

MY PROPOSAL アジアの未来へ

Best Papers of the 5th Asia Future Conference

—私の提案— Vol.5

第5回 アジア未来会議 優秀論文集



今西 淳子【編】

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公益財団法人

渥美国際交流財団

関口グローバル研究会

Sekiguchi Global Research Association
Atsumi International Foundation

 thejapan times 出版

Toward the Future of Asia: My Proposal

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Special Thanks to Takahashi Industrial and Economic Research Foundation for its gracious grants with regard to the publication of this book.

本書の刊行にあたっては公益財団法人高橋産業経済研究財団より研究助成援助をいただきました。
ここに記して厚く御礼申し上げます。

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Compiled articles are either presented at or submitted to
the 5th Asia Future Conference, held in Republic of
the Philippines, through January 9 to 13, 2020.

This book is published by The Japan Times Publishing, Ltd.
2F Ichibancho Daini TG Bldg., 2-2 Ichibancho, Chiyoda-ku,
Tokyo 102-0082, Japan

Printed in Japan
ISBN 978-4-7890-1772-5
ISSN 2435-1431

Editorial Direction by Hiroshi Sawada
Art Direction by Tetsuya Hagiwara(SOJU Ltd.)
Jacket Illustration by Hayato Imanishi

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Toward the Future of Asia

Significance of our Conference and this Book

Junko Imanishi

Representative, Sekiguchi Global Research Association, Atsumi International Foundation

The twenty-first century has seen the world thrust into a maelstrom of change and unpredictability. We remain hopeful in the face of rapid technological advancements, but many of us struggle to regain our bearings as longstanding social structures become upended. Internationalization and globalization have long been heralded as the keys for the future, yet a truly global path forward remains elusive, serving only to heighten the sense of uncertainty. As global citizens in this era of change, we are called anew to reexamine our world and our collective future and to seek new multidimensional and inclusive perspectives on myriad global issues.

The achievement of rapid economic development has also led to dramatic changes in Asia. At the same time, a complex set of transnational problems have been brought about by global environmental issues and increased socioeconomic globalization. In the midst of an ever-expanding understanding of “society,” the global citizenry—individuals, governments, and the business community—must adopt policies that not only allow for the pursuit of individual interests but also respond to concerns for the peace and happiness of society as a whole. Solving these problems requires the development of multifaceted evaluative and analytical strategies with cooperation across national and disciplinary borders.

The Asia Future Conference is interdisciplinary at its core and encourages diverse approaches to global issues that are mindful of the advancement of science, technology, and business and also take into consideration issues of the environment, politics, education, the arts, and culture. The Asia Future Conference is organized by the

Sekiguchi Global Research Association (SGRA) in partnership with like-minded institutions, in order to provide a venue for the exchange of knowledge, information, ideas, and culture, not only by SGRA members, but also by former foreign students of Japan from various educational institutions throughout the world, their own students and collaborators, and anyone interested in Japan.

SGRA began operating in Tokyo in July 2000 as a division of the Atsumi International Foundation, a charitable organization. At its core is a community of non-Japanese researchers who come from all over the world to conduct advanced studies in Japan and obtain doctoral degrees from Japanese graduate institutions. SGRA identifies issues related to globalization and seeks to disseminate research results to a wide audience through forums, reports, and the internet. SGRA’s aim is to reach society at large rather than a specific group of specialists through wide-ranging research activities that are inherently interdisciplinary and international. The essential objective of SGRA is to contribute to the realization of responsible global citizens. We look forward to welcoming a diverse and active group of conference participants.

Following the first conference (2013 in Bangkok), the second (2014 in Bali), the third (2016 in Kitakyushu) and the fourth (2018 in Seoul), Asia Future Conference was held in January 2020 in Manila, the Philippines. There were nearly 130 full papers submitted to the conference. Of them, we here present the 20 best papers selected by an academic panel. We hope their suggestions will give hints to search for the new direction for the future of Asia.

アジアの未来へ

アジア未来会議の趣旨とこの『論文集』について

今西淳子

渥美国際交流財団関口グローバル研究会代表

21 世紀にはいって世界全体に変革の嵐が渦巻き、人々は新しい技術に大きな期待を抱く一方、社会構造の激しい変化にとまどっています。国際化・グローバル化が唱えられて久しいのに、世界中で共有できる新しい方向性を見出すことができず、混乱は増すばかりです。このような時代においては、物事を新しい視点から複合的に分析し判断していくことが必要なのではないのでしょうか。しっかりした理念を持ち、それを如何に実践していくか、一人一人の意識の改革と行動が問われているのではないのでしょうか。

近年、アジアの各国は急激な経済発展を遂げていますが、地球環境問題の発生や社会経済のグローバル化の進展とともに、国境という枠組みを越えた問題が生じています。さらには、急激なグローバル化と同時に進むローカリゼーション、あるいはナショナリズムなど様々な問題が発生し、新しい課題となっています。社会の構成員である企業や市民は、個々の利益の追求と同時に、周辺社会の利益も検討しなければなりません。グローバル化が進む現代においては、従来の社会の範囲をさらに広げ、地球全体の平和と人類全体の幸福を目指すことが求められているのです。そして、様々な問題を解決する時、あるいは方針や戦略を立てる時、科学技術の開発や経営分析だけでなく、環境、政治、教育、芸術、文化など、社会のあらゆる次元において多面的に検討することが必要となっています。

アジア未来会議は、学際性を核とし、科学技術やビジネスの発展だけでなく、環境、政治、教育、文化芸術などからの多様なアプローチによってグローバルな諸問題に取り

組むことを狙いとしています。

アジア未来会議は関口グローバル研究会 (Sekiguchi Global Research Association: SGRA) が、同じ目的をもつ非営利のパートナー機関と共同で開催しています。SGRA 会員だけでなく、世界中の大学や研究機関に所属する日本留学経験者や、日本に関心のある人々が一堂に集い、知識、情報、アイディア、文化の交流を図りながらアジアの未来について語り合う〈場〉の提供を目的としています。

2000年7月から東京を起点として活動する公益財団法人渥美国際交流財団の一部署である関口グローバル研究会は、世界各国から渡日し長い留学生生活を経て日本の大学院から博士号を取得した知日派外国人研究者が中心となって活動し、グローバル化に関わる問題提起を行い、その成果をフォーラム、レポート、ホームページ等の方法で、広く社会に発信しています。ある一定の専門家ではなく、広く社会全般を対象に、幅広い研究領域を包括した国際的かつ学際的な活動を狙いとしています。良き地球市民の実現に貢献することがSGRAの基本的な目標です。

アジア未来会議は第1回(2013年、バンコク)、第2回(2014年、バリ島)、第3回(2016年、北九州市)、第4回(2018年、ソウル)に続いて、2020年1月にマニラ(フィリピン)で第5回を開催しました。今回は130本近い論文が投稿されましたが、その中から厳正な審査により20本の優秀論文を選び、本書に収録しました。こうした若い研究者たちの提案が、アジアの未来への新しい方向性を探るヒントになることを願っております。

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*This paper's selected as one of the best papers of AFC#5, but we learned afterwards that it had previously been published in another journal (<https://www.ncbi.nlm.nih.gov/pubmed/29621694>). So we declined to re-publish it in this book.

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Opening Remark	開会挨拶
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Symposium on "sustainable shared growth" on January 10, 2020
シンポジウム「持続的な共有型成長」、2020年1月10日



It was inspired by Pope Francis' encyclical "*Laudato Si*", with sub-theme "On Care for Our Common Home". This is also part of the sub-theme of AFC #5: "Our Common Home and Happiness".

— Ferdinand C. Maquito

それはローマ教皇フランシスコの回勅「ラウダート・シ」に触発されたものですが、この回勅の副題は「共に暮らす家を大切に」で、奇しくも第5回アジア未来会議の副題「みんなの故郷、みんなの幸福」と重なります。

—フェルディナンド・C・マキト

“Our Common Home and Happiness”

「みんなの^{ふるさと}故郷、みんなの^{しあわせ}幸福」

Dr. Ferdinand C. Maquito

(College of Public Affairs and Development, UPLB)

フェルディナンド・C・マキト（フィリピン大学ロスバニョス校）



Since 2004, AFC's host, Atsumi International Foundation/Sekiguchi Global Research Association (AISF/SGRA), has held 27 seminars in the Philippines on the theme of Shared Growth. This seminar series has gone through three stages of evolution.

In the first stage, the aim was to push the shared growth advocacy through research involving elements of Japan's shared growth experience. In economic terms, the seminars aimed for efficiency with equity (good distribution of income/wealth). This stage saw an active engagement with the manufacturing sector of special economic zones.

The second stage was prompted by a need to involve also those who had an advocacy for pushing the environment agenda, hence, widening the network of like-minded entities. It is at this stage that the word “sustainable” was added to the theme of the seminar series. It should be noted, however, that “shared growth” by itself already includes environmental sustainability when we broaden our income/wealth equity definition of “shared” to also cover inter-generational equity. This conforms to the generally accepted definition of sustainable development as a type of development where the

アジア未来会議を主催する渥美国際交流財団関口グローバル研究会（AISF/SGRA）は2004年以来、「共有型成長」をテーマにフィリピンで27回ものセミナーを開催してきました。一連のセミナーには3つの発展段階がありました。第一段階は、日本における共有型成長の経験を研究し、それを通じて共有型成長の理念を明らかにすることを目指しました。経済学の言葉で言えば、公平性のある効率、つまり収入や富の公平な分配の追求です。ここでは経済特区における製造業の実態も調査しました。

第二段階は、環境問題に熱心な人たちが私たちの議論に加わることで始まりました。これで議論の幅が広がり、連続セミナーのテーマに「持続可能性」という言葉が加わりました。しかし考えてみれば、「共有型成長」の概念には環境面の持続可能性という考え方が含まれていたのです。私たちの考える「公平性」には世代間の公平も含まれていたからです。今の世代のニーズを満たすために、未来の世代が自分たちのニーズを満たす機会を犠牲にしてはならないということです。これは現在広く受け入れられている「持続可能な発展」の定義と一致しています。

第三段階、つまり今日の段階では、いわば総花的であった従来のアプローチに代えて、具体的で絞ったアプローチが始まりました。個々の国が持続可能な成長を遂げるのに必要な具体的メカニズムの研究です。どうすれば効率性

current generation's needs are satisfied without compromising the ability of future generations to satisfy their needs.

The third and latest stage of evolution came with a shift from the carpet bombing approach of the second stage to the surgical strike approach of the third stage. The aim of the seminars is now to search for specific mechanisms that would allow a country to achieve sustainable shared growth, i.e., simultaneously achieve the goals of efficiency, equity, and environmental friendliness. Within the fertile environment of the AISC/SGRA seminars and my home institution, the College of Public Affairs and Development, University of the Philippines Los Baños, the identified mechanisms of sustainable shared growth are: internal revenue allocation; community currency; land value taxation; the Flying Geese Model and other Japanese institutions that differ from that of mainstream economics; decentralization and organizational architecture.

The original theme of shared growth was a term coined by the "East Asian Miracle Report" of the World Bank published in 1993 to refer to the peculiar type of economic development experienced by a group of East Asian Economies, led by Japan, in the decades after WWII. Conspicuously absent in the list of eight Highly Performing (East) Asian Economies of the report was the Philippines. Unfortunately, even if the report was re-written today, the Philippines would not still be included in the list. The Philippines remains in dire need of achieving sustainable shared growth.

The theme of the 5th Asia Future Conference springs

と公平性、そして環境への配慮を同時に追求できるかの研究です。

今回は AISC/SGRA の「アジア未来会議」を私の所属する フィリピン大学ロスバニョス校に迎えることができました。この素晴らしい機会に、私たちは持続可能な共有型成長を実現する具体的なメカニズムとして、いくつかの問題に取り組みました。内国歳入割当、地域通貨、土地税制、雁行モデルを初めとし、主流経済学と異なる日本の諸制度、地方分権とその組織構造などです。

そもそも共有型成長という言葉は世界銀行が 1993 年に発行した「東アジアの奇跡」と題するレポートで使われたもので、第二次世界大戦後の数十年間に、日本を筆頭とする東アジア諸国で実現された経済発展の固有な形態を指していました。ただ残念なことに、この報告の挙げた東アジアの高成長国 8 か国のリストにフィリピンは含まれておりません。不幸なことです、いま同じレポートが書かれたとしても、フィリピンは入らないでしょう。残念ながら、この国はまだ持続可能な共有型成長に到達していません。

いま申しましたとおり、第 5 回アジア未来会議のテーマは過去のセミナーの蓄積から生まれたものですが、アジア未来会議は第 3 回以降、アジアにおける異文化間の対話、とりわけその倫理的側面に関する円卓会議を併催しています。それはローマ教皇フランシスコの回勅「ラウダート・シ」に触発されたものですが、この回勅の副題が「共に暮らす家を大切に」なのです。奇しくも第 5 回アジア未来会議の掲げる「みんなの故郷、みんなの幸福」と重なっているではありませんか。いたずらに社会の格差を広げ、天然資源を食いつぶすグローバル市場経済に対する私たちの批判は、この回勅と響きあうのです。

持続可能な共有型成長の目指すところは効率と公平性、

from these series of 27 seminars. Since the 3rd run, the AFC has included a roundtable on inter-cultural Asian dialogue focusing on ethics. It was inspired by Pope Francis' encyclical "Laudato Si", with sub-theme "On Care for Our Common Home". This is also part of the sub-theme of AFC 5: "Our Common Home and Happiness". The encyclical virtually gave support to our advocacy in its strong criticism of a global market economy that has widened the social disparity and ravished our natural resources.

The three goals of sustainable shared growth, efficiency, equity, and environment, could be translated into Tagalog as Kahusayan, Katarungan, Kalikasan, or, as we have been referring to it in SGRA Philippines: KKK. I am quite aware that these letters do not mean well in a Western or even Japanese context. But, we in SGRA Philippines use it proudly for it symbolizes the revolution of our forefathers against the Spanish colonizers. In English, the revolutionary organization of KKK means: the highest and most respected assembly of the sons/daughters of the country. Indeed, the achievement of sustainable shared growth, at least for the Philippines, requires nothing short of a revolution in thinking and doing things, by the highest and most respectable sons and daughters of the motherland.

そして環境です。この3つは、タガログ語では *Kahusayan, Katarungan, Kalikasan* と言いまして、フィリピンの私たちは略して KKK と呼んでいます。言うまでもなく、この3文字 (KKK) は英語や日本語では好ましくない意味をもっています*。しかしフィリピンの私たちにはとても誇らしい語です。なぜなら、それはスペインによる植民地支配と戦った先人たちの運動を象徴する言葉だからです。KKK は革命組織の名で、「この国の息子たち、娘たちの至高にして最も尊敬すべき会議」を意味するタガログ語の頭文字を取ったものなのです。実際、少なくともこの国で持続可能な共有型成長を実現するには、思考と行動の両面で革命が必要でしょう。その担い手は、もちろん、この国の至高にして最も尊敬すべき息子たち、娘たちです。

* 英語の KKK は白人至上主義団体 キュー・クラックス・クランの略称、日本語の 3K は「きつい、汚い、危険」の意。



Pope Francis kissing an infant
(東京ドームのミサで幼児に
キスする教皇フランシスコ)
© 共同通信社

Special Speech

特別講演

Roundtable B: "Can religion stop the tyranny of market economy?" January 10, 2020

円卓会議B「東南アジアの叡智：社会倫理とグローバル経済」、1月10日



SOLIDARITY: Participants of AFC#5 at CFNR/UPLB

There was a need to return to the multidisciplinary approach taken by the first economists who did not hesitate to combine economics with philosophy and politics.

— Bernardo M. Villegas

最初期の経済学者たちが採った学際的なアプローチに戻り、哲学と政治学を経済学に合体させる必要があります。

——ベルナルド・M・ビレガス

“Social Ethics and Global Economics: A Macroeconomic Perspective”

社会倫理とグローバル経済：マクロ経済の視点から

Dr. Bernardo M. Villegas

Vice President, Board of Trustees, University of Asia and the Pacific

ベルナルド・M・ビレガス（比アジア太平洋大学副学長）



The global economy is faced with increased inequality within national economies and between the highly developed countries and the emerging markets that are still trying to attain sustainable and inclusive development. A major reason for these inequalities is the absence of ethical practices among both the government officials and the leading industrial leaders in both developed and developing economies.

In addition to rampant corruption in the public sector, there is little concern for the common good among those who are on top of business organizations. There are not enough people in business who consider it their obligation to contribute to the common good of society, which is defined in ethical terms as a social or juridical order that enables every single member of society to attain his or her integral human development. At best, lip service is paid to the “greatest good for the greatest number” which can be a dangerous criterion for determining the good of society. Ethics requires the recognition of a natural law that objectively establishes the difference between good and evil, which cannot be determined by majority rule. The principle of solidarity requires that

every entrepreneur and decision maker consider how s/he, in her/his business decisions, is contributing to the welfare of every person in society and not only to the maximization of profit of her/his enterprise. The same can be said of every consumer who, for example, should consider how her/his behavior as a consumer is affecting the physical environment.

Integral Human Development

All cultures, religions and ideologies, especially within Asia, must agree on living and exemplifying these basic ethical principles which are imprinted in the mind of every human being by the Creator such as the principles of subsidiarity, the principle of solidarity, the common good, the universal destination of goods and the preferential option for the poor or marginalized. The lack of concern for the social principles of subsidiarity, solidarity, the common good and the preferential option for the poor, among others, can be squarely blamed on the widespread teaching of free market economics or economic liberalism in the West during the second half of the last century. In the desire to treat the study of economics at the same level as the physical sciences, all

value judgements were purged from economic reasoning. It was very convenient to assume that the only motivation of the businessman was to maximize profit and of the consumer to maximize satisfaction. These very naive and unrealistic assumptions made it possible to apply some of the most sophisticated mathematical models to the study of economics but they rendered the discipline completely irrelevant to the real world. There was a need to return to the multidisciplinary approach taken by the first economists who did not hesitate to combine economics with philosophy and politics. I especially appreciate the British academic curriculum referred to as PPE (Philosophy, Politics and Economics). Especially in the courses I teach on the economics of

development, the PPE approach is the most effective way of tackling predominantly economic problems using the multidisciplinary method.

Over these more than half century of teaching economics, I have witnessed an alarming overspecialization and consequently quantification of the study of the principles of economics. This trend coincided with the increasing worship of markets as the end-all and be-all of economic progress. Because of the emphasis on the elegance of mathematical formulations in analyzing economic phenomena, there was an increasing emphasis on the autonomy of market forces and the exclusion of other equally important considerations in attaining a

【要旨】 経済がグローバル化した今、格差は国内でも、高度な先進国と持続可能な成長の道を探しあぐねている新興国の間でも広がるばかりです。この不公平の主たる理由の1つは、倫理的な慣行の欠如です。政府の当局者も産業界のリーダーも、先進国でも途上国でもそうです。腐敗、汚職もそうですが、「共通善(みんなにとって善いこと)」に対する関心が企業トップに少なすぎる。社会の共通善に寄与することを自らの義務と考える人が、ビジネス界には少なすぎる。彼らが口にするのは、せいぜいが「最大多数の人に最大の善を」ですが、これは共通善の理解としては好ましくない。倫理が求めるのは自然法、すなわち善悪の区別を客観的に確立する法則を認めることであり、多数決で決することではありません。すべての実業家、すべての意思決定者が自らの事業に関わる決断において、自分の会社の利益の最大化だけでなく、この社会のすべての人の幸せに対する貢献を考慮すべきである。連帯の原則はこれを要求します。同じことは消費者についても言えます。私たちの誰もが、消費者としての自分の行動が物理的な環境にどう影響するかを考慮しなければなりません。

ここで考えたいのが「分かち合いの経済(エコノミー・オブ・コミュニオン=EoC)」の概念、つまり公平に分け与える経済です。1990年代の南米でカトリックの社会活動家が提唱したもので、簡単に言えば企業の利益を3つの方面に等しく振り分けようという考え方です。1つは企業の利益と経済的な持続可能性のため、1つは地域で最も貧しい人たちが貧困から抜け出せるよう支援するため、最後の1つは若い世代の教育に投資し、新たな経済文化を育んでもらうためです。現在では欧州と南米を中心に、五大洲で800を超える企業がEoCの考え方を採り入れています。もちろんまだ少数ではありますが、今日の経済・ビジネスの生態系の中で一定の地位を占めていますし、未来へとつないでいくべき試みです。

企業の自由・市場の自由と、自由市場経済の欠陥を直すために必要な国家による介入のバランスをどう取るか。「可能な限り自由な市場」と「必要な範囲内での国家による介入」をどう両立させるか。この問題で政府に求められるのは節制の美德です。慎重になり、やりすぎないこと。節制の美德を肝に銘じてこそ、かつてドイツの故コンラッド・アデナウアー首相が完成させた社会的市場経済を実現できるでしょう。

just and humane society, such as the need for state regulation, the social responsibility of the private sector, and the societal goal of integral development. Over this same period, I have written close to a dozen textbooks on economics that have been used in many schools in the Philippines, especially in the private educational institutions. I have tried to go against the tide and always presented economics as a social science that must take into account the findings of other fields of studies in arriving at the solutions to the fundamental economic problem of scarcity. I have just written an updated version of my widely used textbook in economics called *Guide to Economics for Filipinos*. My co-author, Mr. Luis Molina and I have made sure that in addition to explaining to the readers what Paul Samuelson referred to as “the diagrams of supply and demand and the mathematics of econometric regressions,” we would give as much attention to explaining such vital concepts as sustainable development, inclusive development and especially integral development.

We have not hesitated to incorporate into this introductory book in economics the rich heritage of the social teaching of the Catholic Church which contains the major principles of integral human development. These principles, articulated in numerous documents over more than a century and addressed not only to Catholics but to all men and women of good-will, are actually deeply embedded in the Philippine Constitution of 1987. I should know because I was one of those who drafted the Constitution and helped a core group headed by our Chairperson Cecilia Muñoz-Palma to include in the

preamble of the Constitution such social principles as the common good, the principle of subsidiarity, the principle of solidarity and the universal destination of goods. In all the chapters of our new book, the principle of the common good, for example is, a *leitmotif* that underlines every discussion of what is good for the economy. In this new version of what used to be entitled *Guide to Economics for Filipinos*, the concept of integral development has been fully developed. In fact, the last and concluding chapter of the book is entitled “Integral Development.”¹

Because of the raging debates about the physical environment in the last decade or so, this new approach to economics education we are taking necessarily assigns a great deal of importance to sustainable development defined as seeking the good of the present generation without sacrificing that of future generations. This has especially been applied to the need to protect the physical environment as we search for solutions to uplifting the standards of living of the present generation. One of the most valuable contributions to this ongoing debate was made by Pope Francis in his encyclical “*Laudato Si*.” Pope Francis patiently shows how aspects of reality are related to one another. One of the first aspects of modern life that the Pope tried to relate with the rest is technology.² In his words: “Technology has remedied countless evils which used to harm and

1 Villegas, B.M., Luis Molina. 2019 *Guide to economics for Filipinos*. 8th Edition. (Forthcoming) Sinag-Tala.

2 Francis, Pope. 2015 *Laudato si: On care for our common home*. Vatican Press.

limit human beings. How can we not feel gratitude and appreciation for this progress, especially in the field of medicine, engineering and communications?” (*Laudato Si*, 81-82) He was quick to point out, however, that there were downside harmful effects of technology: “Yet it must also be recognized that nuclear energy, biotechnology, information technology, knowledge of the DNA, and many other abilities which we have acquired, have given us tremendous power. More precisely, they have given those with the knowledge and especially the economic resources to use them, an impressive dominance over the whole of humanity and the entire world.” Needless to say, that impressive dominance has not been always used for the common good.

In the language of policy makers today, development must be inclusive, i.e., everyone — especially the poor — must share in the fruits of economic growth. Over and above the inclusive nature of growth, every participant in the economic development process must consciously contribute to the common good, in the spirit of solidarity. As I personally emphasized to my fellow commissioners when we were drafting the Philippine Constitution in 1986 under President Corazon Aquino, the common good should not be defined as the “greatest good for the greatest number.” Instead, it should be defined as a social or juridical order that enables every member of society to attain his or her full human development economically, politically, culturally, socially, morally and spiritually. This may be a long-winded definition but it guarantees that both government officials and the private citizens themselves will always be

working for the good of everyone, especially the marginalized, and will not focus exclusively on the material welfare of the citizens but will also take into account the other dimensions of human existence, i.e. political, cultural, social, moral and spiritual.³

Macroeconomics and Microeconomics

An indispensable condition for long-term sustainable development, is macroeconomic stability. Fortunately, the Philippines in the second decade of the Third Millennium has received a lot of accolades from independent international institutions such as the World Bank, the Asian Development Bank, credit rating agencies and multinational banks for having built solid institutions such as one of the best central banking systems in Southeast Asia and competent fiscal agencies that can guarantee macroeconomic stability (low inflation, low fiscal deficit to GDP ratio, low total debt to GDP ratio, etc.) over the long run. There are serious constraints imposed on the economy by the very low export to GDP ratio and the need to diversify into higher-value exports such as agribusiness products by significantly improving the productivity of our agricultural sector, long neglected as the “Cinderella” of development. I highlight the importance of investing more in the manufacturing sector that can generate higher levels of employment by, among other means, opening up the economy to more foreign direct investments (FDIs) through amending the very restrictive provisions of the

3 Paul, Pope. 1967 *Populorum Progressio* Vatican Press

Philippine Constitution on foreign investments.⁴

As regards Microeconomics, the new approach to economics education should take greater cognition of the imperfections of free market forces in attaining integral development. We are notorious for having the highest poverty incidence in East Asia: 21 percent of our population. When more than 20 million Filipinos go to bed hungry every day, it is not possible for them to have access to markets to improve their lives. They are too poor, too hungry, too unhealthy and too uneducated to benefit from free market forces. There must be a previous intervention of the State or of civil society to give them enough nutrition, enough health services, and enough education to prepare them for participation in a market economy. Hence, the need for government intervention in building farm to market roads, irrigation systems, post-harvest facilities to enable the millions of poor farmers to eke out a decent living from their small farms. There is need for the State to constantly increase the share of education and health services in the annual budget. In extreme cases of poverty, there is justification for conditional cash transfers that will enable the poorest of the poor to cover the barest economic necessities.⁵

4 Villegas, Bernardo M. 2019 “New Approach to Economics Education Part 2” *Manila Bulletin* (June 17, 2019) (<https://business.mb.com.ph/2019/06/17/new-approach-to-economics-education-2/> Accessed November 3, 2019)

5 Ibid

The Experience of the Economy of Communion

The Economy of Communion (EoC) is a proposal that responds to the need to restructure business models according to the principles of Catholic Social Teaching (Gallagher 2014)⁶. In 1991, the founder of the Catholic movement Focolare, Chiara Lubich, traveled to the city of São Paulo (Brazil) where she observed the significant contrast between the immense skyscrapers and the poverty of the urban favelas. The recently created communities belonging to this ecclesiastical movement, despite living in a communion-of-goods regimen, were unable to obtain the resources necessary to create a dignified quality of life.

In light of this need, Chiara Lubich decided to invite talented entrepreneurs to create companies according to the principles of subsidiarity, solidarity and preferential option for the poor, that she later called the “EoC” (Hernando 2015)⁷. With regard to the business models inspired by EoC, their fundamental elements stem from the principle that a company’s financial profits should be distributed in three parts. The first of these should be directed toward the company’s growth, development, and economic sustainability; the second toward the most needy people in the social environment of the organization, to help them overcome their situation of

6 Gallagher, J. and Buckeye, J., 2014. *Structures of grace: The business practices of the economy of communion*. New City Press.

7 Hernando, I. 2015. “Spiritual Capital for Innovation: The Economy of Communion (EoC) Experience.” In *Spirituality & Creativity in Management World Congress 2015*. Barcelona: ESADE.

poverty; while the third part should be invested into the education of young people, in favor of creating a new means of economic culture at the service of people and of the common good (Lubich 1999). These elements enable the companies forming part of the EoC to live and exemplify the principles of subsidiarity, solidarity and the preferential option for the poor.

According to Chiara Lubich⁸, relying on the “invisible hand” of the market (Smith 1958)⁹ is not enough to achieve an adequate redistribution of wealth, thus it is companies themselves that should dedicate some part of their financial profit to alleviating situations of inequality and injustice. The development of the EoC until October 2015—a period about which information is available on the project’s web page—has been such that it has not only expanded through Latin America, where it was founded, but also across all five continents. To date, 811 companies have already subscribed: 463 in Europe (263 of which in Italy); 220 in Latin America; 26 in North America; 18 in Asia, and 84 in Africa.¹⁰ In other words, the fulfillment of the common good cannot be left to the workings of the market economy, alone.

The principles upon which the EoC is based are found in the Holy Scripture and Catholic Social Teaching (Aguado Muñoz 2014)¹¹. Specifically, the meaning of the word “communion” may be highlighted, which comes from Jesus Christ’s prayer when he says “Father, just as you are in me and I am in you” (John 17:21). The EoC understands that the Christian doctrine of the Trinity explains God as a being in relation to communion, which may act as a community model for human beings (Norris 2009)¹². This sense of unity is directly related to the need to be interested in the living conditions of others, and especially those that are in need. One possible way of improving our relationship with such people involves, precisely, aiding them, using the fruits of our labor.

Business organizations created from the EoC project do not just have the aim of creating financial profit for company shareholders or owners, a proposal that Pope Benedict XVI (2009)¹³ also defends in *Caritas in Veritate*. In addition to providing remuneration to owners and the financial means for the company’s growth, these businessmen also seek to alleviate poverty and help educate future managers, with the aim of promoting, in the future, the care of people and of the common good in the undertaking of their economic activities.

8 Lubich, C. 1999 *For an Economy Based on Communion*. Ceremony of the honorary degree in “Economics” conferred on Chiara Lubich by the Sacred Heart Catholic University. https://eocnorthamerica.files.wordpress.com/2015/11/chi_19990129_en.pdf.

9 Smith, A. 1958. *Investigación sobre la naturaleza y causas de la riqueza de las naciones*. México: Fondo de Cultura Económica.

10 See <http://www.edc-online.org/es/quienes-somos/difusion.html>. Accessed April 20, 2018)

11 Aguado Muñoz, R. 2014. Empresa y economía de comunión. En J. Sols Lucia (Ed.), *Pensamiento social cristiano abierto al siglo XXI. A partir de la encíclica Caritas in veritate* (pp. 165–188). Santander: Sal Terrae.

12 Norris, T. J. 2009 *The Trinity: Life of God, Hope for Humanity*. New York: Hyde Park.

13 Benedict, X. VI. 2009 *Caritas in Veritate*. Libreria Editrice Vaticana.

Other principles of the EoC that are particularly in line with Catholic Social Teaching are the principles of gratuity and reciprocity. According to Luigino Bruni (2010)¹⁴, the novelty of *Caritas in Veritate* is the affirmation that reciprocity and gratuity are also fundamental principles of the economy and the market, and they are not just for nonprofit organizations or those of a social nature. The companies that follow the EoC project are for-profit businesses that consider reciprocity and gratuity to be an integral part of their business. Both reciprocity and gratuity are guided by the logic of the gift, innate to human relations, which should be promoted so that the former are authentically human and favor the development of people.

Reciprocity is understood as “the exchange of gifts,” which goes beyond the logic of contracts and markets, etc. The concept of gift, likewise, is a synonym of gratuity. Gratuity, in the context of Catholic Social Teaching, above all refers to “giving oneself to,” surrendering one’s person, and goes beyond the surrendering of goods and things. It is, therefore, a lifestyle, a “how” which is implicated in the freedom of a person and depends more on their personal decisions than on previously established agreements of any nature.

Another relevant feature of the EoC is the relation that exists between the personal good and the common good.

According to Frémeaux and Michelson (2017)¹⁵, for the EoC the personal good may be favored providing that the common good is met. In this way, the common good can only be promoted if it is through the means of the members of the organization who seek personal good.

In this regard, Catholic Social Thought sets out some key principles for action; offers certain guiding criteria for decision-making; and proposes several values on which a more responsible and competitive economy and business management may be built. The EoC is an example of an applied practice, and shows how, in fact, it is possible to remain on the market by pursuing not only economic benefit, but also declaring an explicit commitment to common good, gratuity, reciprocity, and communion. (Fernández and de la Cruz, 2019).

The EoC, certainly, would have a place in any of the circles or intersections of circles that are presented in Figure 1.¹⁶

14 Bruni, L. 2010 Reciprocidad y gratuidad dentro del mercado. La propuesta de *Caritas in Veritate*. *Aggiornament Sociali*, 38–44.

15 Frémeaux, S., & Michelson, G. 2017. The Common Good of the Firm and Humanistic Management: Conscious Capitalism and Economy of Communion. *Journal of Business Ethics*, 145, 701–709

16 Fernández, J.L.F. and de la Cruz, C.D., 2019. Catholic Social Thought and the Economy of Communion as a Business Model. In *Caring Management in the New Economy: Socially Responsible Behaviour Through Spirituality*, Ora Setter, László Zsolnai, editors (pp. 115-137). Palgrave Macmillan, Cham. (https://link.springer.com/chapter/10.1007/978-3-030-14199-8_7 Accessed September 20, 2019)

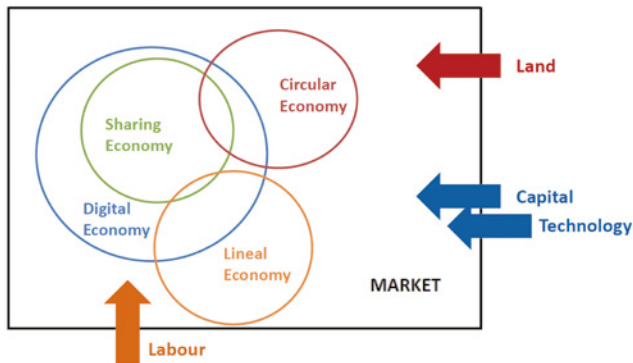


Figure 1. New and disruptive ways of combining production factors

Source: Fernández and de la Cruz, 2019¹⁷

The EoC is a different and innovative model; as a more viable way of doing business that moderates the economic dimension of human life in society. Any way of managing this—although it is a minority—deserves to be supported, since it has apparently found a place in today's economic and business ecosystem and deserves to keep this into the future.

Public-private partnership would be badly needed in a country such as the Philippines where wealthy families have control over the country's production capacity and political organization. While developed countries possess efficient governments, the Philippines can mostly rely on the effective efforts of private institutions to sustainably alleviate poverty. Such a partnership can be achieved, even on the arguments of mainstream economic thinking. This can be seen in the example of EoC member institutions. Foreign aid has its limits. For the entrepreneurial poor to reach a higher socio-economic

status, inter-generational private entity efforts and commitment to alleviate poverty through credit, empowerment, and having an enabling environment, such as reciprocity and gratuity, for the poor, would have hopes of being effective for some developing countries such as the Philippines.

Final Notes

The State has to make sure that the existing oligopolies and monopolies that are in the hands of the Philippine elite are regulated by the Philippine Competition Commission so that they do not victimize the consuming public with unreasonably high prices and poor services. Free markets in themselves should not be absolutized or idolized, because it thrives in an imperfectly competitive market environment. In such an environment, market failures happen frequently, and win-win solutions do not happen effortlessly. What should be emphasized is the principle of subsidiarity, i.e. that what can be accomplished efficiently and competently by private individuals and groups should not be absorbed by higher bodies, least of all by an all-powerful State. This principle flows from the very dignity of the human being who should be given the freedom to do what s/he can achieve without interference from higher authorities. Markets are only means of allowing the principle of subsidiarity to apply to every economic society. At the same time, though, we have insisted on the other side of the coin, the principle of solidarity. Every human being, including the businessman, is obliged by her/his very nature to always contribute to the common good in her/his individual actuations. We

¹⁷ Fernandez et al 2019, p. 131

completely reject the neoclassical assumption that the only thing that a businessman has to do is to maximize her/his profit and for the individual consumer to maximize her/his individual pleasure for there to be an “invisible hand” that automatically promote the good of everyone. Businessmen and consumers must always act with social responsibility for there to be a just and humane society. Only then can we fully understand the oft-repeated reference to “People, Planet and Profit.”

Finally, in deciding what is the optimum mix between the freedom of enterprise that is required by the principle of subsidiarity and the necessary state intervention to cure the imperfections of a free market economy, state officials should exercise the virtue of prudence in implementing the *dictum* “as much free market as is possible” and “as much state intervention as is necessary.” Only the exercise of the virtue of prudence will lead to the appropriate mix as can be found in the social market economy perfected by Konrad Adenauer in Germany.

Looking into the long-term future, especially as a guide to the so-called millennials (those born between 1982 to 2000) and the Z generation (those who were born after 2000), I elaborate the two “sweet spots” that will benefit their generations. The first is the demographic sweet spot. The Philippines is one of the few countries in the Asia Pacific region (together with Indonesia and Vietnam) that will enjoy at least for the next two or more decades a young and growing (and for the Philippines an English-speaking) population while

the rest of East Asia suffer the economic consequences of rapid ageing and population decline. Because of this demographic sweet spot, the Philippines can benefit for a long time to come from the foreign exchange remittances of the more than 10 million overseas Filipino workers and from the earnings of the 1.2 million well-educated workers in the BPO-IT sector. This demographic advantage also provides the Philippines with a huge domestic market that makes it partly immune from the ups and downs of the global economy. The second sweet spot is geographic in nature. The Philippines is fortunate enough to be part of the so-called Asian Century during which Asia will be the epicenter of global economic growth, with China, India and ASEAN Economic Community as the major players in the next 20 to 30 years.

Although one can find in most religions and ethical systems the social principles that can “cure” economics from the disease of scientism, it is the social teaching of the Catholic church developed over more than a century of papal encyclicals and other documents that can shed the most luminous light on the task of every society to promote what is called integral human development, another way of expressing the common good as a social order that enables every single human person to attain her/his fullest development as a human being. Such integral human development necessarily includes the economic, political, cultural, social, moral and spiritual development of the human person.

Sustainable Shared Growth: Our Common Home and Happiness

Junko Imanishi

Representative, SGRA, Atsumi International Foundation

It was on the afternoon of January 12th 2020, a Sunday and the final day of the 5th Asia Future Conference (AFC#5), that the Taal volcano started erupting. Located approximately 70 kilometers to the south of Manila, one of the study tours was just in the middle of enjoying their tour of Tagaytay as it occurred. An eruption of this scale was the first since 1911. The volcanic smoke reached a height of 15,000 meters with volcanic ash even reaching Alabang in the south of Manila, where the first day of the conference was held. On January 13th, the following day, numerous flights departing from Manila International Airport were cancelled or delayed, affecting the over 200 conference participants out of whom over 70 were forced to extend their stay.

From January 9th (Thursday) to 13th (Monday), the AFC#5 was held at the Bellevue Hotel in the Alabang region of Manila and the University of the Philippines Los Baños (UPLB) in the province of Laguna. 294 registered participants from 21 countries attended, and the overall theme for the conference was “Sustainable Shared Growth: Our Common Home and Happiness.” Today, the world is experiencing economic growth as never before, but this growth has in turn led to an increase in the wealth gap as well as to the destruction of the environment. With these issues in mind we discussed the ideal of “sustainable shared growth” and explored the possibilities for its realization from a multitude of perspectives.

January 9th (Thursday). From 9 AM, owing to logistical matters pertaining to simultaneous interpretation, the activities started with Roundtable A, under the theme of “Dialogue of National Histories between Japan, China and Korea.” This roundtable sought to bring about historical reconciliation and rebuild mutual trust in East Asia by establishing a stable and cooperative relationship through dialogue based around Japan’s “Japanese history,” China’s “Chinese history,” and Korea’s “Korean history.” At this fourth meeting the spotlight was shone on the 19th century with the theme of “the birth of East Asia,” which brought about a lively and fruitful discussion. (Simultaneous interpretation: Japanese-Chinese-Korean)

January 10th (Friday). The opening ceremony started at 9.30 AM. Following the hymns by the UP Rural high school choir, Mr.

Yasushi Akashi, Conference Chairperson, gave the opening address. This was followed by the welcome remarks of Dr. Fernando C. Sanchez, the Chancellor of UPLB, the co-host of the symposium, and congratulatory remarks of H.E. Koji Haneda (Japanese Ambassador to the Philippines) and Atty. Danilo L. Concepcion (President of the University of the Philippines). Next was the keynote speech by H.E. Jose C. Laurel V (Ambassador of the Republic of the Philippines to Japan), entitled “Achieving Sustainable Development Goals in the Age of Social Media.” This was followed by a symposium on the theme of “Sustainable Shared Growth,” featuring five speakers who have contributed to SGRA’s projects in the Philippines and facilitated by Dr. Ferdinand C. Maquito (UPLB/SGRA), who is also from the first batch of Atsumi scholars.

In the afternoon, Roundtables A and B as well as the parallel panel sessions were held. The theme for Roundtable B was “Can Religion Stop the Tyranny of the Market Economy?” Despite the economic progress and reduction in poverty in Southeast Asian countries achieved under the current global economy, there is a growing concentration of wealth and power, and a sense of fatigue amongst local communities. Based on this context, this roundtable invited theologians and economists from the Philippines, Indonesia and Thailand to discuss the successes and failures of economic thought and religious systems in Southeast Asia in an increasingly culturally “scrambled” economy. (Language: English)

January 11th (Saturday). At 8 AM, all of the participants were boarded onto seven buses to depart on the one-hour journey to UPLB, which is located at the foot of Mt. Makiling in Laguna province. The sprawling campus is home to the College of Forestry and Natural Resources, the main venue for the second day of the conference. Participants were liberated from the steel and concrete jungle of the hotel venue of the day before into the nature filled environs of UPLB. Roundtable B and 40 sessions were held, and lunch was served in the botanical gardens where participants enjoyed packed lunches in the middle of the forest.

In total over the two days, 50 sessions were held, and 173 presentations given. With an international and inter-disciplinary approach in mind, each session was arranged according to

themes which presenters selected at the time of submission such as “shared growth,” “peace,” “environment,” and “innovation,” thus allowing for these issues to be discussed from multiple perspectives. The Best Presentation from each session was selected by the two chairpersons of the session. The list of Best Presentations can be viewed at the link below:

<http://www.aisf.or.jp/AFC/2020/files/2020/01/List-of-AFC-2020-BEST-PRESENTATION-PRIZE-.pdf>

Best Papers were selected by the Academic Committee before the conference. Papers for which abstracts were uploaded to the AFC online system by January 20, 2019 were eligible provided that a full paper was uploaded by July 31, 2019. 127 papers were divided into 13 groups and evaluated by 65 reviewers, and papers in each group were reviewed by five reviewers who judged them based on the evaluation criteria. The guidelines are as follows: 1) Is the theme of the paper in accordance with theme of “Sustainable Shared Growth: Our Common Home and Happiness”?; 2) Is this paper perspicuous and persuasive?; 3) Is this paper original and innovative?; 4) Does the paper hold international aspects in some points?; 5) Does this paper have an interdisciplinary approach? Reviewers recommended 2 papers from each group, and after tallying the scores the following 20 papers were selected.

Following the sessions, participants once again boarded a bus to go to the National Arts Center at a higher level of Mt. Makiling, where the closing party started at 6:30 PM. We were treated to song and dance performances by the university students, and awards for the Best Papers and Presentations were given. Towards the end of the party there was a presentation about the 6th Asia Future Conference (AFC#6) that will be held in August 2021 in Taipei. Greetings were given by the President of Chinese Cultural University, the co-host of AFC#6, and a video introducing the venue was shown.

January 12th (Sunday). Participants went on various study tours such as the tour of Manila, the Quezon City tour, and the abovementioned tour of the Tagaytay area during which the Taal volcano erupted.

The 5th Asia Future Conference was hosted by the Atsumi International Foundation Sekiguchi Global Research Association (SGRA) and co-hosted by the University of the Philippines Los Baños College of Public Affairs and Development (CPAf) and supported by Japan’s Ministry of Education, Culture, Sports, Science and Technology, the Embassy of Japan in the Philippines, and the Embassy of the Republic of the Philippines, Japan. It was also supported by over 50 organizations and individuals including the University of the Philippines System. Special thanks to the Philippines Plaza Holdings for making it possible to hold this festive event.

The Organizing Committee and Academic Committee for this conference were organized by Atsumi Foundation scholars who voluntarily took part in almost all aspects of the conference such as planning the sessions, maintaining the homepages, selecting the awardees, and taking photos. The sole 2 Atsumi Foundation fellows from the Philippines played a particularly large part in the event from its planning stages to its completion. We would like to express our heartfelt thanks to the 300 participants who joined us, as well as to those who supported the holding of the conference and all of the volunteers who provided assistance in many ways and helped lead to the success of the AFC#5.

The Asia Future Conference is interdisciplinary at its core and encourages diverse approaches to global issues that are both mindful of the advancement of science, technology and business, and also take into consideration issues pertaining to the environment, politics, education, the arts, and culture. This conference is organized together with likeminded institutions in order to provide a venue for the exchange of knowledge, information, ideas and culture. It is not only for SGRA members, but also for former international students of Japan from educational institutions around the world and their students and collaborators as well as for anyone interested in Japan.

The next Asia Future Conference will be held from August 27 (Friday) to August 31 (Tuesday) 2021 at the Chinese Cultural University in Taiwan. We would like to ask for your continued support and cooperation, and especially your participation.

持続的な共有型成長：みんなの^{ふるさと}故郷、みんなの^{しあわせ}幸福

今西淳子

(渥美国際交流財団関口グローバル研究会代表)

第5回アジア未来会議は2020年1月9日(木)から13日(月)まで、フィリピンのマニラ首都圏アラバンにあるベルビューホテルとラグーナ州のフィリピン大学ロスバニョス校において、21か国から294名の登録参加者を得て開催されました。最終日(12日)の午後、スタディツアーの1グループが首都マニラから約70キロ南にあるタガイタイ観光を楽しんでいたとき、突然タール火山が噴火しました。この規模の噴火は1911年以来のこと。噴煙は一時、高さ15,000メートルに達し、火山灰は会議場となったマニラ市南郊のアラバンにも達しました。翌13日の帰国日、マニラの国際空港では欠航や遅れが相次ぎ、200名以上の会議参加者が影響をこうむり、70名以上が会議場ホテルで延泊、それ以上の人が空港ターミナルや市内のホテルで長時間の待機を余儀なくされました。

今回の総合テーマは「持続的な共有型成長—みんなの故郷、みんなの幸福」。今日、世界はこれまで経験したことがないほどの経済成長をとげているものの、この成長は受け入れがたい貧富格差の拡大と環境破壊を伴っているという問題意識に基づき、「持続的な共有型成長」のビジョンを議論するとともに、その実現に必要と思われるメカニズムを多角的な視点から考察し、実現のための途を探ることを目標に、基調講演とシンポジウム、招待講師による円卓会議、そして数多くの研究論文の発表が行われ、広範な領域における課題に取り組む国際的かつ学際的な議論が繰り広げられました。

1月9日(木) 午前9時から、同時通訳設備の都合で本会議に先立ち円卓会議A「第4回日本・中国・韓国における国史たちの対話の可能性」が開始されました。東アジアの歴史和解を実現するとともに、国民同士の信頼を回復し、安定した協力関係を構築するためには歴史を乗り越えることが一つの課題であると捉え、日本の「日本史」、中国の「中国史」、韓国の「韓国史」を対話させる試みです。4回目の今回は19世紀の歴史に焦点を当て「東アジアの誕生：19世紀における国際秩序の転換」というテーマで活発な議論が展開されました(日中韓同時通訳)。

1月10日(金) 午前9時30分から開会式が始まりまし

た。高校生の合唱隊による祈りの歌の後、明石康大会会長が第5回アジア未来会議の開会を宣言。共催のフィリピン大学ロスバニョス校のF・C・サンチェス学長の歓迎の挨拶に続き、羽田浩二駐フィリピン日本大使とフィリピン大学のD・L・コンセプション総長より祝辞をいただきました。引き続きJ・C・ラウレル駐日本フィリピン大使の「ソーシャルメディア時代に持続可能な開発目標を達成するために」と題する基調講演あり、その後、渥美財団の第一期奨学生でフィリピン大学ロスバニョス校准教授のF・C・マキトさんの進行で、フィリピンにおけるSGRAの活動の5名の協力者の先生方と一緒に「持続的な共有型成長」というテーマについて検討しました。

午後には円卓会議A、Bと5つの分科会セッションが並行して開催されました。円卓会議B「東南アジアの叡智：社会倫理とグローバル経済」では、市場資本主義経済に乗って東南アジア諸国はかつてない経済成長と発展を謳歌しているが、富と権力は一極に集中し、地域コミュニティは疲弊しているという問題意識に基づき、フィリピン、インドネシア、タイから宗教家と経済学者を招いて、民族、宗教、文化のつぼである東南アジアには過去の人々が成功と失敗に基づく経験知を通じて築き上げてきたさまざまな叡智やシステムがあり、それらは「混迷する」と言われる現代の経済学や経済社会にどのような光をあてるのだろうかという議論が展開されました(使用言語：英語)。

1月11日(土) 午前8時、参加者全員が7台の大型バスに分乗し、約1時間かけてフィリピン大学ロスバニョス校に移動しました。この会場は広大なキャンパスの中の森林学部で、参加者は冷房の効いたホテルの会議室から自然の中に解放され、円卓会議Bや約40の分科会セッションに参加しました。昼には植物園まで散策し、森の中でお弁当を楽しみました。

第5回アジア未来会議では、合わせて50の分科会セッションで合計173本の論文発表が行われました。各セッションは、発表者が投稿時に選んだ「共有型成長」「平和」「環境」「イノベーション」などのトピックに基づいて調整され、学会とは趣を異にした多角的で活発な議論が展開されました。なお分科会ではセッションごとに2名の座

長の推薦により優秀発表賞が選ばれました。なお優秀発表賞の受賞者リストは下記リンクよりご覧いただけます。

<http://www.aisf.or.jp/AFC/2020/files/2020/01/List-of-AFC-2020-BEST-PRESENTATION-PRIZE-.pdf>

優秀論文は学術委員会によって事前に選考されました。2019年1月20日までに発表要旨、7月31日までにフルペーパーがオンライン投稿された127本の論文を13のグループに分け、65名の審査員によって査読しました。ひとつのグループを5名の審査員が、次の5つの指針に沿って審査しました。投稿規定に反するものはマイナス点をつけました。(1)論文のテーマが会議のテーマ「持続的な共有型成長」と適合しているか、(2)わかりやすく説得力があるか、(3)独自性と革新性があるか、(4)国際性があるか、(5)学際性があるか。各審査員はグループごとに9～10本の論文から2本を推薦し、集計の結果、上位20本を優秀論文と決定しました。

分科会セッションの後、参加者は再びバスに乗って山の上のアートセンターに移動し、午後6時30分からクロージングパーティを開始しました。学生サークルによる歌とダンスの宴もたけなわの頃、優秀賞の授賞式が行われました。授賞式では、優秀論文の著者20名が壇上に上がり、明石康大会委員長から賞状の授与がありました。続いて、優秀発表賞50名が表彰されました。パーティの終盤では、2021年夏に台湾で開かれる第6回アジア未来会議の概要の発表があり、台湾の中国文化大学の徐興慶学長による招待の挨拶とビデオによる大学案内がありました。

1月12日(日) 最終日にはマニラ市内とケソンシティ、タガイタイへのスタディツアーが実施されました。そして冒頭に記したように、タガイタイに向かったグループはタール火山の噴火に遭遇したのです。

第5回アジア未来会議「持続的な共有型成長：みんなの故郷、みんなの幸福」は、(公財)渥美国際交流財団関口グローバル研究会(SGRA)主催、フィリピン大学ロスバニョス校公共政策開発学部共催、文部科学省、在フィリピン日本大使館、在日本フィリピン大使館の後援、(公財)高橋産業経済研究財団の助成、フィリピン大学連合および50を超える日本とフィリピンの組織や個人の方々からの協賛をいただきました。とりわけフィリピンプラザ・ホールディングスの皆様からは全面的なサポートをいただき、華やかな会議にすることができました。

運営にあたっては、渥美元奨学生を中心に実行委員会、学術委員会が組織され、フォーラムの企画からホームページの維持管理、優秀賞の選考、写真撮影まであらゆる業務を担当しました。特に2名しかいないフィリピン出身の渥美元奨学生は企画の最初から最後まで大活躍でした。約300名の参加者のみなさま、開催のためにご支援くださったみなさま、さまざまな面でボランティアでご協力くださったみなさまのおかげで、第5回アジア未来会議を成功裡に実施することができましたことを、心より感謝申し上げます。

アジア未来会議は、国際的かつ学際的なアプローチを基本として、グローバル化に伴う様々な問題を、科学技術の開発や経営分析だけでなく、環境、政治、教育、芸術、文化など、社会のあらゆる次元において多面的に検討する場を提供することを目指しています。SGRA会員だけでなく、日本に留学し現在世界各地の大学等で教鞭をとっている研究者、その学生、そして日本に興味のある若手・中堅の研究者が一堂に集まり、知識・情報・意見・文化等の交流・発表の場を提供するために、趣旨に賛同してくださる諸機関のご支援とご協力を得て開催するものです。

なお第6回アジア未来会議は2021年8月27日(金)から31日(火)まで、台湾の中国文化大学と共催で、台北市で開催の予定です。みなさまの変わらぬご支援、ご協力、そして何よりもご参加をお待ちしています。





*In memory of
those who fell in the heroic
fights against the novel coronavirus,
including
the loved ones and family members of
AFC#5 participants.*

第5回アジア未来会議優秀論文集

The Best Papers of the Fifth Asia Future Conference held in
the Republic of the Philippines, through January 9 to 13, 2020

The Effects of Mother's Social Media Usage to Toddler's Health Status in Indonesia



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インドネシアにおける母親のソーシャルメディア接触が子育て、とりわけ幼児の健康にどう影響するかを検証した。接触時間の長さは一般的な健康状態にネガティブ、基本的な予防接種の実施についてはポジティブな影響を及ぼしていた。

Abstract

This study aims to explore the effect of mother's social media usage on child health indicators. These indicators are: health status, exclusive breastfeeding status, and complete basic immunization status. To account for the potential endogeneity in social media usage, we used the presence of BTS (Base Transceiver Station) and signal strength as the instrumental variables. The data used in this study are derived from the National Socioeconomic Survey (Susenas) of 2015 and Village Potential Data Collection (Podes) of 2014. Using the bivariate probit regression (bivariate probit) as the estimation method, the analysis results show that the presence of BTS and the proven signals are valid instrument for social media usage, while the influence of social media on the three child health indicators are varied. The use of social media negatively affects the health status of children under five during the past week. Meanwhile, the status of exclusivity of breastfeeding infants is not influenced by the use of social media by mothers. Finally, the positive effect of social media was found on the status of completeness of basic toddler immunization in Indonesia.

Keywords social media, endogeneity, instrumental variables, health status, bivariate probit regression

Introduction

Health is a basic human capital that becomes an important input in forming quality of human capital, where quality human resources are needed in supporting the long-term development process⁸. Within the current global framework, it is shown that investments in under five health result in large social and economic returns³⁹.

Results of Indonesia Demographic and Health Survey (IDHS) 2012 indicates substantial inter-provincial health disparity problems, although some health indicators have achieved high coverage rates⁹. Conditions that are exacerbated by this socio-economic difference require more strenuous and strategic efforts to overcome them³⁵. Müller and Krawinkel²⁷ estimated that 53 percent of under-five mortality in developing countries

is due to malnutrition¹⁵. Chronic protein and energy deficiency are indirectly caused by the problem of household poverty, where knowledge and low level of maternal education exacerbate nutritional problems in infants¹¹. Therefore, the importance of efforts to increase the literacy on health that must be done by parents, as this proves to be one way to overcome the problem of child health disparity, especially in Indonesia³⁶.

Although health literacy is a new concept in the field of health promotion, it is important to build a person's ability to obtain and retransmit information received²⁸. So that with the improvement of access to health information, will have an impact on improving the health status of children under five and become an effective strategy to deal with current public health problems¹¹.

Entering the era of net generation today, educational

entertainment, or edutainment, become a more effective way to change the behavior or habits of the individual than to convey information directly even frontally⁴. Someone is left to understand the facts that exist, until the information received can be used to compare whether the behaviors in his life are in accordance with social norms or rules that apply. This mechanism is now widely adopted in educational and health education activities that are systematically introduced as a form of health promotion²⁴.

Online media with various types of social networks is now a potential for highly effective information^{18, 21, 23}. The relationship of friendship or family created among social media users is often a social support that proves to increase the happiness of a mother that affects the condition of a healthier and prosperous child²⁶. In Indonesia, social activism by organizations such as the Indonesian Breastfeeding Association (AIMI) also utilizes social media in its campaign on exclusive breastfeeding¹⁵.

Today, the development of digital technology is increasing, expanding the information and news content through social media. As noted above, social networking-based applications make it easier for users to get information or consultations related to health issues. Statistical data shows the percentage of female Internet users continue to increase, which amounted to 82.05 percent of Internet users use it to access social media³⁸.

Referring to the research of Beck et al. (2014) who said that the productive age group as a group that trusts online information as an accurate source of information, finds out specifically that the majority of health-related online information seekers are productive age women who have children⁵. Because some researches in Indonesia have discussed the negative impacts of social media usage on children, whereas in some countries the use of internet and social media has also had an impact on improving child's health^{14, 26}, then to find out the clarity of the statement and to fill in a study that was not there before, this research will be conducted.

Conceptual Framework

Health Status and Health Behavior

Health is a dynamic thing that marks the welfare of physically, mentally, and socially, which if all the welfare is not fulfilled then the condition is stated otherwise, that is ill⁷. In under-five health, the prevailing health determinant does not differ greatly from the general health determinant. The only difference is that toddlers are one of the most vulnerable groups that benchmarks the performance of a region's health system²⁰.

Theory about health behavior that is widely used is the Theory of Planned Behavior (TPB) proposed by Ajzen (1991)¹, where attitude subjective norm and perceived controls together affect a person's behavior. Berman, Kendall, and Bhattacharyya (1994) developed a conceptual framework for analyzing the health status and changes caused by intervention in a household called The Household Production of Health (HHPH). The main focus of concern in HHPH is the health of household members, and one of the health behaviors in the household is the care of infants and the feeding of children, such as breastfeeding.

UNICEF (2003) promotes appropriate feeding for infants, one of them with breastfeeding. Breastfeeding in infants is the best and unparalleled way for the development of infant health and growth. In addition, the breastfeeding process is also a part of the reproductive process that has important implications for maternal health. A global public health recommendation recommends that infants should be exclusively breastfed for 6 (six) months from birth to achieve optimal growth, development and health⁴².

Social Media Network

The basic concept of meaningful development of social media today started since the rapid growth of social networking sites³⁷. These social networks are digital and online. Social networks are able to describe the flow of information spinning among individuals within a network, and how a group of individuals has stronger ties than other groups¹⁶. It is also said that different types of media cause different network patterns, this is

dependent on the form of information flow made possible by the media.

Kaplan et al.¹⁸ define social media networks as “a group of Internet-based applications that built on the ideological and technological foundations of Web 2.0, which allows the creations and exchange of user-generated content”. Social media is understood as a group of online media types that are divided into five characteristics, i.e. participation, openness, conversations, community, and connectedness²⁵.

Kietzmann, Hermkens, McCarthy, and Silvestre (2011) built a “Honeycomb Framework” of seven social media functional building blocks, consisting of identity, conversations, sharing, presence, relationships, reputation, and groups¹⁹. Social media application like Facebook and Twitter, has more dominant relationship function. Facebook users can expand relationships with friends or new families who are not close to them.

Mechanism Relationship of Social Media Usage with Health Status

The media generally influences the behavior and lifestyle of individuals through two ways, information processing and observational learning³³. When the individual learns new things as a result of seeing the information on the media they uses, then the results of this observation will be stored as memory. Once memory is stored in the brain, memory usually persists and can easily be called at any time (recall). The combination of information and learning acceptance mechanisms on observed matters if done in a recurring process will increase the awareness of the individual about the importance of health. This knowledge if supported by positive health behavior change will make the individual to better able to voice the right of health better, one of them by utilizing health service to be more optimal.

In the communication network, the use of social media will be more widespread if many others, such as friends or relatives also use it. Cohen (2004) describes a mechanism that describes the effect of social relations on health. It is said that those who participate in social networks will tend to gain social control and peer support that influence what they do, especially in health

behaviors. Integration within social networks is a source of positive influence that makes one knows the ideal rules and norms expected¹⁰.

In studies that measure the impact of media on a family's condition such as health status, Price and Dahl (2012) suggests a ‘natural experimental’ approach to be more appropriate³². This is because media usage is a study that has long-lasting effects as well as naturally there are variations in individual exposure to media due to random differences about the number and type of media that individuals use. The existence of this potential bias that causes media variables are said to be endogenous variables.

Methods and procedures

Research on the use of social media like this study also has the potential bias. Two kind bias in this study are, *First*, in the access of the mother's social media and its relation to the health status of the child, it cannot be measured by the mother's type of care for the child. If it is assumed that social media play a role in the dissemination of health information, mothers who have access to social media does not necessarily indicate that she is a mother who cares about children's health. *Second*, the impact of social media can also be felt by people who do not access directly, but get information from others. This potential bias that causes social media variables is said to be endogenous.

To overcome the potential bias in inferencing analysis, the method of estimation using the Instrumental Variable (IV) will be used. A good instrument criterion as said by Angrist and Krueger (2001) is to have a strong and unexplained relationship to endogenous variables that have the potential for such bias, but have no relationship to the dependent variable².

This study uses the existence of base transceiver station (BTS) and signal strength as instrument variables that are considered to have strong relation internet access and social media, but have no relation to child's health. The use of this instrument is based on previous research by Olken (2009) which says the signal is an appropriate instrument to examine the impact of media considering the signal strength in Indonesia varies due

to topographic differences²⁹. Meanwhile, BTS is chosen as an instrument because of its function as a transmitting station that facilitates wireless communication between communication devices (cellular phones, wireless networks) with network operators.

Data

The main data used in this study is the data from the Indonesian national socioeconomic survey (Susenas) 2015 and potential village census (Podes) in 2014. Susenas 2015 data gives detailed questions concerning information and communication technology. This survey was conducted in March 2015 with a total sample of 300,000 households that can be estimated up to the district level, which allows to be combined with Podes 2014 data at the village level. This study assumes that the characteristics of respondent's village did not change significantly from the time of Podes 2014 census conducted.

Unit of Analysis

The unit of analysis used in this study is toddlers (infants under five years old) from mothers who have ever married. The age of a toddler in the unit of analysis is distinguished for each indicator / model. In the first model, namely the model of under-fives health status proxied by health complaints using a unit of analysis of children aged 0-59 months. The second model is the exclusive breastfeeding status model using a unit of analysis of children aged 7-23 months. And the third model, complete basic immunization status analyzes toddlers aged 13-59 months.

Variables

The dependent variable in this study was seen from 3 (three) indicators. *First*, the health status of children under five. *Second*, toddlers who get exclusive breastfeeding. *Third*, toddlers who get complete basic immunization. Health status is seen by the presence or absence of health complaints in the past month. Measuring health status like this is subjective in that the respondent assesses health status based on the respondent's self-perception (Self-Rated Health Status). Health status defined

as binary categorical variables: 1, if the child has no health complaints (health) in the past 1 month and 0, if the child have health complaints (sick).

Meanwhile, for second dependent variables, breastfeeding is said to be exclusive if the infant is given only breast milk without other companion drinks, but with the exception of vitamins, minerals, and drugs. Decision of Ministry of Health (2004) states that breastfeeding exclusively for infants in Indonesia from birth to infants aged 6 (six) months³⁴. In this study, breastfeeding variables are also defined as binary categorical variables: 1, if the toddler gets exclusive breastfeeding and 0, if the toddler does not get exclusive breastfeeding. And the last for the third indicator, if toddlers get complete basic immunization, variables defined with score 1, and score 0 for defined variables that toddlers do not get complete basic immunization.

The main independent variable used in this research is mother's accessibility to social media. In this study, this variable obtained from the question: "whether the mother access the internet for social media/social network like Facebook, Twitter, BBM, WhatsApp, Skype, and so forth?". Accessing the internet itself means when a mom spends time to access the internet so she can utilize or enjoy internet facility which in this case is social media. Activities that are said to access the internet even though it does not have the ability to open and close (log in and log out) the internet but just stay on. This independent variable categorized into two: 1, if mother uses social media, and 0, if mother does not use social media.

In addition to the variable use of social media by the mother, in this study also used independent control variables in the form of socio-economic characteristics of the mother's demography, the characteristics of children, the characteristics of the household, and the characteristics of residence.

Estimated model

This study applies the Seemingly Unrelated Bivariate Probit (SUBP) estimation method which is considered the best method used when testing two equations where the dependent variable in one equation is the main

independent variable in the other equation³¹. So based on the previous description, the regression model used in this study can be written as follows:

$$\text{Prob}\left(Y = \frac{1}{X}\right) = \Phi(x\beta) \quad (1)$$

where, Φ is the cumulative standard normal distribution. The estimated structural equations can be presented as:

$$Y_i = \alpha + \omega Z_i + \beta_i \sum_{j=1}^n X_{ij} + v_i \quad (2)$$

$$Z_i = \gamma + \delta_i \sum_{j=1}^n X_{ij} + z_i \quad (3)$$

Y and Z are the latent variables of child health indicators and using social media, respectively. These variables are dummy variables with values of 1 if dependent variables refers to health or get exclusive breastfeeding or get complete basic immunization or mothers using social media and 0 otherwise. Also γ , α , β , and ω are the estimated parameters and X_{ij} are the control variables. Included control variables are age of mother (in years), marital status (2=married, 1=divorced, 0=death divorced), number of children even born, mother work status (1=work, 0=others), mothers education (4=college, 3=senior high school, 2 = secondary high school, 1=primary school, 0=no primary), child's sex (1=female, 0=male), health insurance (1=yes, 0=no), peer family (mean), expenditure per-capita (measured in \ln), residence (1=rural, 0=urban), health service (1=yes, 0=no). The errors terms of the model are dependent and distributed as a bivariate normal such that: $E(v_i) = E(z_i) = 0$, $\text{var}(v_i) = \text{var}(z_i) = 1$ and $\rho = \text{cov}(v_i, z_i)$. The wald test which is reflected by statistical significance of ρ was used to determine whether the models would be estimated jointly in recursive manner or not.

Result and Discussion

Sample Characteristic

The distribution of sample is presented in Table 1. Table 1 shows the characteristics of the samples studied for three model. First model, the number of observations in children aged 0-59 months is 88.507 with the percentage of mothers who are social media users is 15,90%. Second model, the number of observations in children

aged 7-23 months is 24.155 observations with the percentage of mothers who are social media users is 16,98%. And the third model, the number of observations in children aged 13-59 months is 70.771 observations with the percentage of mothers who are social media users is 15,35%. Then if disaggregated by group of island residences, 1 in 3 mothers of social media users live in Java Island (Appendix A).

Table 1. Sample Distribution by Mother's Social Media User

Indicators	Obs.	Mother using social media (%)	
		Yes	No
(1)	(2)	(3)	(4)
Child health: children aged 0-59 month	88507	15,90	84,10
Exclusive breastfeeding: children aged 7-23 month	24155	16,98	83,02
Basic immunization: children aged 13-59 month	70771	15,35	84,65

According to the social characteristics of maternal demographics, the distribution sample shows that mothers aged 30-31 years old are in married status with number of children are 2 until 3. Then, sample in this study also shown majority mothers graduated from high school or equivalent. Mother in non-working conditions also dominant in this sample. Meanwhile, the distribution sample for children, it shown that majority under-fives aged child are male and already have health insurance. Within households, the average social media users other than mothers are also few, not more than 10 percent per household member.

The low internet and social media users are in line with the value of individual consumption spent, where the average expenditure per capita only ranges from 715 to 722 thousand Rupiah per month. Furthermore, for the characteristics of the region itself, most samples come from households living in villages with available health services and dominant availability of BTS and strong signals in the region (Appendix B).

Child health profile

Table 2 shows that mothers who access social media,

the percentage of children who are in a healthy state is lower than mothers who do not access social media. This is inversely proportional to the other categories, where it appears that mothers who use social media, the percentage of children who get exclusive breastfeeding and complete basic immunization are higher than toddlers with mothers not accessing social media.

In the indicator of health status, the highest percentage of children under five who are sick, is in infants with maternal age characteristics 30-34 years old, divorced, middle schooled, and working. While the highest percentage for toddlers obtained exclusive breastfeeding and complete basic immunization was in the toddler group with mothers who had an age range of 30-39 years, were married, the number of children owned was no more than 2, and in conditions not working.

According to the demographic characteristics of toddlers, it was seen that female toddlers had a lower percentage of sick status than male toddlers. This is in line with the condition that exclusive breastfeeding for female toddlers is greater, even though the basic immunization status for male toddlers is higher. Another unique thing that was found was that toddlers who had health insurance had a higher percentage of unhealthy than toddlers who did not have health insurance. While different conditions in exclusive breastfeeding status and complete basic immunization, where the percentage is higher in infants who have health insurance than those who do not have. Meanwhile, according to household characteristics, it can be seen that the sample distribution in children under five is unhealthy, the largest percentage is owned by infants from families with an average high per capita expenditure and access to social media that is also owned by other household members besides mother. Nevertheless, this characteristic also appears dominant in the exclusivity status of breastfeeding and complete basic immunization.

Model Analysis

In a model examining the effect of endogenous use of social media on the three indicator child health, it is shown that social media is an endogenous variable with the presence of BTS and signals significantly affects the

use of social media. Where the value of the correlation coefficient (ρ) in the final stage of significance 0,01 indicates that both tend to be fully independency. Social media itself becomes a variable that does significantly affect health status and basic immunization, but doesn't affect exclusive breastfeeding when all control variables are included (Appendix C). This generally indicates that breastfeeding behavior is basically a maternal human right that is not constrained by external factors such as neighborhoods¹³. The following Table 3 shows a percentage summary of the changes in the independent variables on the three indicator child health in full.

Table 3 below shows evidence that maternal social media use significantly influences the health status and basic immunization of the child, but has no significant role in influencing the behavior of excluding breastfeeding of toddlers in Indonesia. For health status indicator, the mothers who use social media have a negative and statistically significant effect on the health status of their children in the past week with a p-value of less than 0.01. The marginal effect value is -0.1353 indicating that mothers of social media users will reduce the chances of toddlers to be healthy (not having complaints) during the past week of 13.53%. This finding is interesting because the use of social media by mothers in Indonesia does not have the same impact as the use of social media by mothers in developed countries. One of Johnson's (2014) studies captured the role of increasing digitalization in Australia on children's health conditions¹⁷. It is said that mothers as 'parents of experts' will basically always monitor the health condition of their children through education and information about health which currently uses a lot of technology in its spread. The mother is expected to adopt the results of research / useful information about children's health, and then it will be combined with her ideology. The result is that social media applications and networks that contain health information are very helpful for mothers in caring for children and during pregnancy.

In Indonesia, the use of social media by mothers who actually increase their chances of being ill can be explained in terms of the unequal allocation of time for internet use and social media. The time mothers spend

Table 2. Percentage of Child Health Indicators by Mother, Child, and Household Characteristics

Characteristics	Health Status		Exclusive Breastfeeding Status		Basic Immunization Status	
	Health (%)	Sick (%)	Yes (%)	No (%)	Yes (%)	No (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Mother's using social media						
Yes	56,89	43,11	45,64	54,36	49,29	50,71
No	60,29	39,71	39,32	60,68	37,99	62,01
Mother's age group						
<30	59,63	40,37	38,90	61,10	39,66	60,34
30-34	58,62	41,38	42,42	57,58	40,52	59,48
35-39	59,79	40,21	42,32	57,68	40,24	59,76
40+	62,95	37,05	38,86	61,14	37,34	62,66
Marital status						
Married	59,68	40,32	40,78	59,22	39,92	60,08
Divorced	63,78	36,22	32,47	67,53	34,36	65,64
Death Divorced	59,47	40,53	35,77	64,23	30,59	69,41
Child ever born						
<3	58,45	41,55	40,81	59,19	42,96	57,04
3+	61,57	38,43	39,73	60,27	35,03	64,97
Education						
No primary	60,25	39,75	34,37	64,63	26,87	73,13
Primary	60,09	39,91	38,07	61,93	36,19	63,81
Secondary	58,58	41,42	39,98	60,02	41,20	58,80
Senior	58,92	41,08	42,02	57,98	44,87	55,13
University	62,11	37,89	44,97	55,03	41,90	58,10
Work status						
Yes	59,68	40,32	39,70	60,30	38,07	61,93
No	59,82	40,18	40,88	59,12	41,45	58,55
Child's sex						
Male	59,27	40,73	40,09	59,91	39,98	60,02
Female	60,26	39,74	40,71	59,29	39,45	60,55
Health insurance						
Yes	58,28	41,72	42,36	57,64	41,02	58,98
No	60,78	39,22	39,26	60,74	38,74	61,26
Quintile of expenditure percapita						
Quintile 1	63,31	36,69	39,85	60,15	34,38	65,62
Quintile 2	60,20	39,80	39,16	60,84	37,35	62,65
Quintile 3	59,78	40,22	40,26	59,74	38,68	61,32
Quintile 4	58,43	41,57	40,63	59,37	42,38	57,62
Quintile 5	57,04	42,96	42,04	57,96	45,83	54,17
Residence						
Urban	56,44	43,56	42,80	57,20	44,94	55,06
Rural	62,08	37,92	38,68	61,32	36,07	63,93
Health Service						
Yes	59,16	40,84	41,00	59,00	41,24	58,76
No	64,60	35,40	35,28	64,72	27,66	72,34

Note: ***=p<0,01, **=p<0,05, *=p<0,1

Source: Susenas 2015, Podes 2014 (author's process)

Table 3. Marginal Effect for the Three Child Health Indicator Model

Characteristics	Health Status		Exclusive Breastfeeding Status		Basic Immunization Status	
	dy/dx	Robust Std. Err	dy/dx	Robust Std. Err	dy/dx	Robust Std. Err
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Mother's using social media						
Yes	-0,1353***	0,0324	0,0419	0,0563	0,1671***	0,0358
No (ref.)						
Mother's age (year)	-0,0007*	0,0004	0,0037***	0,0008	0,0048***	0,0005
Marital status						
Married	0,0217	0,0224	0,0267	0,0493	0,0591***	0,0249
Divorced	0,0680**	0,02711	-0,0420	0,0534	0,0009	0,0273
Death Divorced (ref.)						
Child ever born	0,0128***	0,0017	-0,0099***	0,0037	-0,0353***	0,0026
Education						
No primary						
Primary	0,0114	0,0084	0,0364**	0,0149	0,0774***	0,0109
Secondary	0,0105	0,0082	0,0529***	0,0159	0,1071***	0,0115
Senior	0,0354***	0,0083	0,0613***	0,0153	0,1143***	0,0111
University	0,0829***	0,0109	0,0822***	0,0164	0,0786***	0,0132
Work status						
Yes	-0,0138***	0,0046	-0,0232***	0,0077	-0,0223***	0,0057
No (ref.)						
Child's sex						
Female	0,0093***	0,0032	0,0067	0,0066	-0,0045	0,0039
Male (ref.)						
Health insurance						
Yes	-0,0218***	0,0053	0,0187**	0,0084	0,0079**	0,0075
No (ref.)						
Peer family	-0,0345***	0,0128	0,0528**	0,0248	0,0713***	0,0154
Expenditure percapita	-0,0196***	0,0049	-0,0220***	0,0079	0,0032	0,0072
Residence						
Rural	0,0387***	0,0066	-0,0126	0,0093	-0,0223**	0,0094
Urban (ref.)						
Health Service						
Yes	-0,0241**	0,0106	0,0377***	0,0142	0,0800***	0,0142
No (ref.)						
Immunization coverage	-	-	-	-	0,0005***	0,0001

Note: ***=p<0,01, **=p<0,05, *=p<0,1

Source: Susenas 2015, Podes 2014 (author's process)

on socializing the media actually reduces the quantity and quality of their time to care for children. This fact is in fact in line with previous research on indirect media and health relations⁴⁴. One that has been done in Indonesia is through the mechanism of the value of social capital as an intermediary variable, where there is a relationship between media use and health. First, Olken (2009) which examines the impact of media in the form of television, whose use is increasingly widespread with respect to rural social capital in Indonesia²⁹. The results showed that the expansion of television use by the community had an impact on the decrease in the level of trust among the population in the community group accompanied by a reduction in social activities and collaboration.

The decline in social capital is one of them due to the allocation of time to watch television which becomes more in line with the various programs displayed. Second, Sujarwoto and Tampubolon (2013) specifically examined the relationship between maternal access to social capital and child health in Indonesia⁴¹. Using the instrument variable this study obtained the main results which showed that maternal social capital was positively and significantly related to children's health. So if the mother's social capital has a direct relationship with children's health, and it is found that the use of media has a negative impact on social capital, it can be concluded indirectly that in Indonesia, mothers who access the media tend to have low social capital and have an impact on declining status health of his child.

In addition to social medical use by mothers who influence the health status of infants, other factors that influence are maternal age, maternal marital status (divorced life category), number of living children ever born to mothers, highest maternal education (equivalent high school and college graduation categories), maternal working status, sex of children under five, ownership status of under-fives health insurance, average ART of social media users other than mothers, average per capita expenditure, area of under-fives living, and the existence of health services (personnel and health facilities). The area of residence itself has a very large influence because it can reduce the influence of social media

by half. As Subiyakto (2012) stated that urban areas have many social problems that adversely affect children's health such as poor quality of environmental resources including clean drinking water, green open space, non-smoking areas, affordable basic services, and security⁴⁰.

Then for breastfeeding indicator, social media is a variable that does not significantly affect exclusive breastfeeding. This generally indicates that breastfeeding behavior is basically a human right of a mother who is not limited by external factors such as the living environment¹³. One of the reasons for this is in cases where exclusive breastfeeding has no effect on mothers who cannot give breast milk to their babies for several medical reasons, such as illness in mothers who are at risk of contracting it to babies if breastfeeding is still done²². This allegation was supported in this study with the sample limited only to mothers who had ever been and still giving ASI to their babies. This was done because of the limitations of the questionnaire which did not contain the reasons for breastfeeding, so the researchers assumed that mothers who had never given ASI had certain medical reasons. Table 4 contains the value of marginal effects of mothers of social media users who have and still provide ASI.

Table 4. Coefficient and Marginal Effect Exclusive Breastfeeding Model for Mother Who Ever and Still Give Breastfeeding

Characteristics	Coef. (s.e)	dy/dx (s.e)
(1)	(2)	(3)
Mother's using social media		
Yes	0,3797** (0,1832)	0,1469** (0,0694)
No (ref.)		

Note: ***=p<0,01, **=p<0,05, *=p<0,1

Source: Susenas 2015, Podes 2014 (author's process)

The results show that the use of social media by mothers who have and still provide breast milk has a significant and positive influence on the status of exclusive breastfeeding against their children. Nevertheless, the majority of control characteristics in this model have

significant effects on exclusive breastfeeding of children under five years of age: maternal age, number of live births, maternal education (all categories), maternal employment status, health insurance under-five, average social media users besides mother, average of expenditure per capita, and existence of health service.

The socioeconomic characteristics of mothers play an important role in the success of exclusive breastfeeding for their children. This is in line with Astuti (2013) which shows that the socioeconomic characteristics of mothers such as maternal education, maternal employment, and mother's knowledge, coupled with the roles of support of husbands, families, health-care providers and even media proven to be linked in the process of exclusive breastfeeding to infants³.

Then in the basic immunization model, it was shown that the use of social media by mothers proved to be significantly influential on the provision of complete basic immunization for infants. Where the use of social media by mothers will increase the chances of direct toddlers to get complete basic immunization of 16.71%. This considerable value and the positive relationship between the two at a significant level of 1% indicate that the promotion or dissemination of information about immunization in 2015 in Indonesia still has a positive impact and is in line with the expected goals of increasing the level and achievement of complete basic immunization as a national program. The role of internet media and social marketing is said by Opel, Diekema, Lee, and Marcuse (2009) to be constantly optimized³⁰, given the lack of knowledge about the use of social media for health is still a major obstacle now¹².

All control variables in the form of maternal characteristics used in this study were mother's age, mother's marital status, mother's education, and mother's working status which significantly affected the provision of complete basic immunization for toddlers. One of the factors that has a major influence is maternal education where the greatest additional value for toddlers getting complete basic immunization occurs in those with mothers with secondary and upper education (junior-high school equivalent). This is in line with the research of Vikram, Vanneman, and Desai (2012) in India, who

also obtained the results that the influence of maternal education factors most often occurs when mothers complete secondary education⁴³.

Other factors that were significant and influential in the provision of complete basic immunization for children under five were ownership status of under-fives health insurance, social media users other than mothers, status of health services, area of residence, and national immunization coverage, while toddler sex and average expenditure per capita does not affect the provision of complete basic immunization for infants. In general, the majority of these results are in line with the findings of Bhuiya, BHUIY, and Chowdhury (1995) in Bangladesh who found that the presence of health facilities, maternal education, maternal age, child sex, radio exposure, and residential areas were statistically significant with receipt of immunization programs⁶.

Discussion

From the results of the analysis, this study shows that maternal social media use has different influences and relationships on the three health status of children under five. First, the use of social media by mothers has a negative and significant effect on the chances of toddlers to be healthy (no pain complaints). Second, exclusive breastfeeding for children under five is not significantly affected by the use of social media by mothers. However, in the group of mothers who did and still provide ASI, the use of social media by mothers had a positive and significant influence on the chances of children getting exclusive breastfeeding. This captures the picture that exclusive breastfeeding efforts can be made by mothers who have no complaints / medical reasons. Third, the use of social media by mothers has a positive and significant effect on the chances of children getting complete basic immunization.

From the first point it can be said that in Indonesia, mother activities in the virtual world with the application of social media do not play a major role as a supporting media in the process of caring for children. The negative relationship can be caused by several reasons, for example, because health-related content is not the main goal of social media use by mothers. Mother's

leisure time also increases with the amount of time allocated by mothers to access social media, which results in a reduction in the quantity of time spent by mothers in caring for and maintaining children's health. In more specific goals, namely exclusive breastfeeding programs and complete basic immunization, social media is proven to be able to increase the knowledge of users about the health information that is being promoted. Mother's exposure to social media made her more aware of various public health issues and problems related to her baby's health.

Maternal characteristics in the form of age, marital status, number of living children who have been born, education level, and working status of the majority mother have an influence on their behavior in caring for their children's health, exclusively breastfeeding, and ensuring their complete immunization. Other characteristics such as ownership status of health insurance, other social media users in one household, per capita expenditure, the existence of health services and the area where the toddler lives varies have an influence on their health status. And most fundamentally, in Indonesia, toddler demographic characteristics such as gender do not affect them to obtain exclusive breastfeeding and complete basic immunization.

Policy Implications

The results of this study found that the use of social media in the mother is a factor that cannot be ignored in an effort to maintain child's health. Therefore, effort is necessary to improve mother's knowledge through health literacy activity through application and social media content where current technology and internet progressively faster. Educational and promotional programs should be supported by the government by providing as much health-related content as accessible to the public. However, the user's wise understanding and attitudes also need to be improved in using the internet and social media as a source of information.

The use of social media that requires the Internet network becomes a challenge for the government to ensure the equalization of infrastructure such as the presence of BTS and signal strength that specifically affect the

accessibility of its use. Sufficient and equitable facilities throughout Indonesia are expected to have the same impact for all internet and social media users without being limited by the different conditions and areas of residence.

Acknowledgement

This study uses the main data from Susenas 2015 which first contains information specifically related to information and communication technology. However, the details of the question did not provide time allocation for use, so the study was not able to obtain a more specific picture of the utilization of technology and communication made by the mother.

