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LARGE INFRASTRUCTURE PROJECTS IN THE BRAZILIAN AMAZON: INNOVATIVE APPROACHES FOR LOCAL DEVELOPMENT

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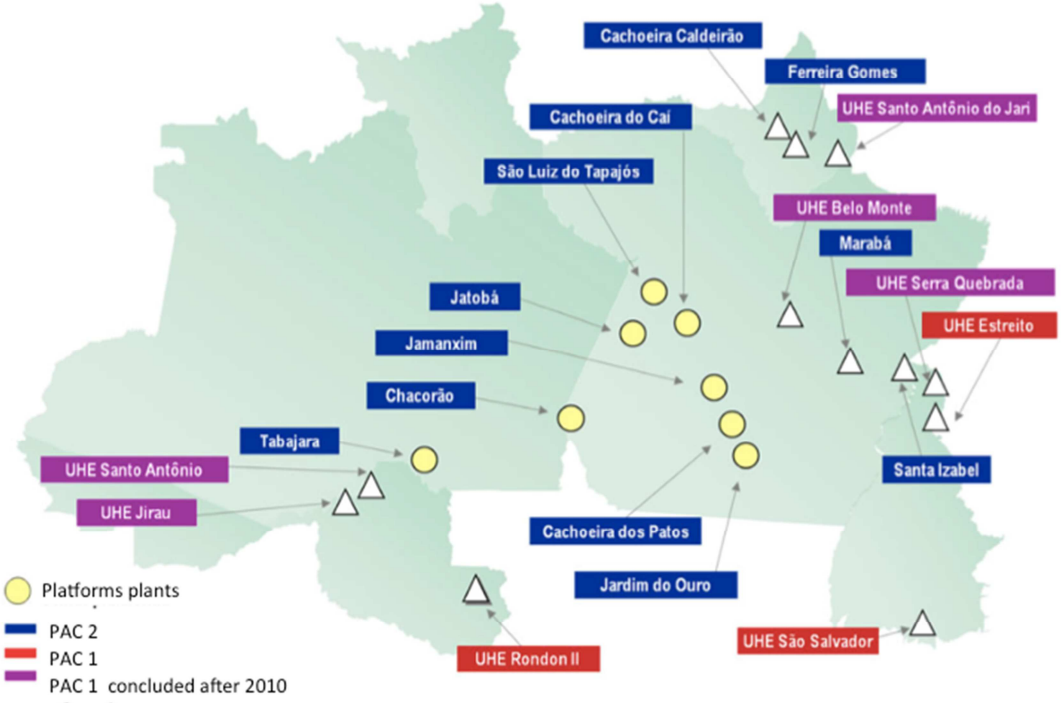
The Growth Acceleration Program (PAC), created in 2007 by the Brazilian government to accelerate the planning and execution of infrastructure initiatives (Ministério do Planejamento 2015), fostered a boom of large projects countrywide with no precedents in the national history. The Brazilian National Bank for Social and Economic Development (BNDES) estimated that investments in infrastructure would represent 2.5% to 3% of the gross domestic product (GDP) in 2014, when over 1,200 projects were taking place in the country (PwC 2013). More recently, Dilma Rousseff, the president of Brazil, announced an infrastructure package worth almost $65bn, combining public investments and private partnerships in highways, railways, ports and airports (Financial Times 2015).

Internationally, BNDES has also increased its influence. About 87% of investments in the international export area of the bank in the last ten years was focused in Latin American infrastructure. From 1998 to 2012, 48 infrastructure projects were supported in the region - all linked to Brazilian companies (Agência Pública, 2013). Also in a ten-year time frame, an increase of 1.185% of the amount of

financing provided by BNDES to Brazilian construction companies to export to other countries was observed.

A great part of PAC projects is taking place in the Brazilian Amazon, a region that hosts one of the world's most biodiverse and culturally complex environments. Figure 1 (Presidência da República



2010) indicates, for instance, the number of hydroelectric power plants concluded or to be concluded during both PAC phases (PAC I (2007-2010) and PAC II (2011-2015).

