Participation and planning for climate change:

Lessons from an experimental project in Maputo, Mozambique

By Vanesa Castán Broto, Bartlett Development Planning Unit, University College London, London, UK; Emily Boyd, University of Reading, Reading, UK; Jonathan Ensor, University of York, York, UK; Carlos Seventine, Fundo Nacional do Ambiente (FUNAB), Maputo, Mozambique; Domingos Augusto Macucule, Universidade Eduardo Mondlane, Maputo, Mozambique; and Charlotte Allen, Independent Consultant, UK

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Two children play around a household in Chamanculo C, Maputo

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Introduction

As the latest Intergovernmental Panel on Climate Change (IPCC) report demonstrates, once again, that climate change is here to stay, the general pessimism towards climate change negotiations has grown. Multiple alternatives to multilateral negotiations have emerged from a sense of disenchantment with the international response so far and the perceived need to intervene urgently.[1] A sense that action has to go beyond the traditional forums of policy-making is growing. Cities, in particular, have emerged as key centres of decision-making for climate change.[2,3] Local authorities have shown clear leadership in terms of delivering practical initiatives and the capacity to reach citizens through provision of services and regulation, while enabling other actors to work beyond the traditional spheres of action.[4] Local governments have also participated in transnational networks that increase their international impact.[5] In practice, the experience of cities engaging in climate change action has demonstrated that there is a variety of heterogeneous strategies that are used by multiple actors.[6]

While it is often assumed that these initiatives are limited to industrialised countries, the reality is that climate change action, particularly as it becomes visible in cities, it is not confined to specific parts of the world.[7] In South Africa, Durban has become a leading example of how to develop an institutional response to climate change,[8] and the experience of managing climate change in Cape Town has demonstrated the importance of bringing together multiple stakeholders and experts to work towards a holistic strategy for the city.[9] This resonates with experiences elsewhere that show how policy and research networks have also been critical in supporting local action.[10] Outside South Africa, other efforts are taking place, in relation to city planning and institutional development, such as UN-Habitat's initiative Cities in Climate Change.[11]

In most cases there is a crucial recognition of the important role that citizens can play in developing and implementing climate change action, whether this is through existing institutions and formal channels of action or, if these are absent, in an ad hoc manner. Calls for sustainability science to include contextual knowledge and transdisciplinary perspectives that take into account the complexity of climate change challenges suggest that there is a need to rethink the role that citizens can play in climate change. Building on the growing tradition of collaborative planning,[12,13] participatory planning can engage with citizens in a collective process of rethinking 'the city' in a context of climate change.

Local citizens have a wealth of knowledge that can be applied to the study of climate change. International consultants who develop plans for cities in developing countries often start by conducting surveys among local populations on the potential impacts of climate change. People who live in coastal cities, such as Maputo, have strategies to manage flooding, and these are of crucial importance for city managers.[14] On the other hand, one of the major limitations of current interventions for climate change has been the large gap between rhetoric and policy.[15] Local governments, for example, may focus on low-hanging fruits (policies that are easily achievable) rather than on those that may have the most significant impact. Local governments, even when acting in coordination with national governments, may lack both resources and capacity to bring climate change action forward. The immediate impulse is to look towards international expertise and consultants. However, cities often have a wealth of knowledge that can be applied in these settings. One resource that is often overlooked is local citizens themselves, who are both capable and eager to take action to improve the quality of life in their communities. They may organise themselves through non-governmental organisations (NGOs) and local associations, or in a more informal manner through what is called 'below-the-radar organisations' (e.g. groups that are capable of undertaking collective initiatives).