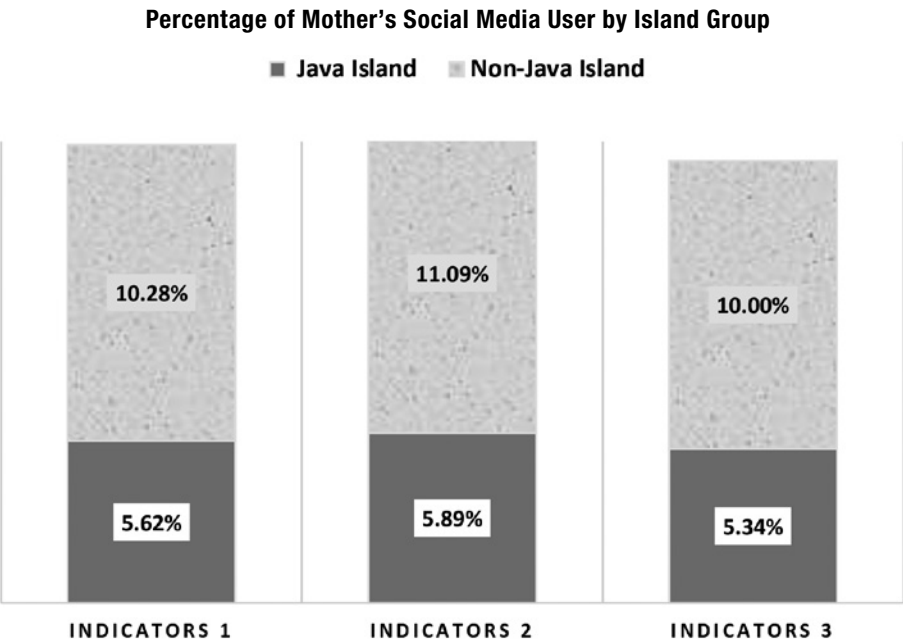
References

- 1) Icek Ajzen, 'The Theory of Planned Behavior', *Organizational behavior and human decision processes*, 50 (1991), 179-211.
- 2) Joshua D Angrist, and Alan B Krueger, 'Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments', *Journal of Economic perspectives*, 15 (2001), 69-85.
- 3) Isoni Astuti, 'Determinan Pemberian Asi Eksklusif Pada Ibu Menyusui', *Jurnal Health Quality*, 4 (2013), 1-76.
- 4) Abhijit Banerjee, Eliana La Ferrara, and Victor Orozco, 'The Entertaining Way to Behavioral Change', (2017).
- 5) François Beck, Jean-Baptiste Richard, Viet Nguyen-Thanh, Ilaria Montagni, Isabelle Parizot, and Emilie Renahy, 'Use of the Internet as a Health Information Resource among French Young Adults: Results from a Nationally Representative Survey', *Journal of medical Internet research*, 16 (2014).
- 6) Abbas Bhuiya, ISMAT BHUIY, and Mushtaque Chowdhury, 'Factors Affecting Acceptance of Immunization among Children in Rural Bangladesh', *Health policy and planning*, 10 (1995), 304-11.
- 7) Johannes Bircher, 'Towards a Dynamic Definition of Health and Disease', *Medicine, Health Care and Philosophy*, 8 (2005), 335-41.
- 8) Hoyt Bleakley, 'Health, Human Capital, and Development', *Annu. Rev. Econ.*, 2 (2010), 283-310.
- 9) BKKBN BPS, 'Survei Demografi Dan Kesehatan Indonesia 2012', *Jakarta: BPS, BKKBN, Kementerian Kesehatan* (2013).
- 10) Sheldon Cohen, 'Social Relationships and Health', *American psychologist*, 59 (2004), 676.
- 11) Darren A DeWalt, and Ashley Hink, 'Health Literacy and Child Health Outcomes: A Systematic Review of the Literature', *Pediatrics*, 124 (2009), S265-S74.
- 12) Luis Fernández-Luque, and Teresa Bau, 'Health and Social Media: Perfect Storm of Information', *Healthcare informatics*

- research, 21 (2015), 67-73.
- 13) Laurence M Grummer-Strawn, Elizabeth Zehner, Marcus Stahlhofer, Chessa Lutter, David Clark, Elisabeth Sterken, Susanna Harutyunyan, Elizabeth I Ransom, and WHO/UNICEF NetCode, 'New World Health Organization Guidance Helps Protect Breastfeeding as a Human Right', *Maternal & child nutrition*, 13 (2017), e12491.
 - 14) Michele P Hamm, Jocelyn Shulhan, Gillian Williams, Andrea Milne, Shannon D Scott, and Lisa Hartling, 'A Systematic Review of the Use and Effectiveness of Social Media in Child Health', *BMC pediatrics*, 14 (2014), 138.
 - 15) Nunik Maharani Hartoyo, and Dandi Supriadi, 'Aktivisme Sosial Melalui Penggunaan Media Sosial: Studi Kasus Asosiasi Ibu Menyusui Indonesia (Aimi)', *Jurnal Kajian Komunikasi*, 3 (2015), 1-11.
 - 16) Caroline Haythornthwaite, 'Social Networks and Internet Connectivity Effects', *Information, Community & Society*, 8 (2005), 125-47.
 - 17) Sophia Johnson, "Maternal Devices", Social Media and the Self-Management of Pregnancy, Mothering and Child Health', *Societies*, 4 (2014), 330-50.
 - 18) Andreas M Kaplan, and Michael Haenlein, 'Users of the World, Unite! The Challenges and Opportunities of Social Media', *Business horizons*, 53 (2010), 59-68.
 - 19) Jan H Kietzmann, Kristopher Hermkens, Ian P McCarthy, and Bruno S Silvestre, 'Social Media? Get Serious! Understanding the Functional Building Blocks of Social Media', *Business Horizons*, 54 (2011), 241-51.
 - 20) Agung Dwi Laksono, and Tety Rachmawati, 'Determinant Sosial Kesehatan Ibu Dan Anak', (ISBN 978-979-21-3563-3, Penerbit Kanisius. Kerjasama Pusat Humaniora, Kebijakan Kesehatan dan Pemberdayaan Masyarakat dan Penerbit Kanisius, hal 145-177, 2007).
 - 21) Agung Dwi Laksono, and Ratna Dwi Wulandari, 'Analisis Potensi Penyebaran Informasi Kesehatan Melalui Jejaring Sosial (Studi Kasus Pada 'Forum Jejaring Peduli Aids')', *Buletin Penelitian Sistem Kesehatan*, 14 (2011).
 - 22) Ruth A Lawrence, and Robert M Lawrence, *Sd-Breastfeeding E-Book: A Guide for the Medical Professional (Expert Consult-Online and Print)* (Elsevier Health Sciences, 2010).
 - 23) Kristen Lovejoy, and Gregory D Saxton, 'Information, Community, and Action: How Nonprofit Organizations Use Social Media', *Journal of Computer-Mediated Communication*, 17 (2012), 337-53.
 - 24) Heri DJ Maulana, 'Promosi Kesehatan', (Penerbit Buku Kedokteran EGC, 2009).
 - 25) A Mayfield, 'What Is Social Media? Ebook: http://www.icrossing.co.uk/Fileadmin/Uploads/Ebooks/What_is_Social_Media_iCrossing_ebook.pdf(Erişim Tarihi: 12.10. 2015) (2008).
 - 26) Brandon T McDaniel, Sarah M Coyne, and Erin K Holmes, 'New Mothers and Media Use: Associations between Blogging, Social Networking, and Maternal Well-Being', *Maternal and child health journal*, 16 (2012), 1509-17.
 - 27) Olaf Müller, and Michael Krawinkel, 'Malnutrition and Health in Developing Countries', *CMAJ*, 173 (2005), 279-86.
 - 28) Don Nutbeam, 'Health Literacy as a Public Health Goal: A Challenge for Contemporary Health Education and Communication Strategies into the 21st Century', *Health promotion international*, 15 (2000), 259-67.
 - 29) Benjamin A Olken, 'Do Television and Radio Destroy Social Capital? Evidence from Indonesian Villages', *American Economic Journal: Applied Economics*, 1 (2009), 1-33.
 - 30) Douglas J Opel, Douglas S Diekema, Nancy R Lee, and Edgar K Marcuse, 'Social Marketing as a Strategy to Increase Immunization Rates', *Archives of pediatrics & adolescent medicine*, 163 (2009), 432-37.
 - 31) Abayomi Samuel Oyekale, 'Fishing Folks' Access to Early Warning and Post Flood Assistancess in Lagos State, Nigeria: Application of Seemingly Unrelated Bivariate Probit (Subp) Regression', *Journal of Animal and Veterinary Advances*, 12 (2013), 607-11.
 - 32) Joseph Price, and Gordon B Dahl, 'Using Natural Experiments to Study the Impact of Media on the Family', *Family Relations*, 61 (2012), 363-73.
 - 33) Mizanur Rahman, Siân L Curtis, Nitai Chakraborty, and Kanta Jamil, 'Women's Television Watching and Reproductive Health Behavior in Bangladesh', *SSM-population health*, 3 (2017), 525-33.
 - 34) Kementerian Kesehatan RI, 'Keputusan Menteri Kesehatan Republik Indonesia No 450/Menkes/Sk Iv/2004 Tentang Pemberian Air Susu Ibu (Asi) Secara Eksklusif Pada Bayi Di Indonesia', *Jakarta: Kementerian Kesehatan RI* (2004).
 - 35) Ratna Rosita, 'Sambutan Sekretaris Jenderal Kementerian Kesehatan Ri Pada Seminar Hasil Kajian Kesehatan Ibu Dan Bayi Baru Lahir. Jakarta, 18 Desember 2012.', (2012).
 - 36) Julia Schröders, Stig Wall, Hari Kusnanto, and Nawi Ng, 'Millennium Development Goal Four and Child Health Inequities in Indonesia: A Systematic Review of the Literature', *PloS one*, 10 (2015), e0123629.
 - 37) John Scott, *Social Network Analysis* (Sage, 2017).
 - 38) Badan Pusat Statistik, 'Statistik Telekomunikasi Indonesia', ed. by Badan Pusat Statistik (Jakarta: Badan Pusat Statistik, 2015).
 - 39) Karin Stenberg, Henrik Axelsson, Peter Sheehan, Ian Anderson, A Metin Gülmezoglu, Marleen Temmerman, Elizabeth Mason, Howard S Friedman, Zulfiqar A Bhutta, and Joy E Lawn, 'Advancing Social and Economic Development by Investing in Women's and Children's Health: A New Global Investment Framework', *The Lancet*, 383 (2014), 1333-54.
 - 40) Rudi Subiyakto, 'Membangun Kota Layak Anak: Studi Kebijakan Publik Di Era Otonomi Daerah', *Sosio Religia*, 10 (2012), 49-71.
 - 41) Sujarwoto Sujarwoto, and Gindo Tampubolon, 'Mother's Social Capital and Child Health in Indonesia', *Social Science & Medicine*, 91 (2013), 1-9.
 - 42) UNICEF, *Global Strategy for Infant and Young Child Feeding* (World Health Organization, 2003).
 - 43) Kriti Vikram, Reeve Vanneman, and Sonalde Desai, 'Linkages between Maternal Education and Childhood Immunization in India', *Social science & medicine*, 75 (2012), 331-39.

44) Melanie A Wakefield, Barbara Loken, and Robert C Hornik, 'Use of Mass Media Campaigns to Change Health Behaviour', *The Lancet*, 376 (2010), 1261-71.

Appendix A



Appendix B

Sample Distribution according to Social Demographic and Economic Characteristics of Mother, Toddler, and Household

Characteristics (1)	Indicators 1		Indicators 2		Indicators 3	
	Sample (n) (2)	Percentage (%) (3)	Sample (n) (4)	Percentage (%) (5)	Sample (n) (6)	Percentage (%) (7)
Marital status						
Married	86161	97,35	23593	97,67	68734	97,12
Divorced	1665	1,88	425	1,76	1429	2,02
Death Divorced	681	0,77	137	0,57	608	0,86
Education						
No primary	7616	8,60	1964	8,13	6255	8,84
Primary	23339	26,37	6154	25,48	18949	26,78
Secondary	19053	21,53	5250	21,73	15128	21,38
Senior	25175	28,44	7187	29,75	19835	28,03
University	13324	15,05	3600	14,90	10604	14,98
Work status						
Yes	42307	47,80	10097	41,80	36111	38,97
No	46200	52,20	14058	58,20	34660	51,03
Child's sex						
Male	45662	51,59	12368	51,20	36626	51,75
Female	42845	48,41	11787	48,80	34145	48,25
Health insurance						
Yes	52125	41,11	8782	36,36	30504	43,10
No	36382	58,89	15373	63,64	40267	56,90
Residence						
Urban	36569	41,32	10009	41,44	29186	41,24
Rural	51938	58,68	14146	58,56	41585	58,76
Health Service						
Yes	78801	89,03	21573	89,31	62886	88,86
No	9706	10,97	2582	10,69	7885	11,14
The existence of BTS						
Yes	46563	52,61	12751	52,79	37161	52,51
No	41944	47,39	11404	47,21	33610	47,49
Signal Strength						
Strong	69325	78,33	19018	78,73	55288	78,12
Others	19182	21,67	5137	21,27	15483	21,88
Total	88507	100,00	24155	100,00	70771	100,00

Summary of Statistics on Characteristics of Numeric Variables

Characteristics (1)	Indicators 1		Indicators 2		Indicators 3	
	Mean (2)	Standard deviation (3)	Mean (4)	Standard deviation (5)	Mean (6)	Standard deviation (7)
Mother's age	31,1	6,85	30,1	6,88	31,5	6,77
Child ever born	2,5	1,51	2,4	1,47	2,52	1,52
Others social media user	0,096	0,18	0,099	0,18	0,095	0,18
Expenditure percapita	721,896,2	698891	715,387,8	670221	721,365,3	703310

Appendix C

Summary of Biprobit Regression Output in Toddler Health Status Model

VARIABLES	Stage a			Stage b			Stage c			Stage d		
	health_ status	socmed	athrho	health_ status	socmed	athrho	health_ status	socmed	athrho	health_ status	socmed	athrho
socmed	-0.767*** (0.0754)			-0.751*** (0.0752)			-0.622*** (0.0782)			-0.355*** (0.0866)		
age	-0.00427*** (0.00108)			-0.00392*** (0.00109)			-0.00277** (0.00109)			-0.00184* (0.00104)		
marital_ dummy1	0.0413 (0.0585)			0.0434 (0.0586)			0.0556 (0.0586)			0.0568 (0.0589)		
marital_ dummy2	0.176** (0.0705)			0.174** (0.0708)			0.172** (0.0711)			0.179** (0.0711)		
CEB	0.0408*** (0.00448)			0.0409*** (0.00448)			0.0356*** (0.00454)			0.0335*** (0.00441)		
educ_ dummy2	0.0208 (0.0218)			0.0208 (0.0218)			0.0257 (0.0219)			0.0299 (0.0220)		
educ_ dummy3	0.00385 (0.0212)			0.00324 (0.0211)			0.0150 (0.0214)			0.0275 (0.0215)		
educ_ dummy4	0.0468** (0.0201)			0.0488** (0.0201)			0.0712*** (0.0211)			0.0930*** (0.0219)		
educ_ dummy5	0.162*** (0.0261)			0.171*** (0.0262)			0.204*** (0.0280)			0.218*** (0.0289)		
work	-0.0297** (0.0123)			-0.0269** (0.0122)			-0.0283** (0.0123)			-0.0363*** (0.0120)		
child_sex				0.0245*** (0.00825)			0.0243*** (0.00828)			0.0245*** (0.00845)		
health_ insurance				-0.0632*** (0.0135)			-0.0585*** (0.0137)			-0.0573*** (0.0140)		
peer_ family							-0.124*** (0.0325)			-0.0907*** (0.0336)		
percapita_ expense							-0.0580*** (0.0127)			-0.0514*** (0.0130)		
residence										0.102*** (0.0173)		
health_ service										-0.0634** (0.0278)		
presence_ BTS		0.329*** (0.0239)			0.330*** (0.0239)			0.330*** (0.0239)			0.332*** (0.0238)	
signal		0.592*** (0.0400)			0.592*** (0.0400)			0.592*** (0.0400)			0.590*** (0.0398)	
Constant	0.317*** (0.0717)	-1.686*** (0.0260)	0.393*** (0.0481)	0.288*** (0.0727)	-1.685*** (0.0260)	0.388*** (0.0477)	1.001*** (0.180)	-1.686*** (0.0261)	0.343*** (0.0478)	0.733*** (0.183)	-1.686*** (0.0261)	0.192*** (0.0491)
Observations	88,507	88,507	88,507	88,507	88,507	88,507	88,507	88,507	88,507	88,507	88,507	88,507

Robust standard errors in parentheses

*** p<0,01, ** p<0,05, * p<0,1

Urbanization and its Effects on the Consumption of Human Activities and Living Environment in Asia



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アジアでも各国で人口の都市集中が進んでおり、すでに都市部の人口は農村部を上回る。それに伴うエネルギー消費の増大や水不足などの諸問題を多角的に検討し、持続可能で快適な都市化の進め方を探った。

Abstract

This paper presents an overview of urbanization in Asian countries and regions, including urban population growth and economic growth, based on the publicly available data from national and municipal governments and international organizations. And we found that the rapid paces of urbanization have already caused significant effects on the consumption of human activities and living environment. These effects are highlighted in the factors of energy consumption, water stress, air pollution, health, settlements and infrastructure construction, even have a certain degree of influence on the level of Asian human development which can be reflected from the human development index (HDI). Therefore, we should focus on the overall quality of the city and the improvement of the environment, to maximize the sustainable development of a comfortable human living environment, which is the fundamental purpose of urbanization.

Keywords

urbanization, Asia, the consumption of human activities, living environment, human development index

Introduction

In the 1960s, twice as many people in the world lived between rural and urban. Though in 2007, the size of rural and urban populations was roughly equal. By 2017, the urban population has exceeded 1.2 times the rural population (Figure 1). The carrying capacity of the city will face unprecedented challenges in all perspectives, especially in Asia.

With the gradual acceleration of this urbanization process and the development of global economic integration, some of the risks and crises of developed countries have been passed on to Asian developing countries, especially the two Asian financial crises in 1997 and 2008, Asian cities (Jiang Wu et al 2018). The urban problems facing the Asian region are more significant, such as dense population, tight land use, environmental pollution, insufficient energy, shortage of resources,

traffic congestion, lack of public facilities, health impact and so on.

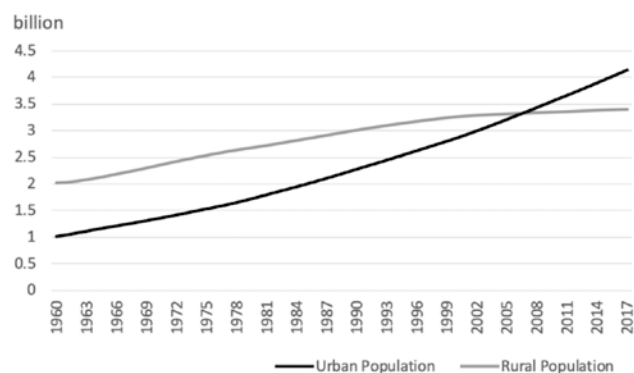


Figure 1. Urban population and rural population, 1960-2017

Source: World Bank. Changes added by authors

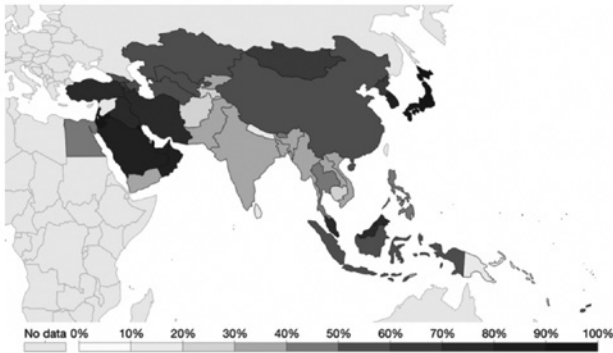


Figure 2. Urban population and rural population, 1960-2017

Source: World Bank. Courtesy Our World in Data. Changes added by authors

Urbanization in Asia

Population growth

By 2015, 16 of the world's 24 megacities (cities with more than 10 million people) will be located in Asia, according to the UN's World Urbanization Prospects: The 1999 Revision. Most of these megacities will be located in the population giants. (PRB, 2001)

As we have seen in Figure 2 and 3, there are many developed cities in the Americas, Europe, and Oceania in which industrialization and urbanization have developed earlier. So, the urbanization rate has basically reached a high level of more than 70%, but the speed of urbanization has been extremely slow as entering the

stagnation period. And Asia and Africa show a clear upward trend.

In Asia, there are major disparities in the pace of urbanization within the region. The urbanization rate in West Asia reached a high level of 70%, followed by East Asia of which urbanization started at a slower rate but gained momentum during the 1970s and 1980s then gradually reaching 60%. Until 1970, due to the European immigration movement, Central Asia's urbanization rate was almost twice higher than that of South Asia. However, the urbanization rate slowed after the 1970s because of internal population movements, terrain and landform restrictions. The urbanization process in Southeast Asia is also steadily accelerating, basically equal to that of Central Asia now. The population of South Asia has increased steadily but is still in a stage of backward development. (Figure 4).

Economic growth

The link between urbanization and economic growth has been well-documented (Bloom, D. E. et al 2008, Henderson, V. 2003) and have a strong positive correlation relationship between urban population and GDP by analyzing the relationship between the share of the population living in urban areas on the y-axis and average income (gross domestic product per capita) on the x-axis in Asia.

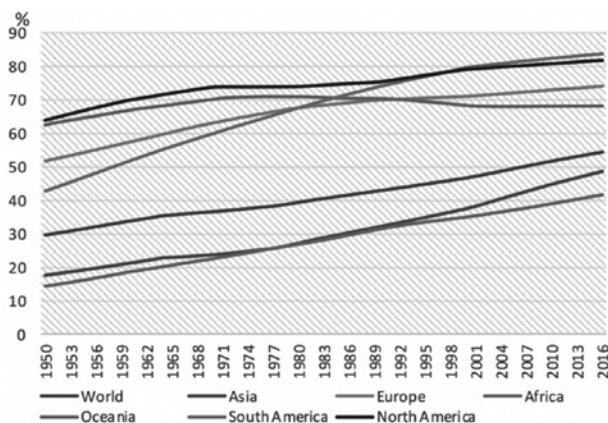


Figure 3. Urban population in the world, 1950-2016

Source: OWID based on UN World Urbanization Prospect 2018 and historical sources

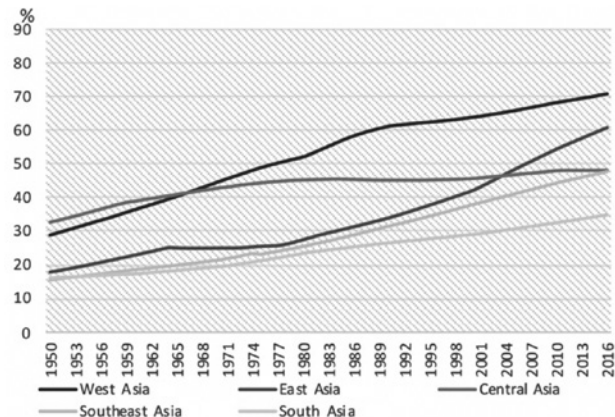


Figure 4. Urban population in Asia, 1950-2016

Source: OWID based on UN World Urbanization Prospect 2018 and historical sources

The main reasons for economic growth are manufacturing growth, such as promoting Japan's industrialization; and implementing open economic policies, such as China's reform and opening up in the 1970s, increasing economic openness and export-led growth models in Malaysia, the Philippines, Indonesia, India, and Thailand.

Especially since the 1980s, the economic growth of Asian cities has been catalyzed by increases in foreign direct investment (FDI) (Hidefumi I. et al 2005), including financial investment, technical assistance, public-private partnerships, innovative sharing and so on. This has been particularly pronounced in East and Southeast Asian countries (Singapore, Thailand, Indonesia, China, and Vietnam) but has also been evident in South Asia (India and Pakistan). The Asian currency crisis of 1997 produced only a short-term drop in FDI to most of these countries. It shows the trends in FDI in the major Asian countries in Figure 5. These FDI inflows which are described as "Pacific-Asia urban corridors" (Douglass 1995) are viewed as an additional driver of economic growth and the basis for making sound economic policies.

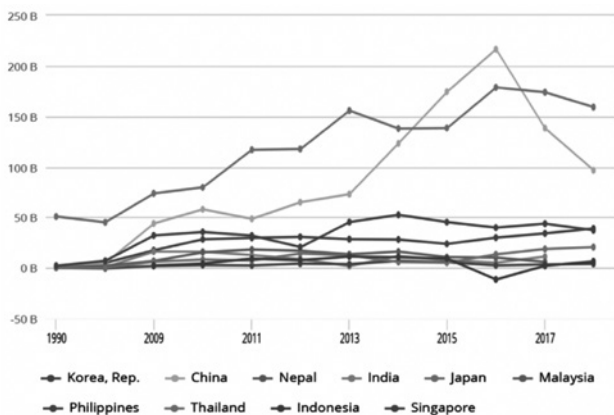


Figure 5. Foreign direct investment of Asian countries (Bop, current US\$), 1990-2017

Source: World Development Indicators

Urbanization effects on the consumption of human activities

Energy consumption

By contrast, rapid rates of urbanization and of economic growth are also considered as one of the major factors that could lead to environmental degradation (Anis Omri et al 2014).

Growing urbanization will lead to a significant increase in energy use, CO₂ and GHG emissions, particularly in non-OECD countries in Asia (OECD 2010). For example, in China, every 1% increase in the urban population relative to the total population, national energy consumption rose 1.4% shown from the data of 1980–2010 (Pengjun Zhao et al 2018).

In the Figure 6 and 7 below, we have plotted the CO₂

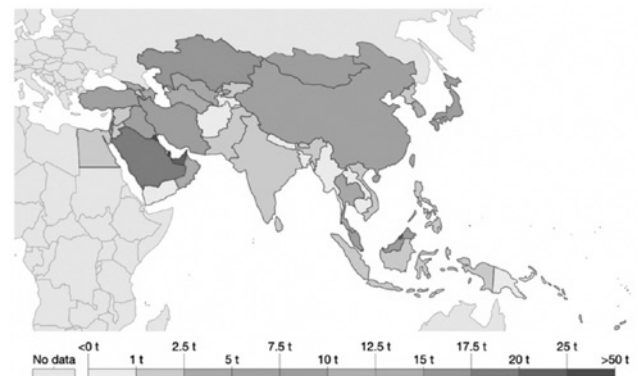


Figure 6. CO₂ emissions per capita of Asian region, 2017

Source: OWID based on CDIAC; Global Carbon Project; Gapminder & UN, Courtesy Our World in Data. Changes added by authors

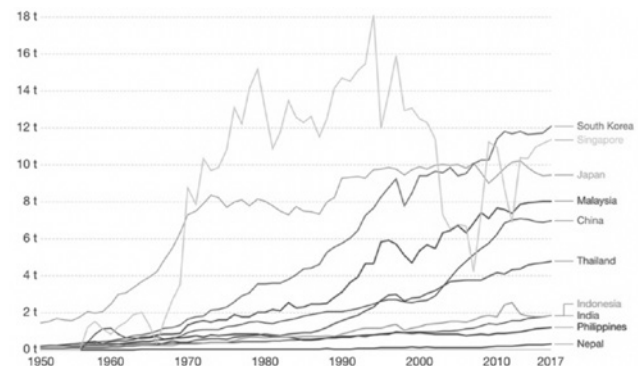


Figure 7. CO₂ emissions per capita of Asian countries, 1950-2017

Source: OWID based on CDIAC; Global Carbon Project; Gapminder & UN, Courtesy Our World in Data. Changes added by authors

emissions per capita of Asian region and selected countries from 1950 to 2017. We can find that countries with higher urban populations and economically developed countries have produce higher carbon emissions. Since the 1960s, East Asia and Southeast Asia have begun to develop labor-intensive processing industries and large-scale urban construction (Figure 8), so that the rapid rise of the economy but also led to a rapid rise in carbon emissions. At the same time, greenhouse gases are increasingly driven by industrial activities (Figure 9), and urban energy use is a key issue for greenhouse gas emissions (IEA, 2009).

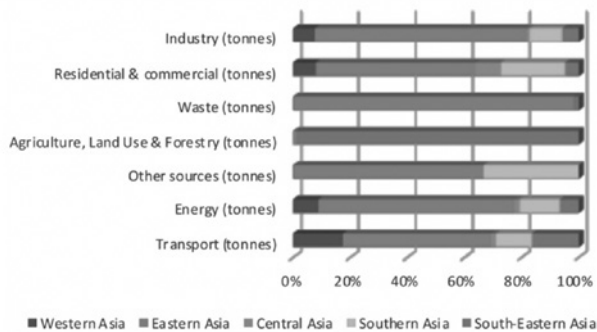


Figure 8. CO₂ emissions by sector of Asian region, 2010

Source: UN Food and Agricultural Organization (FAO)

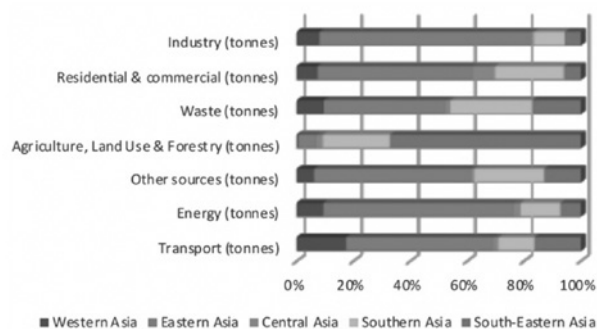


Figure 9. GHG emissions by sector of Asian region, 2010

Source: UN Food and Agricultural Organization (FAO)

Water consumption

The WHO and the United Nations Fund for Children (UNICEF) have shown that although absolute numbers of people with access to water supply have increased

due to rapid urbanization even a smaller portion of the total urban population is now covered (World Health Organization and UNICEF 2000, Hidefumi I. et al 2005).

Asia is facing the immense challenge and risks of water stress. By 2050, more than 60% of the Asia Pacific population will live in cities. However, we are facing an alarming 1.7 billion people who do not have access to basic sanitation 80% of wastewater is discharged in water bodies (rivers, lakes and oceans) with little or no primary treatment. For example, in Indonesia, only 14% Wastewater is treated in the Philippines, with a figure of 10%, India with 9% and Vietnam with 4% (ADBO 2016). Seven of the world's 15 largest groundwater extracts are located in Asia and the Pacific. Bangladesh, India, Nepal, and Pakistan spend \$3.78 billion a year on water withdrawals. However, for example, Indonesia, which has a large population, is seriously underfunded and water resources are not balanced. Those above indicates a strong probability of future water scarcity (Table 1).

Table 1. Top 15 Countries with the Largest Estimated Annual Groundwater Extractions, 2010

Country	Population in 2010 ('000)	Estimated Groundwater Extraction (km ³ /yr)	Groundwater Extraction Breakdown by Sector (%)		
			Groundwater Extraction for Irrigation	Groundwater Extraction for Domestic Use	Groundwater Extraction for Industry
India	1,224,614	251.00	89	9	2
China, People's Republic of	1,341,335	111.95	54	20	26
United States	310,384	111.70	71	23	6
Pakistan	173,593	64.82	94	6	0
Iran	73,974	63.40	87	11	2
Bangladesh	148,692	30.21	86	13	1
Mexico	113,423	29.45	72	22	6
Saudi Arabia	27,448	24.24	92	5	3
Indonesia	239,871	14.93	2	93	5
Turkey	72,752	13.22	60	32	8
Russian Federation	142,985	11.62	3	79	18
Syria	20,411	11.29	90	5	5
Japan	126,536	10.94	23	29	48
Thailand	69,122	10.74	14	60	26
Italy	60,551	10.40	67	23	10

km = kilometer, yr = year.

Source: J. Margat and J. van der Gun. 2013. Groundwater around the World. Leiden, Netherlands: CRC Press/Balkema.

Urbanization effects on living environment

Air pollution and health problem

Air pollution in Asia is composed of a mixture of pollutants emitted in large quantities from many different combustion sources, because of rapid urbanization,

industrialization, and motorization. Several Asian cities in China, India, and Vietnam have the highest levels of outdoor air pollution in the world (Ta-Chen Su et al 2011).

The World Health Organization (WHO) highlights that air pollution might contribute to approximately 800,000 deaths and 6.4 million lost life-years worldwide in 2000, with two thirds of these losses occurring in rapidly developing Asian countries (WHO 2002). What's more, in 2014, nine out of 10 people living in urban areas did not breathe clean air according to modelled data derived from satellite estimates. Air pollution has a range of negative impacts, including human health, damage to ecosystems, agricultural system and urban construction environment. So that air pollution is the greatest environmental risk to human health all over the world, especially in Asian and Africa countries, none of the urban areas met the world air quality guidelines (WHO 2014).

We can clearly see from Figure 10 that the death rate caused by ozone, PM and indoor pollution (per 100,000 people). In Asia, PM has the greatest impact on overall mortality (up to 65%). South Asia is more affected by three types of air pollution than other regions. The higher the level of urbanization, the less indoor fuel use, the better the indoor air pollution control, and the better the indoor air quality in high-income countries, almost no impact on health. Ozone exposure the death rate is higher in South Asia and Eastern Asia (more than 10%).

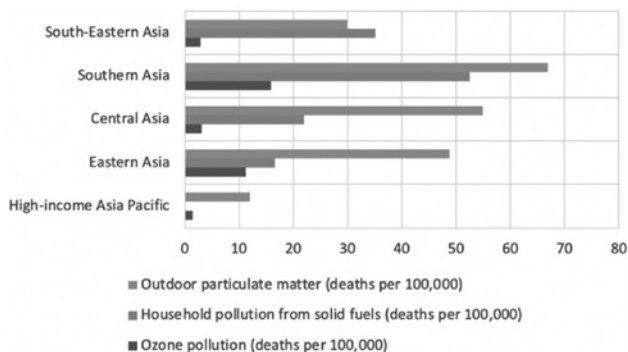


Figure 10. Death rates from air pollution in Asia, 2017

Source: IHME, Global Burden of Disease

Settlements and infrastructure construction

As more and more people migrate to urban areas, urban boundaries often expand to accommodate new residents. From 2000 to 2015, urban land expansion in all regions of the world exceeded the growth of urban population. This ratio increased from 1.22 in 1990 to 2000 to 1.28 in 2015 (UNSD 2017). This means that unplanned urban expansion has a negative impact on the sustainability of urban development and has also led to pernicious levels of urban poverty in many Asian cities including growing numbers of slum dwellers, a lack of proper land and housing policies, inadequate basic services and infrastructure.

Here, we see that in the 2014 data, 10% to 30% of the urban population in slum households in most Asian countries. Western Asian slum families account for a relatively high proportion of up to 70%. (Figure 11) In addition, infrastructure construction is critical for millions of poor people and other vulnerable groups in the region. For example, in the construction of public transportation, in cities such as Bangkok, Jakarta, Manila and Mumbai, the mode of public transportation accounts for 40% to 60% of the total number of people traveling, far below the developed cities of the region, Hong Kong, Singapore and Tokyo. The share is 70% (AIT 2002; UN 2001).



Figure 11. Urban population living in slums, 2014

Source: World Bank. Courtesy Our World in Data. Changes added by authors

Human development index (HDI)

The Human Development Index (HDI) is a summary

measure of average achievement in key dimensions of human development: a long and healthy life (life expectancy index), being knowledgeable (education index) and have a decent standard of living (GNI index), which is the geometric mean of normalized indices for each of the three dimensions (UNDP.org). The HDI is a composite and crucial indicator that measures key dimensions of a society level-of-development and human quality-of-life, which also be considered as the ultimate criteria for assessing the development of a country (Sharma, B. 2004).

The gap in human development levels in Asian cities is even more pronounced. Among the selected representative cities, as the Figure 12 and Table 2 shows below, the developed countries such as Japan, Singapore and South Korea have a human development index of more than 0.8, which is at a very high level of development. From 1990 to 2015, countries almost all steadily developed and crossed to a higher stage of development. The

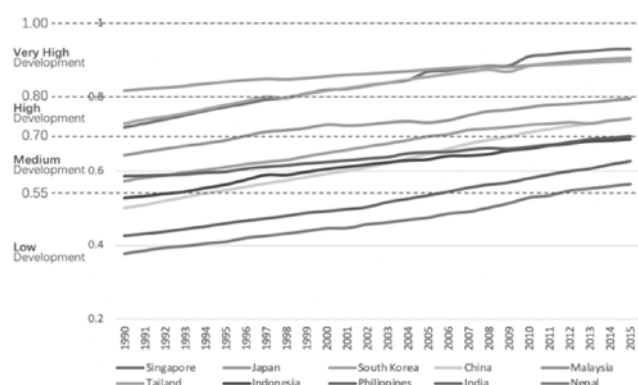


Figure 12. HDI of Asian countries, 1990-2015

Source: Human Development Reports, UNDP.org

Table 2. HDI and its components of Asian countries, 2015

Countries	Human Development Index (HDI)	Life expectancy at birth	Expected years of schooling	Mean years of schooling	Gross national income (GNI) per capita	GNI per capita rank minus HDI rank	HDI world rank
name	Value	years	years	years	2011 PPP \$		
Singapore	0.929	83.2	15.4	11.6	78,162	-3	4
Japan	0.905	83.7	15.3	12.5	37,268	10	17
South Korea	0.898	82.1	16.6	12.2	34,541	12	18
Malaysia	0.795	74.9	13.1	10.1	24,620	-13	59
China	0.743	74.6	13.6	7.9	14,519	-11	88
Thailand	0.741	76.0	13.5	7.6	13,345	-7	91
Philippines	0.693	68.3	11.7	9.3	8,395	-7	111
Indonesia	0.686	69.1	12.9	7.9	10,053	-8	113
India	0.627	68.3	11.7	6.3	5,663	-4	131
Nepal	0.566	70	12.2	4.1	2,337	19	144

Source: Human Development Reports, UNDP.org

biggest inequality is income, which have a significant long-term impact on urban development ability.

Conclusions

To some extent, the impact and challenges of urbanization are the same everywhere. Urbanization has brought about a certain improvement in life, increased economic opportunities for urban population, increased transportation infrastructure, increased provision of social services etc. By contrast, urban populations interact with their environment. More and more energy consumption, uncontrolled use of water and land are changing the environment. Conversely, a polluted urban environment can also affect the health and quality of life of urban populations.

Reducing energy use and promoting green energy in cities has become a key mission at different levels of government. In April 2014 the Government of Japan established the fourth Strategic Energy Plan for 2030 which stated the policies of reducing nuclear power dependency, reducing fossil resources dependency, and expanding renewable energy. At the same year, the Chinese government formulated the “Energy Development Strategic Action Plan” (2014-2020), which includes protecting the environment, saving energy, reducing emissions, building green and low-carbon cities, etc., The aim is to build a clean, efficient, safe and sustainable Modern energy system.

There is a need for Asian countries to promote international cooperation and collaboration, especially between developed and developing countries. For example, the Singapore government and its CLC are collaborating with the Andhra Pradesh government in India. The partnership is focus on sustainable and green infrastructure, including the development of natural waterways, green public spaces and efficient public transport (CLC 2018).

Faced with the impact of urbanization on the consumption of human activities and living environment, Asian countries and metropolitan governments have begun to recognize the need for urgent action to limit the urban environmental impact of urbanization. Various responses are being tried, including policy

measures and actions to offset current trends and move towards sustainable solutions.

References

- 1) Our World in Data. <https://ourworldindata.org/>
- 2) Jiang Wu et al. (2018). *Asian Cities: Planning and Development* (Shanghai: Tongji University Press) (in Chinese)
- 3) Population Reference Bureau. (2001) *Urbanization Takes on New Dimensions in Asia's Population Giants*
- 4) Bloom, D. E., Canning, D., & Fink, G. (2008). Urbanization and the wealth of nations. *Science*, 319(5864), 772-775
- 5) Henderson, V. (2003). The urbanization process and economic growth: The so-what question. *Journal of Economic Growth*, 8(1), 47-71.
- 6) Dutt, A.K. et al. (2003). *Challenges to Asian Urbanization in the 21st Century*. Kluwer Academic Publishers
- 7) Hidefumi I. et al. (2005) *Urban Environmental Issues and Trends in Asia—An Overview*. *International Review for Environmental Strategies*, 5(2), 357 – 382
- 8) OECD, 2010. *Cities and Climate Change*. Publishing, OECD.
- 9) Pengjun Zhao et al. (2018) The impact of urbanization on energy consumption: A 30-year review in China. *Urban Climate*, 24(6), 940-953
- 10) IEA, 2009. *World Energy Outlook 2009*. OECD, Paris.
- 11) Asian Development Bank. *Asian Water Development Outlook 2016*
- 12) United Nations Department of Economic and Social Affairs. *World Urbanization Prospects 2018*
- 13) Ta-Chen Su et al. (2011). Progress of Ambient Air Pollution and Cardiovascular Disease Research in Asia. *Progress in Cardiovascular Diseases*, 53(5), 396-378
- 14) World Health Organization: *The World Health Report 2002*. Accessed September 15, 2010
- 15) World Health Organization. *World Air Quality Guidelines in 2014*
- 16) Sharma, B., and Gani, A. (2004). The effects of foreign direct investment on human development. *Global Economy Journal*, 4(2), 1-20
- 17) United Nation Statistics Division. *Sustainable Development Goals Overview Report 2017*
- 18) Asian Institute of Technology (AIT). 2002. *Analysis of technical options for mitigating environmental emissions from the urban transport system in selected Asian countries*. Bangkok: Swedish International Development Agency-AIT.
- 19) United Nations. 2001. *Review of developments in transport and communications in the ESCAP region 1996–2001*. Bangkok: UN Economic and Social Commission for Asia and the Pacific (UNESCAP).
- 20) United Nation. *United Nation Development Programme. Human Development Reports*
- 21) Tran Van Nguyena et al. (2019). Trade-off between Environment, Energy consumption and Human development: Do levels of economic development matter? *Energy*, 483-493
- 22) The Centre for Liveable Cities. (2018) *From Singapore to Amaravati: Developing a Liveable City Together*
- 23) The State Council of the People's Republic of China. (2014-2020). *Energy Development Strategic Action Plan*
- 24) Japanese Cabinet. (2014). *The fourth Strategic Energy Plan for 2030*

Numerical Modeling of Underground Space Design for Livable Urban Areas



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人口の過密な都市部ではインフラ整備に利用できる空間が限られており、都市景観を守るためにも地下空間の有効な活用は不可欠。マレーシアやシンガポールの例に基づき、都市部における地下空間設計の課題を探った。

Abstract

As populations grow in dense cities, so does the demand for space and natural resources. As an option to combat this problem, a growing number of attempts have been made to build underground structures even in the forest of tall buildings, which aids transporting an ever-increasing abundance of resources into the city. The use of underground spaces can help cities meet these increased demands while remaining compact without destroying natural landscapes. Underground spaces have been widely utilized for storage, water conveyance, and power transmission in highly populated urban areas. The development of underground spaces is now becoming essential to the sustainable growth of cities. Recent development of computer simulations for underground structure construction has enabled planning underground spaces under difficult urban environments even in the early stage of various projects.

This paper presents successful cases of underground construction in Kuala Lumpur and Singapore with employing computer simulations implemented to achieve safe and robust design and construction of deep excavation and tunneling in a tight time frame, and highlights how the numerical modelling can facilitate saving time and effort for challenging urban construction. The use of underground spaces with aid of numerical simulations can bring more optimal solutions for urban development.

Keywords

underground space, sustainable urban development, numerical simulation, finite element analysis

Introduction

Urban areas keep sprawling rapidly over the past decades like seen in mega cities such as Singapore, Hong Kong, Shanghai, Seoul and Tokyo. As populations grow in dense cities, so does the demand for space and natural resources. As an option to combat this problem, a growing number of attempts have been made to build underground structures even in the forest of tall buildings, which aids transporting an ever-increasing abundance of resources into the city. The use of underground spaces can help cities meet these increased demands while remaining compact without destroying natural landscapes. Underground spaces have been widely

utilized for storage, water conveyance and treatment, and power transmission in highly populated urban areas. The development of underground spaces is now becoming essential to the sustainable growth of cities. Underground solutions to urban problems tend to be only considered if all other above ground options have been exhausted. However, lessons from past experience reveal more optimal solutions will become possible when underground solutions are considered and evaluated from the planning or initial project stages onwards. Recent development of computer simulations for construction of underground structures has enabled planning underground spaces under difficult urban

environments even in the early stage of various projects.

This paper presents successful cases of underground construction in busy urban areas with employing computer simulations implemented to achieve safe and robust design and construction of deep excavation and tunneling in a tight time frame, and highlights how the advanced numerical modelling can facilitate saving time and effort for challenging urban construction. Challenges and difficulties encountered in each case are itemized with numerical solutions adopted presented. The cases presented demonstrate how numerical simulations can aid the design and construction of underground spaces.

Sustainable Development Utilizing Underground Spaces

Rapid urbanization has produced many urban problems such as the need for more housing, roads and railways, water and power distribution systems, sewerage systems, reduction of air and noise pollution and other population growth issues. When paired with the demands listed above, these problems can be elaborated to include: traffic congestion; poor environmental conditions due to noise and air pollution; lack of safety, security, and protection against natural disasters and flooding; crowding and lack of space for work and recreation; restrictions when preserving aesthetic qualities and (cultural) heritages of the urban environment; aging infrastructure for distribution of resources, sewage conveyance and treatment; and combination effects of the above. All these problems should be indispensable for the sake of sustainable development of urban areas.

Past studies have demonstrated the benefit of utilizing underground spaces for smoothing issues associated with dense urban environments due to lacking infrastructure for transit, distribution of resources, goods and services (Boere, 2012, ITA, 2012). The urban problems that may be solved through use of the underground space include:

- Crowding and lack of space (for work and recreation),
- Traffic congestion,

- Aging infrastructures and distribution of resources,
- Environmental conditions such as noise and air pollution,
- Esthetic qualities and image of our urban environmental quality,
- Safety, security, and protection against natural disasters,
- Flooding,
- Sewage conveyance and treatment, and
- Synergy effects of the above.

Probably the most recognized problem is the need for traffic congestion relief in city streets. A number of cities have realized the need for a sustainable approach with regard to their overall traffic planning. Cities like Melbourne and Sydney where the population rapidly grows have shown a strong need for action utilizing underground options (ABC News, 2018). Urban rail systems can significantly save time and cost by providing separated rail systems for commuters in urban areas. Mass transit systems offer other benefits, requiring less surface area than road traffic. By moving from above ground car traffic to underground mass transit systems, enormous amounts of surface land can be freed up for other uses. Continual expansion of underground urban rail systems adds to the success of sustainable urban development.

The use of underground spaces extends to many applications for the sake of sustainable and environment friendly urban development such as parking, sport facilities, and resource storage. These facilities turned out benefiting not only from saving the occupation of costly surface land but also from saving cost for operation by taking advantage of constant temperature in the ground, which helps keep the running cost for cooling and heating minimized. Fig. 1 and Fig. 2 show the unique use of underground spaces in Finland and Japan.

With concentration of population, urban areas are particularly vulnerable to failures in infrastructure due to ageing of the systems or those caused by other natural forces or their combination. Growth of population not only indicates the reliance of more on the infrastructure, but at the same time that the man-made facilities may increase the severity of the disaster. For example,

urbanization with increasing paved areas has led to more severe flooding, as well as loss of water resources recharging groundwater. Underground rivers can be constructed to increase run-off or divert storm water. Large diameter tunnels have been bored below cities such as Buenos Aires and Tokyo for this purpose (Dal Negro et al., 2012; Miyao et al., 2000). The SMART tunnel in Kuala Lumpur illustrated in Fig. 3 takes this concept a step further, as this tunnel functions as a road tunnel during dry periods and is closed off for traffic and used as a storm-water tunnel during flooding periods (ITS International 2012).

It should be also noted that underground structures and metro subway systems have shown excellent earthquake performance of underground structures even against major earthquakes in earthquake prone areas such as Japan (Tashiro and Mutou, 2013).



Fig. 1. Underground swim pool in Helsinki (City of Helsinki, 2014)



Fig. 2. Underground LPG storage (Japan Oil, Gas and Metal National Corp et al., 2014)



Fig. 3. SMART multi-purposed tunnel in Kuala Lumpur (ITS International, 2012)

In addition, analysis of carbon footprints for trenchless and open-cut methods for underground freight transportation has revealed that the total CO₂ production could reduce to one sixths by adopting trenchless method as opposed to open-cut method (Tavakoli et al., 2017).

Even if underground solutions have environmental and disaster preventing benefit for sustainable development in urban areas as mentioned above, there have been debates on cost implications when a decision is sought for aerial (surface) versus underground (tunnel) options. The fact that the initial capital cost of underground projects tends to be markedly higher than for surface solutions mostly leads to the less costly option employing surface solutions such as bridges/viaducts or massive buildings. However, apart from real-estate impacts associated with surface structure solutions, when long term operation costs are considered in addition to direct construction costs, underground solutions would be an option to avoid disappointment in supporting sustainable urban growth.

Challenges and Difficulties Encountered for Underground Space Design in Urban Areas

Despite the benefit of underground solutions in urban development discussed previously, challenges have been encountered when underground structures were

built in urban areas including:

- Excessive ground deformation due to uncertainty and irregularity in the ground conditions resulting in delays and harm on workers and/or residents
- Interference with existing structures both under and on the ground surface
- Hindrance due to underground obstacles such as abandoned piles
- Ground water regime changes and their impact on existing structures in an urban area
- Restrictions in time and space to fix up problems occurring underground in an urban area

So far hit and miss methods as well as empirical methods have been routinely used in practical design of underground structures even in an urban area. However, it is becoming more compelling to assess the impact of new structures on existing structures as well as the interactions between closely spaced structures in the ground using advanced analytical techniques ideally combined with feedback from monitoring and instrumentation during construction.

Numerical simulations have enabled assessing the implication of uncertainties borne in the ground and the interactions between the tunnel / underground structures and surrounding ground including the impact on existing structures standing on the ground. By employing numerical simulations it has become possible to identify locations where construction risks arise and establish mitigation plans in advance, which has enhanced the credibility of underground development schemes in progress and to be planned.

Utilizing Numerical Simulations for Underground Space Design

Numerical simulations have enabled engineers to predict the behavior of underground structures in a realistic way even under complex / extreme loading conditions in complicated ground conditions. Numerical modeling is used as control method in reducing the risk of tunnel construction failures. Since some factors such as settlement and deformation are not completely predictable in rock and soil surrounding the tunnel / underground structure because of the complexity and

irregularity of the soil and rock characteristics in nature, using numerical modeling is a very economical and capable method in predicting the behavior of tunnel structures in regard to various complicated conditions of loading. Another benefit of using numerical simulation is in the visual effect with colorful illustrations predicting the tunnel behavior before, during and after construction and operation, which help engineers and operators proactively deal with possible problems occurring to the tunnel / underground structure.

In general, numerical modeling in designing underground structures has the following key benefits:

- Fast and systematic solution over spatial variation
- Possibility of using more realistic non-linear material behavior
- Solution of coupled phenomena
- Fast parametric evaluation.

Particularly three dimensional (3D) numerical modeling is the only effective way to predict the interference in between neighboring structures to be built under the surface in a realistic way. With the recent advances in technology for numerical modeling, 3D numerical modeling has been more often used in various project phases.

Given that 3D modeling aids avoiding potential harm on both existing structures and the underground structure in construction of underground spaces, numerous attempts for 3D modeling have been made in the design of underground transportation infrastructures, lifelines, and other storage facilities in urban areas such as Singapore where the land usage is limited. Three actual cases where 3D numerical modeling was carried out to assist with the design of underground infrastructures are discussed in the following sections.

Case 1 - Singapore cable tunnel and shafts

Transmission corridor cable tunnels were excavated at a depth of 45 m to 80 m below ground level in Singapore to expand the power grid networks. The underground power grid system typically consists of permanent shafts, cable tunnels, and short adits between the shaft and tunnel as shown in Fig. 4.

Temporary shafts and mined tunnels were proposed

during the construction in order to expedite the construction progress so that Civil and Structural and Mechanical and Electrical fit-out works for the equipment building above the permanent shaft could be carried out after the tunneling works without substantial time delays. Due to the complex geometry comprising multiple temporary and permanent tunnels and shafts in a limited space, there were concerns relating to stress concentrations on the tunnel and shaft supports as influenced by the construction sequence and proximity of the voids to one another. In addition, there were existing buildings founded on piles in proximity to the deep shafts were located. The impact of the deep excavation and tunneling on the existing piled structures was also of concern.

Ground movement can take place not only due to the loss of ground in excavation but also in association with the variation of groundwater in the surrounding ground during the excavation. An excavation pit needs to be kept dry so that the construction works can proceed without disturbance from water seeping into the pit. Where the water in an excavation pit or tunnel is continued to be pumped out, the groundwater around the excavation draws down eventually to the steady state. This groundwater drawdown can cause changes in the stress regime in the surrounding ground, accordingly resulting in ground movement.

Therefore, where there is deep excavation or underground excavation for tunnel in the vicinity of existing structures like seen in the cable tunnel site as shown in Fig. 5, the design of the earth retaining system and

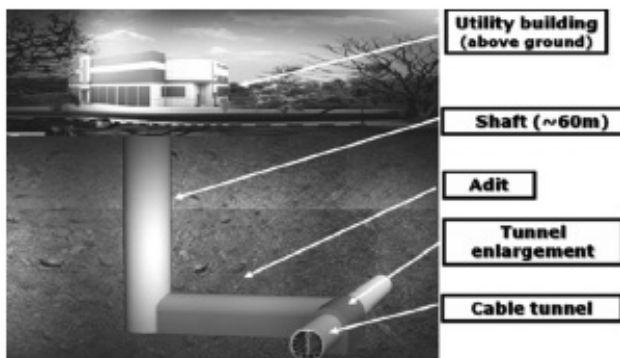


Fig. 4. Underground transmission corridor system

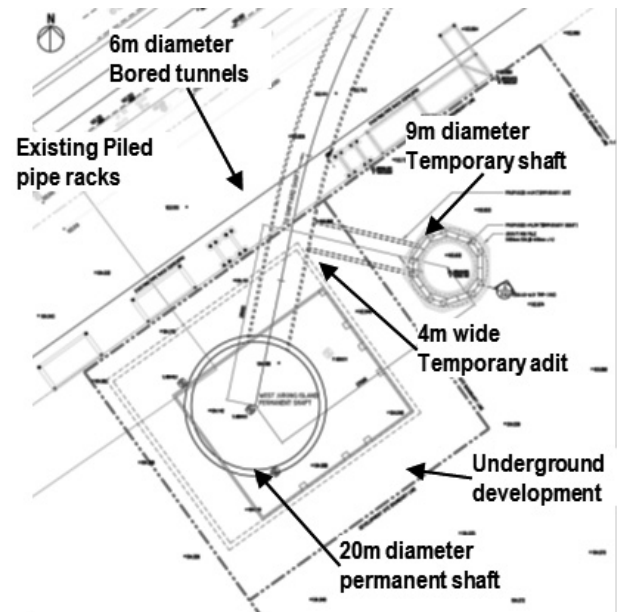


Fig. 5. Layout of cable tunnel and shafts

tunnel support should prove to minimize the impact on the neighboring structures.

Two key issues were identified including potential harm on neighboring underground structures located close to one another, and potential impact on the existing surface structures founded on piles, which might be affected by ground movement induced from the deep excavation for the shafts and/or the tunnel excavation.

Challenges in design were found in assessing the influence of construction staging for closely neighbored underground structures and controlling potential risks related to the ground subsidence, which might result in damage to the existing pile-founded structures in the ground conditions where soft ground was present with a high groundwater level.

In order to quantitatively evaluate the influence of underground construction activities and their sequence, 3D finite element analyses were performed employing PLAXIS3D to evaluate the impact of excavation of temporary structures in close proximity to the permanent structures, including bored tunnel breakout from the temporary mined tunnel. Attention was paid to the deepest underground shafts, mined tunnels and bored tunnel break-out in country by the time the construction

started. Also included was the prediction of ground settlement in accordance with the impact of deep excavation regarding changes on the ground water regime.

As a result of the 3D numerical analyses undertaken, stress concentrations were identified at different locations according to the excavation phases as depicted in Fig. 6. Ground settlement and deflection of the existing piles are also predicted to occur within a tolerable level as shown in Fig. 7 and Fig. 8.

The 3D numerical simulations undertaken facilitated the provision of reliable prediction on likely ground settlement according to deep excavation and tunneling that was used for the optimization of permanent and temporary shafts and management of risks to the existing surface structures without delays.

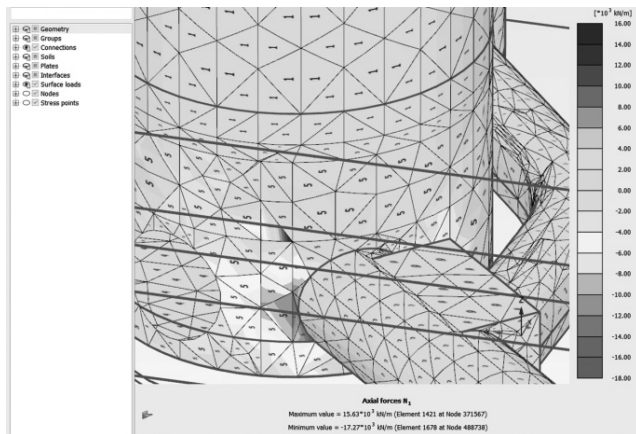


Fig. 6. Stress concentration captured by 3D modeling

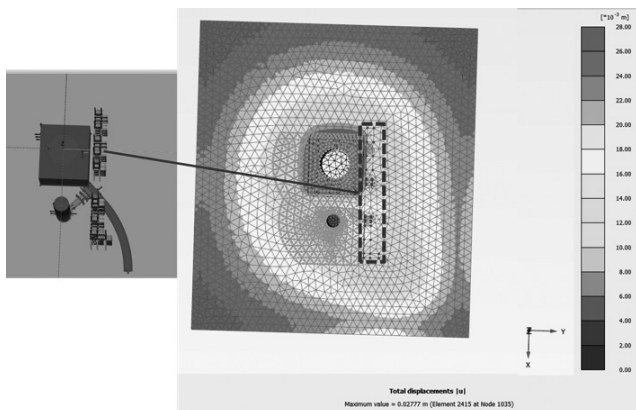


Fig. 7. Ground settlement predicted by 3D modeling

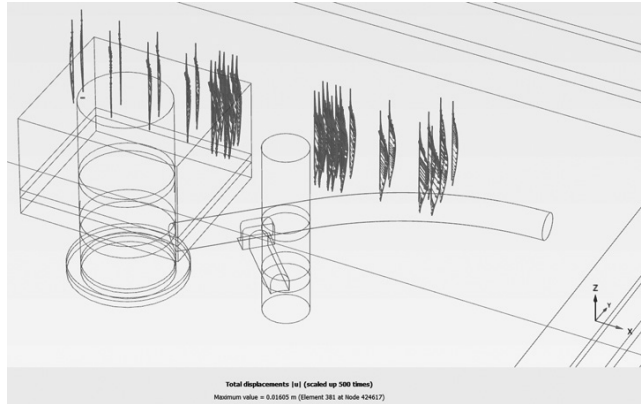


Fig. 8. Prediction of pile deflection due to tunnel and shaft excavation by 3D modeling

Case 2 - Cut and cover tunnel in the proximity to existing railway tunnels

New cut and cover tunnels were planned parallel to the existing railway tunnels. Due to the constraints in space the geometry of the excavation for the new cut and cover tunnels was designed to take a complex shape. The geotechnical investigation undertaken at the site indicated the presence of soft ground and variation of ground profiles, which was considered unfavorable for the stability of the earth retaining system for the excavation. Fig. 9 shows the layout of the new tunnels together with the existing railway tubes. Fig. 10 illustrates the bird-eye view of the site.

Key issues identified include the impact of the excavation on the existing railway tubes as well as the stability of the earth retaining wall under the constraints in space and difficult ground conditions. Since the edge of the excavation was only a couple of meters away from the wall of the existing railway tube, the deflection of

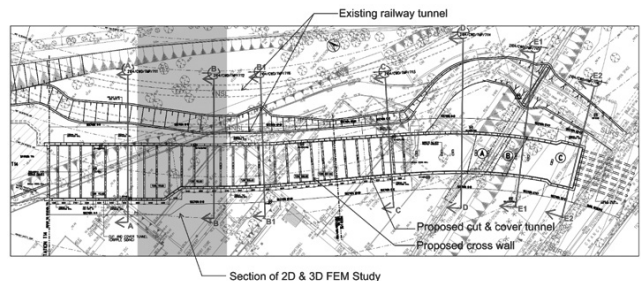


Fig. 9. Layout of cut and cover tunnel excavation in the vicinity of existing railway tunnels



Fig. 10. Bird-eye view of cut and cover tunnel excavation

the earth retaining wall for the excavation should be carefully managed within a strict tolerance to minimize any potential impact on the existing railway tubes.

Challenges in design were found in optimizing the wall support system. While the stability of the earth retaining system can be improved with an increased number of wall supports, a dense layout of wall supports might result in restrictions in the work space, which would hinder the progress of site works and provoke concerns about the safety management in the restricted spaces.

Thus the wall support layout needed to be optimized with ensuring the stability of the wall and no harm on the neighboring tunnel tubes. Numerical analyses were carried out to enable optimization of the design of the earth retaining wall considering construction staging and three dimensional effects.

Two dimensional (2D) finite element analyses were first undertaken at the cross section where the excavation becomes closest to the existing railway tube as shown in Fig. 11. The retaining wall stiffness and the vertical spacing of wall supports were determined based on the results of the two dimensional analysis. However, the two dimensional model had limitations in accounting for the effect of construction sequence/staging along the tunnel alignment. Since the excavation and support staging in the direction of the tunnel alignment (out of plane direction in Fig. 11) was expected to affect the behavior of the earth retaining system and ground retained, three dimensional effects associated with the spacing of wall supports and construction staging

should be taken into account to design the layout of the wall support system. A three dimensional (3D) numerical model was subsequently created using PLAXIS3D as illustrated in Fig. 12 to undertake additional analyses in a more realistic manner for the sake of the design optimization.

Considering the importance of the impact on the existing railway tubes from ground movement induced by the variation of the groundwater conditions according to the progress of excavation, both a tanked (undrained) case and steady state (drained) case were included in the 3D numerical models as seen in Fig. 13. The results calculated from the steady state case analyses appeared to govern the design of the earth retaining system.

Both the 2D/3D numerical analyses confirmed the earth retaining wall designed safely to retain the

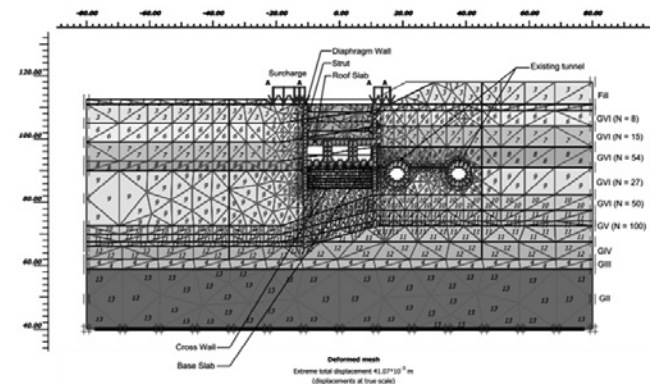


Fig. 11. 2D PLAXIS model for cut and cover tunnels in close proximity to existing railway tunnels

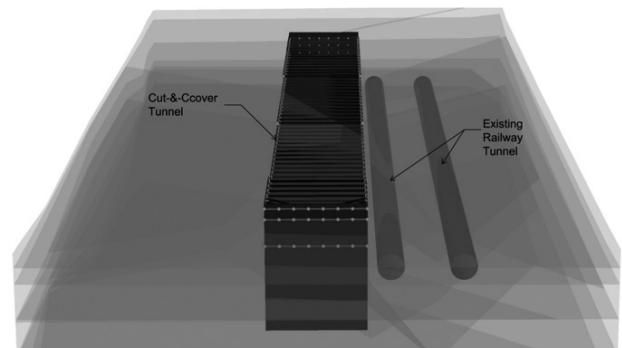
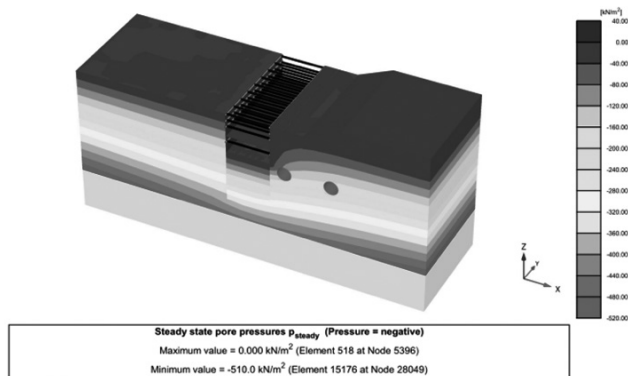
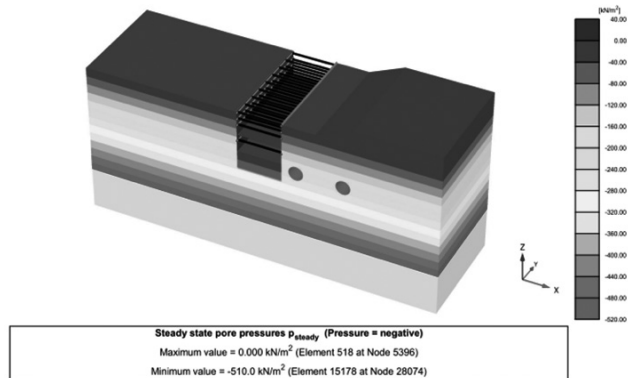


Fig. 12. 3D PLAXIS model for cut and cover tunnels in close proximity to existing railway tunnels



(a) Water pressures for tanked case (Undrained)



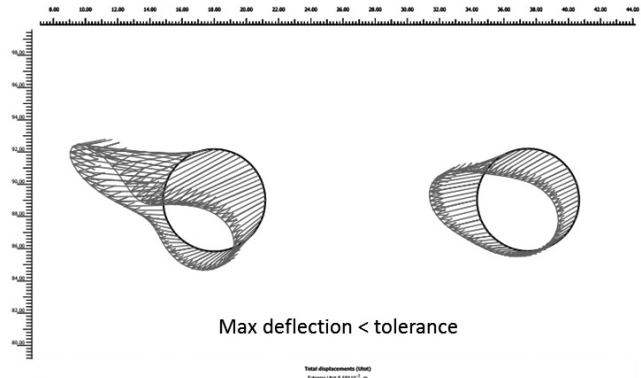
(b) Water pressures for steady state (drained)

Fig. 13. Water pressures reproduced by 3D modeling

excavation with no significant harm on the existing railway tunnels as shown in Fig. 14.

As a result of the 3D analysis undertaken in addition to the 2D analysis, the benefit of 3D numerical modeling was understood including:

- The 3D model assessed approximately 40% lesser movement of the existing railway tunnel due to the excavation than the 2D model at the same section.
- The 3D model assessed approximately 35% lesser deflection of the Earth Retaining wall than the 2D model.
- The force in wall support (strut) appeared to reduce to 50 to 80% in the 3D model compared with the 2D model.
- The member forces in the retaining wall appeared to be relatively comparable in both the 2D and 3D models in terms of the magnitude and location, while

**Fig. 14. Deformation of existing railway tunnels**

the 3D model overall generated lower forces than 2D model.

It is obvious that the 3D model enabled assessing the deflection / forces of the wall and the neighboring railway tunnels in a lesser magnitude than that from the 2D model, even considering the more realistic construction sequence. The benefit of 3D modeling can aid optimizing the design for deep excavation with mitigating the potential harm on neighboring structures.

Case 3 - Access to existing sewer and maintenance shaft in Singapore

An extended operation of the existing deep tunnel sewage system in Singapore necessitated long-term maintenance, which required new access to the tunnel from the ground surface. A new maintenance shaft was planned to be built connecting to the existing deep underground swage tunnel as shown in Fig. 15. Due to the complex geometry of the maintenance shaft and its connection to the neighboring structures in a busy area, the design should take into account interactions with the neighboring structures.

Key issues identified include the assessment of the impact of excavation for the new shaft on the neighboring structures as well as the sewage tunnel considering complex construction staging in a confined space.

Challenges in design were found in determining the best suitable construction sequence of the excavation and installation / removal of supports and slabs with estimating the impact of the construction sequence on

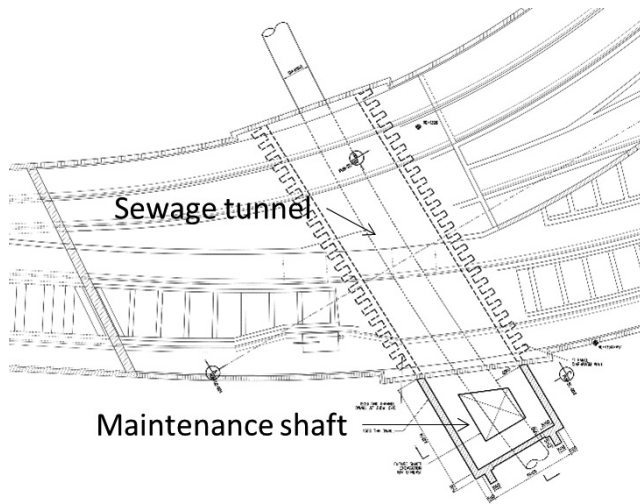


Fig. 15. Layout of maintenance shaft to sewage tunnel

the existing swage tunnel. Because the geometry of the structural components was interrelated in 3D directions, 3D modeling in Fig. 16 was conducted to estimate the deflection of the structures and surround ground so as to predict the deformation of the sewage tunnel underneath the shaft and adjacent structures.

The 3D numerical modeling indicated the deformation of the sewage tunnel was estimated to be controlled within the tolerance as shown in Fig. 17.

Numerical simulations enabled establishing mitigation or remedial plans in advance so that the interference of newly built underground structures with existing structures can be minimized.

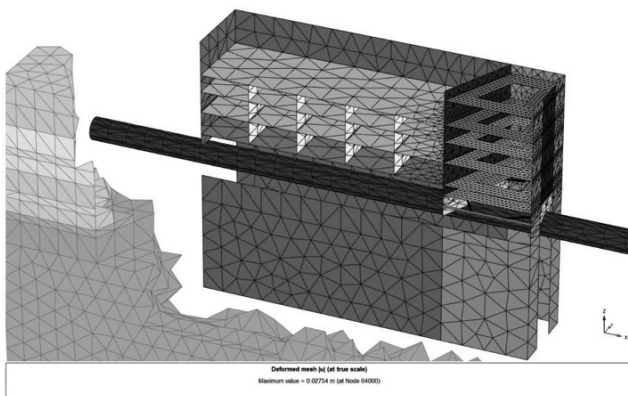


Fig. 16. 3D PLAXIS model for maintenance shaft connecting to sewage tunnel

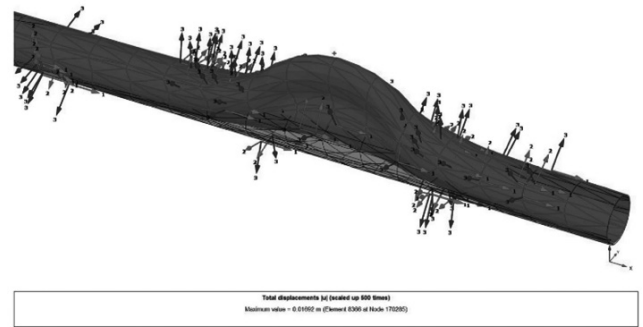


Figure III.4.2: Maximum DTSS tunnel heave

Fig. 17. Deformed sewage tunnel after exaction of maintenance shaft in 3D numerical modeling

Concluding Remarks and Recommendations

The use of underground spaces has been rapidly increased in busy urban areas to minimize the disturbance of surrounding landscapes. Underground development is an important solution in developing and reshaping urban areas to meet the challenges of the future.

Placement of infrastructure and other facilities underground presents an opportunity for realizing new functions in urban areas without destroying heritages or negatively impacting the surface environment, and at the same time brings opportunities for long term improvements in the environmental impact of cities and more efficient use of space and resources.

Numerical simulations using 2D and 3D advanced computational tools have significantly assisted with achieving underground development enhancing the efficiency of design and risk management in construction. The three case studies are presented in this paper to highlight the benefit of advanced numerical simulations

The 2D and 3D numerical models discussed in this paper were developed using the finite element method (FEM) to simulate the construction process for underground structures in a realistic fashion. The models were used to predict the behavior of tunnel and underground structure deformation under different loads in

complicated conditions illustratively. The advantaged of the numerical modeling discussed in this paper include its capability of coupled analysis of multiple phenomena such as changes in a groundwater regime by seepage analysis as well as those in a stress regime due to excavation independently or dependently depending on needs. This advantage will be maximized with further development of computational technologies and advanced soil / rock models which can represent the true behavior of ground where excavation takes place. Predicting the effect of all natural factors on tunnels is always challenging. One of the most significant advantages of the numerical modeling cases presented in this paper is in predicting the critical area surrounding the underground structure as well as in the structure against complex loads prior to commencing the tunnel construction, which enhance managing potential risks.

The use of underground spaces with aid of numerical simulations can bring more optimal solutions for urban development. With knowing the growing opportunities for underground development, the following future development is recommended to further expand the use of advanced numerical modeling to improve the design of the underground structures:

- Development of more sophisticated models for soils and rocks as well as structural components which can better represent the actual behavior of ground and components incorporated into the ground model for underground construction,
- Upgrade of structural models and assessment/design tools,
- Combining with other visualizing techniques such as Building Information Management system,
- Budget allocation for massive numerical models
- Feedback from monitoring and formalizing the processing with back analysis, and
- Design approaches to embrace 3D modeling and visualizing techniques.

The authors look forward to increasing opportunities to make contribution on sustainable development of urban areas utilizing underground structures which can be safely designed and built by the employment of advanced numerical modeling.

References

- 1) ABC News. (2018) Melbourne's population explosion threatens to create a 'Bangkok situation', Australian Broadcasting Corporation, <https://www.abc.net.au/news/2018-10-15/melbourne-will-be-australias-biggest-city-which-party-has-policy/10358988>
- 2) Broere, W. (2015) Urban underground space: Solving the problems of today's cities, Tunnelling and Underground Space Technology, Elsevier, <http://dx.doi.org/10.1016/j.tust.2015.11.012>
- 3) City of Helsinki. (2014) Urban Underground Space Sustainable Property Development in Helsinki, City of Helsinki Real Estate Department
- 4) Dal Negro, E., Boscaro, A., Laham, D. (2012) Successful TBM operations in urban environment: the "Arroyo Maldonado" project in Buenos Aires. In: Proceedings of the ITA-AITES World Tunnel Congress 2012 – Tunnelling and Underground Space for a Global Society.
- 5) ITA Working Group. (2014) Urban Problems – Underground Solutions, ITA Report No 11, International Tunneling and Underground Space Association
- 6) ITS International. (2012) Success of Kuala Lumpur's dual purpose tunnel, <https://www.itsinternational.com/categories/detection-monitoring-machine-vision/features/success-of-kuala-lumpurs-dual-purpose-tunnel/>
- 7) Japan Oil, Gas and Metal National Corp. et al. (2014) Japanese first hydraulic containment type LPG underground storage cavern at EL.-150m - Namikata and Kurashiki national stockpile bases-, Outstanding Civil Engineering Achievement Award, JSCE, 9.
- 8) Lee, J., Zheng, A., Soo, W., Shibano, T. (2017) 3D modeling for design of vertical shafts, mined tunnels, bored tunnels and associated works in urban Areas , Southeast Asian Conference and Exhibition in Tunnelling and Underground Space 2017 (SEACETUS2017) Subang Jaya, Malaysia 2017.
- 9) Miyao, H., Kamoshita, Y., Kanai, M., Fukumoto, K. (2000) Underground river tunnel for flood control by shield tunneling. In: The Tenth International Offshore and Polar Engineering Conference. International Society of Offshore and Polar Engineers.
- 10) Soo, W. (2016) 2D & 3D FEM for deep excavation and tunnelling in urban areas, PLAXIS User Meeting 2017.
- 11) Tashiro, Y., Mutou, Y. (2013) Disaster-prevention measures for Tokyo metro tunnels. In: Anagnostou, G., Ehrbar, H. (Eds.), World Tunnel Congress 2013 Geneva – Underground – the way to the future!, pp. 275–282.
- 12) Tavakoli, R., Najafi, M., Tabesh, A., and Ashoori, T. (2017) Comparison of Carbon Footprint of Trenchless and Open-Cut Methods for Underground Freight Transportation. Proceedings of Pipeline 2017, ASCE, 45-55

物語実践：認識的共感と物語が導く 持続可能な関係修復の研究

Practicing Story: Study on cognitive empathy and
narratives leading to sustainable relationship repair



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社会生活には利害の対立や衝突がつきものだが、私たちはいかにして争いを乗り越え、「仲直り」してきたのだろうか。人類学的、法学的な歴史検証を踏まえ、物語実践を通じた持続的な関係修復の道を探った。

Abstract

Human being is a social animal and can cause conflicts even with closest relationships. In order to build sustainable peace, it is important not only to prevent conflicts, but also restore the damaged relationships. The court system is aimed at resolving conflicts. However, for many local people, this system is a distant presence. Indeed, the modern trial is not familiar for even many people of Japan, one of the developed countries; it is considered a last resort. Litigation means the break of relationships of communities, so it is not welcomed for people. In particular, the people of the former colonial countries are living in legally pluralistic society where several legal contexts overlap. There, the contexts of traditional norms and legal theory norms are different, so that the gap keeps people far from convincing.

Some studies on peace building criticize that the modern trial system does not achieve relationship repair, and suggest that traditional ways rooted in each community will bring out more satisfaction to people. On the other hand, there are also risks of serious human rights violations by community handling the “truth” of a crime, from investigation procedure to judgment. In this presentation, I show that the “story” of conflict shared by the community due to “cognitive empathy” is important to the relationship repair, and propose “Practicing Story” as an effort to make that “story” come true, overcoming the discrepancies between tradition and modernity.

