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PRESENTATION

Special issue: infrastructure delivery and project management in low-and middle-income economies

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Abstract

This presentation introduces the special issue of Cadernos EBAPE.BR, focusing on the theme of infrastructure delivery and project management in low-and-middle income economies. This work highlights the rationale for the special issue and summarizes the articles published. Infrastructure projects operate in a complex environment and must handle multi-level management governance. These challenges are even more pronounced in low-and-middle income economies. Therefore, an infrastructure project management system must not only consider its internal structure but also the changes and impacts the project has on both internal and external environments. The thematic section of this special issue features four articles. The first article, presented by Carneiro (2023), takes a critical perspective on project studies with a focus on the World Bank's role and influence. The World Bank is one of the primary funding sources for infrastructure projects and has committed to increasing investments in infrastructure from billions to trillions of US dollars. Pereira, Gomide, Machado, and Ibiapino (2023) as well as Pinto and Teixeira (2023) concentrate on Brazilian Amazon infrastructure megaprojects. Finally, Barros, Carvalho, and Brasil (2023) discuss inland waterway transportation in Brazil. This special issue aims to delve into project management studies related to the delivery of large-scale infrastructure projects, encompassing public-private governance issues, project execution, and stakeholder engagement. The four articles provide a comprehensive overview of the challenges Brazil faces in executing such projects. They all address the often-high socio-political complexity that characterizes the context surrounding infrastructure projects in low-and middle-income countries, whose ultimate objective is to create and distribute value to their citizens.

Keywords: Development projects. Project management. Infrastructure projects. Socio-environmental demands.

Edição especial: provisão de infraestrutura e gerenciamento de projetos em economias de baixa e média renda

Resumo

Esta apresentação introduz a edição especial do Cadernos EBAPE.BR sobre provisão de infraestrutura e gerenciamento de projetos em economias de baixa e média renda, destacando a sua fundamentação e resumindo os artigos publicados. Os projetos de infraestruturas operam num ambiente complexo e devem lidar com uma governação de gestão multinível. Estes desafios são ainda mais pronunciados em economias de baixa e média renda. Portanto, um sistema de gestão de projetos de infraestrutura deve considerar não apenas a sua estrutura interna, mas também as mudanças e impactos que o projeto tem nos ambientes internos e externos. A seção temática deste número especial traz quatro artigos. O primeiro artigo, apresentado por Carneiro (2023), apresenta uma perspectiva crítica sobre estudos de projetos com foco no papel e na influência do Banco Mundial. O Banco Mundial é uma das principais fontes de financiamento para projetos de infraestruturas e comprometeu-se a aumentar os investimentos em infraestruturas de milhares de milhões para biliões de dólares americanos. Pereira, Gomide, Machado, e Ibiapino (2023), bem como Pinto e Teixeira (2023) concentram-se nos megaprojetos de infraestrutura da Amazônia br asileira. Por fim, Barros, Carvalho, e Brasil (2023) discutem o transporte hidroviário interior no Brasil. Esta edição especial tem como objetivo aprofundar estudos de gestão de projetos relacionados à entrega de projetos de infraestrutura de grande escala, abrangendo questões de governança público-privada, execução de projetos e envolvimento das partes interessadas. Os quatro artigos fornecem uma visão abrangente dos desafios que o Brasil enfrenta na execução de tais projetos. Todos eles abordam a frequentemente elevada complexidade sociopolítica que caracteriza o contexto que rodeia os projetos de infraestruturas em países de baixo e médio rendimento, cujo objetivo final é criar e distribuir valor aos seus cidadãos.

Palavras-chave: Projetos de desenvolvimento. Gerenciamento de projetos. Projetos de infraestrutura. Demandas socioambientais.