To be useful, however, knowledge and local capacity need to be recognised by local government and formal institutions. Lack of recognition may impede local progress. Moreover, communities may benefit from the enabling role that formal organisations play, by supporting their networks, facilitating access to knowledge and resources, and legitimising their actions. For this to become a reality, such below-the-radar activity needs to be recognised within a cooperative environmental governance approach[16] – that is, an approach whereby multiple actors with putatively different interests work together to achieve a common goal. As a form of cooperative environmental governance, partnerships constitute opportunities for that mutual recognition between communities, with the private and public sectors playing a key role, for example, in the transfer of technology.[17]

The project 'Public, Private, People Partnerships for Climate Compatible Development' (4PCCD) in Maputo, Mozambique, developed participatory planning methods to foster partnerships between actors within different sectors in order to tackle climate change through actions in specific locations in Maputo. The objective was the creation of partnerships that could integrate climate change concerns fully, while at the same time addressing directly the concerns of local residents. This background paper provides an overview of the case of Maputo, specifically the neighbourhood of Chamanculo C in which the project took place.

The climate change challenge in Maputo

The capital of Mozambique, Maputo, is located in the south of the country and covers an area of 300 km[2], with a population of about 1.1 million people. The city belongs to the larger metropolitan area of Greater Maputo which, with a fluctuating population of 2–2.5 million inhabitants, is the most densely populated area in Mozambique.

Mozambique is highly vulnerable to natural disasters, in particular those of hydro-meteorological origin such as floods, drought and cyclones. Increases in both temperature and average precipitation due to climate change will exacerbate the already high incidence of extreme events in Mozambique. This will contribute to the uninterrupted sequence of drought and floods that Mozambique has suffered. Since 1970, Mozambique has been hit by 34 cyclones or tropical depressions and five major flood events (in 2000, 2001, 2007, 2008 and most recently in early 2012 following tropical cyclones from the Indian Ocean coast). These events have had dramatic social and economic consequences. For example, in 2000 the most devastating floods in the history of Mozambique killed 700 people, with damages estimated at US$600 million.[18,19]

In the city of Maputo, the main hazards associated with climate change are likely to be temperature increases, extreme events related to precipitation and sea level rise. The rising sea level has already resulted in saline intrusion, which affects urban land and infrastructure. There are already noticeable coastal erosion problems, but further sea level rise will increase the risk of flooding in the lowest lying areas.[20] The potential impacts of extreme events in Maputo are likely to be associated with the deterioration of the already precarious infrastructure system, food insecurity and an increase in vector-borne diseases.

The impacts of climate change in the city of Maputo need to be understood in the context of vulnerability.[21] Approximately 54% of Maputo City's residents live below the poverty line of US$1.50 per day, and 70% live in informal settlements and areas of dense unregulated growth that lack basic infrastructure and services such as water, sanitation, drainage and electricity.[22] Government authorities and expert assessments link flood vulnerability to a proliferation of unplanned human settlements during the last three decades; these areas have gradually expanded to low-lying and marshy areas characterised as having high flood risk. More than 60% of the population has limited access to services such as energy, cooking fuel and sanitation.[23] Thus, access to services and infrastructure constitutes one of the main aspects of urban deprivation in Maputo. The 'Home Space' project,[24] a longitudinal study of living conditions in Maputo, demonstrated how deprivation is connected to lack of access to services. This is especially important in informal settlement areas in which sanitation and drainage are often very poor, with 33% of households in the 'Home Space' study areas having only a simple pit latrine; this can lead to serious health issues following flash floods.[25] Furthermore, 68% of respondents in the 'Home Space' study were not saving money regularly in any form. However, they did make considerable investment in their homes, which makes coping and recovering from flood damage all the more difficult.

The capacity of the city to respond to extreme events related to climate change is limited by existing urban conditions. Not only are the impacts more severe in deprived areas, but also the residents in such areas may have fewer resources to cope with the aftermath of these disasters. Moreover, the focus on developing formal strategies for land planning may clash with informal strategies to access land and resources adopted by residents in deprived areas. The urgency of the climate change challenge may lead to policies that overlook the complexity of arrangements whereby these citizens not only survive but also contribute to and maintain the city.