Keywords

conflict solution, peace building, anthropology, legal pluralism, empathy

はじめに

人間は争いを経たあと、一度損なわれた関係性を修復できるのだろうか。もし可能だとしたら、どのように修復するのだろうか。この問いかけに対し「きっと仲直りできるよ！」と胸を張っている人あまり会ったことがない。争いの「解決」がどのようなものかについてのよくある説明は、忘却や諦め、妥協によるというものだ。これらを強調する場合でなくとも、簡単に「和解できる」ということは、犯罪当事者でなくともためられるものである [Zehr 2003]。

しかし、ひとりひとりの人生の中で仲直りに類することが決して起こらないかという、そんなこともないはずだ。

ここで、法社会学や哲学の分野からは、人間の「赦し」や、わかり合うことの本質を「愛」に求め、検討し直すという試みもある。しかしそれらの言葉は既に十分理念的・文化的であり、世界中の異なる文化的背景を持つ人々すべてに適応し直すには遠回りな印象を受ける。

この難解な、しかし重要な紛争と関係修復の問題について、本稿では人類学と法学の知見から「物語実践」と名付けられた、人間がこれまでおこなってきた納得の手法を、物語論と認識的共感というキーワードを用いて説明する。そして関係修復を狙いとする場合、現代社会でどのように「物語実践」していくのかを提案しようと思う。

伝統的な手法と近代的な手続き

従来、主観的で恣意的という問題を抱えた伝統的な葛藤解決手法が、客観的で公平な近代的手法に発展するのだと考えられてきた。一方で人類学は、そのような近代的（厳密には西洋的）様式を頂点とするような、単線的な社会進化主義を否定してきた〔黒田1984〕。そもそも世界各国に輸入された近代的な裁判手続きが「輸入」された理由は、それぞれのローカルな司法システムが問題をきたしたためではなく、植民地化や脱植民地化、国家体制の整備という国際政治的な事情が直接的な理由であり、多くの場合、各地域の住民たちが必要とし、自発的に取り入れて行ったものではなかった。

このような、近代司法が自明のものではないという見方はいまや人類学のみならず、法学の新しい分野からも現れている。そもそも西洋における刑事法もまた、国家の登場によって税金の徴収のため民事法と区別されるようになり、自明のものでもなければ住民たちが自然と発展させてきたものでもなかった〔Haley 1995〕。世界中の多くのローカルな人々にとってはいまだに民刑は厳密に区別されず、そして区別せずに解決が図られる。むしろ刑事法上の犯罪のリストに該当してしまった際には、従来のローカルなやり方で解決しようとする国家司法が介入して止め、共同体の話し合いに立ち会うべき当事者（加害者）を連れ去り、共同体の損害が放置されてしまうこともある。

1970年代に登場した修復的司法（Restorative Justice/以下RJ）研究はそのような状況を問題視している。たとえば法の専門家が共同体から正義実現の機会を奪うという点について、法学者のニルス・クリスティは、フィンランドにおける司法の問題点を指摘した。彼はフィンランドにおける法の専門家たちが、当事者や共同体からコンフリクトを「盗んでいる」と指摘する。例えば少年犯罪においては、「少年たちは直接の関係者から引き離され、だれかも知らない人々に囲まれ、処遇を決められる」〔Cristie 1977〕。彼からすれば、そもそもコンフリクトは当事者と共同体のものであり、損なわれたものを修復し、適切な行為（正義）の確認がなされるべきである。しかし後期工業社会においては、仕事と称して国家司法制度の専門家たちが加害者を共同体から奪いさり、損害を受けた被害者と、共同体の壊

れた関係性を実質的に放置している。クリスティの主張が過激すぎると指摘する法学者もいるが、筆者からすれば、近代司法制度の大きな枠組みについて反省点を指摘した彼の比喩は、もっともなものに思える。

西欧の、もとい近代司法の専門家さえもが、近代司法の枠組みそのものを再考しようとするのはどういうわけだろう。彼が書いた上記の論文「財産としての紛争」は、現在世界的で展開されているRJ研究の古典的論文とされている。ここでクリスティが問題としているのは、伝統的か近代的かではない。彼は論文の冒頭で、ケニアの事例を取り出し、コミュニティでの話し合いによって葛藤が解決される様を手短に紹介しており、それがロマン主義的であるという批判を受けているが〔グディ2011〕、論文全体を通して、伝統に帰れとか、近代的なものをむやみに批判しているのではないことがわかる。

ここで注目すべきなのは、人間にとっての法や正義が国家や専門家ではなく、そして損害に関わる当事者たちだけでなく、共同体も含めての問題である、と主張したことにある。ふさわしい「解決」や正義のあり方は、権威者が決めるものではない。一方でそれらは、加害者と被害者のみで決まる問題でもない。それらは本来、当事者を含めた共同体に属するものなのだ。この営みを、高度に理念化し論理を洗練させてしまった法の専門家が、邪魔している（盗んでいる）というのである。すなわちここで現れる対立項は、「伝統か近代か」ではなく、「専門家か素人か」なのだ。

文化の衝突と葛藤

上記の主張に対して、殺人や強盗といった重大犯罪をはじめとした解決内容は「真実」によって決められ、そのためには客観的（科学的）に裏付けられた「事実」を明らかにしなければならないという指摘がなされるだろう。共同体由来の葛藤解決のやり方、つまり高度に文化的な儀式や哲学は、感動や社会的再統合をもたらすかもしれないが、それらは保証の限りではなく、ときには重大な過誤も生じうる。共同体で葛藤を解決することは恣意的・主観的な判断から逃れられず、誤った結果を導いてしまうとする批判は、RJ分野の内部からも出てくる批判である。この客観と

主観の問題は、近代司法制度上の法律を、伝統的司法や慣習よりも重んじる根拠ともなる。

このような批判がなされる一方で、では法の専門家たちはすべて客観的であり、かつ公平な判断ができる人々なのであろうか。法学者のゲリー・ジョンストンは、RJ研究者でありながらRJを根本的に批判するなかで、次のような疑問を呈している。彼は先住民ナバホ族の伝統的な調停方法を例にとって、古き時代の慣習の形式を復活させることについて懐疑的な意見を示す。すなわち伝統的社会の慣習法と国家における法律の違いによる問題のうち、「部外者に受け入れられない象徴的回復方式について、受け入れるのが困難な場合どうすればいいのか」。ナバホ族は、調停方法として、遠く離れた場所から被害者が槍を、加害者の腿めがけて投げるといふ儀式をおこなう。この場合、胸など殺してしまう場所に投げてはいけない。率直に言えば、このような儀式が嫌な場合、違う文化に属するジョンストンは、どうすればよいのかと問うているのである。

この象徴的な関係修復方法の価値が異文化の人間から認められない場合、あるいはその価値を他の人々も認めることが多い場合でさえも、傷害罪というコストに見合う修復的な利益は保証されているわけではない〔ジョンストン2006：68〕。ジョンストンのこの指摘は、RJの重要な問題点として、人権保護と伝統社会の手法との衝突、矛盾が生じるということにある。そして修復する保証がないうちは、危険な伝統的手法を禁止するべきである。

楽観主義に陥っていると批判されがちなRJ研究においてさえ、「度を過ぎた」慣習は、裁判官によって管理されるべきだとするのが多数派であるだろう。しかしながら、彼が「象徴的回復」とひとまとめにしてしまうことは正しい認識なのだろうか。さらに当該文化に属するか属さないかで、修復が決定してしまう伝統儀式など、存在するのだろうか？

想像してほしいのだが、たとえば加害者に向かって被害者が遠くから槍を投げる制度が発達した地域があるとして、その地域共同体の人々は槍を投げると、反射的・自動的に損害や感情が修復するのだろうか。そうは思えない。人々は、被害者が槍をどのような様子で投げるのか、加害者がどのように槍を受けるのか目の当たりにする。一体その人々

は、なぜふたりにそのような機会を与え、被害者と加害者をその儀式を遂行するのだろうか。そしてそのような儀式がなぜ続けられ、何よりもそれによってなぜ共同体が存続しているのかを、関係修復の文脈で考えるべきではないだろうか。そして儀式そのものではなく、儀式の実行によって起こる人々の情動や行動はどのようなもので、それが人類全体にとって受け入れがたいものなのか、納得できるものなのかを、文化のバリエーションの中から明らかにし、考察することが、人類の普遍性の模索につながるだろう。

ローカルな身体

ここで、文化相対主義的な視点の重要性を今一度考えてみる必要がある。前述したように、ジョンストンはナバホ族の伝統的な儀式を拒否することを前提に議論するのだが、それは、彼が加害者の立場の場合であろうか、それとも、被害者の場合であろうか。RJ研究者の彼がよく知るように、彼が慣れ親しんだはずの近代司法もまた、冤罪や見逃し、再犯の防止に限界があるのに、彼はなぜ「近代司法制度で裁かれるのが嫌だ」とは思わないのだろうか。ここでジョンストン自身が象徴してしまっているのは、どうしても拭い去れない文化についての不均衡である。どうして、ヨーロッパ由来の文化に慣れ親しんだジョンストンがナバホ族の法を否定できて、ナバホ族たちは、ヨーロッパ由来の司法制度を我慢しなくてはならないのだろうか。このような問いかけ方は、対立を煽るように聞こえてしまうかもしれないが、それは狙いではない。ここで考えなければならないのは、ナバホ族のみならず、いくつかの法制度が併存していることが当然と考える人々は（特に旧植民地に）いて、むしろどれかひとつを絶対のものであると考えている人々は、世界では少数派かもしれないということである。

上記のことから、ジョンストンはナバホ族の暮らしを理解しようとしていないし、同じ人間としての判断を信頼していないだけではないのかという誹りを免れないことになる。近代司法制度の改善が要求され続けるなかで、それでも「近代司法制度の方が好ましい」という印象をジョンストンが受けるのは、単純にそれに慣れ親しみ信頼している一方で、「他のやり方に馴染みがない」だけといえるかもしれない。このようなジョンストンの近代司法への志向

のあり方は、世界の各地域の原住民が慣習を志向するのと変わらないかもしれないのである。ひとりひとりの法の専門家もまた、「ローカルな資質」から逃れられないのだ。怠惰な裁判官、プライドの高い弁護士、私腹を肥やす政治家、そしてそれを支持する市民…このような人々によって近代司法が作られ、施行されているということを、私たちはよく話題にするにもかかわらず、どうして裁判所の判決だけは、客観的で公平だと言い切れるのだろうか。

もちろん、システムが客観的で公平ならば、判決もまたそのようになる可能性はある。しかし私たち人間の身体は、いまだにローカルな資質を含んでおり、それはあらゆる専門家も同様である。専門的な説明や理由によって、公平な（ということになっている）判決を受けたところで、人々の納得や満足、そして関係修復は別の問題なのである。

既に述べたように、RJは、従来の近代司法制度が応報的であることの反省から生まれた研究や運動である。応報と修復という命題は、決して研究者個人の信念や主張次第で決まる性質のものではない。割れ窓理論などで知られるアメリカの刑事司法政策が、その存在目的としての犯罪の予防と被害者の救済について、ほとんど機能していないという現象を目の当たりにし、法学者たちが異なる葛藤解決手法を求めたのが始まりであった。RJは、西洋文化や都市部を生きる人々にとって、伝統的な刑事司法制度でやっていくことが困難だからこそ登場したのである。

また、「未開社会は野蛮で暴力的である」というイメージがある一方で、法に関する人類学研究は、世界中のどの地域にも特有の規範があり、秩序があることを明らかにしてきた。そしてそれらの多くが対話を主とした平和的なものであったということも、もっと注目されていい発見である[ロバーツ1982]。

物語としての法

RJ研究や共同体司法研究では、それぞれの文化に従った「真実」を許容する。そしてそれぞれ異なる「真実」では困る、というのが近代司法制度の要請であった。しかし、近代司法制度は、確たる「真実」を明らかにするのだろうか。

それぞれの視点や法規範によって、正しさや「真実」が変化するという相対的な見方は、文化研究には欠かせない

ものである。かつてパプアニューギニアのトロブリアンド諸島においては、人が死ぬとその死体を村中の人々が確かめる儀式をおこない、どこに痣があった、どこに傷があった、と相談することによって、その死因を呪術や天罰に求めた[マリノウスキー 1984]。現在のバヌアツ共和国でも、人が死ぬとまず呪術の使用が疑われ、調査によって呪術であることが明らかにされたりする。また、自分がブラック・マジックを使った、と名乗り出る呪術者が現れることもある。

これまで人類学が明らかにしてきた文化に関する重大な指摘のひとつは、この世界の現象の意味が、文化や個人の解釈や関連づけによって異なるということであった。人々はそれぞれの意味世界を生きており、そこに立ち現れる現象の真実や意味は、決して自明のものではない。その意味世界を理解し、分析し、翻訳するのも、人類学者の仕事である[ギアツ 1999]。この観点からすれば、ある文化では絶対だと考えられている正義は、他の文化では奇異なものに映ることがある。つまり正義や規範も相対的なものであり、時代や地域によって変わりゆくものである。

このことは特に、旧植民地国家に住む人々にとっては、実感できることであろう。法的多元性 (Legal Pluralism) は、法と文化の研究において大きなトピックである。ひとつの地域にいくつかの法や規範といった正しさの文脈が存在し、当然それぞれが衝突すると問題が起こることになる[千葉 1999]。アジアでは近代司法システム継受の古株である日本でさえ、正しさの文脈がいくつも重なる法的多元性社会に生きている。

このことについて、近年、法学研究者のなかからも、近代司法システムに則った正しさの主張を「物語」として捉えようとする動きが出てきている。法社会学者の和田によれば、日本における近代司法裁判の判例をもたらず「物語」は、3つの文脈から成り立っている。それは「西洋法哲学の文脈」、「日本の世俗的文脈」、そして「法廷の現場の文脈」である[和田2010]。それぞれの文脈はそれぞれの正しさを持っており、日本の裁判で展開される正義や正しさは、それらの出自の異なる正しさをブレンドしたものだ。近代司法裁判は神の視点から「真実」を明らかにする場所ではなく、一定のルールに従って法廷事実を確認し法的拘束力

のある取り決めになす場所である。また法学者の北村は、近代司法の法廷が、対立する両者の矛盾する主張を展開しあうという構造からも、法廷で展開されるのが「真実」ではなく、ある種の「物語」であることが前提となっている。疑いのないように思える科学的根拠もまた、どのように配置し、説明するかによって、物語の結論や方向性は変わってくるのである。また、日本の法廷が3つの異なる文脈の正しさを参照してはいるものの、それでも西欧法哲学の正しさの文脈がもっとも強いものであると和田は指摘する〔和田2010〕。

近代司法手続きの文脈と世俗的な文脈とが異なるというのは、たとえば次のような例が挙げられる。日本の世俗的な感覚では、嘘をつかないことが美德とされ、自分の悪事をむしろ誇張することによって、反省を表明できることになる。自分の悪事をはぐらかし、小出しに明るみになることは、相手や共同体から「反省がない」と思われることにつながる。ところが近代司法法廷では、黙秘権によって自分の犯行を黙っていることは、法廷戦略として重要である。このような専門性に裏打ちされた正しさが、市民感覚からすれば理解しがたいものとなり、加害者への憎悪を膨らませたり、相手を無闇に凶悪であると思ひ込む「モンスター化」を深刻化させたりすることになる。

もちろん、近代司法制度の定め多くの多くは、公平性と人権への配慮が結実したものであり、それ自体重要なものである。ここで問題なのは、高度に専門家された公平性実現のための定めが、世俗感覚と食い違うことがあるという点である。では、私たちは一体どのような「物語」を紡いでいけばよいのだろうか。ときには同じ文化に属するもの同士でさえ「真実」が異なる場合もあるというのに。

認識的共感

ここで「真実」という意味世界に関わる内容が、唯一無二の物語にすぎない場合、考えてみたいのはそれらの物語が、どのように作られるのかである。つまり物語の内容自体ではなく、物語の作り方、フレームに焦点を絞りたい。伝統的・世俗的な文脈の正しさが忌避される理由のひとつに、主観的な要素が排除できないという理由が挙げられる。ここでは相手の考えを推測できる「共感」をキーワー

ドに、相互理解について整理する。

「共感」という言葉は、一般的にごく感情的なものだと捉えられており、したがって理性的に考えられない思慮に足りない状態だと捉えられることがある。その一方で、人間として重要な側面であると強調されることもある。近代司法の世界では、共感といった主観的な要素は基本的に排除されなければならない。しかし、本来人間の認識は、感情と理性とに明確に分離できるものではない。哲学者のヒュームは、すべての論理的決定は情動から生じるとした。自らは客観的だと考えていても、あらかじめ持っている価値観や個人的な事情は、意識できない領域で自らの考え方に方向性を与えているのだ。相互理解の葛藤解決においては、客観や主観を対立させるのではなく、他者の認識から世界を考える契機をもたらす「間主観性」と、それを可能とする共感能力に注目すべきだというのが、本稿の提案である。

ここでは相互理解、すなわち他者の物語を理解するための足がかりとして、人間の共感能力 (Empathy)、なかでも「認識的共感」(Cognitive Empathy) に注目したい。「認識的共感」の能力とは、人間が他者の内面を、自己の内面と区別して推測する能力のことである。この能力によって人間は、他者が(自分と異なる)何を必要としているか理解できるし、何を嫌がっているか理解できる。もちろんこの能力によって、相手の助けになることもできれば、嘘をついて意地悪をすることもできる。この認識的共感による推測の精度はそもそもの個人差もあり、また内面の推測の精度が高くてもコミュニケーション能力が低ければ、目的を達成できないこともあるだろう。さらに認識的共感は、人間同士が互いに持っているものであるもので、その推測は「相手のことを考えている自分のことを、相手も考えているだろう」という、入れ子構造状態となる。このような人間の認識の枠組みを「心の理論」と呼ぶ〔フラスバーク＝コーエン2007〕。

例えば、以下のような父親の様子を想像しよう。「ある父親が、娘へのプレゼントを押入れへ入れておき外出した。母親が布団を干すときに、プレゼントを戸棚へ移動させた。」さて、父親が帰ってプレゼントを確認しようとするとき、どこを最初に探すだろうか。ここで、プレゼントがすでに

ない押入れと答えられるのは、共感能力が発達した3、4歳からである。

さらに、複雑な、以下の娘の心情を考えてみよう。「私がピンクを好きだったのは子どもの頃だが、父はいまだに私がピンクを好きだと思っている。ピンクを嫌いだというと父をがっかりさせてしまうので、毎年嬉しそうに受け取っているのだが、私のこの心情を父は見透かしているだろうか？」

上記の娘の推測は5次の入れ子構造になっている。文字にすると回りくどいが、私たちは普段このくらい複雑な「心の理論」をとっさに理解できる。驚くべきことかもしれないが、このような他者の心情を考える能力は、すべての人間に共通する要素なのである。どの時代、どの地域の、どのような文化の人々も、複数の他者の心を推測し、複数から自分の心を推測されるという心の理論を前提として、複雑な社会生活を営んでいるのだ。

私は、社会学系の学問が、悪しき普遍主義の二の舞を起さぬよう注意深くあるべきだと考える。普遍性を考察することと、制度構築において普遍性を持ち込むことは異なる行為だ。ただ、所属や属性に関する従来の定義が通用しないグローバル現代において、この人間すべてがもつ共感能力が、特に法や正しさ、共同体に関する議論においては、もっと注目されるべきである。

おわりに：正義の物語から物語実践へ

もちろん、相手の考えを慮り、それによって判断を左右すること自体は、その場しのぎの合意をもたらしたり、権力者への付度を誘導したりする危険性を持つ。一方で、合意を含むある葛藤解決の物語を共有する共同体のメンバーが、その先も共に暮らしていく人々であるならどうだろう。そのときの理不尽な取り決めについて、強要した人物は共同体のなかでそれ以後協力を得られないかもしれない。人々は、誰が理不尽な扱いを受けたか、誰が得をしたかを覚えており、そのような振る舞いをした人物は、自分がどのように思われるかもまた、「心の理論」によって理解できる。人々は直接顔を見知った関係で、それぞれの思惑を慮り、慮られる。このように入れ子構造上の認識が展開されるなかで、それから先も共に生きていかなければならないのが、

人類が馴染み深い地域共同体の特徴である。このような社会環境では、匿名メンバーばかりの都市部における振る舞いと、異なる戦略を迫られることになる。

まさに多くの伝統的社会で要請され、発展してきたのは、人間の認知を前提とした関係ネットワークで通用する、葛藤解決の手法であっただろう。さらに、葛藤解決のための協議や儀式で作られたある物語は、その時点では完結しない。みな、どのような物語であったのかを覚えており、その儀式やなされた裁決が、どのような未来を生み出すのかに注目している。そして、その儀式をターニングポイントとして、新しいイベントが起こった場合には、新たな物語が作られていく。すなわち、人々の物語は終わらず、人々が覚えているかぎり続いていくのである。

近代司法は、法という文脈の正しさに沿った「正しい物語」を提供しようとする。RJをはじめとした和解を目指す研究もまた、近代司法とは異なり（オルタナティブな）当事者同士の合意や満足を含みつつも、結局は別の「正しい物語」を提供しようとしてきたという点では同様である。将来にわたって意味づけが変わらない、完璧で正しい物語など存在しない。関係修復とは、完結や達成するものではなく、継続的なものである。取り返しのつかない損害が生じたとき私たちができるのは、よりよい現実にしようと試み続けること、葛藤を抱えてともに生き続けることなのである。

私たちは場当たりの正義（Patchwork Justice）ではなく、何か間違いのない、完璧な、未来永劫続く正義や正解を求めてしまうが、出現するのはそのようなものではない。実際になされるのは、完璧な物語を目指して、新たな物語が作られ続けることである。正しさがないと言っているのではなく、当事者たちが正しさを含むいくつもの物語を展開し、関係性や文脈によって浸る物語が変わってくるので、そもそも完璧で未来永劫続く物語のみが生じる状況など起こりえないだけなのだ。納得と関係修復をもたらすためにできるのは、葛藤を終わらせることなく、物語をメンテナンスし続けることである。

たとえばRJ研究において最も有名な「再統合的恥付理論」は、恥をかかせることによって反省が促され、共同体に再統合されるとされるが、その後も関係性を継続していかな

ければ、単なる応報的な対応になりうる〔ブレイスウェイト 2006〕。それは小さな共同体で通用するものであり、大規模な匿名社会においてはそぐわない方法である。世俗的な慣習の中には、共同体の関係性の継続を前提とした「解決方法」がみられる。これをそのまま匿名社会に適用することは、確かに危険性があり、よくよく考えられるべきである。単なる賠償金の支払いで本当に納得するのであれば、それに越したことはない。人間を真に葛藤に投げ込むのは、そのような取引では納得できない喪失感や苦悩であり、そのようなものこそ、関係修復を目指されなければならない。本論では、葛藤解決に関わる問題を、伝統か近代かではなく、専門性と世俗性、さらには関係性を継続するか継続しないかという観点で考えてみた。さらに納得や関係修復のために人類がどのように「物語実践」するのか、現場の語りや事例を検討することで、明らかにする必要があるだろう。

参考文献

Christie, Nils 1977 "Conflicts as Property" *The British Journal of Criminology* vol. 17" pp.1-26.

Haley, J. 1995 "Victim-Offender Mediation: Lessons from the Japanese Experience" *Mediation Quarterly*, 12-3" pp.233-248

Johnstone, G. 2001 "Restorative justice : Ideas, values, debates" Willan Publishing (ジョンストン、ゲリー 2008『修復司法の根本を問う』 西村春夫(監訳) 成文堂)

Zehr, H.: Gohar, A. 2003 "THE LITTLE BOOK OF Restorative Justice" Good Books

ギアーツ、クリフォード 1999 『ローカル・ノレッジ 解釈人類学論集』 梶原景昭・小泉潤二・山下真司・山下淑美 岩波書店

グディ、ジョー 2011 『これからの犯罪被害者学_被害者中心的司法への険しい道』 西村春夫(監訳) 成文堂

黒田信一郎 1984 「文化進化論」『文化人類学15の理論』綾部恒雄(編) 中央公論社 pp.1-18

千野帽子 2017 『人はなぜ物語を求めるのか』 筑摩書房

千葉正士 1999 「多元的法体制」『法社会科学ジャーナル43』 pp.25-34

長谷川寿一 2015 「共感性研究の意義と課題」『心理学評論58(3)』 pp.411-420

ブレイスウェイト、ジョン 2008 『修復的司法の世界』 成文社
H・ターガー=フラスバーグ、S・バロン=コーエン、D・コーエン 2007 『心の理論—自閉症の視点から(上)』 田原俊司(訳) 八千代出版

マリノウスキー、B 1984 『未開社会における慣習と犯罪 付文化論』 青山道夫(訳) 新泉社

ロバーツ、サイモン 1982 『秩序と紛争 人類学的考察』 千葉正士(監訳) 西田書店

和田安弘 2012 『紛争と共感のリアリティ』 大阪公立大学共同出版会

和田仁孝 2010 「ナラティブの交錯としての紛争」『質的心理学フォーラム』 pp.37-45

Enablers and Constraints of Localized Climate Financing: The Case of a Second-tier City in the Philippines



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地球温暖化の阻止は地球レベルの問題だが、そのためには地域レベルの地道な実践の積み重ねと、そのための資金が欠かせない。フィリピンにおける中規模都市を例に、必要な資金の確保を可能にする方策を探った。

Abstract

This paper aimed to identify the most pressing concerns in attaining financing readiness for climate compatible development in Cagayan de Oro City, a second-tier city in the Philippines. It employed a participatory methodology that incorporated local expertise, stakeholders' experiences and perceptions, preconditions for ensuring an effective design of climate change compatible development measures in Cagayan de Oro City. Specifically, it adopted the science-based stakeholder (SBS) method involving all relevant stakeholders throughout the stages of the research. Despite the existence of strategic plans, existing policy measures and financing schemes to address climate change compatible development in the city, the existing gaps between the types of projects needed by the city and the ability to access funds resulted to a limited or lack of implementation of these plans and improvement of the existing measures. At the local government level, there are several constraints in financing a more programmatic climate change compatible development in the city. Nonetheless, there are new emerging initiatives by government agencies, non-government and private institutions in the city that are currently being promoted.

Keywords

climate financing, climate change compatible development, climate finance readiness

Introduction

The United Nations Framework Convention on Climate Change (UNFCCC) has reached near-universal membership recently as 197 countries ratified the Convention calling themselves, Parties to the Convention during the Paris Agreement last November 4, 2016. The central aim of the Paris Agreement is to further reduce global temperature to 1.5 degree Celsius and to strengthen the global ability “to deal with the impacts of climate change”. Also, it “requires all Parties to put forward their best efforts through “nationally determined contributions” and to strengthen these efforts in the years ahead” (UNEP, 2017).

One of the mechanisms pointed out in those meetings and the Convention is new financial flows to support actions and efforts by developing countries and

most vulnerable countries in line with their respective national objective to contribute to the progress towards the goal set in the Convention and in the Paris Agreement. In 2009, the Copenhagen Accord prescribed that climate policies and actions in developing countries should be supported with USD100 billion per year of new and additional public and private finance by 2020 (GIZ, 2013). Since then, a number of concepts have stressed the need for climate finance readiness (Saito, 2013).

Climate finance readiness relates to harnessing existing national climate finance relevant capabilities and skills within a political system, and seeking to build on these. It refers to the people and expertise, or the ‘know-how’ that exists in country to access and program climate finance (Bécault, Koenig, and Marx 2016).

GIZ, another global key player that works on behalf

of the German Federal Ministry for Economic Cooperation and Development (BMZ) and the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), identified key areas for climate finance readiness. The GIZ approach 'Ready for Climate Finance' identified areas that are key in dealing with climate finance: strategic planning and developing policies; strengthening institutions and good financial governance; accessing international climate finance; effective and transparent spending and implementation and promoting private sector engagement. They are often also used for designing a climate finance readiness roadmap which describes current capacities and outlines further capacities needed to make more effective use of climate finance (GIZ, 2013).

There has been a growing realization that enhancing the effectiveness and the distributive fairness of international climate finance to developing countries will depend on the greater availability of a variety of financing resources especially the most vulnerable ones, to absorb, manage, and implement money flows (Bécault et al., 2016). In response, many international funds have been made available for developing countries through bilateral, multilateral and private sources. The Green Climate Fund (GCF), established in 2010 is also expected to channel a significant part of these resources. International discussions have begun to focus on national institutions directly accessing international funds.

Prevailing literature on 'climate change finance calls for attention to the local aspects of climate change. The local dimension of climate finance is important not only because of the intrinsically local nature of climate change vulnerability, but also because of the critical role of local practitioners in achieving effective results on the ground. A localized response should emanate from local knowledge and experience. It should include the participation of all sectors vulnerable to the impacts of climate change (UNDP, UNCDF, & UNEP, 2013).

Localizing climate compatible development is particularly a major challenge in many cities around the world (Fuchs, Conran, & Louis, 2011; GIZ, 2013; D. Roberts & O'Donoghue, 2013; The Nature Conservancy

Climate Change Program, 2012; UNDP et al., 2013). Cities are hubs of economic growth and innovation, rising emissions and significant climate change vulnerability (Tasan-Kok, Tuna; Stead, Dominic; Lu, 2013). These trends are particularly pronounced in Asian second-tier cities, making climate change a priority for their sustainable urban development (Bierbaum & Zoellick, 2009; Golub & Toman, 2016; Harrison et al., 2013; Satterthwaite, 2011). Thus, cities need to focus on the prioritization, programming and financing of climate change interventions in order to sustain economic growth (D. Roberts & O'Donoghue, 2013). Without these, the environmental degradation will negate the economic gains (Noble et al., 2014). There are three major pillars of readiness to financing climate compatible development at the local level. These are: enabling institutional environment, improved delivery of climate finance and effective and equitable local planning and budgeting (UNCDF-UNEP-UNDP, 2013).

In common with many second-tier cities, Cagayan de Oro City, an emerging growth center in Mindanao, Philippines faces pressing climate change concerns. To determine the climate financing readiness of the city and the most pressing concerns associated with it, this paper based the evaluation on the 2012 UNDP pillars employing a participatory methodology that incorporated local expertise, stakeholders' experiences and perceptions, preconditions for ensuring an effective design of climate change compatible development measures in Cagayan de Oro City. Specifically, it adopted the science-based stakeholder (SBS) dialogue methods involving all relevant stakeholders throughout the stages of the research (Welp, de la Vega-Leinert, Stoll-Kleemann, & Jaeger, 2006).

Objective of the Study

This paper aimed to identify the most pressing concerns in attaining financing readiness for climate compatible development in Cagayan de Oro City, a second-tier city in the Philippines. Specifically, it examined the risks and vulnerabilities experienced in city, identified the adaptation options of the city; and adaptation and mitigation programs, activities and projects at

the barangay level (PAPs); analyzed potential innovative financing sources for climate change in the city and lastly, discussed the major financing enablers and constraints.

Methodology of the Study

This research is guided by the premise that science-based stakeholder (SBS) dialogues are the most appropriate approach for accessing specific data and knowledge and for communicating results and achieving policy impacts. SBS dialogues are structured communication processes linking researchers with societal actors, such as representatives of governments, non-government organizations (NGOs), private sector and the wider public. Stakeholders possess knowledge needed by researchers to better comprehend, represent and analyze problems (Welp, et al., 2006). A stakeholder is defined as a person or a group who has a stake or special interest in an issue, problem, program, policy or a project (Freeman, 1984; Harrison and Qureshi, 2000). There are other types of stakeholder oriented dialogues other than science-based stakeholder dialogues. These are 'policy dialogues', 'multi-stakeholder dialogues for governance' and 'corporate dialogues' (Welp, et al., 2006).

The SBS dialogue as a methodology can be helpful in analyzing the climate change compatibility development needs and gaps and informing the identification of suitable options and the discussion of strategies for its effective and efficient operationalization (Kirchhoff et al. 2013; Moss et al. 2013; Weichselgartner and Kasperson 2010). The rationale is that stakeholders are the legitimate source of salient information and can make better-informed decisions on how to prepare and respond to climate impacts (Cash et al. 2006; Jacobs et al. 2010).

The SBS methodology for this research composed on workshops applying the World Café Technique, focus group discussions (FGDs) and structured interviews to attain a communicative process of linking the research with selected stakeholders in all sectors of the city. Three major workshops from September 2015 to January 2016 were conducted. The first two workshops in September 2015 were initiated for various stakeholders

involving representatives from international and local NGOs, agricultural sectors, business, industry utilities sector, academe, environmental groups, indigenous people's groups, religious groups, homeowners and youth organizations. The first workshop started with lectures on mainstreaming climate change adaption and mitigation in the city. Resource speakers discussed to stakeholders the various topics on global, national and local situations on climate related events, climate change adaptation and mitigation projects and policies in the Philippines and globally. The discussions were intended to enable the stakeholders better understand the different perspectives, resources, possible scenarios for successful adaptation and mitigation, which are of great importance in reversing or halting climate change related challenges in the city.

From the first workshop, participants were then asked to identify the mitigating and adaptive measures to address the risks and reduce the adverse effects of climate change in the city. They were asked to rank the all the identified measures through pairwise-preference ranking. This tool is employed to set priorities between different options available. In this tool, each individual item is compared directly against other options so as to emerge with a ranking from highest to lowest.

The second workshop for these group of stakeholders involved stakeholder analysis in assessing the importance and influence of these key players on the implementation of the identified climate change mitigation and adaptation projects that must be prioritized in the city.

The third workshop was conducted in January 2016 involving national, regional and local government officials. In this workshop, discussions on climate change planning, program and project implementation and climate financing issues were discussed and presented.

The major results from the three workshops were validated through a public forum in April 2016. Three major FGDs composed of eight (8) to twelve (12) participants were also conducted from October 2016 to June 2016 involving policy makers and sectoral representatives. The inclusion of quantitative research methods through descriptive analysis of existing secondary data validated the results of the qualitative methods.

Results

1 *Cagayan De Oro City: A Situationnaire*

Philippines has four elected administrative divisions. Autonomous region is the highest division followed by provinces and independent cities, then municipalities; and the lowest division is the barangays. Governor is the chief executive of the autonomous region, provinces and municipalities. Heads of the cities and barangays are mayors and barangay captains, respectively.

Cagayan de Oro City is a 1st class highly urbanized city in Northern Mindanao.

Cagayan de Oro is geographically situated between the central coastline of Macajalar Bay to the north and the naturally lush plateaus and mountains of Bukidnon and Lanao del Norte to the south. The municipality of Opol bounds the city on the west side while Tagoloan, with its heavy industrial activities is her immediate neighbor to the east.

The city has a total land area of about 462 square kilometers. Eighteen percent of the area is urban while 82 percent is rural. It is administratively divided into 40 urban and 40 rural barangays. Originally, the so-called urban barangays were referred to as “Poblacion” identified as the central business district of the city. This is no longer the case, as 57 barangays have already been classified as urban in 1994.

In 1975, the city barely had 338 persons in every square kilometer. Through the years, the steady population increase consequently made the city denser at 872 persons per square kilometer in 1995. Apparently the more densely settled part of the city is its core central business district which consists of 40 barangays and 17 adjoining urbanizing barangays next to it. These barangays occupy only 20% of the entire city, yet 82% of its population is concentrated here at 3,519 persons per square kilometer in 1995. Owing to this, these barangays are now classified urban. The remaining 23 barangays with an average density of 203 persons per square kilometer are rural in classification. As of May 2010, the total population of the City is 602,088 and population density of the urban barangays has risen to 5,343 per square kilometer.

The city-level external sources of income are

declining for the past three fiscal years. The large bulk of this funding comes from the internal revenue allotment (IRA), constituting more than 75% of the external source of income. The rising local sources of revenue are due to the tax collected from the businesses and property. The sprouting establishments covering the central business district and the recent expansion in the uptown (Upper Carmen) area and the rising number of landmarks and subdivisions are reasons of the appreciation of the value of the land and increased the collection of taxes.

Table 1. Socio-economic Profile of Cagayan de Oro City

Characteristics	Figures
Population (2010)	602, 088
Employment Rate (2015)	93.4
Number of Generated Establishments (2014)	10,615
No. of Corporations Registered (2014)	421
Stock	219
Non-Stock	154
Partnership	48
Tax Revenue in Million Pesos (2014)	1,431
Annual Investments in Infrastructure in Million Pesos (2014)	468

Source: City Treasurer's Office, 2010-2015

The process by which the increase in the number and the proportion of people living in the city as well as the increasing volume of commercial industries have paved to increasing urban development in the city.

As the city grows, several nodes began to emerge. The presence of big commercial establishments in the previously contiguous areas comprising the present Central Business District is now the new major urban center of the City, while southwestern part of the city, especially around Pueblo de Oro, a new nodal point has emerged. Several smaller nodes are also developing at western parts.

The increase in the size of land area occupied by urban settlements and commercial and industrial activities has not only brought about numerous positive impacts but also share of disadvantages as well. These have contributed to its increasing urban growth but with adverse social and environmental challenges, such as

urban poverty, various forms of pollution, vulnerabilities to natural events and climate change impacts. The negative and unsustainable outcomes of this current urban growth in the city have become more visible and gained more attention more recently. These are discussed in the succeeding sections.

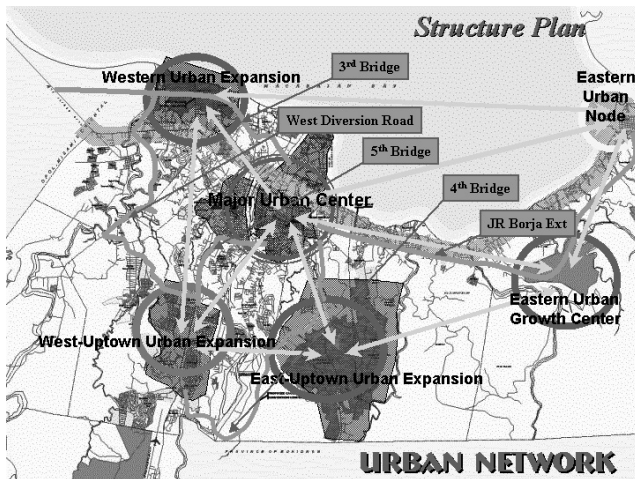


Figure 1. Cagayan de Oro City Urbanization Structure

Source: Comprehensive Land Use Plan Map, Cagayan De Oro City Government

2 Risk and Vulnerabilities Experienced in Cagayan de Oro City

The city is vulnerable to various hazards. Out of 80 barangays, 54 barangays are considered flood-prone areas and 25 barangays are prone to rain-induced landslide. Coastal barangays are possible threat to storm surge should future occurrences take place, seven barangays are prone to earthquake, liquefactions will like be experienced by 45 barangays; and 15 barangays are prone to earthquake-induced landslide. Figure 2 shows the multi-hazard risk map of Cagayan de Oro City.

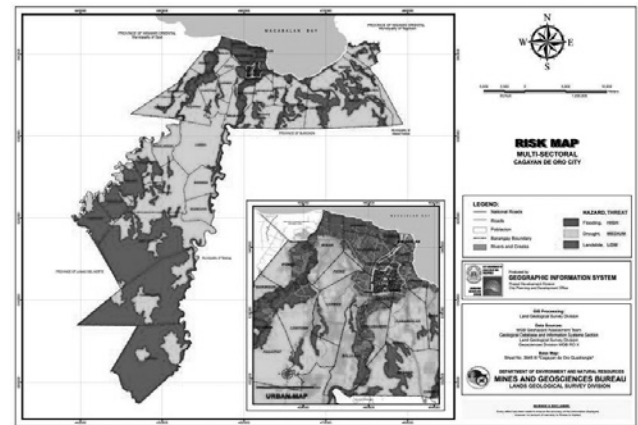


Figure 2. Multi-Hazard Risk Map of Cagayan de Oro City

Source: Comprehensive Land Use Plan Map, Cagayan De Oro City Government

3 Priority Climate Change Mitigation and Adaptation Measures Identified by Stakeholders

Five evident responses emerged as mitigating measures in addressing climate change in the City as shown in Figure 3.



Figure 3. Priority Measures for Climate Change Mitigation in Cagayan de Oro City

Source: City Government of Cagayan de Oro

Stakeholders during the first workshop shared their observations on policy formulation and policy implementation in the city. They observed many existing well-designed policies formulated at the national offices but not fully executed at the local level, more so at the

barangay level. They cited the Clean Air Act. Under Clean Air Act of 1999 (RA # 8749), the Integrated Air Quality Improvement Framework will be used as an official blueprint for which all government agencies must comply to attain and maintain ambient air quality standard. Local government units (LGUs) should assist Department of Environment and Natural Resources (DENR) to prepare and develop action plan consistent to the Framework. Also, LGUs should develop and submit to the DENR a procedure for carrying out the action plan for their jurisdiction. DENR, in coordination with other concerned agencies, should monitor the list of hazardous air pollutants with corresponding standard emission necessary to protect general welfare of the population. However, the well-drafted RA 8749 has not been translated into significant and measurable results. In line with the existing laws are the compliance on proper solid waste management and sustainable ecosystem practices through greening programs.

No matter how small the country's CO₂ emission, with only 0.31% of global emission from 1999 to 2010 (Department of Energy (DOE), 2018), the Philippines is one of the vulnerable countries that have insignificant adaptive and mitigating measure against climatic hazards. As most respondents of the workshop observed, carbon emission is increasing with population due to rising demand for transportation, power, food buildings, goods and services. Stakeholders suggested that reduction of carbon emission may be attained by increasing the utilization of various types of untapped renewable energy of the country. However, the costs of extracting power from renewable energy is expensive. In other countries, the government subsidizes companies using solely on green energy. For this reason, coal plants will continue to dominate the source of energy. The Department of Energy (2018) accounts that an average coal-fired power plant in the country emits 0.97 tons of carbon dioxide per megawatt hour (MWh). This is equivalent to the emission of 2,235 miles of driving. While the country has large potential supply of renewable energy like wind, solar and geothermal, these sources of energy emits low carbon dioxide (CO₂) that vital to our country's fight against climate change. In the

case of geothermal energy, it only emits 0.09 tons of CO₂ per MWh that is equivalent to 225 miles of driving.

On the other hand, stakeholders pointed out structural and non-structural measures as adaptive response to climate change (Figure 4). Structural measures are any physical construction to reduce vulnerability to possible adverse impact of climatic hazards. Usually, they involve application of engineering techniques or technology to achieve resistance against climatic hazards. Participants suggested building structures to improve facilities for emergencies. Structural measures that must be considered for long-term adaptation involved the relocation sites with sustainable community development plan. Structural measures seem to be durable adaptive measures, but these measures work well with non-structural measures.

As stressed by de Graaf, et al. (2009), structural measures alone cannot evolve with development at they require high investments. In terms of adaptive strength, non-structural measures are relatively cost-efficient measures. Non-structural measures involve policy creation specific for different types of climate hazards and risks. For the Philippines, policy makers must make use of legislation drawn from executive briefings of the Senate Committees on Environment and Foreign Relations, the House Committee on Ecology, Department of Environment and Natural Resources, National Economic and Development Authority; and Departments of Trade and Industry, specifically the Board of Investments.

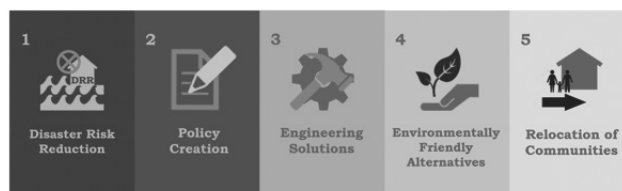


Figure 4. Priority Measures for Climate Change Adaptation in Cagayan de Oro City

Source: City Government of Gagayan de Oro

For most participants, mainstreaming these measures as part of the Local Climate Change Management

Plan of the City is extremely important. Improving the capacity of private and public sectors means providing technical training courses on greenhouse gases (GHG) emissions inventory and Clean Development Mechanism (CDM) – related training courses. Information, education and communication (IEC) is another essential component for mainstreaming climate resiliency. This medium can be very effective intervention to bring about appropriate changes in behavior, especially among vulnerable groups like communities living near river, coast or areas prone to natural hazards. Information materials include primer on climate change, fact sheets on climate change, production of a video clip on climate change; and public announcement about coming typhoons and any threats against climatic hazards.

A second workshop for these group of stakeholders involved stakeholder analysis in assessing the importance and influence of these key players on the implementation of the identified climate change mitigation and adaptation projects that must be prioritized in the city. Responses of the workshop participants were tallied in the Importance versus Influence Matrix. An Importance versus Influence Matrix was designed to map out stakeholders. It generated insights on the importance and influence of each stakeholder. The Importance Field identifies the prioritized stakeholders in satisfying the Cagayan de Oro City's climate change adaptation and mitigation needs. Whereas, the Influence Field refers to the power a stakeholder has to facilitate or impede the achievement of the responses to address the needs for climate change adaptation and mitigation. This is also the extent to which the stakeholder is able to persuade others into making decisions and following a certain course on action. During the second workshop, all the stakeholders were asked to identify and assign ranking on the most important and most influential stakeholders based on a set of criteria. These criteria are legal hierarchy, authority of leadership (formal, informal, charisma, political, familial or connections), control of strategic resources, possession of specialist knowledge and skills, negotiating position (strength in relation to other stakeholders). For informal interest groups and primary stakeholders, the following criteria

were also considered: social, economic and political status, degree of control of strategic resources, informal influence through links with other stakeholders and degree of dependence on other stakeholders.

After the Importance versus Influence Matrix was completed, it became clear who were the ideal stakeholders that will have both a strong influence and high influence in addressing the needs for climate change adaptation and mitigation in the City. The responses were analyzed and transformed into a Venn Diagram for Stakeholders' Degree of Importance and Influence (Figure 5).

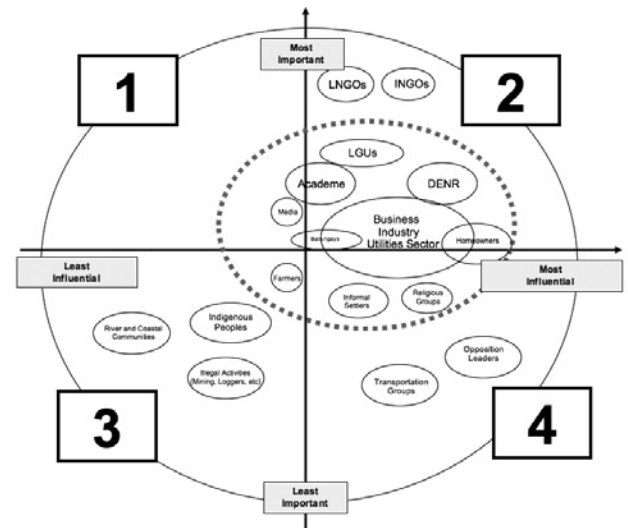


Figure 5. Venn Diagram for Stakeholders' Degree of Importance and Influence

Source: Workshop on Stakeholder Analysis

Two circles distinguish stakeholders: primary stakeholders (those who have the major role in addressing climate change adaptation and mitigation needs of the City) are represented inside the dotted oval. The wider context of stakeholders is represented by the larger oval.

Two axes (importance/influence) divide the diagram into four areas: Sector 1 are those who are most important in addressing the climate change adaptation and mitigation needs. These are primary stakeholders who are important but not so influential actors. They can be tagged as the “Outsiders”, usually they are the local and international NGOs. Sector 2 involves those who are

influential in responding to the needs, the “Primary Stakeholders”. These are the local government units (LGUs) including barangay leaders, major government regulatory body through the Department of Environment and Natural Resources (DENR), academe, business, industry and utilities sectors and homeowners. Sector 3 are those stakeholders who cannot influence the achievement of the needs but are considered primary stakeholders as their statuses are negatively affected. These involve the vulnerable communities located in the river banks and coastal areas as well as the people involved in illegal extractive activities. Sector 4 are those stakeholders who can influence but will lose from the implementation of climate change adaptation and mitigation projects. This is an important area to consider, as it will include those who actively oppose the achievement of climate change adaptation and mitigation projects. The examples include “External Factions” of local leaders who are among the primary stakeholders opposed to change their current ways of conducting their activities and the opposition groups who are against the current local government administration.

4 Adaptation and Mitigation Programs, Activities, and Projects (PAPs) in Cagayan de Oro City

4.1 Climate Change Mitigation Priorities of the City

Anent to the Climate Change Act of 2009, the Local Climate Change Action Plan was designed as a standard approach for cities and municipalities development planning framework such that their urban plans and designs are climate-sensitive. The local government units (LGUs) were tasked as the frontline agencies in the formulation, planning and implementation of climate change action plans in their respective areas, consistent with the provisions of the Local Government Code, the Framework, and the National Climate Change Action Plan.

In 2012, Cagayan de Oro City became the recipient of the Commission on Climate Change and the United Nations Development Program (UNDP) for two projects on climate change mitigation and adaptation that would build up the capacities of local government units (LGUs) to prepare for natural disasters as well as lower greenhouse gas (GHG) emissions. Funding support for

the mitigation project is valued at P32 million (\$750,000) from the European Union and the governments of Germany (through the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety or BMU) and Australia (through the Australian Government Overseas Aid Program).

The mitigation projects were aimed at reduction of emissions in the industry, transport, waste, and agriculture sectors. It will establish the national system for the preparation of greenhouse gas (GHG) emission inventories; formulate Nationally Appropriate Mitigation Actions (NAMAs) and Low Emission Development Strategies (LEDs); and develop Monitoring Reporting Verification (MRV) systems to support implementation and evaluation of these mitigation actions.

In 2014, the Cagayan de Oro City Mayor Oscar Moreno was among the 18 city mayors who joined the country’s “Compact of Mayors”, a global coalition of city leaders committed to save Mother Earth. The coalition was launched on November 12, 2014 as an effort to cut greenhouse gases (GHG) emissions for cities in the Philippines. The City Solid Waste Management Division was tasked by the City Government implement new initiatives focused on the closure of the main dumpsite in an open landfill in Barangay Carmen, Cagayan de Oro City. The City Solid Waste Management Division reported that the landfill is a major contributor of methane gas emission. However, seventy percent (70%) of the total-energy related carbon emissions in cities can still be attributed to factories and transportations in Cagayan de Oro city.

The City has yet to come up with a systematic mitigation and adaptation commitments within the next three years which include public reporting of emissions inventory and the climate hazards, emissions reduction target and the climate vulnerabilities and its climate change mitigation and adaptation plan.

4.2 Climate Compatible Plans and Policies Implemented in Cagayan de Oro City

The role of Cagayan de Oro City in promoting a more climate sustainable city involves the city decisions that rests upon its local government. Understanding how the

city economy and politics function and how the city is connected to the larger economy (regional, national, global) is also fundamental to understanding how to create institutional mechanisms towards a climate sustainable economy.

There can be several local financing options to address climate change programs. Financing climate change adaptation and mitigation are explicitly incorporated in the Comprehensive Land Use Plan (CLUP) and funds can be sourced from National Disaster Risk Reduction and Management Plan (NDRRMP), practices and ingenuities from the community; and non-property tax sources. Sources of funding for climate change programs and activities are presented in the National Disaster Risk Reduction and Management Plan (NDRRMP). This plan fulfills the requirement of RA No 10121 of 2010, which provides the legal basis for policies, plans and programs to deal with disasters.

Other sources would be local user fees, development charges, tax incremental financing, energy performance contracting, green bonds, crowdfunding, bonus programs and procurement; and tax abatement schemes. These schemes incentivize climate friendly behavior; all-inclusive contribution to climate friendly development by stimulating private and commercial investment; financing equipment and structures that are energy saving; granting loans to finance “green” projects; and individual initiatives through citizens’ voluntary investment (Department of Interior Local Government, 2011).

4.3 Climate Change Adaptation and Mitigation Programs, Activities, and Projects (PAPs) at the Barangay Level

This section identifies the actions taken by various communities in Cagayan de Oro City who prepared specific plans for adaptation. The full suite of potential policy responses is being attempted across the plans reviewed.

The barangay is considered the closest to the people in terms of access and proximity. Enhancing PAPs on climate change adaptation and mitigation will allow a barangay to gain benefits that will eventually be of

advantage to its constituents. Also, the constituents themselves may be tapped by the barangay as partners in the implementation of PAPs. In doing so, there may be three major benefits gained by the barangay. First, the barangay would be able to raise their own revenues for climate change related priorities. Second, the barangay would be able to institutionalize climate change adaptation and mitigation PAPs. Third, the barangay would be able to create self-sufficient communities that are able to implement better strategies and practice participative governance, thus realizing the promise of decentralization.

Table 2. Sectoral Allocation of the BDF in Cagayan de Oro City

BDF Budget	District 1	District 2	Average
Social Sector	15%	14%	14%
Economic Sector	8%	7%	8%
Infrastructure	58%	71%	65%
Environment	4%	3%	4%
Local Governance	15%	5%	10%
Total	100%	100%	100%

Source: Various Barangay Development Plans

If the allocation of barangay funds is a measure of the prioritization of barangay projects, it would be fiscally interesting to ask: How much does a barangay currently allocate for climate change as a percentage of its Barangay Development Fund (BDF).

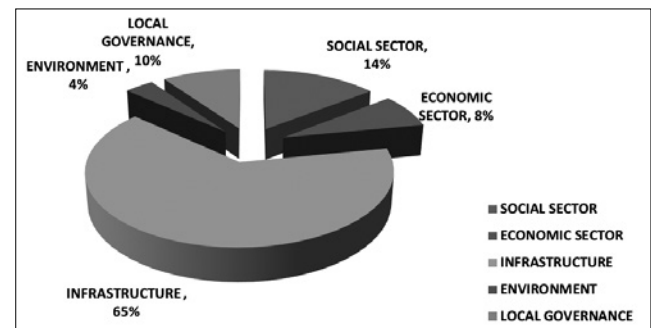


Fig. 6. Sectoral Allocation of the BDF in Cagayan de Oro City

Source: Barangay Development Plans

In practice, the BDF is sectorally appropriated based

on the following: social, economic, infrastructure, environment and local governance. In Cagayan de Oro City, Infrastructure has the biggest allocation among all sectors at 65% on the average. Unless these infrastructure PAPs are justified by the barangays, their spending patterns will simply become fiscally suspect.

From these sectoral allocations, one would expect climate change adaptation and mitigation PAPs to fall under environment. From the forty-seven (47) barangay BDFs in Cagayan de Oro, only one Barangay has explicitly appropriated for climate change adaptation and mitigation PAPs. One has to carefully classify these PAPs from the list under environment sector. In some barangays, a number of these PAPs are found under infrastructure. What is disturbing in the figures is that not all barangays provide appropriation for the environment PAPs. In fact, 20 out of 47 barangays have zero appropriation for the environment. Nonetheless, some programs related to the environment were placed under other sectors. The details are shown in Table 3.

Table 3. Percentage of Barangay Development Fund Appropriation for Environment Sector in Barangays in Cagayan de Oro City in Fiscal Year 2015

Percentage to BDF	District 1	District 2
Zero Budget	5	15
1-5 %	4	11
6- 10 %	0	6
11-15 %	1	1
16-20 %	0	0
21-25 %	0	2
26-30 %	0	0
31-35 %	0	0
36-40 %	1	0
41-44 %	1	0
Total	12	35

Source: Various Barangay Development Plans

The fact that some barangays do not allocate any amount for the environment goes to prove that this sector is not a priority. The picture becomes even more problematic when the barangays with environment allocations are disaggregated into PAPs. This raises

questions on whether or not barangays really understand what environment outcomes it should achieve. Some barangays even allocate funds for PAPs that have nothing to do with environment sector.

On a positive note, though climate change adaptation and mitigation PAPs are not specifically categorized and minimally appropriated, a number of barangays have identified them as priority PAPs under the environment sector.

In light of the foregoing, it becomes imperative to direct more efforts to help barangays to develop responsive barangay development plans especially under the environment sector which has been least prioritized. The first intervention that needs to be done is for responsible government institutions to help barangays redefine barangay development plan and the appropriate PAPs that must comprise it.

A second intervention would be to help barangays make use of their legislative authority to generate funds on environment-enhancing PAPs that would guarantee long-term gains. The barangay's role in maintaining environmental integrity is often delimited because most of its BDF is spent on infrastructure, with little money left for other devolved responsibilities. With no prospect of an increase in both external sources of revenues, barangays continue to suffer from financial difficulties, spending a measly amount on different sectors especially on environment.

According to some barangay officials, their compliance in spending more on infrastructure programs is based on a Joint Memorandum Circular being prescribed by the Department of Budget and Management (DBM) and the Department of the Interior and Local Government (DILG) which mandates them to appropriate their BDF mostly on infrastructure development. However, a joint Circular issued in April 13, 2011 by the DILG revised the earlier recommended appropriation and mandated that at least twenty percent should be appropriated on development projects. It also identified priority PAPs. Unfortunately, many barangays fall short on the recommended appropriation for the environment sector prioritized PAPs.

5 Potential Innovative Financing Sources for Climate Change in Cagayan de Oro City

5.1 Climate Financing in the Philippines

In 2009, Climate Change Act was passed as a response to the vulnerability of the Philippines to the adverse effect of climate change such as rising sea level, changing landscapes, long and unpredictable droughts and storms which lead to consequential climate-related illnesses and diseases. On the other hand, the Act signifies Philippines' strong commitment to the ultimate objective of the United Nations Framework Convention on Climate Change and Hyogo Framework for Action. To intensify and strengthen the various program and projects for climate change adaptation and mitigation, People Survival Fund (PSF) was added to the new Republic Act No. 10174 in 2012.

The Act mandated all relevant agencies and LGU to allocate from their annual appropriations adequate funds to execute the climate change action plan at their level. It should include adaptation programs and projects are identified through risk and vulnerability assessments done in the locality. These assessments are component of the Enhanced - Comprehensive Land Use Plan and the Local Climate Change Action Plan.

PSF is a special fund in the National Treasury for financing of adaptation programs and project based on the National Strategic Framework. The PSF Board was lodged under the Commission who is chaired by the Secretary of the Department of Finance.

The opening balance of PSF under the General Appropriations Act is one billion pesos (P1,000,000.00) and shall not be less than the opening balance. This amount may be increased as the need arises, subject to the review and evaluation by the Office of the President and Department of Budget and Management (DBM). However, the fund shall not be used to fund personal services and other operational expenses of the Commission.

In the Philippines, the common sources on various actions to address adverse effect of climate change are deliberately part of the Philippines' legislature. Given the clear and symmetric avenue to finance response to climate change, there are gaps between expectations

and realities. To date, Cagayan de Oro city has not accessed this financing option.

5.2 Local Government Initiated Financing Schemes

On September 2012, the City Government signed the Memorandum of Agreement for the CdeO Ecobag Project together with City Local Environment and Natural Resources Office (CLENRO), City Social Welfare and Development (CSWD), Community Improvement Office, the Department of Trade and Industry - Region 10, Department of Environment and Natural Resources (DENR) - Region 10, Oro Chamber and major malls and supermarkets. The initiative is a program following City Ordinance No. 12395-12. This is aimed at encouraging sound environmental policies and practices, promoting through environmental cooperation and commitments made by the parties. This also aimed to facilitate cooperation between the parties in the production, distribution and sale of the CdeO ecobags and to help provide livelihood to Tropical Storm Sendong survivors.

After two months, City Ordinance No. 12240-2012 was signed, effective immediately which required establishments to collect a pass-through charge to customers equivalent to P1 for every carryout plastic bag they will use. Customers can avoid the charge if they will use recyclable shopping bags, or purchase the reusable ecobag that is promoted by the city government. All establishments are required to remit the proceeds of the carryout bag fee to City Hall within 10 working days every month. The collection is intended to discourage the use of non-biodegradable materials. The proceeds will be used to help finance the rehabilitation and reconstruction programs for the victims of Typhoon Sendong.

5.3 Private Sector Initiated Financing Schemes

A most recent financing innovation in the city initiated by the members of the Cagayan de Oro River Basin Management Council (CDORBMC), lead by the the Xavier University is the payment for ecosystem services (PES) for Mt Kalatungan and Mt Kitanglad which was launched in 2015.

The PES mechanism focuses on rewards (rather than

payment) of good ecosystem management practices of the IPs (Bukidnon, Higaonon and Talaandig). The fund which will be managed by Land Bank of the Philippines (LBP) serves as the repository in which all forms of incentive, payment, donation, compensation will be coursed through and directed to the various beneficiaries. These beneficiaries are predominantly tribal forest guardians and cultural experts, where contributions toward resource management and nature conservation, ecosystem-based adaptation and non-destructive livelihoods are critical in sustaining provision of ecosystem services for the CDO river basin downstream communities.

PES program also aims to change mindsets to enable the transformation of behaviors and attitudes of the local government, private sector and the public particularly schools in Bukidnon province.

The PES design mechanism involves a major initiative for a Joint Sellers and Buyers where ecosystem service providers and buyers agree on amount of payment, payment mechanism and monitoring system. One major area settled among sellers and potential buyers as explored during series of CDORBMC meetings is seeking Xavier Science Foundation as the Fund Manager. Thus, from buyers who will be financially providing for the various IP communities, Xavier Science Foundation will serve as the collecting and disbursement agent. The step-by-step procedures of collection, recording and disbursement, however, are yet to be formulated and designed upon final commitment of buyers.

5.4 International Financing on Climate Change Adaptation and Mitigation in Cagayan de Oro City

There are also several international sources of financing climate change adaptation and mitigation projects in the city. Some of the international funders are Japan International Cooperation Agency (JICA), Australian Agency for International Development (AusAID) and United States Agency for International Development (USAID), World Bank and Asian Development Bank. The bulk of projects financed by these multilateral agencies are mostly devoted in infrastructure projects (Bureau of Treasury, 2014).

6 Constraints on Plan Implementation for Climate Change Adaptation and Mitigation

6.1 Institutional Environment

Although many efforts at the city and barangay levels were implemented on programs and projects for the attainment of the local climate change plans, the gap analysis on stakeholders' perceived priority mitigation and adaptation programs and projects remain unmet in comparison to the current efforts. At the same time, although adaptation and mitigation programs and projects are important component of local response to climate change, its relative implementation have not been very significant and evident.

Much of the current programs and projects are planned at the national level. It will be particularly important that national policy makers pay attention to the articulation at the local level, with the national level conscious with the local level implementers who should have been involved in designing and monitoring of the implementation of the national plan locally. Only through new processes of shared learning, involving all of these actors, will lessons from climate change plan become implemented into local practice and governance.

At the barangay level, there are several constraints identified by stakeholders in implementation of climate change plans. First, the funds to implement barangay plans from Department of Interior and Local Government were not directly received by the respective barangays. The autonomy and authority that local government units have are influenced to a large extent by the country's policies on decentralization (UNCDF-UNEP-UNDP, 2013). In the case of the barangays, they have a significant amount of dependence to the decision making at the city government and tightly controlled by the national government authorities.

There is coordination failure as other stakeholders noticed funds from national agencies were transferred at the local and been used without the knowledge of the barangay council. Coordination failure may be attributed to the absence of comprehensive tracking system to identify and monitor all climate change projects of the city with financing coming from local, national,

international and all other types of organizations. There is also absence of climate change mitigation or adaptation markers within the local budget to indicate appropriations for climate change limiting the potential for budget or sectoral support mechanisms.

6.2 Delivery of Climate Finance

Designing financing schemes for climate change interventions should be aligned with existing expenditure program. The responsibilities of local governments is greater than their ability to raise taxes and as they are reliant on transfers from the national or regional government. This structure affected the way in which financial resources are used. In many instances, politics play a role in the allocation and access of the funds and resources. The political dynamics between the barangay and city and the city mayor and council intensifies the present frustrating life of the victims of the disaster. The political differences of the politicians affect the pressing needs and issues of the community.

The national government also has a more direct influence over the resources available for climate change by appropriating financing for specific climate change projects. The People's Survival Fund is an example of where this has been done. Local governments in partnership with NGOs and private organizations can make specific requests for projects related to climate change. However, there are several limitations on the capacity of LGUs to access the fund.

The concept of a voluntary PES has progressed very slowly and funds generated were quite low due to limited commitments. Negotiated transactions has proven to be quite complicated in cases where official endorsements from the LGUs are missing. A case in point, the lobbying organizations never progressed in getting endorsement for the proposed inclusion of the PES in local taxation. As a result, PES intervention has become overtly voluntary, in many cases commitments were temporary.

Finally, climate financing sourced from multilateral agencies are implemented by the national government and the trends shows that it has not been effective in delivering its goals, that is, improving the situation of

many climate change vulnerable sectors in the country. In comparison with other developing countries, the Philippines fared low in its use of climate financing to address development needs. Many of the issues redound to massive corruption at all levels, inefficiency of the implementation process and crosscutting issues of budget and management problems of the country (ADB, 2014).

6.3 Local Planning and Budgeting

As discussed above, the autonomy of the local government to decide upon their budgets is influenced by the decentralization and the structure budgetary appropriation. Where local governments have the discretion to appropriate the budget and the financial means, their ability to implement programs and projects will increase. However, in the city, the typhoon affected areas were given more attention while there were other areas that have never been affected by major calamities that have never been improved.

Several reasons were also pointed out by the stakeholders resulting to the existence of these gaps which may be divided into political situation in the city, governance and the misrepresentation of the most vulnerable groups.

Political situation in the city is heightened by political boundaries; political crisis in terms of the impending suspension and termination of the incumbent City Mayor and division/factions in the City Council; weak partnership between the LGU, NGOs, private sectors and academe; low prioritization of climate change mitigation and adaptation projects and programs.

Very often, the role of politics is often intangibly framed in terms of the strength of the local leaders' "political will" for reform. This challenge in governance is manifested in terms of absence of Climate Change Committee/Council in the City; under-prioritization of climate change agenda in Barangay/Community Level; budget allocation gap and incapacity to access and manage funding.

Conclusion

Cagayan de Oro City has established climate change

strategies and priority areas for adaptation and mitigation. There are increasing climate financing options and instruments which the city can successfully tap both domestic and international climate fund sources if the priorities are identified and financial readiness is well articulated. Despite the existence of strategic plans related to climate change, there are gaps between the types of projects needed by the city and the ability to access funds resulting to a limited or lack of implementation of these plans.

At the local government level, there are several constraints in financing a more programmatic climate change compatible development in the city. First, the funds from national government were most predetermined. There is coordination failure as other stakeholders noticed funds from national agencies were transferred at the local and were inappropriately used. Second, much of the discussion on adaptation financing is around the limited capacity of local government units to access the different national and international funds and be familiarized of their funding procedures. In most cases, the incapacity of these funds to be accessed is in building the institutional, financial and political capacity to act, invest and govern well. Third is the weakness in the use of legislative authority to generate funds on environment-enhancing PAPs in funding projects at city and the barangay level. The scale of what they could achieve both at the city and barangay level would be enormously increased, and thus require far less external funding than conventional climate change adaptation plans. This can build local governments with more capacity and partnership with community organizations can improve the transparency. It also means local governments then can better use international funding to complement local resources, and international agencies can work with them more effectively. Lastly, climate change interventions and sustainable development go hand in hand. Climate change interventions in the city have to be treated as a co-benefit of the development initiatives.

Acknowledgement

The authors gratefully acknowledge support from

the Institute for Climate and Sustainable Cities, *Climate and Development Knowledge Network (CDKN)* and Germanwatch.

References

- 1) ADB. (2014). Development Finance and Aid in the Philippines. (November).
- 2) Ayers, J., Huq, S., Wright, H., Faisal, A. M., & Tanveer, S. (2014). Mainstreaming climate change adaptation into development in Bangladesh. *Climate and Development*, 6(4), 293–305. <https://doi.org/10.1080/17565529.2014.977761>
- 3) Bécault, E., Koenig, M., & Marx, A. (2016). Getting Ready For Climate Finance: The case of Rwanda, (September).
- 4) Bierbaum, R. M., & Zoellick, R. B. (2009). *Development and Climate Change. World Development Report 2010* (Vol. 326). <https://doi.org/10.1126/science.1183876>
- 5) Brown, a., Dayal, a., & Rumbaitis Del Rio, C. (2012). From practice to theory: emerging lessons from Asia for building urban climate change resilience. *Environment and Urbanization*, 24(2), 531–556. <https://doi.org/10.1177/0956247812456490>
- 6) de Graaf, R., van de Giesen, N., & van de Ven, F. (2009). Alternative water management options to reduce vulnerability for climate change in the Netherlands. *Natural Hazards*, 51(3), 407.
- 7) Department of Energy. (2018). <https://www.doe.gov.ph/energist/renewable-energy-all-filipinos>
- 8) Filho, W. L. (2013). *Climate Change Management: The Economic, Social and Political Elements of Climate Change. Journal of Chemical Information and Modeling* (Vol. 53). <https://doi.org/10.1017/CBO9781107415324.004>
- 9) Fuchs, R., Conran, M., & Louis, E. (2011). Climate Change and Asia's Coastal Urban Cities: Can they Meet the Challenge? *Environment and Urbanization Asia*, 2, 13–28. <https://doi.org/10.1177/097542531000200103>
- 10) Fussler, H. M. (2010). How inequitable is the global distribution of responsibility, capability, and vulnerability to climate change: A comprehensive indicator-based assessment. *Global Environmental Change*, 20(4), 597–611. <https://doi.org/10.1016/j.gloenvcha.2010.07.009>
- 11) Gaigne, C., Riou, S., & Thisse, J. F. (2012). Are compact cities environmentally friendly? *Journal of Urban Economics*, 72(2–3), 123–136. <https://doi.org/10.1016/j.jue.2012.04.001>
- 12) GIZ. (2013). *Ready for Climate Finance : GIZ ' s Approach to Making Climate Finance Work*. Bonn. Retrieved from <https://www.giz.de/expertise/downloads/giz2013-en-climate-finance-approach.pdf>
- 13) Golub, A., & Toman, M. (2016). Climate Change, Industrial Transformation, and ???Environmental Growth Traps??? *Environmental and Resource Economics*, 63(2), 249–263. <https://doi.org/10.1007/s10640-015-9949-2>
- 14) Harrison, P. A., Holman, I. P., Cojocar, G., Kok, K., Kontogianni, A., Metzger, M. J., & Gramberger, M. (2013). Combining qualitative and quantitative understanding for exploring

- cross-sectoral climate change impacts, adaptation and vulnerability in Europe. *Regional Environmental Change*, 13(4), 761–780. <https://doi.org/10.1007/s10113-012-0361-y>
- 15) Kumar, a, Pulwarty, R. S., Seyller, E. a, Ii, B. L. T., Washington, W. M., & Wilbanks, T. J. (2012). Hell and high water: Practice-relevant adaptation science. *Science*, 342(6159), 696–698. <https://doi.org/10.1126/science.1239569>
- 16) Lieske, D. J. (2015). Coping with climate change: The role of spatial decision support tools in facilitating community adaptation. *Environmental Modelling and Software*, 68, 98–109. <https://doi.org/10.1016/j.envsoft.2015.02.005>
- 17) McNeeley, S. M. (2017). Sustainable Climate Change Adaptation in Indian Country. *Weather, Climate, and Society*, 393–404. <https://doi.org/http://journals.ametsoc.org/doi/abs/10.1175/WCAS-D-16-0121.1>
- 18) Noble, I. R., Huq, S., Anokhin, Y. a., Carmin, J., Goudou, D., Lansigan, F. P., ... Villamizar, A. (2014). Adaptation Needs and Options. *Assessment Report 5- Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects*, 833–868. <https://doi.org/31> March 2014
- 19) OECD. (2013). *Investing Together*. <https://doi.org/10.1787/9789264197022-en>
- 20) Public, C., & Review, I. (n.d.). A METHODOLOGICAL GUIDEBOOK.
- 21) Report, C. A. (2013a). Status of Climate Finance in Indonesia, (August).
- 22) Report, C. A. (2013b). Status of Climate Finance in Status of Climate Finance in Vietnam, (August).
- 23) Roberts, B. H. (2014). *Managing systems of secondary cities: Policy responses in international development*. <https://doi.org/10.1016/j.jhg.2016.09.005>
- 24) Roberts, D., & O'Donoghue, S. (2013). Urban environmental challenges and climate change action in Durban, South Africa. *Environment and Urbanization*, 25(2), 299–319. <https://doi.org/10.1177/0956247813500904>
- 25) Saito, N. (2013). Mainstreaming climate change adaptation in least developed countries in South and Southeast Asia. *Mitigation and Adaptation Strategies for Global Change*, 18(6), 825–849. <https://doi.org/10.1007/s11027-012-9392-4>
- 26) Satterthwaite, D. (2011). How urban societies can adapt to resource shortage and climate change. *Philosophical Transactions. Series A, Mathematical, Physical, and Engineering Sciences*, 369(1942), 1762–1783. <https://doi.org/10.1098/rsta.2010.0350>
- 27) Sussman, E., Holmes, O. W., & Jus-, U. S. S. C. (2009). CASE STUDY ;, I.
- 28) Tasan-Kok, Tuna; Stead, Dominic; Lu, P. (2013). *Chapter 3: Conceptual Overview of Resilience: History and Context. Resilience Thinking in Urban Planning*. <https://doi.org/10.1017/CBO9781107415324.004>
- 29) The Nature Conservancy Climate Change Program. (2012). *Climate Finance Readiness: Lessons Learned in Developing Countries*.
- 30) UNCDF-UNEP-UNDP. (2013). Financing Local Responses to Climate Change Implications of Decentralisation on Responses to Climate Change. Retrieved from [http://asia-pacific.undp.org/content/dam/rbap/docs/Research & Publications/democratic_governance/RBAP-DG-2013-Financing-Local-Response-Climate-Change.pdf](http://asia-pacific.undp.org/content/dam/rbap/docs/Research%20&%20Publications/democratic_governance/RBAP-DG-2013-Financing-Local-Response-Climate-Change.pdf)
- 31) UNDP, UNCDF, & UNEP. (2013). *Financing Local Responses to Climate Change Implications of Decentralisation on Responses to Climate Change*.
- 32) United Nations Environment Program. (2016). “UN Environment Annual Report, Empowering People to Protect the Planet.” (December 2016): 20. <https://wedocs.unep.org>.
- 33) UNICEF. 2014. *Engaging Stakeholders on Children's Rights: A Tool for Companies*. Geneva.
- 34) Weichselgartner, J., & Kaspersen, R. (2010). Barriers in the science-policy-practice interface: Toward a knowledge-action-system in global environmental change research. *Global Environmental Change*, 20(2), 266–277. <https://doi.org/10.1016/j.gloenvcha.2009.11.006>
- 35) Welp, M., de la Vega-Leinert, A., Stoll-Kleemann, S., & Jaeger, C. C. (2006). Science-based stakeholder dialogues: Theories and tools. *Global Environmental Change*, 16(2), 170–181. <https://doi.org/10.1016/j.gloenvcha.2005.12.002>

Performance Analysis of Residential Energy System in Low Carbon District: Case Study in Kyushu



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低炭素社会の実現に向けて北九州市で進められている社会実験を例に、家庭レベルで可能な限り二酸化炭素の排出を減らし、実質ゼロに近づける取り組みの進捗状況を報告し、目標達成に必要な課題を検証した。

Abstract

Driven by the wide application of distributed energy system and liberalization of energy market in Japan, customers are expected to participate more in future sustainable energy system development. HEMS (Home Energy Management System) provides cost-saving potential for consumers through optimal automatic control strategies. This research mainly investigated the participation performances of residential consumers in meeting near zero carbon district project in Japan. Annual energy and economic performances of on-site generators under specific energy contract were exhibited according to their historical operational data. Results of survey analysis indicated that residential customers responded effectively to the electricity liberalization and chose the suitable pricing contract to meet maximum economic benefit. Smart schedule strategy of home appliances under HEMS environment provided promising energy cost reduction chance for the consumers. Meanwhile, the energy and economic performances of two residential zero energy house were examined. Demand response mechanism could help consumers to shift electricity usage and provide chance to participate in regulation within local energy system. A large percentage of consumers equipped with HEMS could be aware of the economic benefit under all electrification environment. However, large ratio of customers still paid less attention to the dynamic information of HEMS display. Survey results may provide valuable reference for the local policy maker.

Keywords Survey; HEMS; energy performance; participation performance

Introduction

After the 2011 Great East Japan Earthquake, the energy self-sufficiency ratio of Japan had sharply dropped, the amount of greenhouse gas emissions in Japan had been increasing, reaching a historical high fiscal in 2013 due to the accelerations of conventional thermal power plant. In order to improve energy efficiency and energy conservation, Japan government implement 1.4 billion Yen budget for energy subsidies for 2017-2018 fiscal year. Power consumption in residential sector experienced an increasing trend over decades, which has increased from 27.0% in 1990 to 33.5% in 2016, reached a large share ratio of national power

supply [1]. Average annual energy consumption is about 33.4GJ per household in 2016, heating load and hot water account for a large portion of residential energy usage, 24.1% and 28.3% respectively. National greenhouse emission ambitious 26.0% reduction target by 2030 was launched by METI, 39.3% reduction was ratio set for residential sector from 2013 level, reduce to 122 million ton CO₂ per year. ZEH (Zero Energy House) is a house equipped with efficient energy technologies, annual net energy needs can be balanced by on-site generators, meanwhile maintaining comfort and convenience available to consumers. Ref [2] estimated the reduction potential of electricity demand and CO₂

emissions in the residential sector through energy saving efforts, around 25TWh maximum reduction estimated, which could greatly contribute to the greenhouse emission reduction target. To achieve energy saving in building sector, ZEH has been introduced as one key energy saving concept in national strategic plan, which utilizes a combination of distributed energy integration and energy efficient equipment. ZEHs are becoming a popular practice and attracted much attention in Japan considering advantages of reducing energy consumption and enhancing energy supply reliability during the disaster. The government offered fixed-amount subsidies for new ZEH builders. Japan Strategic Energy Plan specified the target for ZEH clearly, aiming at achieving zero emission in standard newly-constructed houses by 2020[3]. Meanwhile, wide development of integrated distributed energy resources and advanced energy technologies within the ZEHs enables the residential customer become not only a consumer but also a producer of heat and electricity, which could be called as active prosumer[4]. Real time communication network and appliance technologies used by these ZEHs are combined with HEMS (Home Energy Management System) to ensure an increase in energy efficiency, this combination constitutes what is known as smart houses feature with efficient energy utilization and active customer participation. Japanese government has introduced subsidies to encourage HEMS development, which has led to an increased installation of smart houses across Japan especially among ZEHs. There is also a target program to install HEMS devices in every household by 2030[5], providing efficient energy supply resolutions for customer including electricity, space heating, cooling and hot water supply[6, 7].

Wide uptake of smart meter and Internet of Things (IoT) enable the real time communication and trade-off between energy supplier and consumer[8], coordinate demand side management are expected to capture benefits of both, such as high efficiency, energy savings and smart services[9, 10]. Aggregated effects of coordinate demand side participations may provide significant value to supply side including reduce load frequency[10], cut peak load[11] and reduce negative effects from

intermittent renewable generation[12]. Meanwhile, customers could gain potential cost saving with optimal load shift or energy saving under incentive dynamic pricing scheme[9, 13, 14]. Smart contracts of ZEHs have the potential to allow automatic control of energy transfer in decentralized form, and turned the passive consumers into collaborative prosumers in response to incentive signal. HEMS is seen as key solution that enables demand side response in microgrid and households, providing the chances for residential customers to acquire the real time load and coordinately participate in district energy system management.

This research will analyze the energy and economic performances of the residential consumer equipped with advanced energy supply system, detail scenarios of power consumptions and generations of selected residential ZEHs were presented. Meanwhile, a survey investigation is carried out to examine the role of HEMS and the attitude of customer are classified in the zero carbon district project. Finally, summarized the conclusions.

Objective

Jono Low Carbon District Project locates at Kitakyushu city, Japan the area covers around 19.0 ha [15]. This project is defined as an advanced ‘Zero Energy Residential District’ that deliberately aims to manage local energy resources and develop sustainable way to achieve a balance of social, environmental and economic objectives. Fig. 1 illustrated the annual scenario of district ambient temperature, it shows an obvious seasonal variations across the year, and indicated a longer heating period.

Various technologies and advanced energy technologies are employed in this demonstration project, such as uptake of residential rooftop PV, fuel cell, battery storage, Eco-cute and HEMS. All of the house in this demonstration project are equipped with HEMS, Fig. 2 depicted the detail architecture of HEMS comprises energy and information flows. HEMS could receive the variability and uncertainty information of customers provided by smart meters, planned to be installed in all household by 2024[16]. Real time energy consumption,

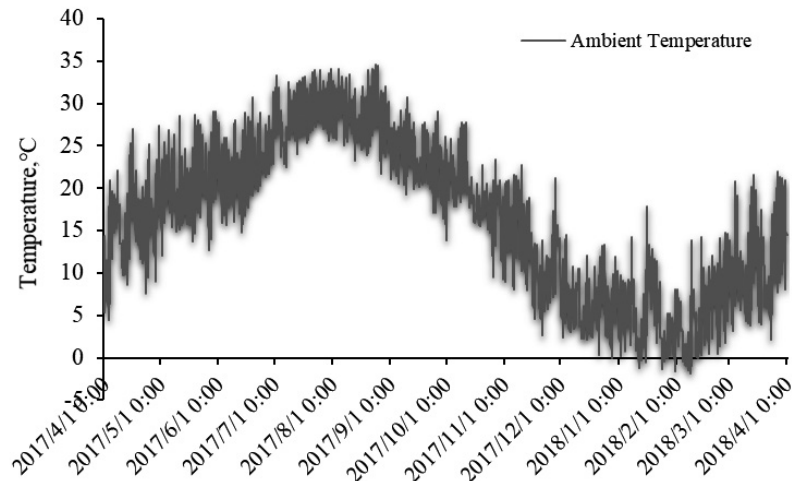


Fig. 1. Weather condition of this district

renewable generation and feedback signal from central supplier were visualized in home display, visualization function aims at inducing customers to reduce energy usage, cost and forming energy conservation life-style[13]. Japan METI (Ministry of Economy, Trade and Industry) has approved ECHONET Lite as standard communication protocol between devices and HEMS controllers, with open-source software could be connected with home existing internetwork. Customers could acquire the detail power consumption and

operation information of building based on ECHONET-Lite compliant switchboard. A rule-based HEMS will help remote schedule and control the on/off status of home appliances, that include heat pump, fuel cell, AC (air conditioner) and washing machine. The power consumption and generation from grid feed-in PV obtained from smart meter will be transferred to central energy management system in real time.

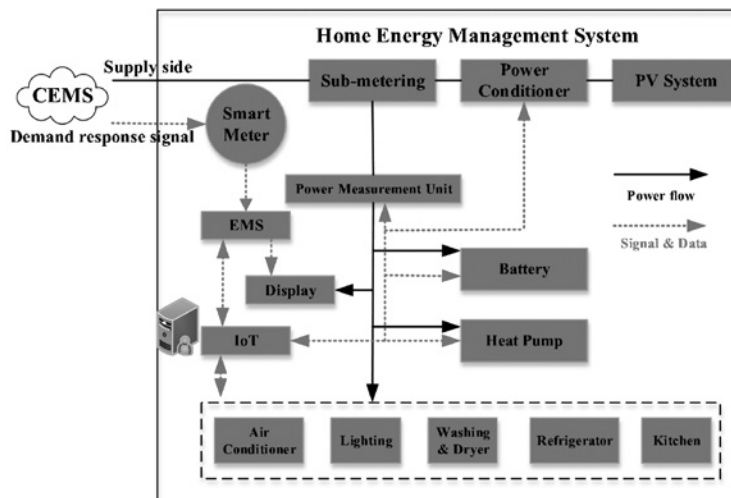


Fig. 2. Structure of the HEMS

Method

A public survey of energy users across the Jono Low Carbon District was conducted in March, 2018, in terms of building information, energy pricing choice, HEMS utilization, local on-site production and consumption. Questionnaire survey data was collected from 108 residential objectives, includes 59 detached houses and 59 apartments. According to the collected data, statistical analysis was applied to identify the participation performances of residential customers in this low carbon district, including their awareness of energy saving and preferences about energy liberalization market. Fig. 3 revealed the information about the surveyed objectives in Jono low carbon district.

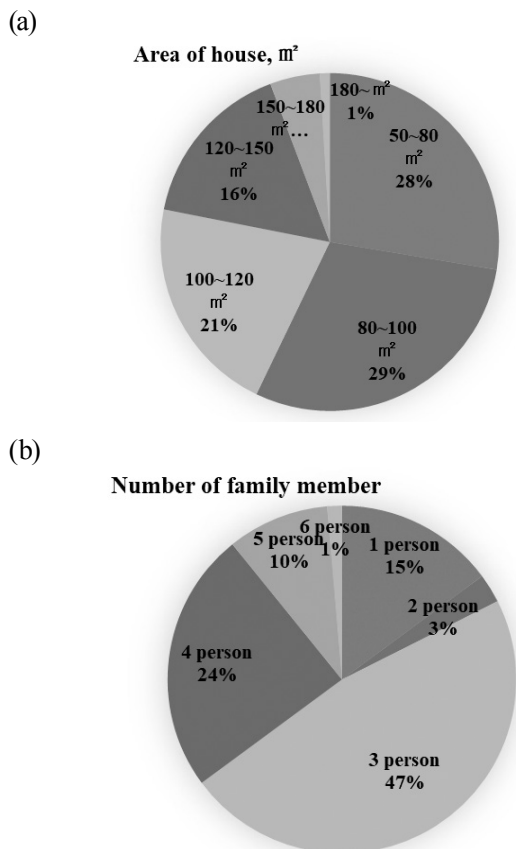


Fig. 3. Survey results of residential customers: size of residential building (a), number of family member

Result and Discussion

In order to reinforce industrial competitiveness,

protect customer benefits and create new service, Japan government opened the retail electricity market to competition to allow business consumers more options to manage their energy consumption, consumers can choose their own preference about energy retailers that best meet their needs.

Contracted power capacity (A) and preferences of energy retailers among residential customers were illustrated in Fig. 4. There were various types of chosen electricity pricing schemes provided by the electricity utilities.

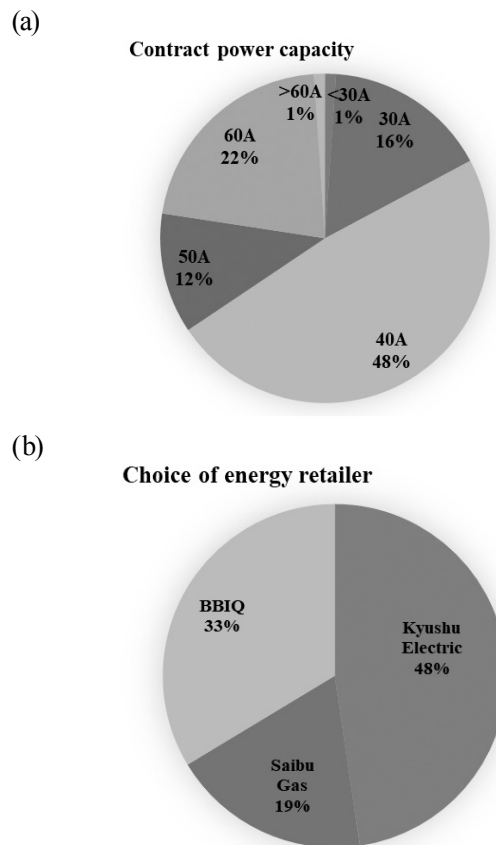


Fig. 4. Survey results of energy retailer choice: contracted power capacity, A (a), choice of energy retailer (b)

Heating load contributes to a large ratio of residential energy consumption, generally used for hot water and space heating. Therefore, the selection of heating supply system will significantly influence their preferences about choosing their electricity price scheme. Hot water

system can be seen as a thermal storage system and utilized as flexible source. Heat pump water heater using CO₂ as a refrigerant had gained a popularity in Japan, which generally operated to produce hot water during off-peak price period, and stored energy in thermal storage system for daily later usage. HEMS features with characteristics of learnability and memorability, the volume of hot water production could be determined by average amount of history daily hot water consumption.

Currently, there are novel tariff schemes designed for residential sector in Japan that are suitable for the residential customers to choose for energy cost saving. Representative tariff schemes include monthly foundational charge (a) and TOU (b) were depicted in Fig. 5. Meanwhile, survey investigation found that there are 91 fuel cell, 14 eco-cute (heat pump), 3 gas boiler among the examined objectives, 47 residential houses feature with rooftop PV system that their nominal capacity generally ranges from 3kWp to 9kWp, which indicates a promising electricity bill saving potential by introducing local generations to reduce imported electricity from the public grid, especially for the customer contracted monthly foundational charge scheme with power company as shown in Fig. 5(a).

Combined heat pump and thermal storage (power to heat) provides chances for residential customers under TOU scheme Fig. 5(b) [17]. On-site generators, such as PV and fuel cell decrease the total imported electricity from supplier, reduce the power at higher pricing stage, and induce the customers to contract the monthly foundational charge scheme [18]. Management and economic benefits are critical for consumer switching, consumers tend to switch their provider if the transaction costs are lower, 13 residential customer equipped with eco-cute chosen the TOU pricing scheme according to the survey result.

There was an all electrification trend among residential sector, which indicate potential economic benefit under electricity liberalization scheme via choosing their own preferred pricing. Respondents' attitudes toward cost saving compared with previous price scheme before moving into Jono low carbon district was shown in Fig. 6, results present that large ratio of

surveyed residential customers tend to response with a cost drop perception.

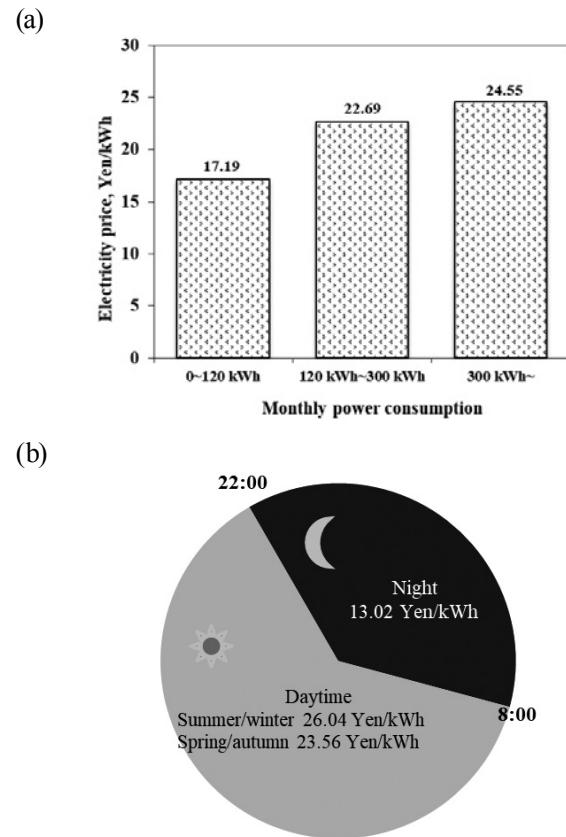


Fig. 5. Typical two electricity schemes: monthly foundational charge (a), daily time of use (b)

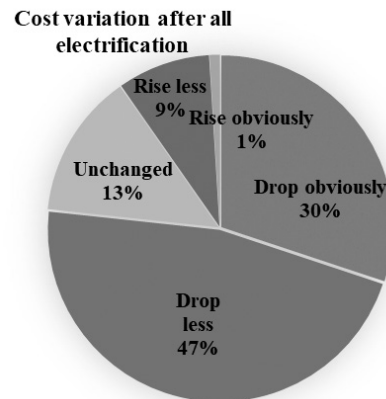


Fig. 6. Cost saving perception of residential customers toward all electrification transfer

Fig. 7 presented the variable power consumption of eco-cute system, which is collected from HEMS environment at 30 min interval from April, 2017 to March, 2018. The variability of Eco-cute power consumption of two ZEHs in color scale was presented in Fig. 7(a). It was obviously seen that the working period of Eco-cute concentrated during the early morning corresponding to the lower price period of TOU scheme. The amount of heat pump power consumption shown significant seasonal or daily variations, heat pumps produced a high level of heat over a longer period during winter time. Fig. 7(b) illustrated the relationship between power consumption of Eco-cute and ambient temperature at nominal output, power consumption rose in linear trend with decreasing of ambient temperature. Under HEMS control environment, working period of eco-cute (combined residential heat pump and thermal storage system) could be scheduled on valley pricing

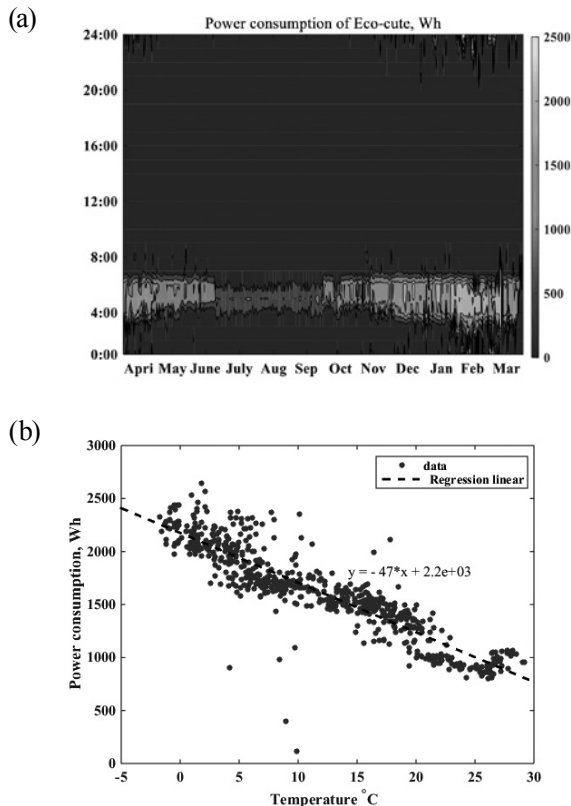


Fig. 7. Performance of residential heat pump system: color scale distribution of power consumption (a), the impact of temperature on power consumption (b)

period of TOU, which indicated cost saving potential for the customer via automatic control under HEMS environment. Customer with efficient heat pump system might choose the TOU pricing scheme, generated and stored thermal energy during off-peak price period, obtained energy and cost saving benefits.

Fig. 8 provided the performance of residential combined heating and power system, the fuel cell adjusts its output via tracking the time series heating demand, as a result the output of fuel cell presents a significant variation across the year. Fig. 8(b) presented the relationship between the power generating efficiency and load factor according to the monitored gas consumption and power generation (calculated LHV of nature gas is 45MJ/Nm³), it was worth noting that the electricity efficiency may drop sharply when its load factor was less than 0.40. Fuel cell cogeneration system of the examined ZEH operated in a daily start-and-stop mode, the output of fuel cell was determined by simultaneous heating and electricity load profiles. It could obviously see that output of fuel cell was as a function of time of day and seasonal periods, and presented considerable daily or seasonal variations across the year. Pattern of daily hot water consumption has a significant effect on electricity output of the fuel cell, leading the maximum production concentrated in early morning and night hours during winter period, decreasing hot water usage shorten the operation period of fuel cell in summer time. It indicated that the simultaneous heating and power demand had a great impact on the energy saving performance of the micro cogeneration system, longer period of considerable heating demand may enable higher overall energy efficiency of the fuel cell.

Rated power generation efficiency of fuel cell is 39%, and waste heat recovery efficiency is 47%. Assuming low heating value of nature gas is 45MJ/Nm³, fuel cell will supply variable output to meet time series residential loads, power efficiency of two monitored fuel cell under different part load ratios was calculated according to monitored gas consumption and power output, detail scenario was illustrated in Fig. 8(b).