Edición especial: provisión de infraestructura y gestión de proyectos en economías de bajo y medio ingreso

Resumen

Esta presentación expone la edición especial de Cadernos EBAPE.BR sobre provisión de infraestructura y gestión de proyectos en economías de bajo y medio ingreso, destacando su justificación y resumiendo los artículos publicados. Los proyectos de infraestructura operan en un entorno complejo y deben abordar una gestión de gestión multinivel. Estos desafíos son aún más pronunciados en economías de bajo y medio ingreso. Por lo tanto, un sistema de gestión de proyectos de infraestructura debe considerar no solo su estructura interna, sino también los cambios e impactos que el proyecto tiene en los ambientes internos y externos. La sección temática de este número especial contiene cuatro artículos. El primer artículo de Carneiro (2023) adopta una perspectiva crítica de estudios de proyectos críticos, basada en el papel y la influencia del Banco Mundial, una de las principales fuentes de presupuesto para proyectos de infraestructura que se comprometió a aumentar las inversiones en infraestructura de miles de millones a billones de dólares estadounidenses. Pereira, Gomide, Machado, e Ibiapino (2023), así como Pinto y Teixeira (2023), se centraron en megaproyectos de infraestructura en la Amazonía brasileña. Para concluir el número especial, Barros, Carvalho, y Brasil (2023) discutieron el transporte por vías navegables interiores en Brasil. Este número especial tiene como objetivo profundizar en los estudios de gestión de proyectos relacionados con la ejecución de proyectos de infraestructura a gran escala, cubriendo cuestiones de gobernanza público-privada, gestión de ejecución y participación de las partes interesadas. Los cuatro artículos brindan una visión integral de los desafíos que enfrenta Brasil en la ejecución de este tipo de proyectos. Todos abordan la complejidad sociopolítica, a menudo alta, que caracteriza el contexto que rodea a los proyectos de infraestructura en países de bajo y medio ingreso, cuyo objetivo final es crear y distribuir valor a sus ciudadanos.

Palabras clave: Proyectos de desarrollo. Gerencia de Proyectos. Proyectos de infraestructura. Demandas socioambientales.

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A deepened consciousness of their situation leads people to apprehend that situation as a historical reality susceptible of transformation (Freire, 1989, p. 85).

INFRASTRUCTURE PROJECT DELIVERY: WHY IT MATTERS

Today, worldwide, around US $ 2.5 trillion a year is invested in new infrastructure development including transport, power, water, and telecom systems, to spur economic growth and provide much-needed services to citizens. This investment represents a small fraction of the global amount of domestic investment in fixed assets, which has been estimated at around $26.5 trillion in 2020 by the World Bank. Unsurprisingly, this project-based capital investment falls far too short to tackle traffic gridlocks, jammed ports, long blackouts, broken dams, and tainted water supplies according to multiple sources ranging from World Bank reports to private consultants. And if the world was a perfect place, we would see today additional tens of trillions of US dollars investments in infrastructure projects being committed to achieve by 2030 the United Nations' Sustainable Development Goals (SDGs), which are a useful blueprint to guide global collective action. While evidence shows that it is increasingly unlikely the world will be on a sustainable development path by 2030, global investment in infrastructure will remain critical for decades to come both in high-income economies as well as in low-and middle-income economies, where most of the global population growth is occurring.

Critically, a series of natural catastrophes from earthquakes in Turkey and Indonesia to cyclones in Africa and the Pacific, together with human-made crises such as the 2008 financial crisis and the war in Ukraine, keep reviving the discourse on the need to invest in infrastructure. Both present a strong case to stimulate the economy of low-and middle-income countries and represent social instruments to achieve pressing environmental and social goals. A case in point is China's economic and poverty-reduction success story, which hinges in part on investment in large-scale infrastructure projects, a situation that has aroused interest in other low-and middle-income countries in search for replication (United Nations Conference on Trade and Development [UNCTAD], 2018; Woetzel, Garemo, Mischke, Hjerpe, & Palter, 2016). As Hirschman (1958) has long noted, large-scale infrastructure planning is "a matter of faith in the development potential of a country or region" (Hirschman, 1958, p. 84). Such 'faith' has the potential to fuel a scramble – at least rhetorically – of pledges by multilaterals and high-income economies to help Africa, Asia, Latin America and the Caribbean build much-needed infrastructure. Key examples include institutional frameworks that have been established in recent years such as the G7 Build Back Better World, China's Belt and Road Initiative, Indian's National Infrastructure Pipeline, Europe's Global Gateway Investment Plan for Africa, Infrastructure Development Plans from the African Development Bank, the Initiative for the Integration of the Regional Infrastructure of South America, and the Caribbean Infrastructure PPP Roadmap. Concomitantly, the World Bank, a key player in international development policy, has shifted from a focus on "getting institutions right" or "good governance" practices to "getting the territory right" or further the integration of countries' economies with global value chains (Schindler & Kanai, 2019). Thus, the World Bank has pledged to scale up infrastructure investments "from billions to trillions" (UNCTAD, 2018).

