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Climate risks in West Africa: Bobo-Dioulasso local actors' participatory risks management framework

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The paper focuses on the role of multilevel governance in climate change adaptation and risk management, and draws out lessons from the implementation of the UN Habitat Cities and Climate Change Initiatives (CCCI) in Bobo-Dioulasso, Burkina Faso. It describes the process for the formulation of a participatory risk management framework for local actors drawing from empirical investigations undertaken in Bobo-Dioulasso. The paper argues that adaptation needs to be mainstreamed and implemented at local level and to include risk management. Moreover, regulatory capacity of public authorities and balance of power and resources play a major role in this process. After presenting the specific knowledge on climate and environmental challenges and CCCI implementation in Bobo-Dioulasso, the paper describes challenges and opportunities in the implementation of the participatory risk and management framework.

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Introduction

Although there is a broad consensus on the central role of local government in dealing with the different and complex challenges of climate and environmental change [1,2^{••},3[•]] which are already affecting sub-Saharan African cities, relatively little attention has been given to the processes for the formulation of local frameworks and action plans

that support the implementation of adaptation policies and programmes. Urban and other local-scale actions are an important part of international and national climate change (CC) agendas. Urban and local government actors are at the centre of the implementation process for such agendas through action on the ground and proximity to local stakeholders [4]. They are crucial for integrating CC concerns into urban planning and management and they also provide opportunities for experimentation and learning about CC, acting as laboratories of change and for the testing of new approaches [5^{••}]. Moreover, urban and local authorities work closely with different local decision-makers, such as community organisations, households, urban planners and private companies who will engage with and invest, or resist, in CC adaptation.

This paper argues that adaptation needs to be mainstreamed and implemented at local levels and to include risk management to limit vulnerability to current and future hazards [6,7]. In particular, it emphasizes the importance of relations and networks between various levels of government, and between governments and non-governmental stakeholders, in shaping the decision-making process from policy consultation to action plan design. Focusing on small and medium sized cities and multilevel governance linkages in policy and action for adaptation and risk management, the paper draws out lessons from results of the implementation of the UN-Habitat Cities and Climate Change Initiative (CCCI) in Bobo-Dioulasso, Burkina Faso.

While CC policy, programme and debate generally focus on megacities in sub-Saharan Africa and elsewhere, the crucial role of small-sized and medium-sized cities in addressing CC challenges has been highlighted in this study [8^{••}]. The urban growth in developing countries will occur mainly in small and medium sized cities and they are also the fastest growing urban agglomerations in which close to half of the world's urban residents live⁴ [9]. Smaller cities offer opportunities for development but at the same time suffer a disadvantage in terms of basic services (piped water, waste disposal, electricity and schools, *etc.*), higher poverty rate and levels of infant and child mortality, and weaker local government capacity [10].

These challenges and the knowledge on experiences, challenges and opportunities in addressing CC in those

⁴ 'Close to half of the world's urban dwellers reside residents live in relatively small settlements of less than 500 000 inhabitants, while only around 1/8 live in the 28 mega-cities with more than 10 million inhabitants' [9].

cities are relatively neglected in CC and development debate and agendas.

The paper aims to contribute to filling this gap by analysing the experience of policy and action for adaptation and risk management in Bobo-Dioulasso.

The paper begins by establishing a conceptual background for understanding the role of multilevel urban governance in addressing CC challenges. Against this background, it situates the implementation of the CCCI, defining its objectives, implementation processes, and actors. The Bobo-Dioulasso context is then introduced describing the CC vulnerabilities, the governance and policy context, and the response to CC.

The paper analyses the implementation of the CCCI in Bobo-Dioulasso, from the stakeholder consultation to the design of the Participatory Climate Risks Management Framework and concludes with a discussion on the main lessons identified from CCCI implementation in terms of multilevel-governance benefits and challenges.

Linking climate change adaptation and risk management to multilevel governance

In sub-Saharan African Cities, the coupled effects of CC and rapidly growing population, weak management [11], poor basic services and shifting regime of ecosystem services, exacerbate existing vulnerabilities and the social and economic challenges, undermining development opportunities and resources [12], particularly for those dependent on climate sensitive resources [13].

However, CC policy challenges can also be turned into opportunities to achieve climate and development policy goals. For instance, infrastructural development and natural resource management are crucial both for development and risk reduction. Therefore, addressing vulnerability in sub-Saharan African cities means understanding different and cross-cutting dimensions of vulnerability and linkages between climate and governance challenges.