Chamanculo C is one such area where the impacts of climate change will highlight the vulnerability of its residents and infrastructure. There, vulnerability is closely linked to: poverty and access to resources; soil characteristics (i.e. compacted soils have a limited capacity to allow water to infiltrate, leading to runoff and flooding); the proportion of roofs and paved surfaces; deficient drainage; and the extent to which the tree canopy supports infiltration. One important vulnerability factor is the presence of accumulated waste that is up to 5 metres in height and completely surrounded by houses; this may increase runoff, block drainage canals and contaminate living spaces, with potentially detrimental effects on health. Community members have identified a range of major issues that affect them following flooding. For example: stagnating water in large puddles covering the street and private areas; flooding of homes; loss of mobility and restricted access to markets, schools and other public services; flood-related health problems; the destruction or temporary disuse of sanitation infrastructure; and potential material losses.

In this context, partnerships are emerging in Maputo as a form of environmental governance. These alliances are associated with two main dimensions: the provision of services, often related to the development of infrastructure or the lack of thereof; and as a vehicle through which a range of heterogeneous actors may intervene in actions for climate compatible development, sometimes playing unorthodox roles.

Developing partnerships for climate compatible development

What is a partnership for climate compatible development? James Meadowcroft defined a cooperative management regime as "a form of social regulation in which groups originating in different spheres of social life, and reflecting distinct perspectives and interests, participate in debate and negotiation to achieve a common understanding of a scientific problem, and then implement a collective plan for its resolution".[26] In his analysis he described cooperative environmental governance as a set of processes that bring together a cross-section of actors with different interests but who are implicated in a similar environmental problem. These processes are oriented, in principle, towards developing forms of periodic consensus that enable all parties to jointly commit to collective solutions. While encouraging mechanisms associated with pluralism, consensus building, flexibility and adaptability, cooperative governance becomes a strategy to extend authority beyond the traditional realms of government.

Partnerships emerge as a form of institutionalisation that can lead to effective cooperative environmental governance. Partnerships involve both the negotiation of the terms of the partnership and the means to deliver collective action towards a given problem. When the realm of the given problem is narrow – for example, the need to provide a specific service – public–private partnerships may emerge as a potential alternative to more traditional forms of delivery, as long as the creation of a public–private partnership does not compromise the delivery of a public good. However, in the context of complex and multi-scalar environmental problems such as climate change, partnerships may need to be open to encompass a wide range of actors that can intervene in climate change governance.[27]

Actions for delivering climate compatible development are necessarily delivered in a context of uncertainty and multi-scalar interaction. Commentators tend to emphasise the need to deliver adaptive governance mechanisms that are flexible enough to navigate the complex spatial and temporal contexts in which climate compatible development is delivered, and which can bridge the views and perceptions of the multiple actors affected and intervening in these processes.[28,29] Thus, partnerships, as a form of cooperative environmental governance, can contribute to this debate through their potential to open up spaces for the operation of multiple actors in climate compatible development at different scales. Delivering partnerships in context, however, requires the understanding that actors do not necessarily adopt a predetermined role. Indeed, partnerships provide spaces for actors to behave in an unorthodox manner.

In Mozambique, recent reforms have led to an increase in the power of local municipalities, which may play a vital role in both supporting and leading partnerships for climate compatible development. In Maputo, there are many actors who are already taking initiative through partnerships to address the city's climate vulnerability. For example, in a 2013 interview, Dr Raul Chilaule, head of the Environmental Management Department of Maputo Municipality, emphasised the crucial importance of their partnership with UN-Habitat and the National Institute for Disaster Management (Instituto Nacional de Gestão de Calamidades, INGC). The partnership has facilitated an assessment of the possible impact of climate change throughout the city and the ecological zoning of the mangrove swamp to the East of Maputo, in the area known as Costa do Sol. In a public debate, however, these interventions have been challenged because they may not address the everyday concerns of people living in Maputo's *bairros*. In a public meeting, for example, participants raised the issue that the zoning of the mangrove swamp may have led to the construction of luxury houses that compromise the resilience of the ecological system. This also highlights the complex set of circumstances in which municipal decisions are taken and the extent to which mechanisms such as zoning can actually be enforced in this context.