DELIVERY CHALLENGES IN PECULIAR CONTEXTS

Notwithstanding numerous pledges towards the UN SDGs, infrastructure-led development remains a "risky business" (Flyvbjerg, 2014; Hirschman, 1958; Rondinelli, 1979), especially in low-and middle-income economies (Gil, Stafford, & Musonda, 2019; Schindler & Kanai, 2019). In these settings, large-scale projects tend to experience high uncertainty in terms of changes in their evolving context, high structural complexity in terms of their scope (Bentahar & Ika, 2020; Gregory, 2020; Shenhar & Holzmann, 2017), and high socio-political complexity in terms of their surrounding context including many stakeholders with differing if not conflicting expectations (Gil & Fu, 2022; Ika & Saint-Macary, 2023). Consequently, these projects are often subject to high transactional and institutional costs (Ika, Söderlund, Munro, & Landoni, 2020; Lizarralde, Tomiyoshi, Bourgault, Malo, & Cardosi, 2013; Orr, Scott, Levitt, Artto, & Kujala, 2011). Taken together, these factors make it hard to define, measure and observe the performance of large-scale infrastructure projects (Ika, 2018; McDermont, Agdas,

Díaz, Rose, & Forcael, 2022). Performance appreciation becomes particularly complicated once infrastructure projects are seen, not just as linear enterprises to create economic returns, but rather complex social artifacts that require extensive orchestration of coordinated collective action to create and distribute value. Once value is defined broadly, performance measures need to consider both the capacity of new infrastructure projects to produce economic returns for capital investors and the imperative to produce wider social and environmental value for a number of non-user stakeholder groups. Thus, performance evaluations need to ask the extent to which such projects meet the needs of a broader pool of beneficiaries including local communities, interest groups, local authorities, environmental agencies, and other non-user stakeholder groups (Gil, 2023).

This emphasis on a broader conceptualization of value is important when we seek to assess the performance of capital-intensive infrastructure projects such as the $4 billion Chad-Cameroon pipeline, the South African $ 14 billion Medupi, the $ 5 billion Kusile, and the $ 2 billion Ingula coal plants (Gregory, 2020; Ika, 2012). Such emphasis raises questions that go beyond the extent these projects stay on target to validate a formulaic cost-benefit analysis that is perforce narrow in scope because there are facets of value that we do not know how to monetise. A broader definition of value thus raises questions around the extent these projects contribute tackle equity and distributional concerns as well as mitigated impact on the welfare of local communities and on the environment (Gil & Fu, 2022; Gil & Pinto, 2018). For example, when a wider optic is applied to assessing the performance of projects such as the 1780km BR-163 highway and the $16 billion Belo Monte hydropower plant in Brazil, our attention suddenly shifts to the troubling fact that both enterprises have reportedly benefitted the economic elites to the detriment of the less powerful local communities, which were nonetheless materially impacted (Abers, Oliveira, & Pereira, 2017).

