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

Catherine Roween C. Almaden, PhD[1], Ma. Kresna N. Mansueto[2]
1 Associate Professor, Xavier University – Ateneo de Cagayan
2 Assistant Professor, Xavier University – Ateneo de Cagayan

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 polices 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.

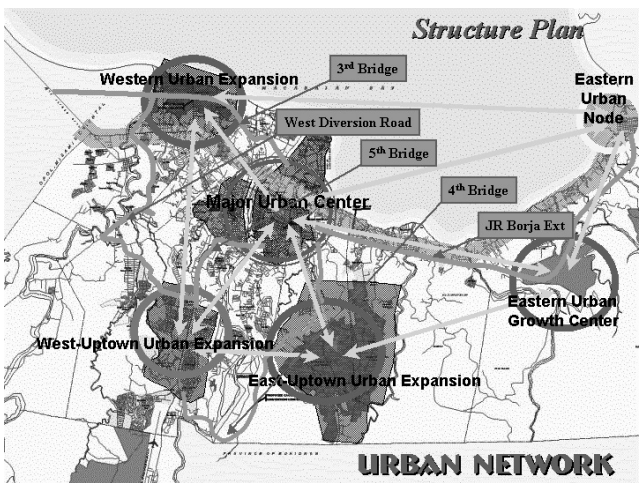

Figure 1. Cagayan de Oro City Urbanization Structure

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.

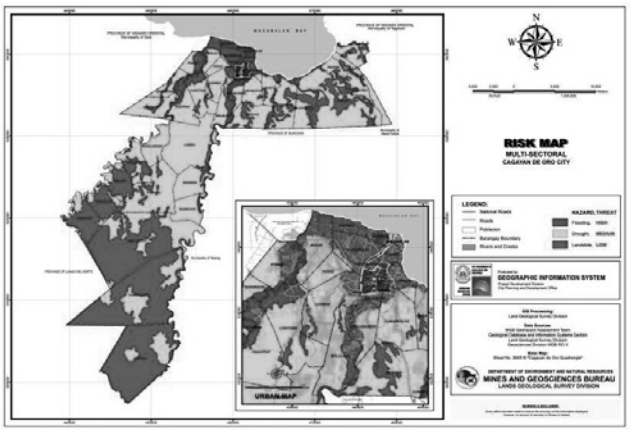

Figure 2. Multi-Hazard Risk Map of Cagayan de Oro City

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 Gagayan 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 CO_2 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 (CO_2) that vital to our country's fight against climate change. In the case of geothermal energy, it only emits 0.09 tons of CO_2 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.

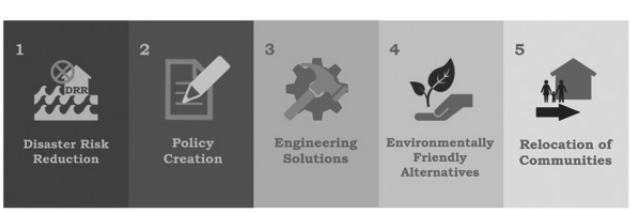

Figure 4. Priority Measures for Climate Change Adaptation in Cagayan de Oro City

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).

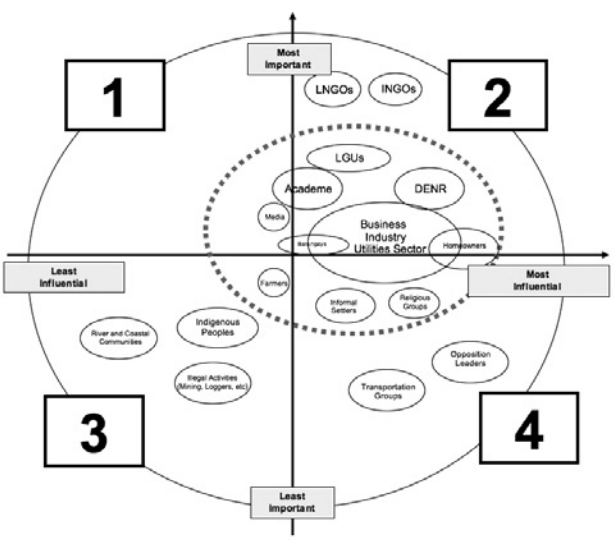

Figure 5. Venn Diagram for Stakeholders' Degree of Importance and Influence

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).

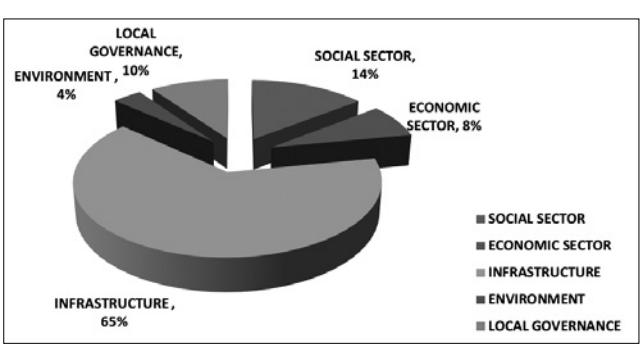

Fig. 6. Sectoral Allocation of the BDF in Cagayan de Oro City

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 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 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). It 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 calamites 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.

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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) Füssel, 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., Cojocaru, 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 :, *1*.

28) Tasan-Kok, Tuna; Stead, Dominic; Lu, P. (2013). *Chapter 3: Conceptual Overview of Resileince: 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

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 Enviroment 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., & Kasperson, 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