The effectiveness of CC adaptation depends mainly on the local and extra-local institutions through which incentives for individual and collective action are structured. Institutional arrangements facilitate or hinder individual and collective responses to CC, and shape the consequences of such responses [14]. However, to translate global politics at local levels, now and in the future, is still very difficult. For example, due to the high degree of abstraction and generalization informed by global aggregate data, it is very difficult to relate CC global politics to current and future actions at local level [15]. A major institutional barrier that limits the capacity of cities to address CC risk is the lack of a suitable governance framework for climate risk management in cities [16].

A variety of governmental, international and non-governmental organisations, including the UN, launched initiatives to overcome this barrier. UN-Habitat aims to link the global governance to the local level and the CC to the development goals through the CCCI and other actions.

A body of research has developed around the importance of the multi-level governance in urban responses to CC [17–18,5**] with particular emphasis placed on the role of local governments [19,3*,20].

Theorists have stressed the importance horizontal and vertical coordination and collaboration [3*,21] through which the local government becomes involved in or influences the development of policies and strategies at the national level [22]. Relationships between urban governments and provincial governments in addressing CC adaptation and risk reduction challenges [2**,5**,23**,24], and other forms of interactions, including inter-municipal and intra-municipal collaboration and linkages, are considered necessary for dealing with complex and cross-boundary challenges associated with CC [23**] including operational, political, financial challenges.

Although, there is a broad consensus on the benefits of multi-level governance in addressing CC, and various cities have institutionalized CC within their functions [25], many challenges need to be addressed for improving collaboration among different levels on adaptation and risk management. Barriers to adaptation at all levels have been identified in weak horizontal and vertical networking, lack of information sharing, communication and mutual learning, lack of consensus or tensions on economic, political, cultural and developmental challenges between all scales of government, and lack of regulatory frameworks and guidance for developing collaborative networks for adaptation [23**,16,26].

CCCI objectives and implementation actions

Launched in 2008, the CCCI focuses on small-sized and medium-sized cities (from 10 000 to 250 000 people) in developing countries and aims to increase efforts at adaptation through four main objectives: promoting active climate-change collaboration between local governments and their associations; enhancing policy dialogue so that CC is firmly established on the agenda; supporting local governments in making climate-sensitive changes, and fostering awareness, education and capacity building strategies that support the implementation of climate-change strategies [8**,26,27].

CCCI implementation is adapted to the specific context of each city, however, all the initiatives follow a similar approach, moving from a preliminary consultation and process design, to an assessment phase, where information and data are collected and evaluated in order to

identify vulnerabilities, defining long and short term policy and actions, and for the mobilization and advocacy for action by different actors [27]. This approach aims to maximize use of existing knowledge and to identify gaps and stimulate dissemination and collective analysis in view of action [28**]. An important characteristic of the process is that a variety of types of partners are involved in the formation of a network partnerships to share interests and knowledge which directly inform the CCCI process and support the development of policy and actions. This also includes the promotion of innovative partnership between universities, local governments and communities and the provision of usable scientific knowledge for decision-makers.

Vulnerabilities and local adaptation action: implementing the CCCI in Bobo-Dioulasso

Burkina-Faso developed various initiatives that take into account dimensions related to environmental governance, sustainable management of natural resources, the increase of forest and wildlife areas, the improvement of the living environment, the strengthening of the capacities of the actors, the fight against global warming. CC concerns were included in several policy documents⁵ [29].

Moreover, the National Adaptation Programme of Action (NAPA), submitted in 2007, is intended to help maintain economic and social development in the face of CC and account for development objectives⁶ [30]. In 2012 development of the National Adaptation Plan (NAP)⁷ as a medium-term and long-term evolving programme to exploit the results of different studies and achievements of the projects implemented under the NAPA was initiated. In addition to the national programme and plan, Burkina Faso has experienced adaptation initiatives in different sectors and at different levels. For instance, in the ecosystem services sector, water harvesting practices

have improved soil properties and increased agricultural yields [31].

In this evolving national context, Bobo-Dioulasso was involved in the implementation of CCCI. Bobo-Dioulasso⁸ is located in the Sahel within the South Sudanese climatic zone where the continuation of climate trends⁹ [32] will exacerbate vulnerabilities associated with the combined effects of population growth¹⁰ [33], land degradation (deforestation, desertification, continuous cropping and overgrazing, erosion along the banks of the Houet river, declining capacity to produce certain vegetables and loss of trees and shrubs¹¹) [34], reduced and erratic rainfall [35,36].

Bobo-Dioulasso is the centre of industry and of the high agriculturally productive due to the presence of water and vegetation. Therefore, vulnerabilities and negative impacts of CC on these sectors may undermine not only the city and regional development, but also the country's economy, increasing political tension, migration and other side effects.

