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Mapping the road to development: a methodology for scaling up participation in policy processes

Donald R. Nelson, Marcelo T. Folhes, and Timothy J. Finan

Understanding local variability in context and mobilising local participation to define develop-ment agendas are widely accepted development strategies. There remain, however, significant challenges to the systematic and effective inclusion of local communities and households. Projeto MAPLAN, a pilot project in Ceará, Brazil, is a joint effort of the public sector and civil society designed to create a process of participatory development planning which inte-grates local-level contextual variations. In this effort, the use of a Participatory Geographic Information System (PGIS) stimulates the participation of community members in analysing their needs, goals, and priorities. The visualisation of these factors through easily understood maps facilitates communication and contributes to a democratic and transparent planning process, thus permitting the articulation of local priorities with the state-level planning appar-atus. MAPLAN represents part of a shifting paradigm for rural development planning in the state and provides the tools for the effective inclusion of citizen voice in development policy.

Introduction

The past several decades have witnessed a shift in reigning development paradigms towards greater effective local participation and decentralised planning as integral components of posi-tive change (Chambers 1983, 1994; Abers 2007; Leal 2007; Agrawal and Gupta 2005). Perhaps due to the unsatisfactory results of the structural adjustment policy-reform process in the 1980s, development theorists and practitioners have increasingly focused on local formal and informal institutions of governance (including NGOs) and how they articulate with the larger decision-making system (Fisher 1997; Mercer 2002). Consequently, both governments and donors have adopted both the narrative and the practice of participation and decentralisation into policies and projects (Dongier *et al.* 2003: Tikare *et al.* 2003).

In theory, enhanced community participation and decentralised decision making promote local-level ownership of the development process, and thus empowerment. As the governance

of the change process devolves to the local level, development practice reflects local priorities, and local communities are more likely to invest their own resources in collective interventions. With decentralisation, the roles of the local, state, and national political and administrative entities are also fundamentally altered to articulate and negotiate development strategies, rather than to generate them. In a true democratic fashion, the state becomes a representative of the community, rather than its director and supervisor. In practice, as the critics of community-driven development have documented (Mansuri and Rao 2004), decentralisation and participation are immensely difficult to achieve. In societies where modes of social differentiation and social exclusion are traditionally engrained, representative participation of all social groups often yields to the domination of elites. Participation is often confused with 'presence', as opposed to actual partnership in a decision-making dynamic, and there are few cross-context metrics for effective participation outcomes. In fact, in many local communities, the incentives for participation are often poorly defined.

Another daunting problem is that of scaling up from the community to larger political units, such as the region or nation. Participation provides a foundation for improved governance, but also a means to flesh out local context, needs, and priorities, essential for appropriate public policy and planning. But there is an inherent tension between a focus on the local context and working at a higher policy-making level where resource-allocation decisions are usually made. Trade-offs are required between fine-grained contextual information, systematising local process, and the need for comparable data. Prioritising contextual information may come at the expense of the geographical scope of work, due to the demand of financial and monetary resources. An over-abundance of local information may also bog down the policy process in a wealth of detail and lead to an inability to compare and assess priorities across a region. Conversely, prioritising the scope and comparability may result in ineffective and superficial participation, leading to generic assumptions and conclusions applied universally to heterogeneous areas. In effect, communities perceive needs locally, but regional and national decision makers are forced to think in broader strokes and cross-cutting intervention strategies.

The problem of scale is not unique to the world of public policy and development. The natural and physical sciences struggle with similar issues. Unique to the development process, however, is the fact that participation is desirable for more than instrumental benefits. There are moral and ethical imperatives relating to the social contract between the state and citizens and issues of equity in process and outcome. Effective scaling up can address data needs for local and regional scales; however, it entails more than data aggregation. Communities do not exist in isolation. They are part of larger governance systems, and for local policy and management institutions to be truly effective they must be integrated at a higher level. Therefore it is essential for scaling up to entail a scaling up of the participation process and articulation with further levels of the institutional framework.