This has led to an alternative perspective within the municipality. For example, Dr João Mucavele, Municipal Director of Urban Health, has expressed the need to improve dialogue with communities, particularly on issues that affect them directly, such as solid waste management. Here, social and environmental concerns come together in plans to fund facilities for waste separation, while at the same time providing job opportunities to '*catadores*' – people who make a living from waste picking. However, officials often insist that local communities 'need to be educated' about the nature of environmental problems, indicating a lack of understanding among institutional representatives of how broad environmental concerns relate directly to the daily needs of citizens. While lack of education in informal settlements may indeed be a problem, local communities can also 'educate' officials and international experts about the specific transformations taking place in their environment, thereby advancing understanding of local climate impacts.

In a city, environmental problems are intrinsically linked to issues of public health, and these are very familiar to all citizens, regardless of their level of formal education. In Chamanculo C, for example, local residents and stakeholders both highlight the need to upgrade the city's unplanned *bairros* in order to address the obstacles to providing public infrastructure and services. The irregular urban form and the lack of infrastructure already compromise the most basic services. In *bairros* such as Chamanculo C, climate change will exacerbate this situation. When debating issues about how upgrading is to be done, by whom, and with what resources, participation of residents is critical.
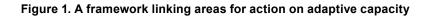
Institutional actors showed themselves willing to enter into partnerships with communities. Previous experiences of partnerships for waste management and water provision suggest that there is great potential for partnerships that involve communities in decision-making for climate change action. This is more evident when such climate change action is linked to service provision and neighbourhood upgrading. But such partnerships cannot take place without explicit recognition of communities' potential by municipal and national government authorities. Interviews have shown that existing governance structures of local organisations, with chiefs who represent local interests, are not always appropriate for transmitting the concerns of local residents. Instead, participatory planning methods can help build appropriate local-level institutions, which can enable the recognition of communities' potential to organise themselves and identify appropriate planning tools. Local-level institutions can support community action through a climate compatible development partnership.
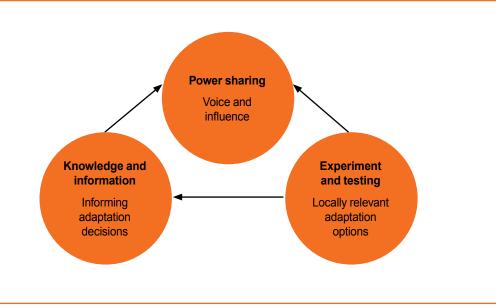
Participatory planning for climate change

The project adopted the methodology of Participatory Action Plan Development (PAPD), which aims to foster negotiation and dialogue that can lead to knowledge co-production.[30,31,32] The objective of PAPD is to give community residents the opportunity to articulate their needs so that they develop the capacity to influence policies and processes at the district, national and international levels. This is done through building consensus among different interest groups, which can enable the community to prioritise problems and implement potential solutions.

PAPD focuses on how power relations shape local development opportunities and, in this context, aims to develop the conditions for power sharing between citizens and the multiplicity of institutions and interests that influence their lives. Ideally, such an exercise could enable: i) power sharing arrangements to expand citizens' networks, voice and influence; ii) mechanisms to share knowledge and information for adaptation decisions; and iii) opportunities for experimentation and testing of adaptation options.