Since July 2010, Bobo-Dioulasso has been a partner of the CCCI. A research activity and consultation process began in 2009, incorporating a series of workshops and interviews with urban actors, a survey and a public forum, directed at a wider public and opinion leaders, to explore the effects of CC on urban dwellers. A workshop in 2011 concluded the process, together with a commitment by the Deputy Mayor to draft a strategy development plan to create a CC unit within the municipality and to launch a CC charter for the city [28**].

During the first step of the CCCI program, Bobo-Dioulasso carried out an initiative from May 2011 to June 2012 called 'the city of Bobo-Dioulasso against the effects of CC: framework to improve dialogue between local and national actors'. During this initial phase residents, community actors, territorial officials and local policy-makers were involved in a study on the challenges and preparatory measures with regard to CC [37]. It highlighted the responsibility of local actors in the struggle against CC and the prevention of its harmful consequences for urban

⁵ For instance the Strategy of Accelerated Growth and Sustainable Development 2011–2015 (SCADD), Strategy for Rural Development (SDR) and the Action Plan for Integrated Management of Water (PAGIRE). Moreover, the study conducted by the Water, Climate and Development Program (WACDEP), highlighted that the worsening ecological stress, combination of adverse climatic conditions (e.g. the flood of 1st September 2009 in Ouagadougou), human pressures on resources (i.e. demographic pressures increasing the demand for resources, pollution, poor cultivation practices, *etc.*), led to rapid depletion of small reservoirs, damage to infrastructure and facilities and others negative consequences.

⁶ For instance the objectives of existing strategies, plans and programs such as the Strategic Framework for the Fight Against Poverty, the Policy of Rural Development, the National Plan to Combat Desertification, the Action Plan for Integrated Water Resources Management, the Environmental Code, among others.

⁷ The Burkina Faso developed and submitted the NAP for a technical review and requested and received support, for the assessment of the Secrétariat Permanent du Conseil National pour l'Environnement et le Développement Durable (SP/CONEDD) as National Implementing Entity of the Adaptation Fund Board.

⁸ Bobo-Dioulasso is situated in part of the Hauts-Bassin region which is bordered by the region of the Boucle du Mouhoun on the north, by the Cascades region on the south, by the South-West region on the east and west by the Republic of Mali.

⁹ Although there are different vulnerabilities and impacts of CC across West Africa and Sahel, according to the IPCC (5th Assessment Report, 2013), significant warming trend (between 0.5 and 0.8 degrees) have been observed over the region between 1970 and 2010 (particularly in the last 20 years) [38], and reduced rainfall and increased temperatures are expected for the next two decades [41].

¹⁰ In Bobo-Dioulasso the population increased from 228 668 in 1985, to 309 771 in 1996, to 489 967 in 2006.

¹¹ Women use or sell who depend on them for fuelwood, wild food and medicinal plants [41].

areas. Subsequently, different streams for intervention have been formulated by the local population, the different communities and local authorities.

Engaging local actors in participatory climate risk management framework

One of the key outcomes of the initial phase of the CCCI in Bobo-Dioulasso has been the creation of the municipal charter of collaboration and permanent dialogue for a climate-resilient Bobo-Dioulasso (*Charte municipale de collaboration et de dialogue permanent pour une ville de Bobo-Dioulasso résiliente au climat*). Apart from the individual efforts of the different stakeholders or groups of stakeholders, the role of administrative districts in the participatory risk management has been highlighted as particularly relevant before the responsibility of the Government. The formulation of a participatory framework for the management of present and future climate risks was identified as crucial for the identification and definition of priorities and for a better coordination of the different interventions to address climate risks.

Therefore, local actors in Bobo-Dioulasso were involved in the participatory formulation of a climate risk management framework. The participatory process was divided into two phases; in each phase local actors were involved in four main steps which led to the formulation of the framework [37] (Figure 1).

In the formulation of the PCRMF, the CCCI unit in Bobo-Dioulasso (including also one a water and environmental engineer) was supported by two experts (one climatologist, one specialist in urban and municipal development). The knowledge produced by the two experts was integrated with the outputs from the dialogue workshop and the administration of questionnaires or semi-structured interviews to the public with the target actors. During the workshop the tools used were mainly the problem tree, the SWPO (Success–Weaknesses–Potentials–Obstacles) method, the SWOT (Strengths, Weaknesses, Opportunities, Threats) method and the open discussion.

The framework designed through those methods was discussed and adopted by the elected municipal representatives under the mediation of a representative, and an expert from one of the local CC networks (*Institut d'Applications et de Vulgarisation en Sciences-IAVS* — Pôle Bobo-Dioulasso). The local actors agreed that the management of present and future climate risks requires first of all the prevention and mitigation of CC.