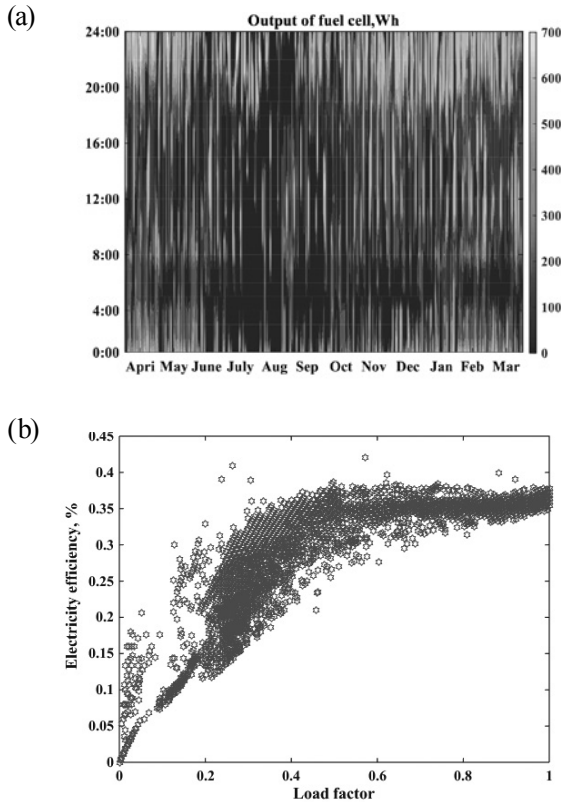


Fig. 8. Performance of residential cogeneration system: color scale distribution of power generation (a), relationship between electricity efficiency and load factor (b)

Fig. 9 presented the monthly power consumption and generation of the all electrified residential house with PV and eco-cute system. The annual maximum PV power generating reached 2.6kW, driving by the cooling load and great solar radiation, the amount of PV self-consumption is higher in summer compared other seasons. The annual net load power was feed-in power minus the imported power -657.2 kWh. However, a great ratio of PV generation had been fed into the grid due to low correlation between residential load and PV generation, especially during the mid-season period. Monthly power consumption of the all-electrified house will rise sharply during heating period, and electricity fee will be increased significantly.

Fig. 10(a) provided detail the scenarios of power generation and consumption in each month, limited to the

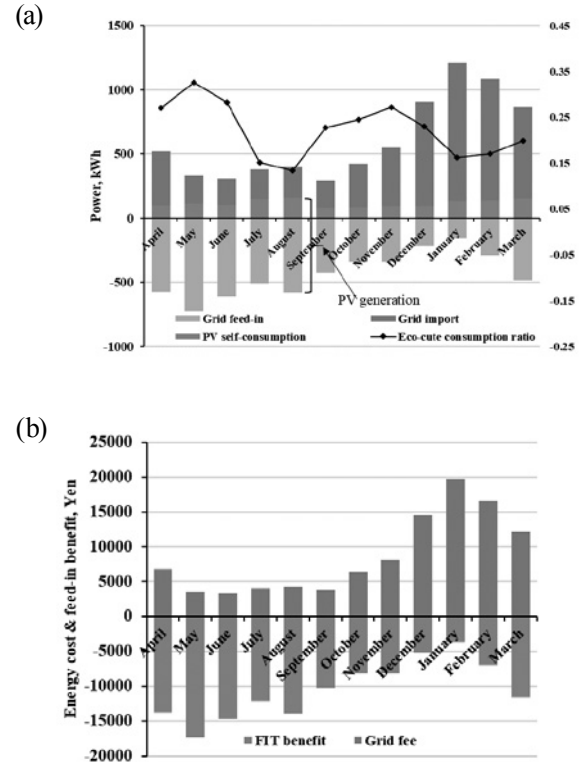


Fig. 9. The residential consumer with PV and eco-cute system: power consumption and generation (a), energy cost and feed-in benefit (b) PV feed-in tariff is 24 Yen/kWh

heating load fuel cell contributes less to the residential load during summer period. PV and fuel cell contribution was generally over 50% of residential monthly load, electricity fee accounted for a less ratio of monthly total energy cost as shown in Fig. 10(b). Uptake of fuel cell or PV system could benefit the customers through reducing imported electricity with higher cost under foundational electricity charge scheme. It was worth note that annual net power was 4702 kWh, which indicated that a large ratio of PV generation had to be sold into the grid. Backup was triggered to produce hot water to meet the total heating demand, and monthly gas fees will rise sharply and gas cost becomes the main part of monthly energy cost.

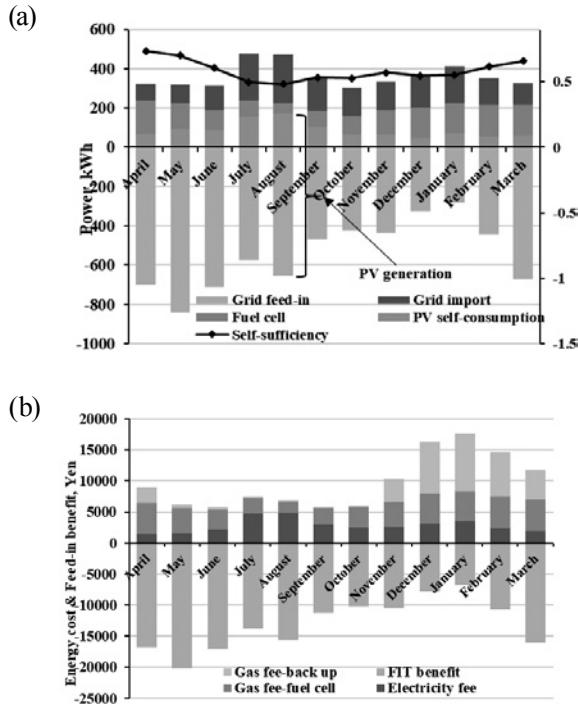


Fig. 10. The residential consumer with PV and fuel cell system: power consumption and generation (a), energy cost and feed-in benefit (b) PV feed-in tariff is 24 Yen/kWh

There was a wide uptake of energy efficiency appliance and grid connected distributed energy systems. Taking into account of the high energy intensity in the residential sector, active demand side management is expected to induce the energy user to participate more in low carbon energy system and make more energy-saving lifestyle. Therefore, policy makers must look beyond simply the technology and need to know what extent consumers can engage in demand side management, especially after the application of smart meter, home display and application of dynamic pricing scheme. Fig. 11 depicted the HEMS utilization frequency of HEMS dynamic information among surveyed customers, result indicate that around 70% of respondent seldom or never watch the HEMS home display. It shows a low utilization frequency of the HEMS display function, which can reveal the real time power consumption, variable power output from on-site generators (PV, fuel cell) and dynamic price information.

Utilization scenario of HEMS

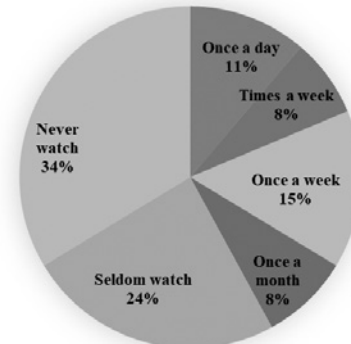


Fig. 11. Survey results of HEMS utilization frequency scenario

Conclusion

In this research, we used a survey investigation approach to analyse the participation performances of residential customers in the zero carbon district project in Japan. Meanwhile, we also examined energy and economic performance of the zero energy house based on monitored history data under HEMS environment, including Eco-cute and fuel cell and other home devices. Results indicate that customers can response effectively to the electricity liberalization, customers will choose various energy price scheme that can better satisfy their needs. Customers equipped with heat pump system (power to heat) in all electrification environment tend to choose the time of use tariff to maximize their benefit. Energy saving performance of residential micro-cogeneration system still highly depends on the simultaneous heating and power load. Smart contract provided distributed operator responsibilities within local energy systems, however, the energy-saving or cost saving chances of HEMS still largely depends on the automatic control function, customers shown weak awareness of dynamic information of home display, which aims at inducing customer to form energy saving lifestyle. Results could also provide possible policy implication for policy maker during construction process of low carbon district, especially considering the participation of demand side.

References

- 1) Japan TFOEPCo. Electricity Review Japan. 2018.
- 2) Wakiyama T, Kuramochi T. Scenario analysis of energy saving and CO₂ emissions reduction potentials to ratchet up Japanese mitigation target in 2030 in the residential sector. *Energy Policy*. 2017;103:1-15.
- 3) Ministry of Economy TaI. Agency for Natural Resources and Energy, ZEH Roadmap. 2015.
- 4) Morstyn T, Farrell N, Darby SJ, McCulloch MD. Using peer-to-peer energy-trading platforms to incentivize prosumers to form federated power plants. *Nature Energy*. 2018;3(2):94-101.
- 5) Robotina. Japan implementing HEMS in all households by 2030.
- 6) Iwafune Y, Mori Y, Kawai T, Yagita Y. Energy-saving effect of automatic home energy report utilizing home energy management system data in Japan. *Energy*. 2017;125:382-92.
- 7) Iwafune Y, Yagita Y. High-resolution determinant analysis of Japanese residential electricity consumption using home energy management system data. *Energy and Buildings*. 2016;116:274-84.
- 8) Chou J-S, Truong N-S. Cloud forecasting system for monitoring and alerting of energy use by home appliances. *Applied Energy*. 2019;249:166-77.
- 9) Eid C, Koliou E, Valles M, Reneses J, Hakvoort R. Time-based pricing and electricity demand response: Existing barriers and next steps. *Utilities Policy*. 2016;40:15-25.
- 10) Heleno M, Matos MA, Lopes JAP. A bottom-up approach to leverage the participation of residential aggregators in reserve services markets. *Electric Power Systems Research*. 2016;136:425-33.
- 11) Fan H, MacGill IF, Sproul AB. Statistical analysis of drivers of residential peak electricity demand. *Energy and Buildings*. 2017;141:205-17.
- 12) O'Shaughnessy E, Cutler D, Ardani K, Margolis R. Solar plus: A review of the end-user economics of solar PV integration with storage and load control in residential buildings. *Applied Energy*. 2018;228:2165-75.
- 13) Li Y, Gao W, Ruan Y, Ushifusa Y. Demand response of customers in Kitakyushu smart community project to critical peak pricing of electricity. *Energy and Buildings*. 2018;168:251-60.
- 14) Li J. Optimal sizing of grid-connected photovoltaic battery systems for residential houses in Australia. *Renewable Energy*. 2019;136:1245-54.
- 15) Kitakyushu. Jono Low Carbon District Information. 2018.
- 16) News JI. The Smart House – Japanese Technology and Standards. 2016.
- 17) Company KE. Residential electricity pricing scheme. 2018.
- 18) Gas S. Electricity pricing scheme. 2018.
- 19) Kasai, K. and Yashiro, T. (2001) Elicitation of subjective probabilities for risk analysis. *Journal of Asian Architecture and Building Engineering*, 1 (1), 77-82

Teaching for Wisdom: The Asian Way



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知識(knowledge)に対置される知恵(wisdom)。アジアは伝統的に知恵の伝授を重んじてきたとされるが、果たして現代教育において「知恵」はどのように教えられているか。現場の教員たちの声を集め、検証した。

Abstract

In line with the growing research on wisdom as field of study in contemporary psychology, this research is a phenomenographic study of teachers' conceptions of wisdom in education. It is researched from the perspective of educators who advocate that educational goals and practices ought to be directed towards the higher goal of wisdom, which is what will truly nurture students' growth as authentic human beings (e.g. Sternberg, 2001; Maxwell, 2007; Lin, 2007), rather than aiming merely at achieving technical excellence or good academic outcomes. As teaching for wisdom ultimately begins at the level of teachers' conceptions, this research is aimed at discovering the qualitatively different ways in which teachers conceive of wisdom in education. The data collection consisted of interviews with teachers of various levels, subject areas, and years of experience. Three categories of description emerged from the data – 'Strategic Wisdom', 'Social Wisdom' and 'Transcendent Wisdom'. These were then compared with philosophical and contemporary psychological theories on wisdom. It enabled the discernment of theories and practices which were appropriate in enhancing teachers' conceptions of wisdom according to the different lenses through which they were found to typically conceive of wisdom.

Keywords

wisdom in education, teacher's conceptions, educational policy, teacher training, ethics

Introduction

Asia as we know it today is characterized by rapid advances in technology and subsequent economic growth, but for this growth to be sustainable for future generations, education plays a key role in nurturing the minds of young people who will lead their countries into the future. Hopwood, Mellor and O'Brien (2005) proposed that sustainable development requires a strong basis in principles that link the social and environmental to human equity, in order to concentrate on well-being, rather than well-having. Mustakova-Possardt and Basseches (2014) argued for the need of greater integration of social sciences with philosophy in working towards global integrative solutions. Addressing the issue from the viewpoint of an educator, I argue that

achieving shared sustainable growth at the national and international levels starts first at the personal level through education. Hence, I propose that *teaching for wisdom* is what will help students put their knowledge, skills and attitudes at the service of the common good. It fosters in them virtues, noble ideals, an understanding of what success and growth really mean, so that they can develop and use the knowledge and skills they learn to serve the common good of society as well as the world at large. In this way, students are equipped with a mind-set that helps them to work towards achieving shared sustainable growth, which runs counter to technocratic ideals and efficiency-driven attitudes so prevalent in modern societies (Ball, 2003; Maxwell, 2007).

Wisdom in Asia

Wisdom has always been a valuable part of Asian history, culture and tradition. Confucian ideologies still permeate many Asian societies such as China, Korea, Taiwan and Singapore (Wang, Smyth & Tan, 2000). The Philippine culture also contains many ideals originating from Christian philosophers such as Saint Thomas Aquinas, who drew heavily from the works of the Greek philosopher, Aristotle. Finally, Buddhism and Hinduism continue to exert a great influence on the culture of Asian countries such as Thailand, Cambodia, Sri Lanka and India (Harris, 2001). These examples show Asian countries' enduring openness towards the transcendent, to noble ideals and values which concern the good of others. This, I believe, is a strength that can be harnessed to equip Asians to achieve sustainable shared growth in their respective countries.

Wisdom

Wisdom is an extremely rich and complex concept that has been defined through the ages from a multitude of perspectives. It was traditionally the focus of philosophy, however in recent decades, it has been a concept that has been widely studied in psychology as well (Baltes & Staudinger, 2000; Levitt, 1999). Wisdom has been defined as a metaheuristic link between mind and virtue (Baltes & Staudinger, 2000; Csikszentmihalyi & Rathunde, 1990; Labouvie-Vief, 1990); as being superior to knowledge, intelligence and creativity (Craft, 2006; Sternberg, 2001); as being directed towards the fulfillment of the common good (Ardelt, 2004; Csikszentmihalyi & Rathunde, 1990; Deanne-Drummond, 2007; Sternberg, 2001); and as having a spiritual aspect (Bierly III et al., 2000; Rooney & McKenna, 2007; Levitt, 1999; Wink & Helson, 1997). A meta-analysis of the literature defining wisdom in psychology revealed four main dimensions of wisdom: (a) superior knowledge; (b) virtue; (c) orientation towards a superior good; and (d) spirituality (Rozells, 2011). These four dimensions were found to be consistent with conceptions of wisdom in philosophy ranging from Eastern philosophies of Buddhism and Confucianism, to classical Greek and Medieval philosophies (Rozells, 2011).

Wisdom in Education

Wisdom has always been traditionally acclaimed as the goal of education in both Western and Eastern civilizations (e.g. Confucius, Aristotle, Buddhism). However, it has been increasingly suppressed because of a growing emphasis on expertise in technical knowledge and the power that such knowledge yields, brought about by empiricism and the technical age which emphasize certainty in knowledge and objective measurement of intelligence (Eryaman, 2007; Hart, 2001; Maxwell, 2007; Rooney & McKenna, 2007; Sternberg, 2001). Teachers tend to teach to the tests, and tests rarely measure wise thinking (Sternberg, 2001; Hart, 2001). Teacher training institutes rarely emphasize wisdom in teacher education. Therefore, wisdom occupies a marginal space in teachers' classes, as teachers have little or no incentives and training to teach for wisdom.

Fortunately, in recent years, there has been a revival of the need for more higher-reaching aims in educational agendas brought on by educators and psychologists who advocate the teaching for wisdom as opposed to the focus on the mastery of an extant knowledge base (Eryaman, 2007; Craft, 2006; Hart, 2001; Maxwell, 2007; Phelan, 2005; Sternberg, 2005). These educators are now coming to realize that the prior focus on developing students' intelligence, and then subsequently, in developing critical thinking and creativity, are still insufficient to provide for the holistic education of students (Sternberg, 2005). Wisdom is necessary so that students use their intelligence and creativity for their own good and the good of others. This effort, however, has just begun, as can be evidenced by only a limited number of studies and published works that explore wisdom in the context of education.

A review of studies related to wisdom in education revealed that the four dimensions of wisdom mentioned above could also be used to categorize conceptions of wisdom in education. With reference to the first dimension of wisdom as superior knowledge, Rooney and McKenna (2007) recommended that students need to access knowledge bases which are transcendent, universal and uncertain. Other researchers (Chua, 2006; Deane-Drummond, 2007; Halpern, 2001; Hart, 2001;

Iredale, 2007; MacIntyre, 2009; Maxwell, 2007) went one step further. They argued that in addition to considering these more ‘uncertain’ knowledge bases, curricular knowledge needs to be subordinated to philosophical and theological wisdom. Still others argued for the creative exploration of knowledge within the limits of rationality and a normative system of values (Craft, 2006; Halpern, 2001). Drawing from Aristotelian concepts, Halverson (2004) stressed the importance of ‘practical wisdom’ (*phronesis*) which marshals knowledge (*episteme*) and techniques (*techne*) to respond appropriately to specific contexts. Finally, Eryaman (2007) proposed an ethical dimension in teaching, recommending the consideration of ethical principles which translate into ethical actions and virtues.

With regard to the dimension of wisdom as virtue, Van Manen (1994) argued for the need for teachers to acquire ‘pedagogical virtues’. Other virtues emphasized in teaching were prudence (Deane-Drummond, 2007) and ‘heartfulness’ (Hart, 2001). Similarly, Csikszentmihalyi and Rathunde (1990) enumerated various wisdom-related qualities that would be desirable in a teacher. Several authors also suggested strategies which teachers can use to help their students develop virtues to foster the development of wisdom (e.g. Halpern, 2001; Deane-Drummond, 2007; Csikszentmihalyi & Rathunde, 1990; Hart, 2001). These included strategies such as modelling wisdom, and imparting wisdom through a ‘master-pupil tutelage’ which is similar to mentoring and fostering service and care for others. Finally, authors also proposed the need to emphasize virtues as educational goals (Deane-Drummond, 2007; Hart, 2001; Lin, 2007).

With regard to the third dimension of wisdom as the orientation towards a superior good, all the authors above argued that wisdom, rather than technical, functional or pragmatic knowledge, should be seen as the ultimate goal, or ‘superior good’ of education (Craft, 2006; Deane-Drummond, 2007; Eryaman, 2007; Hart, 2001; Rooney & McKenna, 2007). In addition, others highlighted the differences between education aimed at wisdom, and education aimed at functional or technical efficiency and accountability. These authors argued for the urgent need of a paradigm shift in educational goals

from serving technical-rational and functional ends such as efficiency and accountability, to embrace more humanistic ends of addressing global problems (Iredale, 2007; Maxwell, 2007), and helping people live more meaningful and authentic lives out of a respect for human dignity and freedom (Chua, 2009; Ball, 2003). Lin (2007) urged for the need of a new form of education – education for love, peace and wisdom – which emphasizes compassion, love, respect and peace. Finally, Chua (2006), drawing from Finnis’ theory of basic goods (1980), proposed a framework of education for human rights, wherein schools ought to be open to respecting and promoting the rights of their students to seek basic goods (which in sum, constitute the common good of the school community), without denying them rightful access to any one of them.

Last but not least, spirituality was also recognized by several authors as an important aspect of wisdom in education. Hart (2001) proposed an added way of knowing which comes more directly and quietly, an ‘inner guidance’ which also needs to enter the dialogue as recommended by mystics and contemplatives (Hart, 2001). Similarly, Lin (2007) advocated for the need of a spiritual dimension in education that focuses on the essence of students as thinking, feeling, loving and compassionate beings. In terms of how spirituality can contribute to the content of knowledge taught, Deane-Drummond argued that theological wisdom is important in education as it is a voice that is often marginalized and excluded from educational agendas, particularly in higher education (2007). She discussed ways in which theologically-informed wisdom can be applied to enrich education. Similarly, MacIntyre (2009) claimed that it is indispensable that theology, or at least a secular version of theology, be taught at the university level, because he believed that theology is what unifies the various disciplines and orders the curriculum to appropriately reflect the order of knowledge in the universe (MacIntyre, 2009). Finally, Chua (2006), in advocating religion as a basic human good, argued for the need for schools to offer students the option of studying religion or theology as a subject, as well as the respect for religious points of view in the teaching of other curricular subjects.

Purpose of the study

The purpose of this study was to discover the qualitatively different ways in which teachers conceive of and experience wisdom in education in an Asian context. This is because if teachers are to teach for wisdom, they should firstly have clear conceptions about what wisdom is, and what it means to teach for wisdom. Finding out about teachers' conceptions of wisdom would give us an insight on how teachers' conceptions of wisdom in education are manifested in an Asian context. Subsequently, by comparing their conceptions of wisdom with the established theoretical bases of wisdom, we can discover how their conceptions can be enhanced by building upon the various conceptions they have, which serve as starting points on their journey towards teaching for wisdom. Hence, the research question for this study was: What are the qualitatively different ways in which teachers conceive of wisdom in the context of education?

Methodology

A qualitative approach was taken to enable greater flexibility and openness in exploring these 'lenses' through which teachers perceive wisdom in education. Specifically, this study employed a phenomenographic approach to collect and analyze data obtained from the participants. Phenomenography seeks to discover the qualitatively different ways in which people conceive of and experience a phenomenon. It is particularly suited to concepts that are complex and can be viewed from multiple perspectives, because it seeks to capture a snapshot of the range of different ways in which a particular phenomenon is conceived (Marton, 1981). Phenomenography's outcomes are essentially pragmatic: to discern what theories and practices will work best to enhance people's conceptions of a phenomenon in a particular setting, we first need to survey the ground and know what people are thinking. In this study, this would mean discovering the qualitatively different ways in which 'wisdom in education' is conceived and experienced by Singaporean teachers in order to discover how their conceptions of wisdom in education can be enhanced.

Data for this study was collected in Singapore, an Asian country that has experienced significant growth in a variety of industries in recent decades. Twelve (5 male, 7 female) teachers of various levels, subject areas, race and years of experience were interviewed in-depth about their conceptions of wisdom in education using a semi-structured interview format (see Appendix I). Participants were selected in order for the sample to have as large a variation in characteristics as possible, so as to capture a diversity of ways in which wisdom could be conceived. Informed consent was obtained, and participants were given the interview questions a week beforehand to prepare for the interviews. Interviews were conducted one-on-one, lasted an hour on average and were audio-recorded and transcribed.

Data was analyzed using a phenomenographic approach. Transcripts were read and re-read, and categories that emerged from the data were tested and re-tested to see if they could sufficiently capture the qualitatively different ways in which the teachers conceived of 'wisdom in education'. All this occurred in a recurring and cyclical fashion till all the categories were stable and distinct from each other.

Results

Participants' experiences of 'Wisdom in Education' were found to comprise three categories of description: '*Strategic Wisdom*', '*Social Wisdom*' and '*Transcendent Wisdom*'. The findings provided a map of the various ways in which 'wisdom in education' was experienced by the participants. Teachers' experiences of wisdom in the educational context comprised both how wisdom was important for themselves in their profession, as well as how they claimed to develop wisdom in their students.

Category 1: Strategic Wisdom

In the first category, 'Strategic Wisdom', the teaching profession is experienced as an arena for professional advancement, which emphasizes quantitative evidence of technical expertise in teaching, the possession of a rich knowledge base, excellent cognitive skills (e.g. problem-solving, critical thinking, logical analysis,

strategic planning and decision-making) and the efficient management and use of resources. These guide the teacher to act in a logical, practical and efficient manner, as well as defend his or her own interests, in order to increase his or her chances of achieving success in the teaching career.

Teaching for ‘Strategic Wisdom’ emphasizes quantitative evidence of students’ academic achievement and the acquisition of knowledge and the development of cognitive skills which teachers believe are highly applicable for life, and will stand students in good stead, professionally, in time to come. The teacher focuses on helping students to achieve good academic outcomes and enhancing their problem-solving and other cognitive skills which they believe are of foremost importance, not only for their academic subjects, but also for life in general.

Having clear and strategic professional goals and career plans, as well as a strong focus on achieving them, form an important part of this category. In A.’s quote below, she describes an incident where she was advised by a more senior teacher about how she should act.

A: She listed down what I need to do in school to be part of the team. She was very clear in how she...in fact she was very, very candid about it. She said that “If you want to have a good career path, you need to do this”. Yeah. She said “There’s no beating around the bush. We won’t try and pretend that it’s a perfect world. This is what you need to do. You need to be seen, you need to be heard,” you know. (...) And yeah, she was rising up the ladder very fast and she did it with everybody’s respect, you see.

Furthermore, in line with having a strategic outlook, the teacher also has clear priorities about how to maximize the allocation and use of resources (e.g. staff, funds and other material resources) to carry out educational initiatives. In the quote below, P. is pleased that his school has been allocated funding to get external vendors to train students, rather than have the teachers do it. Such strategic planning in the use of funding and resources thus maximizes the utilization of their teach-

ing expertise.

P: (*refers to being in-charge of the audio-visual club in his school*) I joined this year. And next year, we will have – this IDA (*Information Development Authority of Singapore*) – they are going to be pumping money into the school, to have a proper program. So they will have vendors coming to teach the kids and all that. That should be the right way.

R: Teaching them what?

P: Oh, teaching them, for example, film-making, videography, you know, stuff like that, managing the stage, you know, for concerts and stuff like that. Get the experts to teach. There are many schools that are employing coaches, like for example, basketball coach to teach, rather than get a teacher to teach, you know. We are specialist teachers, but not basketball players.

Similarly, the teacher also strategically plans where to draw the boundaries when relating to students. Such a measure appears to be necessary in the teaching profession, since oftentimes, teachers are expected to perform a multitude of tasks that take a lot of time away from their actual teaching, and thus need to limit time spent on ‘non-professional’ activities which take up extra time. Also, since teachers are in a position where they could be heavily depended upon by students, participants such as E., felt that it was important for a teacher to set such boundaries in order to preserve their “space and authority”, and thus not spend excessive time and energy on their students yet still gain their respect.

E: Yeah, but I won’t want to buy them favor, and “Hey, let’s go for lunch,” No, no way. I won’t go all out of the way, “Eh, after school I see you”, that kind. I think that I still need my space and our authority and so on.

In terms of how they saw wisdom as relevant to their teaching of students, participants who viewed wisdom in education from a Strategic perspective associated wisdom with successful educational outcomes, seen largely in academic terms. For example, in the first

quote below, P. expresses that wisdom is what leads to success, based on academic performance.

P: We look back again at this question of success. One was the quantitative evidence that I told you. One more is the observation that we see. And from my observation, the kids these days are actually wiser, because they are able to – for example, giving them project work, they can to speak up in front of a group, they are confident. They are given exposure to do that, practice and stuff like that in class. They are able to carry themselves pretty well, they are knowledgeable thanks to the internet age, also.

It is not surprising, therefore, that he believes that schools are basically meant “to teach you and achieve results” so that “you get on in life”.

P: After all, a school basically is to teach you and achieve results. Correct? Can you say that? Yeah. Because once you achieve these results, you get on in life, and then you can build on that, right? (...) I think that the fact that you are here, pursuing your degree, you must give credit to your teachers in your previous school who have honed your thinking, made you think sharply, because by challenging your intellect, you see.

Category 2: Social Wisdom

In the second category of description, ‘Social Wisdom’, the teaching profession is experienced as a community of practitioners who strive to identify themselves with established professional practices and values, so as to attain harmonious relationships with colleagues, students and their parents, through good communication skills, the adherence to a system of shared values, as well as the consideration of the consequences of one’s decisions and actions on others. Adopting a perspective of ‘Social Wisdom’ also means that the teacher focuses on the acquisition of and identification with knowledge, established norms of practice and ‘mainstream’ values that are recognized as being important in one’s professional and social community,

and is open to learning from others.

Teaching for ‘Social Wisdom’ emphasizes the development of students’ values, social and emotional skills, and the consideration of their decisions and actions on others within their community, all of which are founded upon socially-recognized values. Learning through social interactions is emphasized, as teachers believe that acquiring good social skills and good values are important goals in education.

Firstly, a consistent feature of teachers’ conceptions of wisdom that came under this category was their focus on social interactions and communication with others, which they believed was of great importance in the teaching profession. For instance, in the example below, C. believed that having good academic results or IQ does not necessarily mean that one will be a good teacher, since interactions with people form an important part of the teaching profession. Similarly, in the second quote, S. recognizes that social interactions are a necessary aspect of one’s job as a teacher.

C: No matter how smart they are, even if they come in with fantastic university, A level, university results, that is just IQ. Because you’re not just doing a job for yourself. You are doing a job that involves interaction with other people.

S: Because this world is no longer a single world. You cannot work alone. You need everybody.

In addition, teachers who viewed wisdom in education from a Social perspective recognized the importance of considering the consequences of one’s actions on others. For example, W. mentioned the following:

W: I’ll ask them “why do you think you did this?” “And how do you think it makes me feel?” So, at least in that hope of it, they’ll think that, you know, their actions have consequences on people around them.

In addition, ‘Social Wisdom’, embraces values and ways of interacting with others which are socially acceptable. Thus, an important way in which one acquires the knowledge of these values is through experiences of interacting with others, as S. notes below:

S: Because everything comes with experience. If you acknowledge that this is important, if you acknowledge that this is the way I should interact with the people around me, and this is the acceptable level of acceptance from others, I guess this is wisdom.

Finally, in teaching for ‘Social Wisdom’, teachers focused on developing students’ values as well as their social communication skills to enhance their treatment of others. This can be seen in the quotes below.

M: Yeah. I think... I believe that for myself, I don’t really want to just teach academically, because anybody can do that. I think the important thing there is to impart some kind of life skills and values.

S: The pedagogy is one thing, and the content knowledge is one thing. But I guess the most important thing is social skills.

This focus on socially-related goals in teaching in ‘Social Wisdom’ contrasts with teachers’ focus on developing students’ problem-solving skills in ‘Strategic Wisdom’ that was described previously, as well as helping them to live virtuously and morally and contribute to the common good, which was the main focus in ‘Teaching for Transcendent Wisdom’, as described below.

Category 3: Transcendent Wisdom

In ‘Transcendent Wisdom’, the teaching profession is experienced as a means for carrying out one’s mission in life, where one finds personal fulfillment in freely committing oneself to serving the common good of students, colleagues and humanity at large, or fulfilling one’s vocation in life, and inspiring others to do the same. Adopting a perspective of ‘Transcendent Wisdom’ means that the teacher is open to the knowledge of transcendent realities such as the existence of God and a universal moral law which frames his or her overall perspective in life. This perspective, which is oriented towards seeking an ultimate good in each concrete situation, guides the teacher to act virtuously, particularly with those virtues that are related to the teaching profession, as well as morally. This, therefore, may lead them

to decide and act in ways that transcend established educational goals, practices and priorities, and at times, even contradict them.

In teaching for ‘Transcendent Wisdom’, the teacher views the development of students’ virtues, morals and knowledge of transcendent realities as being of foremost importance in students’ education. He or she inspires them make the most of their lives by aiming for higher goals such as living virtuously, developing their talents, and serving the common good of humanity. In addition, teacher also makes himself or herself available to listen to students and offer them advice, has hope in the potential of each student, and trusts in their ability to decide and act for themselves, even if they should make mistakes.

A distinctive aspect of ‘Transcendent Wisdom in Education’ was that teachers saw their job as a means of serving the common good, while at the same time giving personal fulfillment to their life. These teachers’ personal goals were aimed at providing direct service to their students and colleagues, and indirectly to humanity at large. Such a compatibility between personal goods and the common good is possible because of the pursuit of an ultimate good, which puts in order these intermediate ‘goods’. These can be seen in the quotes by C. and A. below.

C: When you contribute to the common good, you are also contributing to yourself also, and to your family. In my own small way, I feel as a teacher, if I can do a good job in the class, that is 40 students there, in one class. Then you 40 times the number of classes I have.

A: So, which is why I’m trying to make my career something that will achieve this goal of giving back a little bit. It’s a very lofty ambition and I know somewhere along the way, I’m going to begrudge the little pay or something...I don’t know! I’m just hoping I can strike a balance between the material world and giving back to society. Trying to balance both at the same time.

Similarly, in the quote below, C. shared how

rewarding it was for her to be a teacher, especially teaching in neighborhood schools where the challenge often lay not only in helping, but in first convincing students that they could live upright and noble lives. Her focus is on seeking the overall good of her students, which may, at times, entail having to correct or address contrary desires in them. She expresses her genuine belief in the potential of each student and emphasizes how personally fulfilling she believed her job as a teacher was.

C: You know, I like helping people, alright, and like I say again, you know, I really like to be a teacher, alright, because constantly, I'm in contact with people. And the fact that I teach mainly neighborhood schools, that is even more rewarding. But of course, it's a struggle, you know. At first, they don't know, they cannot see this, they are bitter. So they cannot understand where you are leading them. They cannot understand, they said "I mean, I already failed all my life already, one more year wouldn't hurt, you know." But having taught for so many years, I've gone through, like bringing them right through, and then they come back to tell me, ah, that is very rewarding! They come back to tell me things like they are glad that I was strict with them, they were glad that I would not allow them to lie and to cheat, and not close a blind eye. So that is very rewarding.

In addition, teachers who viewed wisdom in education from a Transcendent perspective were also guided by a spiritual perspective to see a deeper meaning behind their profession. They saw their profession as a vocation that they had in life, to contribute towards the welfare of their students, colleagues, and ultimately, humanity at large. For example, E. and Y.'s quotes below describe their spiritual motivations for wanting to be teachers based on their religions of Buddhism and Christianity, respectively. Their quotes reflect how their knowledge is framed by transcendent truths, which are characteristic of wisdom conceptions within this category.

E: Yes. OK, the Buddha said, "Be a light to yourself." That means you guide your own

path, OK. For me, I want to be a light in a dark room. So if, should my students be ignorant, they are in darkness, I want to be the light that gives them warmth and to guide them, so that once I light up every heart, it can spread. So that is how I can see my mission in life.

Y: You know, but now when I come back and I look back, I say, "Ok, God, you've given me all this, so what am I supposed to do with it?" And it's a very important question to ask. It's a very important question to ask. So, I think I'll think about it. This is the conclusion that I have. Why else be a teacher?

Teachers who viewed wisdom in education from a Transcendent perspective also strongly believed that teaching for wisdom was of prior importance in the education of students, more so than teaching knowledge and skills. For example, Y. mentioned the following:

Y: I try to tell my students all the time that, you know, you can grade women in three categories, and they overlap. But I'll say, let me bridge the three categories. They're little kids, so you explain to them (...) So I try to tell them very simply, in a very secular way, because we're not allowed to say God in the classroom. Content gets you your exam grades, gets you your certificates, gets you your job interview, right? The skills get you your job, and the wisdom gets you to keep the job, and get promoted.

R: But when you talk to them, do you actually say the word wisdom, do you say, like, life, or...

Y: No, I say wisdom.

R: You actually use the word "wisdom"?

Y: Yeah, and I tell them...yeah, and they ask me, "So, you know, what's wisdom?" And I say "Almost everything. You know, how you live your life, what your life is about, how do you want to spend the rest of your life, what does it mean to you, what you value."

Y.'s conception of wisdom is clearly Transcendent,

although he did not feel comfortable enough in his context to mention God in the classroom. However, he still uses the word “wisdom” in the classroom and expressed how he saw it as a priority in education over content knowledge and skills.

Discussion

Teachers are a group of people who may offer very meaningful insights into the concept of wisdom. (Staudinger, Smith & Baltes, 1992). The results of this study gave rise to three unique categories that represented Asian teachers’ conceptions of wisdom, which were quite different from wisdom categorizations in the literature. Each of the categories are discussed below in comparison with the theoretical bases of wisdom, with recommendations on how teachers’ conceptions of wisdom can be enhanced.

Strategic Wisdom

When seen in comparison with the literature, this category contained elements which were often opposed, or at best, did not correspond with scholarly conceptualizations of wisdom in education. Perhaps the best representation of this category in the literature was Ball’s (2003) account of ‘performativity’, which, he argued, was directly opposed to wisdom. Ball argued that an excessive emphasis on performance monitoring, performance management, technical efficiency as well as meeting measurable outcomes and improving outputs – what he coined as ‘the terrors of performativity’ – were contrary to authenticity and freedom (2003). Ball noted that within the performativity paradigm, new ethical systems based on institutional self-interest, pragmatics, and performative worth were introduced (2003). He called this ‘the ethics of performativity’, which were contrary to traditional ethics of performance judgment, co-operation and honesty (Ball, 2003).

Another feature of this category was its strong emphasis on excellence in quantifiable outcome measures such as test scores and teachers’ performance appraisals. However, attributing such technical and pragmatic ends to education stood in stark contrast to many authors’ conceptualizations of wisdom in

education. These authors proposed instead, that education be aimed at higher goals, even though they were less quantifiable, such as the development of virtues and ethics (Hart, 2001; Eryaman, 2007), addressing more universal concerns such as serving the common good (Sternberg, 2001; Deane-Drummond, 2007) and addressing the problems of humanity (Maxwell, 2007), as well as building peace among nations (Lin, 2007).

On the whole, the findings within this category clearly give evidence that a culture of performativity (Ball, 2003) pervades the Singapore education system and influences the ways in which teachers think about the goals of education. For teachers whose predominant view about education is a ‘Strategic’ one, educational goals go no further than achieving academic success. As a logical consequence, they did not report feeling constrained by such a culture, as opposed to those who viewed wisdom from a more Social or Transcendent perspective, but rather, they saw its benefits.

Nevertheless, ‘Strategic Wisdom’, as articulated by the teachers, consisted of some positive aspects which could serve as starting points for developing ‘Transcendent Wisdom’, which most resembled the theoretical and philosophical definitions of wisdom. One aspect was teachers’ recognition of creativity as an important skill that students ought to develop. These skills were recognized by some authors to be related to teaching for wisdom. For example, Hart (2001) noted that an emphasis on creativity and artistic expression in education opened up a ‘space’ for wisdom to develop. Sternberg (2001) proposed that the development of intelligence and creativity in students ought to culminate in teaching for wisdom, and Craft (2006) argued that a having ‘wisdom framework’ was the best way to teach creativity. Hence, the acknowledgement of the importance of developing creativity could liberate students from excessively linear modes of cognition which can then lead them to discover more transcendent truths about reality.

In addition, developing creativity could also open teachers and students to explore alternative goals in education which may be well worth seeking. Indeed Chua (2008) recommended ‘goalless designing’ and

‘playful seriousness’, which were precisely aimed at helping educators and students become more creative in their choice of goals in life, within the limits of rationality. In this way, recognizing the importance of creativity could be the key to liberate teachers from excessively pragmatic and results-driven concerns, as well as a rigid sense of accountability, which are characteristic of a culture of performativity (Ball, 2003). However, for this to occur, creativity needs to be seen – as Chua (2008) rightly pointed out – *within the boundaries of rationality*, where knowledge is subordinated to ultimate truths about reality. This again underscores the importance of conceiving creativity – and indeed, education as a whole – within a framework of wisdom, if the move towards creativity is to be of any true benefit to the educational community.

Another positive aspect was teachers’ emphasis on the acquisition of a rich knowledge base and cognitive skills that would be beneficial for themselves and their students in life. Thus, the value that teachers place on the pursuit of knowledge could be a starting point for them to acquire more multi-disciplinary and synthetic ways of thinking and knowing, which, according to Deane-Drummond (2007), opens them to a greater sensitivity to the complexity of truth. Such an endeavor, assuming that one humbly submits to ultimate truths about reality, could eventually lead them to discover true wisdom, which, according to Aquinas, differs from science in that it looks at things from a greater height (Hart, 2001). Hence, the value placed on the pursuit of knowledge in ‘Strategic Wisdom’ could serve as a pathway for developing knowledge as how it is seen in ‘Transcendent Wisdom’. Knowledge then becomes not only a good to be pursued, but also a good to be perfected.

Social Wisdom

‘Social Wisdom’ also did not correspond much to the conceptualization of wisdom in education in the literature. However, in its emphasis on developing social communication skills, emotional regulation, and the consideration of the needs of others, it did resemble the views of Csikszentmihalyi and Rathunde (1990) and

Fink and Garner (2008). In addition, its focus on empathetic dealings with others resembled Hart’s (2001) personal quality of ‘heartfulness’. Furthermore, its emphasis on achieving harmonious dealings with others, somewhat resembles Lin’s (2007) recommendation that education be directed towards ‘love, peace and wisdom’.

However, all these authors’ conceptualizations of wisdom incorporated spiritual and transcendent elements, whereas ‘Social Wisdom’ was based instead upon socially constructed knowledge, subjective well-being and feelings. Nevertheless, they are similar in terms of the importance given to social interactions with others, and these aspects could, therefore, be built upon to open teachers’ mindsets to the idea of ‘Transcendent Wisdom’, which more closely represented wisdom theories in the literature.

‘Social Wisdom’ was also found to incorporate some elements of performativity (Ball, 2003), which was contrary to the conceptualization of wisdom in education in the literature. Indeed, a key aspect of performativity was that individuals and organizations tended to scramble to take ever greater care in the construction and maintenance of appearances (Ball, 2003). This was seen in participants’ desires to “make all the ‘right’ decisions”, and “not make any enemies”. Such practices, according to Ball (2003), results in a kind of “values schizophrenia” whereby authenticity within educational practice is sacrificed for impression and performance (Ball, 2003). This can produce a lot of anxiety and insecurity in teachers and is contrary to the claims of many authors who proposed for authenticity and freedom to be necessary conditions for wisdom (e.g. Ball, 2003; Hart, 2001).

This category’s heavy focus on meeting others’ demands or trying to conform oneself to established educational goals and practices, at times, led teachers to be resigned to a defective balancing of goals in wisdom. This caused them to neglect important intrapersonal interests. For example, teachers often had no time for themselves and found their job “draining”. Such were the consequences of having socially determined goals as a main focal point in wisdom.

One way in which acting according to socially

defined values and communicating effectively with others could lead teachers to develop 'Transcendent Wisdom' is by means of welcoming and accepting (transitional) hypocrisy, as proposed by March (1994). Teachers who viewed wisdom mainly from a Social perspective tended to refer to morality and character in terms of 'values'. This could be due to a dominant discourse on 'values' in the Singapore educational system. Chua (2009) pointed out that it may be sensible to welcome and even promote such 'politically correct rhetoric' in the hope that it can serve as a transition to teachers subscribing to such non-academically oriented goals. He argued that as a person exposes himself or herself to these new goals and rationales, he or she may perhaps come to see the reason for such non-performative goals and their attractiveness.

Another significant aspect of 'Social Wisdom' worth mentioning was the importance that teachers placed on giving good example to students. Owing to the fact that in 'Social Wisdom', much importance is placed on the consequences of one's decisions and actions on others, realizing how much influence teachers had on the lives of their students gave them the impetus to try to improve themselves, in order to give a good example of upright conduct to their students. This could be another starting point for teachers who saw wisdom from a 'Social perspective' to adopt a more 'Transcendent perspective', if they could be helped to see that being 'good' involved more than simply adhering to socially-constructed values, but to virtues and more objective moral principles, which were characteristic of 'Transcendent Wisdom'. In fact, giving good example to students was also a strategy identified by teachers who taught through 'Transcendent Wisdom'. Furthermore, developing good social and emotional skills in order to deal peaceably with others could also serve as starting points for developing virtues. For example, to relate well with others, having self-control and self-mastery to regulate one's emotions correspond to virtues such as temperance and fortitude. They could be helped to discover that virtues are not simply socially constructed concepts, but stable dispositions of character that are in themselves, morally good, and pre-dispose individuals to act according to them.

Transcendent Wisdom

'Transcendent Wisdom' most closely resembled the conceptualizations of wisdom in the literature. It corresponded to the views of many authors who stressed the importance of knowledge about spiritual and transcendent realities (Deane-Drummond, 2007; Hart, 2001; MacIntyre, 2009; Lin, 2007), and that technical and scientific knowledge be intellectually subordinated to moral principles of conduct (Craft, 2006; Halpern, 2001) and even philosophy and theology, and that these ought to serve as overarching frameworks for one's perspective in life (Maxwell, 2007; Deane-Drummond, 2007; Chua, 2006).

Allowing teachers and students the freedom to explore and pursue educational goals other than merely academic achievement was recognized in the literature as being characteristic of wisdom in education (e.g. Chua, 2009; Hart, 2001; Halverson, 2004; Ball, 2003). This was also seen in the data where teachers argued for the need for parents, teachers, and even students themselves, to acknowledge a greater diversity of educational or even non-educational goals which were worth seeking in life. This arose from participants' desire to pursue the overall good of students, which were at times, contrary to socially acceptable policies and practices. Participants claimed to experience tensions between their personal goals and that of their school or the educational system. However, at the same time, they viewed that it was possible for teachers to rise above these contextual constraints, precisely because they recognized that they had the freedom to decide for themselves and were not bound or conditioned by social or other obligations, as in 'Social Wisdom'. An example of this can be seen in Y. who found ways to develop students' spiritual beliefs even though he was not allowed to talk about religion in the classroom, and E., who recognized the need to choose "to make our own space to really step back and reflect" amidst the hectic life of a teacher, which rarely afforded opportunities for reflection.

In 'Transcendent Wisdom', dealings with others such as rectifying one's wrongdoings, apologizing and making peace with others, as well as exercising self-discipline, self-mastery and not reacting to every impulse (Hart,

2001) went beyond developing social and emotional skills, because they were oriented towards higher ends such as morality, the acquisition of virtues, and/or the good of others. This could potentially serve as a starting point for teachers who view wisdom in education from a Social perspective, as mentioned previously.

Teachers also recognized virtues an important part of wisdom in education. This corresponded to the views of several authors such as Van Manen (1994), who proposed the need for teachers to develop 'pedagogical virtues'. He argued that cultivating virtues was preferable to the alternative of a 'moral principled model', because teachers rarely had the opportunity to step back and 'reflect in practice', given the rush of daily interactions with their students (Van Manen, 1994). Hence, 'pedagogical virtues' could be an interesting aspect of wisdom that would be of benefit for teachers to develop. In fact, some of the pedagogical virtues which Van Manen (1994) proposed, such as patience, trust, and believing in children, were also identified by the teachers, thereby providing empirical evidence for his claims. In addition, participants also recognized the need for the virtue of prudence, which according to Deane-Drummond (2007), enables teachers to engage with the overall goal of the subject or topic taught, asking broader questions about social justice.

Teachers also transmitted knowledge about morality by infusing them in the curriculum subjects. For example, two teachers used examples of the lives of famous composers and scientists in order to help their students to see that morality, and not just success, was an important aspect of one's life. This also corresponded to the views of many other authors who proposed that students be helped to see that knowledge and educational goals are to be viewed within a rational perspective of ethics and morality (Craft, 2008; Chua, 2008). This corresponds to many authors (Sternberg, 2007; Hart, 2001; Halpern, 2001; Csikszentmihalyi & Rathunde, 1990) who argued that 'wisdom' is best taught as infused within the normal curriculum subjects and in day-to-day classroom experiences, rather than as a subject on its own.

Finally, teachers also stressed the importance of being a good role model of virtue and upright morals, in

order to develop wisdom in their students. They also believed that school administrators and leaders encouraged generosity in their staff when they led by service, which was essentially giving good example of virtue and morals. This corresponded to several authors' recommendation that teachers use 'role modelling' to develop virtues in students in order to foster in them the development of wisdom (Csikszentmihalyi & Rathunde, 1990; Hart, 2001). These and all the other examples cited by teachers who viewed wisdom from a 'Transcendent perspective' provide helpful ideas on how teachers can be trained to teach for wisdom.

Conclusion

The insights gained from the current study would be able to inform educational policy and teacher training so that students would be equipped with virtues and a mindset to be able to make responsible choices about how to use the knowledge and skills they acquire in school. They will be able to make good judgments about complex issues in life and be better able to identify and solve problems in real-world contexts using an ethical framework, in order to contribute to the common good, thereby working towards shared sustainable growth in the future.

References

- 1) Ardel, M. (2004). Wisdom as expert knowledge system: A critical review of a contemporary operationalization of an ancient concept. *Human Development*, 47, 257-285
- 2) Ball, S. J. (2003). The teacher's soul and the terrors of performativity. *Journal of Education Policy*, 18(2), 215-228
- 3) Baltes, P. B., & Staudinger, U. M. (2000). Wisdom: A meta-heuristic (pragmatic) to orchestrate mind and virtue toward excellence. *American Psychologist*, 55(1), 122-136
- 4) Bierly III, P. E., Kessler, E. H., & Christensen, E. W. (2000). Organizational learning, knowledge and wisdom. *Journal of Organizational Change Management*, 13(6), 595-618
- 5) Chua, S. M. J. (2006). What is a school? An answer consistent with human rights. *Educational Research for Policy and Practice*, 5(3), 225-234
- 6) Chua, S. M. J. (2008a). In praise of folly: On seriously playful curriculum design. *Education Today*, 58(4), 18-23
- 7) Chua, S. M. J. (2009). Saving the teacher's soul: exorcising the terrors of performativity. *London Review of Education*, 7(2), 159-167

- 8) Craft, A. (2006). Fostering creativity with wisdom. *Cambridge Journal of Education*, 36(3), 337-350
- 9) Csikzentmihalyi, M., & Rathunde, K. (1990). The psychology of wisdom: An evolutionary interpretation. In R. J. Sternberg (Ed.), *Wisdom: Its nature, origins, and development* (pp. 25-51). Cambridge: Cambridge University Press
- 10) Deane-Drummond, C. (2007). Wisdom remembered: Recovering a theological vision of wisdom for the academe. *London Review of Education*, 5(2), 173-184
- 11) Eryaman, M. Y. (2007). From reflective practice to practical wisdom: Towards a post-foundational teacher education. *International Journal of Progressive Education*, 3(1), 87-107
- 12) Fink, D., & Garder, S. (2008). Wisdom in student assignments: Its operationalization and manifestation. *Proceedings of the Informing Science and IT Education Conference*
- 13) Finnis, J. (1980). *Natural law and natural rights*. Oxford: Clarendon Press
- 14) Halpern, D.F. (2001). Why wisdom? *Educational Psychologist*, 36(4), 253-256
- 15) Halverson, R. (2004). Accessing, documenting, and communicating practical wisdom: The phronesis of school leadership practice. *American Journal of Education*, 111(1), 90-121
- 16) Harris, I. (Ed.). (2001). *Buddhism and politics in twentieth century Asia*. A&C Black
- 17) Hart, T. (2001). Teaching for wisdom. *Encounter: Education for meaning and social justice*, 14(2), 3-16
- 18) Iredale, M. (2007). From knowledge-inquiry to wisdom-inquiry: Is the revolution underway? *London Review of Education*, 5(2), 117-129
- 19) Labouvie-Vief, G. (1990). Wisdom as integrated thought: Historical and developmental perspectives. In R. J. Sternberg (Ed.), *Wisdom: Its nature, origins, and development* (pp. 52-83). Cambridge: Cambridge University Press
- 20) Levitt, H. M. (1999). The development of wisdom: An analysis of Tibetan Buddhist experience. *Journal of Humanistic Psychology*, 39(2), 86-105
- 21) Lin, J. (2007). Love, peace, and wisdom in education: Transforming education for peace. *Harvard Educational Review*, 77, 362-365
- 22) MacIntyre, A. (2009). The very idea of a university: Aristotle, Newman, and us. *British Journal of Educational Studies*, 57(4), 347-362
- 23) March, J. G. (1994). *A primer on decision making: How decisions happen*. New York: The Free Press
- 24) Marton, F. (1981). Phenomenography - Describing conceptions of the world around us. *Instructional Science*, 10, 177-200
- 25) Maxwell, N. (2007). From knowledge to wisdom: The need for an academic revolution. *London Review of Education*, 5(2), 97-115
- 26) Mustakova-Possardt, E., & Basseches, M. (2014). Processes in the development of individual and collective consciousness and the role of religious and spiritual communities. In E. Mustakova-Possardt, M. Lyubansky, M. Basseches & J. Oxenberg (Eds.), *Toward a socially responsible psychology for a global era*. International and cultural psychology. New York: Springer
- 27) Phelan, A. M. (2005). A fall from (someone else's) certainty: Recovering practical wisdom in teacher education. *Canadian Journal of Education*, 28(3), 339-358
- 28) Rooney, D., & McKenna, B. (2007). Wisdom in organizations: Whence and whither. *Social Epistemology*, 21(2), 113-138
- 29) Rozells, D. (2011). A phenomenographic study of teachers' conceptions of wisdom and their experiences of wisdom in education. Unpublished doctoral thesis, Nanyang Institute of Education, Nanyang Technological University, Singapore
- 30) Staudinger, U. M., Smith, J., & Baltes, P. (1992). Wisdom-related knowledge in a life review task: Age differences and the role of professional specialization. *Psychology of Aging*, 7(2), 271-281
- 31) Sternberg, R. J. (2001). Why schools should teach for wisdom: The balance theory of wisdom in educational settings. *Educational Psychologist*, 36(4), 227-245
- 32) Sternberg, R. J. (2003). *Wisdom, Intelligence and Creativity Synthesized*. U.K.: Cambridge University Press
- 33) Sternberg, R. J. (2005). A model of educational leadership: Wisdom, intelligence and creativity, synthesized. *International Journal of Leadership in Education*, 8(4), 347-364
- 34) Van Manen, M. (1994). Pedagogy, virtue and narrative identity in teaching. *Curriculum Inquiry*, 4(2), 135-170
- 35) Wang, J., Smyth, R., & Tan, D. H. (2000). The role of Confucian values in East Asian development: Before and after the financial crisis. *Journal of International and Area Studies*, 7(1), 115-135
- 36) Wink, P., & Helson, R. (1997). Practical and transcendent wisdom: Their nature and some longitudinal findings. *Journal of Adult Development*, 4(1), 1-15

Appendix I: Interview Questions

1. Is wisdom important to you as a teacher? Why?
2. Does it relate to your teaching and about you as a teacher? How?
3. Who in your teaching career can you describe as particularly wise? What is it about this person that makes you think he/she is wise?
4. What aspect/s of wisdom do you think is important in the teaching profession, if any?
5. Does your professional environment (cultural, social, institutional) contribute to wisdom (in yourself and in your students)? Why?

Numerical Simulation and Seismic Performance of Buckling Instability of Piles in Liquefiable Ground



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地震頻発国のインドネシアでは都市部における地盤液状化のリスクが深刻な問題となっている。本稿では3Dシミュレーションを用いて在来リスク予想の手法を検証し、よりの確かな予想を導くための課題を探った。

Abstract

This paper discusses an alternative to compute and analyze pile buckling in liquefiable ground during seismic shaking. This study is undertaken based on three-dimensional finite element (FE) simulations using OpenSeesPL. To explore the effect of shaking, soil and pile behaviors are observed at different axial loading conditions. The results reveal insights of axial load influence due to soil liquefaction in both near-field and free-field grounds. Analysis results show that an increase in axial load would generally decrease the lateral displacement and increase the bending moment of piles, as well as reduce the acceleration and excess pore pressure responses in soils by seismic shaking and soil liquefaction. From the case examined in this study, we notice the computed bending moments in piles are less than that of the yielding or ultimate moment, which appear dissimilar results by using Bhattacharya (2015)'s approach that would indicate the buckling of piles under the dynamic axial loads and soil liquefaction in seismic shaking. Further studies would therefore be warranted to justify the capability and suitability of the numerical simulations conducted herein. Nonetheless, the revealed insights by numerical simulations provide a good basis for understanding and analysis on the buckling of piles in liquefiable ground.

Keywords pile buckling; seismic shaking; soil liquefaction; numerical simulation; OpenSeesPL

Introduction

Soil liquefaction is one of complex phenomena that causes many damages during earthquakes. In addition, liquefaction represents one of the biggest contributors to the damage of constructed facilities during earthquakes; for instances, settling, tilting, and sliding of building structures due to soil liquefaction.

Liquefaction of soils has caused considerable damages to pile-supported structures such as bridges and buildings. Liquefaction was reported as the main cause of damages to pile foundations during major earthquakes, such as 1964 Alaska, 1989 Loma-Prieta, 1995 Hyogoken-Nambu (Kobe), 1999 Chi-Chi, 2011 Tohoku earthquakes (Kramer, 1996; Finn and Fujita, 2002; EERI, 1999; Bhattacharya et al., 2013). Recently, Palu

earthquake, Indonesia, on 28 September 2018 with a magnitude (M_w) of 7.5 caused strong shaking, generating a tsunami and massive liquefaction (GEER, 2019).

The strength and stiffness of soils decrease due to the increase in pore pressure by earthquake shaking and would seriously affect the embedded piles, causing large bending moments and shear forces and eventually threatening structural stability of the piles.

Generally, soil profiles encountered for piles consist of a liquefied layer sandwiched between a non-liquefied crust and a non-liquefied base layer (Cubrinovski and Ishihara, 2005).

The collapse of pile structures is observed after many strong earthquakes due to lack of safety factor against bending failure by the lateral or axial loading. Several

methods are available for calculating the bearing capacity of pile foundations, such as theoretical formulas based on static analysis (Kulhawy, 1984; Poulos, 1989), in-situ testing (Meyerhof, 1976; Schmenrtmann, 1978; Eslami and Fellenius, 1997), dynamic approach (Goble and Rausche, 1979; Rausche et al., 1985; Fellenius, 2006), or through interpretation of full-scale pile load tests (Fellenius, 1990).

Piles must be designed to sustain axial (vertical) and lateral (horizontal) loads without suffering structural damages, bearing capacity failures and excessive settlements or deflections.

Terzaghi (1943) has proposed a theory for calculating the bearing capacity of shallow foundations by the following:

$$q_{ult} = cN_c + qN_q + 0.5\gamma BN_\gamma \quad (1)$$

where q_{ult} is the ultimate bearing capacity, c is cohesion, q is surcharge pressure, B is the foundation width, γ is the soil unit weight, and N_c , N_q , and N_γ are bearing capacity factors that are the functions of soil friction angle. For deep (pile) foundations the third term can usually be neglected because of relatively small width (diameter) of the pile (Bowles, 1996). Thus, the ultimate base capacity of pile is regarded as $cN_c + qN_q$. Except for pre-consolidated clays and cemented sands, the above equation can take the form qN_q .

A pile under axial load derives its load-carrying capacity through the friction or adhesion along the pile shaft and by the compressive resistance at the pile base with underlying soils (Salgado, 2008). The ultimate bearing capacity Q_{ult} of single pile may be expressed as:

$$Q_{ult} = Q_b + Q_s = q_b A_b + \sum_{i=1}^n q_s A_s \quad (2)$$

where Q_b is base resistance, Q_s is limit shaft resistance, q_b is unit base resistance, q_s is limit unit shaft resistance, A_b is area of pile base, and A_s is pile shaft area.

Bhattacharya and Madabhushi (2008) suggested that the bending moment or shear force experienced by the failed piles due to soil liquefaction of lateral spreading

would exceed the bending or shear carrying capacity of the piles.

Pile foundations in liquefiable soils subjected to seismic shaking may also due to excessive settlements. The mechanism of buckling instability in liquefiable soils has been proposed (Bhattacharya, 2003; Bhattacharya et al., 2004; Knappett and Madabhushi, 2005; Kimura and Tokimatsu, 2005; Shanker et al., 2007). During liquefaction, the pile would suffer a significant loss lateral support in the liquefied zone. Therefore, if the axial load is close to its critical buckling load, then buckling instability of piles may occur, which would be promoted by the actions of lateral load or material imperfection.

Bhattacharya (2015) described that prior to shaking the axial load acts on pile beneath a building is equally distributed under static conditions without any eccentricity of loading. During earthquake shaking, the inertial action of superstructure imposes dynamic axial loads on the piles, which can be given by the following:

$$P_{dynamic} = P_{static} + \Delta P = (1 + \alpha) P_{static} \quad (3)$$

where α is the dynamic axial load factor, which is a function of the type, dimension and mass of the superstructure, the characteristics of seismic shaking, as well as material properties and geometry of the pile foundation.

In the following, a brief description will be given on the geotechnical problems and code requirements for pile design under static and seismic loadings. In such cases, modification methods would be called upon to reach the level of improvement that is needed. Attaining necessary improvements against buckling instability in liquefiable ground may sometimes be difficult and expensive.

In this regards, numerical simulations can provide an important role for the development of an economical and effective solution. This paper proposes numerical simulations to evaluate soil-pile responses due to seismic shaking, and behaviors of pile buckling during soil liquefaction.

Literature review

JRA (1996) describes that certain soils liquefy during earthquake shaking, losing their shear resistances and causing flow with overlying non-liquefied crust. The mechanism and criteria to be used by practicing engineers are usually specified by prevailing codes. An example is the bending failure of piles by assuming non-liquefiable crust offers passive resistance and liquefied soil layer offers restraint equal to 30% of the overburden pressure.

Bhattacharya et al. (2004) proposed an alternative mechanism of pile failure in liquefiable deposits during earthquake. It has been demonstrated that the end-bearing piled foundations can be vulnerable to buckling instability during seismic liquefaction based on the results of centrifuge tests. Their works considered that the pile becomes unstable under axial load from loss of support from the surrounding liquefied soil, provided the slenderness ratio of the pile in unsupported zone exceeds a critical value. The instability causes the pile to buckle and causes a plastic hinge in the pile. In a soil-pile interaction term, the method assumes that, during instability, the pile pushes the soil. Consequently, the lateral load effect is considered secondary to the basic requirements that piles in liquefiable soils must be checked against Euler's buckling.

If the pile buckles due to diminishing effective stress and shear strength of soils owing to liquefaction, buckling instability can be a possible failure mechanism irrespective of level or sloping ground.

Foundations directly supported on soil are particularly vulnerable to liquefaction. This phenomenon is well understood and studied. Piled foundation responses to liquefaction and buckling are less studied.

Designing piles with column buckling and beam bending criteria require different approaches. Dash et al. (2010) described the former is based on strength and the latter is on stiffness. Bending failure depends on the bending strength, such as moment at first yield (M_y), and plastic moment capacity (M_p) of the pile. While buckling represent a sudden instability of the pile when axial load reaches the critical value (P_{cr}).

Bhattacharya and Goda (2013) proposed the

probabilistic evaluation of liquefaction-induced pile foundation buckling failure due to a scenario earthquake. By comparing critical pile length (H_c) and unsupported pile length (D_L), the potential failure of the pile due to buckling is indicated when $H_c < D_L$. The unsupported length (D_L) can be assessed based on the depth interval of liquefied soils plus some fixity (normally 3~5 times the pile diameter). The critical pile length (H_c) can be computed by the Euler's theory as below:

$$H_c = \sqrt{\frac{0.35\pi^2 EI}{K^2 P_{dynamic}}} \quad (4)$$

where K is the Euler's effective column length coefficient, depending on the boundary condition of column. Finally, buckling index (G) can be defined by following:

$$G = H_c - D_L \quad (5)$$

Based on Eq. (5), if G is greater than zero (i.e., $H_c > D_L$), then pile is considered safe. Otherwise, the pile will be buckling due to seismic loading and soil liquefaction.

On the other hand, some researchers use numerical simulations to model the liquefaction-induced pile failure during shaking, with aims to mitigate detrimental liquefaction effects with various kinds of modification techniques (Mitchell et al., 1998; Adalier and Elgamal, 2004). Installation of piles to mitigate lateral spreading effects has been proposed (Boulanger and Tokimatsu, 2005; Boulanger et al., 2007). During and after earthquake shaking, liquefaction of mitigated ground would be affected by several key parameters (e.g. area replacement ratio, soil and stone column permeability, pile or stone column diameter, mass of the superstructure and ground motion characteristic) and may result in localized deformation (Kokhuso, 1999; Yang and Elgamal, 2002; Akgari et al., 2013).

Elgamal et al. (2009) conducted simulations by using OpenSeesPL to evaluate mitigation of soil liquefaction by stone column (SC) and pile-pinning approaches on the basis of a systematic parametric study. Recently, the simulation of pile buckling is considered due to axial

loading during seismic excitation. It is important to know the behaviors surrounding soil and pile during the seismic excitations.

Numerical simulations

Analysis framework

The simulations are carried out by using the open-source computational platform, OpenSees (Mazzoni et al., 2006; McKenna et al., 2010). The platform allows for developing application to simulate performance of structures and geotechnical systems subjected to static and seismic loadings. The 3D finite-element modeling of the soil is represented by 20-8-node brick elements. The nodal element is based on the solid-fluid formulation with saturated soil implementation in OpenSees.

The OpenSeesPL approach is adopted in this study (<http://soilquake.net/openseespl/>). It has particular capabilities for carrying out a large variety of 3D finite-element simulations based on the OpenSees computational platform (Lu, 2006; Elgamal et al., 2009). In addition to static analysis, the software allows for dynamic and cyclic earthquake simulations with linear, bilinear, or advanced (i.e., nonlinear fiber) element formulations.

Wang (2015) described that OpenSeesPL allows for simulating with considerations to: (1) convenient generation of the mesh (e.g., surface load/axial/footing, single pile, pile group) and associated boundary condition; (2) simplified selection of soil/pile linear/non-linear material modeling parameters in finite-element input file (Yang et al., 2003; Elgamal et al., 2008); (3) execution of simulation using an OpenSees platform; (4) single pile and pile group computations under seismic shaking as well as studies in prescribed displacement or prescribed force modes; (5) numerical studies in various ground modification scenarios by using certain specification of material within pile zone (Elgamal et al., 2009; Asgari et al., 2013; Lu et al., 2019); (6) graphical display of the results for footing or pile and ground system.

Analysis procedure

The model adopted in numerical analyses is shown in Fig. 1. All simulations were developed and executed using interface OpenSeesPL based on $u-p$ formulation.

The 3D finite-element soil domain is represented by 8-node, fully-coupled (solid-fluid) brick elements. In this scenario, an 18-m thick saturated sand layer was studied, with a permeability $k = 6.6 \times 10^{-5}$ m/s based on Nevada sand properties at a medium relative density D_r of approximately 40% (Elgamal et al., 2009; Asgari et al., 2013; Lu et al., 2019) and performed with a ground-water level of 0.9 m below ground surface. The ground surface was assumed level.

In the following, the plane area of simulation was 4.6 m \times 4.6 m (square area), and the scenarios were analyzed using same meshes with spacing of 1 m in longitudinal (x), transverse (y) and vertical (z) directions. In terms of base excitation (embedded at 18-m depth), the downhole north-south (N-S) acceleration record from El Centro earthquake (1940) was adopted along the x -axis, as shown in Fig 2.

To explore the effect of seismic shaking on soil and pile behaviors, different axial loadings on the pile were considered, including 0, 1500, 3000, and 6000 kN. In addition, simulation results were examined for the behavior of soils in near-field and free-field.

Example case description

In this study, a series of numerical analysis was carried out to investigate various factors affecting on the liquefaction potential of saturated soil, the axial load transfer mechanism, and the seismic performance of pile foundation. Therefore, using a comprehensive constitutive soil model is one of the most important parts of numerical simulation of dynamic behavior of liquefiable soils.

In view of symmetry, only half-mesh was performed with lateral loads applied along the longitudinal of the model. According to Tang et al. (2015), the following aspects were considered: (1) the penalty method was used to set equal degree-of-freedom (DOF) of displacements for the left and right boundaries at any spatial location in horizontal and vertical directions (i.e., periodic-boundary); (2) due to symmetry, the inner and outer boundaries were fixed against out-of-plane displacement but free to move longitudinally and vertically; (3) the ground surface was stress-free; (4) the

seismic excitation was imposed at the base along the x -axis (longitudinal) direction.

One of the parameters in this modeling lies in soil type. The physical and mechanical properties of soil layer and reinforced concrete pile are presented in Tables 1 & 2, respectively. The exterior and interior diameters of reinforced concrete pile are 600 mm and 400 mm, respectively. Rigid beam-connections, normal to the pile longitudinal axis, were used to represent the geometric space occupied by the pile. The soil domain's 3D brick elements are connected to the pile geometric configuration at the outer nodes of these rigid links using the equal DOF constrain in OpenSees for translation only (Asgari et al., 2013).

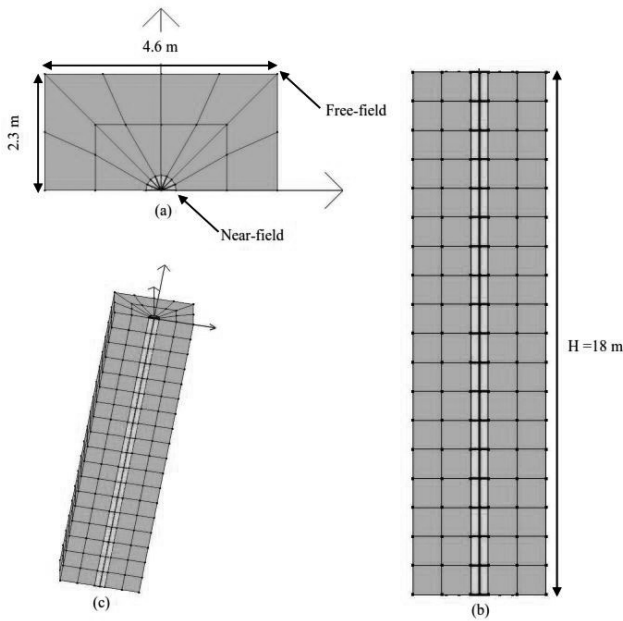


Fig. 1. FE mesh for the ground modification study: (a) schematic plan view; (b) side view; (c) 3D isometric view (soil stratum with half mesh employed due to symmetry).

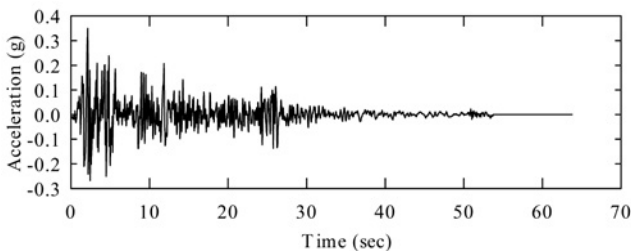


Fig. 2. Base input motion (El Centro earthquake of 1940)

Table 1. Soil parameters

Parameters	Medium
Mass density γ_m	1900 kg/m ³
Low-strain shear modulus G_r	78.5 MPa
Friction angle ϕ	31.4°
Liquefaction yield strain γ_y	1%
Contraction parameter c_I	0.3
PT angle ϕ_{PT}	26.5°
Dilation parameter d_I	0.4
Dilation parameter d_2	2.0

Table 2. Reinforced concrete pile parameters

Parameters	Reinforced concrete pile
Weight of concrete γ_c	2.5 Mg/m ³
Yielding moment M_y	908 kN-m
Plastic moment M_u	1317 kN-m
Flexural rigidity EI	178×10 ³ kN-m ²
Shear rigidity GA	228×10 ⁴ kN
Torsional rigidity GJ	23×10 ³ kN-m ²
Axial rigidity EA	546×10 ⁴ kN

Table 3. Earthquake data

Earthquake motion parameters	El Centro (USA)/N-S
Date of occurrence	18/05/1940
Recording station	117 EL Centro
Moment magnitude of earthquake M_w	7.1
Max. horizontal acceleration MHA	0.314 g
Predominant period T_p	0.5 sec
Bracketed duration	28.78 sec
Significant duration D_{5-95}	23.84 sec
Time of MHA t_p	2 sec
PGV/PGA	0.113 sec
Arias intensity for scaled PGA=0.35 g	2.175 m/sec
Energy flux for scaled PGA=0.35 g	2469 Jm ⁻² sec ⁻¹
No. of significant excitation cycles N_c	14.5

The numerical simulations were performed with different the axial loads (i.e. vertical dead loads) at the center of pile head, with 0, 1500, 3000, and 6000 kN, to demonstrate the effect of non-linear soil response and to compare their in-fluences on soils in the near and free fields.

To examine the characteristics of input motions, we adopted a strong shaking phase of the downhole N-S acceleration record and embedded at an 18-m depth of the model. The shaking data was based on El Centro earthquake (1940), which had caused large ground failures and extensive liquefaction phenomena. The earthquake data for this study are shown in Table 3.

Simulation results

1) Soil response of shaking

Acceleration amplitude appears to increase as the depth of soil becomes shallower, as shown in Fig. 3. It is also noticed that the increase in axial load of pile would generally decrease the acceleration responses in soil. The acceleration responses does not differ much, however, for the soils in near-field (i.e., at the contact with pile) and free-field (i.e., at the edge of model). A more “rigor oscillation” would appear noted for soils in the near-field of this study.

The study here demonstrates the soil deposit would tend to amplify the seismic shaking. As the increase in the axial loading on pile, a situation similar to a heavier

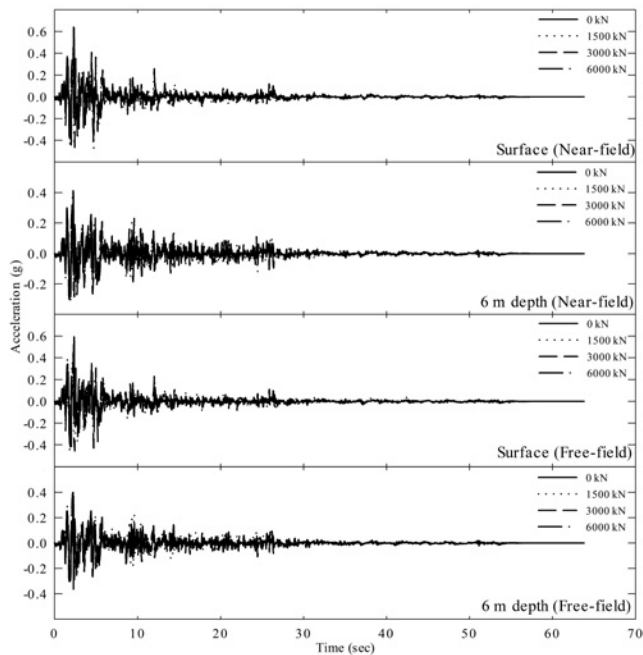


Fig. 3. Acceleration time histories at surface and 6-m deep for soils in near and free fields.

superstructure, the natural period of the pile structure would be increase, and hence less interaction between pile and soil. In accordance, the increase in axial loading on pile would reduce the acceleration response in soil. It can be perceived that the soil along the contact of pile (i.e., near-field) would be subjected to more interaction effect than that of the soil in a distance away (i.e., free-field). And hence the response of soil in free-field would tend to be smoothened.

2) Behavior of soil

Fig. 4 shows excess pore pressure responses in soils. Generally, the excess pore pressures reach their original effective stresses (i.e., soil liquefaction) at shaking times of approximately 5 and 10 seconds, respectively, for soils at depths of 6 and 12 meters, indicating soil liquefaction would be generated at a shallower depth and then propagated downwards. Through a series of excess pore pressure response with depth, we would be able to determine the depth interval of liquefied soil or the unsupported length of pile (D_L).

It is noticed that the near-field responses in excess

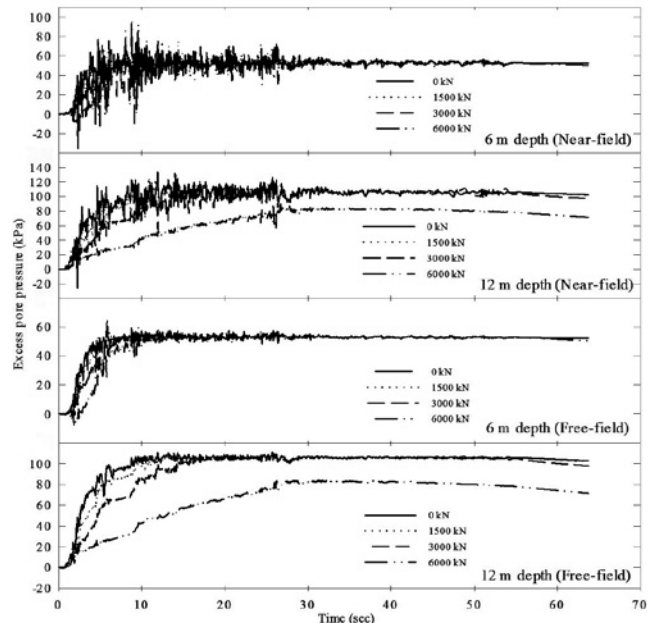


Fig. 4. Excess pore pressure time histories at surface and 6-m deep for soils in near and free fields (initial effective stresses at 6 and 12 m depths are 64 and 119 kPa, respectively).

pore pressure are apparently more “rigorous” than that in the free-field. Due to the interaction effect as mentioned previously, the excess pore pressure responses would be smoothened for the soils in a distance away from the pile.

In the figure, we also observe a delayed response in excess pore pressure as the increase in axial load on pile. The increase in axial load of pile would postpone the development of excess pore pressure, and thus the occurrence of soil liquefaction. For instance, liquefaction of soil in free-field and at a depth of 12m occurs at shaking times of approximately 10, 12 and 18 seconds, respectively, for axial loads of pile of 0, 1500 and 3000 kN. For the axial load of 6000 kN, however, the free-field soil at 12m deep would never liquefy during the course of input seismic shaking.

Fig. 5 shows the shear stress vs. shear strain relationships of soils in the near and free fields and with different axial loads of pile. The stress-strain hysteresis loops will become flattened as the soil is weakened or softened as due to the developed excess pore pressure in soil. Eventually, the sandy soils would be liquefied and the corresponding stress-strain curves will show large

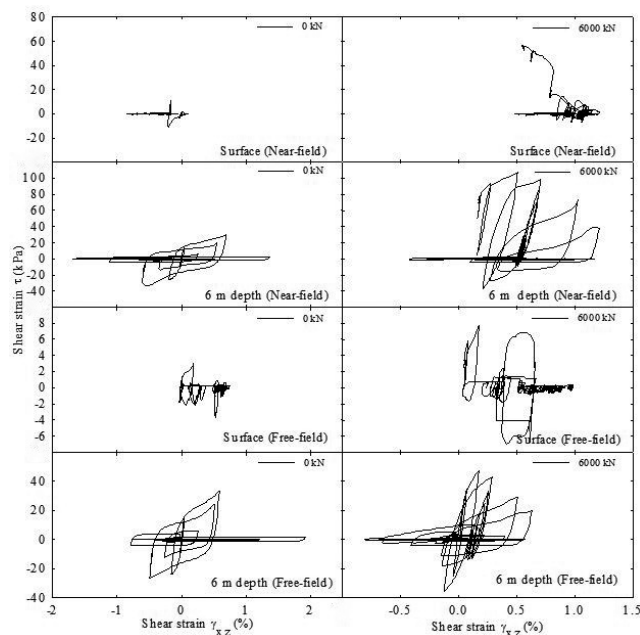


Fig. 5. Shear stress-strain relationships at surface and 6-m deep for soils in near and free fields.

strains with negligible shear resistances.

As shown in the figure, the increase in pile axial load would generally reduce the aforementioned interaction effect, a less response in excess pore pressure, and thus a stiffer stress-strain relationship in soil. It is also noticed that the deeper the soil the stiffer would be the stress-strain relationship for soil, a situation can also be explained by the de-layed development of excess pressure with depth during seismic shaking.

Due to its close proximity to the pile, the near-field soil would suffer more interactive effect, higher response in excess pore pressure, and thus less stiff in the stress-strain relationship of soil, as shown in the figure.

3) Behavior of the pile

Lateral displacement of pile during seismic shaking is examined for the cases with various axial loads and at different depths of concern. As indicated in Fig. 6, the lateral displacement of pile would be decreasing with the depth of concern, suggesting the lateral displacement of pile due to shaking would be amplified or maximized at the pile head.

As far as the effect of axial load, we notice that the increase in the pile axial load would tend to reduce the lateral displacement of the pile. Since the increase in axial load of pile would be similar to the increase in the weight of superstructure, the lateral displacement of pile would therefore be reduced as due to the increasing axial pile load. The effect of axial pile load will be fur-

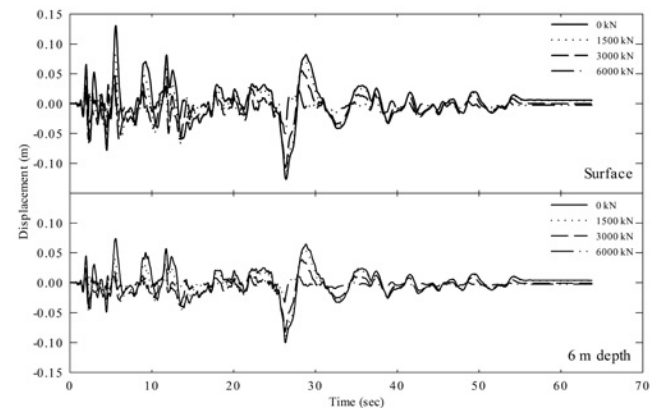


Fig. 6. Displacement vs. time histories of pile at the surface and a depth of 6-m.

ther discussed in the following paragraphs.

The weights from superstructure are trans-ferred to the pile, which is eventually considered as the axial or pile head loads. The pile head load will affect the responses of pile during seismic shaking in terms of lateral displacement, shear force and bending moment profiles. Figs. 7 and 8 show the results of pile response profiles due to various axial pile loads at the end of shaking and the maximum profiles during the shaking, respectively.

As shown, the increase in axial loading would generally decrease the lateral displacement of pile, both

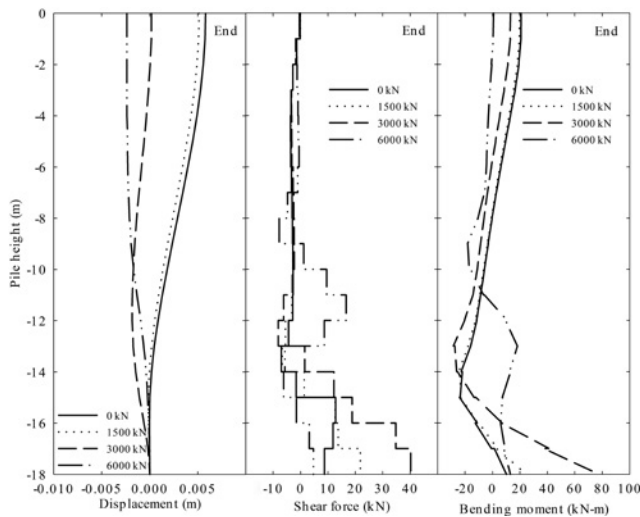


Fig. 7. Pile response profiles at the end of shaking.

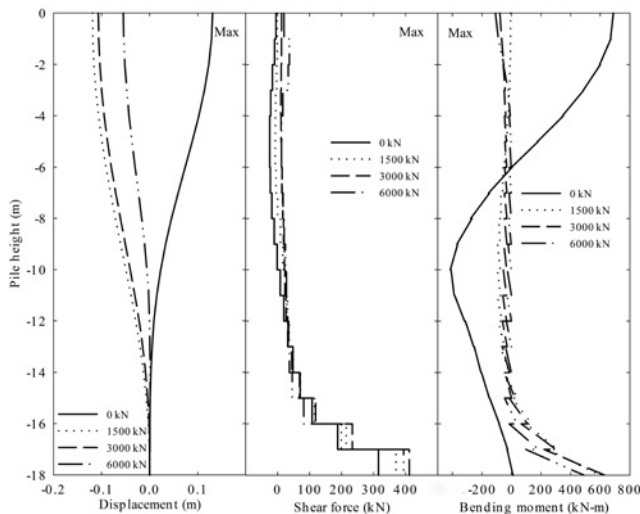


Fig. 8. Maximum pile response profiles during the shaking.

at the final stage of shaking and the maximum profile throughout the shaking history.

Results indicate the increase in pile axial loading would normally increase the shearing force in pile due to the shaking. The maximum shear would appear to locate at the fixed-end pile tip.

For the bending moment in pile, we observe that the maximum moments would also occur at the fixed-end pile tip, same as for the maximum shears. Except for the zero-axial-load case, the maximum moment vs. depth profiles would be similar for the piles with axial loading

4) Comments on buckling load

For all the cases examined in the above numerical simulations, we notice the computed maximum bending moments in pile are not exceeding the yielding or plastic moments of the pile as shown in Table 2. This is indicative that the numerical simulations by OpenSeesPL do not predict the buckling of pile with the various assigned axial loadings (0~6000 kN).

As mentioned in the literature review, the buckling of piles in liquefiable ground can also be assessed by Bhattacharya's approach (2015), which considers the unsupported pile length (D_L) due to soil liquefaction and the critical pile length (H_C) based on Euler's theory.

Results of the numerical simulations show the deposit soil will liquefy from the ground surface up to a depth of 12~18 m due to the assigned seismic shaking for the pile axial loads of 0~3000 kN. For the pile axial load of 6000 kN, the liquefied soil will reach to a depth of 6~12 m. In accordance, it can be estimated the unsupported pile lengths (D_L) would be approximately 18 m and 12 m, respectively, for the pile axial loadings of <3000 kN and 6000 kN.

By applying Eq. (4), the critical pile lengths (H_C) can be computed with the values of ∞ , 20.2, 14.3 and 10.1 m, respectively, for the pile axial loads of 0, 1500, 3000 and 6000 kN.

