



Global perspectives on institutionalizing land value capture for sustainable infrastructure planning and innovative fiscal solutions in Indonesia

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ABSTRACT

Background: Indonesia faces a significant fiscal challenge in funding infrastructure development, marked by a high debt-to-GDP ratio and interest burden that consumes a large portion of the national budget. This paper examines the institutionalization of Land Value Capture (LVC) as a sustainable and equitable alternative to conventional financing. **Methods:** The study conducts a comparative analysis of LVC implementation models in Hong Kong, the UK, and India, reviewing existing literature and policy reports. These models, ranging from property-based schemes in Hong Kong to tax-based approaches in the UK and national policies in India, reveal how LVC can capture the increase in land value resulting from public infrastructure projects. **Findings:** The findings demonstrate LVC's potential to internalize the positive externalities of infrastructure development, aligning with classical economic theories and the principle of fiscal justice. By doing so, it can expand the non-tax state revenue base, reduce debt dependency, and strengthen fiscal resilience. **Conclusion:** This paper concludes that establishing a robust legal framework, integrating LVC with spatial planning, and fostering public-private collaboration is essential. **Novelty/originality of this article:** The originality of this research lies in its comprehensive comparative analysis of global LVC models and the formulation of integrated policy recommendations specifically tailored to Indonesia's unique institutional and fiscal context.

KEYWORDS: Land Value Capture (LVC); fiscal challenge; infrastructure development.

1. Introduction

Indonesia's ambitious pursuit of infrastructure as a primary driver for economic growth has inadvertently created a looming fiscal challenge. This strategic narrative is underpinned by a significant imbalance between the nation's megastrategic ambitions and its real fiscal capacity, which is increasingly strained. A key indicator of this vulnerability is Indonesia's debt-to-GDP ratio, which currently stands at 38.8% (Trading Economics, n.d.). The fiscal pressure is compounded by the staggering debt interest payments, amounting to IDR 499 trillion in the 2024 State Budget (CNBC Indonesia, 2024), a figure that exceeds the combined allocations for health and social protection. This not only signifies a substantial portion of the budget being diverted to past obligations but also creates a condition of fiscal crowding out, where debt servicing expenditures restrict the government's ability to finance new, productive investments (International Monetary Fund, 2023). This situation is

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a critical concern, as a nation's fiscal health is a cornerstone of its long-term economic stability and a determinant of its ability to fund future development. The over-reliance on traditional financing models, primarily debt, has created a vicious cycle where new infrastructure projects require new loans, further escalating the debt burden and ultimately shrinking the fiscal space for essential public services and future capital expenditure.

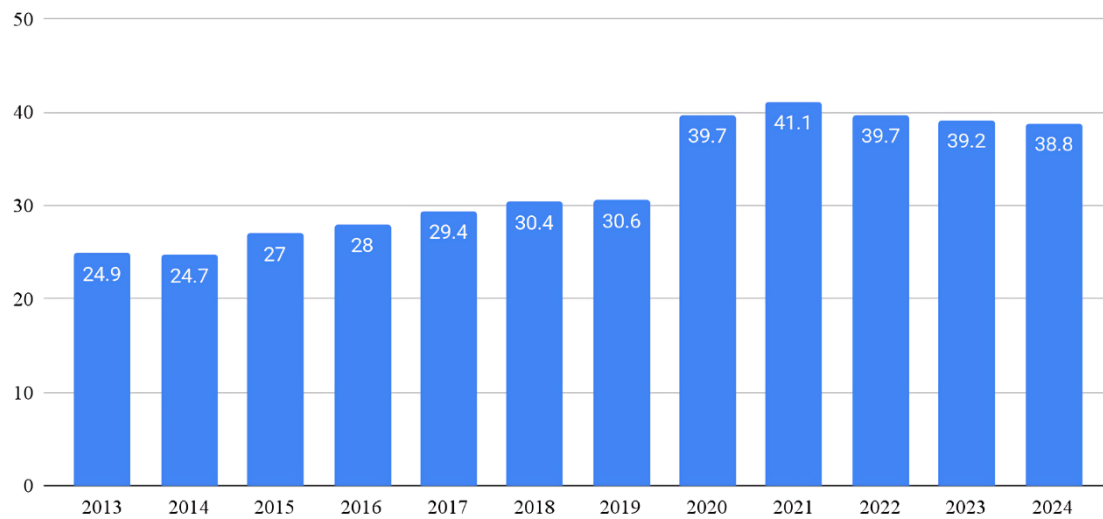


Fig. 1. Government debt value compared to GDP in Indonesia (2013-2024)