Moreover, to operationalize the PCRMF the CCCI promoted partnerships with global/regional/national networks and the development of demo projects and pilot activities. For instance, a joint programme between CCCI and the Resource Centres for Urban Agriculture and Food

Security (RUAF Foundation) supported Bobo-Dioulasso in implementing, monitoring and assessing the contribution of urban and peri-urban agriculture and forestry (UPAF) to CC adaptation and mitigation; in forestry pilot projects, and in engaging in policy lobbying to integrate UPAF in local and provincial CC policies and action plans¹² [38,39].

Local decision makers were directly involved in the project by signing a partnership agreement between the municipality (mayor) and RUAF, by participating in several consultation meetings and exchanges, as well as, in community mobilization actions conducted through meetings with local leaders, household surveys and awareness-raising for community associations [40,41].

Discussion

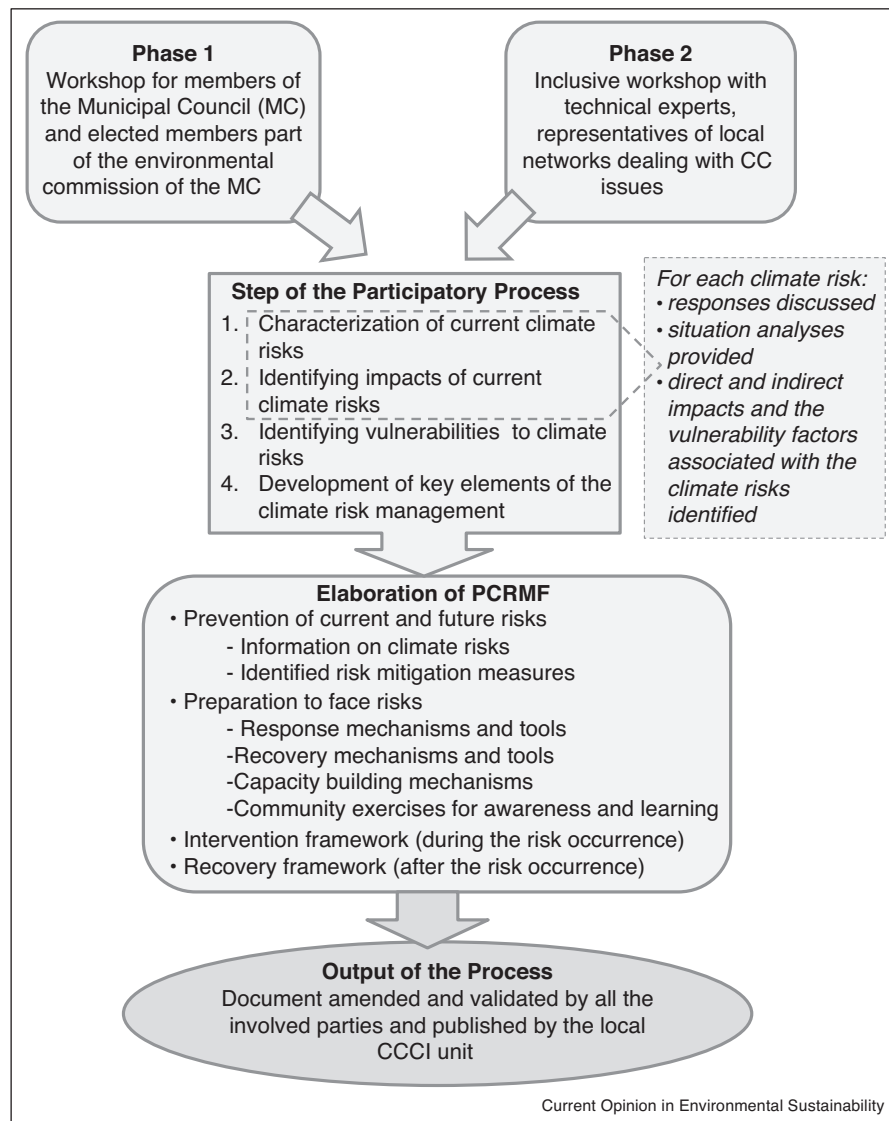
The CCCI activities contributed to building an arena for policy process, knowledge and decision-making involving a broad range of actors. Through the creation of local and global relations and networks between various levels of government, between governments and non-governmental stakeholders, and multi-level partnerships, CCCI overcomes the traditional focus on the devolution of authority amongst established hierarchical government levels, shifting to a complex network conception where jurisdictions and authority overlap in an action oriented framework.