Participatory Geographic Information Systems (PGIS)

PGIS is being increasingly cited as a method for undertaking public planning and development activities, including conservation management, conflict resolution, environmental justice, and community planning, among many others (Chambers 2006; Rimbaldi *et al.* 2006; Elwood 2002). PGIS refers to a family of practices that grew out of the Participatory Rural Appraisal (PRA) and Participatory Learning and Action (PLA) approaches. In the 1990s the PRA techniques were increasingly combined with Spatial Information Technology (SIT) such as Geographic Information Systems (GIS) and remote sensing, and developed into what is now known as PGIS. Thus, PGIS combines the communication, advocacy, and visualisation techniques that are the core of PLA with powerful information technology.

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PGIS is a spatially based approach to participatory processes, which means that all analytical data are associated with a geographical space. Such space may be quite broad, as in the case of a region, or highly localised, as in the case of a water well. The participatory research process generates data associated with that geographical space. In the case of the well, it might include the water quality, its depth, its volumetric output, or even its cultural significance. The visual nature of a PGIS encourages effective public participation, because it provides a common language to which all can relate and thus serves as a focus for community discussions. The cognitive mapping of behaviours and environmental awareness, for example, is one way to incorporate local knowledge into larger contexts by helping to place local knowledge and scientific knowledge on comparable levels. This facilitates interaction, reciprocal learning, and negotiation. Contrary to a 'top–down' approach in which scientists, technocrats, and bureaucrats define policy debates, a PGIS expands the bounds of debate and the types of relevant information to privilege the local community as part of a shared and open process. The output from a PGIS practice tends to be accorded a high level of legitimacy, due to the production process (e.g. through a scientific procedure using proven algorithms and computers) and due to the quality and types of that output (e.g. large, colourful, dynamic maps) (Obermeryer 1998). Finally, the information technology within a GIS provides the ability to move between spatial scales, analysing aggregate data without losing any local detail.

This article documents how PGIS has been used to address the development problems associated with participation and decentralisation strategies in the state of Ceará, an impoverished region of Northeast Brazil. It describes the sequential implementation of a PGIS process referred to as MAPLAN (*Mapeamento para Planejamento Participativo* – Mapping for Participatory Planning) in Ceará and demonstrates both the utility and the difficulties of such an approach. We begin with a brief discussion of the state of rural development in Ceará and then describe the methods used during the course of the pilot and beyond. Finally we reflect on the implications of the methodology for governance and development in the region, with some caveats for future expansion in the state.

Rural development in Ceará

The state of Ceará is squarely situated in the semi-arid nine-state Northeast region of Brazil, famed for its vast hinterland, the *sertão*, with its severe, recurrent droughts. In Ceará, 30 per cent of the total population of 8 million live in the rural regions of the state, where they mostly depend upon rain-fed agriculture for their livelihood. Rain-fall is highly variable in both spatial and temporal terms, and the spectre of drought is always present. An estimated three-quarters of the rural population live beneath the poverty line. The rural society of Ceará is highly stratified (and wealth, particularly land, is highly concentrated), and political patronage and clientilism are major factors determining power relationships and the flow of resources (Nelson and Finan, in press). In a state with well-defined, entrenched elites, it is not surprising that local-level participation in public affairs is not pervasive and that resource flows are uni-directional (top–down) and highly concentrated in the state capital (and national capital).

Rural development in Ceará has been on the federal and state agenda since the catastrophic droughts of the late 1800s (Davis 2001). Since then, intervention priorities have been designed to protect the rural population from the frequent and severe droughts that decimate the small-holder, rain-fed agriculture production of the region. Both discourse and development strategies have passed through several paradigms, beginning with a focus on technology and infrastructure for the purposes of storing water, followed by models of increasing agricultural production, neo-liberal growth, and modernisation, and more recently integrated sustainable-development

approaches (Finan and Nelson 2001). These development programmes have had mixed success, and despite 130 years of international, federal, and state involvement, the rural population continues to be chronically poor and highly vulnerable to drought.