These three dimensions provide a framework for supporting adaptive capacity, focusing attention onto important aspects of social systems that are frequently overlooked in development actions. Attention is directed explicitly to the processes that can be supported and sustained. In context, these processes can expand a community's opportunities for sharing power, knowledge and information, along with increasing experimentation and testing. In this way, residents can expand their capabilities in ways that enable them to engage with the challenges of climate change in a complex world, rather than achieving a particular governance arrangement or set of actions. As Figure 1 illustrates, the dimensions are linked and interdependent: the sources and processes that give rise to knowledge and information feed into power-sharing relationships and emerge as collaborative actions – i.e. experiments and tests – that apply new understandings and produce learning in the form of new knowledge and information.[33]

Figure 1. A framework linking areas for action on adaptive capacity

PAPD is oriented towards building a consensus about development priorities in a given area. This refers to consensus not just in relation to what decisions are to be taken but also to how such decisions will be taken. Thus, the PAPD methodology provides opportunities to both deliberate about local development priorities and to build institutions that can represent the proposals put forward during negotiations.

The emphasis of PAPD is not on permanent, but on sporadic, consensus. It is the openness of the process that may lead participants to a position upon which the community can collectively agree. Such a position, however, is open to questioning by changing contexts, both in terms of changing values and priorities and in understanding who can deliver action and how they can deliver it. Thus, 'consensus' implies reaching a negotiated agreement in which all stakeholders are satisfied with the outcome at a given moment. While this does not require total agreement, it does bring all stakeholders to the point where none have concerns or objections that they feel are significant enough to justify blocking the shared wishes of the group. As such, carefully facilitated processes between representatives of diverse interests or perspectives can reach consensus and share ownership of the decision. Power-sharing arrangements such as co-management or collaborative agreements are usually defined in this way, relying on consensus rather than a majority vote, and they often generate an outcome based on an agreed balance of interests between informed, entitled and engaged stakeholders. Such consensus is highly dependent on the process itself, how people are enrolled in it, whether they feel free to speak, and the extent to which they feel individually represented within the process of negotiating consensus. Therefore, mediation by a facilitator is a crucial aspect of this process.

PAPD was developed for use with marginalised communities, with the intention of building new political and institutional relationships. The focus is on providing a structured and repeatable approach to helping people identify collective problems and the potential pathways to their resolution. As a consensus-building approach, the emphasis is on building relationships between diverse stakeholders to raise awareness and understanding of their different perspectives, using skilful facilitation to ensure the full participation of the most vulnerable and to avoid descending into a conversation that follows the fault lines of familiar local animosities.

Lewins and colleagues have described PAPD as "a methodology to build local consensus by uncovering co-dependencies and developing greater understanding between stakeholders".[34] PAPD is centred on:
- a recognition of the range and connectedness of livelihood interests within communities
- acknowledgement of the role of relationships, trust and institutional support in collective action
- an understanding of group dynamics and the value of a well facilitated and punctuated sequence of tasks and achievements
- the use of simple participatory tools with participants.

Facilitation is a key feature of PAPD. Whereas many have highlighted the potential for achieving forms of collective thinking through communication and negotiation, following the insights of the German philosopher Jürgen Habermas, this enthusiasm has been equally matched by a concern about whether the conditions for such a dialogue can actually exist. In collaborative planning, the focus is on creating a platform where such a collective rationality, to support a consensus for action, can take place. In the case of Chamanculo C, the intervention by intermediaries from research institutions facilitated this process of dialogue, gave it legitimacy and fostered enthusiasm among different participants.

PAPD gives voice to both primary and secondary stakeholders, but has primary stakeholders leading the process and remaining involved throughout. Primary stakeholders are those who are directly connected to the local environment (e.g. relying on the natural resource base for their livelihoods), whereas secondary stakeholders have a less direct stake, but can play a role in management decisions affecting natural resources and livelihoods (e.g. technical bodies associated with fisheries or water, or local and regional government bodies).[35] Thus, rather than approaching the community as a single, monolithic group with a given identity, PAPD engages with the community as it becomes constructed by different actors with overlapping livelihood concerns and interests. PAPD thus focuses on the concerns and interests of primary stakeholders. This creates a shared sense of purpose among community members. It can also help build the confidence of marginalised groups, such as women, to express their interests by providing the opportunity to meet and discuss issues, and by subsequently opening a space in which they can communicate their priorities to other sections of the community.