Different vertical interactions identified in multi-level governance debates, are integrated in CCCI implementation. Particularly, actions oriented to regulatory interventions, such as the climate risk management framework, are integrated with actions directed at enabling different government and non-government actors to better understand and address CC-related challenges (e.g. mobilization and advocacy activities and study and research on CC), and with actions aiming to provide specific service and infrastructure (e.g. pilot projects).

The PCRMF remains to be implemented under the institutional leadership of the municipality. Barriers to its implementation are mainly linked to the availability of local resources to finance the implementation of the Framework and to the role and responsibilities of local government (e.g. decision space, responsibility of an investment authority in service delivery and revenue raising of services linked to the devolution and decentralization reforms), which are particularly relevant for the

¹² Under this initiative, the Municipal Council developed three regulations to ensure sustainable and productive management of greenways in the city. One of these regulations has been approved [35] and will contribute to reconvert open vacant areas within the city into areas with multifunctional land use, whilst promoting agroforestry and recreation generating positive effects on urban temperatures, diversification of food and income sources and facilitating the monitoring of urban greening [34].

Figure 1



Process for the formulation of the participatory climate risk management framework.

definition of a normative, operational and organisational framework for local decision makers to address climate challenges.

Role and responsibilities of local government in general, have been influenced by decentralization programmes¹³ of the late 1980s and 1990s in Burkina Faso. Under this process of decentralization and

¹³ These programs were oriented to build local self-governing capacities in communities and 'increase the decision space or discretionary authority of local actors in the delivery of services in a variety of areas' [42]; create or sustain local governments that interact with other institutional actors within the local community (governmental, nongovernmental and donor agencies working in local communities), to promote participation and empower local groups).

transfer of powers to local authorities, local governments and cities assumed more direct responsibility for investments that include civil construction and transport infrastructure [42]. Therefore, the understanding of normative, operational and organisational frameworks for local decision makers to address climate challenges is strictly linked to the understanding of policy change and transition and to the uncertainty related to ongoing and implemented reforms.

Although it is not yet possible to assess the impacts of CCCI implementation as well as the implementation of the PCRMF, the CCCI process has already contributed to awareness raising and involvement of local authorities, local knowledge networks and residents (e.g. realization

of a Municipal Charter). Moreover, to overcome the above-mentioned barriers (i.e. lack of local resources) the set of actions recommended in the action plan could be employed to mobilize a variety of financial partners and stakeholders at different levels: community or local level, national level, both on bilateral and multilateral international level.

If evolving international frameworks for addressing CC and financial landscape to obtain funds could be a major obstacle in accessing adaptation funding, the CCCI assists municipalities in engaging with institutions that are framing debates and funding opportunities for cities through the improvement of multi-level communications, knowledge sharing, collaboration and permanent dialogue, participatory processes.

Conclusions

While the CCCI programme has made several advances in urban adaptation agenda significant governance challenges remain in CC policy integration, awareness raising [8^{••}], and in integrating CC concern into local and city wide planning.

The experience of the CCCI in Bobo-Dioulasso shows that multiple stakeholders recognise the need to implemented adaptation at local level and integrate risk management to limit vulnerability to current and future hazards.

However, to ensure a suitable governance framework for climate risk management in cities, different types of constraints need to be considered in the implementation of CC initiatives such as the CCCI.

Institutional constraints include unclear and overlapping distribution of roles and responsibilities among key-actors at national and local levels. Regulatory capacity of public authorities and balance of power and resources play a major role in the development and implementation of the PCRMF as described in the previous section. Capacity and resources are directly linked to legitimization, and information. Therefore, reforms and processes like decentralization of decision making and administration can undermine the implementation of PCRMF and related pilot projects. Conflicting values and priorities between different government and key actors involved in the participatory process can undermine integrated projects and initiatives for climate adaptation and risk management. Therefore, orienting participatory and consultation processes to clarify roles and responsibilities of different levels of government, individuals, civil society groups and private sector is crucial for translating global politics for CC adaptation agendas into local action.

Finally, using actions and recommendations identified in the PCRMF to interact with financial partners and other

stakeholders to find resource and share knowledge on CC adaptation and risk management, can generate conflicts and competing strategies among different levels of governance and sectors.

Activating policy change to integrate adaptation and risk management substantively into urban planning and local decision-making processes may contribute to addressing power imbalances and complex decision-making processes. Therefore, research on CC mainstreaming at local level is needed to better understand how CC can be used as an entry point to promote broader innovation in urban governance (and planning) and overcome sectoral and conventional actions.

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