Hence, Bhattacharya's approach would predict no buckling failure for piles with axial loads less than 3000 kN (i.e., $H_C > D_L$). For axial loads greater than 3000 kN, however, the piles will be buckling (i.e., $H_C < D_L$).

It is apparent that the predictions by numerical simulations using OpenSeesPL are not consistent with those of Bhattacharya's approach. As mentioned previously, OpenSeesPL consists of a 3D formulation of finite element method which considers interaction of pile and surrounding soil due to seismic shaking. Although the application of axial load on pile is permitted, if the axial load on pile deflection or buckling being properly considered in the software is still uncertain. On the other hand, Bhattacharya's approach neglects the confining effect of the liquefied soil and assumes a pseudo-static way for the dynamic inertial forces. It is not sure, however, if Bhattacharya's approach would be too conservative. Hence, further studies are warranted to justify the queries raised above.

Conclusions

This study was conducted to explore the influence of pile axial load on the responses of pile and surrounding soil due to seismic shaking. A 3-D finite element software, OpenSeesPL, was employed for the numerical simulations. Results of the study are listed below:

- a. An increase in axial loading would generally decrease the lateral displacement and increase the bending moment of piles.
- b. An increase in axial loading would reduce the acceleration and excess pore pressure responses in soils during seismic shaking and soil liquefaction.
- c. Numerical simulations using OpenSeesPL indicate the piles with various assigned axial loads will be safe from buckling failure, with computed bending moments less than the yielding and plastic moments of the pile. However, these predictions are dissimilar with those by Bhattacharya's approach, indicating more studies are warranted for the analysis of pile buckling issue in liquefiable ground due to seismic shaking.

References

- 1) Adalier, K. and Elgamal, A. (2004) Mitigation of liquefaction and associated ground deformations by stone columns. *Journal Engineering Geology*, 72 (3-4), 275-291
- 2) Asgari, A., Oliaei, M., Bagheri, M. (2013) Numerical simulation of improvement of liquefiable soil layer using stone column and pile-pinning techniques. *Soil Dynamics and Earthquake Engineering*, 51, 77-96, doi: 10.1061/j.soildyn.2013.04.006
- 3) Bhattacharya, S. (2003) Pile instability during earthquake liquefaction. Ph.D. thesis. University of Cambridge, UK
- 4) Bhattacharya, S. (2015) Safety assessment of piled buildings in liquefiable soils: Mathematical tolls. *Encyclopedia of Earthquake Engineering*, doi: 10.1007/978-3-642-361975-5_232-1
- 5) Bhattacharya, S. and Goda, K. (2013) Probabilistic buckling analysis of axially loaded piles in liquefaction soil. *Soil Dynamics and Earthquake Engineering*, 45, 13-24
- 6) Bhattacharya, S. and Madabhushi, S.P.G. (2008) A critical review of methods for pile design in seismically liquefiable soils. *Bulletin of Earthquake Engineering*, 6 (3), 407-446
- 7) Bhattacharya, S., Madabhushi, S.P.G., Bolton, M.D. (2004) An alternative mechanism of pile failure in liquefiable deposits during earthquakes. *Geotechnique*, 54 (3), 203-213
- 8) Bhattacharya, S., Sarkar, R., Huang, Y. (2013) Seismic design of piles in liquefiable soils. *New Frontiers in Engineering Geology and the Environment. Proceedings of the International Symposium on Coastal Engineering geology, ISCEG-Shanghai*, 31-44
- 9) Boulanger, R.W. and Tokimatsu, K., Eds. (2005) Seismic performance and simulation of pile foundations in liquefied and laterally spreading ground. *Geotech. Spec. Publ., Special Publication GSP 145*
- 10) Boulanger, R.W., Chang, D., Brandenberg, S.J., Armstrong, R.J., Kutter, B.L. (2007) Seismic design of pile foundations for liquefaction effects. *Proc. 4th Int. Conf. on Earthquake Geotechnical Engineering-Invited Lectures*, K.D. Pitilakis, ed., Springer, New York
- 11) Bowles, J.E. (1996) *Foundations analysis and design*. 5th Edition. McGraw-Hill, New York
- 12) Cubrinovski, M. and Ishihara, K. (2005) Assessment of pile group response to lateral spreading by single pile analysis. *Proceedings of Workshop: Seismic Performance and Simulation of Pile Foundations in Liquefied and Laterally Spreading Ground (Geotechnical Special Publication (GSP) No. 145)* (Editions R.W. Boulanger and K. Tokimatsu). American Society of Civil Engineers, Reston, VA, USA, 242-254
- 13) Dash, S.R., Bhattacharya, S., Blackeborough, A. (2010) Bending-buckling interaction as a failure mechanism of piles in liquefiable soils. *Soil Dynamics Earthquake Engineering*, 30, 32-39
- 14) Earthquake Engineering Research Institute (1999) The Chi-Chi Taiwan earthquake of September 21, 1999. *EERI Special Earthquake Report*, EERI, Oakland, California, USA
- 15) Elgamal, A., Lu, J., Forcellini, D. (2009) Mitigation of liquefaction-induced lateral deformation in sloping stratum: Three-dimensional numerical simulation. *Journal of Geotechnical and Geoenvironmental Engineering*, 135 (11), 1672-1682, doi: 10.061/(ASCE)GT.1943-5606.0000137
- 16) Elgamal, A., Yan, L., Yang, Z., Conte, J.P. (2008) Three-dimensional seismic response of Humboldt bay bridge-foundation-ground system. *Journal of Structural Engineering*, 134 (7),

- 1165-1176, doi: 10.1061/(ASCE)0733-9445(2008)134:7(1165)
- 17) Eslami, A. and Fellenius, B.H. (1997) Pile capacity by direct CPT and CPTu methods applied to 102 case histories. *Canadian Geotechnical Journal*, 34 (6), 886-904, doi: 10.1139/cgj-34-6-886
- 18) Fellenius, B.H. (1990) Guidelines for static pile design: a continuing education short course text. Deep Foundation Institute. Hawthorne, NJ.
- 19) Fellenius, B.H. (2006) The red book-basics of foundation design. Available from <http://www.fellenius.net/>
- 20) Finn, W. and Fujita, N. (2002) Piles in liquefiable soils: seismic analysis and design issues. *Soil Dynamics and Earthquake Engineering*, 22 (9), 731-742
- 21) GEER (2019) Geotechnical reconnaissance: The 28 September 2018 M7.5 Palu-Donggala, Indonesia Earthquake. Geotechnical Extreme Events Reconnaissance
- 22) Goble, G.G. and Rausche, F. (1979) Pile driveability calculations by CAPWAP. Proceedings of the Conference on Numerical Methods in Offshore Pile, 22-23 May 1979. Institution of Civil Engineers, London, 29-36
- 23) JRA (1996) Design Specifications of Highway Bridges, Part V: Seismic Design, Japan Road Association, Tokyo, Japan
- 24) Kimura, Y. and Tokimatsu, K. (2005) Buckling stress of steel pile with vertical load in liquefied soil. *Journal of Structural and Construction Engineering*, 73-78
- 25) Knappett, J.A. and Madabhushi, S.P.G. (2005) Modelling of liquefaction-induced instability in pile groups. *Seismic Performance and Simulation of Pile Foundations in Liquefied and Laterally Spreading Ground* (Geotechnical Special Publication (GSP) No. 145) (Editions R.W. Boulanger and K. Tokimatsu). American Society of Civil Engineers, Reston, VA, USA, 225-267
- 26) Kokusho, T. (1999) Water film in liquefied sand and its effects on lateral spread. *Journal of Geotechnical and Geoenvironmental Engineering*, 125 (10), 817-826, doi: 10.1061/(ASCE)1090-0241(1999)125:10(817)
- 27) Kramer, S.L. (1996) *Geotechnical earthquake engineering*. Prentice-Hall Civil Engineering and Engineering Mechanics Series. Upper Saddle River, NJ: Prentice Hall
- 28) Kulhawy, F.H. (1984) Limiting tip and side resistance, fact or fallacy. Proceedings of a Symposium on Analysis and Design of Pile Foundations, San Francisco, California, 1-5 October 1984, Edited by J.R. Meyer. American Society of Civil Engineers (ASCE) Geotechnical Division, New York, 80-98
- 29) Lu, J. (2006) Parallel finite element modeling of earthquake site response and liquefaction. Ph.D. thesis, University of California, San Diego, La Jolla, CA
- 30) Lu, J., Kamatchi, P., Elgamal, A. (2019) Using stone columns to mitigate lateral deformation in uniform and stratified liquefiable soil strata. *International Journal of Geomechanics*, 19 (5), doi: 10.1061/(ASCE)GM.1943-5622.0001397
- 31) Mazzoni, S., McKenna, F., Fenves, G.L. (2006) Open System for Earthquake Engineering Simulation (OpenSees) user manual. Berkeley, CA: Pacific Earthquake Engineering Research Center, University of California, Berkeley
- 32) McKenna, F., Scott, M., Fenves, G.L. (2010) Nonlinear finite-element analysis software architecture using object composition. *Journal of Computing in Civil Engineering*, 24 (1), 95-107, doi: 10.1061/(ASCE)CP.1943-5487.0000002
- 33) Meyerhof, G.G. (1976) Bearing capacity and settlement of pile foundations. *Journal of Geotechnical Engineering Division, ASCE*, 102 (2), 195-228
- 34) Mitchell, J.K., Cooke, H.G., Shaeffer, J.A. (1998) Design considerations in ground improvement for seismic risk mitigations. *Proc. Geotechnical Earthquake Engineering and Soil Dynamics III, Geotechnical Special Publication No. 75, Vol. 1, ASCE, Seattle*, 1, 580-613
- 35) Poulos, H.G. (1989) Pile behavior-theory and application. *Geotechnique*. 39 (3), 365-415, doi:10.1680/geot.1989.39.3.365.
- 36) Rausche, F., Goble, G.G., Likins, G. (1985) Dynamic determination of pile capacity. *Journal of Geotechnical Engineering*, 111 (3), 367-383, doi: 10.1061/(ASCE)/0733-9410(1985)111:3(367)
- 37) Salgado, R. (2008) *The engineering of foundations*. McGraw-Hill, New York
- 38) Schmertmann, J.H. (1978) Guidelines for cone penetration test performance and design. US Department of Transportation. Federal Highway Administration. Offices of Research and development, Washington D.C. Report No. FHWA-TS-78-209
- 39) Shanker, K., Basudhar, P., Patra, N. (2007) Buckling of piles under liquefied soil conditions. *Geotechnical and Geological Engineering*, 25 (3), 303-313
- 40) Tang, L., Cong, S., Ling, X., Lu, J., Elgamal, A. (2015) Numerical study on ground improvement for liquefaction mitigation using stone columns encased with geosynthetics. *J. Geotext. and Geomem.*, 43, 190-195, doi: 10.1016/j.geotexmem.2014.11.011
- 41) Terzaghi, K. (1943) *Theoretical soil mechanics*. John Wiley and Sons Inc., New York
- 42) Wang, N. (2015) Three-dimensional modeling of ground-pile systems and bridge foundations. Ph.D. thesis, University of California, San Diego, La Jolla, CA
- 43) Yang, Z. and Elgamal, A. (2002) Influence of permeability on liquefaction-induced shear deformation. *Journal of Engineering Mechanics*, 128 (7), 720-729, doi: 10.1061/(ASCE)0733-9399(2002)128:7(720)
- 44) Yang, Z., Elgamal, A., Parra, E. (2003) A computational model for cyclic mobility and associated shear deformation. *Journal of Geotechnical and Geoenvironmental Engineering*, 129 (12), 1119-1127, doi: 10.1061/(ASCE)1090-0241(2003)129:12(1119)

Degradable Plastic Characterization as an Interface Layer on Multilayer Plastics to make the Recycling Process Easier



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種類の異なるプラスチックを貼り合わせた製品のリサイクルでは、再利用に先立ってプラスチックの種類ごとに分別する必要がある。その際のインターフェイスに生分解性プラスチックを用いる方法を検証した。

Abstract

Plastic waste is one of the waste which can harm the environment. Using plastic drastically increased 20 times in the last 50 years. Because it has very long hydrocarbon circle which makes it hard to digest. The Recycling process has an important role in reducing plastic waste pollution. Before recycling process, plastic waste must be sorted first, according to its kind and then ground into plastic seeds. Plastic seeds will be melted and formed into new products. However, this process is hard to apply for a multilayer plastic that has several layers of different types of plastic. This structure makes this kind of plastic hard to melt because the melting points of those layers are different. If layers could easily be separated, the recycle process of this kind of plastic will be easy. This research utilizes biodegradable and oxo-degradable plastic that has been produced by the factory to apply to one of the layers of multilayer plastic because of the degradable characteristic they owned. So, it can be obtained multilayer plastic that can be separated between each layer and to simplify the multilayer plastic recycling process

Keywords multilayer plastic, biodegradable, oxo-degradable, plastic, recycle

Introduction

The waste produced is equal to population growth, waste that can endanger the environment is plastic waste more population means more waste produced.

One of the Plastic waste can damage the environment because it can reduce soil fertility and damage the aquatic environment.

The solution to solve the plastic waste problem is recycling. The recycling process is commonly done by industry. Generally, there are four requirements waste can be processed by the industry. The requirements are waste must be in certain form as needed (seed, pellets, powder, or fraction), waste must be homogenous, not contaminated and oxidized. Therefore, before plastic waste melt, plastic must through a process of separation, cutting, washing, and removal of substances such as iron. (Macklin, 2009). Then, melted plastic formed into

a new product. Using recycled plastic in the rebuilding of plastic goods has grown rapidly. Almost all the kind of plastic waste (80%) can be reprocessed into original goods even though it must be mixed with new raw materials and additives to improve quality (Syafitrie, 2001).

However, there are kinds of plastic that hard to be recycling. One of them is multilayer plastic. India environment ministry announces to change rules of plastic waste management and suggest removal of multilayer plastic. Multilayer plastic hard to be recycling. So, it is an important threat of ecosystem. (The Hindu, 2018).

Multilayer plastic has some plastic layers with different kinds. The different types of plastic layers can combine the characteristic of each layer. So, multifunctional plastic is obtained. Through multilayer system can produce thin package but has the strength and function as a good packaging.

Besides that, technology allows the industry to modify the strength of packaging. But, because it is durability multilayer packaging have weaknesses. When it becomes waste the packaging very difficult to recycle and accumulate in a landfill. Even, scavengers do not want to take this type of waste because they can't be sold. Observation study done by Mr.Wahyudi et.al. (2018), on two landfills in Bandung city found that multilayer plastic waste reached 17% of total plastic waste in these landfills. So far, multilayer plastic waste in Indonesia used as a handicraft material such as a plastic bag etc.

The durability of multilayer plastic makes handicraft products strong and durable. The recycling process of multilayer plastic packaging is challenging.

The biggest challenge is the separation process because various types of plastic mixed and bonded very strongly. If plastic melted before sorted, this multilayer structure will affect the quality of mono-material such as PET. As an example, Plastic A has melting point 90° C and Plastic B has melting point 200° C, if these plastics heated in temperature 150° C, plastic A will damage meanwhile Plastic B hasn't melted and the result there is a significant degradation in quality. When it's melted, the plastic will not be mixed spontaneously. Therefore, multilayer plastic waste becomes an inseparable complex mixture. If the layers can be separated the recycling process will be easier.

This research is to find an alternative solution to separate layers on multilayer plastic by applying degradable plastic as an inter-layer bulkhead. Hopefully in the presence of degradable plastic as an inter-layer partition, multilayer plastic will be more easily separated so that it is easily recyclable too. Currently, Indonesian scientists are developing degradable plastic that is environmentally friendly. Based on the causes of degradation, the degradation process caused by biodegradable, compostable, hydro-biodegradable, oxo-degradable, and photo-biodegradable.

This research use two types of degradable plastics that are biodegradable and oxo-degradable. In general biodegradable plastics are composed of plastics that are mixed with biomass sources such as vegetable oils, corn

amyum, cassava starch, ercis and others that allow the acceleration of the plastic decomposition process.

Polymers from promising renewable resources to plastic degradable due to abundant supply, low cost, biodegradability, and ease in chemical modifications (Liza, 2014). While Oxo-degradable is a type of plastic can be degraded with the aid of oxygen, generally composed of polyethylene (PE) plus additives in the form of minerals.

Biodegradable and oxo-degradable plastics are often found in the plastic bags of bookstores and minimarket in Indonesia. This type of plastic is already a commercial product and PT. Harapan Interaksi Swadaya is one of the producer. In this study we use the existing degradable layers, so that it can obtain shorter test results.

Method

This research was conducted in two stages. The first stage, to obtain the right formulation for the first prototype making of multilayer plastic. Prototype making is done by moulding compression method between Polypropylene plastic (PP) and biodegradable or oxo-degradable plastic using hot press machine Collin P 300 P with certain setting and composition and then continue with final prototype making of multilayer plastic. In this stage, the chosen formula will be printed more according to research need.

The second stage, both prototypes are characterized: Accelerated weathering with Q-UV Method, mechanical properties testing (tensile and elongation), and morphology through a scanning electron microscope (SEM). It is to determine whether there is any degradation in the degradable bulkhead layer. After the first stage finished, all prototypes will be collected and printed into several specimens and undergone UV resistance test with certain time setting. Irradiated specimens collected and undergone a strong pull test (elongation). It is to find out whether the quality of the prototype meets the standard although given bulkhead between the layers.

Table 1. Formula and Optimum Condition

Nomenklatur	Formula	Temperature (C)	pressure (bar)	Time (minute)
<i>Multilayer X</i>	PP//Biodegradable//PP	160	40	35
<i>Multilayer Y</i>	PP//Oxodegradable//PP	160	40	35

Formulation and optimum condition of multilayer plastic

Expected optimum condition from multilayer plastic is not broken or burned and having a thickness of 0.1 mm. PP is optimum material as a cover layer of prototype making in multilayer plastic insulated degradable, with the same optimum condition between multilayer X and multilayer Y as follow: temperature 160 Celsius, pressure 40 bar, and time 35 minutes. Look at table 1.

Multilayer Plastic

Multilayer plastic used to provide protective, functional and decorative properties. They consist of at least two layers, aiming to meet the required performance for a particular application. Multilayer structures may lower the total cost of production by incorporating inexpensive materials such as recycled material in addition to the expensive polymers or by film thickness reduction. (Butler & Morris 2010) Flexible packaging structures for medical applications have from three up to eleven layers. Multilayer structures with barrier films such as EVOH often require a tie layer, thus producing a five or seven layer structure (Breil 2010; Butler & Morris 2013).

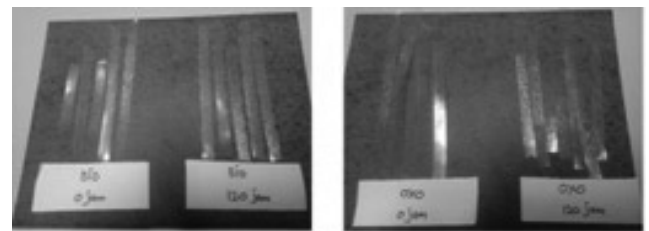
Individual layers contribute to specific functional properties, such as enhancing permeation resistance or tensile strength. Other common properties that need to be taken into account include optics, formability, machinability, economics, sealability and adhesion. An individual layer may contain polymer blends, neat polymer, recycled material or additives. Important key properties for multilayer structures in flexible packaging include good barrier properties, selective permeability, machinability, sealability, esthetics and damage preventing properties, such as impact strength. (Butler & Morris 2010).

Multilayer plastic degradable X and Y characterization with QUV method

Evaluation result of UV Irradiating test toward Multilayer X and Y sample could be seen at Table 2. After 120 hour UV irradiating test, all samples in every duration shows the highest greyscale number is 5. The result shows both samples meet greyscale standard and no changing color compared with sample before irradiating process.

Table 2. Result of UV Irradiation at sample *multilayer X* and *multilayer Y*

Num.	Sample's name	Kind of evaluation	Result test in every hour			
			8	16	72	120
1.	<i>Multilayer X</i>	Grey Scale	5	5	5	5
		Visual	No color changes in Sample			
2.	<i>Multilayer Y</i>	Grey Scale	5	5	5	5
		Visual	No color changes in Sample			

**Figure 1. Sample condition before and after UV irradiating for 120 hour. (a) Sample *Multilayer X*, (b) Sample *Multilayer Y*.**

Mechanical Properties Characterization

Tensile test is a test to measure the ability of material to withstand tensile strength. This is to determine how far the material experience stretching before breaking up. Testing in this test including tensile strength and elongation. The result of the test can be seen on Figure 2.

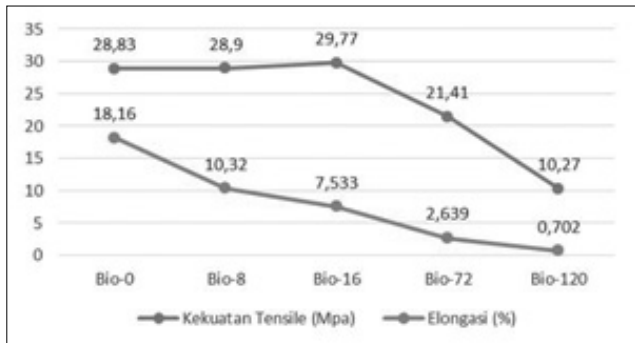


Figure 2. Graphich result tensile and elongation test *multilayer X* and *Y* (biodegradable bulkhead layer) sample.

Morphology evaluation with SEM

SEM result shows there is a damage in PP surface layer at 120th hour. At 120th hour, there are cracks in PP layer.

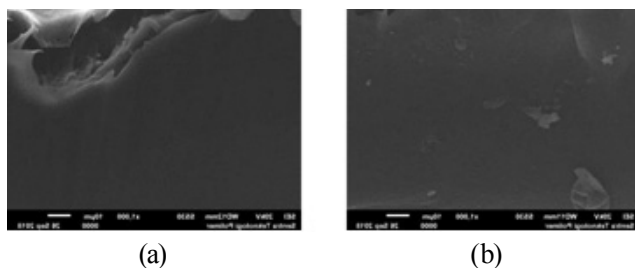


Figure 3. First Sample zooming 1000 times: (a) *Multilayer X*, (b) *Multilayer Y*

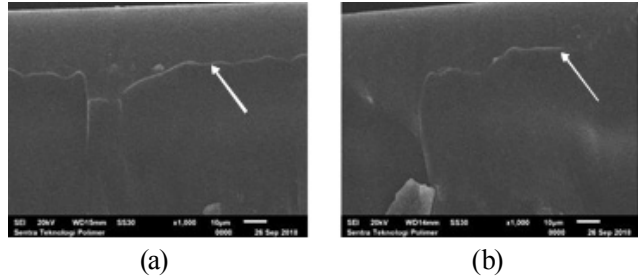


Figure 4. Sample condition 8th hour zooming 1000 times: (a) *Multilayer X*, (b) *Multilayer Y*

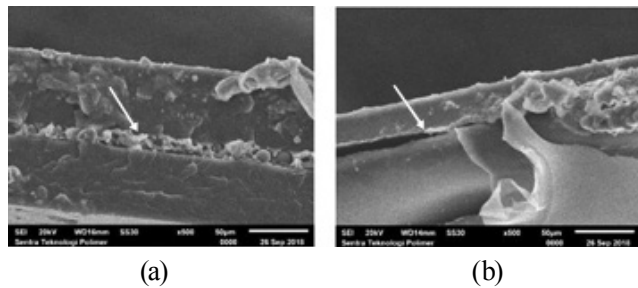


Figure 5. Sample condition at 16th hour zooming 500 times: (a) *Multilayer X*, (b) *Multilayer Y*

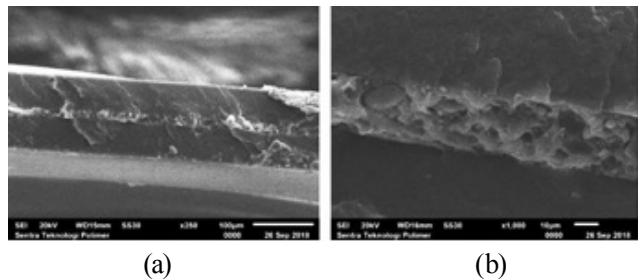


Figure 6. Sample condition at 72th hour: (a) *Multilayer X* with zooming 250 times, (b) *Multilayer X* with zooming 1000 times, (c) *Multilayer Y* with zooming 100 times, (d) *Multilayer Y* with zooming 1000 times

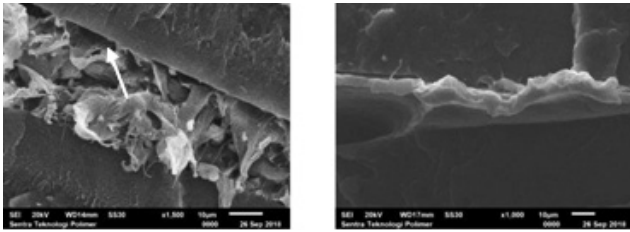


Figure 7. Sample condition at 120th hour with zooming 1000 times: (a) Multilayer X, (b) Multilayer Y

Conclusion

Multilayer plastic with formulation PP//Degradable//PP, according to ASTM D 3826-98, 2002, with multilayer X sample (biodegradable layer) and multilayer Y (oxo-degradable layer) proven as good degradable material according to elongation test and tensile. As well as SEM test result which shows there are cracks in the layer. The cracks is as parameter and evaluation that degradable happened. As a result, it means degradable layer can be used as alternative solution of multilayer plastic recycle problem

This research is a strategic first step to solve multilayer plastic waste recycle problems. Furthermore, this research has great potential to explore foremost about degradable layer composition used in this research. This research is very feasible to continue.

References

- 1) Fahnur, M., (2017) Uji Ketahanan dan Struktur Mikro Plastik *Biodegradable* dengan Variasi Kitosan dan Konsentrasi Pati Biji Nangka. Makassar, Fakultas Sains dan Teknologi Universitas Islam Negeri (UIN) Alaudin Makassar.
- 2) Yunar, V. (2011), Evaluasi Biodegradabilitas Plastik Berbahan Campuran Pati dan Polietilen Menggunakan ASTM G21-09, Uji Mikroorganisme dan Uji Lapangan. Depok, Universitas Indonesia
- 3) Wahyudi, H. et al. (2018). Proses Pemulihan Sampah Plastik Multilayer pada Variasi Temperatur dan Dosis Katalis Ziolit Alam. Bandung, Program Magister Teknik Lingkungan Institut Teknologi Bandung.
- 4) Ardiansyah, R.(2011) Pemanfaatan Pati Umbi Garut Untuk Pembuatan Plastik *Biodegradable*. Depok, Fakultas Teknik Universitas Indonesia.
- 5) Rahmawati, N. I.. (2018) Semaraknya “*THE GREENING OF MANAGEMENT*” di Indonesia. Jakarta, STIE Muhammadiyah Jakarta.
- 6) Yuriandala, Y et al. (2016) Pirolisis Campuran Sampah Plastik Polistirena Dengan Sampah Plastik Berlapisan Aluminium Foil (Multilayer). Jogjakarta, Jurusan Teknik Universitas Islam Indonesia.
- 7) Syafitrie, C. (2001) Analisis aspek Sosial ekonomi Pemanfaatan Limbah Plastik. Bogor, Program Magister Sais Institut Pertanian Bogor,
- 8) Wahyudi, H. et al. (2018) Proses Pemulihan Sampah Plastik Multilayer pada Variasi Temperatur dan Dosis Katalis Ziolit Alam. Bandung, Program Magister Teknik Lingkungan Institut Teknologi Bandung.
- 9) Liza, C.. (2014) Treatment Lapisan Organo Silika Dengan Media Plasticizer Cassava Starch Untuk Preparasi Kemasan Nanokomposit Degradabel LLDPE Cassava Starch. Jakarta, Program Doktor Universitas Indonesia.
- 10) Gabeiras, J.E., Aracil, J. Palacios, J.P.F. (2009). Is Multilayer Networking Feasible. Optical Switching and Networking 6, 129-140.
- 11) Anggarini, F, (2014). Aplikasi Plasticizer Gliserol Pada Pembuatan Plastik *Biodegradable* Dari Biji Nangka. Program Sarjana Sains Universitas Negeri Semarang
- 12) Febrianto, Arief. (2015). Pengolahan Limbah Kemasan Plastik Multilayer LDPE (*Low Density Polyethylene*) Dengan Menggunakan Metode Pirolisis Konvensional Dan Pirolisis Microwave. Surabaya: Institut Teknologi Sepuluh Nopember Surabaya.
- 13) Winursito, Isananto.(2014). Mekanisme Reaksi Degradasi Plastik Oxo-Degradabel. Manado: Balai Riset dan Standardisasi Industri Manado, Kementerian Perindustrian.
- 14) Listyarini, Arie, Wiwik Pudjiastuti. (2014). Fotodegradasi (Degradasi Abiotik) Kantong Plastik Polietilena Yang Mengandung Aditif *Oxodegradable*. Jakarta: Balai Besar Kimia dan Kemasan Kementerian Perindustrian.
- 15) Hidayah, Betty Ika, (2015). Pembuatan *Biodegradable Film* dari Pati Biji Nangka (*Artocarpus heterophyllus*) dengan Penambahan Kitosan. Purwokerto: Fakultas Teknik, Univesitas Muhammadiyah Purwokerto.
- 16) Kershaw, Peter John, (2015). *Biodegradable plastic & Marine Litter, Misconception, Concerns and Impacts on Marine Environment*. United Nations Environment Programme (UNEP).
- 17) Kržan, Andrej, *Biodegradable polymers and plastics*. Plastice, Central Europe Cooperating.
- 18) Dharini, Mega, Yulinah T., Studi Terhadap Timbulan Sampah Plastik Multilayer Serta Upaya Reduksi Yang Dapat Diterapkan Di Kecamatan Jambangan Surabaya. Surabaya: Institut Teknologi Sepuluh Nopember Surabaya.
- 19) Thomas, N.L., et al., (2012) *Oxo-Degradable Plastics: Degradation, Environmental Impact and Recycling*. Loughborough University.

Rewards for Environmental Services of ICCs In the Philippines



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フィリピン政府は先住民の伝統的居住区を保護しているが、根深い貧困の問題がある。そうした地区で環境保護活動に参加する住民に報酬を出す仕組みを活用し、貧困からの脱出と持続可能な農業の両立を目指す動きを検証した。

Abstract

The Indigenous Cultural Communities in the Cordillera Region of the Philippines regarded the Indigenous Peoples Rights Act (IPRA) as answer to their plight for genuine development and self-determination over generations. The native tribes of Bakun in Benguet, Philippines was the first Indigenous Cultural Communities (ICCs) issued with Certificate of Ancestral Domain Title. The International Fund for Agricultural Development and the World Agroforestry Centre introduced the framework on “Rewarding the Upland Poor for the Environmental Services” (RUPES), and Bakun, Benguet is among the three project sites. The RUPES action research in Bakun was spearheaded by Cordillera Highland Agricultural Resource and Management Project (CHARMP) with the partner Indigenous People’s Organization named as Bakun Indigenous Tribes Organization (BITO), participated by stakeholders, i.e. MLGU, DENR, CHARMP-PSO, DAR and NGOs.

The project invested on community empowerment, through awareness and capacity building coupled by the introduction of RUPES principles, framework, and watershed profiling. The Community and the buyers of the environmental services and products created mutual beneficial relationship to each other, and mechanisms for sustainability were institutionalized. Foremost, as Bakun is a watershed that provided watershed environmental services, HEDCOR and Luzon Hydro Companies equally reframed and aligned their perspective to RUPES to benefit the BITO.

Keywords

indigenous cultural communities, empowerment, rewards, environmental services, seller-buyer

Background and Rationale

The World agroforestry Centre (ICRAF) embarked on a project in Asia to identify pro-poor mechanisms to reward upland communities so they may enhance their livelihood and promote sustainable resource use thereby reducing poverty and preserving the environment through the so called “REWARDING THE UPLAND POOR FOR ENVIRONMENTAL SERVICES THEY PROVIDE” (RUPES). The project was undertaken through the support of the International Fund for Agricultural Development (IFAD). The RUPES covered six countries namely: Indonesia, Vietnam, India, Nepal and the Philippines.

In the Philippines the RUPES project started out two action research sites in Luzon in 2002-2007, namely the Bakun in the Province of Benguet for the development of payments for watershed services (2004) and in Kalahan in Nueva Viscaya for carbon sequestration (2003). Other sites are in Sibuyan Island in Romblon; Baticulan in Negros Occidental and in Lantapan in Bukidnon (2006). In all sites, the project worked with community based organizations as the main stakeholders who are themselves the local resource managers and providers or sellers of the environmental service.

The Bakun RUPES was implemented with the Department of Agriculture – Cordillera Administrative

Region (DA-CAR) through its IFAD funded project -the Cordillera Highland Agricultural Resource Management Project (CHARMP) headed by Dr. Cameron Odsey, the PSO Manager. It was in collaboration with the Bakun

Indigenous Tribes Organization, the Bakun MLGU and all National line agencies and private institutions and enterprises and NGOs.

Project Site Profile

VARIABLE	PROJECT AREA
Municipality, Province, Region	Baku, Benguet, Cordillera Administrative Region (Northern Luzon)
No. of Barangays	7 barangays : Ampusongan, Bagu, Bdalipey, Gambang, Kayapa, Poblacion, Sinacbat
Temperature	10-28 degree Celsius. December, January the coldest
Climate	Type I, rainy /wet May to October, dry from November - April,
Elevation	200- 2,500 MASL
Topography	rolling to very steep terrain (26-45 degrees slope)
Watershed name & area	Bakun Watershed; 19,321 hectares, 91% within Bakun Municipality
Size of watershed	21,129 has
Vegetation	native pine species and mossy forest
No. of Major Rivers	4 major rivers : Bakun River , Bagu River, Gambang river (part of Abra River)
Total Population	14,148 (2007)
Main Economic activities	Marginal rice and vegetable production (potatoes, cabbage, carrots, lettuces, root crops, legumes). Small scale mining
Environmental service (ES) provider	Kankanaey-Bago Tribe represented by the Bakun Indigenous Tribes Organization (BITO)
Tenurial Instruments	Certificate of Ancestral Domain Title issued July 22,2002 for 30,705, Free Patent, Certificate of Land Ownership Award (CLOA)
Investment in Environmental Service (ES)	Indigenous sustainable farming and resource management practices since time immorial
Form of Environmental service (ES)	Clean water supply for Household consumption, irrigation and hydropower
Environmental service user/buyer	2500 HH and farming families, 4 hydro plants of which 3 are mini hydro generating less the 500 MW capacity belonging to 2 companies - Luzon Hydro Power Company and HEDCOR c mini Hydro Power Company
Reward mechanism	Statutory payment (166,93 M Php actual); Negotiated and voluntary benefits paid in cash and in kind (as of 2006)

The Technical working group (TWG) was organized, which the Department of Agrarian Reform was a member in the action research.



Fig. 1. Location of the Municipality of Bakun

Objectives of the RUPES Action Research

The followings are the objectives of this research, to wit:

1. Understanding rewards for environment services (RES) and how RES can reduce poverty;
2. Identify the environmental services and means to measure them;
3. Determine who pays for the service, who receives the payment for the services and the amount and form of payments;
4. Explore innovative, sustainable models or approaches for successful transfer agreements appropriate and building partnerships and networking;
5. Develop or strengthen local institutions to handle environmental transfer payments and connecting ES providers and buyers in the testing RES schemes;
6. Identify problems, issues, needs and concerns and recommended actions and solutions; and
7. Establish collaborative networks at global, regional and national levels for RUPES work and creating policy & institutional options for enabled RES schemes at local, national, international levels

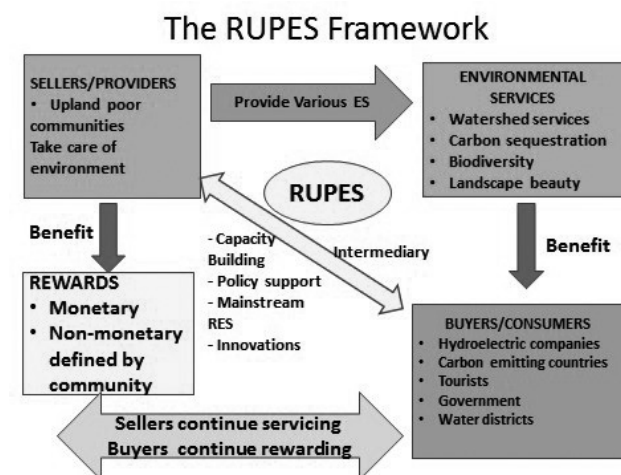


Fig. 2. Concept and Framework of RUPES

Methodology

The RUPES was an action research was a hand holding, walk-through process which employed the following approaches namely: Community orientation through lecture discussion sessions, Barangay Workshop

consultations, focus group dialogues, surveys, demonstration, practicum, design workshops and experiential learning expeditions, technical trainings, write shops and learning sessions, review community planning workshops.

Project Activities/Action Research Undertaken

1. On November 2004, Bakun was selected as RUPES action research site by the World Agroforestry Centre focusing on watershed services. It was implemented in collaboration with the International Fund for Agricultural Development (IFAD) funded Cordillera Highland Agricultural and Resource Management Program of the Department of Agriculture and the Bakun Indigenous Tribes Organization (BITO).
2. RUPES orientation meetings were held for the BITO *papangoan*, barangay and municipal officials, key community representatives, the Hydro-electric companies (HEC) which enhanced RUPES understanding.
3. Ethno Botanical Resource Survey of Bakun Ancestral Domain was undertaken and was registered with the NCIP-IPR - the first IPR registered in the Cordilleras. The Local Knowledge of plant resources of some 265 plant species were documented preserving the local heritage in a new, easy accessible format – Album. Local Knowledge on the relation between land cover and watershed functions was documented in comparison with the perceptions and government and hydrological models.
4. A study on Hydrologic function of the Bakun Watershed was also conducted which elevated the awareness of the community on the importance of trees with regards to watershed conservation. There were four mini hydro plants supported by the Bakun watershed. The Bakun AC Plant located at Alilem, Ilocos Sur is supported by the Bakun watershed producing 70 MW; the FLS Plant, Poblacion, Bakun produces 5.9 MW, 27 million KWH sold to National Power Corporation and Benguet Electric Cooperative; The Lon-oy Plant yields 3.6 MW, 12 Million KWH sold to NPC & BENECO; the Lower

Labay Plant = 2.4 MW , 14 Million KWH sold to NPC and BENECO. With the Bakun's rainfall pattern of very wet seasons alternating annually with clear dry seasons, water balance modeling predicts that in the wet season there is a dramatically high water yield.

5. In 2005, an assessment of all the benefits provided by the two HEC (Luzon Hydro Company and the HEDCOR Inc.) was done. Initial review and analysis of the benefits through workshops participated by the BITO, BLGU, MLGU and the HECs. Results showed that there were benefits that were statutory and voluntary and non-MOA.
6. A cross visit to Kalahan Forest Reserve to gain insights on community empowerment ancestral domain and natural resources were undertaken. The participants gained insights on how the Kalahan and the Kalahan Educational Foundation are optimizing benefits from their resources while preserving them.
7. The Current capacities of Bakun Stakeholders to implement and sustain RUPES activities were also assessed which was the basis of series of capacity building interventions undertaken.
8. In support, a Technical Advisory Group (TAG) composed of Heads/representatives from concerned line agencies of government and non-government organizations in CAR was formed, likewise the formation of a Technical Working Group (TWG) at the project level to ensure that activities and outputs were facilitated.
9. Training on water quality monitoring & management was one of the important skills identified by the stakeholders. Water quality monitoring was held where the BITO and selected BLGU, community, MLGU, TAG and TWG were taught basic methods of quality water monitoring, in terms of equipment used, quality indicators and parameters. Practical demonstration on water sample collection for laboratory examination, technique on estimating stream flow discharge, floatation method and were conducted at Bakun River.
10. As a result it was agreed that a Bakun Integrated Watershed Development & Management plan (BIWDMP) should be formulated as blue print for the watershed management. Bakun sees the importance of an integrated plan that can get real "buy in" from the hydro power company on the basis of realistic and conditional agreements. Representatives from the TAG and the TWG were tasked to prepare the plan with the community. Training to enhance RUPES/RES knowledge and on Natural resource Management, agroforestry farming systems were conducted to heighten appreciation and concepts for the team.
11. Participatory Poverty Livelihood Assessment (PALA) was conducted in 2007 which has yielded valuable insights on how the upland communities would be able to maximize their income opportunities. The communities acknowledged to enhance their farming practices to maintain evergreen agriculture on slopes such as, natural vegetative filter strips establishment, cash perennials integration and improved cropping pattern, vegetable agroforestry, livestock integration, organic fertilizer production
12. The BIWDMP was finalized with RUPES laying the groundwork for its formulation. Doable programs, interventions, assistance and innovations were mainstreamed in the plans of each stakeholder and implemented with the community.
13. In 2009, the RUPES participated in the planning workshop at Baguio City and contributed to the proposal for the CHARMP 2 mainstreaming in the Rewards for ecosystems service (RES) scheme for the CHARMP 2. The linkage between CHARMP and RUPES were revived to continue partnership in Bakun and the BITO, LGU and HEC continue cooperation.
14. A review and planning session was undertaken in 2010 to assess how far has RUPES gone, what needs to be done participated by stakeholders, TAG and TWG. An MOU was forged among the BITO, LGU, and CHARMP to undertake and continue the RUPES. Based on the BIWDMP, a proposal write shop was conducted to prepare critical project proposals for the HEC in Bakun to fund conservation and rehabilitation activities starting 2011 onwards. The RES/RUPES inspired project design was

appreciated hence is being advocated region-wide. The CHARMP 2 being implemented by the DA and the NREMP by the DENR are has RUPES component. The HEDCOR which now operates a new Hydro plant at Mountain Province has mainstreamed RES mechanism

Research Findings

Indigenous Knowledge Systems and Practices.

The Kankana-ey Bago Tribes of Bakun have a rich socio-cultural heritage. Their indigenous way of life governs how they relate with land, forests, and among themselves. They have a wealth of Indigenous Knowledge systems and practices. They support each other through the *inal-luyon* system of mutual helps where assistance is reciprocated in kind. Conflict / disputes among members and with other tribes are settled through the traditional *tongtong* system which is basically through consensus. However on aspects of income, healthcare and education, the traditional way of life has already changed.

Certificate of ancestral domain title (CADT)

The Kankana-ey-Bago Tribe of Bakun has a history of articulating their rights within Philippine society adopting indigenous and sophisticated strategies to protect their way of life. They are the first ICC to obtain CADT that gave them formal title to their indigenous system of ownership. They received their CADT through the efforts of the BITO which gained the responsibility of representing the tribe.

Ancestral Domain Management

The tribe have demonstrated responsible stewardship of their natural resources through their indigenous farming practices. These practices include terracing, riprapping, sloping farm lands, *nem-a*, a system of clearing portions of forest to establish a permanent agroforestry, safeguards environmental functions on their lands. The Practice is so embedded in their lives that they have spiritual significance. Example, cutting down of trees cannot proceed without performing a ritual beforehand. With these practices in place, the Bakun

Watershed yields plentiful water supplies for domestic use, irrigation and for the two hydro power plants.

Household Incomes

Unfortunately, a net result of these sustainable land use practices is that, 87% of the households earn incomes below the poverty line. Upland farmers cannot meet their needs defined by modern standards. Presented with increasing demand for commercial farming, they cannot resist the lure of increasing incomes by clearing their agroforestry for temperate vegetables

Environmental Services provided by the Bakun Ancestral Domain

The environmental services provided are watershed service, carbon sequestration and landscape beauty for tourism. Carbon trading has yet to be explored. The Ethno Botanical resources survey is not sufficient to determine carbon stock. A resource valuation is needed to determine actual and potential carbon stock. Tourism is already being developed and operated by the MLGU under the municipal tourism unit. Responsible and IP sensitive Tourism Development Plan has yet to be crafted with the communities. Net benefit from tourism has yet to be determined. Bakun People articulated key tourism concerns namely: that it should be natural/ cultural area focused not to disturb indigenous systems and sacred grounds, build upon community Participation, emphasize Protection management of resources education & ethics, equitable distribution of local benefits, IP sensitive and responsive visitor management and responsible marketing. This is because Bakun Indigenous community is not yet ready for the globalization of tourism.

Watershed Services: Water for Hydropower plant

These environmental services have created value for hydropower companies that operate in the area. The Hydro companies and the tribe worked closely respecting its wishes in land use and assisting in some community development effort. The Hydro power plants utilizes run-off-river. It is a least disruptive to the environment. Scheme works by redirecting river water through the

weir into conveyance pipes towards the penstock and feeding it downhill to the power station. The pipeline brings water to a forebay tank where the water flow is slowed allowing sand and other particles to settle. Clear water passes through pressure pipe or penstock to the turbines. The Natural force of gravity generates energy used to spin the turbine enclosed in a powerhouse with the generator and control equipment. Spinning turbines enables the generator to produce electricity. Water is discharges down a tailrace or canal back to the river.

Difference in perspective on environmental services

Prior to RUPES, Bakun people regarded their resource conservation, protection systems as an IKSP that defines them and their spirituality, as responsible generation and steward of the borrowed resource. On the other hand, the HEC saw these efforts as a part of being a good community citizen, it did not recognize Bakun People as provider of a valuable environmental service and provided no compensation for its service. The HEC regards its voluntary/ social responsibility programs as payments whereas the communities in RUPES context see it as a token services.

The buyers of Environmental services (watershed)

The HEDCOR and Luzon Hydro Company utilizes water from Bakun for power generation. The Bakun AC Plant produce 70 MW; the FLS Plant- 5.9 MW, the Lon-oy Plant yields 3.6 MW, the Lower Labay Plant - 2.4 MW. All in all selling 54million KWH to NPC.

Understanding the threats in environmental service

Although the Bakun people use conservation practices, there is a severe degradation in the area. The adverse effect of forest fires, the bulldozing of lands due to increasing vegetable gardening on slopes takes a toll. And these have to be addressed both by the community and government.

The Payments/ Rewards

The HEC have provided some benefits regulated by various laws and policies and defined through MOA between them and MLGU. These are statutory benefits.

In terms of tax payments mandated under government laws, where the HEC directly pay business tax and real property to the LGU treasury office, and the special privilege tax to the national treasury. They also support the host communities with some voluntary assistance such as, infrastructure projects, scholarship provision, assistance to cooperatives and people's organizations, selected farmer trainings, medical and dental assistance, and seedling dispersal program as part of their corporate responsibility (CSR). There are negotiated benefits implemented annually as contained in the MOA, there are non-MOA benefits to host barangays and an environment fee of PhP 350,000 annually equally divided among barangays.

The HEC expressed willingness to upscale these voluntary rewards and channel them directly to the communities provided that there would be marked decrease in silt and sediment volume in their facility during the rainy season. They therefore encouraged the communities to adopt sustainable land management practices such as agroforestry and natural resources management systems.

RUPES as a community empowerment mechanism

The RUPES action research has walked through the Bakun community and stakeholders on the RUPES framework and activities which heightened their awareness and appreciation on the inter relationships of environment, economy and equity. They recognized the need to deepen "Kaalaman", (knowledge) "kakayahan" (capacity) kabuhayan (livelihood), "kalikasan" (environment) The community regarded the RUPES they walked through as an empowerment and capacity development experience. The RUPES orientation meetings with the BITO was emancipating helplessness due to ignorance. The Ethno Botanical Resource Survey documentation reinforced and preserved indigenous knowledge. The study on hydrologic function of the Bakun Water capacitated them to measure and value their resource. The assessment of all the benefits provided by the two HEC (Luzon Hydro Company and the HEDCOR Inc.) It opened their minds on the more sustainable and mutually beneficial partnership they each can nurture

with their domain. The cross visit to Kalahan Forest Reserve allowed them to gain insights on community empowerment ancestral domain and natural resources. The assessment of the current capacities of Bakun community and stakeholders to implement and sustain RUPES activities has shown potential action points, strengths, weaknesses, risks and opportunities. The formation of the Technical Advisory group composed of heads of line agencies was reassuring that government will pick up from Bakun for the mainstreaming of important learnings in agency program implementation. The formation of the technical working groups from line agencies and civil society and Non-government that assisted the Bakun community technically throughout RUPES was appreciated as sincere handholding. The training on water quality monitoring & management through floatation method developed skill on measuring stream flows and monitoring their water resource. The Participatory Poverty Livelihood Assessment (PALA) was most appreciated as it directly concerned their incomes and livelihood. In addition to the IKSPs on farming the different models and options on ever green agriculture on slopes were important inputs that the communities wanted to adopt and develop in their farms. The crafting of the Bakun Integrated Watershed Development and management plan (BIWDMP) was a legacy of Bakun, as it would ensure continuity of the initiatives of RUPES. The linking and networking that the RUPES has initiated is an intermediary service that helped Bakun negotiate for more sustainable payments for environmental services. The Bakun people have greater understanding of RUPES, the external appreciation for and value of trees, biodiversity and the relevance of sustainable soil and water conservation practices for themselves as well as for the downstream users and the generations to come.

Bakun acknowledge that RUPES is a long journey, but are thankful for the few steps, distance and obstacles conquered.

Conclusion

In the action research, the question was: Can the environmental service rewards sustainably alleviate

poverty in Bakun? Can the negotiated payments for environmental services reduce poverty among traditional people whose protection of the environment has economically disadvantaged them? Experiences in the RUPES project sites suggest that the amount of per capita royalty distributions for water supply services to hydropower plant *alone* is not enough to raise people from poverty. For communities to significantly affect their poverty levels, they may need to layer in benefits streams from several environmental services. The Bakun domain and watershed is also a carbon sink that can be tapped for carbon sequestration. It is rich in landscape beauty and ecotourism potentials that can be developed for agro-eco tourism than can trigger gainful activities. Communities can optimize their IKSPs enhanced with evergreen farming in slopes through agroforestry farm models other environment friendly activities that generate income without reducing environmental services. The HEC, LGU and BITO programs may focus on these livelihood programs as they are the drivers and has direct impact to household incomes. The HEC obviously contributed to the access to basic social (education, health) and economic (livelihood) and physical infrastructure (FMRs, waterworks) support services however, the development indicators and assessment has not been established in the RUPES action research. The RUPES seed has just been planted and its growth and development rests upon a mutually responsive community – environment service provider/seller and the buyers – HEC and many more.

Recommendations and Challenges

- a. **On Ownership and Roles:** Government officials and BITO need to reach understanding on complementary roles and shared responsibility they each play in payments for environmental services in Bakun.
- b. **On Royalties:** It is better to move from the redistribution of royalties to conditional payments dependent on environmental services outcomes. Effective use of the existing royalty funds requires locally agreed criteria and transparent mechanism. Further, there is a need to reinvest the payments to income

generating-environment nurturing programs and ensure trickle down benefits and sustainability of initiatives.

- c. **On Local Policies:** The MLGU should and BITO and HEC to separate environmental payments from corporate social responsibility and statutory taxes. The ADSDPP which defines the development dreams and aspirations as Bakun tribes should be the anchor of plans and programs. Institute local policy on rewards and sanctions on ES. The implementation of the BIWDMP will serve as a bargaining tool for negotiating conditional payments and rewards for ES. Since payments / rewards for environmental service is a voluntary transaction between seller and buyer, and is very difficult to achieve as it entails an empowered community and principled mutually beneficial bargaining, the MLGU and BITO need to closely work hand –in hand.
- d. **On national policies:** Seek alignment with the National Policy. The recognition of Ancestral Domain Title provide for a basis for financial compensation for environmental services that originate from the area. But further clarification of issues of rights and resources is needed within the national policy framework that is not free from ambiguity. There is a need to redefine host community and payments & rewards systems. Bakun, together with Kalahan has been a pioneer in recognition of indigenous people's rights and can serve as learning ground for other IPs of the Philippines.
- e. **On RUPES replication:** The Bakun Rupes experience as a community empowerment development that builds upon community participation can be replicated or mainstreamed in development agenda of other government agencies. It can be adopted in Agrarian Reform Community Development (ARC) and in ARC cluster development plans in similar ICC and upland communities providing environment services.

References

- 1) Understanding RUPES – IFAD, ICRAF –World agroforestry
- 2) Bakun RUPES – Cordillera Highland Agricultural & Resource Management Program (CHARMP)

Towards an Effective Disaster Management in Indonesia: A Meta-Analysis Approach



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地震や津波から豪雨、山火事まで、インドネシアは毎年のように自然災害で大きな損失をこうむっているが、国の災害対策はどうあるべきか。さまざまな既存の理論を比較検討し、有効な災害対策の望ましい姿を探った。

Abstract

Indonesia is prone to natural disasters. Flood, tornado, landslide, fire, earthquake, drought, abrasion, and volcanic eruptions are the most frequent natural disasters that are prevalent in Indonesia. In 2007, the Indonesian government issued a disaster management act for the basis of disaster management. However, the current rule considered being revised because the current practice has not run effectively. Therefore, this study aims to propose a useful framework for disaster management in Indonesia using existing disaster management models. The methodology used in this research is qualitative literature and document analysis. Based on document analysis, the current disaster management act is examined to depict disaster management in Indonesia. Furthermore, disaster models: the traditional model, the expand-contract model, the disaster crunch model, and Kimberly's model are observed to suggest the most suitable disaster management model in Indonesia. The result of this study suggests that models are useful for decision-making support tools in disaster management. The four basic steps in the models are mitigation, preparedness, response, and recovery. These are addressed in the current Indonesia regulation of disaster management. However, the current disaster management practice in Indonesia has not considered disaster insurance as a tool for risk transfer.

Keywords

disaster management, meta-analysis, insurance risk, natural disaster

Introduction

As a country located along the Pacific Ring of Fire, Indonesia faces abundant of natural threats. Earthquakes, volcanic eruptions, floods, and tsunamis are the most regular natural disaster occurs in Indonesia. According to the Indonesia National Agency Disaster Management (BNPB), over the past ten years, Indonesia has suffered 20,500 natural disasters with a total fatality of 11,489 people and 1,386,980 destroyed houses (details in Table 1). The most notable disaster was the 2004 Indian Ocean earthquake and tsunami, which affected over half a million people. The earthquake also struck other countries nearby Indonesia. Last year, another earthquake and tsunami occurred in Palu and it was followed by

liquefaction.

Table 1. Indonesia Disaster Statistic

Years	Events	Fatalities	Destroyed Houses
2018	3,405	4,719	359,967
2017	2,868	378	49,731
2016	2,308	578	47,798
2015	1,694	276	25,532
2014	1,963	604	55,469
2013	1,666	512	89,718
2012	1,781	320	54,060
2011	1,622	428	73,643
2010	1,947	1,907	59,501
2009	1,246	1,767	571,534

Generally, the number of disaster victims is proportional to the number of disasters that occurred. However, each type of disaster has its characteristics. As shown in Figure 1, Indonesia categorizes disaster into nine types: floods, landslide, tidal and abrasion, tornado, drought, forest and land fire, earthquakes, tsunami, and volcano eruptions. The highest number of fatalities comes from the least occurrence, which is the tsunami. In seven times tsunamis occurred in Indonesia, the number of victims approximately 4,269 people.

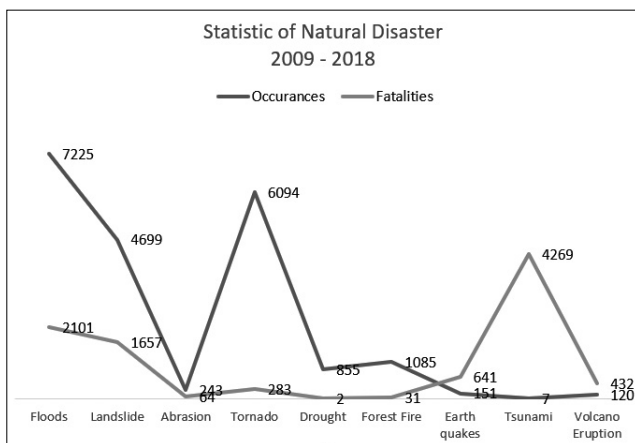


Figure 1. Statistics of Natural Disaster

Floods and tornados are the most numerous disasters occurred in Indonesia. This phenomenon is reasonable because Indonesia is an archipelago and lies at the equator, which is vulnerable to tornados. Therefore, the Government should have an extensive understanding and proper planning to mitigate potential threats of natural disasters.

The problem with disaster is not only related to reducing the victims and mitigating the potential threats, but also all activities in the recovery phase after the calamity occurs. This process usually the most extended process and the most fund needed. In Indonesia, to handle the impacts of the disaster, the government must provide approximately USD 1, 5 million every year. This amount of money allocated in the state budget. However, the total losses incurred by the natural disaster is estimated four times than the government budget allocation because it considers all material and non-ma-

terial losses.

The purpose of disaster management is to decrease potential loss from threats, to guarantees appropriate support for victims, and to attain effective recovery (Othman & Beydoun, 2012). The process then simplified using model, and later it is utilized to explain the intricacy of the disaster management process (Kelly, 1998). The reason using a model is to investigate the most effective disaster management. Therefore, this research aims to evaluate the current disaster management policy in Indonesia. Using existing disaster management models, this paper describes the characteristics of each model: common types, differences, relationships. Furthermore, the paper investigates how the model contributes to disaster management in Indonesia.

Theoretical Review

Based on the literature, at least four categories of disaster models are used to describe the disaster management theory. The logical models, the integrated models, the cause models, and other models. The logical models provide a simple definition of disaster stages and emphasize the primary events and actions of a disaster. One of the most common logical models is the traditional model. This model emphasizes disaster management into two phases: pre-disaster and post-disaster.

Traditional model

This model is the earliest in the field of disaster management. The main feature is the suggestion of sequences of activities in the disaster management process. Thus, ADPC (2000) explains that the model emphasizes disaster management into two phases: pre-disaster and post-disaster (Figure 2)

Expected activities to reduce the harmful effects of the potential disaster are carried out during the first stage of the model: preparedness, mitigation, and prevention. Manitoba (2000) argues that the pre-disaster stage is the most critical stage, and so proper management should be conducted in disaster management.

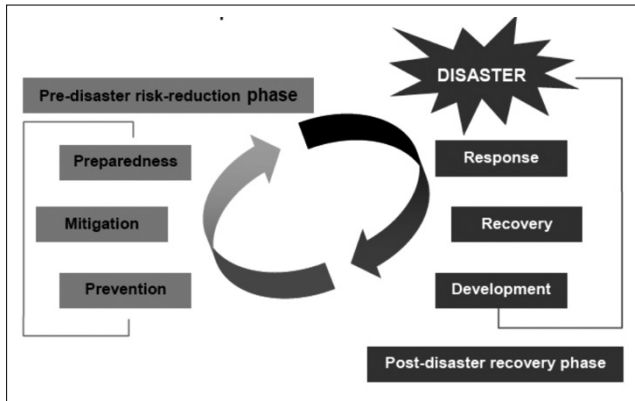


Figure 2. Traditional Model

Source: Coburn, et. al. (1994)

The post-disaster stage includes a response which is carried out after the moment of catastrophe. The goals of this stage are to reduce the number of fatalities by search and rescue, medication, and food distribution. Moreover, the recovery and development process involve a long-term period of action because it includes all the infrastructure construction and community resilience after the disaster occurs.

The traditional model can be seen in a sequential process and might become the simplest model to be adapted by disaster management practice.

The expand-contract model

The expand-contract model also categorized in the logical model, which aims to improve the traditional model. This model suggests four strands which almost like the stages of the traditional model. Prevention & mitigation, preparedness, relief and response, recovery, and rehabilitation (Figure 3).

The difference between the two models is that the traditional model proposes a static sequential stage. However, the expand-contract model suggests a more dynamic stage. Thus, as shown in figure 2, the disaster management activities can be performed throughout the whole process, simultaneously, and expanding or contracting as needed depends on the calamity (DPLG-2, 1998).

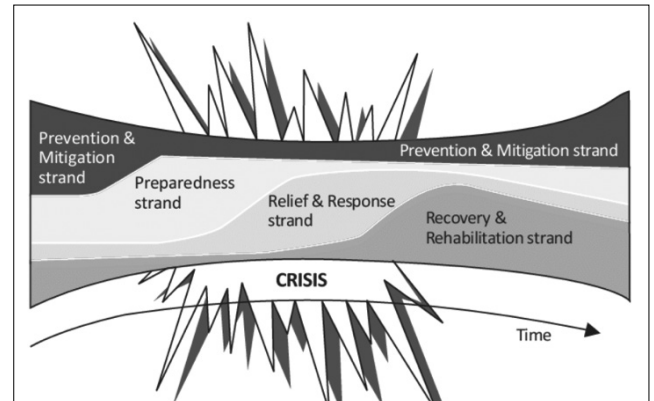


Figure 3. Expand-Contract Model

Source: Atmanand (2003)

Dube (2018) argues that although the activities have a dynamic relationship, the lack of cause and effect relationship among strands becomes its weakness. The cause and effect perspective is critical to clarify the relationships among strands. Moreover, the model also determines the proportion of strands while expanding or contracting.

The disaster crunch model

This model categorized as the caused model because it adopts a cause and effect perspective. While the logical model focuses on stages or strands, this model explains the relationship between vulnerability and hazards.

Hazards occur either in the form of natural hazards, social conflict, and technological accidents collide the vulnerability. The vulnerability can be seen as the progression of three stages: underlying causes, dynamic pressures, and unsafe conditions. The first stage is related to the deep-rooted set of factors that causes vulnerability to exist. Poverty, limited access to resources, ideologies, or economic systems are typical pre-conditioning factors as underlying causes (Blaikie, et al., 1994).

Dynamic pressure is the link between the root of the problem and unsafe conditions. Lack of education, training, local institutions participation, appropriate skills combine with macro-forces such as population growth, environmental degradation, and urbanization

are then become the channels to the third stage.

The last stage in this model is the unsafe conditions where people and property are directly exposed to the risk of disaster. Buildings and infrastructure that do not meet earthquakes resistance standards and construction of buildings in locations prone to natural disasters are physical environments that create unsafe conditions. Moreover, dangerous habits such as littering and other adverse public behavior will amend the level of vulnerability (Figure 4).

This model focus on establishing cause and effect in disaster. The most important contribution of this model is its focus on elaborating the causes of disasters. Therefore, it helps practitioners to understand the root of the problem, prepare and mitigate the potential threats, and react to disaster vulnerabilities facing people (Hai and Smyth, 2012).

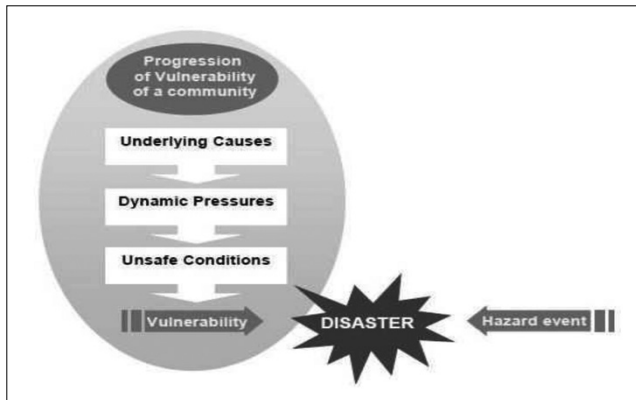


Figure 4. Disaster Crunch Model

Source: Blaikie (1994)

The Kimberly's model

The Kimberly's model is one of the integrated models' categories of disaster management model. Kimberly (2003) argues that mitigation, preparation, response, and recovery are phases of disaster management (Figure 5). Preparation and mitigation are located at the base of the model to suggest that those stages are the foundation of disaster management to minimize losses. The Response phase is the most visible phase of disaster management (Albtoush et al., 2011). This stage is essential; therefore, it is located in the middle of the

diagram, different shapes, and becomes connector among stages.

The recovery stage illustrates the process carried out after the response stage. This stage is the longest and the most extensive phase in disaster management, according to Kimberly (2003), because getting recover from a disaster is costly and needs a long-term period.

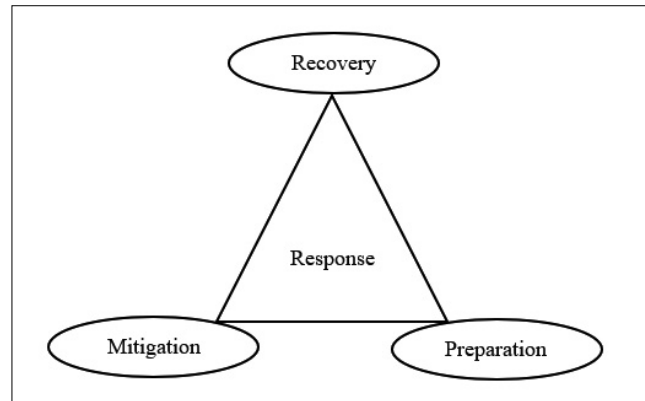


Figure 5. Kimberly's Model

Source: Kimberly (2003)

However, Dube (2018) argues that this model can be used only in a specific disaster situation. The reason for this claim, because it requires appropriately trained employees to handle each stage of disaster phases, which cannot be implemented in all disasters. Also, Alboush, et al. (2011) pointed out that this model is best implemented in the health sector.

Research Methodology

Meta-analysis is one technique in quantitative research that compares multiple previous studies. Glass (1976) explains meta-analysis as a statistical analysis of an extensive collection of analysis results from individual studies to integrate the findings.

In the meta-analysis, there is no single correct approach exists (Shelby & Vaske, 2008). However, researchers mention four basic steps to conduct meta-analysis: problem conceptualization and operationalization, data collection and processing, analysis, and reporting.

The problem conceptualization and

operationalization suppose that meta-analysis research should include a specification of the relevant research literature. Then it followed by data collection and processing, analysis, and reporting to perform appropriate research.

This study utilizes a meta-analysis approach to compares various disaster management models. The chosen research models are research models that have been published academically included journal articles, books, conference proceedings, or working papers. The models are evaluated, compared, and then associated with the results of the document analysis regarding the current disaster management implemented in Indonesia.

Furthermore, findings of the study are expected to describe the differences among disaster models, common features in all models, and how those models contribute to Indonesia's disaster management.

Discussion

This section elaborates on the Indonesian act of disaster management, which was released in 2007, to describe the current practice of disaster management in Indonesia. On the other hand, disaster models are discussed to find the main feature, differences, and how each model impacts on disaster management practice.

Indonesian Act of Disaster Management

Indonesia government released the law of the Republic of Indonesia number 24 concerning Disaster Management in 2007. The act divides disaster management into three phases: pre-disaster, emergency response, and post-disaster.

1. Pre-disaster

Disaster at the pre-disaster stage includes situation without disaster and situations with potential disaster. Situation without disaster consists of planning, risk reduction, prevention, integration into development planning, risk analysis requirements, spatial structure plan implementation and enforcement, education and training, and technical standard requirements.

2. Emergency response

The Emergency response phase consists of the quick

and appropriate study, emergency status, rescue and evacuation, the fulfillment of necessities, protection for a vulnerable group, and immediate recovery. This phase is a critical phase to reduce the number of victims, decrease the amount of loss, and improve mental and psychological victims.

3. Post-disaster

This phase divided into two sections: rehabilitation and reconstruction. Rehabilitation emphasizes the environmental improvement and repairment, socio-psychological recovery, healthcare, and conflict resolution. Then, it followed by reconstruction, which focuses on rebuilding the infrastructure and community.

The regulation also regulates disaster aid financing and management of the funds. The central government and the regional government shall jointly responsible for disaster management funds, encourage community participation in the provision of funds. Moreover, the government also must allocate sufficient disaster management budget, especially to recover the government's primary duties and functions.

The government does not only have to build infrastructure and buildings but also has to provide disaster aid to disaster victims. Disaster aid shall comprise donation to the relative of a ceased person, compensation money for disability, soft loan for productive business, and aid for necessities.

Influence of Disaster Management Models

Disaster management models are useful to simplify the disaster management process. Models are also can become a framework guideline for disaster management. Indonesia's act for disaster management was issued after the 2004 earthquake and tsunami in Aceh. The tragedy has prompted serious attention from the Government and the international community in disaster management. Therefore, the government established the Indonesia National Agency Disaster Management (BNPB) to replace the National Disaster Coordinating Board (Bakornas PB). The new agent has a broader function, not only emergency response but also disaster

risk reduction.

The Indonesia disaster management act has resemblances to existing models. The phases in the traditional model are applied to the rules. The cause and effect model also become Government concerns when formulating the mitigation procedures. Moreover, in practice, it is factual that the response phase becomes one of the crucial phases because it has a direct effect on the victims. Incident response, the fulfillment of necessities, rescue and evacuation are the earliest activities after the disaster. Then, the process of recovery also takes years to be complete, as mentioned in Kimberly's model.

Models comparison

This study discussed four disaster management models from different categories. The traditional model and expand-contract represent the logical approach; the disaster crunch model characterizes a cause and effect method, and Kimberly's model denotes the integrated approach of disaster management. The first-three models have a similar approach but different in emphasis. The expand-contract accepts simultaneous activities, while the disaster crunch model focuses on the cause and effect relationship (Table 2). The traditional model is a universal model for most practitioners and then followed by the expand-contract model. These models are simple, clear, and enough to be used as a guideline, while Kimberly's model is the least model used by scholars (Dube, 2018).

Table 2. Models Main Features

Model	Main Feature
Traditional	Sequential stages
Expand-contract	Accepts simultaneous activities
Disaster crunch	Cause and effect relationship
Kimberly	The importance of recovery stage

However, not only one single model used in the practice of disaster management. In Indonesia, all the models have a significant influence on the formulation of regulation. Each of the models assists different features in the disaster management process (Table 3).

Table 3. Major Differences

Model	Main Feature
Traditional	Phase pre-disaster plays a significant role in disaster management, recovery phase not indeed elaborated
Expand-contract	Each phase can expand, or contract depends on the situation, the most flexible model
Disaster crunch	Finding the deep-root problem, beneficial in disaster mitigation framework, as the basis for early construction of regulation
Kimberly	Focus on recovery and inattention the need of pre-disaster, preparedness and mitigation in the same level

Disaster Financing

Because of the significant economic losses as the impact of the disaster, as well as the potential risk exposure in the future, Indonesia needs to own a reasonable consideration of assessing the economic impact of disasters. This attention is crucial for ensuring the availability of resources for disaster response, recovery, and reconstruction, which can prevent financial distress (Mahul and Signer 2014).

There are two types of disaster risk financing as policy options; one is the public tools and the second is private tools (Juswanto & Nugroho, 2017). While the government has difficulties in financing all losses due to disaster, the private sector has financial resources. Therefore, the government might seek other funding sources such as disaster insurance. The state-sponsored reinsurance program will allow the government to protect the private insurance sector from the exposure of risks. This protection is recognized using special proportional and nonproportional of reinsurance arrangements. (Juswanto & Nugroho, 2017).

As an example is the Japan's earthquake insurance scheme. This insurance was introduced in 1966 by the act on earthquake insurance. This schema focus on the earthquake reinsurance for the private insurance market is solely provided by Japan Earthquake Reinsurance Co., Ltd. (JER). JER retains some portion of the liability and transfers the rest back to the private insurer and the government through reinsurance treaties. This schema also in accordance with Mita (2016) that explains the

needs of the public sector and private sector participation in disaster risk management.

Whereas in Indonesia, there is no disaster-specific insurance that can be used as a tool for risk transfer. Consequently, beside foreign grants, the government should fund all the disaster management process. Therefore, Indonesia should consider other tools for risk transfer, such as disaster insurance. At least the needs of a fund to cover immediate needs after the disaster will be fulfilled by the third party. (Ghesquiere and Mahul, 2007).

Conclusion

One of the conclusions in this study is that models have a noteworthy role in disaster management practice. As a base on formulating a framework of disaster management practices, the government can utilize various disaster models to be applied in the regulation. The traditional model and expand-contract are the most regular model for practitioners; while the disaster crunch focuses on the process of brainstorming to decide disaster management practice. Kimberly's model also beneficial in the formation of regulation; however, the implementation needs an adaptation on specific conditions.

After the earthquake and tsunami in 2004, Indonesia realized the importance of the preparation stage in disaster management. The regulation of disaster management then released and became a guideline in disaster management practice. The regulation also explains the source of funding to minimize the impact of disaster, reporting and accountability process of the fund. However, the regulation does not consider any risk-transfer method to minimize the Government's burden on disaster management.

Therefore, the Government should find the most suitable funding sources and consider the risk-transfer tools to mitigate the impact of a disaster.

References

- 1) ADPC (2000) Community based disaster management (CBDM): Trainer's guide, module 4: Disaster management. Asian Disaster Preparedness Center (ADPC). Bangkok, Thailand
- 2) Albtoush, R., Dobrescu, R., and Ionescu, F. (2011) A hierarchical model for emergency management systems. U.P. B. Sci. Bull., Series C, 73 (2): 53-62
- 3) Atmanand, R., (2003), Insurance and disaster management: The Indian context, *Disaster Prevention and Management* 12(4), 286–304. http://dx.doi.org/10.1108/0965356_0310493105
- 4) Blaikie, P., Cannon, T., Davis, I., Wisner, B. (1994) *At risk: natural hazards, people's vulnerability and disasters*. Routledge: London
- 5) Coburn, A.W., Spence, R.J.S. & Pomonis, A. (1994). *Disaster mitigation*, 2nd edn. Cambridge Architectural Research: Cambridge.
- 6) Dube, E. (2015) Improving disaster risk reduction capacity of District Civil Protection Units in managing veld fires: A case of Mangwe District in Matabeleland South Province, Zimbabwe. *Jamba: Journal of Disaster Risk Studies* 7(1), Art #143
- 7) Dube, E. (2018) Using models to deal with hazards and disasters: A trajectory towards effective disaster management in Zimbabwe. *People: International Journal of Social Science* Volume 4 Issue 1, pp 111-132
- 8) Ghesquiere, F. and Mahul, O (2007) Sovereign natural disaster insurance for developing countries: A paradigm shift in catastrophe risk financing. *The World Bank policy research working paper* number 4345
- 9) Glass, G. V. (1976) Primary, secondary, and meta-analysis of research. *Educational researcher*, 5(10), 3-8
- 10) Hai, C. M. and Smyth, I (2012) *The disaster crunch model: guidelines a gendered approach*. Oxfam GB: Oxford
- 11) Juswanto, W. and Nugroho, S. A. (2017) Promoting disaster risk financing in Asia and the Pacific. *ADB Policy Brief No. 2017-1* (January)
- 12) Kelly, C. (1998) Simplifying disasters: Developing a model for complex non-linear events. *Proceedings of International Conference on Disaster Management: Crisis and Opportunity: Hazard Management and Disaster Preparedness in Australasia and the Pacific Region*, Cairns, Queensland, Australia, pp 25-28
- 13) Kimberly, A. (2003) Disaster preparedness in Virginia Hospital Centre-Arlington after Sept 11, 2001. *Disaster Management Response* 1(3), 80-86, 1 (1), 77
- 14) Mahul, O. and Signer, B. (2014) *Financial protection against natural disasters. Assessment report*, Washington DC, World Bank
- 15) Manitoba Health (2000) *Disaster management model for the health sector. Guidelines for program development/ Manitoba Health*
- 16) Mita, Noriyuki (2016) The development of disaster risk financing strategies in Japan. Presentation at OECD-ADBI seminar on disaster risk financing in Asia. Asian Development Bank Institute, Tokyo. 24 June
- 17) Othman S. H. & Beydoun, D. (2012) Evaluating disaster management knowledge model by using a frequency-based selection technique. *Lecture Notes in Computer Science*, 7457: 21-27
- 18) Shelby, L. B. and Vaske, J. J. (2008) Understanding meta-analysis: A review of the methodological literature. *Leisure Sciences*, 30:96-110

Appendix 1 Disaster Management Phases based on Indonesia Act of Disaster Management

Phases	Stages	Details	Explanations
Pre-disaster	Situation without disaster	Disaster management planning	Management planning document released periodically and include recognition and study of disaster threat, understanding on community's vulnerability, analysis of potential disaster impact, options for reducing risk disaster measures, selection of mechanism for alertness and for disaster impact management, allocation of task, authority, and available resources
		Disaster risk reduction	Activities to reduce potential negative impacts such as recognition and monitoring of disaster risk, participatory disaster management planning, promotion of disaster-awareness practices, greater commitment of disaster management team, application of physical and non-physical efforts and instruction on disaster management
		Prevention	Shall contain sure identification and recognition of sources of disaster danger or threat, check on control and management of natural resources with abrupt and/or gradual potential to become of source of disaster, monitoring the use of technology with abrupt and/or gradual potential to become a source of disaster threat or danger, spatial structuring and environmental management, strengthening of community's social resilience
		Integration into development planning	Shall include disaster management plan elements in Central and Regional development plans which require periodical reviews and coordination by the Agency
		Disaster risk analysis requirements	The document shall be shown in a document ratified by a government official
		Spatial structure plan implementation and enforcement	Shall aim to reduce disaster risk including the application of regulations on spatial structure, safety standard, and the imposition of sanction on violators. The implementation of spatial structure and the achievement of safety standard should be monitor and evaluate periodically
		Education, training and technical standard requirements	Government shall carry out and stipulate education, training, and technical standard requirements
	Situation with potential disaster	Alertness	Shall require preparation and try-out for disaster emergency plans, organization, installation, and testing of early warning system, provision and preparation of supplies for fulfillment of necessities, organization, counseling, training, and rehearsal regarding emergency response mechanism, preparation of location for evacuation, composition of accurate data, information, and update on disaster emergency response fixed procedures, provision and preparation of materials, goods, and equipment to fully recover facilities and infrastructure
		Early warning	Shall require observation of disaster signs, analysis of results from disaster signs observation, decision-making by the authorities, dissemination of disaster warning information, community actions
		Disaster mitigation	Shall require implementation of spatial structuring, regulation of development, infrastructure development, building lay-out, conventional and modern education, counseling, and training

Phases	Details	Explanations
Emergency response	Quick and appropriate study	Shall aim to identify disaster area coverage, number of victims, damage to facilities and infrastructure, disturbance to the functions of public service and government administration, capability of natural and artificial resources
	Deciding on the disaster emergency status	The agency shall have easy access to mobilization of human resources, equipment, and logistics. Acceptance on immigration, excise, quarantine, licensing, procurement of goods and services, accountability of money, rescue, and command.
	Rescue and evacuation of disaster-affected community	Shall require humanity services in disaster area through search and rescue of victims, emergency aid, and evacuation of victims.
	Fulfillment of necessities	Shall include aid for necessities of water and sanitation, food, clothing, healthcare, psychosocial service, and accommodation and dwelling place.
	Protection for vulnerable group	Shall priorities infants, preschoolers, and children, pregnant women and nursing mothers, the disabled, and the elderly in the forms of rescue, evacuation, protection, healthcare, and psychosocial services
	Immediate recovery	Shall require to and/or replacement of damages of essential facilities and infrastructure from disaster
Post-disaster	Rehabilitation	Shall require improvement to disaster area environment, repairment of public facilities and infrastructure, provision of aid for community housing repair, socio psychological recovery, healthcare, conflict resolution, socioeconomic and cultural recovery, security and order recovery, government administration function recovery, and public services function recovery
	Reconstruction	Shall include rebuilding of facilities and infrastructure, rebuilding of community's social facilities , revival of community life, use of appropriate design with disaster-resistant equipment, participation of social institutions and organization, business, and community, improvement to social, economic and cultural conditions, improvement to public service functions, and improvement to essential services in community

Human Development through Technical-Vocational Education and Training



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経済成長を通じた国民の生活向上には技能訓練・職業教育(TVET)が欠かせない。本稿ではフィリピンにおけるTVETの現状を紹介しつつ、それが卒業生の就職率や生産性の向上につながっているか否かを検証した。

Abstract

A strong economic rationale exists for investing in technical and vocational education and training (TVET), that is, the recognition of TVET as a source of the skills, knowledge and technology needed to drive productivity in the knowledge-based and transition societies of the twenty-first century. This research focuses on how TVET is able to improve labor productivity through the followings: (a) providing industry relevant training; (b) ensuring institution-based training quality; and (c) improving the TVET image. The potential contribution of TVET to education and employability shall be estimated using a socio-economic welfare index. This will be achieved through a regression estimation procedure explaining the human development index with the contribution of TVET to average years of schooling. The potential contribution of greater TVET graduates entering the labor force significantly improves the 2017 HDI of the Philippines of 0.699 to an estimated 2018 HDI of 0.7088, thereby outgrowing the 2015-2017 HDI growth rate. A case in point is the 2-year program offered by the Foundation for Professional Training, Inc. (FPTI). Schools answer these needs by consistently providing 100% employment to its graduates in the hotel and restaurant industry.

Keywords technical and vocational education and training, labor productivity, human development index

Background

Currently, the Philippines is fortunate enough to be at its demographic gift spot; a high population of a young labour force. A large labour force may contribute more consumption and production to the economy, which leads to higher economic growth. However, the quality of human capital is more important than the quantity; raising the quality of education must be at the center of human capital policies to utilize the population¹. One of the ways to prepare the labour force at a broad range and at different levels of the education and training system is

through technical and vocational education and training or TVET. TVET is one of the three education subsectors in the Philippines, alongside basic education and higher education². TVET is especially crucial for the Philippines, because of the country's high poverty rates; it typically caters to secondary school graduates or dropouts, or college graduates looking for skills training.

At the center of pro-poor strategies is skills development within the informal sector (Johanson and Adams 2004; King and Palmer 2006), as it promotes sustainable livelihoods in fragile environments. In addition,

¹ Descy, P. and Tessaring, M., 2005. *The value of learning: evaluation and impact of education and training: third report on vocational training research in Europe: synthesis report*. Luxembourg: Office for official publications of the European Communities.

² Philippines. Congressional Commission on Education, 1991. *Making Education Work: An Agenda for Reform*.

many of the disadvantaged youth are unable to complete the 10-year education cycle, are limited by basic education and/or unequipped with skills necessary for employment³. Furthermore, TVET helps achieve the following economic objectives: filling skills shortages, enhancing productivity on the job productivity, achieving competitiveness in the global economy, attracting foreign direct investment, and raising productivity of the informal sector.⁴

In the Philippines, the government agency tasked to manage and supervise technical education and skills development is the Technical Education and Skills Development Authority (TESDA). TESDA was established in 1994 by merging together certain offices under the Department of Labour and Employment (DOLE) and the Department of Education, Culture and Sports (DECS). By integrating offices from DOLE and DECS, there was a reduction in overlap amongst skills development activities initiated by various public and private agencies. In addition, it provided clearer direction for the nation's technical- vocational education and training goals. TESDA was established under the Republic Act No. 7796. This act, otherwise known as the Technical Education and Skills Development Act of 1994, was enacted by President Fidel V. Ramos. The act was passed due to the Philippine's need to improve its educational system's quality, accessibility, and responsiveness to the nation's development challenges.⁵ Its aim is to encourage mobilization and full participation of labour within the Philippines' industries and local government units. Moreover, the law aims to develop the skills of the country's human resources.

Since 1994 TESDA has been mandated to “integrate, coordinate and monitor skills development programs; restructure efforts to promote and develop middle-level manpower; approve skills standards and tests; develop

an accreditation system for institutions involved in middle-level manpower development; fund programs and projects for technical education and skills development; and assist trainers training programs.” Concurrently, TESDA is expected to “devolve training functions to local governments; reform the apprenticeship program; involve industry/employers in skills training; formulate a skills development plan; develop and administer training incentives; organize skills competitions; and manage skills development funds.”⁶

Today, TESDA has four training program modalities: school-based, center-based, community-based, and enterprise-based. These programs are executed through the 57 TESDA administered schools, 60 training centers, and multiple enterprise-based training programs.⁷ According to TESDA's 2017 Annual Report, there are 2.2 million enrollees and 2 million graduates of skills development services.⁸

This brings us to this study's research problem: *Do TVET graduates have a significant contribution to labor productivity in the Philippines?* Given all these contributions and efforts to promote technical-vocational education in the Philippines, is there a present contribution to labor productivity in the country? As established, there is a need to develop human capital in the country so that economic growth and social development can be achieved hand in hand. The objectives of the study are as follows. First, to understand the significance of technical-vocational training on labor productivity. Second, to promote technical-vocational education in key sectors that are concerned with stimulating growth in the Philippine economy. Third, to estimate the contribution of technical-vocational education and training to the human development index.

3 Yao, Xianbin. “Education and Skills: Strategies for Accelerated Development in Asia and Pacific.” *Asian Development Bank, OECD* (2008).

4 Yao (2008)

5 Philippines. Congressional Commission on Education, 1991. *Making Education Work: An Agenda for Reform*.

6 Brief History of TESDA - TESDA. (2019). Retrieved from <https://www.tesda.gov.ph/About/TESDA/10> (Accessed May 2019)

7 TVET Programs. (2019). Retrieved from <https://www.tesda.gov.ph/About/TESDA/24> (Accessed may 2019)

8 Philippines. Technical Education and Skills Development Authority (TESDA). “TESDA 2017 annual report.” (2017)

Significance of the Study

Although there is a large amount of research on TVET internationally, little research exists on TVET graduates in the Philippines. Furthermore, Philippine research on TVET graduates' labor productivity has yet to be done. This paper will serve as an important addition to the body of research, by providing an empirical analysis of the significance of TVET on the Philippine's labour productivity. Similar to most countries implementing TVET, the Philippines faces the challenge of coordination between implementers, industries, and stakeholders⁹. Additionally, there tends to be a lack of alignment between the qualifications earned from vocational schools and the needs of industries¹⁰. Through the results of this study, relevant parties will have a deeper understanding on the labor productivity of TVET graduates and will be able to construct more efficient strategies for TVET. Furthermore, as regards economic growth, the study provides information on the key sectors to promote TVET. Lastly, the study will continue to promote and improve awareness of TVET in the Philippines.

Scope and Limitations

This study will focus on technical-vocational education and training in the Philippines. The study will pay particular attention on the sectors with a high employment of TVET, namely: Tourism, Construction, and Information Technology. The study will examine the relationship between the country's technical- vocational training and labour productivity within key sectors. To achieve this objective, annual data on TESDA graduates will be obtained from the Philippine Statistics Authority and TESDA from 2011 to 2014.