In Chamanculo C, we focused not just on identifying local development priorities, but also on fostering institutional mechanisms that would support the communication of such priorities. We also aimed to deliver a process that would not only enable the representation of the local community in its diversity, but would also establish a smaller working group whose members could dedicate time to the process of planning for climate change. For that reason we facilitated

the creation of a community-led Climate Planning Committee (CPC). Each working group elected a member to join the CPC, and this was followed by an active engagement process in which CPC members took action to engage with relevant stakeholders, develop detailed proposals and work on a road map towards implementation.

Another important feature of PAPD is the establishment of links between primary and secondary stakeholders throughout the process. In Maputo, we did this through three different but interrelated strategies. First, researchers, operating as facilitators, interviewed key secondary stakeholders with the intention of gathering information about the context of urban governance in Maputo, and also to call their attention to the process of self-organisation and consensus building taking place within communities. Second, the researchers facilitated access for the CPC to key stakeholders to gauge their potential to engage in partnerships for climate compatible development and to compile detailed information that could facilitate the implementation of the CPC's proposals. Third, a public learning workshop and follow-up public presentation allowed for a frank public dialogue and revalorised the contribution of communities to the local planning process. These three key steps aimed to constitute partnerships through the notion that, by communicating common priorities, momentum for collective action would be enabled.

Taken together, these features of PAPD combine to build horizontal and vertical relationships in an environment that is designed to optimise collaboration. Through the process of building local consensus around an issue of significance to the community, new institutional and social relationships are formed that open up opportunities for the poor and provide "a foothold for longer-term resource use negotiation, committee formation and community-based management".[36] The writing up of a local development plan as an instrument for negotiation and as a tangible output that can be shared across stakeholders is also part of the process of building a consensus and sharing information.

The key process that articulates PAPD is that of locally organising communities for dialogue. We implemented PAPD in six steps:

1. The preparation stage requires gathering background knowledge to identify primary stakeholders and organise them into representative groups.
2. Problem census and problem prioritisation entails the discussion of a range of environmental issues to increase awareness of underlying causes and how they impact different groups. This stage should help to identify alternatives that are shared among broader groups of stakeholders, thus helping to build mutual trust between different groups. This is the stage in which climate change information should be presented to primary stakeholders for their inclusion in climate change discussions.
3. Information gathering is the process whereby community representatives flesh out their proposals and establish their requirements, in terms of feasibility and suitability for existing problems. The CPC at this stage was one of the greatest achievements of our project, particularly because the CPC took leadership of the process from then on.
4. Analysis of solutions is the stage at which each proposal is evaluated, based on available information, in relation to different criteria, including social, technical/financial, environmental, political/institutional and sustainability factors.
5. Public feedback is given in collective meetings through direct engagement with specific actions. As explained above, in Maputo we used different strategies with a view to developing partnerships and networks that would work towards implementation.
6. Action planning summarises the results and states the possibilities for intervention, and may open up possibilities for action beyond the PAPD process.

Community profiling was greatly improved by linking the project with the work of actors already operating in the area – such as the NGO Associazione Volontari per il Servizio Internazionale (AVSI), which had surveyed livelihood conditions in the neighbourhood – and by negotiating with representatives of existing governance structures, especially the secretary and local chiefs. Community profiling thus led to the establishment of subgroups that worked independently during the PAPD process and which represented varied interests such as those of the elderly, younger members of the community, women, the unemployed, people who manage small businesses, and salaried workers. Each group had different concerns in relation to their demands for services and mobility; aside from their own interests, they were able to engage in a group discussion that was later shared collectively with the other community members.