Relatedly, in the peculiar contexts that characterize low-and middle-income countries, evidence suggests that infrastructure projects experience high non-completion and underperformance rates. In Nigeria, for example, it has been suggested that 19,000 projects including many infrastructure projects that have started are not completed (Umoru & Erunke, 2016). Brazil also has its fair share of infrastructure projects that are abandoned mid-course (Samuels, 2002). More recently, the Brazilian Federal Court of Accounts published a report entitled “Infrastructure: Operational audit of stalled projects” (Tribunal de Contas da União [TCU], 2019). From a total of 38,412 contracts under execution with federal budget in 2019, the report revealed that 14,403 projects were not being executed, which counted for 20% of the total approved budget. The main causes were reportedly due to technical problems (47%) followed by abandonment, during project execution, by the organizations contracted to carry out the work (23%). As well, clientelism, collusion, and corruption remain key institutional factors behind the reasons that lead to interrupt projects in low-and middle-income contexts (see Damoah, Akwei, Amoak, & Botchie, 2018 and Williams, 2017 for the case of Ghana). This is to the extent that the OECD claims that collusion may cost up to $2 trillion dollar per year in global procurement (Signor, Love, & Ika, 2022). Adding to the difficulty to develop new infrastructure in low-and middle-income countries are collective action problems to reach a consensus on the target locations for projects (Williams, 2017), a struggle which was not there when high-income economies built their own infrastructure backbone, because at the time those countries were sparsely populated and the decision-making processes on resource acquisition and allocation were centralized in hierarchical structures.

In addition to non-completion, underperformance remains a key challenge. In Africa, for example, the International Finance Corporation, the private arm of the World Bank, estimates that half of its projects fail to deliver intended benefits in terms of economic growth or poverty reduction (Ika & Saint-Macary, 2014). This may be due to structural (e.g., economic), institutional (e.g., governance) and managerial (e.g., monitoring) challenges (Ika, 2012). As this author notes, infrastructure projects in low-and middle-income countries tend to fall foul to a series of traps: the one size-fits-all-technical trap (e.g., the ill-conceived idea that all projects can be managed the same way), an accountability-for-results trap (e.g., too much emphasis on guidelines and procedures and little on the delivery of results), a-lack-of-project-management-capacity trap (e.g., deficient project management skills), and a cultural trap (e.g., underplaying local context and culture).

Importantly, not all governments in low-and middle-income countries face the same challenges. While middle-income countries such as Brazil, China, and India can finance their infrastructure projects through their national budgets or through public private partnerships, this is not the case for countries such as Afghanistan, Columbia, Haiti, Laos, Liberia, South Sudan, and Niger that struggle to both borrow money by issuing bonds as well as attract foreign private investment for infrastructure (Moore, 2018). As a result, infrastructure development in the latter countries requires commitment from institutional intermediaries in the

form of multilaterals and donors. Those lenders and donors, which espouse western norms, however, are unlikely to offer loans and grants for infrastructure unless the recipients meet institutional requirements in terms of stakeholder engagement during planning processes and competitive bidding before implementation – conditions that tend to significantly delay the disbursement of capital funds.

In recent decades, we have seen a greater number of low-and middle-income countries turning to emerging lenders like China, Russia, and Saudi Arabia, who are much less likely to make lending conditional on institutional building/development. Critics claim that efforts by low-and middle-income countries to deepen the relationships with emergent funders to bridge a rapidly growing infrastructure gap is akin to a Faustian bargain that can lead to value capture by opportunistic and predatory lenders, through so-called resources for infrastructure deals. But exercising agency, many countries continue to seek loans from emergent lenders not conditioned on institutional reforms – a gamble that, when it works well, leads to much-needed quick infrastructure development and value creation; but when the gamble takes a turn for the worse, it leads to value destruction in the form of "White elephants" and abandoned projects (Gil et al., 2019). In light of this seemingly intractable problem, infrastructure development in low-and middle-income countries is one of today's world-scale challenges and because of the wicked nature of the problem, there is no one-size-fits-all approach (Furtado, 1971; Ika et al., 2020). The complex participation architecture of Brazil's housing social movement is a case in point (Gil, Sousa, & Massa, 2023). What we know is that infrastructure development is a context-sensitive enterprise in time and space (Davies, MacAulay, & Brady, 2019). Thus, the planning and managing task structure needs to adapt to the surrounding context, be it China (Li, Sun, Shou, & Sun, 2020), Africa (Gil et al., 2019), or Brazil (Ramos, Mota, & Corrêa, 2016), the latter of which is the geographical context of this special issue. Notably, Brazil, compared to the other BRIC countries, has the greatest infrastructure gaps including shortages in social housing, sanitation, and railways to name but a few.