Figure 1: Electrical energy generation in the Brazilian Amazon region (Presidência da República 2010)

Brazil is widespread known for its environmental licensing legislation. As a resource-rich country, it developed over the years a complex governance system that regulates the implementation and the operation of different types of infrastructure and related enterprises. The conduction of public hearings during the impact assessment and the inclusion of social aspects among the mitigatory and

compensatory measures are two examples of national practices, despite the frequent critiques about their inefficiency.

In spite of solid legislation, Brazil still faces huge challenges in delivering development with social justice, environmental protection and more equal distribution of economic development. In many cases the set of processes and procedures adopted by infrastructure projects are counterproductive in terms of the broader national development project.

Several studies approached the effects of infrastructure projects for social indicators (Coutinho 2008, Pizzol & Ferraz 2009, Borges, 2011), claiming that they perversely affect politics and social policies (Garcia & Cardoso, 2015), and that impacts have been systematically underestimated, including population displacement and loss of livelihood, biodiversity loss, and greenhouse-gas emissions (Rovere & Mendes 2000; Fearnside 2015). Others analyze impacts on deforestation (Barni et al. 2015; Graça et al 2014).

Problems in the preparation of environmental impact studies, lack of dialogue with affected communities as required by law, non-compliance with social and environmental conditions and even death of workers are among the reasons that led prosecutors of the Federal, State and Labor Ministries to move actions against companies and governments responsible for major infrastructure projects in seven states of the Amazon region. A total of 80 lawsuits were brought by prosecutors against 17 of the 20 infrastructure projects in the Amazon between 2008 and 2012 that receive BNDES financing (Agência Pública 2013). These processes interrupt implementation and reflect social instability in these areas.

As described by research from the Applied Economic Research Institute (IPEA) of the Brazilian Government:

> "There are some situations that combine explicit and implicit demands for public strategic planning; that show what this planning could deliver to print a virtuous dynamic from large public-private initiatives; and which reveal the enormity of problems that are produced by the lack of strategic planning and coordination of actors. Recent examples are the social and political

> dramatic facts occurred in Porto Velho, Rondônia, resulting from the construction of two large hydroelectric plants on the Madeira River, (…) Belo Monte hydropower plant in Altamira, Pará; the social drama surrounding the Suape complex at Pernambuco state; the socioeconomic and environmental impacts caused by private investments in the mining-metallurgical sector in Alto Paraopeba, Minas Gerais; and the implementation of the Petrochemical Complex of Itaboraí, Rio de Janeiro (Comperj), to mention only a few cases. (…) In all these cases, poor regions with great potential were not prepared to receive heavy investment and get the most out of them, making them engines of an inclusive local development, democratic, sustainable and dynamic. In the absence of adequate preparation, they will face demographic explosion, increased crime, child prostitution, and diseases. This will be accompanied by the disintegration of rural and urban economies and by environmental degradation, by real estate speculation that will expel the poor to marginal areas, the unbearable burden on basic social services, by expanding the presence of drug traffic and consumption, by the rising costs of living, among many other ills (Garcia 2010 apud Garcia & Cardoso 2015).

A closer look at the effects of infrastructure projects in the Amazon region positions them as a challenge for local development[1]. Small municipalities and surrounding areas hosting such projects are usually ill prepared to manage the rapid changes brought by them, and are characterized by fragile social organization and lack of financial resources. Migration, higher income basis, and pressure on infrastructure, services, social organization and natural resources bring long-term social and environmental repercussions. The implementation of sustainability principles in such contexts requires innovative frameworks and initiatives.