Since the late 1980s, however, Ceará has been regarded as a model of progressive political administration and innovative development initiatives (Tendler 1997; Lemos and de Oliveira 2004). A more professional political leadership has encouraged forward and innovative thinking, breaking with many of the historical patronage-based models of management and resource allocation. This has created space for individuals within the public sector to begin to talk of decentralisation and participation, which have become central to the official development narrative of the state. Nevertheless, this experimentation with novel approaches at the state level has not been widely emulated in the *municípios*, some of which continue to be bastions of patronage-based politics. Nonetheless, the 2004 elections ushered in a widespread change, with the electoral defeat of the ruling elites in a majority of *municípios*. The popular message sent by the voters resulted in a significant change in attitude towards the relationship between civil society and the government, presenting the opportunity to promote participation systematically at the *município* level. It is in this context that MAPLAN establishes its significance.

MAPLAN

MAPLAN is the result of a multi-institutional partnership which includes the University of Arizona, the Federal University of Ceará, the Secretariat of Local and Regional Development (SDLR – now the Secretariat of Cities), and the Ceará Agency for Meteorology and Water Resources (FUNCEME). The methodology is based on a synergy of methods from GIS and Participatory Learning and Action, illustrated in Figure 1, where the left column represents GIS methods, the right column identifies the PLA activities, and the centre column indicates the intersection of the two processes. The resulting output is a series of attribute-specific maps which spatially describe assets, vulnerabilities, and priorities. However, the more significant results are in the process itself, which facilitated the active and effective participation of
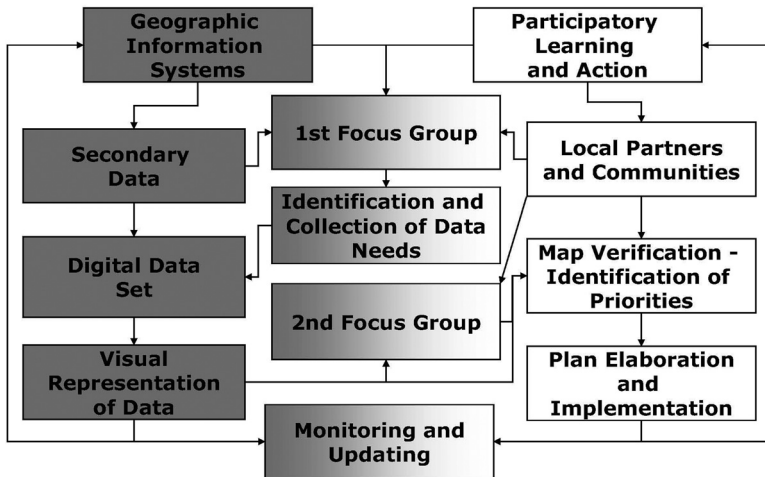

Figure 1: Diagram of MAPLAN methodology

civil society. These benefits extend beyond development planning and make inroads in the establishment of strong public–private linkages and improved governance.

The objective of MAPLAN is to substantively restructure the process of development and emergency-relief planning in Ceará, through the engagement of civil society. The methodology is founded on the belief that participation is part of the underlying structure of public-policy paradigm and encompasses the concepts of citizenship and democratic governance. It is imbued with rights, responsibilities, and associated power and opportunities. True participation, which MAPLAN was designed to facilitate, occurs in a context in which individuals have the opportunity to define and characterise the problem(s), identify opportunities and solutions, and contribute to the planning process. This requires not only the physical presence of people, but a process designed to engage with the specific people that are involved. For MAPLAN, a GIS and the use of colour-coded maps, developed from the community data, helped to make the information accessible to all, stimulating the participation of many who are traditionally marginalised in participatory processes historically designed with the educated and articulate in mind.