Clearly, evidence from around the world suggests that many large-scale infrastructure projects, irrespective of the real nature of their goals (see Rego, Irigaray, & Chavez, 2018 for the Brazilian context), struggle to lead to prosperity in the sense of fostering both economic returns for capital investors and broader societal benefits such as poverty reduction and climate change adaptation. Rather, not only many projects tend to succumb to cost blowouts that are not commensurate with an increase in the broad benefits they produce (Love, Ika, & Sing, 2022; Thacker et al., 2019), but they may actually generate negative social and environmental impacts that go unmitigated (Gellert & Lynch, 2003; Hirschman, 1967; Schindler & Kanai, 2019). The Three Gorges dam in China and the Brazilian Amazon projects are good illustrations (Abers et al., 2017; Shenhar & Holzmann, 2017).

THE FOCUS OF THE SPECIAL ISSUE

While infrastructure matters, we still lack rigorous empirical studies on the planning, delivery, and performance of infrastructure projects in low-and middle-income countries (Gil et al., 2019; Gregory, 2020; Ika, 2018; McDermont et al., 2022). This is the research gap that motivates this special issue. We were inspired by the idea that much like low-and middle-income countries have contributed to the emergence and shaping of the SDGs (Fukuda-Parr & Muchhala, 2020), data from these countries can also shape the theory and practice of project management (Hirschman, 1967; Ika et al., 2020) and organization and management theory and practice more generally.

Specifically, this special issue brings together four papers on infrastructure delivery and project management in Brazil. The special issue generated interest, as we received some 20 extended abstracts and 8 full paper submissions. Following a thorough review process, the original set of papers was whittled to a final set of four.

The papers in this special issue present cases of large-scale infrastructure projects in Brazil.

The first paper by Carneiro (2023) takes a critical project studies perspective and, through historical and documentary analysis, discusses the role and influence of the World Bank. The author questions the Bank's strategic approach in using projects to reduce poverty in Brazil and suggests the Bank disappointingly followed a typical and "managerialist" model for low-and

middle-income countries. **Better alignment** between international bodies investing in these countries and local governments and institutions is needed for project success.

In the second paper, Pereira, Gomide, Machado, and Ibiapino (2023) take a close look at two megaprojects in the Brazilian Amazon: the Belo Monte hydropower plant and the BR-163 highway. Governance arrangements, in terms of patterns of interactions between the State and society, are examined through interviews to identify the sufficient conditions (e.g., stakeholder participation) for infrastructure projects to meet socio-environmental expectations from local communities. They conclude that although there is no one shared list of conditions, **participation of civil society actors is critical**. Therefore, representation, involvement, and engagement of the target local community in infrastructure development projects must be carefully addressed and managed.

Pinto and Teixeira (2023) also focus on governance but this time from a territorial view. Their interview-based single case study examines the Belo Monte hydropower plant. They highlight the high socio-political complexity of dealing with the territory and in particular building and sustaining effective relationships with local communities (that is, engaging external stakeholders) to deliver a project that is deemed successful by many stakeholders. The authors note how this complexity affects the ability to deliver a successful project. **Planning instruments, shared responsibilities and objectives, and local territory involvement** are required to deliver project impact, and the territory should no longer be a passive place of investment, but a "voice" actively influencing and being influenced by project governance and management.

In the last and fourth paper, Barros, Carvalho, and Brasil (2023) highlight the inefficiency of available funds for inland waterway transport projects. Budget strategies as well as planning and execution factors are investigated in light of governance approach and decision-making practices. The authors find that deficient leadership and poor monitoring and organization capacity are the main reasons for budget underperformance and unsuccessful projects and recommend **a governance arrangement that fosters the participation of multiple stakeholders** in project planning and execution.