PAPD works well in many circumstances, but it is particularly suited to addressing climate change in context. As a complex problem that will have multiple impacts across Maputo society and that will likely have the highest impact on the most vulnerable, climate change is a problem shared by many stakeholders. The greatest challenge in fostering collective action for climate change is in developing a shared discourse that generates common objectives. However, climate change information is often presented in a highly technical way. Historically, climate change scientists have struggled with communicating their messages, particularly because of opposition by climate change deniers trying

to discredit their data. In this context, it is not uncommon to find some among the scientific community who advocate leaving climate change in the hands of experts. However, it is important to realise that the notion of climate change as a conspiracy is very much limited to those places in which climate deniers are active shapers of public opinion, e.g. Australia and the United States.

Moreover, climate change modelling is not the same as taking climate change action. There is a crucial need to gather contextual knowledge to make intervention possible in specific settings. This is not a problem of climate change denial or of having enough climate change information; it is a problem of communicating climate change information. Thus, the research team facilitated the communication of such information in the context of Maputo by taking a double approach: i) relating climate change to previous experiences of flooding and disasters in Chamanculo C, and ii) linking the information to development priorities. This information was provided during the PAPD dialogues, and it constituted the backbone of the argument that the community representatives presented in their local action plan.

What did the project achieve?

The 4PCCD demonstrated that working with communities in processes for participatory planning for climate change is relatively easy. Of course, some methodological issues need further refinement, but the project worked to develop simple participatory tools that anyone could engage with. What surprised us was the tremendous enthusiasm for the project within the community. Local citizens in Maputo are not just interested in climate change – they understand its relevance and they want to participate in actions that address it directly. The two key achievements of our project were i) developing institutions for climate change governance at the local level, and ii) establishing channels of communication among different stakeholders from government, business and civil society.

The CPC wrote the community's proposals into a Community Plan for Climate Change Adaptation. This process showed both how local residents can engage with climate change information and how they can use climate change as a theme to foster local debate – and generate partnerships – around their key development concerns, particularly in relation to their safety and health. To address the deficient drainage system and its exacerbation of the floods, residents in Chamanculo C proposed measures to improve the drainage through community organisation, repairing networks to improve the water supply, facilitating the management of waste in a recycling centre and promoting environmental education (for example, to learn about waste management and emergency responses to flooding). However, they rejected the option of relocation because they perceived it would have an unbearable impact on their livelihoods.

4PCCD also gave communities a forum to explain their plans, and this created expectations about what the community could achieve. Local residents gained confidence in their perspectives, and the CPC led a learning workshop to present their views to a wider audience of institutional representatives and policy-makers. The project created a shift away from having local residents participating in planning for their neighbourhood to actively leading and mediating the process. Some policy-makers responded enthusiastically, but we do not yet have evidence of policy impact. However, the Fundo Nacional do Ambiente (National Environment Fund, FUNAB) has acknowledged the benefits of the project. Its members received training to further implement participatory methods and thereby gained confidence in participatory planning methods to engage local residents in climate change decisions. They showcased the project to other government institutions to demonstrate their capacity to think innovatively about how to address climate change in Maputo. The challenge for both FUNAB and local residents will be to implement the proposals, demonstrating that participatory planning can improve the capacity of residents in Chamanculo C to respond to flooding events.

The public learning workshop also showed that multi-stakeholder negotiation can encourage great amounts of creativity, and the creation of collective proposals and generation of collective ideas is a key process – not just for enabling dialogue, but also for fostering institutional development. For example, the learning workshop resulted in a range of proposals including:
- community education and mobilisation through a community newspaper, radio station, door-to-door campaigns, public meetings and theatre
- gaining the support of land surveyors for the planning and rehabilitation of drainage channels and involving the community in their maintenance
- the creation of micro-enterprises for waste collection
- further deployment of participatory planning methods through peer-to-peer communication and sharing the experience with other communities.