9 Budhrani, K.S., D'Amico, M.M. and Espiritu, J.L.D., 2018. Developing a Skilled Workforce through Technical and Vocational Education and Training in the Philippines. *Handbook of Comparative Studies on Community Colleges and Global Counterparts*, pp.693-718.

10 Kuczera, M., Kis, V., & Wurzburg, G. (2009). Learning for jobs OECD reviews of vocational education and training: Korea. Organisation for Economic Co-Operation and Development. Retrieved March 25, 2019 from <http://www.oecd.org/dataoecd/53/49/42689417.pdf> (Accessed May 2019)

Benefits of TVET

Technical and vocational education and training (TVET) is the systematic and orderly transmission of knowledge, skills and values to develop a workforce that is able to enhance productivity and sustain competitiveness in the global economy. It encompasses the ability to accelerate economic growth, provide marketable labor supply, minimize unemployment and underemployment, infuse technical knowledge, and reduce poverty (Bhurtel, 2017)¹¹. According to Yao (2008)¹², skills formation is not only vital, it is also complex. It crosses institutional boundaries, takes place in varied settings (including on the job and in non-formal ways), engages a highly diverse clientele, involves multiple delivery methods, and addresses occupational requirements that change constantly. The challenge is to unravel these complexities and meet the growing economic demand for skills. TVET serves a wide variety of objectives--political, social, and economic--some of which place unrealistic demand on training potential. The political objectives for TVET include keeping potentially disruptive youths off the streets--i.e., that providing TVET to jobless youths and adults will automatically reduce unemployment.

The social objectives of TVET are numerous, and, may include catering to different student abilities and interests and improving retention--e. g., keeping youths in secondary school by providing practical skills to those with low interest in academic studies or lesser academic abilities. TVET provides youths with skills on specific occupations which is vital for employability and holds more significance for the youths without higher level of education. It is taken as the tool for human resource development through skill empowerment and for restoration of economic stability during times of financial misfortune which may lead to an overwhelming rise in unemployment (Bhurtel, 2017).

TVET here is seen as something that is not a

11 Bhurtel, A., 2015. Technical and Vocational Education and Training in Workforce Development. *Journal of Training and Development*, 1, pp.77-84.

12 Yao (2008)

stand-alone tool for labor productivity. Because of its direct interaction with both general and academic education and work, vocational education particularly needs to collaborate and coordinate with other sectors. In the notion of policy implementation, TVET calls for the development of the quality of the education sector, its teachers and its materials to properly give out positive effects.

Effects of TVET to Socio-Economic Welfare

Beyond the benefits of TVET for the individuals and key sectors, this training is seen as an important strategy to achieve sustainable economies and societies through its contribution to social equitability and inclusivity (Schueler, Stanwick and Loveder, 2017)¹³. Moreover, it is aligned with the one of the Sustainable Development Goals of the United Nations, SDG 10: Reduced Inequalities as it is an efficient provision of opportunity for all. With that, the United Nations Educational, Scientific and Cultural Organization (UNESCO) highlighted the need for TVET in order to gain productivity, bring financial and non-financial benefits to the society, and greater social equity to alleviate poverty. Below is a discussion of the economic and social welfare contributions of TVET.

Social Welfare. According to UNESCO (2012), which was cited in Orbeta Jr. & Esguerra (2017) of Philippine Institute for Development Studies (PIDS), they underscored that demands on TVET are not solely confined to provide work, rather, it provides a lifelong learning that can teach ways to be adaptive in the fast-changing world. With this in mind, this type of educational training is sought to solve social issues, specifically social exclusion. With the income gap between the poor and non-poor, a large number of the poor are hindered from entering universities and colleges. Moreover, there are also situations where the transfer of technology in the Philippines requires more skilled

workers in the labor force. Given these, Orbeta & Esguerra (2017) argued that TVET must be accessible to all types of clients, namely, (1) the unemployed, (2) the currently employed who want to increase their income, and (3) the employed who want to re-tool. More so, they also cited that TVET should not discriminate against those who cannot afford to pay as to not impede any human development. It should also be accessible to small and medium enterprises to properly orient their industry to expand their capacity.

The accessibility of TVET proves social inclusion in the Philippines because it encourages equality among the workers. As a result, it increases the well-being of Filipinos. The design of TVET has improved social outcomes because students gained participation in the society. Schueler, Stanwick & Loveder (2017) stated that social interactions such as membership in organizations, social network groups, civic participation and the like have positive effects on the TVET graduate because it contributes to life and work satisfaction. In addition to that, this enhanced sense of well-being contributed to an improved self-esteem, improved confidence, and also satisfaction with financial situation. Schueler, Stanwick & Loveder (2017) further emphasized that the foundation skill gains elevate their literacy and numeracy skills that would be essential inside and outside work. To a greater extent, one of the notable effects of inclusion from TVET is that it also developed and promoted human rights of women. There have been gender issues as to what are the boundaries between the role of men and women. The educational trainings are not limited to male individuals but is open to both genders. Bhatta (2016) identified that women are then represented in different spheres of social activities.

On a larger scale, Bhatta (2016)¹⁴ explained that alleviating gender inequality and social exclusion closes possibilities of encountering problems in accessing public services and development opportunities. The society is able to realize the capacity of the people and

13 Schueler, J., Stanwick, J. and Loveder, P., 2017. *A Framework to Better Measure the Return on Investment from TVET. Occasional Paper*. National Centre for Vocational Education Research Ltd. PO Box 8288, Stational Arcade, Adelaide, SA 5000, Australia.

14 Bhatta, K., 2016. Gender Equality and Social Inclusion in Vocational Education and Training. *Journal of Advanced Academic Research*, 3(2), pp.29-39.

enrich human capital that would be beneficial for the economy. This decreases cases of low security, low pay, low conditions for work, and low bargaining power (Bhatta, 2016). With that, the TVET graduates are encouraged to heighten employee engagement because of the assurance and certainty that the labor service they will offer will be appreciated and be useful for the company.

Economic Welfare. The workforce of a nation is the main driver for development and economic growth (Adams, 2007 cited in Bhurtel, 2015). From this standpoint, the productive labor force has a significant impact on the welfare of the economy. UNESCO-UNEVOC (2013) argued that with the demands of industries, it created greater importance for TVET programs to strengthen the potential of the population. Moreover, it is one of the most efficient ways of alleviating unemployment due to insufficient skills. Bhurtel (2017) stated that it opens an avenue for economic acceleration for both developed and developing countries. The program is formed to train students to be fit in the labor market. With the developed skills gained from TVET, it creates possibilities for employment that would result to a better labor force. It is drawn that as the number of TVET graduates increase, there is a higher possibility of increasing the employment rate.

King & Palmer (2008) cited in Bhurtel (2017) mentioned that they conducted a study and found that there is a positive relationship between skill development and accessibility to decent jobs which can remarkably lead to economic growth because of the increase in productivity. The increased capacity of laborers would result to better quality work. In the workplace, Shreeve, Gibb and Riberio (2013) cited in Bhurtel (2017) expressed this instance as manner to boost the competitiveness of the graduate because the training gives them a specialization. This serves as a bridge to the success of the company and economy because TVET aligned their skills to match the job requirements. It becomes vital especially for entering new growing industries. On a larger scale, it can be derived that through the demands of globalization, these specialized labor markets contribute to efficiency.

There has been significant differences in the income between college graduates and non-college graduates because of skill differentials. The discretion is determined by the relationship of qualification levels with employment and wages (Karmel & Nguyen 2006; Leigh 2008; Noonan et al., 2010 cited in Schueler, Stanwick and Loveder, 2017). After the trainings, graduates are more likely to have full-time income. This secured opportunity becomes a benefit to the laborer through higher disposable income for a greater spending and saving capacity. This also benefits the employer through higher labor productivity and improved labor supply and quality (ADB, n.d.)¹⁵. Nonetheless, the wage enhancements that may be attained by TVET programs may aid in uplifting the economic status of the worker in time. As a developing country that promotes social inclusion, it would be highly beneficial since many individuals who are below the poverty threshold may be pushed upwards, out of the poverty line.

Theoretical Framework: Labor Productivity and Vocational Training

This study is based on an article from a discussion paper series of the Institute of the Study of the Labor entitled “Labor Productivity and Vocational Training: Evidence from Europe” by Hector Salva and Jose I. Silva. The paper acknowledged that human capital is necessary for economic and productivity growth and analyzed cases in select sectors and countries in the European Union. It recognized the need to develop human capital so that they may be trained and prepared to improve their quality of output and their ability to utilize new capital, technologies, and processes. It intended to provide a “quantitative assessment of the impact of vocational training using a large dataset with information by country and sector, controlling the standard determinants in the literature such as capital deepening, the level of education, and expenditures in research & development activities.” The paper

¹⁵ Asian Development Bank 2019 “Bhutan: Skills training and education pathways upgradation project” (<https://www.adb.org/projects/50296-002/main#project-documents>) (Accessed May 2019)

conducted a cross-sectional panel data of 16 sectors of 21 European economies for years 1999 and 2005. It considered variables such as capital deepening, vocational training, intensity in research, and education to analyze the effect of technical-vocational training to labor productivity. The results of the paper found that an extra hour of training per employee contributed to accelerate the growth rate of labor productivity by 0.55 percentage points. Given this discussion paper based on European context, this study decided to follow this paper as a theoretical framework for similar objectives in the case of the Philippines.

An extra hour of training would refer to hours spent on mentoring and coaching technical-vocational students. This practice is conducted within the institutions providing the skills and competencies training, as well as from the industry partners where the students undergo on-the-job training. This capital deepening process enables students to be more competent and effective professionals once they join the industry.

Empirical Methodology

Based on the cross-sectional panel regression of the IZA discussion paper by Salva and Silva, this paper will conduct a cross-sectional panel regression of the tourism, construction, and information communication technology (ICT) sectors of the Philippine economy for years with available data. The equation below will be used for the regression:

Where:

$$Y_{ij} = \text{Labor productivity} = \frac{\text{real value added}}{\text{total employment}}$$

$$K_{ij} = \text{Capital deepening} = \frac{\text{real net capital stock}}{\text{total employment}}$$

$$\xi_{ij} = \text{Vocational training} = \frac{\text{hours in TVET courses}}{\text{total employment}}$$

w = Wage

Based on the methodology of the IZA discussion paper, utilizing the logarithm forms on certain variables is necessary the percent change and its impact, or its

elasticity. Analyzing the percent change of capital deepening on a percent change of labor productivity is needed because when concerned with growth and productivity, it is normally indicated in terms of growth or incremental/marginal changes. Meanwhile, capital deepening is necessary to understand how capital is utilized by the workers in each sector. In this model, vocational training will be measured by the average hours of a TVET graduate in a course related to the concerned sector of tourism, construction, or information communication technology (ICT) multiplied to the number of TVET graduates in those sectors over total employment per sector. Wage will also be considered in this model as efficiency wage theory states that higher wages leads to higher labor productivity in firms and sector which will be determined from the average wage of each sector.

The results of the regression (See Table 1) illustrated a positive correlation between all variables and labor productivity. Amongst the variables, wages, with a p-value of 0.4498, has the least impact on labor productivity. This is possibly due to wages being relatively low and increases are not significant enough to incentivize workers to increase productivity.

Table 1. Regression Results on Labor Productivity and TVET

Model 1: Fixed-Effects, using 12 observations
Included 3 cross-sectional units
Time-series length = 4
Dependent variable: Labor Productivity

	Coefficient	Standard Error	T-Ratio	P-Value
Constant	1.01815	1.81164	0.562	0.5945
Capital Deepening	1.83591	1.9752	0.9295	0.3885
Wage	0.000129009	0.000159624	0.8082	0.4498
Hours of Vocational Training	1.21983	0.361532	3.374	0.015 **
Mean Dependent Var	6.682022	S.D. Dependent Var		3.34893
Sum Squared Resid	9.941614	S.E. of Regression		0.39615
LSDV R-Squared	0.992367	Within R-Squared		0.90228
LSDV F (5, 6)	156.0223	P-Value (F)		2.89E-06
Log-Likelihood	-1.756862	Akaike Criterion		15.5137
Schwarz Criterion	18.42316	Haman-Quinn		14.4366
Rho	0.318826	Durbin-Watson		0.32927

Source: Philippine Statistics Authority (PSA)

Capital deepening showed that a lower significance to labor productivity, with a p-value of 0.3885. Although capital deepening is a less significant variable, its

positive relationship with productivity still illustrates the need for investments into real net capital stock. Capital deepening is widely considered an important component for a business's productivity. According to the regression results, every 1% increase in capital deepening leads to an estimated 1.83% increase in labor productivity. Through capital deepening, workers are allotted more access to inputs, such as machinery and technology. With a greater availability of resources per worker, workers are allowed to produce more output. Therefore, productivity may be increased through greater investments into real net capital stock. However, because the p-value is considered not significant, it is clear that the returns from investments in human capital itself is more valuable.

With a positive and significant coefficient for TVET, this result reinforces what is proven by literature that technical and vocational education and training positively contributes to the labor productivity of a sector. In this study, specific sectors were analyzed as these were found to have many graduates from TVET in the Philippines. In construction, the most recent TESDA Survey on Employability of Graduates (2014) found that 92,640 graduates were employed by the construction industry, easily accounting for 7.5 percent of the graduates. It is even more fortunate that with the infrastructure boom that has come with the Build Build Build program of the President Duterte, there is more demand for skilled labor in the construction sector. In a report released by the Philippine Information Agency, Department of Labor and Employment – Region XI Asst. Regional Director Jason Balais¹⁶ said “[b]ecause of the build, build, build, we have so many vacancies in the construction industry ... Our available construction-related vacancies are about 2,200 jobs, mostly carpenters and masons.” With this demand and the clamor within the construction industry for skilled labor, now more than ever should TVET be emphasized and

focused on.

Meanwhile, in the information and communication technology (ICT) sector, there is a lack of skilled labor despite the growing demand for these workers. In a report by SunStar¹⁷, technical- vocational education has been scene as the key to developing skilled laborers that are needed by the industry. Pedro V. Sandalo Jr., the school director for operations and finance of Vocational Technical Training and Assessment Institute (VocTech) in Mambaling, Cebu said “We see that there is a need for workers, but when the industry demands, there are not enough people available. With VocTech, we will have a pool of talents to serve the needs of the industry.” Additionally, Information Technology and Business Process Association of the Philippines (IBPAP) Board Trustee Jonathan D. de Luzuriaga believes that the Philippines already has a sizeable workforce with basic capabilities but to become more competitive and even catch up with the country's ASEAN neighbors, more advanced skills must be developed¹⁸. ICT graduates also absorbed 7.9 percent of the TVET graduates of 2014 or 97,768 graduates.

Lastly, the tourism sector has the most batch of graduates from 2015-2016, absorbing 8.88% percent of the 2,151,000 TVET graduates. (See Figure 1)

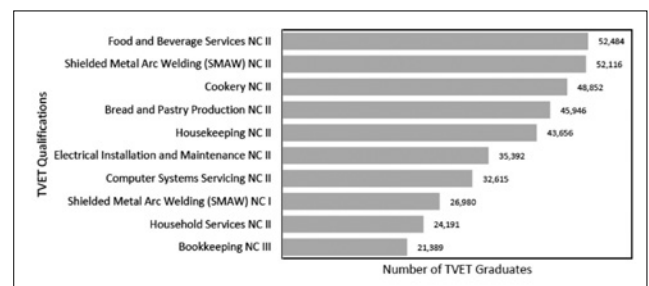


Figure 1. TVET Graduates in Top 10 Qualifications. 2016

Source: TESDA

16 Alama, Rudolph Ian. (May 3, 2019). Build, build, build projects boost demand for skilled workers. Philippine Information Agency. Retrieved from <https://pia.gov.ph/news/articles/1021604> (Accessed May 2019)

17 Galolo, Jeandie O. (April 4, 2016). ICT workers in short supply. SunStar Philippines. Retrieved from <https://www.sunstar.com.ph/article/66721> (Accessed May 2019)

18 Cortez, Gillian M. (March 24, 2019). PHL IT workers skilled in basics, developing capability seen key. BusinessWorld. Retrieved from <https://www.bworldonline.com/phl-it-workers-skilled-in-basics-developing-capability-seen-key/> (Accessed May 2019)

TVET courses for the tourism sector mostly focus on hotel and restaurant service and management, such as housekeeping, food and beverage services, bartending, cookery, and, bread and pastry production. The Hotels and Restaurants Association of Baguio (HRAB) is in close partnership with various technical vocational schools and has found TVET graduates to be crucial in the industry. Anne Juzette Ruth Toledo, an executive from HRAB, said “Graduates of technical vocational courses augment the industry, provide support and employment opportunity to the TESDA graduates.” She also mentioned that the partnership with TESDA has proven particularly beneficial for the company saying, “We consider TESDA as our partner in the industry and the objective of HRAB is to develop the hospitality and tourism industry and it would not be complete without the help of TESDA in terms of producing quality graduates.”¹⁹

Table 2. TVET Enrollees and Graduates by Delivery Mode by Sex: 2014-2016

Delivery Mode	2014			2015			2016		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Enrollees	972,359	1,061,058	2,033,417	1,099,118	1,182,271	2,281,389	1,060,463	1,209,202	2,269,665
Institution-based	542,419	485,586	1,028,005	647,040	519,573	1,166,613	591,133	560,511	1,151,644
Enterprise-based	32,793	36,345	69,138	34,797	28,828	63,625	36,643	35,815	72,458
Community-based	397,147	539,127	936,274	417,281	633,870	1,051,151	432,687	612,876	1,045,563
Graduates	859,448	926,233	1,785,679	1,009,966	1,118,792	2,128,758	1,004,487	1,146,779	2,151,266
Institution-based	448,817	388,042	836,859	551,245	488,044	1,039,290	543,838	613,936	1,157,774
Enterprise-based	30,617	27,400	57,417	28,235	28,767	57,002	35,558	31,522	67,080
Community-based	383,812	510,791	894,603	430,485	605,981	1,036,466	425,261	601,321	1,026,582

Source: 2014-2016 MIS 03-02 data from TESDA Regional Office, Provincial Office and TechVoc Institute ROPOTI. Consolidated and Validated by Planning Office - Labor Market Information Division

Table 2 shows the delivery mode having the greatest number of graduates. From 2014-2016, technical-vocational education delivered by institutions such as schools, learning centers and universities, have the most graduates. Due to the close supervision, mentoring and on-the-job training in close partnership with industry, these institutions are able to immediately employ almost 100% of their graduates. This mode of training would entail the capital deepening aspect of technical-vocational education and training prevalent in the European

context. Students have to be closely supervised by their trainers, in order to skillfully use instruments and equipment essential for effective job performance. It also ensures an excellent quality of graduates, whose skills and competencies match the needs of the industry. Figure 2 shows their employability by sector.

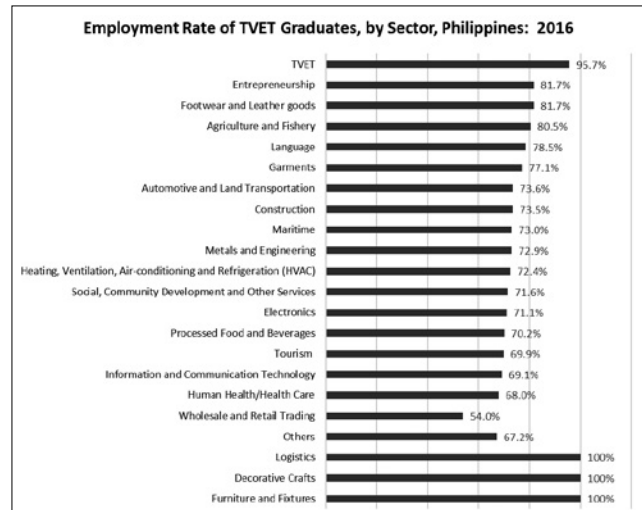


Figure 2. Employment Rate of TVET Graduates by Sector. Philippines 2016

Source: TESDA

In summary, the results show that the tourism sector-related skills and competencies taught via TVET, which has a consistently high level of enrollment and graduates, are among the courses contributing to high labor productivity for the country.

Industry Focus-Graduates of an Institution- Based TVE: FPTI Schools

Lifelong development for women from all walks of life is the primary focus of the Foundation for Professional Training, Inc. (FPTI). Guided by this thrust, the FPTI Schools believe that raising the educational level of women and developing their skills--be this for household chores or institutional services--redounds to the good of the family they belong to and the community that they serve. FPTI's vision is to educate and train women to be agents of social change at all levels of society by committing themselves to service and wholistic personal development. FPTI's mission is

¹⁹ Agoot, Liza. (April 10, 2019). TESDA graduates are quality workers: tourism exec. Philippine News Agency. Retrieved from <https://www.pna.gov.ph/articles/1066961> (Accessed May 201)

to contribute to the efforts of nation-building by empowering women of all walks of life--especially among the less privileged sectors – through development education, skills training, and character-building founded on Christian values of life and work.

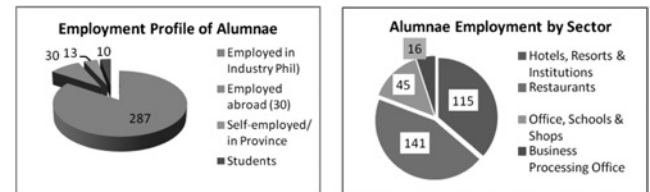
The FPTI schools recognize and have faith in the dignity of the person as the sustainable foundation for development. Development education is a lasting solution to overcome the negative effects of poverty: the lack of skills, opportunities for employment, lack of self-esteem and self-reliance, and lack of access to social integration. The FPTI schools also believe in life long professional training to ensure competent service and the active participation of women in various aspects of development, good governance, and responsible partnership with stakeholders.

These are achieved through an institution's readiness to undertake collaborative projects in the field of educational development, explore and implement appropriate innovative approaches to formal and non-formal training that will foster lifelong learning activities of women, manage training centers that offer enhanced education-to-employment programs in both residential and institutional services, conduct continuing programs among trainers and volunteers to strengthen institutional support and capabilities, and promote advocacy programs that will heighten awareness of socio-civic responsibilities among individuals and corporate entities. All these are geared toward supporting the promoting technical-vocational training in the Philippines.

The two-year program offered by the FPTI Schools responds to said needs by assuring graduates of employment in the hotel and restaurant industry. The programs are self-sustaining and provide innovative technical and vocational education and mentoring. Livelihood training is further imparted through one-on-mentoring in the school and coaching during on-the-job training.

With more than 20 years of service and development commitment, FPTI schools continue to meet the challenges of its various stakeholders — women from various socio-economic status, their volunteers, hospitality industry partners, donors — through constant nurturing of its core educational values and updating of strategies

for honing its competencies. Students are given livelihood training, mentoring and coaching.



Figures 3. & 4. Employment Profile of Batch 2006-2012 Alumnae

Source: Banilad Center for Professional Development

Figures 3 & 4 shows employment from a sample of 340 graduates from the Banilad Center for Professional Development (BCPD) based in Cebu. This sample of graduates are earning at least a gross income Php20,000 – Php25,000 per month, equaling the regional per capita gross domestic product of NCR of Php21,158 as of 2018. Most of the enrollees come from the low income D socio-economic status, as can be seen in Figure 5.

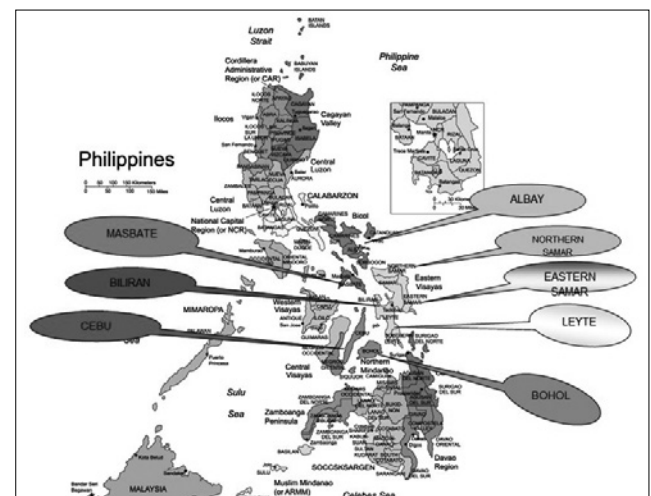


Figure 5. Map of the Recipient Provinces of BCPD Training in the Philippines

Source: Banilad Center for Professional Development

The areas receiving training from BCPD belong to the poorest regions in the Philippines. While being in their on-the-job training after acquiring their appropriate skills training and competencies, their highly satisfactory job performance is observed by their potential

employers, most of whom are in the hotel and restaurant industry. They immediately get hired after their TVE graduation along with their NC II certificates in house-keeping, food and beverage services, cookery, and, bread and pastry production. Some of them are absorbed by the maritime industry, or, in the hotel and restaurant industry abroad, such as pension homes, hostels and hotels in Italy, Spain, East Asia and North America, enabling them to lift the socio-economic status of their families just within a span of 5 years. These graduates are able to save enough in order to build their families a home.

Based on the results of the social economic welfare index (SEWI) survey (see Figure 6) of the BCPD students using Maslow's hierarchy of needs before training of the BCPD alumnae and after finishing the 2-year Hotel and Restaurant Services (HRS) course, results show a positive increment improvement in the 8 out of 9 SEWI indicators. (See Tables A2-A3 for calculation of SEWI). To facilitate the comparison of the SEWI survey results, data is presented using the M&E Wheel or Spider web, which is one of the methods for monitoring and evaluating projects (ANCP Annual Development Plan (2012-2103, Annex D-40). The spider web provides a visual means of measuring project performance vis-a-vis targets and in comparing changes in ratings through time. The spider web was used here to help represent the social economic welfare index of the BCPD students before and after training as illustrated in Figure 6.

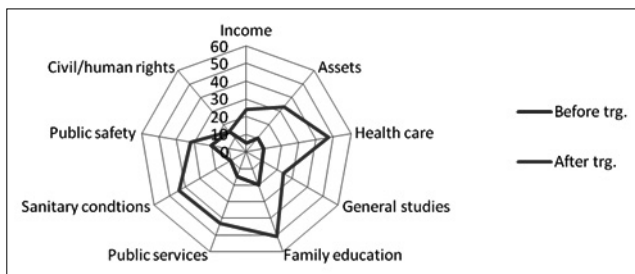


Figure 6. Comparative SEW Index of BCPD Students Before and After Training

Source: Banilad Center for Professional Development

The increment improvement in the 8 social economic welfare indicators varies. Highest improvement (77%) is

seen in the individual-tangible goods and services, such as income (79%) health care (79%) and properties/ assets- housing (69%). It is followed closely by the collective-tangible (71%) indicators; namely, sanitary conditions (77%) and public services- utilities (65%). These results are congruent with Maslow's Hierarchy of Needs theory in which the basic low-level physiological requirements to sustain life, such as air, water, nourishment, shelter, warmth, sleep must be satisfied before the higher-level needs, such as self-fulfillment. Moreover, the second level -safety and security is required to be free from the threat of physical and emotional harm, such as living in a safe area, medical insurance, job security and financial reserves. Most of these needs are satisfied in the lives of the alumnae.

In the area of individual-intangible (61%) goods and services, such as general studies (58%) and family education (61%), the increment improvement is minimal. It seems that higher education is not an urgent need for the alumnae to succeed in their career in the hotel and restaurant industry. There is a wide array of opportunities to grow and develop in their competence and profession that satisfies their social needs and esteem. Also, majority (63 or 68%) of the survey respondents belong to batch 2010 to 2012; just taking off in their career with one to three years experience in their wings.

Lastly, lowest increment improvement in the social economic welfare index is in the collective-intangible (29%) goods and services; namely public safety (38%). It is reassuring to note that there is no threat of harm in the community environment where the alumnae live, but there is no assurance of protection in case of aggression or harm. Furthermore, Civil and human rights enforceability has not improved as graded by the students and alumnae; that is (15 or Low-low) the same level before and after training. It may be a manifestation of the low economic capacity of the local government unit or a lack of political will of local officials in implementation of programs and delivery of basic services.

BCPD envisions a brighter future for the Filipino women. From the social economic welfare index (SEWI) survey results, it is safe to conclude that this vision has been fulfilled in the lives of the alumnae beneficiaries.

The graduates are 100 percent employed and earn at least a minimum amount that uplifts the family from poverty line that satisfies their physiological and safety needs. Although, it would be desirable if the alumnae's communities, through the local officials improve in civil and human rights enforceability. In general, BCPD training has indeed led to an improved quality of life of the alumnae and their families. As of 2019, the SEWI is being updated.

Referring further to Maslow's hierarchy of needs theory, it can be gleaned that the alumnae are also growing in the other levels of sociability, esteem and self-actualization; although these may not be quantified in the SEWI survey results. Being in the service industry, they are dynamic and relate with all types of people, gaining self-respect and recognition along the way. The quest for excellence inculcated in them makes them seek realization of their full potential as shown in their staying in the job for 5-6 years rising in the career ladder or moving on to greener pastures trying out new ventures even in foreign lands. The mentoring program for the alumnae has to be institutionalized so that they can be guided to make prudent career and life choices.

It seems the alumnae are content with the BCPD diploma. However, as the alumnae get on in years, there is a need to 'reinvent themselves', 'sharpen the saw' and acquire higher level qualification certificates or diploma for their professional portfolio to remain competitive in the tourism industry. Hence, BCPD can take the lead by looking into offering higher qualifications (e.g. TESDA National Certificate III and IV) for the alumnae so that they maintain an edge in the competitive hotel and restaurant industry

From a macroeconomic standpoint, the contributions of these schools and institutions providing TVET shall be summarized using an estimated human development index. The human development index is the geometric mean of the index for life expectancy at birth, index for expected average years of schooling, index for the mean years of schooling and the index for gross national income per capita in \$PPP (purchasing power parity). In the absence of data to compute or estimate these variables with the contribution of TVET graduates for 2018,

a regression of the HDI for the Philippines shall be done. The additional labor force for the Philippines in 2018 is 5 million individuals. About 2 million of these are employed. Of the additional labor force in 2018, 480,000 are graduates of TVET²⁰. If these 480,000 graduates would have been employed in 2018, then their percentage would be 24%. If all TVET graduates would have been able to attain 12 years of schooling, i.e. finished senior high school, then that would mean that the average years of schooling for the Philippines would no longer be 9.3 years, but 9.948. Forecasting the HDI for the Philippines for 2018, with a 9.948 mean number of schooling years, all other variables constant would increase the HDI from 0.699 to 0.7088. The HDI of the Philippines has been from 0.693 in 2015 to 0.669 in 2017 or a 0.4% growth. If we include the forecasted HDI with the inclusion of TVET graduates, the growth rate will be significantly higher, or 0.7%. With TVET, the additional employable graduates, with at least senior high school education, would significantly increase the average years of schooling. (See Figure 7)

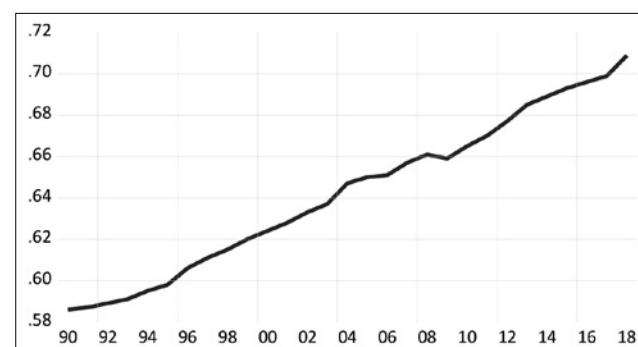


Figure 7. Human Development Index Philippines with 2018 Forecast

Source: Human Development Index, UNDP

Summary

With the high population of the Philippines, TVET education has become a driver for economic growth. The young labor force has a large contribution to the

20 Orbeta, et al 2018 "Senior High School and the Labor Market: Perspectives of Grade 12 Students and Human Resource Officers," PIDS Discussion Paper Series No. 2018-49.

production and consumption of the economy. However, it is more important to consider the human capital of the country. The following table summarizes the results of the study.

The results in Table 3 show that increasing the quality of education is a must, and one of the many ways to promote this is through TVET.

Table 3. Summary of Results by Objectives

Objectives	Results
Objective 1. To understand the significance of technical- vocational training on labor productivity	<ul style="list-style-type: none"> • Number of TVET Graduates in the labor force very significantly explains labor productivity in the Philippines. • Seen from the regression results in Table 1.
Objective 2. To promote technical-vocational education in key sectors that are concerned with stimulating growth in the Philippine economy	<p>The study focused on three areas. Results are based on TESDA reports and from the industry focus on FPTI Schools:</p> <ul style="list-style-type: none"> • <u>Provide relevant industry training.</u> Due to the high enrollment and graduation rate in TVET with intense industry- relevant skills and competencies training, graduates acquire NC II qualification which ensures employability. Excellent experience of BCPD. (Figures 3-6) • <u>Institution-Based Training Quality.</u> Institutions offering TVET provide mentoring and coaching to students. Mentors and coaches are equipped with the expertise to provide these skills and competencies while students undergo on-the-job training. There is high employability of TVET graduates in the following sectors: construction, computer and information technology and tourism-related industries which require skills in food and beverage preparation, cookery, bread and cake preparation and housekeeping. (See Table 2) • <u>TVET Image Imparted.</u> Higher wages in comparison to those with no NC II, high skills, high employability (Figure 1, 2)

Objective 3. To estimate the contribution of technical-vocational education and training to the human development index	<ul style="list-style-type: none"> • If the additional labor force for 2018 would consist of at least 24% technical-vocational education and training (TVET) senior high school graduates, the mean years of schooling in the Philippines will increase from 9.3 years to 9.948 years. This will increase the Philippine Human Development Index of 0.699 in 2017 to 0.7088 in 2018. (See Figure 7) • This will be a significant increase in the country's human development
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This paper attempted to prove this hypothesis based on the discussion paper on “Labor Productivity and Vocational Training: Evidence from Europe” by Salva and Silva. The framework assumed that developing human capital through trainings would be beneficial as it would translate to improving the quality of their output and also have the ability to utilize new capital, technologies, and processes. The empirical methodology is conducted through a panel regression, focusing on the top three sectors with the most graduates. These sectors are tourism, construction, and information communication technology. After running the regression, the results show that vocational training is the most significant factor than capital deepening, and wage. Investment on key resources would be vital.

It is worth noting that all variables manifested a positive relationship with labor productivity. Under the construction sector, TVET graduates proved to have a major contribution attributed to the infrastructure boom from the Build Build Build Program of the Duterte Administration, creating more jobs and demand for carpenters and masons. The ICT have high demand for skilled workers, but the supply of ICT graduates is not enough. With TVET, it would allow people to be more capable on this field and serve the needs of the country. As for tourism that mainly focuses on hotel and restaurant service and management, TVET graduates proved to have skills aligned with the needs of the sector. This is further supported by the fact that TESDA is in partner with Hotels and Restaurants Association of Baguio (HRAB) who has been providing employment opportunities for its graduates.

Conclusion

Given the positive correlation between TVET and labor productivity, as well as the forecasted improvement in the Human Development Index for the Philippines, if the mean years of schooling were increased from 9.3 to 9.948 given the increase in the labor force with TVET graduates, it can be said that TVET has, indeed, a significant contribution to human development. Aimed at providing practical and affordable education to the general public, TVET is evidently geared towards reducing unemployment and job-mismatches. It develops graduates with the necessary skill sets to be productive employees in the industry. More so, this study confirms the importance of TVET and its graduates, especially from institution-based graduates, in the key-sectors of the Philippine economy. TVET graduates, as seen in this study, affirmed their present positive contribution to these sectors through labor productivity.

From simply just going through TVET to remedy unemployment to becoming actual drivers and stimulants for economic growth, TVET graduates have proven the value and quality of their work to society and the labor market. With wages being a positive incentive to workers, the improvement of this key sector may possibly lead to further growth and productivity.

In conclusion, with a formidable incentive structure and proper policy implementation, TVET can be developed further and can continue to produce graduates of even higher quality. With the development of such, much of the Philippine population will be able to benefit and transform the labor market for the better.

References

- 1) Budhrani, K.S., D'Amico, M.M. and Espiritu, J.L.D., 2018. "Developing a Skilled Workforce Through Technical and Vocational Education and Training in the Philippines." *Handbook of Comparative Studies on Community Colleges and Global Counterparts*, pp.693-718. Springer International Publishing: Germany. (https://link.springer.com/referenceworkentry/10.1007%2F978-3-319-50911-2_28 (Accessed 29 July 2019))
- 2) Marope, P.T.M., Chakroun, B., Holmes, K.P. 2015. *Unleashing the potential: transforming technical and vocational education and training*. UNESCO: France

Appendix

Table A1. Regression Result for HDI

Dependent Variable: HDIPH				
Method: Generalized Method of Moments				
Date: 07/30/19 Time: 16:13				
Sample: 1990 2017				
Included observations: 28				
Linear estimation with 1 weight update				
Estimation weighting matrix: HAC (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)				
Standard errors & covariance computed using White weighting matrix				
Instrument specification: C LIFEIRTH EYEARSSCH MEANYEARSSCH GNIPC2011PPP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.093702	0.059578	-1.572768	0.1294
LIFEIRTH	0.006685	0.001054	6.343263	0.0000
EYEARSSCH	0.011319	0.000896	12.63229	0.0000
MEANYEARSSCH	0.014782	0.000783	18.88743	0.0000
GNIPC2011PPP	5.49E-06	3.34E-07	16.41371	0.0000
R-squared	0.999588	Mean dependent var	0.639964	
Adjusted R-squared	0.999516	S.D. dependent var	0.036567	
S.E. of regression	0.000804	Sum squared resid	1.49E-05	
Durbin-Watson stat	1.624901	J-statistic	8.45E-39	
Instrument rank	5			

Table A2. Tabulated Indicators of the 9 Social Economic Welfare Index (SEWI)

Nine Indicators	Weight	Component
income	20%	individual-tangible
properties/assets	12%	individual-tangible
health care	8%	individual-tangible
general education	12%	individual-intangible
professional training	18%	individual-intangible
security	10%	collective-intangible
civil & human rights	10%	collective-intangible
public services	5%	collective-tangible
sanitary conditions	5%	collective-tangible

Source: Alumnae Social Economic Welfare Index Survey Results (2013), Banilad Center for Professional Development

Table A3. Socio-economic Welfare Matrix

	Individual (70%)	Collective (30%)
	<i>Economic resources</i>	<i>Public resources</i>
	40%	10%
(50%)	-income (50%)	-Utilities: water,
Tangible	-assets (30%)	electricity, internet
	-access to insurance	use (50%)
	(20%)	-sanitary conditions
		(50%)
	<i>Personal resources</i>	<i>Community resources</i>
	30%	20%
(50%)	-Technical/ Higher	-public safety (50%)
Intangible	Education (60%)	-civil and human rights
	-Family education	enforceability (50%)
	(40%)	

Source: Alumnae Social Economic Welfare Index Survey Results
(2013), Banilad Center for Professional Development

植民地朝鮮の解放と〈近代の超克〉

Liberation of Korea and “Overcoming Modernity”



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「アジアの連帯」を語る場合に、かつての日本発の「大東亜共栄圏」構想の悲惨な失敗の総括は欠かせない。本稿は20世紀前半の東アジアにおける「近代の超克」の思想運動と朝鮮半島における知識人の葛藤を検証する。

Abstract

How would it be possible to realize ‘Asian’ solidarity? This is not a problem that arose recently. We have already experienced a failed attempt to realize it.

The period from 1920 to 1930 had been referred to as one of ‘transition’ in the modern era. The experiences of WWI and the Great Depression led many to attempt to overcome the value systems that symbolized modern civil society, such as liberalism, individualism, and capitalism. What emerged in Europe in an attempt to overcome this world-historical ‘crisis’ were fascism and Nazism. Meanwhile, in Asia, Japanese imperialism was expanding - from the Mukden Incident to the Sino-Japan War - and along with it, the conception of a new order with ‘East Asia’ as its subject was being pursued as an extension of the historical project of ‘overcoming modernity’. The concept that was tasked with this historical project was that of the ‘East Asian Cooperative Community’ proposed by the philosopher Miki Kiyoshi and his think-tank, the Showa Kenkyukai. Although the idea of the East Asian Cooperative Community came to be forgotten along with the memories of WWII, some intellectuals in colonial Korea who had sought to overcome even Japanese imperialism through participation in the Cooperative Community attempted to reconstitute its thought within the ‘newly born’ Korea, even after liberation from Japanese rule.

This study reviews the ideological horizons of overcoming ‘Western modernity’ by examining the discourse on ‘overcoming modernity’ among Korea intellectuals and considers the ideological basis of ‘Asian’ solidarity.

Keywords

history, Korea-Japan, modernity, East Asian Cooperative Community

はじめに

「アジア」はいかに連帯可能か。グローバル化が進み、国境を越える地域間の関係が緊密になりつつある今日、われわれはこのような問いに直面せざるを得ない。ところが、実はこの問いは、近年になって発されたわけではない。われわれは、この問いに向き合おうとして、無残にも「失敗」した経験を持っている。「大東亜戦争」という名の下に。

1920～30年代は、世界各地で近代の〈転形期〉*transformation of modernity*が声高に叫ばれた時代であった。第一次世界大戦、そして世界恐慌を経て資本主義の矛

盾が明らかになり、自由主義や個人主義といった近代市民社会を象徴する価値理念の修正が求められるようになった。こうした世界史的な「危機」を打開するためにヨーロッパで台頭したのが、他ならぬファシズムやナチズムであった。一方、アジアでも満州事変から日中戦争に繋がる帝国日本の新たな展開とともに、「東亜」を掲げる新秩序構想が、〈近代の超克〉*Overcoming Modernity*という世界史的な課題を受け継ぎながら唱えられていった。そして、やがてそれは「盟主日本」を中心とする「大東亜共栄圏」の建設のための「大東亜戦争」に帰結した。

戦後になって、戦時期における「近代の超克」をめぐる議論は、戦争を理念的に正当化したとして「悪玉あつかい」されるようになった。「近代の超克」論は、事実としては無念にも「大東亜戦争」に解消したのである。しかし竹内好が、かの有名な論稿「近代の超克」（1959年）の中で、「近代の超克」論を、侵略／連帯の「二重構造」をはらんだ「日本近代史のアポリア（難関）の凝縮」¹⁾として捉え、（過ぎ去った「事実」としてではなく）その「思想」の創造性を回復するためには「もう一度アポリアを課題にすえ直さなければならない」²⁾と指摘したように、思想としての「近代の超克」は、依然としてわれわれに多くのものを問いかけている。ましてや、今ここで、「アジア」の連帯のための思想を探ろうとする時、こうした歴史経験にもう一度真摯に向き合うことは不可欠とさえ言えるだろう。

本稿は、今なお問われ続けている「アジア」の連帯可能性を探るために、かつてそれに向き合おうとして孤軍奮闘した幾人かの知識人に注目し、彼らの思想実践から、その可能性と限界について考察しようとするものである。とりわけ、日中戦争期に戦争の解決と日本の変革を求めて提出された「東亜協同体」論を中心に検討し、それが植民地朝鮮にどのように転移され、また解放後にどのように受け継がれていったかを明らかにしたい。

これまで「近代の超克」をめぐる議論は、アジア・太平洋戦争期における日本思想界の議論が繰り返し注目されてきた。2000年代に入ってから、日中戦争期の「東亜協同体」論がその原型として取り上げられるようになり³⁾、また、近代以降の日本のアジア主義の文脈の中で「近代の超克」をめぐる議論を位置づける試みもなされている⁴⁾。だがそれに比して、植民地朝鮮における同時代的な「近代の超克」をめぐる議論は、近年ようやく注目されるようになったばかりである⁵⁾。本稿では、「西洋」と「近代」に対置させる形で「東洋」（もしくは「東亜」）と「近代の超克」を思想的課題としていた「東亜協同体」論の内実を検討するとともに、そこに、〈植民地〉（としての朝鮮）colonial Chosunという新たな軸を加えて考察したい。というのも、「植民地」は、世界システムによって作り出された近代の構造が象徴的に現れる場所であり⁶⁾、それゆえ、「近代の超克」をめぐる議論にはらまれたアポリアが真っ先に問われる

〈場〉toposである。植民地朝鮮の知識人たちは、「近代の超克」をうたう「東亜協同体」論に共鳴しつつも、そうした「東亜協同体」論に内在している暴力について、植民地人であるがゆえに敏感にならざるを得なかった。だからこそ、そのアポリアを感知し、それを回避するための言語実践を行おうとした。こうした植民地知識人の「近代の超克」をめぐる議論に注目することによって、思想としての「近代の超克」の可能性を抽出するためのヒントが得られるのではないかと考える。

1.（近代の超克）への投企——三木清の「東亜協同体」論

1937年から始まる日中戦争が長期化するなか、日本帝国主義政策の一環として打ち出された「東亜新秩序」構想（1938年11月の第2次近衛声明）を契機として、近衛内閣のブレーン集団である「昭和研究会」の革新的知識人たちを中心に、戦時変革をめざす「東亜協同体」論が唱えられた。これは、日中戦争の最中の日本を世界史的な文脈の中で自己理解し、西洋を中心に展開されてきた「近代」の自由主義や個人主義、そしてそれらを乗り越えようとする全体主義をも修正していくような新たな理念の提示を目標とするものであった⁷⁾。ここでは、こうした「東亜協同体」論の展開において中心的な役割を果たした三木清（1897-1945）の思想を中心に、その内実について検討したい。三木は、「東亜」を単なる地域概念としてではなく、世界史的な「近代の超克」のための思想的課題として認識していた⁸⁾。日中戦争勃発直後に発表された「日本の現実」において、彼は次のように述べている。

今度の事変〔日中戦争—引用者〕にしても、一つの重要な点は思想の問題である。日本の対支那行動の目的は爾後における日支親善であり、東洋の平和であると云われる。（中略）問題は、そのような日支親善のイデオロギーは具体的にはいかなるものであるか、あるいはいかなる内容の思想を基礎にして東洋の平和を確立しようとするのであるか、ということである。⁹⁾

京都学派左派の哲学者として知られる三木清は、1930年代に入ってからジャーナリズムで活動していたが、この「日本の現実」を書いたことがきっかけとなり、1938年に昭和研究会に招かれ、その後は文化委員会の委員長を務めた。三木は、日中戦争を契機として問われる「東洋の平和」を、世界史的な意義を持つべき思想課題として捉え直した。そしてそのために、「東洋」なるものをたんに地域主義を表す概念としてではなく、世界史的な「危機」、即ち「近代の超克」のための思想問題として提起したのである。昭和研究会に参加してから間もない時期に発表された「東亜思想の根拠」において、三木はこうした思想原理を「新しい全体主義」だと言い表した。

今日自由主義に対して全体主義が現われている。全体主義的社会観は、全体を部分よりも先のものであるという原理に従って、まず社会を全体として考え、その中においてそれに包まれるものとして個人を考えるのである。部分に対する全体の優先が認められる。ところで今日の全体主義は民族主義として現れた。(中略) 東亜協同体は単なる民族主義によっては考えられ得ない故に、従来の全体主義が血と土というがごとき非合理的なものを強調していたのに対して一層合理的なものを基礎としなければならぬ。民族と民族とを超えて結ぶ原理は、一民族の内部においては結合の原理として可能であるような内密のもの、秘教的なものであることができず、公共的なもの、知性的なものでなければならぬ。また従来の全体主義は論理的に云っても全体が部分を抑圧し、個人の独自性と自主性が認められないという欠陥を有しており、そして事実としてもそうであったのであるが、新しい全体主義においてはかかるような欠陥がなくならなければならぬ。¹⁰⁾

第一次世界大戦後のヨーロッパにおいては、オスヴァルト・シュペングラーの『西洋の没落』(第1巻は1918年、第2巻は1922年刊) が大きな反響を呼び、自由主義に代表される近代西洋文明への危機意識が広がっていった。こうした「危機」を乗り越えるべく、「全体主義」を標榜する

ファシズムやナチズムが台頭した。だがそれは、民族主義に基づく非合理主義的な全体主義であるため、「民族」を超えた協同体の思想としては不十分である、と三木はみていた。世界史的な「危機」の克服をめざす「東亜」の思想は、そうした全体主義をも克服するものでなければならない。彼からすれば、「個」を重視する自由主義でもなく、また「全体」を重視する全体主義でもない、それらを弁証法的に統一するような「新しい全体主義」が「東亜協同体」の原理でなければならない。では、具体的にそれはどのようなものであるか。言い換えれば、「新しい全体主義」と「東亜」はどのように結び付くのだろうか。

1938年末に「東亜新秩序」構想が発表されると、翌年の1939年に、三木を中心にしてまとめられた昭和研究会の報告書『新日本の思想原理』が刊行された。三木はその中で、「東亜協同体」は西洋の原理とは異なる世界の秩序によって構想されるべきだと再び強調し、その原理を「東洋的ヒューマニズム」であると示した。彼は言う。

新文化の創造の見地から眺めて東亜の文化の伝統のうちに見出される最も重要な思想は「東洋的ヒューマニズム」とも称し得るものである。(中略) 西洋のヒューマニズムが個人主義的であるのに反して、東洋的ヒューマニズムは共同社会における人倫的諸関係そのもののうちにある。また西洋のヒューマニズムが人間主義であり、文化主義であるのに対して、東洋的ヒューマニズムに於ては人間と自然と、生活と文化とが融合している。西洋のヒューマニズムの根拠にあるのは「人類」の思想であるに反して、東洋的ヒューマニズムの根拠にあるのは却って「無」或ひは「自然」或ひは「天」の思想である。(中略) 一般に東洋文化はゲマインシャフト的文化としての特色を有する故に、新しい協同体の文化の地盤として適切である。殊にそのヒューマニズムは民族を超えた意義を有するものとしてそれに対する反省は東亜の新文化の形成の根拠となるべきものである。¹¹⁾

三木の言う「新しい全体主義」、つまり西洋の民族主義的な全体主義に代わるものとして提示される「東亜」の思

想は、「人間と自然」が融合する「東洋的ヒューマニズム」である。それは、「東亜に於ける文化の伝統」に繋がるものでなければならないが、それだけでなく、と同時に西洋近代の「ゲゼルシャフト」（利益社会または集合社会）的な文化を身につけることも必要とされる¹²⁾。三木は、「東洋」と「西洋」をたんに対立させるのではなく、いわば「東洋」と「西洋」を弁証法的に止揚し統合する「新しい全体主義」を、「民族」を超えた「東亜協同体」の思想原理として提唱していた。

ところが、1940年7月に第二次近衛内閣が成立すると、「大東亜新秩序」と国防国家の建設が基本方針となり、同年10月に大政翼賛会の結成によって昭和研究会は解散となる。「東亜」による「近代の超克」を掲げていた「東亜協同体」論は、「偏狭な排外主義」としての「日本主義」を批判的に捉えながらも、現実においてはそれを具現すべき指導者として「日本」の主体性を強調していたことから、「大東亜共栄圏」に横滑りし、「大東亜戦争」の名目として流用されるようになった¹³⁾。

2. 変奏する（近代の超克）論——徐寅植・朴致祐の「東亜協同体」論

1938年末から本格的に展開される「東亜協同体」論は、当時の植民地朝鮮においても反響が大きく、大衆的な総合雑誌『三千里』（1939年1月）ではすぐに「東亜協同体と朝鮮」という小特集が組まれるほどであった。こうして朝鮮に転移された「東亜協同体」論は、当時の朝鮮総督府を中心に唱えられていた「内鮮一体」をめぐる議論と連動する形で、次第に植民地朝鮮の知識人を巻き込んでいった。

ところが、朝鮮における「東亜協同体」論は、同時期に日本で展開されていた「東亜協同体」論の複製版にはならなかった。朝鮮では、まさにそれが「内鮮一体」論と連動していたがゆえに——「帝国日本の臣民」として新秩序たる「東亜協同体」に参画することが前提とされていたため——、「東亜協同体」論の受容において亀裂が生じることになる。ここでは、三木をはじめ京都学派哲学者に影響を受け、植民地朝鮮において「近代の超克」という思想課題に向き合いながら「東亜協同体」論に関与していた二人の知識人、徐寅植と朴致祐の思想実践を取り上げて検討した

い¹⁴⁾。

まずは、徐寅植と朴致祐について簡単に紹介しておこう。徐寅植（1906-?）は、早稲田大学文学部哲学科を中退した後、朝鮮共産党の日本部員として活動した。しかし、1931年頃に朝鮮共産党の再建運動に関わったことで検挙され、1937年頃によく釈放された。この時期から彼は批評活動を始め、1940年末に絶筆するまで、朝鮮のジャーナリズムにおいて多くの文章を残した。一方、朴致祐（1909-1949）は京城帝国大学法文学部哲学科を卒業した後、同大学助手・崇義実業専門学校教授を勤め、その後は『朝鮮日報』の学芸部記者などを経験しながら、1930年代半ば以降の植民地朝鮮において活発に批評活動を行った。

徐寅植は、1939年4月に発表された「現代の世界史的な意義」において、当時の「東亜協同体」論を意識しながら、「西洋から東洋の解放、それ自体が即ち世界史的な意義を持つのではない。（中略）東洋の解放が今日の世界史の現代的な課題と内面的連関を持って遂成されるのであれば、それはもちろん世界史的な意義を持つことになる。」¹⁵⁾と書いていた。徐によれば、西洋的な近代を乗り越えようとする「東洋」（もしくは「東亜」）の思想原理は、「世界史的な意義」を持つものでなければならない。もしも「東亜協同体理論」が単なる「東洋的ミュトス（神話）」として議論されるのであれば、「東洋の伝統的な王道イズムや家族主義」と何の変わりもない。彼は、こうした「東洋」の特殊原理は、「東洋と西洋の相克」を解消することができないとみていた¹⁶⁾。

このように、徐は「東洋」なるものを、地域的に統一された実体としてではなく、西洋的な近代を克服するための主体として把握していた。そして、「東洋」が「世界史的な意義」を持ち得るのは、西洋近代を象徴する「キャピタリズム」と根本的な連関を持って提起される時のみである、と断言する。それでは、「東洋」はいかにして「キャピタリズム」に立ち向かうことができるのだろうか。

東洋文化の一面に人間性を否定し、認識を排除する特殊性があるのは事実である。しかしそれは、東洋文化の特殊性に過ぎない。言い換えれば、それは西洋文化と対比する場合、自然にそれとは異なる特

殊な側面だけを抽出してしまうことから由来するのである。したがって、特殊性が即ち東洋文化ではない。東洋文化に東洋的な特性があるとすれば、文化としての一般性もある。(中略) そうであれば、われわれは今から東洋文化の文化としての一般性の側面(西洋と共通の)を描かなければならない。そして一般性と特殊性の連関が明らかになるにつれ、人類一般の文化史的な道程におけるその特殊な位置が規定されるだろう。¹⁷⁾

徐は、「東洋」の特殊性、即ち人間の「自由」を否定する側面を抽出するのではなく、「西洋」と通じるその一般性(普遍性)によって、「世界史的な意義」を果たさなければならないと唱える。このような「東洋文化」は、それが「西洋」と通じるものである以上、たんに西洋的な近代を否定するものでないことは言うまでもない。では、具体的にそれはどのようなものであるか。

徐は「文化における全体と個人」(『人文評論』1939年10月)において、現代には「新しい全体性の原理」が求められると述べながら、それが、「媒介的な全体性の原理」だと言っていた。この「媒介的な全体性の原理」は、「個性の自己目的性を生かすと同時に全体の自己目的性までも生かすもの」であり、それゆえ、「個」と「全体」は、「相互否定的な関係から相互肯定的な関係へ」と変わる¹⁸⁾。この原理による新秩序は、「あらゆる個体が独立しながらそのまま全体になるような構造を持つ世界」であり、そこでは「無限大の円」のようにあらゆるところが中心になる、と彼は言う。徐は、こうした世界を「無的普遍的な性格を持つ」ものと表現していた。そしてこれは、「東洋」の普遍性に基づく世界観であり、こうした世界においては「中心と周辺があって支配と帰属の関係を形成することはない」とされる。つまり、西洋的な近代世界は、「個」と「全体」が排他的なものであり、それゆえ、「世界の多中心」は許容されなくなる。こうして、「中心と周辺ができて、その間に支配と帰属の関係が形成される」ことになる¹⁹⁾。「西洋と東洋」や「本国と植民地」、「階級と階級」、「個人と個人」の関係において、支配と帰属の関係が形成されることになるのはそのためであるが、このように徐は、「近代の超克」をめざす「東洋」

の思想によって、帝国／植民地関係をも「克服」しようとしたのである。そしてそれは、新たな秩序の建設による、「帝国日本の臣民」とは異なる全く新しき世界史的な「主体」への希求であった。

徐が1940年前後の一連の論稿を通して「東洋」を主体とし、「東洋」の一般性(普遍性)による「近代の超克」を思考していたのに対し、朴致祐は、「東亜」を形式としながらもその内実においては西洋的な近代の産物である「自由」や「理性」を徹底的に追及することによって「近代の超克」をめざしていた。朴は「東亜協同体論の一省察」(『人文評論』1940年7月)を発表し、「東亜協同体」の具体的な形ではなく、その方法原理を問題にしていた。現代に台頭してきたファシズム—全体主義を支える「非合理性の原理」について分析すると同時に、それが新秩序たるべき「東亜協同体」の思想原理として妥当かどうかを診断していた²⁰⁾。

朴によれば、「東亜協同体」はファシズム的な全体主義が援用する「非合理性の原理」によって建設されるべきではない。ナチズムにみられるように、「血と土」のような本能的なものに媒介される結合は「秩序以前」の原理であり、それゆえ、「東亜協同体」においては求められるべきではない。「東亜協同体」は、あくまでも「理性」による結合でなければならないとされるのだが、そのような彼が、「東亜協同体」の建設という新たな歴史の創造に必要な「新しい原理」を導き出そうとして着目したのが、「運命」という概念であった。現代のファシズム的な全体主義が、「血と土」のような自然的な必然性、即ち「宿命」を媒介として全体への結合を図っているのに対し、「東亜協同体」はそれとは区別される「運命」、即ち「可能性」の媒介による結合でなければならない。

血と土は本質的に、いわば宿命の系列に属するものであり、それゆえ宿命が持つ根本的な欠陥である保守性から抜け出すことはできない。言い換えれば、運命と同じ可能的側面、すなわち開放的で創造的な側面を持つことができないのである。(中略) 運命を媒介とする結合は目的への意識の差異によって縦横に比較的自由に応変的な錯綜した運命圏を作り出すことができるが、この点が弱点だと言うことも

できるが、とにかく血と土よりも融通性を持つ。²¹⁾

非合理性の原理に基づく結合は、朴致祐にとってみれば、過去—必然性の負荷＝「宿命」によるものとして捉えられる。それに比べて「運命」は、未来—可能性の現在における統一を意味する。そしてその「運命」を自覚することによって、未来を志向する現在の「使命」が現前する。こうして朴は「運命」の概念を用いることによって、必然性に縛られない、それを越え出た「理性」の自由を歴史の創造における動因力として捉えていた。そしてそれを可能にする論理として提示されたのが「弁証法的な全体主義」であった。

とりわけここでわれわれが忘れてはならないのは、運命概念の背後に隠れている峻烈無双な弁証法の存在である。運命の同一性による結合は血と土による結合とは最初から異なるものである。それは腕が体についているような、あるいは個人が血を通じて家族と民族につながるような、直接的な合一ではない。(中略) 全体主義だからと言って宥めるわけではない。分有論理の時代に通用する素朴で範囲の狭い有機体説的な全体主義をもってしては、国内の錯雑としている諸懸案さえも十分に納得させることが困難だけでなく、到来する新東亜建設の思想的武器としても十分ではない。個体の真の個体意識を土台にした弁証法的な全体主義というものもある。²²⁾

朴の言う「弁証法的な全体主義」は、「個体の真の個体意識を土台にした」ものであり、両極が「他者」であることを前提条件とする結合——絶対的な他者としての「自己」を定立しながらも、「他者」が「自己」であることを自覚する弁証法的な結合である。彼は、こうした「弁証法的な全体主義」による結合こそが、「個人対個人」、「個人対国家」、「個人対民族」のみならず、「東亜」の結合を支える普遍的真理となり得ると唱えていた。

こうして朴は、各々が「個」の高度な自覚を経て「運命」を媒介とするものとならない限り、「東亜協同体」は必ず限界に直面すると明言していた。彼は、民族や国家といった「全体」に、非合理的に吸収されることのない「個」と「全

体」の結合の具現体として「東亜協同体」を構想していたのであり、それは、徐の場合と同様に、「植民地」を抜け出すためにめざされる(近代の国民国家や帝国の論理に収斂されない)「近代の超克」への志向として受け止めることができる。

3. 「新生朝鮮」における(近代の超克)の痕跡 ——朴致祐の「民族文化」論

1945年8月、日本がポツダム宣言を受諾し、戦争は終わりを告げ植民地朝鮮は解放された。三木清は、敗戦直前に脱獄援助罪の容疑で逮捕され、1945年9月に獄中で死を遂げた。また、1940年末に絶筆した徐寅植は、蟄居したまま解放後も表舞台に姿を現さなかった。ここでは、解放後に再び筆を握った朴致祐が、戦時期の「東亜協同体」論に刻まれていた「近代の超克」の思考を「新生朝鮮」においてどう再構想しようとしていたかを検討してゆく。

朴は「東亜協同体」論を通して、「必然性」によって「個」が「全体」に吸収されてしまうのでもなければ、また「可能性」のみにによって「個」が「全体」から切り離され、理念的に宙づりになってしまうのでもない、まさに「弁証法的な全体主義」を構想していた。それは、「運命」概念に凝縮されているように、「必然性」(自然)から「可能性」(人間)が分離されたことを自覚し、非合理的な「必然性」に還元され得ない合理的な「可能性」(自由の実現)を現実において追求することであった。こうした彼の構想は、解放後に行われる「民族文化」の建設問題をめぐる議論において再びその姿を現す。

第2次世界大戦における連合国の勝利により、解放後に再び「自由主義」が新たな価値理念として力を増していくなか、朴は「全体主義と民主主義：新生朝鮮の民主主義のために」という一文を書いた。彼はその中で、「人種や民族、階級とはなんの関係もない無色透明な一粒の個人というのは、実際にはあり得ない」と述べ、西洋的な近代の自由主義や個人主義を批判するために「民族」のような「全体」との関わりをあえて持ち出し論破した²³⁾。しかしだからと言って彼は、民族主義的な全体主義のように「個人」の「民族」への収斂を主張していたわけではなかった。朴は「民族文化」について、「民族が文化のためにあるのではなく、

文化が民族のためにある」²⁴⁾と強調していたが、その意味は、民族の固有文化があるというより、民族がどのような文化を「民族文化」としてゆくかという問いのみがある、というものであった。彼にとって「民族」は開かれたものでなければならない。

要は、単なる「民族」ではなく、「人」が重要なものであって、それゆえ、「民族」云々ではなく、必要であるから作って、作ってからそれを享有する個人ないし個人の集団のみがあるのであって、だからこそ、「民族」云々ではなく、文化は生成・享有・発展する、そのようなものであるということが重要である。²⁵⁾

朴は、文化を享有するのは「人」であり、そうした人々の集団の一形態として「民族」を捉えていた。そのような民族が享有すべき「文化」、つまり本来は「必然性」(自然)に基づく人々の集団が享有してゆく「可能性」の文化を「民族文化」として強調したのである。そしてそのために参考にすべき一例として挙げられたのが、アメリカの「超民族的な」文化であった。それでは、「民族」はどのような人々から成る集団なのか。朴は「文化共同体と民族の成立」の冒頭で次のように述べている。

人種の成立ならば、血縁が根底にあるかもしれない。国民の成立ならば地縁が根底にあるかもしれない。しかし、民族の場合は、血と土、つまり血縁と地縁ではなく、文化共同体であるかどうかが決定的な条件となるだろう。血縁が民族成立の決定的な条件にはならないということは、雑種ではない民族はあるかもしれないが、すくなくとも雑種から成っている民族がいくらかでも存在するという事実の指摘だけで十分であろう。²⁶⁾

朴は人種や国家ではなく、「民族」の成立の条件として「文化共同体」を挙げていた。つまり、「血と土」のような「必然性」(自然)から成る人々ではなく、作為的な「可能性」(人間文化)によって結合する集団を、「民族」として捉えていたのである。こうして彼は、「個人」と「民族」をとも

に生かす弁証法的な「共同体」の原理を求めていた。「東亜協同体」論を通して展開していた「弁証法的な全体主義」、そしてそこにおける「個」と「全体」の関係は、解放後に「個人」と「民族」に置き換えられ、それを具現すべき場として「新生朝鮮」が想定されていたのである。

おわりに

さて、最初の問いに戻ろう。「アジア」はいかに連帯可能か。この古くて新しい問いが、たんに「アジア」を地域概念として捉えることで解決できるようなものではないのは言うまでもないだろう。「東洋」は単一の実体ではけっしてない。かつてそれは、西洋的な近代へのアンチテーゼとして注目され、「西洋的でない」ものたちの特殊性から、「西洋」と通じる普遍性の連関をみつけることで近代を克服しようとする試みとして登場した。日中戦争期に提唱された三木清の「東亜協同体」論には、少なくともそうした契機が含まれていた。西洋的な近代を象徴する自由主義とそれに対抗して現れた全体主義を弁証法的に止揚し、統一する作業であったのだ。そこにおいて「東洋」と「西洋」は、たんに相互否定される関係ではなく、弁証法的に統合されるものであった。しかし、日本帝国主義による戦争が拡大されてゆくなか、三木は獄中で無残な死を遂げ、「東亜協同体」論は、いよいよ「盟主日本」による「大東亜共栄圏」のための「大東亜戦争」を正当化する論理として流用されていった。

ところが、「東亜」の思想の流用は、意外なところでも起こっていた。植民地朝鮮の知識人たちは、その「流用」の場を逆手にとって、「近代の超克」を帝国／植民地＝「近代」を乗り越えるための構想の場として流用した。「東亜」という主体の立ち上げに、「帝国日本の臣民」には収斂され得ない、開かれた「可能性」の主体を夢みたのである。徐寅植と朴致祐の言語実践は、帝国日本の「近代の超克」をも止揚し「克服」しようとする植民地朝鮮の思想的地平において捉えられるべきであろう。

そして、こうした戦時期の「東亜協同体」論に刻まれた「近代の超克」の契機は、解放後の朴致祐の民族文化論において継承されていった。彼は、「個」―「全体」の関係を「個人」―「民族」の関係に置き換え、それらを弁証法的に

統合しようとした。「自由主義＝個人主義」に埋没するのでもない、「民族主義＝全体主義」に還元されるのでもない、「弁証法的な全体主義」の論理を民族文化論において構想し直したのである。これは、「個人」と「民族」の関係のみならず、アジア、そして世界に向かって開かれた、全く新しき共同体の原理への追及の痕跡であると言えよう。

しかし、こうした「近代の超克」の構想は、朝鮮半島における分断国家の成立、朝鮮戦争の勃発などの厳しい政治的現実によって途絶えてしまう。朴は1948年に入ってから絶筆し、1949年末に若くして死を遂げた。今日、われわれはどう「アジア」に向き合うべきだろうか。帝国日本／植民地朝鮮の「近代の超克」をめぐる議論はわれわれに何を問いかけているか。今一度、こうした歴史経験に真摯に向き合う時期が来ているのかもしれない。

注

- 1) 竹内好「近代の超克」『日本とアジア』東京：ちくま学芸文庫、2010年、225頁（初出は、『近代日本思想史講座 第7巻』東京：筑摩書房、1959年）。
- 2) 同上、227頁。
- 3) 米谷匡史『アジア／日本（思考のフロンティア）』東京：岩波書店、2006年、132頁。
- 4) たとえば、中島岳志『アジア主義：西郷隆盛から石原莞爾へ』東京：潮文庫、2017年。
- 5) 近年、植民地朝鮮における「近代の超克」論のテキストを収録している資料集が韓国で刊行された（〈植民地／近代超克〉研究会企画『식민지 지식인의 근대 초극론（植民地知識人の近代超克論）』ソウル：ソウル大学出版文化院、2017年）。
- 6) 尹海東（沈熙燦・原佑介訳）『植民地がつくった近代：植民地朝鮮と帝国日本のもつれを考える』東京：三元社、2017年、294頁。
- 7) 「東亜協同体」論は左派知識人を中心に日本帝国主義の自己批判と日中連携をかかげるものであった。それを担った「昭和研究会」の中心メンバーは三木清、尾崎秀実、蠟山政道、加田哲二などであった。1930年代後半の東亜協同体論については、前掲『アジア／日本』を参照されたい。
- 8) 地域主義としての「東亜協同体」論を展開していたのは、蠟山政道である。蠟山の「東亜協同体論」については、平野敬和「蠟山政道と戦時変革の思想」石井知章ほか編『一九三〇年代のアジア社会論：「東亜協同体」論を中心と

する言説空間の諸相』（東京：社会評論社、2010年）を参照されたい。

- 9) 三木清「日本の現実」（内田弘編・解説）『東亜協同体の哲学：世界史的立場と近代東アジア——三木清批評選集』東京：こぶし書房、2007年、8頁（初出は、『中央公論』1937年11月）。
- 10) 三木清「東亜思想の根拠」、同上、48-49頁（初出は、『改造』1938年11月号）。
- 11) 『新日本の思想原理』東京：昭和研究会、1939年1月、7-9頁。なお、引用にあたり、旧漢字は新漢字に、旧かなは新かなに改めた。
- 12) 同上、9頁。
- 13) 永野基綱『三木清：人と思想（Century Books）』東京：清水書院、2009年、201頁。
- 14) 本稿における朴致祐についての記述は、閔東暉「「全体主義」から「民主主義」へ：解放前後における朴致祐思想の断続」（『アジア地域文化研究』第15号、2019年3月）および「学」(theoria)と「思想」(ism)のあいだで：朴致祐「東亜協同体論の一省察」(1940年)再読」（『朝鮮学報』第254輯、2020年1月）の記述の一部を改稿したものである。
- 15) 徐寅植「현대의 과제 (2): 전형기 문화의 제상（現代の課題（2）：転形期における文化の諸相）」チャ・スンギ、チョン・ジョンヒョン編『서인식 전집（徐寅植全集）I』（歴史と文化）ソウル：ヨクラク、2006年、151頁（初出は、「현대의 세계사적 의의（現代の世界史的な意義）」『朝鮮日報』1939年4月6日-14日付）。なお、本稿における朝鮮語→日本語訳はすべて引用者による。
- 16) 同上、153-154頁。
- 17) 徐寅植「동양문화의 이념과 형태: 그 특수성과 일반성（東洋文化の理念と形態：その特殊性と一般性）」チャ・スンギ、チョン・ジョンヒョン編『서인식 전집（徐寅植全集）II』（新聞・雑誌）ソウル：ヨクラク、2006年、174頁（初出は、『東亜日報』1940年1月3日-12日）。
- 18) 徐寅植「문화에 있어서의 전체와 개인（文化における全体と個人）」チャ・スンギ、チョン・ジョンヒョン編『서인식 전집（徐寅植全集）II』（新聞・雑誌）ソウル：ヨクラク、2006年、95-96頁（初出は、『人文評論』1939年10月）。
- 19) 同上、97-98頁。
- 20) 朴致祐「동아협동체론의 일성찰（東亜協同体論の一省察）」ユン・デソク、ユン・ミラン編『박치우 전집: 사상과 현실（朴致祐全集：思想と現実）』仁川：仁荷大学校出版部、2010年、155-156頁（初出は、『人文評論』1940年7月）。

- 21) 同上、174頁。
- 22) 同上、174-176頁。
- 23) 朴致祐「전체주의와 민주주의: 신생조선의 민주주의를 위하여 (全体主義と民主主義: 新生朝鮮の民主主義のために)」
 ユン・デソク、ユン・ミラン編『박치우 전집: 사상과 현실 (朴致祐全集: 思想と現実)』仁川: 仁荷大学校出版部、2010年、205頁 (初出は、『『民衆朝鮮』1945年11月』となっているが、原文はまだ確認されていない)。
- 24) 朴致祐「민족과 문화 (民族と文化)」ユン・デソク、ユン・ミラン編『박치우 전집: 사상과 현실 (朴致祐全集: 思想と現実)』仁川: 仁荷大学校出版部、2010年、281頁 (初出は、『漢城日報』1946年2月26日・3月4日・5日・7日付)。
- 25) 同上、284頁。
- 26) 朴致祐「문화공동체와 민족의 성립 (文化共同体と民族の成立)」ユン・デソク、ユン・ミラン編『박치우 전집: 사상과 현실 (朴致祐全集: 思想と現実)』仁川: 仁荷大学校出版部、2010年、287頁 (初出は、『中外新報』1946年4月19日付)。

参考文献

- ・『新日本の思想原理』東京: 昭和研究会、1939年1月
- ・チャ・スンギ、チョン・ジョンヒョン編『서인식 전집 (徐寅植全集) 1・II』ソウル: ヨクラク、2006年
- ・米谷匡史『アジア／日本 (思考のフロンティア)』東京: 岩波書店、2006年
- ・三木清 (内田弘編・解説)『東亜協同体の哲学: 世界史的立場と近代東アジア——三木清批評選集』東京: こぶし書房、2007年
- ・永野基綱『三木清: 人と思想 (Century Books)』東京: 清水書院、2009年
- ・竹内好『日本とアジア』東京: ちくま学芸文庫、2010年
- ・ユン・デソク、ユン・ミラン編『박치우 전집: 사상과 현실 (朴致祐全集: 思想と現実)』仁川: 仁荷大学校出版部、2010年
- ・〈植民地／近代超克〉研究会企画『식민지 지식인의 근대 초극론 (植民地知識人の近代超克論)』ソウル: ソウル大学出版文化院、2017年
- ・中島岳志『アジア主義: 西郷隆盛から石原莞爾へ』東京: 潮文庫、2017年
- ・尹海東 (沈熙燦・原佑介訳)『植民地がつくった近代: 植民地朝鮮と帝国日本のもつれを考える』東京: 三元社、2017年

Analysis of Community Currencies as Payment Mechanism for Sustainable Shared Growth



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特定の地域だけで購買に使える地域通貨。その形態はさまざまだが、持続可能な共有型経済ではどのような役割を果たしているのか。本稿では日本やブラジル、ケニアの実践例を検証して、その可能性を探った。

Abstract

A review of the literature on community currency (CC) was conducted, with the aim of ascertaining its relevance to achieving sustainable shared growth. The review revealed certain levels of differences wherein community currencies are used to a higher degree in developed countries than in developing countries. The result suggests that community currencies could equally play an important role in developing countries. This paper likewise examined the cases in Japan, Brazil, and Kenya to draw possible explanation in the higher transactions cost that developing countries faced in designing and implementing community currencies. Further, the paper included insights from discussions in the Philippines relevant to reconciling the differences.

Keywords

community currency (CC), transaction cost theory, sustainable shared growth, community development

Introduction

In the history of man, society, and civilization, the existence of fiat money can be viewed as means that facilitated the evolution of economy in local, regional, and international community. Also, it became a mechanism that economic or business transactions and also individual to individual relationship, individual to group relationship, and even people of a particular community and society flourished. But its purpose or use has limitation in certain circumstances like limited supply of money in the circulation of a particular economy regardless what factors caused it to happen. This can be an opportunity to appreciate other means such as Community Currency (CC) that can bridge this limitation of the fiat money. The community-based organizations or associations, especially when problems on its supply occurs, might think that these strategies be introduced.

Alternative currencies refer to unofficial currencies that exist parallel to the national (fiat) currency and

which can exist for a variety of stated purposes. Normally, these are launched at the community level, supported by various organizations or institutions in the area. The higher the monetary stability, the level of financial sector development, and the general level of economic development, the higher the likelihood of existence and the number of alternative currencies (Pfajfar, Sgro, & Wagner, 2012).

CCs could also yield benefits to developing countries. Demographically speaking, developing countries have younger and growing populations. Nevertheless, these countries are beset by problems of unemployment or underemployment, environmental degradation, and poor linkages among businesses and within communities (Pfajfar et al., 2012).

Objectives

The paper is aimed at describing implementation of CC as alternative currency in specific areas and discussing how it became part of the local economy. Also, the

paper depicts level of awareness of members of local cooperative councils, and council representatives on CC, their perceived relevance or needs, and their perceived capacity to implement CC in their transactions. It also presents an analysis of transaction cost for adopting CC among cooperatives in the Philippines

Related Literature

Seyfang and Pearson (2000) stated that there is a diverse range of currencies at the local, regional and international levels. There were differences among initiatives from grassroots movements, and those from public agencies or non-governmental organizations. It also investigated the need for closer study of CCs as policies against poverty and “social exclusion” by the development community.

Developments on CC in Brazil

Complementary currency in the education sector in Brazil was proposed, using the information on the background, objectives, scope and approach adopted. The feasibility of complementary currencies directed at specific sectors and its implementation particularly in the education sector was also studied. (Lietaer, 2006).

Referring to CC as social currency or social money in Brazil, (Freire, 2009) CC is based on structural tenets, recognized and determined as lawful. Related governing matters and administrative characteristics are also the reasons why there is alignment between CC and public policy instruments and monetary policy.

The progress of CC implementation in Latin America showing CC's effective transformation as “grassroots innovation” seems to be necessary for sustainability, prosperity and democracy in the area (Place, 2011). An analysis was also made by the Community Development Bank in Brazil to show the symbolic role of currency as a bond to build the community; as a medium for institutionalization of the community and as a catalyst to explore different formats and adaptation to community development perspectives (Fare, de Freitas, & Meyer, 2015).

Developments on CC in Japan

The different strata of Japanese schools relative to complementary currencies and their relationships were studied. Models used were described and the relevance of these experiments to the rest of the world was evaluated (Lietaer, 2004). A similar mechanism called “Fureai Kippu” whose purpose was to provide care for older people particularly its contributions, benefits and operational difficulties was found to be so complex and difficult to evaluate (Hayashi, 2012).

Likewise, a study on CC coupon circulation among shopkeepers in Tokyo, Japan determined the relationship between CC circulation and shopkeepers' behavior. It was concluded that use of CC coupon and redemption is affected by the respondents' level of comprehension, “psychological resistance”, and the procedures followed in accounting (Kurita, Miyazaki, & Nishibe, 2012). A CC organization in Japan and one in Sweden were comparatively studied. Results showed that transfer of social support by CC makes users aware that it was part of their lives. CC was likewise a source of supplementary support and was deemed effective as a social support system for residents (Nakazato & Hiramoto, 2012).

CC systems are most developed in Japan but there was a dearth of literature written in other languages, which hindered its proliferation in other countries. CC as another means of exchange has been transformed by Japanese practitioners and promoters over the years (Hirota, 2011). A study in communities in Japan which determined whether volunteers were more motivated with CC than without CC showed that CCs are likely to raise motivation of volunteers. There were also different perceptions towards CCs even though CCs and cash have the same monetary value (Kurita, Yoshida, & Miyazaki, 2015).

Developments on CC in Kenya

Another CC program called Eco-Pesa in informal settlements of Kenya, was found to be cost effective, with a mechanism for tracking development funding and increasing overall accountability. CC was considered a tool to promote development but it also needs further implementation and research (Ruddick, 2011).

The importance of education on CC is considered as one of the critical factors in the success of CC systems. Key actors identified are system designers, administrators and public decision makers. It was also noted that coordinated and strategic support would enhance the effectiveness of the strategies implemented to educate these people (Rogers, 2011).

CC would depend on how community or certain organization prefers its usefulness. CCs can be categorized into community, complementary and local currencies and once classified, these currencies can present the combinations which would enable one to determine forms of non-national and not-for-profit currencies from for-profit currencies (Blanc, 2011).

CC system was implemented in Kenya through “collaborative credit” model, locally known as “Bangla-Pesa”. Immediate positive benefits of the CC system were observed in informal settlements that trade goods and services through a network of local business. The model was recommended for replication for sustainable development programs in the future (Ruddick, Richards, & Bendell, 2015).

The role of CC in the local and regional government is relevant to make use of assets that are under-utilized and enable employment and economic sustainability (Spano & Martin, 2018). Therefore, local communities should participate in existing CC circles for the purpose.

Theoretical Framework

Robert Coase pioneered the transaction cost economics which later became popular as *Transaction Cost Theory*. The inclusion of all costs is considered to complete a decision. Cost and efficiency could be a good measurement of productivity of any organizations, programs or projects, activities, etc. Cost is a requirement to any deliverable in the form of transactions. Efficiency will depend on how activities develop in the three major stages pertaining to cost such as actual search and information cost, bargaining and decision cost, and policing and enforcement cost. Actual search and information cost require the need to collect and establish basic information which can be done through searching and initial

building of information. This can refer to the establishment of efficient database or initial information that can be used in planning workshops, focus group discussions, or any meeting with the same objective incurring certain cost. Bargaining and decision cost bring the transaction to the time of exchange of leverage and decision making. The cost of any bargaining and decision processing will depend on the rate of how accurate information can be retrieved and be used to arrive in a sound decision. Decision making skill is another dimension that can be observed during transaction and using the given information. The policing and enforcement cost can be seen during the time where cost incurred is related to how certain outputs such planned activities (projects or programs, after sale activity, etc.) are monitored and evaluated for control which can be observed and measured. Efficiency in every transaction is expected to potentially contribute to the overall activities at lower cost but high in quality of output. Transfer of information and capacity of people involved in transactions could also be observed in studying the progress and appreciating quality of the transaction. “Focusing on firm boundaries, *transaction cost theory* aims to answer the question of when activities would occur within the market and when they would occur within the firm” (Williamson, 1991 as cited in Greve & Argote, 2015).

Sustainable Shared Growth refers to three economic goals: efficiency, equity, and environmental friendliness.

Conceptual Framework

CC can only be applied if the people in the locality understands and acknowledges its purpose and usefulness in their day-to-day activities or business operations, and how they can use it to facilitate transactions. In this study, cooperative councils were the selected respondents to find out how CC can be introduced and adopted by the cooperative council members in their cooperative in the future. There were three main components that were analyzed on the respondents: their level of awareness on CC, their perceived level of relevance given to CC, and level of capacity to implement.

These three competencies shall describe readiness of the community and its individuals to implement use of CC in the local setting.

Transaction Cost Theory was used to analyze these components and define its conditions for future actions. With the use of transaction cost model, costs including the accounting of *actual costs of search and information, bargaining and decision, policing and enforcement* assisted the study in determining cooperative councils' capacity to implement CC in their operations and transactions. Transaction costs are high when the ratings of *level of awareness, level of relevance, and level of capacity* to implement are low. When these ratings are high, it is the ideal situation to adopt CC as payment mechanism because high ratings are indicators of readiness to adopt CC.

In analyzing CC based on 'transaction cost theory', lower cost means effective transaction cost. Lower transaction cost can help facilitate adoption of 'CC' but it would require high ratings on level of awareness, level of relevance, and level of capacity to implement. It may not directly affect 'sustainable shared growth' but it can also impart bits of contribution to achieve it in the future.

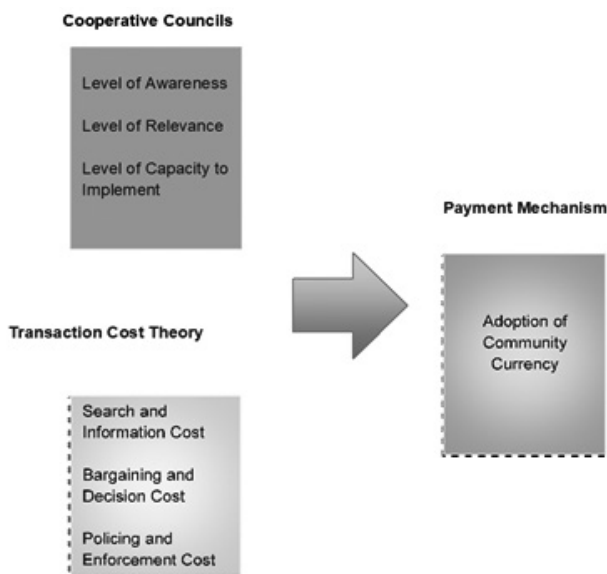


Figure 1. Transaction Cost of Adopting CC as Payment Mechanism

Methodology

Using survey questionnaire, primary data were gathered to determine the level of awareness, level of relevance, and level of capacity to implement as perceived by the respondents on CC.

A survey was conducted in selected provincial and city cooperative councils in the Philippines. The study was accomplished through purposive sampling, with 27 respondents including provincial cooperative council composed of representatives from local government units, cooperatives, and line agencies who are stakeholders for cooperatives. Frequency, percentage, and weighted mean were used to present the results of the study. Weighted mean adjectival ratings are classified as low (1.00 to 2.99) and high (3.00 to 5.00).

Results and Discussion

Respondents Profile

Most of the respondents or 31 percent out of 26 has age range between 56 and 65 years old, while 27 percent has age range of 46-55 years old. Majority or 81 percent of the respondents were female, and 19 percent were male. Also, majority or 85 percent were Roman Catholic while 15 percent belonged to other Christian denominations.

Assessment of their level of awareness

Awareness of CC In Table 1, 26 percent out of 27 responses, answered 'Definitely No', 'No Idea' and 'Maybe Yes' respectively with weighted mean of 2.96. These showed that most of the respondents did not have an idea about CC.

High level of knowledge on CC Most of the respondents or 42 percent answered, 'No Idea' and 23 percent answered 'Definitely No' which yielded the weighted mean of 2.62; the lowest among listed statements under the level of awareness. The respondents have low level of awareness on CC.

Perceived example of CC Most of the respondents or 43 percent believed that CC referred to the "peso issued by the Bangko Sentral ng Pilipinas" which confirmed that the majority did not have an accurate idea of CC. Other examples except "None of the above" got

weighted means ranging from 2.94 to 3.48. “None of the above” got a weighted mean of 3.33, with the lowest number of responses among the examples mentioned.