The project began in mid-2005 and took place in eight of the 184 *municípios* in the state of Ceará. A município is the smallest political administrative unit and headed by an elected *prefeito*. As part of the preparation phase (see Figure 2), SDLR identified municípios that were priorities for the government, using município-level human-development indicators. The nature of the methodology confronts long-standing traditional power structures and is not appropriate for all contexts. Thus, an additional criterion for participation was the identification of municípios in which the prefeito espoused the ideals of participation and decentralisation. These prefeitos were invited to participate and had to agree to support the project with in-kind resources. Not all prefeitos accepted. With official município sanction, meetings were held in each município to alert and inform the public about the project and to identify local partners who would serve as the partnership hub and undergo intensive training in project goals and objectives, facilitating group dynamics, the fundamentals of GIS, and eventually the art of proposal writing.

The local partners, with material support from their município governments, were responsible for logistics. The unit of analysis is the *comunidade* (community), which is a residential area recognised by a place name and containing upward of two families. It is logistically impossible
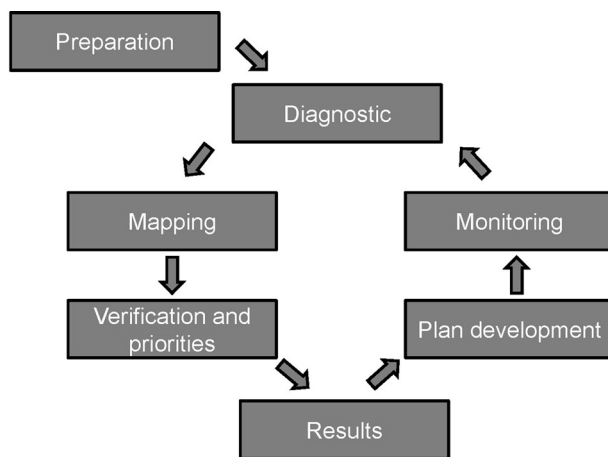

Figure 2: Phases of MAPLAN implementation

to visit each community – some munícipios have more than 500. As a compromise, communities were identified that had the necessary structure to accommodate a group meeting and that were central to surrounding communities. Meetings were advertised via radio, agricultural syndicates, and churches, and the local partners visited many of the communities. Individuals in the more remote communities or those without ready transportation were assisted by vehicles provided through the munícipio government.

The diagnostic phase begins with a verification of the base map, with the objective of identifying all of the communities and the number of resident families, regardless of size.[1] This is followed by discussions and identification of the key development challenges for the area. The situation of each community is then discussed in relation to the key challenges and evaluated relative to the other communities. For example, in this region access to potable water is a common problem, but it is not an equivalent challenge for each community. Some communities have water, but it is not treated. Others have good supplies of water only during the rainy season, and others, lacking sources of water at all times of the year, seek water at distances of up to 12 kilometres. Other commonly identified challenges include poor access to roads, and lack of electricity, health care, and educational opportunities. All of the challenges were evaluated for each community relative to the other communities in the area.

The mapping phase translated data from the community meetings into a GIS, where it was spatially referenced to each community.[2] For each community a relative ranking was assigned for each challenge identified. The numbers were then assigned colour attributes which appeared on the maps. In the example cited above, communities with access to water throughout the year represented the best situation (though not ideal) and were accorded a '3', which corresponded with the colour blue (darkest shade) on the map (Figure 3). Those with no water throughout the year were in the most difficult situation and were assigned a '1' and the colour red (medium shade). Communities that had water only during the rainy season were relatively worse off than the 'blue' communities but better off than the 'red' communities and were designated a '2' and the colour yellow (lightest shade).

Participants had the opportunity to verify the maps and amend them where necessary during another visit to the communities. The corrected maps served as the basis for discussions on priorities for the region. From a planning perspective it is not feasible to consider individual communities with very few residents. For the purpose of the discussion of priorities, highlighting assets, and identifying solutions to the challenges, each community is assigned to a sector (SEC) which serves as the basic planning unit. Each sector consists of communities that were spatially contiguous, with common geographic characteristics, with a minimum population determined by planning and policy needs, and with common social ties (for example, public services such as health, education, recreation, or through family ties). The SECs were determined in conjunction with the local partners and validated by participants.