The potential for participatory planning in Maputo has barely been tapped in this project. For example, Dr Paulo da Conceição Junior of UN-Habitat has emphasised the potential for participatory methodologies to contribute to risk reduction and the extent to which such methodologies recognise the validity and value of communities' knowledge of local conditions and problems.

The project was also directed at identifying and mobilising resources; that is, showing how local proposals could be implemented. In doing so, the CPC identified key actors who could support them or who were responsible for delivering some of the proposed interventions. This raised interest among different institutions that could intervene in the climate change sphere, including the Ministry of Environment, the Maputo Municipality, the water utility Fundo de Investimento e Património de Abastecimento do Água (FIPAG), as well as private and civil society organisations including the Italian NGO AVSI, the Mozambican Association for Recycling and the local development association AMANDLA. The CPC met with each of these actors, creating networks that did not exist prior to the project; in some cases, dialogue has been maintained beyond the project lifetime, especially through FUNAB. Overall, 4PCCD showed that climate change is a very relevant and current issue in Maputo, not just for policy-makers but also for citizens. The CPC's technical evaluation of their proposals, in terms of their sustainability and feasibility, led to the community's realisation that they also had access to local resources and could make their visions possible, especially given their human and social capital. This has accelerated a process of institutional development and mobilisation around climate change.

4PCCD was an experiment in participatory planning, and these are early days to see whether the dialogue, institutional involvement and manifestations of enthusiasm during the project will be translated into firm and formal commitments for partnerships. The original assumption of 4PCCD was that the community's capacity for self-organisation would automatically generate formal commitments and long-standing partnerships, but this has not been proven within the lifetime of the project. However, we are positive about the long-term viability of this project. The proposals put forward by the CPC are feasible, and several key institutions, especially FUNAB and the Maputo Municipality, have expressed their commitment to implementing them. FUNAB continues to support the idea of participatory planning and may play a key role in replicating the project and ensuring the sustainability of its achievements over time.

Conclusion

This project demonstrates that local residents in Chamanculo C, and perhaps Maputo more broadly, could be responsive to a participatory planning culture. Giving each citizen a voice is essential to developing the potential of local communities to both engage with climate change information and to catalyse action for climate change. They can do so by incorporating climate change concerns into local development priorities. While in an abstract setting conflicts between development, mitigation and adaptation priorities may seem irreconcilable, communities are able to formulate practical and feasible options that negotiate and even resolve such trade-offs. By addressing a key development priority of improving sanitation, local residents are reducing their vulnerability to climate change. The project also demonstrates that government institutions and business have a lot to gain from listening to local communities' perspectives. Overall, local communities have a grounded understanding of climate, and they can do a lot with limited resources by capitalising on their own human resources.

What are the broad lessons of this project for the governance of climate change in cities? Obviously, the scholarly work on climate change and cities over recent years has shown that there is not one single way to address climate change in cities, but many. The incredible variety of actions that can be taken is shaped by the multiple factors that intervene in this complex problem. Interventions may be directed towards adaptation, mitigation or both; they may emerge in different sectors through the provision of energy, water, sanitation, waste management and mobility; they can be directed towards technological innovation or social change; they may focus on a particular place to intervene, e.g. the built environment; or they may attempt an holistic approach through planning.[37] This complexity is matched only by the complexity of actors intervening at subnational levels of climate change governance. Of course, local governments have a crucial role to play, and they are doing so not just by taking action in given places but also by influencing wider trends in climate change governance at the global scale.[38,39,40] Simultaneously, there is a range of other actors who can also bring about action.[41] The Maputo case showed how ill-defined this map of governance is. However, this is not an obstacle. It is not a question of mapping precisely who can intervene in climate change governance, but rather of being open to the range of actors who can intervene and to accept this vague definition of actors as an opportunity to develop adaptive forms of governance that can reach across multiple scales.

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