CC’s geographical coverage Most of the respondents or 38 percent answered, ‘Maybe Yes’, having weighted mean of 3.67. This showed that most of the respondents perceived CC has certain geographical location.

CC as a means of payment In Table 1, 52 percent out of 25 respondents, answered ‘Maybe Yes’ having

weighted mean of 3.68. This showed that most of the respondents have an idea about the main use of CC.

Using transaction cost theory, the level of awareness has an overall weighted mean of 3.27 which is considered high rating which means transaction cost would be low. The results showed that there was low level of awareness of its existence, but respondents had an idea of its possible use based on the term “community currency”.

Table 1. Showing respondents’ level of awareness on CC

Level of Awareness Statement	Definitely No (1)		Maybe No (2)		No Idea (3)		Maybe Yes (4)		Definitely Yes (5)		N	%	Weighted Mean	Adjectival Rating
	F	%	F	%	F	%	F	%	F	%				
1. Have you heard about CC	7	26	2	7	7	26	7	26	4	15	27	100	2.96	Low
2. Do you have high Knowledge about CC	6	23	4	15	11	42	4	15	1	4	26	100	2.62	Low
3. Which of the following is an example of CC?														
a. Gift certificate/voucher	2	11	1	5	6	32	8	42	2	11	19	100	3.37	High
b. Debit Card	3	16	0	0	6	32	9	47	1	5	19	100	3.26	High
c. Old expired coins or bills	4	22	2	11	5	28	5	28	2	11	18	100	2.94	Low
d. Peso issued by the Bangko Sentral ng Pilipinas	3	14	1	5	4	19	9	43	4	19	21	100	3.48	High
e. Credit card	2	9	3	13	4	17	13	57	1	4	23	100	3.35	High
f. None of the above	0	0	2	17	6	50	2	17	2	17	12	100	3.33	High
4. CC has a particular coverage (Geographical)	2	8	1	4	6	25	9	38	6	25	24	100	3.67	High
5. CC can be used as a means of payment	2	8	2	8	3	12	13	52	5	20	25	100	3.68	High
Overall Weighted Mean													3.27	High

Adjectival Rating:

1 to 2.99 – Low

3 to 5 – High

Level of Relevance

Money is insufficient despite availability of goods

In Table 2, 48 percent out of 25 responses answered for both 'Maybe Yes' and 'Definitely Yes' respectively with weighted mean of 4.44. These showed that most of the respondents perceived the importance of CC as alternative when money is insufficient, and goods are available.

A lot of environmental problems In Table 2, 64 percent out of 25 responses, answered 'Maybe Yes' and having weighted mean of 4.04. These showed that most of the respondents perceived many environment related problems, an opportunity where CC is needed and can be helpful especially after occurrences of calamities that would affect supply of money.

Business transactions involve in credit In Table 2, 50 percent out of 26 responses, answered 'Definitely Yes' and having weighted mean of 4.12. These showed that most of the respondents recognized that a lot of businesses need credit in their transactions. Conditions such as these can be conducive to use CC as means to lend and repay.

Non-payment of credit as major problem In Table 2, 50 percent out of 26 responses, answered 'Definitely Yes', and having weighted mean of 4.04. These showed that most of the respondents perceived that inability to pay loans is a major problem. One cause of non-payment is insufficient supply of money in the area which can be addressed by using CC.

Majority in the community are poor In Table 2, 50 percent out of 26 responses, answered 'Maybe Yes' and having weighted mean of 3.69. These showed that most of the respondents recognized that there are a lot of poor people in their area. CC can be helpful in financing livelihood activities and transactions.

Good use of CC In Table 2, 65 percent out of 20 responses answered 'Maybe Yes' to use of CC after a calamity, with weighted mean of 3.85. Fifty-seven percent out of 21 responses, answered 'Maybe Yes' to use of CC when there is price hike in basic commodities, with weighted mean of 3.95. Out of 21 responses, 48 percent answered 'Maybe Yes' to use of CC when there is price hike in raw materials for production with

weighted mean of 3.86. Out of 20 responses 45 percent answered 'Maybe Yes' to use of CC when there is chaos and security threatening occurrences" with weighted mean of 3.50. Sixty-two percent out of 21 responses answered 'Maybe Yes' to use of CC in normal life situation with weighted mean of 3.76. These imply the perceived relevance of CC in different life situations.

Need for CC in developed countries In Table 2, 62 percent out of 24 responses, answered 'Maybe Yes' to need for CC in developed countries with weighted mean of 3.83.

Need for CC in developing countries In Table 2, 64 percent out of 22 responses, answered 'Maybe Yes' to need for CC in developing countries with weighted mean of 3.91.

Based on the above, the respondents acknowledged that CC may be applicable to both developed and developing countries.

Level of relevance has an overall mean of 3.92 or high which would indicate that there was perceived relevance of CC among the respondents. This high rating requires low transaction cost to adopt CC.

Level of Capacity to Implement

This component determined the potential capacity of the community as perceived by the respondents to adopt transaction or payment mechanism using CC.

Various products and services In Table 3, 54 percent out of 24 respondents, answered 'Maybe Yes' to various products and services with weighted mean of 4.01. This showed that most of the respondents recognized various products and services in their area, indicating the necessary capacity of the community to adopt the use of CC.

Products and services from the community In Table 3, 44 percent out of 25 respondents, answered 'Maybe Yes' that products and services are coming from their community, with weighted mean of 3.08. This showed that most of the respondents recognized the economic condition in their area which would indicate their capacity to implement the use of CC.

High level of trust in the community In Table 3, 54

Table 2. Perceived Level of Relevance

Level of Relevance	Definitely No (1)		Maybe No (2)		No Idea (3)		Maybe Yes (4)		Definitely Yes (5)		N	%	Weighted Mean	Adjective Rating
	F	%	F	%	F	%	F	%	F	%				
1. There were times money is insufficient despite availability of goods in the community.	0	0	0	0	1	4	12	48	12	48	25	100	4.44	High
2. We have a lot of environment related problems.	1	4	0	0	2	8	16	64	6	24	25	100	4.04	High
3. There are many business transactions that involve credit.	2	8	2	8	0	0	9	35	13	50	26	100	4.12	High
4. Non-payment of credit is a major problem of people in the community.	2	8	3	12	0	0	8	31	13	50	26	100	4.04	High
5. Majority of people in the community are poor.	1	4	5	19	1	4	13	50	6	23	26	100	3.69	High
6. The CC is good to use in the following a) After a calamity (e.g. earthquake, typhoon, etc.)	1	5	0	0	3	15	13	65	3	15	20	100	3.85	High
b) When there is price hike among basic commodities such as rice, sugar, cooking oil, etc.	1	5	0	0	3	14	12	57	5	24	21	100	3.95	High
c) When there is price hike in raw materials for production	1	5	0	0	5	24	10	48	5	24	21	100	3.86	High
d) When there is chaos and security threatening occurrences	2	10	1	5	5	25	9	45	3	15	20	100	3.50	High
e) In normal life situation	1	5	1	5	3	14	13	62	3	14	21	100	3.76	High
7. Economically developed countries such as Taiwan, South Korea, Japan, and Singapore may demonstrate need for CC	2	8	0	0	3	13	14	58	5	21	24	100	3.83	High
8. Economically developing countries such as the Philippines, Vietnam, Cambodia, Myanmar, and Laos may demonstrate great need for CC	1	5	0	0	3	14	14	64	4	18	22	100	3.91	High
Overall Weighted Mean													3.92	High

Adjectival Rating:

1 to 2.99 – Low

3 to 5 – High

percent out of 24 respondents, answered ‘Maybe Yes’ to high level of trust in the community with weighted mean of 3.91. These showed that most of the respondents perceived high trust among members of their community to do business activities, which manifested also the capacity to implement CC.

Generally, the level of capacity to implement has an overall weighted mean 3.67, which also means low transaction cost. This showed that based on the respondents’ perception about their community with all those features, it also manifests their capacity to implement the use of CC as transaction or payment mechanism.

Table 3. Perceived level of capacity to implement

Level of Capacity to Implement	Definitely No (1)		Maybe No (2)		No Idea (3)		Maybe Yes (4)		Definitely Yes (5)		N	%	Weighted Mean	Adjectival Rating
	F	%	F	%	F	%	F	%	F	%				
1. I am often aware of the various products and services in my community	1	4	2	8	0	0	13	54	8	33	24	100	4.04	High
2. Most of these products and services are from our community	2	8	7	28	4	16	11	44	1	4	25	100	3.08	High
3. There is a high level of trust among the members of the community.	1	4	2	8	2	8	13	54	6	25	24	100	3.88	High
Overall Weighted Mean													3.67	High

Adjectival Rating:
1 to 2.99 – Low
3 to 5 – High

Conclusion

The experiences of Brazil, Japan, and Kenya in implementing CC have gone through different hurdles. It can be observed that successes of its implementation depended on how communities or community organizations recognized the purpose of community currencies as payment mechanism. Their experiences in CC provide lessons that can be taken to explore its potential as a tool in pursuing community shared growth.

If a particular CC model for the research in the Philippine setting were to be adopted, it tends towards the Kenyan model since it is more open to involvement from someone outside the community. Moreover, it is the simpler CC model since it requires only the issuance of the CC, without microcredit financing, and focuses on prosumers instead of dividing the community into consumers and producers. The Kenyan model is also more aligned to zero-interest rate preference which is

relevant to the search for a CC that contributes to sustainable shared growth.

The case of the Philippines, particularly on level of awareness, level of relevance, and level of capacity to implement are all showing high rating which also correspond to low transaction costs. Likewise, these manifest people and communities’ potential to adopt the use of CC. However, the result also indicated that education should be given priority to promote the use and purpose of CC.

Recommendations

It is proposed that CC is efficient that it helps a community reach its production possibility frontier when incomes are reduced, so that the budget line is below its efficient point. It is proposed that a CC is equitable since it seeks to empower a marginal community, but more importantly because it applies a zero-interest principle.

It is proposed that a CC is environmentally friendly, since it could be utilized to pay for environmental services, among other services that are not usually traded in the market.

Development practitioners can further explore how to introduce CC as means in helping communities do their transactions efficiently. Likewise, they can also promote strengthening trust or confidence among them.

Researchers can further study the legal, political, cultural, and economic aspects in using CC and explore other areas where it can be helpful to make community progressive.

The local government units will have the opportunity to utilize CC in effectively optimizing the resources of the community through policy development and program management.

Policy makers concerning currencies can look into implementation of community currency system by formulating related laws that support its utilization.

References

- 1) Blanc, J. (2011). 'Classifying 'CCs': Community, Complementary and Local Currencies'. *International Journal of Community Currency Research*, 15 (D) 4-10. Retrieved from <http://dx.doi.org/10.15133/j.ijccr.2011.013>
- 2) Pfajfar, D., Sgro, G. and Wagner, W. (2012) 'Are Alternative Currencies or a Complement to Fiat Money? Evidence from Cross-Country Data' *International Journal of Community Currency Research* 16 (D) 45 –56. Retrieved from <http://dx.doi.org/10.15133/j.ijccr.2012.004>
- 3) Fare, M., de Freitas, C. and Meyer, C. (2015). 'Territorial development and Community currencies: symbolic meanings in Brazilian Community development banks' *International Journal of Community Currency Research* 19 (D) 6-17. Retrieved from <http://dx.doi.org/10.15133/j.ijccr.2015.002>
- 4) Freire, M.V. (2009). 'Social Economy and Central Banks: Legal and Regulatory Issues on Social Currencies (Social Money) as a Public Policy Instrument Consistent with Monetary Policy'. *International Journal of Community Currency Research*, 13 76-94. Retrieved from <http://dx.doi.org/10.15133/j.ijccr.2009.007>
- 5) Greve, H. R. & Argote, L. (2015). Behavioral Theories of Organization. *International Encyclopedia of the Social & Behavioral Sciences*, (Second Edition), Pages 481-486. Retrieved from <https://doi.org/10.1016/B978-0-08-097086-8.73121-7>
- 6) Hayashi, M. (2012). 'Japan's Fureai Kippu Time-banking in Elderly Care: Origins, Development, Challenges and Impact.' *International Journal of Community Currency Research* 16 (A) 30-44. Retrieved from <http://dx.doi.org/10.15133/j.ijccr.2012.003>
- 7) Hirota, Y. (2011) 'What Have Complementary Currencies in Japan Really Achieved?'. *International Journal of Community Currency Research* 15 (D) 22-26. Retrieved from <http://dx.doi.org/10.15133/j.ijccr.2011.016>
- 8) Kurita, K., Miyazaki, Y. and Nishibe, M. (2012). 'CC Coupon Circulation and Shopkeepers' Behaviour: A Case Study of the City of Musashino, Tokyo, Japan'. *International Journal of Community Currency Research*, 16 (D) 136-145. Retrieved from <http://dx.doi.org/10.15133/j.ijccr.2012.020>
- 9) Kurita, K., Yoshida, M., & Miyazaki, Y. (2015). 'What kinds of volunteer become more motivated by community currency? Influence of perceptions of reward on motivation'. *International Journal of Community Currency Research*, 19 (Summer) 53-61. Retrieved from <http://dx.doi.org/10.15133/j.ijccr.2015.006>
- 10) Lietaer, B. (2004) 'Complementary Currencies in Japan Today: History, Originality and Relevance' *International Journal of Community Currency Research* 8. Retrieved from <http://dx.doi.org/10.15133/j.ijccr.2004.005>
- 11) Lietaer, B. (2006) 'A Proposal for a Brazilian Education Complementary Currency' *International Journal of Community Currency Research* 10 18-23. Retrieved from <http://dx.doi.org/10.15133/j.ijccr.2006.004>
- 12) Nakazato, H. and Hiramoto, T. (2012) 'An Empirical Study of the Social Effects of Community Currencies' *International Journal of Community Currency Research*, 16 (D) 124-135. Retrieved from <http://dx.doi.org/10.15133/j.ijccr.2012.019>
- 13) Place, C. (2011) 'Community Currency Progress in Latin America (Banco Palmas)' *International Journal of Community Currency Research* 15 (D) 39-46. Retrieved from <http://dx.doi.org/10.15133/j.ijccr.2011.019>
- 14) Rogers, J. (2011) 'On the Money: Getting the message out' *International Journal of Community Currency Research* 15 (D) 11-16. Retrieved from <http://dx.doi.org/10.15133/j.ijccr.2011.014>
- 15) Ruddick, W. (2011). 'Eco-Pesa: An Evaluation of a Complementary Currency Programme in Kenya's Informal Settlements' *International Journal of Community Currency Research* 15 (A) 1-12. Retrieved from <http://dx.doi.org/10.15133/j.ijccr.2011.001>
- 16) Ruddick, W., Richards, M. & Bendell, J. (2015). 'Complementary Currencies for Sustainable Development in Kenya: The Case of the Bangla-Pesa'. *International Journal of Community Currency Research*, 19 (Summer) 18-30. Retrieved from <http://dx.doi.org/10.15133/j.ijccr.2015.003>
- 17) Seyfang, G. & Pearson, R. (2000). Time for Change: International experience in community currencies. *Development*. 43:4; 56–60; 015255. Retrieved from <https://doi.org/10.1057/palgrave.development.1110197>
- 18) Spano, A. & Martin, J. (2018). Complementary currencies: what role should they be playing in local and regional government?, *Public Money & Management*, 38:2, 139-146, Retrieved from DOI: 10.1080/09540962.2018.1407162

言語景観による地域の活性化—大分県での事例—

Revitalization of Community by Linguistic Landscape in Oita Prefecture



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公共空間に掲出されている案内、看板、標識などに用いられる言語表現を「言語景観」と呼ぶが、本稿では大分県の国際観光都市・別府を舞台に、その改善に取り組んだ長期にわたる実践的研究の成果を報告する。

Abstract

“Linguistic landscape” is roughly defined as written language (such as signs, warnings, tourist information and so on) displayed and shown in public places. While the basic purpose is for the sake of tourists/visitors, both foreign and national, the linguistic landscape tells us a lot about the cultural backgrounds of the local community. It also plays an important role in promoting inbound tourism and in revitalizing the local economy through multilingual services.

This paper is based on several field studies we conducted in the famous *onsen* (hot spring) resort of *Beppu*, Oita Prefecture, Japan, in collaboration with local authorities and tourism associations. Beppu enjoys many incoming (especially Korean and Chinese, along with Western) tourists, but we found erroneous words, inadequate words and mistranslations in signs and boards there. In some cases, there are no explanations in foreign language. Therefore we made some suggestions for improving the linguistic landscape of Beppu. For example, we edited and produced a Chinese language version of a tourist booklet on popular destinations there. This has contributed to the revitalization of the community, nurturing the healthy multilingualism and multiculturalism.

Keywords linguistic landscape, language service, inbound tourism, multilingualism, multiculturalism

1. はじめに

1.1. 言語景観とは何か

言語学界において、言語景観は、「公共空間で目にする書き言葉を指している」(庄司博史/P・バックハウス/F・クルマス 2009:9) という認識で概ね一致している。街で「扁額や看板」などに文字が書かれているのをよく目にするが、その風景を「言語景観」(linguistic landscape) と言う。書かれている文字は国や地域によって様々なタイプがあり、それぞれの特徴を持っている。これらの言語景観は言語サービスにもなる。例えば、日本において、漢字圏以外の観光客は、お店やレストランの看板が漢字のみで書かれている場合、何のお店であるかを事前に予測できない。もし英語や日本語の二言語で書かれていれば、事前に

情報を得ることができ、観光客の言語面での障害を取り除くことができる。これを「言語サービス」と言い、こうしたサービスを受けた観光客が口コミで友人にお店を紹介したり、日本にもう一度来ることに結びついたりする可能性は十分にあり、「経済効果」(井上・包2015) や地域の活性化にも繋がっていくと考えられる。

1.2. 研究目的

本稿は日本一の温泉県 — 大分県の観光地である別府地獄めぐり温泉と観光経由地の別府駅と大分駅周辺エリアを対象とし、設置されている看板や標識などの言語表記を調査し、大分県における言語景観の実態を明らかにし、地域の活性化に繋がっていくことを研究の目的とする。同時

に、改善すべき点がある場合、その解決策を含めた実践的な研究も行うことにする。

1.3. 研究方法

研究方法として、本稿は先行研究を参照にし、フィールドワークによってデータの収集や現状把握などを行った。そのうえで多言語（文字）景観の問題点を指摘し、それに対する改善策を考え、実践していく方法を取った。そして、多言語（文字）景観による多言語サービスを通して、より多くの観光客を呼び寄せることで、地域の活性化に貢献することを目指す。

2014年から2019年にわたって別府地獄めぐり温泉を中心に現地調査をし、写真による資料収集を行った。そして、2017年に大分県委託事業：地方創生大学等連携プロジェクト支援事業A「学生における地域ブラッシュアップ」プログラム2017」にも応募し、助成を受け、包ゼミによる調査も実施したことがある。

1.4. 先行研究

井上・包（2015：104-105）によると、言語景観に関する本格的な研究としては正井（1969）が最も早く、言語景観の地理学のLandschaft、landscapeの訳語として「景観」という術語が使われたという。言語景観に関しては様々な定義がなされており、R. Landry / R.Y. Bourhis (1997:25) と 庄司博史/P・バックハウス/F・クルマス（2009：9）、Long（2011：3-4）、包（2015：90-91）などが見られる。言語景観の定義を厳格にすると、境界領域まで視野を広げることができず、研究の範囲を狭めてしまう恐れがあると考えられる¹。言語景観が果たす役割の一つとして、井上（2011：1-10）は「言語景観は見る人の意識に影響を与え、アイデンティティに作用し、景観と人の相互に、循環的な対話が成立する」と見ており、単に言語サービスの役割を果たすだけでなく、見る人の意識にも影響を与える。上記のように言語景観について多数の研究はあるものの、実践的な活動を行った研究は今のところまだあまり見られ

ない。そのため、本稿は言語景観の研究にとどまらず、実践的な活動を通して、地域活性化への貢献も視野に入れ、それらをまとめたものでもある。

1.5. 本稿の構成

本稿のはじめに言語景観の定義に言及し、研究目的と研究方法などを明確にし、第2節では、研究の背景、即ち、大分県を訪問する外国人観光客が増加しつつある実態、その経緯、動向などを紹介した。第3節では、言語景観の言語の種類と存在する問題点、主に中国語の誤用などを指摘し、改善策を考えた。第4節では、中国語によるパンフレットの作成や公共機関における多言語誤表記についての指摘や改善につながる実践活動を紹介し、第5節のおわりでは、考察とまとめを行った。

2. 大分県を訪問する外国人観光客の動向

2018年に訪日外国人観光客数（総数）²は3119万人に達し、そのうち、アジアからの客数は2675.8万人程度であった。国・地域別にみると、韓国は753.9万人であり、中国大陆は838万人、台湾は475.7万人、香港は220.8万人前後であった。漢字圏からの観光客数は1500万人を超え、全体の半分を占めていることがわかる。

大分県において、近年の統計をみると、外国人観光客の数は増加傾向にある。以下の表1は、平成28年度から30年度までに大分県に宿泊した外国人の国や地域別の人数を表したものである。韓国からの宿泊者は平成28年度の36万人前後から30年度の53.9万人以上までに増加したものの、29年度の56万より2万人程度減少したが、これは最近の日韓の政治動向に影響されたものと見られる。漢字圏である中国大陆からの観光客は平成28年度に6万人を超えていたが、毎年約1万人の勢いで増加する傾向にある。香港も毎年増加しているが、平成30年度は平成28年度より3万人も増え、8万人を越えている。そして、台湾は平成28年度に8.7万人を越えていたが、平成30年度も平

1 言語景観の定義について、包（2015）、井上・包（2015）を参照されたい。

2 JNTO日本政府観光局（平成30年）https://www.jnto.go.jp/jpn/statistics/data_info_listing/pdf/2018_december_zantei.pdf

成29年度同様に10万人を超えていることがわかる。外国人訪問客の中で、漢字圏としての中国大陆、香港と台湾からの来客数は30.9%以上を占めているが、韓国からの観光客は61.4%以上を占めていることがわかる。これは地理的な位置と、大分空港から韓国の仁川まで直行便が運航されていることと関係があると考えられる。

表1：発地別宿泊客数【大分県統計（平成28－平成30年度）】（単位：人）³

発地	H28	H29	H30
韓国	360,601	560,017	539,189
中国大陆	63,020	72,795	82,292
香港	51,580	62,799	81,111
台湾	87,296	102,050	108,598
タイ	20,767	17,459	16,267
その他のアジア	19,750	24,091	25,207
その他外国	15,658	23,083	25,234
外国小計	618,672	862,294	877,898

出典：大分県観光統計調査（ホームページ）より筆者作成。

以下の図1と図2は、平成30年度の数字に基づき、国・地域別の使用言語（文字）を推定したものである。図1からわかるように、大分県において、外国人訪問客のうち、韓国語の使用頻度が最も高く、その次に中国語になることが推測される。言語景観及び言語サービスとしては、韓国語と中国語の需要が英語と同様に重要であることがわかる。図2は使用文字（言語）の予測を示したものであり、観光客を地域ごとに分けてみると、漢字圏の中国語繁体字を用いる香港や台湾の観光客の数が22%を占め、中国大陆の9%よりも倍以上多いが、中国語圏の観光客の多数は繁体字も簡体字も両方とも大体読めると想定できる。したがって、こうして合わせて考えると、中国語圏が凡そ31%以上を占めていると想定してよい。

図1：使用言語（文字）の推定（出典：大分県観光統計調査（ホームページ）を参考にし、筆者作成）。

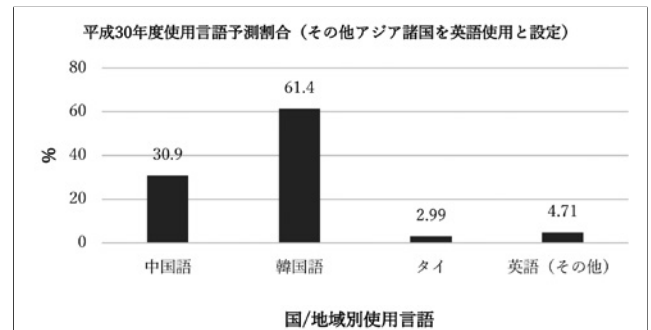


図2：使用文字（言語）の予測割合（出典：大分県観光統計調査（ホームページ）を参考にし、筆者作成）。

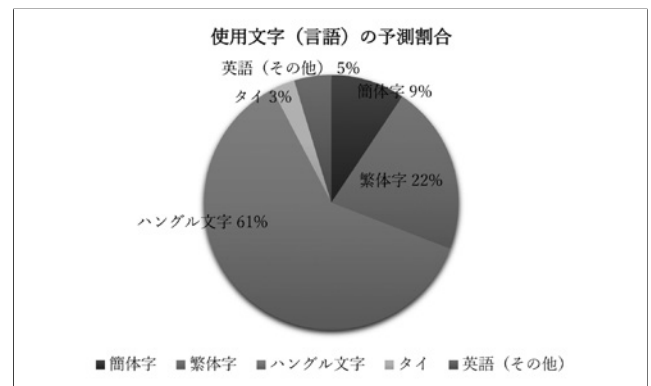


表2は平成28年度から30年度までに大分県の別府市に宿泊した外国人の国や地域別の人数を表したものである。韓国からの宿泊者は最も多く、平成28年度に14万人以上に達しており、大分県全体の外国人観光客の63%以上を占めている。そして、その後も徐々に増え、平成30年度は21万人を越えたことがわかる。漢字圏である中国大陆、香港と台湾からの観光客は毎年増加する傾向にあり、平成30年度の合計は、13.3万人を超えている。そして、平成30年度に別府市に宿泊した外国人観光客は38万人を超え、全体の44%以上が別府市に宿泊していることがわかる。

3 大分県観光統計調査（ホームページ）：<https://www.pref.oita.jp/soshiki/14180/kankoutoukei.html>

表2：発地別宿泊客数【別府市計（平成28年度～30年度）（単位：人）⁴

発地	H28	H29	H30
韓国	142,701	221,486	219,301
中国大陆	28,377	29,968	39,258
香港	28,369	35,902	47,639
台湾	38,172	41,898	46,421
タイ	14,452	10,071	8,987
その他アジア	6,619	8,392	10,531
その他外国	8,814	9,778	11,976
外国小計	267,504	357,495	384,113

出典：大分県観光統計調査（ホームページ）より筆者作成。

以上の表1と表2より韓国と漢字圏（中国大陆、香港と台湾）からの外国人観光客の半分近くが別府市を中心に活動していることがわかる。これは別府市にある観光地「別府地獄めぐり温泉」の重要性を物語っており、その言語景観及び言語サービスの重要性に注目する必要があると考えられる。

このように外国人観光客の増加に伴い、別府市や大分市などの観光地を中心に多言語表記が増えてきている。大分県は、都道府県別外国人延べ宿泊者数（平成30年度1月～12月）が全国において14位であり、宿泊者数の伸び率も16位である。県内・県外（除く外国人）・外国人延べ宿泊者数構成比は福岡県に次ぐ9位であることが国土交通省観光庁の統計からわかる⁵。こうして、全国だけではなく、九州や沖縄エリアの中でも上位にあがっており、インバウンドの需要が比較的に高くなっているため、大分県の言語景観や言語サービスがますます無視できなくなっていることが明らかになってきていると言える。以下では、大分県における多言語景観の実態を見ていこう。

3. 言語景観の実態

大分県別府市の別府地獄めぐり7箇所、別府駅や大分駅などの観光客が行くところや経由地を中心とし、現地を訪れ、観光地の案内看板やその他の言語表記を対象にし、多言語表記の実態を調査した。多数回にわたる現地調査を通

して、観光客が多く集まる別府地獄めぐり温泉、別府駅や大分駅での多言語表記、特に中国語表記の誤表記が多く、必要とされる情報が正しく翻訳されておらず、言語サービスが行き届いていない実態が明らかになってきた。以下では、その表記言語の種類と中国語の誤表記の具体例を紹介し、改善点を指摘する。

3.1. 表記言語の種類

3.1.1. 四言語表記：日・英・韓（朝鮮）・中

別府地獄めぐり温泉の海地獄とカマド地獄では、図3～図8のように案内板や売店、商品などの案内に日本語、英語、中国語と韓国（朝鮮）語⁶の四言語で表記されている。図4は三言語で表記しているが、日本語の表記は別の看板にて書かれている。



図3：別府地獄めぐり温泉の海地獄



図4、図5：別府地獄めぐり温泉の海地獄

4 大分県観光統計調査（ホームページ）：<http://www.pref.oita.jp/soshiki/14180/kankoutoukei.html>

5 国土交通省観光庁 宿泊旅行統計調査報告（平成30年1～12月）
<https://www.mlit.go.jp/kankocho/siryou/toukei/content/001312884.pdf>

6 本稿では、以下「韓国（朝鮮）語」と表記せず、「韓国語」と省略。

図6と図7は別府地獄めぐり温泉のカマド地獄の由来をそれぞれ四言語で書いてある。また、カマド地獄では、簡単な情報だけを四言語で示し、他は日本語のみで表記している看板もある。例えば、図8の「竜舌蘭」(century plant)はそうである。

近年において、別府駅や大分駅にも四言語で表記するところが増えてきている(図9-図12)。なお、大分駅の看板の主な表記は多言語であるが、注意書きなどの細かい表記は日本語のみで書かれていることもある。一方、別府市に観光施設が多くあるため、外国人の間でもその認知度が高く、表2で示されているように、別府市は外国人観光客の人気宿泊先にもなっていることがわかる。



図6、図7：別府地獄めぐり温泉のカマド地獄

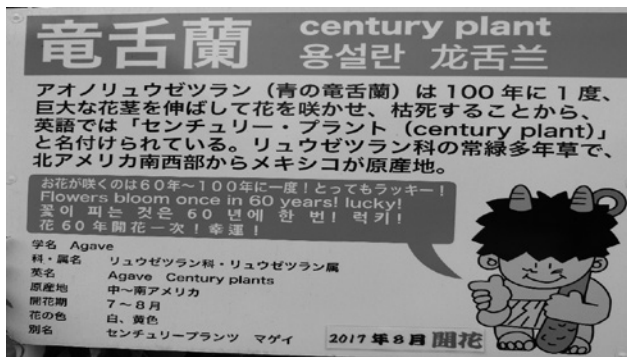


図8：別府地獄めぐり温泉のカマド地獄

別府駅には、地獄めぐりをはじめとする各観光地のパンフレットが用意されている。日本語のパンフレットの他に英語、韓国語、中国語表記のもの(図13-16)が主に置かれており、中国語のパンフレットは繁体字、簡体字の両方に対応しているときもある(図17)。大分駅と比較すると詳細な情報の多言語表記が多く、バス乗り場の地図や注意喚起ポスターには英語、韓国語、中国語が表記されていることがよく見かける。



図9：別府駅の多言語表記看板



図10：大分駅の多言語表記看板

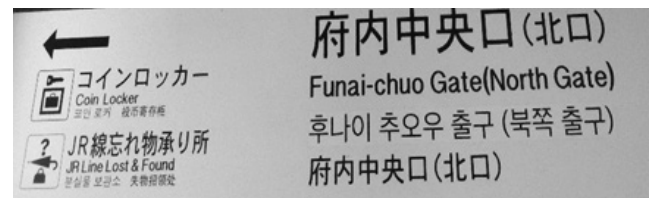


図11：大分駅の多言語表記看板

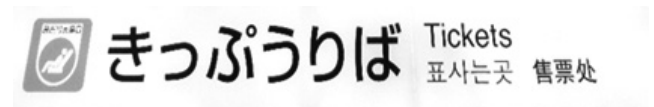


図12：大分駅の多言語表記看板



図 13：別府駅多言語表記パンフレット



図 16：別府駅韓国語表記パンフレット



図 14：別府駅英語表記パンフレット



図 17：別府駅多言語（中国語簡単字・繁体字）表記パンフレット

3.1.2. 三言語による表記

(1) 日・英・韓

別府地獄めぐり温泉の海地獄、カマド地獄と鬼石坊主地獄などには日本語、英語と韓国語の3カ国語で表記されている看板はあるが、図18-図20の海地獄での注意を促す看板のように中国語の表記がないものもある。

カマド地獄の料金表（図20）は日本語、英語と韓国語の表記があり、中国語の表記はなかった。中国語は漢字を使うため日本語の漢字を見ればある程度は理解することが可能であるが、すべての漢字の意味が一致しているわけではない。例えば、図20にある「高校生」は中国語では「大学の学生」を指し、「中学生」は「高校生と中学生」を指す。「小学生」は中国語でも同様に「小学生」である。このように同じ意味のものがあれば、異なる意味を示すものもあるため、誤解が生じやすいと言える。



図 15：別府駅中国語表記パンフレット



図18と図19：多言語表記の看板

共通観覧券料金表

BOOK OF TICKETS FOR JIGOKUS (YEN)

観覧券料金表

身体障害者券料金表

区分	大人	高校生	中学生	小学生	大人	高校生	小中学生
個人	2,000	1,350	1,000	900	550	450	250
3人以上	1,300	850	600	500	400	350	160

幼児団体 (10名以上) 400円

別府地獄組合

(注) 各証明書は観覧券面を求めた際
観覧券又は提出いただけます。

図20：料金表

(2) 日・中・韓

図21、図22の注意事項の表記は、「日・中・韓」で書かれているが、英語の表記が見当たらない。

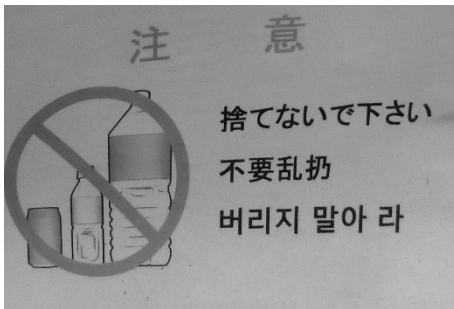


図21：注意を促す看板

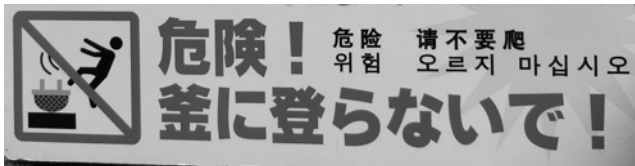


図22：カマド地獄の注意を促す看板

(3) 中・日・英

図23は観光客向けの記念スタンプの案内が「中・日・英」で表記されていることがわかる。

(4) 中・韓・英

図24は観光客向けの注意事項が「中・韓・英」で表記されている。



図23：スタンプの案内



図24：注意を促す看板

3.1.3. 二言語による表記

(1) 日本語・韓国語

以下の看板は日本語と韓国語で表記されている。図25は「芝生に入らないでください」という注意を促す看板であり、図26もトイレでの注意事項の看板である。図27は食事禁止の注意事項、図28は販売食とドリンクのメニューである。

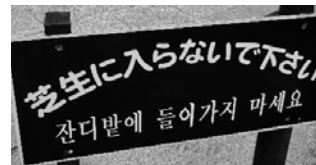


図25：注意を促す看板

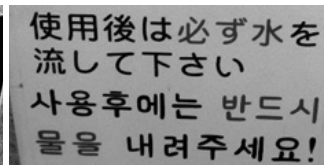


図26：注意を促す看板

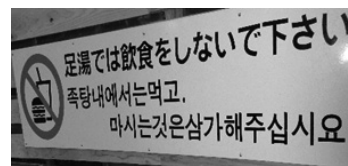


図27：注意を促す看板



図28：メニュー

(2) 英語・韓国語

白池地獄では英語と韓国語のみの看板が設置されていた。この看板には、温泉からお湯が吹き出る時は透明であるが、温度が下がると自然に白くなっていくという特性についての説明が書かれている。鬼山地獄の温泉の説明も英・韓のみがある(図29)。

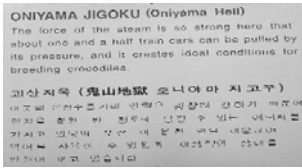


図29：鬼山地獄の説明看板

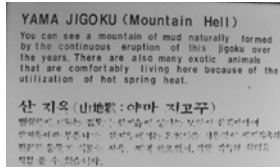


図30：地獄の説明看板

(3) 日本語と英語

鬼石坊主地獄では、図31のように危険を知らせる看板があり、日本語と英語の表記はあったが、中国語と韓国語の表記がない。中国語で立入禁止を表す場合、「禁止入内」あるいは「禁止进入」と表記する。この他、野外設置の案内掲示板には日本語と英語のみの表記も多数あることがわかった。

大分駅の案内看板にも日本語と英語の二言語のみの表記があった(図33)。



図31：鬼石坊主地獄注意事項



図32：スタンプの案内



図33：大分駅にある案内表記

(4) (日本語) 韓国語と中国語

図34のように、日本語で主な意味だけを示しておき、そして、詳細な意味を韓国語と中国語で書いていることがわかる。即ち、二言語による表示をしていると理解できる。「飲むと10歳若返るよ」という意味を表していることがわかる。



図34：飲める温泉の案内表記

3.1.4. 単一言語(日本語)による表記

図35のように「危険注意」の看板は日本語のみのものもあるが、安全注意事項に関して日本語だけの表記も見かける(図36ー図37)。それ以外、温泉の説明などの看板も日本語だけの表記があった。上述したように、場所によって多言語表記があるものとなないものが存在する。



図35：危険注意看板

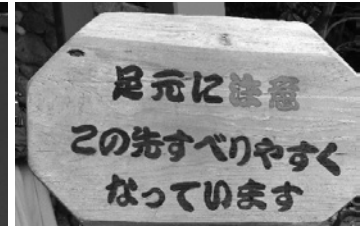


図36：安全注意看板

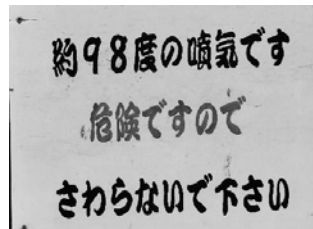


図37：安全注意看板

3.2. 表記言語の同字異議の問題

3.2.1. 日本語と中国語にある「湯 tāng」字

図38の海地獄での「足湯」のように、日本語と中国語には同じ漢字があるため、日本語がそのまま中国語として通じると考えられている可能性がある。日本では、温泉を楽しむ観光地が多くあり、「足湯」もその一つであるが、中国では、このような習慣があまりなく、また中国語では、「湯(汤 tāng)」はスープを意味するため、「足のスープ」という意味に取られる可能性を否定できない。したがって、中国人観光客には本来の意味が正しく伝わらないと推測される。



図38：海地獄の看板

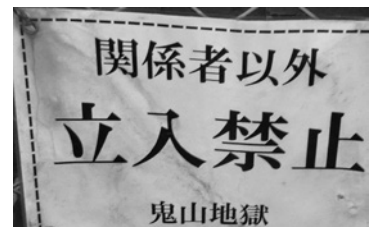


図39：注意事項の看板

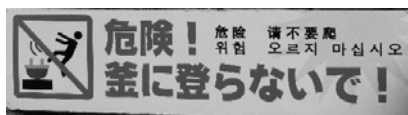


図40：カマド地獄の看板

3.2.2. 日本語と中国語にある「立入 lirù」字

図39の「立入禁止」の意味は、中国語で「闲人免进 Xián rén miǎn jìn」あるいは「禁止入内 Jìnzhǐ rù nèi」となるが、もし正しく訳さなければ、「立入 lirù」の意味は文字通りにすると、「立」漢字は「立つ」の意味を表し、中国語の「立 lì」（站立 zhàn lì）の意味になり、そして「入 rù」は「入る」の意味にそれぞれ取られることになる。「立入 lirù」はフレーズとして日本語のような「入る」の意味にはならない。したがって、単なる文字通りに中国語圏の人々に通じると考えてはいけない。このように日本語の漢字が中国語圏の人々にすべて通じるとは限らないのである。

3.3. 表記言語の誤用事例

3.3.1. 語彙的に

(1) 目的語・結果補語の欠如による誤用

日本語から中国語に翻訳する際、誤訳の事例が多く見られる。例えば、カマド地獄に図40のような標識があり、観光客に対して危険を知らせるものであるが、日本語の動詞「登る」を中国語の「爬 pá」に直訳しているが、目的語と結果補語の欠如により、意味が変わってしまい、中国語圏の人々には正しい情報が伝わりにくくなっていると言える。例えば、中国語で「请不要爬 Qǐng bú yào pá」とあるが、「爬 pá」はここでは目的語がないと意味が伝わらないのである。また、中国語の動詞の「到達点を示す」目的語と動詞の結果を示す「結果補語」の「到 dào」も欠けているため、意味的・文法的にも不自然となり、何に登ってはいけないかが不明瞭である。ここでは、日本語の「釜」が中国語の「锅 guō」にあたるが、直訳の文章にはこの目的語がない。この日本語は中国語で「请不要爬到锅上 Qǐng bú yào pá dào guōshàng」と訳するのが妥当である。

(2) 動詞の誤訳による誤用

図41・42にある中国語訳文の「動詞一目的語（VOフ

レーズ）」の「松开 sōngkāi」は「緩める」という意味であり、日本語の「とけだした」を説明できていない。したがって、中国語訳文の「松开 sōngkāi」を「化开 huàkāi」にするのが正しいのである。



図41：カマド池の色の説明

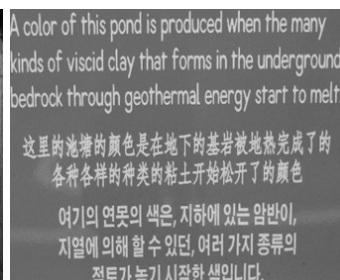


図42：図41の下の部分の拡大

3.3.2. 文法的に

(1) 受身の欠如

図43と図44の龍巻地獄の案内標識の中国語表記をみると、語彙的なミスがあることに限らず、文法的にも誤りがあることが明瞭である。例えば、まず、語彙的にみると、「间歇温泉 wèn xiē wēn quán」とあるが、「間 wèn」とは「問う、聞く」の意味を表し、日本語の「間欠泉」の意味が伝わらない。「间歇温泉 jiānxiē wēn quán」と表記すべきである。「間 jiān」は「間、一定の時間」であり、「歇 xiē」は「休む」という意味を持つ。「间歇温泉」と表記したほうが、意味がスムーズに伝わる。図43-44の中国語の正確な訳文を下記に示す。

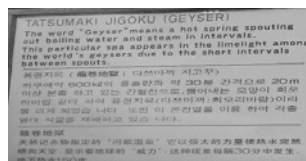


図43：龍巻地獄の案内板

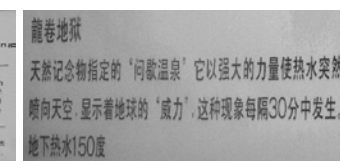


図44：龍巻地獄の中国語による案内

図43-44の正しい中国語訳文：

被指定为天然纪念的“间歇温泉”，它以强大的力量使热水突然喷向天空，显示着地球的“威力”。这种现象每隔30分中发生一次。地下热水温度为150度。

中国語訳文のピンイン表記：

Bèi zhīdìng wéi tiānrán jìniànde “jiānxiē wēnquán”，
tā yǐ qiǎngdàde lìliang shǐ rèshuǐ túrán pēn xiàng

tiānkōng, xiǎnshìzhe dìqiúde “wēilì”。Zhè zhōng xiàxiàng měi gé 30 fēnzhōng fāshēng yíci。Dìxià rèshuǐ wēndù wéi 150 dù。

次に文法的にみると、図43と図44の中国語訳文に「天然記念物指定的」とあるが、受身の「被bèi (…为)」(…とされる)が欠けている(正解: 被指定为天然記念的…)ため、文法的な間違いが目立つことになり、結局本来の意味が正確に伝わりにくくなる。

(2) 場所を表す「前置詞」の欠如

図45をみると、日本語の「スタンプは園内中央の標本館にございます」を中国語で「图章标本馆里 túzhāng biāoběn guǎnlǐ」と翻訳しているが、ここでは、場所を示す中国語の前置詞の「在zài」が欠けていることがわかる。「图章在标本馆里 túzhāng zài biāoběn guǎnlǐ」のほうが本来の意味

が最も適切に伝わることになる。



図45: スタンプの案内板

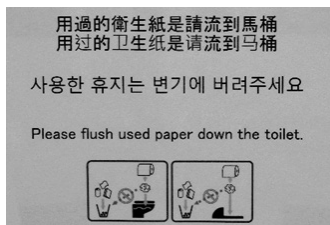


図46: トイレでの注意事項

以上のように、語彙的、文法的な誤用があることが明らかになってきた。

(3) 判断動詞「是」の誤用

図46の中国語の「用过的卫生纸是请流到马桶 Yòngguode wèishēngzhǐ shì qǐng liúdào mǎtǒng」(用過的衛生紙是請流到馬桶)と表記されているが、判断動詞「是shì」の使い方が文法的に間違っており、その意味を正しく示すことはできていない。中国語の正しい文は、「请把用过的卫生纸仍进(/到)马桶 Qǐng bǎ yòngguode wèishēngzhǐ réngjìn(/dào) mǎtǒng (垃圾桶lājītǒng)」である。「物事」を「どう処理すべきか」を示すため、中国語の「把bǎ」構文を使うのが適当である。また、「马桶」は中国

の特定地域の方言であり、標準中国語で「ゴミ箱」は「垃圾桶lājītǒng」というのである。さらに、「流liú」は自動詞であるため、日本語の他動詞である「捨てる」に相当する中国語の他動詞「仍réng」を使用すべきである。動詞「仍réng」の結果を表す「进jìn」と「到dào」のどちらを使っても良いであるが、「到dào」は「到達点」を示し、「进jìn」の場合は「結果」に重点が置かれることになる。

3.4. 不完全な訳によって生じる誤解

図47の「開けたら閉めてください」の中国語の直訳は「开了就请关上(門), Kāile jiù qǐng guānshàng(mén)」あるいは「请随手关上(門), Qǐng suíshǒu guānshàng(mén)」になるはずであるが、ここでの中国語の「请随手」(Qǐng suíshǒu)は「ついでに」という意味で表記されていることがわかる。また、下の行には、「開けたままにしないでください」という日本語の表記があり、中国語の表記は「请关门Qǐng guānmén」(ドアを閉めてください)になっている。意味的に同じであると考えてよいが、日本語の意味を中国語に直訳すると、「请不要一直开着(門), Qǐng bùyào yízhí kāizhe(mén)」になる。こうして、いずれにせよ、この二つの文は日本語を中国語に正しく翻訳したと評価しにくいところがある。初めの行の中国語の「目的語」が見当たらないため、観光客にはその意味が正しく伝わらないに違いない。こうして、当初の目的に達したとはいえないのである。

3.5. 重要な場所での言語表記問題

観光客にとって毎日何回も使う可能性がある「お手洗い」の多言語表記に誤用が多く見られる。例えば、図48の「トイレ」の中国語訳が「洗手xǐshǒu」となっているが、「洗手」は「手を洗う」という意味であり、「间jiān (間)」という「部屋」の意味を表す漢字が抜けているため、「トイレ」の意味が正確に伝わらないと言える。

また、図49と図50にも「马桶mǎtǒng」という単語が使用されているが、これも上述したように方言の使い分けがあるため、標準中国語の「垃圾桶lājītǒng」にしたほうがよい。



図47：血の池地獄の案内板



図48：トイレの案内



図49：トイレでの注意事項

さらに図51の「水を流してください」の訳文は「使用后, 请使水流动 Shǐyòng hòu, Qǐng shuǐ liúdòng」と表記されているが、中国語の「使」は「させる」という使役形であり、「流」は「流れる」という自動詞である。したがって、文法的に誤りがあり、意味も通じない。正しい中国語訳文は「使用后, 请冲水 Shǐyòng hòu, Qǐng chōngshuǐ」になる。



図50：トイレでの注意事項

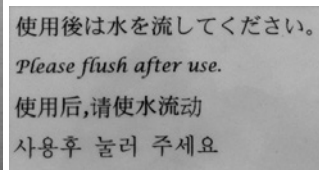


図51：トイレでの注意事項

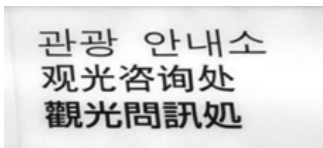


図52：簡体字と繁体字による案内

3.6. 繁体字の表記の有無

中国語には簡体字と繁体字があり、簡体字は1950年代の漢字簡略化法案の成立により中国大陸で採用され、使用されはじめたが、繁体字は台湾、香港、マカオなどの地域や中国大陸以外の中華圏で用いられている。こうして、同

じ中国語でも、地域によって使用されている文字に違いがある。日本の漢字は簡体字と繁体字のどちらとも共通するところや異なるところがある。観光目的で大分県を訪れる中国人の中で、簡体字を使う中国大陸からの観光客のほかには繁体字を使う台湾、香港、マカオからの観光客が増加傾向にあることが第2節から明らかにわかる。

しかし、別府地獄めぐりや大分駅、別府駅の案内標識は中国語簡体字のみの表記が圧倒的に多い。大分駅構内にある観光案内所の標識(図52)や別府地獄めぐりの観光パンフレットは簡体字と繁体字の両方の表記があった(図17)が、トイレでの注意事項などは両方の表記が少なかった(図46と図50は両方で表記されているが、図49と図51は簡体字のみで表記されている)。中国大陸、台湾や香港などの中国語圏からの訪日旅行者が増加している中、中国語を簡体字と繁体字の両方で表記したほうが観光客に分かりやすく、言語サービスが行き届き、言語経済(包2015)の効果もあり、地域の活性化に繋がると考えられる。

上述したように、大分県の言語景観の実態に対する調査や考察を通じて中国語表記に多くの誤表記があることが明らかになった。こうした現状を改善し、言語サービスを向上させていくことによって、地域の活性化につなげていくことが研究者の責務であり、求められていると推測される。そこで包をはじめとし、2015年度ゼミ生にも参加してもらい、実践的な調査及び不足している中国語の表記の補足や誤りを訂正し、中国語の簡体字と繁体字によるパンフレットを作成した(2018年1月)。以下ではその具体的な内容を見ていく。

4. 地域活性化への実践活動

4.1. 中国語によるパンフレットの作成

筆者は2014年から大分の言語景観について調査を実施してきたが、2017年に大分県委託事業：地方創生大学等連携プロジェクト支援事業A 2017「学生による地域ブラッシュアップ」プログラムに応募し、支援を受け、「大分県観光地の多言語表記調査—別府市地獄めぐり温泉・その周辺と大分市中心部商店街を主として—」をテーマとし、調査を実施した。プロジェクトの実施にあたり、大分市役所景観推進室、大分市観光協会(一般社団法人)にも協力を

求め、さらに別府市観光戦略部観光課（温泉課）を通じて別府地獄組合の協力も得た。成果としてゼミ生とともに中国語のパンフレット（簡体字・繁体字）を作成した（図53）。

当プロジェクトは、主要観光地別府地獄めぐり温泉や一部商店街における看板の中国語（簡単字・繁体字）表記の改善を通して観光客に向けた言語サービスの利便性の向上を目指し、より多くの観光客の呼び込み、多言語景観の実現、観光情報の積極的発信、国際性や観光地の魅力のさらなる引き出し、地域の活性化及びまちづくりに貢献できる実践的成果を得ることを目標とした。

その成果として、ゼミ生とともに中国語（簡体字・繁体字）訳バージョンのパンフレットを作成し、そして作成したパンフレットを地域の活性化のために、上記各機関や大学関係者に贈呈した。この「観光客用小冊」（パンフレット）では「別府地獄めぐり」温泉について中国語（簡単字・繁体字）での紹介や、鬼山地獄の温泉や「龍巻地獄温泉」（図53）の全体の説明など観光客に必要な情報が多く取り入れられている。



図53：作成したパンフレットの内容⁷

4.2. 公共機関における多言語誤表記の改善

福岡の博多駅バスターミナルには、空港行きの国際線があり、外国人観光客が多く利用している。また、対外窓口

の一つにもなっている。図54－図57のように博多駅バスターミナルの乗車口には日・英・韓・中の多言語表記が見られる。筆者は2018年2月26日と3月23日にこのバスターミナルを利用した際、多言語（中国語を含む）表記に誤りがあることに気づいた（図54、図56）。3月に利用した際、現場にバス案内役の従業員がちょうどいたため、中国語表記の誤りの改善を提案した。そして2018年8月8日にバスターミナルを再度利用する際、図55のように中国語の誤りが訂正され、英語と韓国語も改善されていた。

図54のような多言語のあやまりは外国人観光客にとって意味が通じにくく、それを改善しなければならないと考えられる。例えば、図54は日本語の「ご乗車の際はこのボタンを押すとドアが開きます。」を中国語で「乗車時候、這個按按鈕和門張開Chéngchē shíhòu, zhège àn ànniǔ hé mén zhāngkāi」になっていた。正しい中国語は図55のように「乗車時按此按鈕,門會自動打開Chéngchē shí àn cǐ ànniǔ, mén huì zìdòng dǎkāi」になるべきである。ここでは、語彙的・文法的なミスがみられた。中国語の「と」の意味を示す「和」の誤用と中国語の二音節動詞「張開zhāngkāi」の誤用が認められる。「張開」は、「口をあけて」の意味を示すときに「張開口zhāngkāi kǒu」と使用されるが、「ドアが開く」ときに用いられないため、語用に問題が出て中国語圏の母語話者に不自然に感じられてしまうのである。

以上のような実践活動を通して、言語景観が改善され、英語、中国語と韓国（朝鮮）語などを利用する外国人観光客に便宜を図り、言語サービスの向上に繋がり、地域の活性化にも役に立つと考えられる。こうした地域のための活動は、研究者にも問われる問題であり、地域の活性化のために今後も貢献していくことが必要である。

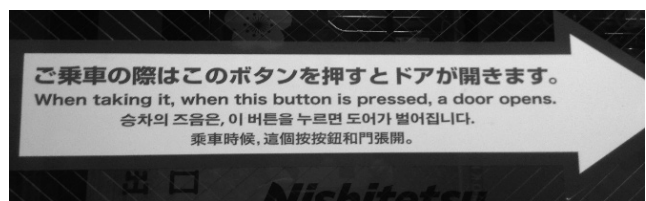


図54：博多バスターミナル福岡空港行き国際線乗車口の多言語景観（2018年2月26日撮影）

7 当ページのデザインはゼミ生の井口真穂が担当。

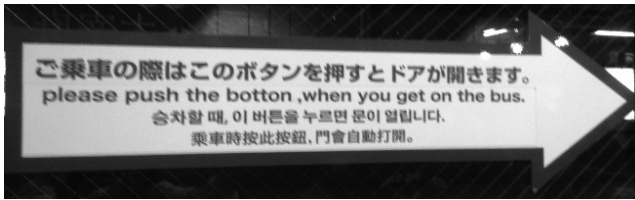


図55：博多バスターミナル福岡空港行き国際線乗車口の多言語景観
(2018年8月8日撮影)



図56：博多バスターミナル福岡空港行き国際線乗車口の
多言語景観 (2018年3月23日撮影)



図57：博多バスターミナル福岡空港行き国際線乗車口の
多言語景観 (2018年8月30日撮影)

5. おわりに

大分県の観光地別府地獄めぐり温泉、別府駅と大分駅周辺エリアの言語景観を調査することによって、その周辺地域の案内標識や案内板の言語表記の実態を明らかにすることができた。観光地として、日、英、韓、中の四言語や日、英、韓（日、英、中；日、韓、中など）の三言語及び二言語表記（日、英；日、韓；中、韓など）、単言語（日本語）表記などの種類があることもわかった。第2章で取り上げたように、近年の観光客の増加により、中国語の表記が以前より増えたものの、まだ十分とは言えない状態にあることが明らかになった。さらに、案内板の中国語に誤りがあり、

中国語語彙の選択、動詞の使い方や文法的なミスなどの問題が起きていることが明らかになってきた。こうして漢字圏の観光客に正しい情報が伝わらない可能性もあるという問題点が浮上してきた。また、同じ漢字圏とは言え、中国語の漢字と日本語の漢字の意味がすべて一致しておらず、日本語の漢字で中国語の漢字をすべて代用することができないため、誤解を招く恐れも生じていることがわかった。さらに、中国大陆、香港と台湾などの地域では簡体字と繁体字を使い分けているため、より正確な情報を伝えるためには、簡体字と繁体字の両方を使用して表記したほうが最も効果的であると考えられる。

本研究は多言語景観を調べることを通して、大分県の主要観光地における言語景観の実態を明らかにすることに止まらず、多言語表記における誤字・脱字・間違った翻訳表記などを発見し、言語景観改善の提案を行い、中国語訳がないところに訳文を提供し、地域の活性化や多言語景観の実現に繋げることができたと言える。今後も引き続き地域に着目し、改善点の発見と提案及び実践活動を通して多言語・多文化共生幸福な社会作りに貢献できるように取り組んでいきたい。

参考文献 (Alphabetical)

- 包聯群 2015 「経済言語学の視点からみる言語景観——アメリカのチャイナタウンと日本の中華街の比較」、『大分大学 経済論集』(第67巻 第5号)、85-116頁。大分大学経済学会。
- ダニエル・ロング (Long) 2011 「世界の少数言語の言語景観に見られるアイデンティティの主張」、『世界の言語景観 日本の言語景観 景色のなかのこぼれ』。3-12頁。富山：桂書房。
- 井上史雄 2009 「経済言語学からみた言語景観」、『日本の言語景観』。三元社。53-77頁。
- 井上史雄 2011 「日本語景観の地理と歴史にみる言語接触 戦前・戦後の日本語領域」、『多言語社会の日本語教育に関する社会言語学的総合研究』(山下暁美編)。1-10頁。
- 井上史雄 2011 『経済言語学論考一言語・方言・敬語の値打ち一』。東京：明治書院。
- 井上史雄、包聯群 2015 「内蒙古文字景観の社会言語学—文字の社会類型論—」、『社会言語学』。社会言語学刊行会。91-111頁。
- 正井泰夫 1969 「言語別・文字別にみた新宿における諸設営物の名称と看板広告」、『史苑』(29-2)。166-177頁。

中井精一/ダニエル・ロング/内山純蔵2011『世界の言語景観
日本の言語景観 景色のなかのことば』。富山：桂書房。

庄司博史/P・バックハウス/F・クルマス2009『日本の言語景
観』。東京：三元社。

Backhaus, Peter 2007 *Linguistic Landscapes* (Multilingual
Matters).

Bourhis, R.Y. and Landry, R. 1997 'Linguistic landscape and
ethnolinguistic vitality: an empirical study', *Journal of
Language and Social Psychology* 16: 23-49.

謝辞

当論文の執筆や調査の一部にあたり、大分県委託事業：地
方創生大学等連携プロジェクト支援事業A「「学生におけ
る地域ブラッシュアップ」プログラム2017」のご支援を受
けたこと、そして2017年の調査を実施する際に、ご支援
を下された大分市商工労働観光部・観光課と別府市観光
戦略部・観光課及び別府地獄組合の皆様にご深くお礼を申
し上げます。また、2015年のゼミ生の皆様による別府地
獄めぐり温泉のパンフレットの作成に感謝する。最後に、
日本語のチェックをしてくださった中篠雫氏にも感謝の意
を示したい。

Ghost languages: Language and Spiritualism in a Siraya Community of Taiwan



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台湾には多くの先住民族がいて、独自の言語をкаろうじて伝えているが、言語学的な研究に比べて、それら言語で語られる伝承の研究はおろそかにされてきた。本稿では現代に生きるシャーマンの語りを音声と文字で忠実に採取した。

Abstract

The Sirayan community in Taiwan, like other Aboriginal communities, has been dispossessed of its language as a result of colonization by Fujianese-speaking Han Chinese, Japanese, and, since 1947, a Mandarin-speaking majority. Our previous work with Sirayan Aboriginal shamans uncovered fascinating folk-theories about the origins and authenticity of their heritage language based in long-held cultural practices and contemporary community politics. Linguists document endangered languages by bringing together linguistics, contemporary ethics respecting communities' participation, and digital technologies for recording and sharing. However, language documentation is typically narrowly focused on language systems – grammars and vocabularies – rather than the choices that speakers make, whether in the forms of their languages, where they choose to use them, what they choose to express, or their feelings and beliefs about their languages.

The case of Sirayan shamanism illustrates how various layers of this community's languages have become 'ghosts' – endangered and rarely documented. The shamans generally communicate and describe their practices using the Taiwanese language (Minnan/Hoklo), which, despite being spoken by millions of people, itself remains little documented, largely ignored in formal, administrative and academic life, undergoing significant change, with almost no literacy, and vulnerable to politicization of its use in media, education and public life. We present texts in Taiwanese as well as, for the first time, video and transcriptions of the shamans' god-channeling events where two shamans "speak in tongues" channeling their gods.

Our documentation of Sirayan shamans' vernacular accounts of their community's history and practices in Taiwanese enables this knowledge to reach a wider Taiwanese public in its own language, and signposts the Taiwanese language as part of the linguistic and cultural diversity of Asia.

Keywords

Siraya, Taiwan, shaman, spiritualism, language

Introduction

In previous research and cultural documentation with members of two local Sirayan Aboriginal communities in southwestern Taiwan, we started with the aim of offering whatever help we might be able to provide for existing activities in the revival of the Sirayan heritage language (Fang & Nathan 2013). What we found, however, was a complex interconnected set of local

social, political, and theological dynamics that would frame any conventional language work. We glimpsed and documented how views about language intertwined with that of religion and culture. Comparing and contrasting the links between language and culture in each community, we found a commonality in that each invoked sources of cultural authority for their stance on language authenticity. While one group has access to

historical colonial language resources but is thoroughly Christianised, the second group is desperately seeking language but retain their Indigenous spiritual traditions.

In more recent fieldwork, we conducted further consultation, a review of previous recordings, and interviews and documentation with the second group, the Hoan-á-chhân (潘仔田) Sirayan community in the Koaⁿ-tiân (宮田) area. This paper presents video and transcriptions of shamans' god-channelling events for the first time, where two shamans "speak in tongues", channeling their *Alizou* gods.¹ The shamans more generally communicate and describe their practices using the Taiwanese language (Minnan/Hoklo), which itself survives in the twilight of dominance by Mandarin Chinese.

As well as documenting aspects of shamanic practice, this paper (and the website that will accompany it) has two advocacy goals. First and foremost, we wish to respect the Hoan-á-chhân community's request to convey "their own story" to a wider public.

Secondly, we convey these community accounts of their history as direct transcriptions of the shamans' own words in spoken Taiwanese. These represent all-too-rare examples of written Taiwanese together with parallel-translations (in Mandarin and English). Through this, we also wish support the maintenance and valorisation of the Taiwanese language. Despite being spoken by millions of people, Taiwanese is undergoing significant change and remains under-documented, largely ignored in formal, administrative and academic life, with almost no literacy, and vulnerable to politicisation of its use in media, education and public life.

Sirayan origins

Like many peoples, the Sirayans take a keen interest in their origins. As we will see, this is also a matter that is of a wider, national political interest for Taiwan. Most of the conventional sources and literature about the history of the Sirayans concerns their language, their

interactions with the various waves of colonisers including the Han people from Fujian, Portuguese, Dutch, and Japanese, and how their language and culture fared through those interactions. The deeper roots of the Sirayan people are most often discussed in terms of the history and genealogy of their language.

A foremost academic scholar of the Sirayan language, Alexander Adelaar, classifies Sirayan as a member of the 'Formosan' language family. While that family includes all the Indigenous languages of Taiwan, it is also one of the two major branches of the very widespread family of languages known as Austronesian. The Austronesian language family is one of the world's most widely distributed, and includes "native languages all over Southeast Asia and the Pacific" (Adelaar, nd; see Figure 1.).

While divergence of languages, both geographically and over time through language change, can tell us much about population genealogies and movements, ultimately there is no fixed or necessary correlation between a group's language and its origins or deeper migration history. Additionally, in the discussions and beliefs of everyday life, language, origins and history can easily be intermingled or confused. This is especially the case for many Indigenous people where ancient written records may not exist, and it is highly amplified by the ravages of colonialism and the destruction it has brought to cultural continuity.

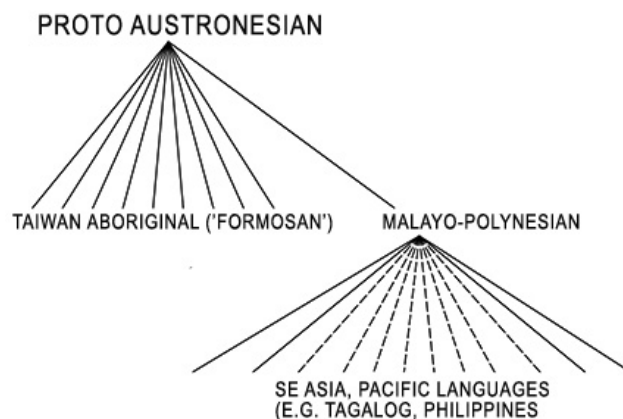


Figure 1. Language genealogy for the Austronesian languages (adapted from Adelaar, nd).

¹ Video will be made available through the website that we are creating in collaboration with the community; see further below for details (<http://www.speaktaiwanese.com/siraya/>).

Various sources of information and social factors do indeed seem to have contributed to a creative fusion of origin beliefs in the Sirayan communities we worked with. In the Hoan-á-chhân (潘仔田) Sirayan community in the Koaⁿ-tiân (官田) area (see Map 1) where we conducted fieldwork, a belief has grown that *another* nearby Sirayan group (Tainan Ping-pu Siraya Culture Association) believes that the Sirayan people originated in the Philippines.

As noted above, the linguistic and anthropological evidence is to the contrary – that is, the Austronesian languages and cultures originated in Taiwan and spread throughout Southeast Asia and the Pacific. However, several sources have fed into the Hoan-á-chhân community's suspicion that others claim a Philippines origin, a claim that they wish to contest. It appears that, for the Hoan-á-chhân community, beliefs about their geographic origins have become significant markers of their identity.



Map. 1. Location of the Hoan-á-chhân (潘仔田) Sirayan community in the Koaⁿ-tiân (官田) area of south-western Taiwan (courtesy Google maps).

So what are the sources of this origin controversy? Firstly, there is a significant body of academic linguistic literature dealing with the Austronesian language family that, like Figure 1, show a relationship between Taiwanese languages and related or descendant languages; in many cases, Tagalog (the main Indigenous language of the Philippines) is noted as an exemplar. For example, Adelaar (nd.) states:

The basic outline Siraya grammar is not very different from that of other Formosan or “Philippine-type” languages.

Secondly, local communities have become polarised around the perception of Filipino origins as a result of the influence of particular community leaders and their religious and linguistic associations. The more widely known and influential Tainan Ping-pu Siraya Culture Association combines the authority of the main historical records of the Sirayan language – especially a 17th century translation of the Christian Gospel of St. Matthew into a Siraya dialect by Dutch missionaries (Adelaar 2011) – with political and academic recognition, and leadership by a senior female Sirayan woman and her Filipino husband. The latter emigrated to Taiwan from the Philippines and speaks publicly of his facility with revitalising the Sirayan language as being inspired and facilitated by his own Filipino group’s language Bisaya (see also the transcript of recording 201209-14. mp4 at 59:29 below). In a previous paper (Fang and Nathan 2013) we described in detail how that group drew its authority to represent the Sirayan language from its use of the colonial records, strengthened by their ongoing Christian identity, while the Hoan-á-chhân group has little confirmable pre-colonial Sirayan language yet retains significant continuity with its Aboriginal religious and ritual traditions.

A third factor might be the clouding of the actual origins of the Sirayan people. The Hoan-á-chhân group say that their origins are in China, which is consistent with academic accounts, yet this fact is rarely highlighted, possibly because Aboriginal arrivals in Taiwan go back some thousands of years, beyond recorded history, and further complicated by the national representation of Taiwan’s Indigenous people as evidence of Taiwan’s

independence from China (Adelaar 2014). The Hoan-á-chhân group holds firmly to the view that their ancestors emigrated from China to Taiwan about 800 years ago (see recording 201209-09.mp4 below).

Guided by information channelled through Sirayan shaman Chén Qiū-yàn 陳秋燕 from their god Alizou 阿立祖, a group from the Hoan-á-chhân community travelled to China to try to identify their place of origin. They believe that they found the approximate area, in Henan Province (河南省), boosted by further evidence in the form of sharing their surname with common surnames used in that area. In turn, this new information has added to the mixed picture of Sirayan origins, because Hoan-á-chhân people now feel that others have mistakenly confused the home of the 17th century Dutch Christian translators, Holland – in Taiwanese Hô-lân – with Hô-lâm, the very similar-sounding Taiwanese name for Henan Province.

We worked with two Sirayan shamans. Our initial contact was made with male shaman Mr Huáng Róng-fēng 黃榮豐, a postman from village Pat-thâu-iûn 北頭洋, who generously participated in many interviews and video documentation sessions of his shaman practices with us. Subsequently, we were introduced to female shaman Chén Qiū-yàn 陳秋燕, a cattle farmer from the Hoan-á-chhân group at the nearby Koaⁿ-tiân village. Chén Qiū-yàn 陳秋燕 is the most senior shaman of the Sirayan tribe. Female shamans in Taiwanese are called âng-î (in Chinese 尪姨); male shamans are called Hiàng-thâu (in Chinese 尪頭). Although the two shamans had never previously met, they very graciously agreed to meet and for their interactions to be video-documented (see below for excerpts and discussion).

In the following interview extract, Chén Qiū-yàn 陳秋燕 explains her community's beliefs about these issues. Note that in what follows we refer to her *as* âng-î 尪姨 Chén when she is in shamanic trance.

[Recording 201209-14.mp4, recorded at Hoan-á-chhân (潘仔田) in 2012 with âng-î 尪姨 Chén; 我=Meili Fang (interviewer)]

59:00 我: I m̄-sī siók-î lín chit chōk ê.

她不是屬於你們這族的?

Doesn't she belong to this tribe?

59:03 尪姨: Kāng-khoán siók goán chit chōk ê, iá-m̄-kò sī pài bô kāng-khoán ê.

一樣是屬於這族的, 不過是拜不同的。

She does belong to our tribe, but prays to a different god.

59:06 我: Hòⁿ, pài bô kāng-khoán ê.

哦, 是拜不同的。

Oh, I see. She prays to a different god.

59:07 尪姨: Hèⁿ, i pài ki-tok kàu, ah goán pài kan-á giáh huiⁿ ê.

對, 她是拜基督教, 啊我們是拜祀瓶子(祀壺), 拿香的。

Yes, she worships as a Christian and we pray using a bottle [= sacramental jar].

59:10 我: Goá chai, goá chai, tân-sī i pún-sin i chhut-seⁿ eng-kai mā-sī siók-î...

我知道, 但是她本身出生是應該不是屬於...

Ah I see, I see. But did she grow up in the Sirayan tradition?

59:17 尪姨: Pêⁿ-po-chōk ê,
平埔族的。

(as a) Pingpu [plains people].

59:18 我: Hèⁿ āh.

是啊。

Yes, I know.

59:19 尪姨: Iá in sī pài ki-tok kàu, ah goán pài kan-á án-ne.

而她們是拜基督教, 啊我們是拜瓶子的。

They are Christians but we are kan-á [bottle].

59:22 我: Ah i kóng ê, in lòk ôe í-keng long bô-kâng khi, goán-choán bô-kâng khi à?

而她說的, 錄的話都已經不同了, 完全不同了?

Are their language materials completely different?

59:29 尪姨: In kóng chit-soeh, iá goán kóng chit-soeh lá. In bô cheng-kù, goán mā bô cheng-kù là hōⁿ, ah i kóng-ê kóng hōⁿ, tō sī i tú-á-hó kè hit-ê Hui-lit-pin ê ang-sài nā hōⁿ, ah só-í kóng in iōng in ê Hui-lit-pin gi lâi han ùi Pêⁿ-po-chōk lá.

她們說的是一種, 我們說的又是另一種。他們沒有證據, 雖然我們也沒有證據, 但是她是剛好嫁給那個菲律賓的丈夫, 所以說他們用的是菲律賓的語言來混為平埔族的。

They tell one story, we tell another story. They don't have evidence; we don't have evidence either. But

because she married a Filipino, they have mixed their Filipino language with our Pingpu (Siraya) language.

Íá-m̄-ko, í chiah ê Pêⁿ-poⁱ-chôk mā bô kah jîn-tông là. Nā ū jîn-tông ê ôe tō sin-chhéng ē khí-lâi lá, hōⁿ, íá tō sī bô kah jîn-tông là. Ah, Tâi-oân chêng-hū nā hōⁿ, I mā bô kah goán jîn-tông goân Pêⁿ-poⁱ-chôk là.

不過, 以我們這些平埔族的, 我們也不認同他們。若我們有認同他們的話, 就可能申請得過。然而臺灣政府也不認同我們平埔族的。

But we don't identify with (or accept) their language. If we had accepted their language, our Pingpu group might possibly be recognised (by the government). However the government doesn't recognise all the Pingpu groups.

Notice how the shaman contrasts religious traditions using an expression that in English is something like “worship via the bottle”. Observing the shrines and religious events clearly highlights the salience of the sacramental jars (see Figure 2) as well as both bottles of water and beer in Shamanic practice. But without this vernacular expression *kan-á* (祀壺) in mother-tongue Taiwanese, authenticity of descriptions of the religious practices would be lost.



Figure 2. Showing *kan-á* (centre), beer bottle and betel nut. All are found in Sirayan temples and are important for worship. Photographed by Chén Qiū-yàn 陳秋燕.

Shamans as history tellers

In earlier research, we investigated the possibilities of shamans being able, through communication with their ancestor gods, to provide information about the Sirayan language (Fang & Nathan 2013). We found that although it was not feasible to elicit significant linguistic information in this way, it proved to be an interesting ethnographic study of how communities appeal to their religious and ceremonial traditions to provide authority for their community's understandings of their language and origins.



Figure 3. Conducting interviews and documentation at Hoan-á-chhân kong-kài 潘仔田公廨. Left: Meili Fang, centre àng-î 尪姨 Chén; right: Hiàng-thâu 尪頭 Huang.

The Hoan-á-chhân community highlights its origins in ancient China, an emphasis that may have been amplified by the recently implied origins in the Philippines. It is possible that now community members see their origin beliefs as distinguishing attributes of their identity. Several community members, including Chén Qiū-yàn 陳秋燕 and her sister Chén Qiū-é 陳秋娥, encouraged us to disseminate information about their community and culture, including in Mandarin Chinese so that it could be made accessible to the wider Taiwanese community. Further below we discuss some of the issues of disseminating information in Chinese, the dominant language of media and wider communication, and Taiwanese, the vernacular, daily and personal language spoken in all the local communities across the Tainan area.

In the following interview segment, Meili asked àng-î 尪姨 Chén about how and why their religion came

to Taiwan:

[Recording 201209-09.mp4, recorded at Hoan-á-chhân kong-kài 潘仔田公廨 in 2012 with âng-î 𪗇𪗇 Chén]

12:39 我: Chhīⁿ-kóng chit-ê A-l...t-chó' ê sìn-ióng, lí kóng sī chēng lín sè-hàn ê-sī-chūn to tōa kan-á cháu.
比如,你説這個阿立祖信仰, 從你們小的時候就開始抱著瓶子逃。

About this Alizou's religion, at the time you were a child you (plural) had already started to carry that bottle [bottle = sacramental jar: see below].

12:46 𪗇𪗇: M̄-sī goán sè-hàn, sī chiah-ê chōk-kūn, lāu-lāng beh chhut-cháu, teh chiàn-cheng beh cháu, in tō chah kan-á the cháu, m̄ sī goán sè-hàn, m̄ sī goán A-l...t-chó', goán sè-hàn. Goán s,, lāng kóng bō-tang thó-chiah, goán it-tit tō it-tit lâi là, tō-kàu Tâi-ôan lâi-là. Ah tō-kàu Tâi-ôan tú-á hó gū-tiōh chiàn-cheng.

不是我們小的時候, 而是我們族群的人, 老人要逃跑, 因戰爭要逃跑, 他們就抱著瓶子的逃, 不是我們小的時候, 不是我們阿立祖在逃。我們是爲了度日糊口才逃跑到這裏(臺灣)來的, 而跑到臺灣時卻剛好遇到戰爭。

Not when we were young. The old people of our group fled from war so they had to carry the bottles and escape. It wasn't Alizou running away.

We (our seven sisters) escaped to Taiwan to survive and when we arrived in Taiwan and unfortunately when we arrived in Taiwan we encountered war.

13:10 我: Sím-m...h chiàn-cheng lí kám chai?

什麼戰爭?

War, which war?

13:12 𪗇𪗇: Ná hit-chūn sī sím-m...h chiàn-cheng, sī tī Bēng-tiào ê-sī-chūn ah.

當時是處於明朝的時代。

That was during the Ming Dynasty era.

13:20 我: Bēng-tiào? Peh-pah kúi-tang chēng, kám kah Chu-hong-bó in ê chhau-ke biát-m̄ng ê sī-tāi kám-ū liân-káp?

明朝? 明朝的話800多年前, 那麼跟朱洪武時的抄家滅門的時代有連接嗎?

Ming Dynasty? That was more than 800 years ago. Is there any connection with the time of first emperor Zhu Hongwu who killed a lot of families?

13:31 𪗇𪗇: Lóng ū liân-káp là, èng-kai sī Bēng-tiào ê sī-dāi goán kai-sí cháu ê là.

有連接, 應該是明朝時是我們開始逃的。

Yes, there is a connection. It ought to have been the Ming Dynasty when we began to escape.

13:37 我: Ah h...t-chūn lín sī án-chóaⁿ tō lâi kàu... ? hit-chūn ê chūn iā-bō foat-tát, lín sī án-chóaⁿ tō lâi kàu chiah ê?

當時你們是怎樣, 當時船運並不發達, 你們是怎麼的逃到這裏來的?

At that time, how could you come here ... when ships were not that developed?

13:43 𪗇𪗇: He tō khò tì-hūi àh là. khò tì-hūi àh là. Beh án-chóaⁿ tō lâi kàu Tâi-ôan-tó, tō khò chúí-éng àh là, iá-koh khò goán ê ka-lāi sîn nā hōⁿ, sng goán ka-lāi-sîn ê l...t-liōng àh là.

那就得靠智慧了。靠智慧了。當時要到這個臺灣島時, 我們一是靠水流(的方向), 和靠我們的家內神(祖神)的力量了。

It needed wisdom at that time, how we came to Taiwan Islands, firstly we used the currents in the sea, and secondly used the power/protection of the ancestors.

14:00 𪗇𪗇: Goán Pēⁿ-pō-goân-chū-bîn A-l...t- chó' nā-hōⁿ, ū goân ka-tī ê ka-lāi-sîn, iā tō sī khò goán ê ka-lāi-sîn nā-hōⁿ, iā tō khò l̄ ê l...t-liōng, beh án-chóaⁿ ká goán chí-mōai lâi ín-khi-lâi lâi-kàu Tâi-ôan chiah là. Ah, beh án-chóaⁿ chhú-lí jip chit-ê Tâi-ôan-tó là, ah só-í goân pē-bú ē s...t-chong, ē bō-khi nā-hōⁿ, tō sī chit-ê goân-in nā hōⁿ.

我們平埔原住民阿立祖也就是我們的家內神, 也就是靠我們的家內神的力量, 讓它如何地將我們姐妹來引導到臺灣此地及如何地處理入此臺灣島, 而我們的父母會失蹤的原因也因此而來的。

Our Pingpu Aboriginal people's Alizou also is our ancestor, so we also depended on their power to lead our sisters toward Taiwan, and to arrive on this island. And the reason our parents disappeared is because of this time when they escaped to Taiwan.

14:24 𪗇𪗇: Goán tong-chhe-sī, goán pē-bú, lóng ká goán kat ê, che-lāng kat ch...t-ê kho' là, ah lóng pāk chò-hóe là, iā-m̄-kó goán pē-bú tō sī bō giau goán kat chòe-hóe là. Ah nā chò âng-î nā hōⁿ, it-tēng ài kat

ch...t-ê. Kho'la, chò âng-î là.

當初我們父母都在我們手上繫上一個紅圈且將我們都綁在一起，但我們父母並沒跟我們繫在一起。因此若要當尪姨（乩童）比得繫上這個紅圈。

At that time, our parents tied all our sisters together by the hands with red bands, but our parents didn't tie themselves together with us. So if you want to become a shaman you have to tie a red band around your hand.

Channelled language and glossolalia

During this fieldwork we were able to record some rare examples of “conversations between gods”. These conversations occurred between the two shamans, âng-î 尪姨 Chén and Huáng Róng-fēng 黃榮豐, from different local communities of the Tainan District of south-western Taiwan. In what follows we refer to Huáng Róng-fēng in shamanic trance as Hiàng-thâu 向頭 Huáng.

In trance, a Sirayan shaman “channels” or speaks as and for one of their seven gods Alizou.² While most of this channelled speech was expressed in Taiwanese – and never in Mandarin Chinese³ – there were special instances of speech in an “unknown language”. Video examples of these two shamans conversing in this



Figure 4. Shamans âng-î 尪姨 Chén and Hiàng-thâu 向頭 Huáng conversing through the words of their god Alizou.

2 Some believe that there are five Alizou sisters, but Alizou's message (via âng-î 尪姨 Chén) is that there are seven.

3 Although âng-î 尪姨 Chén said that if necessary, Alizou can convey her message in Chinese.

speech variety will be presented in the website (see below). While in English we might be tempted to refer to this as “speaking in tongues”, the latter generally refers to mystical speech inspired or directed by a group's god (typically Pentecostal or Charismatic Christian) that the speaker and their audience cannot actually understand. The linguistic term for this phenomenon is ‘glossolalia’. However, in contrast, the shamans take their inspired speech to be comprehensible and indeed form the vehicle for conversational exchange.

Following several of these exchanges between the shamans while in trance, Meili asked âng-î 尪姨 Chén “what did she say? / what are you [two] saying?” and âng-î 尪姨 Chén responded with an account of the exchange. Here is an excerpted example:

[Recording 201209-14.mp4, recorded at Hoan-á-chhân kong-kài 潘仔田公廨 in 2012 with âng-î 尪姨 Chén and Hiàng-thâu 向頭 Huáng]

07:26 我：Lín chim má kóng chia ê ôe mã mã-hoan lí kah góa hoan chit-ê kám-hó?

你們呢現在說的這些話，也麻煩你翻譯一下好嗎？

What you [plural] just said, could you please translate it?

07:41 尪姨：Hó, I chim má sī the kóng in Pak-thâu-iàng là...

好。她現在是說有關於他們北頭洋...

OK, now she is talking about the situation of Bei Tou Yang [another Sirayan community].

A more detailed theological or ethnographic account of the gods and the people's relationship with them is beyond the scope of our research and this paper. However, it is interesting that for âng-î 尪姨 Chén, it is very clear which of the seven female gods (all sisters) is the agent of the channelled speech, as she describes in the following interview segment:

[Recording 201209-14.mp4, recorded at Hoan-á-chhân kong-kài 潘仔田公廨 in 2012 with âng-î 尪姨 Chén and Hiàng-thâu 向頭 Huáng]

27:17 我：Lín long-chóng sī kúi-ê chí-mōai á? Làk-ê ò?

Lín sèⁿ Phoanⁿ ê?

你們總共是幾個姐妹？六個？你們姓潘的。

- In total how many sisters do you [your “Pan” family] have??
- 27:18 𡇗姨: Chhit-ê.
七個。
Seven.
- 27:21 我: Chhit-ê.
七個。
Seven?
- 27:22 𡇗姨: Hng.
對。
Yes?
- 27:24 我: Ah sī àn cháoⁿ sit-sàn ê? Lo chhun lín nng-ê lâi chiūⁿ-hōaⁿ.
那, 是怎麼失散的? 只剩你們兩個上岸。
How did you lose each other? Did only two of you land here?
- 27:27 𡇗姨: Bô là, chhit-ê lóng ū chiūⁿ-hōaⁿ là.
不是啦, 七個都有上岸。
No, all seven managed to get ashore here.
- 27:28 我: Lóng ū chiūⁿ-hōaⁿ oh, hòⁿ.
都有上岸。
All of them reached here?
- 27:32 𡇗姨: Chhit-ê lóng ū chiūⁿ-hōaⁿ là.
七個都有上岸。
All seven reached here.
- 27:33 我: Án-ne ê ì-sù sī kóng ū chhit-ê A-l...t-chó'lo?
那意思就是說有七個阿立祖了吧
So does that mean you have seven Alizou (gods)?
- 27:37 𡇗姨: Hèⁿ chhit-ê A-l...t-chó'là.
對, 七個阿立祖。
Yes, seven of them.
- 27:39 我: Lóng cha-bó-ê mā?
都是女的嗎?
Are you all female?
- 27:40 𡇗姨: Lóng cha-bó-ê.
都是女的。
(Yes) they are all female.
- 27:41 我: Iá-m̄-ko ū chit-ê bün-tê tō sī kóng, ū ê A-l...t-chó'nā-ē sī cha-po-ê? Chhiūⁿ-kóng hái...
可是, 有個問題也就是說, 有些阿立祖怎麼會是男的? 就像是 ...
But I still have one question: how can some Alizou be male? For example.
- 27:46 𡇗姨: Hiàng-thâu là. Hiàng-thâu he sī A-l...t-chó' chhú ê lá. M̄-sī..
是向頭。向頭那是阿立祖取的。不是...
Hiang-tau [male shamans]. Hiang-tau [male shamans] can be selected by Alizou, not.
- 27:56 向頭: Hái-chó'.
海祖。
Hai-zu [another term for a male shaman].
- 28:00 我: Hòⁿ, hèⁿ, tiòh-là hái-chó'.
哦, 對, 是海祖。
Oh, right, that's Hai-zu.
- 28:06 𡇗姨: He sī A-l...t-chó' chhú ê lá.
那是阿立祖取的。
They are selected by Alizou.
- 28:08 我: He m̄ sī in-ūi lín chí-mōai á ū chit-ê sī cha-po-ê nih?
那不是因為你們姐妹裏有個是男的?
Isn't it because one of the sisters is [actually] a male?
- 28:10 𡇗姨: Bô là, lóng cha-bó-ê là.
不是啦, 都是女的啦。
No, all are female.
- 28:16 我: Chhiáⁿ-m̄ng iá lí sī te kúi ê, a i sī te kúi ê ha?
請問, 那你是第幾的, 啊她是第幾的?
Then, can I ask which number are you? And which number is she [the male postman, who is in trance]?
- 28:17 𡇗姨: Góa oh?
我嗎?
Who, me?
- 28:18 我: Hèⁿ.
是。
Yes.
- 28:19 𡇗姨: Góa sī te saⁿ ê, i mā te saⁿ ê, i kah góa siang-seⁿ là.
我是老三, 她也是老三, 我們是雙胞胎。
I am the 3rd [sister] and she [male shaman] is also the 3rd [sister] – we are twins.
- 28:23 我: Án-ne oh!
是這樣哦!
Oh really!
- 28:25 𡇗姨: Hèⁿ là.
是的。
That's right.