There is a wealth of data generated during the community meetings and recorded by participants that serve to support and give context to the maps. These data include discussion details not readily displayed on maps. They are, however, included in the GIS. Thus, it is possible to select a community or SEC on a computer, in order to retrieve a record of discussions and other details. This information was presented to the prefeitos and other munícipio representatives, who used it as a principal source for developing their short-term and long-term development plans. The local partners were trained in the art of writing proposals and, using the results of the earlier community meetings and the munícipio-level development plans, elaborated specific proposals that were submitted to SDLR, who made a commitment from the outset to fund projects arising from MAPLAN.

The maps and GIS set the stage for monitoring the changes in resource allocation. This is done both as part of the methodology and through spontaneous actions of community

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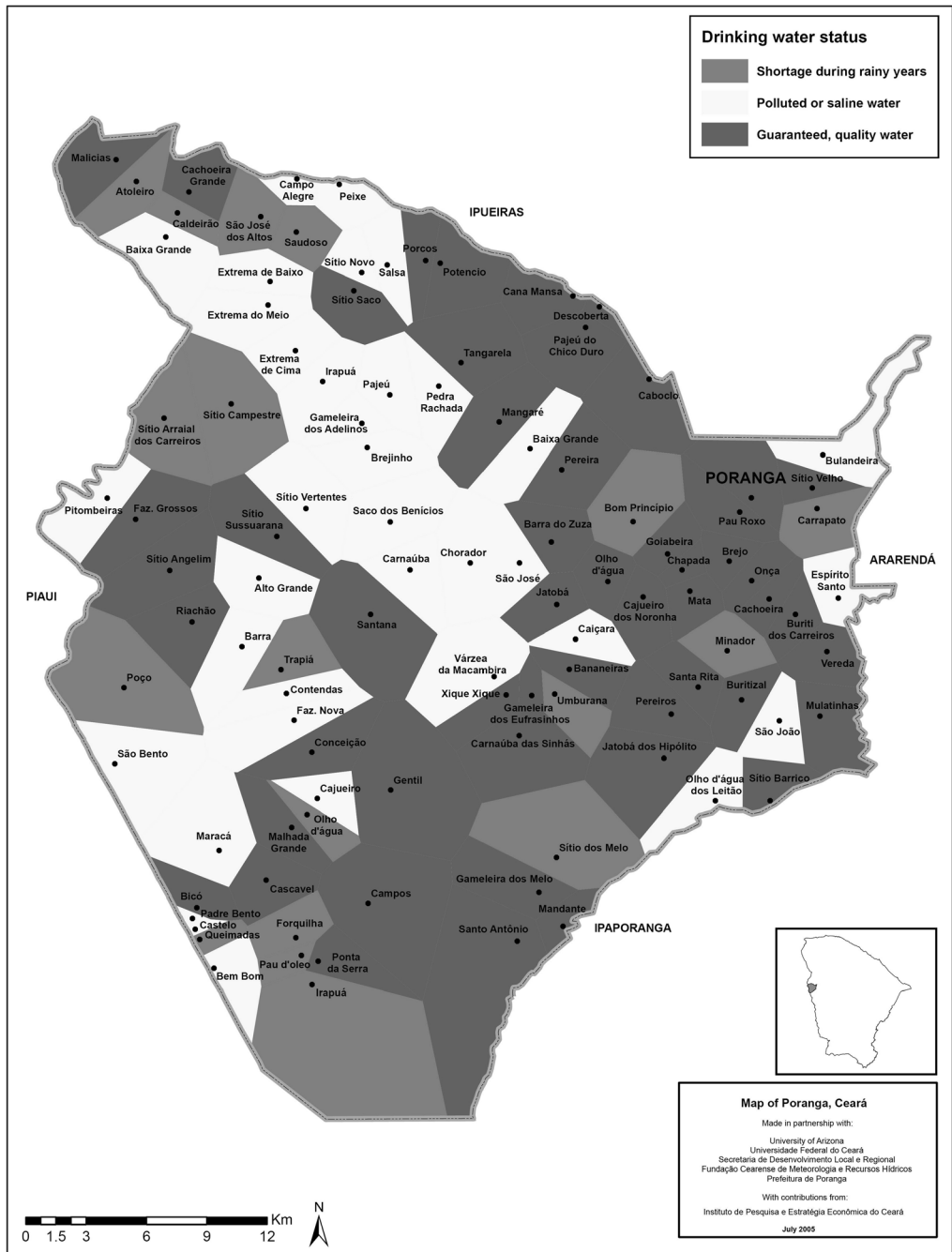
Figure 3: Sample output – map of potable-water availability by community in the *município* of Poranga