CLOSING INSIGHTS

The special issue was open to discuss a variety of themes around the delivery of large-scale infrastructure projects, including governance issues, project roles, and stakeholder engagement processes. The four published papers offer distinct but complementary views. Notably, they all point to the often-high socio-political complexity that characterizes the context surrounding infrastructure projects in low-and middle-income countries. In Brazil's multi-layered context in particular, the findings consistently show that governance and stakeholder engagement play a key role in ensuring projects create value in a broad sense.

The papers also suggest the impact on society and environment is crucial, especially in the Brazilian Amazon. Indeed, although large-scale infrastructure projects are initiated with good intentions to receive funds from external sources such as the World Bank, in many cases, it seems that their long-term outcomes are not on par with stakeholder expectations, and, in some cases, they may even destroy value over time (e.g., negative social and environmental impacts). In Brazil, this value dimension remains underexplored, and yet is crucial to achieve the SDGs. We can expect that even if infrastructure projects receive the go ahead from powerful lenders like the World Bank, projects are unlikely to progress unless they widen their purpose to meet the legitimate concerns of stakeholders that control essential resources, for example, local authorities with statutory powers to issue local permits; local communities with capacity to mobilize, and powerful interest groups with local political influence. Increasingly, these groups of non-user stakeholders expect infrastructure projects to distribute more value by going above and beyond the law and existing regulations. In other words, stakeholders expect projects to internalize more positive externalities beyond the threshold that is necessary to conform to regulations and the law. For example, expect projects to allow for technological spillovers, create good local jobs, and address loss of biodiversity and climate change concerns to mitigate the negative impact on the welfare of local communities.

Thus, the need to develop infrastructure projects may become a "boon and bane" for many low-and middle-income countries: on the one hand, the business ecosystem around infrastructure projects may experience a boom as more projects see their

business case approved. But on the other, there persist difficulties to reconcile expectations to keep a project within predefined business case targets with pressure post hoc for projects to widen their purpose beyond the production of economic returns. This raises difficult questions about how to reconcile the need to build infrastructure quickly with the need to reform the institutions controlling project appraisal, and how to plan to ensure stakeholders have voice, but not power to hold up projects. Institutional building/development is invariably slow because of the time it takes to convince the power holders to change the institutions that enable them to capture value disproportionally to the risks they incur. And yet, without institutional reform, there is a risk that either projects get stuck, or they manage to go ahead but fail to become agents that contribute to a collective effort to further SDGs.

Thomas Jefferson's once said, "Never spend your money before you have it". This would be a good piece of advice if low-and middle-income countries could accumulate sufficient wealth to invest in infrastructure. But this rarely is the case, which raises questions about who is going to the rescue of low-and-middle-income countries who lack the wherewithal to bridge infrastructure gaps. It also raises the question of how different lenders and donors can balance traditional project professional norms (the iron triangle of time, budget and scope, and narrow cost-benefit analysis) with increasing pressure to define project purpose by the SDGs. After all, it is hard to disagree that there is urgency to mobilize capital to develop new infrastructure towards tackling today's grand challenges such as climate change, poverty reduction, and sustainable development. It is also hard to disagree that infrastructure investment should allow for efficient allocation of scarce resources. But we still know very little on how traditional demands for project accountability can be reconciled with pressure to transform infrastructure projects into social instruments of value creation and distribution.

We hope this special issue will inspire scholars especially those based in low-and-middle-income countries to examine how infrastructure projects can be effective tools to create and distribute value. This requires investigating how the legal and political environment, social norms, governance structures, and stakeholder enfranchisement activities conflate to impact the processes of value creation and distribution through infrastructure projects. It also raises important policy questions around accountability. If we expect projects to become social tools to distribute value, accountability then needs to go beyond those who approve and deliver projects (the traditional suspects) to include stakeholders who have voice and power to hold up projects. Without progress along these lines, it will be hard for low-and middle-income countries to make strides towards the SDGs. And without progress, we all have to lose no matter where we live.

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