Further examples of channelled language are the notes that the shaman writes for people who consult her – as âng-î 尪姨 Chén – for advice at the temple (see Figure 5). The inscriptions that she makes on these notes are akin to glossolalia in that neither she nor the recipient can read them. They do not use Chinese – or any other known – orthography, but ritualise the interaction between the consulter and Alizou. Later, the recipients burn them.



Figure 5. Showing âng-î 尪姨 Chén ‘writing’ a message from Alizou.

Getting the message out

Compared to Australia, where one of us (David) works with Indigenous languages, Taiwan has a relatively positive and healthy public representation of its Aboriginal communities and languages. Positive stories about Aboriginal communities appear regularly in broadsheet newspapers; the Taiwanese government supports a Council of Indigenous Peoples, reserves seats in the national parliament for Aboriginal representatives, and formally recognises 16 Aboriginal languages – the majority, although not all, of the self-identified Indigenous groups.⁴ Prominent among the non-recognised groups are the Pingpu (plains) peoples of the southwest. Like other settler-colonial societies, Taiwan’s mainstream finds it harder to acknowledge Indigenous people who were the victims of the earliest phases of colonisation. Today, the Pingpu peoples, including the Siraya communities of the Tainan region, have been

advocating for recognition.

As part of this advocacy at ground-level, the Hoan-á-chhân Sirayan community expressed to us their keenness to share their culture and activities with us and the “eyes and ears” that we can reach; as researcher/linguists, this typically means academic audiences. Early in the project’s discussions with the community we asked about sensitivities and wishes in regard to sharing and making public various documentation recordings we were making. As part of this ‘ethical protocol’ framework we also provided copies of all the video recordings to key community members (Czaykowska-Higgins 2009, Nathan & Fang 2009). Due to their desire for advocacy and recognition – amplified by a wish to be distinguished from neighbouring communities who have adopted Christianity – Chén Qiū-yàn 陳秋燕 and her family encouraged us to disseminate our documentation work. As a result of our most recent fieldwork with them in June 2019, we have agreed to collaboratively create a website which will include video of previously unrecorded cultural events, especially shamanic displays, in order to potentially reach a wider audience.⁵

Media such as video is a powerful tool for portraying a community and its cultural activities, especially for researchers who are otherwise over-enthused about reducing rich cultural expressions to anonymised written interpretations. Video and audio are especially valuable for community members themselves, who can directly recognise and relate to people (relatives) and places (their own localities), without mediation and processing by academics.

Conclusion

This particular Sirayan community’s cultural and communicative practices use languages ranging in form from written to spoken to chanted, and from esoteric and ephemeral writing to a suppressed majority language, and to the dominant national language. The closer the languages are to the hearts of the community, the more they have become ‘ghost languages’

⁴ See <https://www.apc.gov.tw> (accessed 29-06-2019).

⁵ The website is located at <http://www.speaktaiwanese.com/siraya/>

– experienced in increasingly limited contexts, endangered and rarely documented.

Portrayal of Aboriginal languages has played a political role in Taiwan. They can be invoked to either differentiate Taiwan from China in order to support efforts to guard independence, or to argue for ‘unification’ on the grounds that Taiwan has very deep cultural connections roots in China. (The latter argument is rejected by Adelaar since Aboriginal roots in what is now southern China go back long before there was any entity resembling China; Adelaar 2014).

However, the texts and discussion here have principally aimed to honour the community’s request to share some of their history with mainstream Taiwan society in its dominant language, while at the same time valorising Taiwanese by presenting speech written directly in the language in which it was spoken. Information in the form of video, conveying community accounts and shaman practices in a direct and compelling way, will be publicly available on the web.

We might feel surrounded by languages that loudly dominate, but many people’s identities and the nuances of their daily life are built on layers of fragile languages. When we asked âng-î 尪姨 Chén to name the most important challenge for their community, she replied: “language”. She expressed the hope that one day all the Alizou sisters could reunite, and through combining their various talents, gift their community its true language once again.

Acknowledgements

We are grateful to members of the two Sirayan communities (潘仔田大公廨管理委員會 and 北頭洋西拉雅社區) who so generously and openly shared their knowledge and activities with us, with special thanks to Chén Qiū-yàn 陳秋燕 and her sister Chén Qiū-é 陳秋娥 and to Mr Huáng Róng-fēng 黃榮豐.

References

- 1) Adelaar, Alexander. 2011. *Siraya: Retrieving the phonology, grammar and lexicon of a dormant Formosan language*. Berlin: de Gruyter Mouton.
- 2) Adelaar, Alexander. 2012. *Siraya: the revival of a dormant Formosan language*. [http://lingdy.aacore.jp/doc/indonesiacurrenttrend/alexander_adelaar_p.pdf, viewed 10/12/2012].
- 3) Adelaar, Alexander. 2014. *Speaking Siraya: Revitalizing a dormant language, rediscovering cultural identity*. Up Close podcast, University of Melbourne. [<https://upclose.unimelb.edu.au/episode/282-speaking-siraya-revitalizing-dormant-language-re-discovering-cultural-identity>, accessed 10/06/2019]
- 4) Adelaar, Alexander. nd. *The Austronesian languages of Taiwan, with special reference to Siraya*. Unpublished ms.
- 5) Czaykowska-Higgins, Ewa. 2009. Research models, community engagement, and linguistic fieldwork: Reflections on working within Canadian Indigenous communities. *Language Documentation & Conservation* 3(1): 15-50. [<http://hdl.handle.net/10125/4423>]
- 6) Fang, Meili & David Nathan. 2013. *Divining Siraya: Sources of language and authority in documentation and revitalisation*. In *Proceedings of the International Workshop on special genres in and around Indonesia*. ILCAA, Tokyo University of Foreign Studies. 49–58. [https://dnathan.com/eprints/fang_nathan__2013_siraya.pdf, viewed 30/6/2019]
- 7) Nathan, David & Meili Fang. 2009. *Language documentation and pedagogy for endangered languages: a mutual revitalisation*. In Peter Austin (ed.) *Language Documentation and Description*. Vol 6. London: SOAS. 132–160.

Participatory Planning and Design Approaches for Housing Delivery Interventions



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都市スラムの解消と適切な住宅の供給は多くの途上国が抱える深刻な問題だ。本稿ではフィリピンでの実践を例に、そうした住宅の設計や供給に住民やNGOが積極的に参加することの意義を検証した。

Abstract

Housing inadequacies remain a serious challenge to sustainable living, particularly in most developing countries. In addressing the acute housing problem, the government and non-government organizations in the Philippines implement various initiatives that are optimistically viewed as ways to spur community development and boost housing delivery systems aimed to align with the Sustainable Development Goals, particularly Goal 11. Housing programs which are designed employing participatory approaches enable grassroots involvement –a widely adopted design philosophy nowadays.

A mix of research methods were used to explore the participatory planning and design approaches of selected civil society organizations (CSOs), specifically on the role they played in housing delivery interventions used in forming communities for beneficiaries from informal settlement areas. The results showed a significant similarity in the manner the selected CSOs utilized participatory approaches. Although when it comes to the implementation in the various stages of housing, the results manifest differences according to the category of each CSO.

Keywords

participatory planning and design, housing delivery, civil society organization

Introduction

Participation is an evidence of sharing, inclusivity, and heightened attention to every stakeholder in a community. The appreciation for the use, significance, and relevance of participatory approaches, in general, may be easy to understand and grasp. People would normally want to be involved and partake in activities with a foreseen positive outcome, especially, if they themselves are affected by issues, such as those concerned with shelter provisions. While encouraging the end-users to express their wants and desires is somehow an easy task and could be easily achieved, extracting vital insights and processing the idea contributions is an interesting and challenging aspect in the study of participation in relation to a successfully designed and built environment.

Design and planning experts are trained to create

beautiful and functional environments, community organizers and developers know the process of building communities by heart, financial experts know a great deal on how to manage money matters, investment, and savings, historians can trace the roots and development of a community, and many other fields that contribute significant roles to the formation and evolution of a society. But there is also a need to recognize a segment of the society and communities who do not have the expertise, training, and the know-how, and yet are important stakeholders of communities. Building the capacities of this segment of the population could significantly increase the overall quality of life in societies.

Background

The shelter component has always been a core

element of communities and overtime has become a challenging issue, among governments and development experts, given the manifold growth in population across different parts of the world. According to statistics, the majority of the developing world's population will live in urban areas by 2020, increasing the number of urban residents by 2.5 billion. The development of communities and human settlements involves multiple disciplines or expertise, including architecture, planning, urban design, community development, and community organizing, among others. The experts from these different fields are expected to work cohesively in a concerted effort to provide for an adequate and suitable environment for various functions and sectors of the society.

The ideal traditional or conventional Housing delivery model usually involves planning and design engagement between the technical practitioners and the client/end-user. The process appears to produce higher effectiveness and efficiency when there is clear and direct communication between the technical practitioner and end-user, such as when a paying client commissions an architect to deliver architectural services. Ideally, the end-user preferences are solicited and identified at the onset of the project. Design decisions emerge to be successfully carried out when the physical house or building is constructed with continuous consultations between end-user, architect, and constructor.

However, the traditional or conventional Housing delivery model could only be afforded by end-users who have financial capabilities in the form of savings or have access to Housing loan facilities like the Government Service Insurance System, Social Security System, and PAG-IBIG. The different lending institutions, whether government-controlled or the private lenders, can only be accessed by wage earners in the formal labor market, while families in the low income group and earners in the informal labor market usually make up the number of households in informal settlement areas. The need for job opportunities and inadequate financial capabilities of people have been cited as major reasons for informal settler proliferation in the urban setting, and thus resulting to uncontrolled growth of slum areas.

The magnitude of informal settler families (ISFs) in

the Philippines have been estimated with a growth rate of 7.2% annually between 1991 and 2012 (Ballesteros, Ramos, Magtibay, 2017). This figure does not yet account the number of families displaced by calamities, those living in danger zones and with cases of land eviction, and the homeless. The continuously increasing population contributes to the immense Housing need which was projected by the National Economic Development Authority (NEDA) to reach 6.8 million units for the 2017-2022 period while the compounding Housing backlog has been estimated by the Housing and Urban Development Coordinating Council (HUDCC) to reach 12.50 Million units by 2030. Also, according to the 2018 Philippine Statistics Authority figures, the proportion of informal settlers in urban areas have already reached 7.53% in 2016. The numbers raise an alarm that more demand would be created in the next fifteen years or so if collective actions from both the government and private sector will still not suffice. The figures are targeted by the Philippine government to be balanced out by 2030 in a means to achieve SDG Goal 11 target 1, which is to ensure access to adequate, safe and affordable housing and basic services and upgrade slums. Corresponding questions arise as to what has already been achieved in addressing the housing problem as well as an inquiry about what else could be done and how to correct errors, if any, in the housing delivery processes which are already in place. These set of questions, simply put, requires the need for an assessment or evaluation in order to identify the good practices as well as the gaps and challenges.

The housing dilemma is a continuous problem which must be addressed using adequate and innovative measures. To cope with the phenomenal Housing backlog as reported in government statistics, technical experts in government agencies are tasked to profile the informal settler families as well as create appropriate design and planning solutions like the provision of Housing resettlement areas. The efforts of the government in terms of community organization as well as for Housing design, planning, and implementation processes in various resettlement sites have been critiqued over time due to reports that beneficiaries have tendencies of abandoning

Housing units given to them. It is theorized that the application of the ideal traditional or conventional Housing delivery model is narrowed when applied in the delivery for mass shelter intended for the marginalized sector of the society or informal settler families (ISFs) and the low income group, and thus, creating a gap in the ideal planning and design process.

The supposition is that a negligible amount of consultation between designer and end-user is one of the significant factors in the resulting attitude of end-user/beneficiaries towards the provided Housing. Most commonly observed outcome is that the end-user/beneficiaries return to their former informal settlement areas, mainly due to economic and practical reasons, which are inferred as having been overlooked during the planning and design stages. Further results are barren communities and poorly maintained Housing that the government had spent to design and build. Because of the apparent detachment of end-user/beneficiaries from the Housing provided by the government that participatory or bottom-up approaches are viewed as an alternative and innovative means for Housing delivery that can forge housing beneficiaries to build a strong connection with their new community, and develop an understanding and concern for the housing unit they may acquire. This approach has been championed by individuals and organizations pushing for a recognition to mainstream and integrate the process in the government-provided Housing. The bottom-up approach or also known as community-led or citizen-led organizing results to a people's plan.

Given the recognizable compounding problems in the country, efforts are made by ordinary citizens, non-government organizations (NGOs), and civil society organizations (CSOs) to make contributions to the government initiated Housing programs. With the different initiatives from the government and non-government organizations from different parts of the world to address the existing problems related to community development and Housing delivery, there is an optimistic view that these problems can be alleviated when there is adequate involvement from the grassroots. Various NGOs or CSOs devise programs and initiatives in assisting and empowering citizens, especially the

marginalized sector, in asserting their right to a decent Housing that they can call their home, in making dialogues with the concerned local government unit and various government agencies, in dealing with technical consultants and material suppliers, as well as the process that the end-users could adapt in order to eventually manage their community on their own.

Every human being has the right to a decent living environment. Housing was recognized as part of the right to an adequate standard of living in the 1948 Universal Declaration of Human Rights and in the 1966 International Covenant on Economic, Social and Cultural Rights (United Nations, 2009), and in September 2015, the United Nations also updated the Millenium Development Goals or MDGs (Agenda 21) and introduced the Sustainable Development Goals (Agenda 2030) to cope with current and future challenges aimed in addressing urbanization issues that include hunger, poverty, education, health, sustainable communities and inclusive human settlements, and climate change adaptations. Goal 11 specifically states: "Make cities and human settlements inclusive, safe, resilient, and sustainable."

In its simplest terms, a participatory approach is one in which everyone who has a stake in the intervention has a voice, either in person or by representation. The staff of the organization that will run it, members of the target population, community officials, interested citizens, and people from involved agencies, schools, and other institutions. Everyone's participation should be welcomed and respected, and the process should not be dominated by any individual or group, or by a single point of view (Participatory Approaches to Planning Community Interventions). UN-Habitat defines participation as the process in which affected stakeholders of an urban plan take part in its development. Through a participatory process they can be actively involved in the process of informing the planning process and influencing the decision-making, the plan, and its execution. This process can range from months to years, in which stakeholders periodically come together in a moderated setting with a clear objective to provide input for a project (UN-Habitat, 2016).

One of the generally viewed concern with the use of participatory approaches is the tedious challenge of having to involve all stakeholders in, ideally, rounds after rounds of discussions and workshops before arriving with a consensus and decisions being made. This general understanding of the participatory process has been one of the setbacks why participation is shortened in the planning and design process. The numerous positive views on the use of participatory process as a means in making successful communities and improved Housing delivery deem it necessary to present adequate empirical evidence. Concrete proof of the positive outcome in the use of participation could further its integration in the planning and design processes that can serve as a basis in creating refined participatory planning and design models.

Rationale

Proponents of participation primarily argue that it produces superior results, that is, in terms of built environment upgrading, participation improves the responsiveness, the 'fit', between the resulting environment and the needs and wants of the people it is supposed to serve (Frediani, et. al., 2011). In the Philippine setting, there are positive impressions, among development circles and the Housing end-users, about how participatory approaches tends to increase efficiency and success in Housing delivery concerning both the physical environment and improved social cohesion among community members. Given the indications that participatory approaches gain positive results and advantages, there seems to be a weak link in terms of documentation substantiation in terms of the actual proceedings of participatory activities happening on the ground. The observed gap suggests an opportunity to find and present empirical evidence to concretely capture the details on how participatory approaches are contextualized and carried out by civil society organizations (CSOs) in the Philippine locale. A clearer understanding of the CSOs role in paving the initiatives to mainstream participatory approaches across the different community development stages can inform the development of future participatory planning and design models.

Statement of the Problem

The study intends to look into the participatory planning and design approaches employed by selected civil society organizations (CSOs) and infer on the role they played in the performance of Housing delivery interventions.

The following are the sub problems:

- Determine the nature and extent of stakeholders' participation in the design and planning approaches applied by the CSOs in their Housing delivery programs.
- Identify/document good practices, similarities, differences, constraints, and gaps in the way participatory planning and design approaches are applied by CSOs
- Look into the assessment or evaluation of the performance of the Housing delivery interventions and how it reflects on the participatory planning and design approaches applied by the selected organizations.

Key Research Questions

1. What are the participatory planning and design approaches employed by selected civil society organizations (CSOs) in their Housing delivery programs?
2. What is the nature and extent of stakeholders' participation in the civil society Housing delivery interventions?
3. What are the good practices, similarities, differences, constraints, and gaps in the way CSOs apply participatory planning and design approaches in their Housing delivery programs?
4. What are the currently used international criteria and procedures for the assessment of participatory planning and design approaches for Housing delivery that can apply in the context of the selected CSOs?
5. How can the Housing delivery system of the subject CSOs be characterized in terms of performance related to the participatory process used, and how do these reflect in the designed and built Housing?

Goal of the Study

To contribute a clearer understanding of participatory approaches in planning and design towards an improved application in Housing delivery and community development.

Significance of the Study

Probing how the participatory approaches are utilized by the selected CSOs in rendering assistance for Housing delivery, a critical component in the development of communities, is an attempt to contribute insights in the continuous efforts of both the government and non-government organizations in identifying gaps and deficiencies, which processes and practices works, and what alternatives could be generated to create further mechanisms for an efficient Housing delivery system.

Scope and Limitations

The scope of the study delves on the role of civil society organizations (CSOs) in Housing delivery focusing on evidences in processes which used participation modes, and specifically, focused on the design and planning stages and how participatory approaches were integrated and utilized in creating design outputs.

The study addressed the cases of six (6) CSOs with operations in Luzon, Visayas, and Mindanao. The CSOs were initially determined through referral and is a sort of convenience sampling method in terms of selection, with the benefit of access to data and information. The Housing projects of the selected CSOs featured in this study focused only on particular samples with integrated participatory approaches and not all projects handled by the CSOs.

The data and information concerning the stakeholders were gathered from CSO officials such as executive directors, community organizers, technical team members, Housing beneficiaries from ISFs including those affected by typhoons/calamities and from identified danger zones, key Philippine shelter agencies' information bulletin and key official publications, websites and social media pages.

Methodology

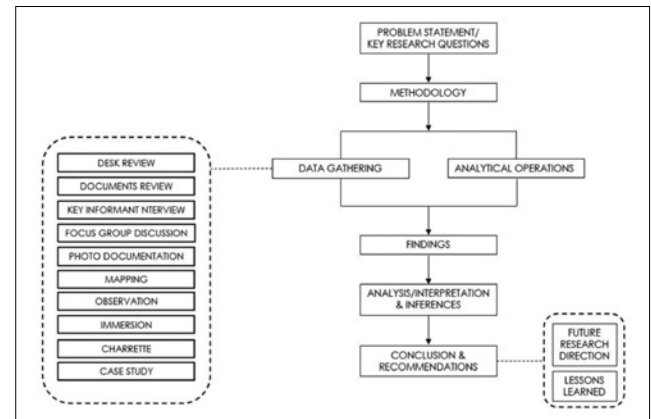


Fig. 1. Methodology of the study

The study used qualitative methods in gathering data, analytical operations, and in producing inferences. Data gathering strategies used in the conduct of the study include desk research, documents review, observations, key informant interviews (KII), mapping, survey, photo/voice/video documentation, immersion, focus group discussions (FGD), charrette, and case studies.

Table 1. Case Studies

HOA location	No. of respondents	Project stage
Iloilo	15	Occupied
Quezon City	8	Occupied
Tacloban	117	Construction
Valenzuela	12	Reblocking
Total	152	



Fig. 2. Charette workshop

Conceptual Framework

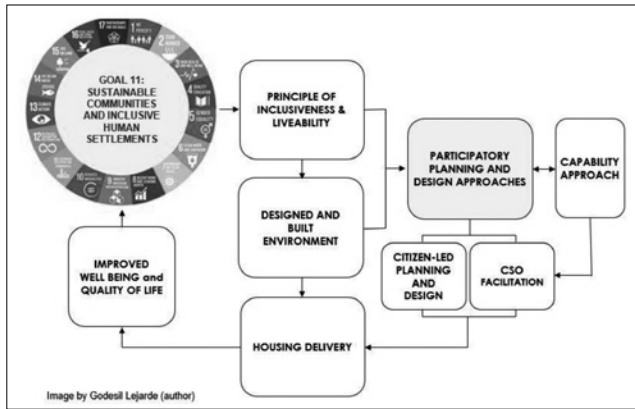


Fig. 3. Conceptual Framework

Arnstein's ladder of participation serves as the theoretical base for the study. The Sustainable Development Goals are viewed to be successfully achieved when the quality of life and well-being of people is enhanced by means of access to adequate, safe, and decent Housing. The initiatives and measures can dramatically improve the designed and built environment concerned with shelter provision when people or end-users work together with CSOs that facilitate improvement of their capacities in order to assert their access and rights to Housing and a community that supports development for the different stages of family life.

Results

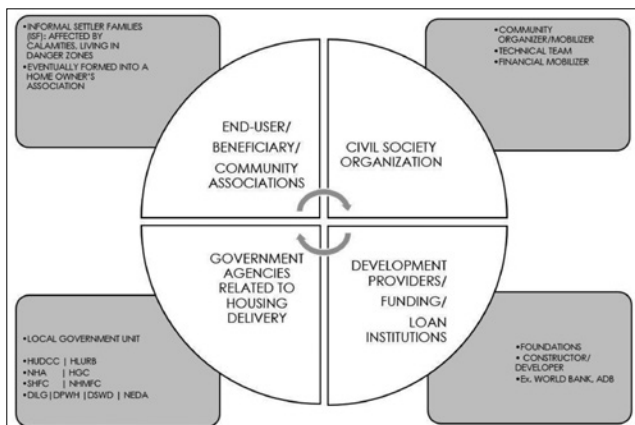


Fig. 4. Observed Stakeholders

The delivery of a Housing project and the organization of the community entails efforts from different roles that must work in harmony. The physical setting and the social cohesion of the observed communities takes years to organize and requires various expertise in order to address particular issues and concerns at each stage of the project development. Putting together people from different backgrounds to form a community is a challenge. Understanding individual rights, preferences, values, beliefs, and way of life usually affects the degree of community cohesion.







Using all the findings and results of the data gathered from all methodologies used in the study such as desk research, documents review, mapping, observation, photo and video documentation, key informant interviews, survey, focus group discussion, immersion, and charrette, there seems to be a prevailing inclination or trend showing that participatory process is popular and frequently applied among CSOs, but particularly in organizations with faith-based foundation.

Looking at the details of the process, there is evidence that participation can be found in different stages of the housing delivery system. However, it is more frequent in the design stage where members of the community are involved in brainstorming, discussions, arguments, workshops, and charrettes. Participation is also shown in planning, procurement, and construction, but not as frequent in design.

As shown in the analytic diagram of the participatory process, the resultant Housing is a product of the inputs from community members during their participation in community workshops followed by the work of the members of the technical team in formalizing the plans. The expertise of the technical team is still required to check compliance with building codes and regulations as well as technical documentation. After the technical team preparations of the technical drawings, another round of workshop-consultation is conducted to validate the outputs with the community members. This process of validation is a key stage in the success of the participatory process.

Based on the various data collected and particularly as taken from observations made, the participatory

Table 2. Featured civil society organizations

No.	Name of Civil Society Organization	Office/s	Type of Organization	Date Established
1	 Center for Community Assistance and Development, Inc. (CCAD)	Quezon City	Non-governmental Organization; community-based	1989
2	 Community Organizers Multiversity (COM)	Quezon City/ Davao City	Non-governmental Organization; community-based	1994
3	 Foundation for Development Alternatives, Inc. (FDA)	Quezon City	Non-governmental Organization; faith-based foundation	1985
4	 Foundation for the Development of the Urban Poor (FDUP)	Quezon City	Non-governmental Organization; community-oriented; faith-based foundation	1988
5	 Philippine Alliance (PA)	Quezon City	Community organization; faith-based foundation	1998
6	 Urban Poor Associates (UPA)	Quezon City/ Tacloban City	Non-governmental Organization; faith-based foundation	1992

Source: Desk review of CSO background and interviews of CSO officials; © Godesil Lejarde


Beneficiaries' Aspirations	Resultant or Observed Housing	
<p>Tangible</p> <ul style="list-style-type: none"> Physical house attributes <ul style="list-style-type: none"> Requirements for specific space Provision for second floor Addition of balcony or terrace space Laundry and clothes drying space Garden space Quality of materials <p>Intangible</p> <ul style="list-style-type: none"> Socio-cultural Safety Security Economic 	<p>Tangible</p> <ul style="list-style-type: none"> Physical house attributes <ul style="list-style-type: none"> Generally provided second floor allocated balcony provided laundry space Quality materials and workmanship <p>Intangible</p> <ul style="list-style-type: none"> Better relationship with neighbours Children play together in common areas Neighbours share food Neighbours look after the security of the community Holds regular social events 	

Fig. 5. Beneficiaries' Aspirations and Resultant Housing

process applied by the selected CSOs has to some extent achieved satisfactory performance and success. This inference does not however rule out the presence of deficiencies encountered. In fact, CSOs in particular, are likely known in the monitoring and assessment/evaluation field as those with more advanced practices and techniques in determining what works and what doesn't in terms of their process, as well being the leading advocates of the principle of participation.

Conclusion and Learnings

Participatory processes are evident in various stages of involvement by the CSOs. The role of the CSOs can be enhanced to further strengthen their contributions in developing communities and assisting the marginalized sector of the society to attain their goals of owning their house.

Looking into participation is like looking at a mix of ingredients which may work if taken individually, but might have more compounding constructive results

when taken all together. Given that this study is only an initial attempt (1% of the tip of the iceberg) in understanding the use of the participatory approaches in the Philippine context, it will contribute to the larger global setting by emphasizing the importance of participation and eventually support the integration of the concept of livability across different cultures.

The study provides clearer understanding on how the engagement of end-users in the development process results to the building of capacities especially in informed decision-making on the housing development across project stakeholders. This understanding also highlights the vital role of civil society organizations for the efficient development of communities towards housing delivery and that a successful housing project is a collaboration and cooperation of all stakeholders-- the community, civil society, funding agencies, private and government institutions. They all together contribute to the development of a better built environment and cohesive society.












No.	Name of Civil Society Organization (CSO)	Location Office Address	Year Established	Area of Operation	Nature of CSO	Affiliations	Staff Size	Participation Mode	Average Number of Participants	Sample Project	No. of Beneficiaries (units)	Assessed Level of Participation	Other Stage of Participation	Sample photo of participation	Sample of Designed and Built Housing
1	Philippine Alliance (PA)	Quezon City	1998		Community organization	SIDA	70	DESIGN; CONSTN	50	CLIFF RVHQA	172	MODERATE	procurement ; community management		
2	Urban Poor Associates (UPA)	Quezon City, Tacloban City	1992	NCR, Tacloban	Non-governmental Organization	Christian Aid, COOP, MISERERE, SELAVIP, MERCY, RELIEF	25	DESIGN; CONSTN	30	POPE FRANCIS VILLAGE	566	MODERATE	procurement ; community management		
3	Foundation for the Development of Urban Poor (FDUP)	Quezon City	1988	NCR, Cebu	Non-governmental Organization		10	DESIGN; CONSTN		ERNEST VILLE	212	MODERATE (based from interview)	community management		
4	Foundation for Development Alternatives, Inc. (FDA)	Quezon City	1985	NCR	Non-governmental Organization	PHILSSA PHILHPRR A		DESIGN		MARANGAL VILLAGE	720	MODERATE (photodocuments only)	community management		
5	Community Organizers Multiversity (COM)	Quezon City, Davao City	1994	NCR, Davao	Non-governmental Organization		24	DESIGN		APDAMF	2867	MODERATE (photodocuments only)	community management		
6	Center for Community Assistance and Development, Inc. (CCAD)	Quezon City	1989	Region 1-5	Non-governmental Organization		9	land acquisition		SAMACA	69	FAIR (based from interview)	community management		

Fig. 6. Summary Analytic Diagram

An important realization put forth as a result of the study is that there is no single template in the development of communities and in the delivery of housing projects. The varied culture that end-users bring with them to their new community has an effect even in the immediate and mundane steps of the development process. It follows that there is no one size, fits all method or strategy to address the issues and challenges of communities for housing delivery.

Why participation should be encouraged and further enhanced or integrated in the development process has been accepted by development practitioners for many decades now as also proven by this study. This has been widely acknowledged especially in the enhancement and streamlining of monitoring and evaluation processes. Altogether, it is realized from the study that participatory planning and design models need to be further developed using more empirical evidence by improving documentation strategies and activities.

References

- 1) Arnstein, Sherry R. (1969). A Ladder Of Citizen Participation. *Journal of the American Institute of Planners*, 35:4, 216-224.
- 2) Ballesteros, M., Ramos, T. & Magtibay, J. (2017). An Assessment of the Community Mortgage Program Implementation Strategy. Discussion Paper Series no. 2017-01. Philippine Institute for Development Studies.
- 3) Ballesteros, M., Ramos, T. & Magtibay, J. (2015). An Assessment of the Community Mortgage Programs of the Social Housing Finance Corporation. Discussion Paper Series no. 2015-41. Philippine Institute for Development Studies.
- 4) Cousins, J. B., Whitmore, E., & Shulha, L. (2013). Arguments for a common set of principles for collaborative inquiry in evaluation. *American Journal of Evaluation*, 34(1), 7-22.
- 5) Department of Foreign and International Development (2010). "How to Work with Civil Society," <http://www.dfid.gov.uk/aboutdfid/dfidwork/workwithcs/cs-howto-work-definition.asp> [Accessed 9 February 2010].
- 6) Fisher, F. (2001). Building Bridges Between Citizens and Local Governments to Work More Effectively Together: Through Participatory Planning. Local Government and Public Service Reform Initiative of the Open Society Institute.
- 7) Frediani, A., French, M. A., Ferrera, I. (2011). Change by design: building communities through participatory design. New Zealand: Urban Cultures Press.
- 8) Gabriella TONK & Imola ANTAL & Ágnes DAVID-KACSÓ & Júlia ADORJÁNI & Olimpiu Bela LACATUS. (2017). "The role of participatory approach in reducing social vulnerability: the example of a social intervention aiming at the re-housing of families belonging to a marginalized roma community," *Romanian Journal of Economics*, Institute of National Economy, vol. 44(1(53)), pages 95-106, June.
- 9) Heylen, K. (2006). Liveability in social housing: Three case-studies in Flanders. Paper presented at the ENHR conference "Housing in an expanding Europe: Theory, policy, participation and implementation", Malaysia (2006) 2-5 July 2006, Ljubljana, Slovenia.
- 10) Jackson, Edward T. and Kassam, Yusuf (eds.). (1998). Knowledge shared: Participatory Evaluation in Development Cooperation. Connecticut: Kumarian Press.
- 11) Kindon, S. L., & Pain, R. (2007). Participatory action research approaches and methods: Connecting people, participation and place (Vol. 22). Psychology Press.
- 12) Lane, Marcus B. (2005) 'Public Participation in Planning: an intellectual history', *Australian Geographer*, 36:3, 283-299. DOI: 1080/00049180500325694.
- 13) Lefevre, P., Kolsteren, P., De Waele, M. P., Byekwaso, F., & Beghin, I. (1999). Comprehensive Participatory Planning Evaluation.
- 14) Ley, Astrid, Fokdal, Josefine, & Herle, Peter (eds.). (2016). How Urban Poor Networks are Re-scaling the Housing Process in Thailand, the Philippines, and South Africa in From Local Action to Global Networks: Housing the Urban Poor.
- 15) Patel, S., Burra, S., & d'Cruz, C. (2001). Slum/Shack Dwellers International (SDI)-foundations to treetops. *Environment and Urbanization*, 13(2), 45-59.
- 16) Rayos, J. (2010). Community-driven disaster intervention: Experiences of the Homeless People's Federation Philippines, Incorporated (HPFPI). Water and Sanitation London, IIED, 58.
- 17) Skinner, R. J., & Rodell, M. J. (Eds.). (1983), *People, Poverty and Shelter: problems of self-help housing in the Third World*. London: Methuen.
- 18) TAO-Pilipinas. (2018). Architects in the Margins. Quezon City: TAO-Pilipinas, Inc.
- 19) Teodoro, J. I. E. (2009). Community-driven land tenure strategies: the experiences of the Homeless People's Federation of the Philippines. *Environment and Urbanization*, 21(2), 415-441.
- 20) Throsby, D. (2005). Cultural heritage as financial asset in strategies for urban development and poverty alleviation. Paper for International Conference for Integrating Urban Knowledge & Practice, Gothenburg, Sweden.
- 21) United Nations Department of Economic and Social Affairs (UN DESA). (2018). The Sustainable Development Goals Report 2018. UN, New York, <https://doi.org/10.18356/7d014b41-en>.
- 22) United Nations Evaluation Group (UNEG). (2016). Norms and Standards for Evaluation. New York: UNEG.
- 23) United Nations Human Settlements Programme (UN-Habitat). (2016). Urban Planning and Design Labs: tools for integrated and participatory urban planning. Quito: Habitat III Version 1.0.
- 24) White, H., Menon, R. and Waddington, H. (2018). Community-driven development: does it build social cohesion or infrastructure? A mixed-method evidence synthesis, 3ie Working Paper 30. New Delhi: International Initiative for Impact Evaluation (3ie)

- 25) Yu, S., & Karaos, A. M. (2004). Establishing the role of communities in governance: the experience of the Homeless People's Federation Philippines. *Environment and Urbanization*, 16(1), 107-120. Kasai, K. and Yashiro, T. (2001) Elicitation of subjective probabilities for risk analysis. *Journal of Asian Architecture and Building Engineering*, 1 (1), 77-82.

Profit Utilization of Income Generating Projects in the Philippines



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公立大学の経営はどこの国でも楽ではなく、公的助成だけでは足りないので各種の利益創出プロジェクト(IGP)を手がけている。だが多くのIGPは運営が不適切で、必ずしも高等教育の質の向上に貢献してはいない。

Abstract

Income Generating Projects (IGPs) are regarded as means in compensating inadequate government subsidies in public higher education institutions (HEIs). This study aimed to determine the contribution of IGPs to the development of public HEIs. A survey was conducted to the persons with first-hand information about the IGP profit utilization. Weighted mean, frequency count, and percentage were utilized to analyze and interpret the data gathered from 37 accountants and 7 IGP directors from seven public HEIs in Panay Island, Philippines. The result of the study revealed that IGP profit was never used for instruction, research and extension functions of the HEIs. The respondents disclosed that expenses for these functions of HEIs were sourced out from government subsidy and income from tuition and other school fees. On the other hand, there was a minimal spending of IGP profit to administration services function of the HEIs. Therefore, IGPs do not have significant financial contribution to public HEIs development.

Keywords

higher educational institutions, income generating projects, profit utilization, Panay Island

Introduction

Universities worldwide are considered as drivers of economic and suitable national development. Hence, education is the most powerful and vital success factor for humans and the society (Johnstone, 2005). Presently, the problem of underfunding in public universities is not surprising because government revenues have not grown in proportion with its expenditures (Aina, 2002; Kiamba, 2004). As a result, Income Generating Projects (IGPs) exist in public higher education institutions in the whole world. Public Higher Educational Institutions (HEIs) are empowered to put up an IGP to compensate the inadequate government subsidy.

In the Philippines, total State Universities and Colleges (SUCs) receipts increased by an average of 8% per year from Php21.8 billion to Php42.5 billion in 2012 and 2013, respectively. Unfortunately, the increase in

total SUCs income was not in proportion to inflation and increase in student population combined (Manasan and Revilla, 2015). Hence, SUCs are authorized out of their income from tuition fees to allocate a budget for the establishment of a project or income generating activity or investment outlay in the form of commercial structures that would generate additional revenue. For its initial operations, the budget allocation that is based on the project proposal approved by the board would be utilized. After that, the succeeding expenses would be sourced out from collections of the said IGP as soon as it becomes viable (CMO No. 20, Series of 2011).

In Panay Island, there are 7 SUCs, namely: Aklan State University (ASU), Capiz State University (CAPSU), Iloilo State College of Fisheries (ISCOF), Iloilo Science and Technology University (ISAT-U), Northern Iloilo Polytechnic State College (NIPSC),

University of Antique (UA), and West Visayas State University (WVSU). The IGPs of these SUCs are poultry, piggery, fishpond, bakery, canteen, water refilling station, hotel, commercial spaces for rent and others.

Several researches have been conducted and published locally and internationally regarding IGPs. These researches focused on the factors on the success or failure of IGPs, management, best practices, analysis on the financial performance, among others. However, as of this writing no research has been conducted yet involving persons with first-hand information such as accountants and IGP directors on the utilization of IGP profit. This paper, then, examined if IGPs really contributed financially to the development of SUCs in the areas of instruction, research, extension and administration services.

Conceptual Framework

The declining government subsidy in public higher education is a dilemma in the whole world. To understand this trend in SUCs as organization that obtains resources for its survival, a theory that explains how an organization responds to changes in resources are essential and appropriate.

Resource Dependence Theory (RDT) presents helpful conceptual tools in understanding organizational responses to financial challenges (Hillman, et al. 2009). This theory argues that no organization is fully self-sufficient. Organization survival is, therefore, dependent on the extent that they can obtain and keep resources. Furthermore, when resources are insufficient, organizational stability is at risk. Organizational vulnerability occurs. Under this scenario, organizational efforts are focused on regaining stability and removing the source of the threat to the organization (Gebreyes, nd). From the resource dependence perspective, universities can handle resource dependence difficulties arising from government subsidy by venturing into income generating activities. With this, the dependence of SUCs on the government subsidy could be minimized and financial independence might be attained.

The underfunding of Kenyan Public Universities is a result of the expansion of the higher education due to the

continuous increase in the demand for the university education without adding the corresponding available resources. This has affected the universities' quality of education which has declined significantly due to inadequate teaching materials and the like (Kiamba, 2004).

One of the main challenges for European universities is financial sustainability. The European Universities Diversifying Income Streams (EUDIS) project recognizes income diversification as a tool in generating additional income that contributes to the financial aspect of the institution. One of the major findings of the EUA research revealed that how the quality of public higher education was affected due to the reduced government subsidy. The increase in student population and reduced government funding are the major concern for maintaining the quality of teachings. Hence, income diversification which includes venturing into IGP is indeed one way to attain financial sustainability (Estermann & Pruvot, 2011).

According to Ahmad and Ting (2015), teaching staff participation is vital for the success of IGPs in Malaysian public universities. Faculty members are encouraged to give their feedback and comments to the management according to the present scenario that they are experiencing. Likewise, the management is encouraging them to be involved in various IGPs since funding is not enough to defray the expenses of the university and for its future development.

The research conducted by Murage and Onyuma (2015) presented the Egerton University income generating units' (IGUs) financial performance from 2003 to 2012. The financial performance was gauged through the secondary data from financial statements using the financial ratio analyses. Thereafter, these ratios were used to analyze the IGUs' financial performance for the past ten years. Moreover, the study of Urquillo (2015) dealt with measuring the performance of IGPs in Surigao del Sur State University. Financial statement and profitability ratio analyses and return on investment were among the tools used in measuring the IGPs economic performance.

Miranda et al. (2015) identified the correlation between the extent of implementation and the IGPs'

profile about length of operations, the number of IGP staff and average volume of clients. Based on the results of the study, the profitability IGP, like any other business organization, does not depend on how long it exists but on its operational performance. Moreover, the extent of implementation does not rely on the number of IGP staff but on the quality of IGP staff possessing necessary knowledge and skills in managing the IGP.

Under Republic Act No. 8292, it is within the power of the governing board to enter into a business venture for the efficient utilization of assets of the college or university. The profit to be derived from that endeavour could be used for the development of the SUC. Moreover, the law states that any income collected by the SUC either from tuition and other fees or income from other sources like IGP shall be retained by the college or university. The income may be disbursed through the approval of the board for instruction, research, extension, administration or other programs of the SUC.

On this study, the researcher endeavored to discover the compliance of SUCs to RA 8292 as regards venturing into IGPs. He wanted to know if profit has been utilized to instruction, research, extension and administration related expenses as prescribed in the above mentioned law and CHED Memorandum No. 20, Series of 2011. And this profit utilization contributed to the development of the SUC.

Methodology

The researcher identified 37 accountants and 7 IGP directors across 7 SUCs in Panay Island as respondents of this study. The researcher chose them as respondents since they have direct knowledge of the subject matter of the study particularly in the IGP profit utilization.

A researcher-made questionnaire was formulated based on CMO No. 20, Series of 2011 and it underwent face validity, content validity, and dry run to secure the reliability of the questionnaire. Thereafter, it was utilized as the primary tool in data gathering. To verify further the respondents' answers and gather additional information, an interview was conducted. Moreover, document analysis on the IGP Reports and manuals were undertaken.

This study used weighted mean, frequency count and percentage in the analysis of the data gathered. The researcher computed the weighted average using the formula given:

$$\mu = \sum fx / n$$

Where:

- μ = weighted average
- \sum = summation notation
- f = number of responses under each scale
- x = weight assigned to each scale
- n = number of respondents

Furthermore, the percentage was computed by dividing the frequency of each factor to the number of respondents and multiplied by 100.

$$P = f / nx100$$

Where:

- P = Percentage
- f = frequency
- n = number of respondents
- 100 = constant number used as multiplier

Results and Discussion

Table 1. Profile of the Respondents

Variables	Category	F	%
Name of SUC	A	5	11%
	B	7	16%
	C	6	14%
	D	7	16%
	E	7	16%
	F	5	11%
	G	7	16%
Type of Respondents	Accountants	37	84%
	IGP Directors	7	16%
Educational Attainment	Doctorate Degree	6	14%
	Masters Degree	10	23%
	Baccalaureate Degree	28	64%
Length of Service in the SUC/Number of Years in Service as IGP Director	0 to 5 years	25	57%
	6 to 10 years	7	16%
	11 to 15 years	5	11%
	16 years and above	7	16%

There were forty-four (95.65%) respondents answered and returned the questionnaire out of the total population of 46. Of the 6 doctorate degree holders or 14% of the total respondents, only one is an accountant and the remaining five are all IGP directors. During the interview, the researcher discovered that though majority of the IGP directors are doctorate degree holders, none of them graduated in a business course. Generally speaking, it implies that doing business it is not within the core competence of the IGP directors. This might be one of the contributory factors why IGPs did not thrive in SUCs.

Furthermore, 57% of the respondents were with 5 years or less length of service in the SUC. It is worth mentioning that 6 out of 7 IGP directors belong to this category. The researcher discovered that there is no continuity on the person managing the IGP since IGP director position is just a designation. Likewise, IGP director's attention is divided in his teaching function and designation. These present scenarios could be attributed to the low performance of IGPs in the SUCs.

Government facilities would only last approximately up to six (6) years then reach its critical level. This is due to the assumption that only 40% of government institutions are effective workers (Susada, J. et. al, 2017). Hence, expenses related to maintenance and/or procurement of instruction related facilities are necessary.

As depicted in Table 2, there was minimal utilization of profit for instruction related expenses as shown in some indicators and none at all in other indicators. Interview with the accountant revealed that expenses on instruction function of the SUCs were financed by the government subsidy and income from tuition and other school fees. They said that IGP profit is very small. Hence, it could afford to augment the expenses on instruction. Thus, if the administration got its share from IGP profit it was spent most of the time in the administration services and portion of the profit reverted back to the IGP itself for additional capitalization.

Table 2. IGP Profit Utilization to Instruction

Indicators	WM	Description
1 Repair of ceiling and/or repainting of classrooms	1.84	Less
2 Construction of new classroom building	1.48	Never
3 Renovation and/or construction of faculty room	1.55	Never
4 Purchase of classrooms chairs and tables	1.68	Never
5 Purchase of projector and/or smart TV and IT equipment	1.75	Never
6 Purchase of laboratory facilities and/or sports equipment	1.80	Less
7 Purchase or reproduction of instructional supplies and materials	1.89	Less
8 Funded student seminar workshops and/or industry tour.	1.61	Never
9 Funded faculty seminars, trainings, workshops and/or scholarship grants	1.70	Never
Mean	1.70	Never

Nonetheless, though IGP has no significant contribution to instruction in terms of money but some IGPs have instructional value. The IGPs are used for further learning of students. For instance, review center, hotels and canteens where students undergo their OJT.

In general, the IGP profit was never utilized in the research services function of the SUC as illustrated in Table 3. The same also to instruction, research services office sourced its expenses from the government subsidy and from income from tuition and other fees collected from students. Interview with the College/University accountants disclosed that in practice the profit of the IGP revolved within the IGP itself. Only one SUC is practicing the transfer of IGP profit from IGP bank account to income bank account. Likewise, out of the College/University IGP profit share none went to research or if there is, it is difficult to identify. The reason for this was once the College/University gets its share, it is not programmed on how much would be spent to research services office and other functions of the institution but rather it was lumped to the income from tuition of the University.

Table 3. IGP Profit Utilization to Research Services

Indicators	WM	Description
1 Funded research trainings and seminars attended by the faculty	1.68	Never
2 School research activities like research in-house review and the like	1.61	Never
3 Funded research presentations and publications.	1.59	Never
4 Funded research-based project proposal	1.68	Never
5 Improvement or renovation of research office	1.48	Never
6 Funded the purchase of air conditioning unit, office chair, table and cabinet for Research Services Office	1.48	Never
7 Funded the purchase of IT equipment like desktop and laptop computer including internet connectivity for Research Services Office	1.59	Never
Mean	1.59	Never

With an average of 1.59, this means that majority of the respondents answered that the IGP profit was never used to extension services. Just like the instruction and research services, the expenses of extension services office were funded by government subsidy through government subsidy and income collected from tuition and other school fees. For instance, faculty training and seminars related to extension and/or purchase of office supplies and materials were sourced out from MOOE and/or income collected from tuition fees. Hence, the IGP main objective of augmenting the expenses on mandated functions (e.g. instruction, research and extension) of the SUCs was not truly achieved.

Table 4. IGP Profit Utilization to Extension Services

Indicators	WM	Description
1 Funded faculty extension trainings and seminars	1.64	Never
2 Funded improvement/renovation of extension services office	1.50	Never
3 Purchase of extension services office supplies and materials	1.57	Never
4 Funded skills training and livelihood programs to the community	1.73	Never
5 Funded the payment of salary of job order employee at the extension services office	1.64	Never
6 Funded the purchase of air conditioning unit, office chair, table and cabinet	1.55	Never
7 Funded the purchase of IT equipment like desktop computer and laptop including internet connectivity for extension services office	1.52	Never
Mean	1.59	Never

Table 5 revealed with the average of 1.94, the IGP profit was utilized to administration services to a less extent. This is the only one among the four functions of the SUC where the respondents agreed that IGP has a financial contribution. This could be noticed in the table presented above where IGP profit was used in the payment of water, electricity and communication bills, purchase of administration office supplies and materials, purchase office equipment, furniture and fixtures and payment of travel expenses of the administrative staff. However, no expenses were incurred charged to IGP profit on the repair of administration offices and motor vehicles as well as purchase of motor vehicles gasoline, oil and lubricants. The reason was that renovation of administration offices usually requires substantial amount in which IGP profit could not afford. Likewise, gasoline, oil and lubricants expenses were generally paid out of government subsidy and income from tuition fees of the SUC instead of getting it from the IGP profit.

Table 5. IGP Profit Utilization to Administration Services

Indicators	WM	Description
1 Water, electricity and communication bills paid out of IGP profit	2.32	Less
2 Purchase of administration office supplies and materials	2.14	Less
3 Funded repair of administration offices	1.73	Never
4 Purchase of office equipment (aircon, photocopier, etc)	1.91	Less
5 Purchase of office furniture and fixtures (office tables, chairs, cabinet, etc.)	1.93	Less
6 Funded travel expenses of administrative staff	1.84	Less
7 Funded the repair of motor vehicles and/or purchase of gasoline, oil and lubricants	1.73	Never
Mean	1.94	Less

As depicted in Table 6, twenty-one (21) or 47.72% of the respondents said that there is an existing monitoring scheme in place. From those respondents who said that there is an existing monitoring policy, their response showed that there is a moderate extent of monitoring the contribution of IGP to instruction and administration services and less extent of implementation of monitoring policy towards research and extension services. The implication of this is that there is a room for improvement in the reporting of IGP profit utilization. Based on the existing scenario, there is no standardized report submitted by the accountant to the SUC President and Board of Trustees/Regents showing the utilization of the College/University share on the IGP profit.

Table 6. Existence of Monitoring Policy and Extent of Implementation in Determining the Contribution of IGPs

Indicators	F/WM	%/Description
Existence of monitoring scheme in determining the contribution of IGPs to instruction, research, extension and administration services	21	47.72%
Extent of implementation of monitoring scheme:		
Instruction	2.57	Moderate
Research	2.38	Less
Extension	2.38	Less
Administration	2.90	Moderate

Table 7. Existence of Policy on Retention and Discontinuance of IGP

Indicators	F/WM	%/Description
Existence of policy as basis for decision making in retaining or discontinuing an IGP	37	84.09%
Degree of Implementation	2.68	Moderate

There were thirty-seven (37) or eighty-four point nine percent (84.09%) of the respondents said that there is an existing policy as basis for decision making in retaining or discontinuing a particular IGP. However, it was observed by the researcher that the answer of the respondents were not consistent with others even if they are connected in one institution. When the researcher asked for a copy of the IGP manual from the accountants during the interview, it was found out that majority of them do not have a copy. A copy of the IGP manual was with the IGP directors. Hence, this might be the reason why some are not aware of the policy and the degree of implementation is moderate.

In addition, most of the SUC IGP Manual was crafted many years ago and was not yet revised. There are SUCs undergoing revisions of its manual. Upon verification of the existing policy in the IGP manual, this provision in one of the IGP manuals was found and I quote, “*The continuance or stoppage of an income-generating project will be based on its income performance for the last three years. In addition, the instructional value of a*

project will also be considered in the evaluation. If a project is not viable for the last three (3) years and without instructional value to the University then it will be stopped”.

Though there is an existing policy found in the IGP manual but there are no tools or template reports to measure the viability of the projects within three years. With this, the researcher assessment is that there is a need for suggested template reports should be made for adoption of all SUCs.

Table 8 showed that in 2017, the IGP profit was 17.405 million only or just 0.98% of the combined MOOE and capital outlays government subsidy, internally generated funds and IGP profit of the 7 SUCs in Panay Island. Generally speaking, based on the data presented the SUC operations will not be affected financially when the IGP will be discontinued. Likewise, this implies that the SUC is very dependent on the government subsidy and tuition and other fees collected from students.

Table 8. Percentage of IGP Net Income to the Total Budget of the SUCs in Fiscal Year 2017 (in thousands)

FY 2017	Amount	%
Government Subsidy (MOOE & Capital Outlays)	857,548	48.12%
Internally Generated Funds (Income collected from tuition and other school fees)	907,236	50.90%
IGP Net Income	17,405	0.98%
Total	1,782,189	100%

Source: DBM website and SUC Accountants

Note: Maintenance and Other Operating Expenses (MOOE) is net of scholarships, Tulong Dunong and other government financial assistance to students. Capital Outlays budget pertains to property, plant and equipment projects of SUCs funded by the Philippine government.

The annual government funding depends on the SUC absorptive capacity and its project implementation readiness. The budget utilization rate (BUR) in the previous year serves as one of the bases in the granting of the budget for the next fiscal year. Once, the BUR is higher or 100%, the SUC will get a higher budget the next year provided that proposed projects are shovel ready upon evaluation of DBM. This is one of the reasons why in

SUCs, income generating projects did not flourish in SUCs at Panay Island. The SUC top management as well as finance personnel focused on the utilization of funding from government so that they could get higher budget the following year. Likewise, it has also another income stream from tuition and other fees that could subsidize its expenses. Hence, SUCs are too complacent since they could survive without the IGP.

Conclusion

The researcher concluded that IGPs do not have significant financial contribution to the development of SUCs in Panay Island. Republic Act 8292 which mandated SUCs to venture into IGP in order to augment its expenses on instruction, research, extension and administration services was not achieved since IGPs are generating a very minimal profit. This, in effect, do not have significant impact on the finances of the SUCs. Since the IGP concept is a mandate of the government, SUCs have to comply with it.

Hence, IGPs are oftentimes managed by an educator, and not by a businessperson. This led to the deficiency in proper financial accounting and reporting as well as insufficient policies and guidelines in the implementation of IGPs. In the end, the resources of the SUCs are spread into various IGPs having insignificant amount of profit and loss for some, instead of having a minimal number of IGPs but each is earning a huge amount of profit. Lastly, when the costs outweigh the benefits of operating an IGP, it is best to rent it out to private businesses. With these, public HEIs will be assured of its profit.

References

- Ahmad, A. R., Soon, N. K., & Ting, N. P. (2015). Income Generation Activities among Academic Staffs at Malaysian Public Universities. *International Education Studies*, 8(6), 294-203.
- Aina, O. I. (2002). Alternative Modes of Financing Higher Education in Nigeria and the Implications for University Governance. *Africa Development: A Quarterly Journal of CODESRIA*, 27(1-2), 236-262.
- Commission on Higher Education (2011). *CHED Memorandum Order No. 20, Series of 2011*. Retrieved March 1, 2018, from <https://ched.gov.ph/cmo-20-s-2011/>
- Commission on Higher Education (1997). *Republic Act No. 8292*

- otherwise known as *Higher Education Modernization Act of 1997*. Retrieved March 1, 2018, from <https://ched.gov.ph/wp-content/uploads/2017/05/Republic-Act-No.-8292-The-Higher-Education-Modernization-Act-of-1997.pdf>
- Estermann, T & Pruvot, E. (2011). *Financially sustaining universities II: European universities diversifying income streams*. Belgium: European University Association
- Gebreyes, F.M. (n.d.). *Revenue generation strategies in subsaharan African universities* (Doctoral dissertation, Center for Higher Education Policy Studies (CHEPS), School of Management and Governance, University of Twente)
- Hillman, A. J., Withers, M. C., & Collins, B. J. (2009). Resource dependence theory: A review. *Journal of management*, 35(6), 1404-1427.
- Johnstone, O. B. (2005). The costs of higher education: Worldwide issues and trends for the 1990s. *Pennsylvania state university ses-quicentennial celebration*.
- Kiamba, C. (2004). Privately sponsored students and other income-generating activities at the University of Nairobi. *Journal of Higher Education in Africa/Revue de l'enseignement supérieur en Afrique*, 53-73.
- Manasan, R. G. A., Revilla, M., & Laarni, D. (2015). *Assessment of Sources and Utilization of Funding of State Universities and Colleges* (No. DP 2015-50). Philippine Institute for Development Studies.
- Miranda, A. T., Tenedero, L. E., Fiel-Miranda, J. L., & Celestino, E. R. (2016). The income-generating projects of a government academic institution in the Philippines: The case of the University of Eastern Philippines. *Asia Pacific Journal of Innovation and Entrepreneurship*, 10(1), 5-16.
- Murage, S. M., & Onyuma, S. O. (2015). Analysis of Financial Performance of Income Generating Activities in Public Higher Learning Institutions: Experience from Egerton University, Kenya. *Analysis*, 6(7).
- Susada J., Mahilum M., & Regalado D. (2017). Simulation Model for the Maintenance of Government and Private Facilities in the Philippine Context. *Recoletos Multidisciplinary Research Journal*, 3(1). Retrieved from <https://rmrj.usjr.edu.ph/rmrj/index.php/RMRJ/article/view/26>
- Urquia, L. (2015). Financial performance of income generating projects of Surigao del Sur State University. *Australian Journal of Basic and Applied Sciences*, 9(32), 227-232

Countering Radicalism and Intolerance from School: Lessons Learned in Indonesia



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異なる思想や民族への不寛容と若い世代の急進化は世界中で深刻な問題だが、多民族国家のインドネシアでは教育を通じて、不寛容と急進化を防ぐ取り組みを続けてきた。本稿ではその成果を検証し、課題を検討した。

Abstract

Intolerance and radicalism have been one of the most discussed issues of the time in every nation-state around the world. In Southeast Asia, Indonesia is one of the countries that prevented actively intolerance and radicalism. According to Dunn, Sing, and Sumaktoyo (2013), intolerance in this study is defined as a negative orientation or a refusal to people from a different group of social and political rights and perspective. Intolerance indicated by violence or *hate-speeches* of people on different groups. While radicalism is a religious interpretation both actively and passively that tries to replace the political system of the country (Nadzir et al., 2017). This phenomenon also occurs in educational institutions. Therefore, it is crucial to prevent the intolerant and radical behaviours through school from the beginning. Unfortunately, there are many obstacles to make the school as a media to counter intolerance and radicalism optimally. This paper focuses on the problems in the education system in Indonesia and its role in countering intolerance and radicalism. This study utilized *mix-match* methods, both quantitative and qualitative approaches. We found that school as media for countering the intolerance and radicalism issues still not effectively worked out because the school has not become a meeting space that allows mutual learning and recognition, and encouraging the critical thinking of the students which needs more attention of the government.

Keywords

education, peace, school, intolerance, radicalism

Introduction

There are several studies about intolerance that are using a quantitative method in Indonesia, including the study in education area (PPIM, 2018). Nevertheless, those There are several studies about intolerance that are using a quantitative method in Indonesia, including the survey in the education area (PPIM, 2018). Nevertheless, those studies have not been sufficient to gain a deeper understanding of intolerance, especially in education perspective. Education is a crucial part of building a tolerant and peaceful situation. At school, students can meet other students who have different economic, ethnics, and religion. However, until now, the education system in Indonesia, especially in school, still

has problems to strengthen tolerance in Indonesia. Previous studies found that school is one of the places where intolerance and radicalism are disseminated (Wahid Institute, 2014; Infid, 2016).

A large number of state schools needs to have a role which can counter intolerance and radicalism. The formal education institutions are numerous and have a tiered structure. The counter of intolerance and radicalism can strengthen through the educational area. School can be a space for actualizing tolerance issue and “meeting spaces” for children with various groups.

The issue of radicalism and intolerance has become a concern of the Indonesian government. Intolerance, radicalism, and extremism are considered as the causes of a

large number of violent incidents in Indonesia (Kompas.com, 2018). The National Agency for Combating Terrorism (BNPT) said that the right ideology lessons for children through educational institutions need to be strengthened as an essential part to suppress radical and intolerant behaviour.

The increasing of intolerance and radicalism phenomenon occurs because the school as the main education locus failed to build a complete education system that grows humanization for students. Currently, school is a place where students focus a lot on academic orientation. Therefore, they have limited time to meet other different groups.

Methods

This study utilize both quantitative and qualitative methods. In 2018, a survey was conducted across nine provinces in Indonesia. There were Aceh, DKI Jakarta, DI Yogyakarta, West Java, Central Java, East Java, Banten, North Sumatera, and South Sulawesi. Multistage random sampling was utilized in order to obtain a sample of a person aged 17-64 years or married. A total of 1800 respondents were interviewed face to face.

This study added the variable of geo-cultural in sampling method to obtain the respondent as considering the effects of culture on tolerance behaviour. Horga and Brie (2013) said that the differences in culture related to language, ethnicity, and religion increase the tendency of being xenophobia and intolerance on a person. The qualitative data is collected in Jakarta as the case studies to gain a better understanding of the school system as a basis to counter the intolerance and radicalism issues.

Profile of respondents

Appendix 1 shows the characteristics of the respondent in nine provinces. The majority of respondent around 32-46 years old. Of out four respondent, three respondents are married (77.8%), and more than 50% of respondents were living in urban areas. When looking at the level of education (Figure 1), the majority of the respondent were tertiary school (SMA) and below. There is 36.8% respondent who have finished senior

high school (SMA), around 23% has finished the elementary school, 20.6% has finished the secondary school (SMP), and only 1.1% who has completed the master degree or doctoral.

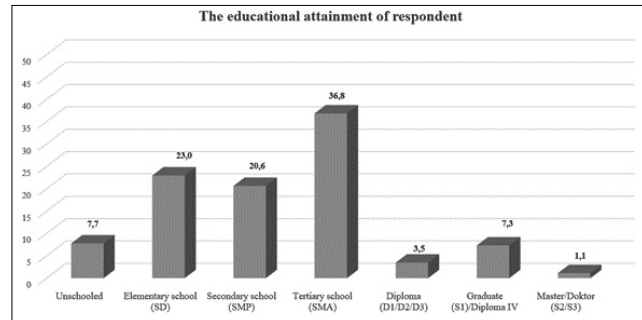


Figure 1. The educational attainment of respondent

Furthermore, around 60.2% of respondents are working, and 29.6% of respondents are a housewife. Of the total respondents who are working, there is 46.6% who are working as an employee or labour. Besides education and job, the expenditure also became an indicator of social-economic characteristics. Data also shows that there are 53.7% of respondents have expense around Rp<1.000.000 - 3.000.000, and 12.2% is Rp<3.000.000 - 5.000.000 are 12,2%.

Regarding religion in Indonesia, due to the randomness, the data is quite similar to the census data (Figure 2). In this study, data shows that the majority of respondents are Moslem (87.5%). In 2010 Indonesia population census data, around 87.2% are Moslem.

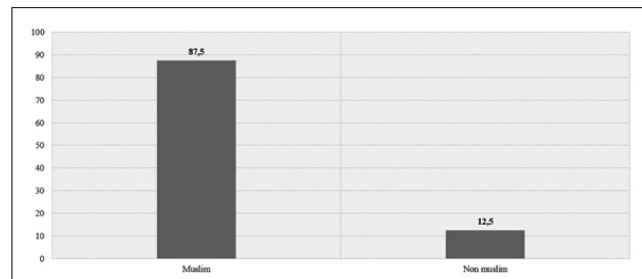


Figure 2. The proportion of respondents based on religion in nine provinces.

The rationality of respondents on misinformation

In this study, we also asked the respondent about the kind of information and hoax that might be contradictory with established issues. Three of them are (1) the resurgence of PKI (Indonesian Communist Party); (2) state intentionally designed the ulama's criminalization; and (3) the existence of million Chinese labour in Indonesia. Besides, we asked if the respondents familiar with the information, we also asked whether they believed the information or not.

Figure 3 shows the proportion of respondent whether the respondents know and believe in the information about the resurgence of PKI (Indonesian Communist Party). As we can see, the prevalence of respondent who knows about the resurgence of PKI (Indonesian Communist Party) increases with the level of education. It means that the more educated a person, the propensity to know the information rising. It is also shown that respondents with the highest-level education (Master/Doktor (S2/S3)) are the category that very familiar with the information about the resurgence of PKI. However, not all the respondent who knows the information related to the resurgence of PKI believe in this information.

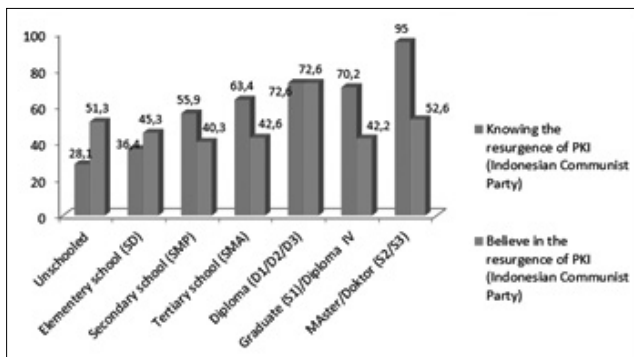


Figure 3. The proportion of respondents who know and believe in the information about the resurgence of PKI (Indonesian Communist Party).

Interestingly, of the total respondent with the highest level of education who familiar with this information, more than 50% believe this information. Moreover, the highest proportion of respondents who believe this

information is respondent with Diploma level (72.6%). Although the percentage of the unschooled category who are familiar with the resurgence of PKI has the lowest, however, amount to 51.3% believes in this information.

Furthermore, Figure 4 represents the second information about the state intentionally designed the ulama's criminalization. Similar to the resurgence of PKI, respondents who are familiar with this information increase with the level of education. Of the total 80% of respondents who are knowing the information about state intentionally designed the ulama's criminalization, more than 50% who believes this information. It can be assumed that respondent with higher education does not means they were more critical than others respondent.

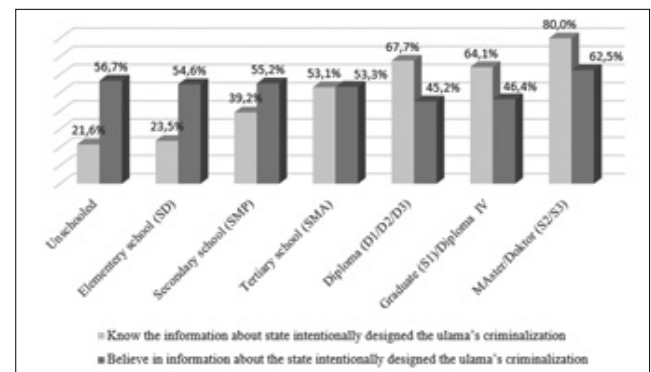


Figure 4. The proportion of respondents who know and believe in the information about state intentionally designed the ulama's criminalization

The last information that we include in this paper is about the existence of millions of Chinese labour in Indonesia (Figure 5). Like the previous two information, around 50% of respondents familiar with the information about the existence of millions of Chinese labour in Indonesia. Of the whole category, level of education from diploma until master or doctoral is the category which has around 50% and above familiar with this information. For those who know this information from each level of education, more than 50% of respondent believe in the information.

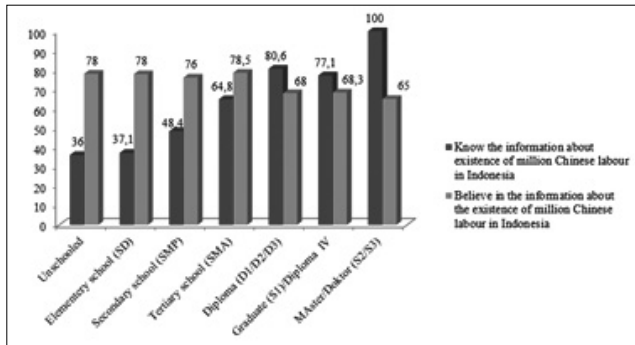


Figure 5. The proportion of respondents who are knowing and believe in the information about the existence of million. Chinese labor in Indonesia

Intolerance behaviour

In this study, there were several indicators to measure the intolerance of a person both in the social domain and political domain. Two indicators show in this paper (Figure 6 and Figure 7). First, the respondent's perception regarding the place of residence that only had neighbourhoods from the same religion. Although the percentage not as high as the percentage of respondent who does not agree and very not agree, however, the percentage of respondents who agree and very agree to prefer live in an area with the same religion is quite high. The proportion of respondents with lower education (Unschooled-Tertiary school) who prefer to live in an area with only the same religion is higher than those respondents who have finished diploma and master or doctoral.

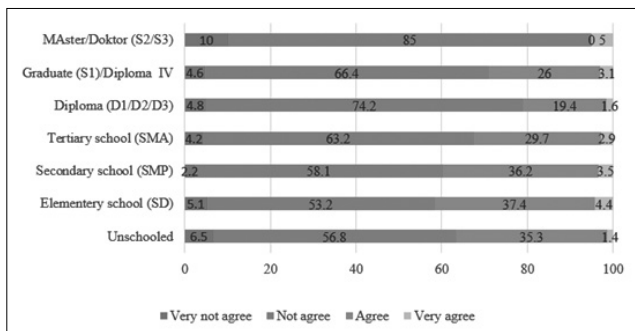


Figure 6. The percentage of respondent based on level education and the preferences place of residence that was only have neighborhood from the same religion

Furthermore, Figure 7 represents the respondent's whether they support the prohibition of other religious activities in their private home or not. As we can see, it is also showing that respondents with lower education tend to support the prohibition of other religion than respondents with higher education. Overall, around 10% and more for each category agree and very agree to prohibit the other religious activities in their homes. Respondents who have the highest education do not mean they will be more tolerant of permitting people from different religion to do their religious activities in their home.

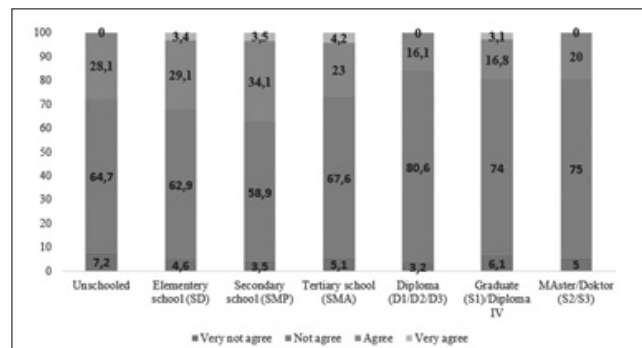


Figure 7. The percentage of respondent based on level education and supporting the prohibition of other religious activities in their home

Intolerance and radicalism phenomena in School

One of the sad tragedies happened in Bali in 2002. The tragedy caused 200 deaths. The spotlight was addressed to the madrasa because the attackers of the bomb were alumni of Islamic schools in Solo, namely Madrasah Al Mukmin Ngruki, Solo led by Abu Bakar Baasyir. The madrasa thought to teach the violence-based fundamentalism doctrine (Woodward, 2015).

Several researchers have raised suspicion of the role of educational institutions as a space for infiltration of intolerance and radicalism. School considers being a space where intolerance and radicalism internalized. Educational institutions are one of the highlights being the arena where penetration of radicalism and intolerance share to the students. Nevertheless, Muslim education such as madrasa is also one of the fields for protecting radicalization that occurs because it provides

a robust religious understanding that allows students to participate in dynamic spiritual and cultural celebrations. On the contrary, secular universities become the locus where the process of re-Islamization and development of Islamic understanding are rigidly strengthened (Woodward, et al., 2010).

Abdallah stated that even though manual books are the primary reference for students and their shape understanding of Islam. Previous studies regarding intolerance in the education space, among others: growing exclusiveness in education institutions that are associated with the prevalence of intolerant curriculum (Freedom House, 2006), exclusivist teachers (PPIM 2008, LAKIP, 2011), the Islamist movement in schools (Ciciek 2008; Maarif Institute, 2011), and Islamic schools recognized by radical movements from the outside (Rahima, 2011).

Teachers who become intolerant

Research conducted by PPIM UIN Jakarta (2018) showed that teachers in Indonesia from kindergarten to high school/Madrasa have intolerant opinions and high radical opinion. The survey showed 21% of teachers did not agree that neighbours of different faiths could hold religious events at their homes. 56% of teachers disagree that Non-Muslims may establish religious-based schools around them. Then, if there is an opportunity 34% of teachers wish to sign the petition rejecting the establishment of non-Islamic religious schools around their homes. 33% of teachers agreed to encourage others to join in the fight to realize an Islamic state. 29% of teachers agreed to participate in jihad in the southern Philippines, Syria or Iraq in fighting for the establishment of an Islamic state.

This condition is an alarm for education in Indonesia because the teacher's views or perspectives on differences are very influential for student growth and development. In Indonesia, teachers still play an important role in building the perspective of their students. It is very dangerous if narrow-minded teachers teach children.

In this context, the political events that took place in Jakarta were very influential on the teacher's

perspective in addressing the political world. The Jakarta community has been split when Governor Basuki Cahaya Purnama issued a controversial statement and resulted in volumes of demonstrations. This situation caused an endless debate among teachers. The debate in cyberspace also spread to the real world, and the school community also involved from the debate contestation.

The teacher informants interviewed, must be left from the *WhatsApp* group (WAG) because they were not comfortable with some teachers who quickly spread the hoax news related to the election. On the other hand, excessive suspicion of ethnic Chinese or the suggestion not to choose leaders of different religions with false news is massif disseminated. The warming up of Jakarta's political situation had been vibrated into classrooms. What happened at the school must be a concern of the government. Moreover, teachers are central to the implementation of education in Indonesia.

Lack of meeting space in-school programs

One aspect that makes schools not play an optimal role in building tolerance is the lack of meeting space that allows various groups, ethnic, religious, and social classes to meet each other. The lack of this meeting caused children not to get enough space to apply a tolerant attitude to the differences that exist in society. This space is possible to construct in public schools that consist of various groups. These different groups should meet at school and then form strong, cross-cultural communal ties. The practice of working together can pursue in the meeting rooms initiated by the school, both through classroom learning, extracurricular activities and daily activities. Unfortunately, not all schools realize the importance of public spaces for meeting children.

Moreover, one aspect that burdens children to be free to meet is a heavy burden to complete various academic tasks. Also, school culture is not designed to make children intensely recognize a variety of students at school. Even though public schools have diverse inputs, the level of the encounter between children that allows them to know each other is very limited.

The three public schools that we interviewed in Jakarta did not have specific programs that allowed children to get to know each other intensively. These schools do not have cross-cultural programs that enable them to work together or collaborate with other schools that are different from their school setting. The initiation of this cultural encounter has not been carried out by state schools.

Not only is the meeting space in schools, in this case, but the meeting space outside the school is also very limited, especially for young people. Infid (2018) for example provides recommendations that the central and regional governments can more actively facilitate space so that people can meet well with public facilities such as squares, village halls, art studios, and others. This space can be an arena for cross-faith and cultural youth encounters that enable them to collaborate intensively (Infid, 2018).

Strategy For Countering Intolerance And Radicalism in School

Strengthening critical thinking

One of the main programs of efforts to fight intolerance and radicalism in schools is to provide adequate understanding for students about the differences that exist in the world in the form of perspectives on religion, ethnicity, and social class. Students must open their views to understand better the various ideologies and perspectives that exist in society. That differences of opinion, religion, politics, social class are commonplace in community. A diverse society is a primary necessity for Indonesia, which consists of a variety of ethnic groups. The Indonesian ideology based on Pancasila is the locus where all religious beliefs are respected, and unity is also the goal of the establishment of the Indonesian nation.

On the other hand, the most important thing is to strengthen the tradition of critical thinking among children. Critical thinking is a tool for them to be able to sort the various information they receive. They are not easy to influenced by incitement from various groups who want to divide the Indonesian people. Moreover, education has a huge responsibility to create spaces that allow students to get used to critical thinking and also

be able to dialogue with various groups. It is undoubtedly a heavy homework for education in Indonesia.

The tradition of critical thinking can only do through progressive education, which can only be done by progressive teachers. Teachers who, according to Freire (1993), give love to students, are consistent between behaviour and words, tolerant, have clarity of political views, and can live together with different parties. They are here to invite students to think critically, build curiosity continuously, and take risks.

Quoting Maxine Greene, Giroux (1997) suggests that educators need to create public space in the classroom as a precondition for educating children in an active democratic process. In that space, children express themselves, are free to express their opinions, and learn to articulate different ideas.

Teachers (Stacie Molnar-Main, 2017) are expected to commit to bringing students to discuss various issues that exist in the community so that they can handle a variety of complex problems, consider them with multiple perspectives, and offer different solutions.

The tradition of critical thinking is only possible through liberating education. Children need to be accustomed to expressing all kinds of aspirations or anxieties in the classroom. The argument must be delivered logically and systematically and also built by substantial evidence. It is to familiarize that we are not just from talking without presenting the significant evidence.

Creating programs that encounter Students with Diverse Group

The most crucial program that must-have in the school is a space where children and teachers can meet with various groups. Some schools, especially religious-based private schools, although very limited in number, for example, already have programs that make students have to meet other schools with different religious backgrounds or social classes. They immediately faced these different groups in various events collaborated. One example, Al Izhar Islamic High School, Jakarta and Kanisius College High School have activities together with “Ragamuda” which aims to build national unity and unity among young people. They

have several programs, including joint discussion activities, visiting various religious houses, or other cross-cultural activities. These activities allow these children to meet each other, greet each other, and work together. They know each other and discuss and plan various possible collaborations.

Interviews with students at Al Izhar Islamic High School who were involved in this activity stated that meeting with various groups made their perspective on different groups change. Various information he had previously received about other religious groups could be directly confirmed to his friends. He got new understanding and methods from various activities carried out in the two schools. He became aware of how other students whose religion and ethnicity differed. The program carried out by these two schools needs to be done intensively and structured.

From the information conveyed by the informants, not all schools can establish cooperation such as the activities carried out by the two schools. Not all schools welcome plans for activities that seek to bring these cultures together. There is still a thick wall made by the school that invited to join in this activity. The stuttering of associating with different groups is undoubtedly dangerous for Indonesia's diverse future even though it is evident that schools are public institutions that are responsible for building interactions with various groups.

Conclusion

Issues of intolerance and radicalism also occur in educational institutions that require serious attention from the government. Therefore, one of the solution to prevent the increase of intolerance and radicalism in Indonesia is the schools through the better education system. Unfortunately, there are many obstacles to make the school as a media to counter intolerance and radicalism effectively. We found that school as media for countering the intolerance and radicalism issues is still not be worked out effectively because the school has not become a meeting space that allows mutual learning and recognition for students. Also, the school have not been encouraging the critical thinking of the students. In terms of countering the intolerance and radicalism

issues at school, the government needs various programs that allow children to have more meeting times with different groups through various activities. Besides that, teachers must have training to improve their abilities and skills to make a dialogue space and critical thinking for the students.

References

- 1) Bashori. (2015). *Menimbang Eksistensi Pendidikan Terpadu*. Dalam Ahmad Baedowi (2015). *Potret Pendidikan Kita*. Jakarta: Pustaka Alvabeta.
- 2) Dunn, K., & Singh, S. P. (2014). *Pluralistic Conditioning: Social Tolerance and Effective Democracy*. *Democratization*, 21 (1): 1-28.
- 3) Freire, Paulo. (1993). *Pedagogy of the Oppressed*. New York: Continuum.
- 4) Giroux, Henry. (1997). *Pedagogy and the Politics of Hope Theory, Culture, and Schooling: A Critical Reader*. USA: Westview Press.
- 5) Hasan, Noorhaidi. (2009). *Islamizing Formal Education: Integrated Islamic School and a New Trend in Formal Education Institution in Indonesia*. Singapore: S. Rajaratnam School of International Studies.
- 6) Hasan, Noorhaidi. (2012). *Education, Young Islamists and Integrated Islamic Schools in Indonesia*. *STUDIA ISLAMIKA*, Indonesian Journal for Islamic Studies, Vol. 19, no. 1, 2012. Source: <http://journal.uinjkt.ac.id/index.php/studia-islamika/article/viewFile/370/764>
- 7) Horga, I. and Brie, Mircea (2013) Can be Hungarian-Ukrainian-Romanian Moldovan an Inclusive Frontier of Europe? Romania. University of Oradea
- 8) Infid. (2018). *Rekomendasi Anak Muda untuk Pembuat Kebijakan*. Source: <https://www.infid.org/wp-content/uploads/2018/05/Rekomendasi-HRC-Youth-Fellowship-IDN.pdf>. Diakses 29 July 2019 pukul 20.30 wib.
- 9) Infid. (2016). *Studi Tentang Toleransi dan Radikalisme Di Indonesia Pembelajaran dari 4 Daerah Tasikmalaya, Jogjakarta, Bojonegoro dan Kupang*. Jakarta: Infid.
- 10) Kompas.com. (2019). *Intoleransi dan Ekstremisme Dinilai Jadi Sumber Kekerasan di RI*. Source: <https://nasional.kompas.com/read/2018/11/23/17072461/intoleransi-dan-ekstremisme-dinilai-jadi-sumber-kekerasan-di-ri>.
- 11) MAARIF Institute for Culture and Humanity, Pusat Pengkajian Islam dan Masyarakat (PPIM) Universitas Islam Negeri (UIN) Syarif Hidayatullah Jakarta & United Nations Development Programme (UNDP) Indonesia. 2017. *Menjaga Benteng Kebinekaan di Sekolah: Studi Kebijakan OSIS di Kota Padang, Kab. Cirebon, Kab. Sukabumi, Kota Surakarta, Kota Denpasar, dan Kota Tomohon*. Jakarta: MAARIF Institute for Culture and Humanity.
- 12) MAARIF Institute for Culture and Humanity. 2018. *Menolak Radikalisme dalam Pendidikan, Mencipta Sekolah Inklusif*.

- Kebinekaan*. Policy Brief Series Vol. 1 2018.
- 13) Molnar-Main, Stacie. (2017). *Deliberation in the Classroom: Fostering Critical Thinking, Community, and Citizenship in School*. USA: The Kettering Foundation.
 - 14) Nadzir, I., Permana, S.P., Satriani, S., Usman, Wahyudi. (2017). *Strategi Antisipasi Radikalisme dan Intoleransi Agama di Indonesia*. Kertas Kebijakan Kedeputan IPSK-LIPI.
 - 15) Sumaktoyo, N.G. (2017). Penelitian empiris mengenai toleransi di Indonesia: Menuju praktik terbaik. Dalam I. Ali-Fauzi, Z.A. Bagir & I. Rafsadi Eds.), *Kebebasan, toleransi, dan terorisme: Riset dan kebijakan agama di Indonesia* (159-192). Jakarta: PSAD Yayasan Paramadina.
 - 16) Tan, Charlene. (2014). *Educative Tradition and Islamic Schools in Indonesia*. *Journal of Arabic and Islamic Studies*. 14 (2014): 47-62., Nanyang Technological University, Singapore.
 - 17) Wahid Institute & Lembaga Survei Indonesia. (2016). *National Survey Report: A Measure of The Extent of Socio-Religious Intolerance and Radicalism Within Muslim Society In Indonesia*. Jakarta: Wahid Institute & LSI.
 - 18) Wajidi, Farid. (2011). *Kaum Muda dan Pluralisme Kewargaan*. Dalam Bagir, Zainal Abidin, Dwipayana AA GN Ari, Rahay Mustaghiroh, Sutanto Trisno, & Farid Wajidi Pluralisme Kewargaa: Arah Baru Politik Keragaman di Indonesia (2011). Bandung: Penerbit Mizan.
 - 19) Woodward, Kathleen E. (2015). *Indonesian Schools: Shaping the Future of Islam and Democracy in a Democratic Muslim Country*. *Journal of International Education and Leadership* Volume 5 Issue 1 Spring 2015 <http://www.jielusa.org/>.
 - 20) Woodward, Mark; Rohmaniyah, Inayah; Amin, Ali & Diana Coleman. (2010). *Muslim Education, Celebrating Islam and Having Fun As Counter-Radicalization Strategies in Indonesia*. Source: Perspectives on Terrorism, Vol. 4, No. 4 (October 2010), pp. 28-50 Published by: Terrorism Research Institute Stable URL: <https://www.jstor.org/stable/26298470> Accessed: 30-08-2018 03:40 UTC.
 - 21) Zuhdi, M. (2006). *Modernization of Indonesian Islamic schools' curricula, 1945–2003*. *International Journal of Inclusive Education*, 10(4-5) 415–427. doi:10.1080/13603110500430765

Appendix 1

The characteristics of respondents in nine provinces

Variables	(%)	Variables	(%)
Age groups		Education attainment	
17 - 21	10.2	Unschooling	7.7
22 - 26	9.2	Elementary school (SD)	23.0
27 - 31	10.4	Secondary school (SMP)	20.6
32 - 36	13.1	Tertiary school (SMA)	36.8
37 - 41	14.1	Diploma (D1/D2/D3)	3.5
42 - 46	12.5	Graduate (S1)/Diploma IV	7.3
47 - 51	10.5	Master/PhD (S2/S3)	1.1
52 - 56	8.4		
57 - 61	6.3	Main activity	
62 - 64	5.3	Working	60.2
		Domestic work	29.6
Sex		School	4.4
Male	51.9	Others	5.8
Female	48.1		
		Expenditure (in the last month)	
Marital status		Rp<1.000.000	29.6
Unmarried	16.5	Rp<1.000.000 - 3.000.000	53.7
Married	77.8	Rp<3.000.000 - 5.000.000	12.2
Divorced	1.6	Rp<5.000.000 - 7.000.000	2.6
Widowed	4.1	Rp<7.000.000 - 9.000.000	0.6
		Rp<9.000.000 - above	1.2
n = 1800			

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Hearty Thanks to All

The 5th Asia Future Conference was hosted by Atsumi International Foundation, co-hosted by University of the Philippines Los Baños, College of Public Affairs and Development, and was supported by many institutions, foundations and companies listed below. We would also like to express our heartfelt gratitude to some 300 participants, to those who supported the holding of the conference, and to volunteers who cooperated in many ways, for the success of our Conference.

ご協力、ありがとうございました

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アジアの未来へー私の提案 5

Toward the Future of Asia: My Proposal Vol.5

2020年9月5日 初刷発行

編 者 今西淳子

発行者 伊藤秀樹

発行所 株式会社ジャパントイムズ出版

〒102-0082 東京都千代田区一番町2-2

一番町第二TGビル2F

電話 050-3646-9500（出版営業部）

ウェブサイト <https://bookclub.japantimes.co.jp/>

印刷所 株式会社シナノパブリッシングプレス

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ISBN978-4-7890-1772-5