members. Through regular monitoring and by updating diagnostics, it is possible to visually trace the impact of public policy on communities. The process provides baseline situations and a way to measure change against them. By tracing the change in colour of each community for the various challenges, it is possible to follow the allocation of resources. This is a strong

tool for holding public-policy makers accountable for their decisions, and for providing additional incentives for individuals to be actively involved throughout the entire policy process.

Discussion

The project has met with success at the state and município levels and within communities themselves. The state government adopted the methodology and has now expanded implementation to more than 15 municípios, with plans to continue the expansion. Prefeitos are using the reports to justify access to development funding from a variety of sources, and communities in several municípios are doing the same. In effect, MAPLAN has co-opted the development discourse from the state government by demonstrating how to put ideals such as participation and decentralisation into practice.

Project gains are the result of the process and the outcomes. Significant efforts were made to ensure the active and representative participation of citizens, with special care to guarantee that the processes were not dominated by local political machines. Engagement on an equal footing with município leaders provided individuals with the opportunity to express their views in what they felt was an effective manner. The flexibility of the process ensures that localised concerns are addressed, while at the same time highlighting factors that are important across the region. By using the GIS spatial-analytical capabilities, it is possible to scale up data to identify the spatial patterns of resource allocation as well as principal development challenges and priorities. Finally, the transparent and inclusive process, in conjunction with the legitimising effect of the GIS, provides the results with significant impact.

Although MAPLAN has met with success on many levels, there remain areas of concern and room for improvements. In a certain sense, the success of the project has also made it vulnerable. As MAPLAN gains increasing prominence in the state as a vehicle for legitimately constructing public policy, it runs an increasing risk of being appropriated by those in traditional positions of power. This may be a purposeful rent-seeking, through distortion of the process of participation and representation for personal gain. However, it may simply be an artefact of institutional resilience. As a package, MAPLAN offers a pathway to true change in the relationship of citizens and their government. However, the adoption of a particular method is easier than embracing a methodology, and it is essential to the objectives of MAPLAN that it should not become simply another diagnostic tool, but rather that it should continue as an approach that redefines rural development politics and the relationship of citizens and the public sector.

The MAPLAN experience provides an innovative example of a way in which participation can be systematically employed across regions and in which the data can be scaled up. More importantly it opens a pathway to redefine the way in which citizens interact with the government. Putting ideals of participation, decentralisation, transparency, and accountability into practice, MAPLAN is a step towards strengthening governance in the state.

Acknowledgements

Notes

1. The available digital maps contain information on roads, waterways, and community locations. The communities are not current, and we asked participants to indicate communities that were not included or no longer existed. We were primarily concerned with the relative spatial relationships between communities and ensuring that all were represented on the maps.
2. The spatial extent of each community was determined by a Thiessen polygon function within the GIS. For the purposes of this project, the relative location and relationship with other communities were of greater interest than the specific spatial bounds of each community.

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