The Initiative *Guidelines for Large Infrastructure Projects in the Amazon*

To highlight the different components that characterize the saturation of the current model, and to describe and list the tools needed to build new approaches, two main ideas are being brought to foster the debate in Brazil. One of them relates to the measures that can be taken to better prepare public policies, institutions and structures of localities that will receive large projects. Financial instruments such as 'anticipatory local development funds' are one possible way to make available financial resources for developing local capacities and providing the necessary infrastructure and

[1] The publication "Sustainable Juruti: a proposed model for local development" (GVces 2008) presents an example of a large mining operation in the Amazon region and the challenges for local development.

capacity-building required by the arrival of an immense contingent of workers and indirect population attracted by such projects.[2]

The other idea is focused on the opportunities and challenges that may arise from large infrastructure projects implementation by effectively looking at territorial long-term planning. This regards to developing a set of mechanisms dedicated to territorial planning based on local characteristics and opportunities resulting from the enterprise's implementation.

In this context, a multistakeholder initiative is being promoted in Brazil by the International Finance Corporation (IFC) and the Center for Sustainability Studies of Fundação Getulio Vargas (GVces). Departing from the recognition that strategies to tackle the impacts resulting from the installation and operation of large-scale enterprises in the Amazon region need to go beyond mitigation and compensation, the initiative is dedicated to the following goals: (a) to promote rounds of discussion about large-scale projects and investments in the Amazon region within a broad context of impacts and opportunities in the economic, social and environmental fields; (b) to foster dialogue, social mobilization and coordination between public sector, civil society organizations and business sector; (c) to promote greater transparency and social control in the affected territories; (d) to contribute to the inclusion of main issues at the federal, state and municipal agendas as regards to territorial planning tools for assistance in overcoming institutional weaknesses, identifying actions and complementary responsibilities, and better formulation of public policies; (e) to contribute to the effectiveness of human development opportunities that may arise from the economic dynamism that focuses on regions affected by large-scale projects; (f) to strengthen the current environmental regulatory framework, by offering tools and guidelines that complement actual efforts of impact mitigation within current environmental licensing process; and (g) to encourage and guide best business practices in the context of the insertion of companies and their value chains in delicate environmental structure territories.

[2] In a recent interview published 2014, Hector Gomez Ang (IFC's Brazil Country Manager) declared: "the creation of a fund able to finance research and policies dedicated to better prepare regions that are hosting large projects may trigger a new pattern of local development in Brazil." (GVces/P22, 2014)

To reach these goals, groups composed by different stakeholders (civil society, private sector and the federal and governments) are engaged in discussing specific issues that were identified as crucial for the local development of territories that host large-scale enterprises.

The first issue is an **assessment of the scenario** of large infrastructure projects investments foreseen for the Amazon region, including climate change scenarios. In particular, social and environmental impacts, weaknesses in the supporting infrastructure, aspects related to governance processes, and the participation of local actors, need to be mapped. This means providing an overview of the current situation and different scenarios of investment in major projects planned for the region, allocating them territorially and temporally, as well as identifying sectors of the economy to which they relate. Moreover, this overview will be followed by key institutions operating these processes, such as public administration agencies, private companies and financing institutions, among others. A broad view of the upcoming investments in Brazil infrastructure is indicated above and further information can be found mainly at the Acceleration Growth Program online platform[3]. As for the climate change scenarios, two interconnected driving forces will influence the Amazon region: regional deforestation and land use change such as biomass burning and forest fragmentation, which affects local and regional climate, and global climate change (Salati et al., 2006, IPCC 2007, SREX 2012 apud Ometto et al. 2013). Both driving forces can lead to the increase in temperature, which will induce larger evapotranspiration in tropical regions and probably reduce the amount of soil water. This phenomenon can trigger the replacement of the current vegetation by other vegetation types more adapted to drier conditions (Ometto et al. 2013).

The second topic to be detailed is about **local development agendas and related governance mechanisms, transparency, access to information, and social control**. The practice indicates that the development of a given territory when facing large infrastructure investments must be based on the ability to identify bottlenecks and opportunities, elaborating local agendas to be negotiated, debated, prioritized and integrated into broader territorial planning. This set of initiatives invariably

[3] Available at (only in Portuguese): http://www.pac.gov.br/. Acessed: 26th October 2015.

requires action from different institutions to be effective, requiring coordination and organization of these interventions. Thus, governance which is responsible for better coordination of skills and competences should also provide the necessary agreements to adjustments that dynamic possibly require. Results of these arrangements and adjustments in strategies arise from the monitoring capacity, based on indicators or other mechanisms to assist in territorial planning. The concept of local development rests, from this paper's perspective, on promoting an improvement in the quality of life of the population, based on its capacity to manage the resources available in a given territory. While local government is considered key to this, the importance of engaging civil society and the private sector in the process of setting a local agenda has grown over time in decision-making processes and in raising the money to finance such a development agenda (GVces, 2008).

The last element is related to the **required financing mechanisms to support local development** in the context of large projects. Due to the intensity of impacts, past experiences indicate that extra resources are needed to support local development initiatives, as well as the preparation of the necessary infrastructure for the region. The question then becomes not only the sources of funds for both purposes, as well as its management and governance, as the planned activities do not fall solely on municipal logic, nor state, and should involve the participation of many institutions and organizations (public, social and private).

The **vulnerability of some social groups** to the impacts of large projects is also a topic of concern. Children and adolescents, women, indigenous and traditional communities are some examples of such groups. Human rights non-governmental organizations and social movements acting in Brazil claim that large projects are causing serious human rights violations, which may then aggravate already existent social inequalities (Conselho de Defesa dos Direitos da Pessoa Humana 2010 apud Timo 2013). Given the legal and social specificities of vulnerable groups, efficient measures must be planned and agreed with all sectors of society in order to guarantee their rights, which are protected by specific guidelines worldwide and legislation nationally.

Institutional capacity and strong dialogue among public policies in federal, state and municipal level are also key for a sound implementation process. Ill-prepared municipal governments and, in some cases, state governments as well as specific federal agencies are the main primary "hosts" of the impacts upon the arrival of a large-scale infrastructure enterprise. The extraordinary demands, such as mitigation measures, environmental compensations, and increasing demand on a variety of social services, in a rapid and dynamic process, requires planning, regulatory measures and procedures for the public policies to better articulate and act in the territory.

The last element that should be taken care of when a large project is implemented in a certain territory is related to **spatial planning and biodiversity**. In the Amazon region, the occupation of the territory results in a significant liability that affects rights and enhances environmental damage given the historical absence of state or even ineffective result of his presence, including the colonization dynamics during the military period in Brazil. The relationship between highways implementation and deforestation alone shows "vicious cycles" of environmental depletion, including stimulation of the implementation of extensive cattle ranching and slash-and-burn agriculture, fires cycles, and inhibition of rainfall (Nepstad et al, 2000). The impacts of a large enterprise are more expressive - not only the direct ones, but also those arising from the injection of funds in local economic activities, including illegal. So spatial planning is even more crucial to environments with a high degree of dynamism. Similarly, spatial planning can ensure better discipline in the use of these spaces, resulting in less pressure on natural resources and the guarantee of rights (Alencar, 2008; Soares Filho et al, 2004).

Creating the new mindset

Innovative approaches that aim at fostering new development patterns and opportunities due to the implementation of large infrastructure projects in the Brazilian Amazon region will inevitably face multiple and significant political and institutional implications characteristic to traditional processes of installation of large infrastructure projects in Brazil. Further, a change in the culture and *modus*

operandi of the different actors involved requires prioritizing public policies, leading them to work together to create a viable and lasting sustainable development environment.

The time is ripe for change precisely because the Brazilian national development strategy is heavily relying on a necessary infrastructure agenda for the country's growth. This is the opportunity to learn from mistakes and past experiences and advance a transition to new forms of implementation of large infrastructure projects, consistent with the context and the actual challenges of sustainability.

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