Beyond the immediate fiscal figures, Indonesia also faces profound structural challenges that exacerbate its fiscal vulnerability. The current evaluation of infrastructure projects often has a narrow focus on short-term financial indicators, failing to account for the broader economic value creation, such as enhanced productivity, land value appreciation, and regional growth. This limited perspective results in many projects failing to fully optimize their economic potential (Asian Development Bank, 2021). Furthermore, the pervasive issue of institutional fragmentation (where economic planning, spatial planning, and infrastructure financing are managed independently) erodes the overall effectiveness of national development efforts. Despite continuous increases in infrastructure spending, the absence of structural reforms in financing models amplifies long-term fiscal risks. According to the National Medium-Term Development Plan 2020-2024, Indonesia's infrastructure needs are estimated at IDR 6,445 trillion, with the state budget capable of covering only 37% or IDR 2,385 trillion (Bappenas, 2019). This leaves a substantial 63% funding gap, which is typically filled through external debt, private investment, or Public-Private Partnerships (PPPs). While these models are essential, they can also lead to long-term dependency on borrowing and introduce hidden fiscal risks, especially for projects that do not generate adequate returns on investment (World Bank Group, 2021). The over-reliance on these mechanisms in the absence of a sustainable domestic funding source represents a critical flaw in Indonesia's current development paradigm.

In response to these escalating fiscal pressures and ballooning debt, there is a compelling and urgent need for a more sustainable and equitable infrastructure financing approach. This is where the concept of Land Value Capture (LVC), a widely studied and globally relevant approach, becomes a critical consideration. LVC is a financing mechanism that aims to capture a portion of the unearned increase in land value that occurs as a direct result of public investments in infrastructure. Its theoretical foundation is deeply rooted in the Benefit Principle of Taxation (Musgrave & Musgrave, 1989), which posits that those who gain from government goods and services should contribute in proportion to the benefits they receive. This principle provides a strong ethical and economic justification for LVC, making it not just a financing tool but also a mechanism for fiscal justice. Several international studies have demonstrated the successful implementation of LVC. For

instance, OECD (2022) and Plummer et al. (2010) highlight its effectiveness in developed nations through instruments like land value increment taxes and transit-oriented development (TOD) fees. In Asia, study illustrate how cities like Tokyo and Hong Kong have used LVC to successfully fund major metro projects and urban renewal initiatives. However, a significant gap remains in the literature, particularly within the Indonesian context. While some studies (e.g., Firman, 2017; Hughes et al., 2020) have conceptually explored LVC's potential for urban development in Indonesia, there is a distinct lack of comprehensive research that directly connects the practical application of LVC to the specific problem of mitigating fiscal crowding out and reducing infrastructure debt. This research is therefore crucial to bridge this analytical and policy gap by providing a detailed, contextual framework for how LVC instruments can be effectively designed and integrated to address Indonesia's unique fiscal and structural challenges.

This study aims to fill the identified gap by providing a comprehensive analysis of the potential for Land Value Capture (LVC) as a sustainable and equitable financing alternative for infrastructure in Indonesia. The primary objectives are to identify the most relevant and feasible LVC instruments for Indonesia, considering its current regulatory and institutional framework, and to analyze the potential impact of LVC implementation on the nation's fiscal health, particularly its ability to mitigate fiscal crowding out and generate a more stable and just source of revenue for infrastructure funding. Building on the insights of Vejchodská et al. (2022), this research also situates LVC within the broader context of land rent, recognizing that capturing land-based value requires not only project-specific mechanisms but also systemic approaches that address persistent issues of rent-seeking and unequal wealth distribution. Such integration is essential to adapt LVC to Indonesia's unique socio-economic conditions and to maximize its transformative potential in public finance.

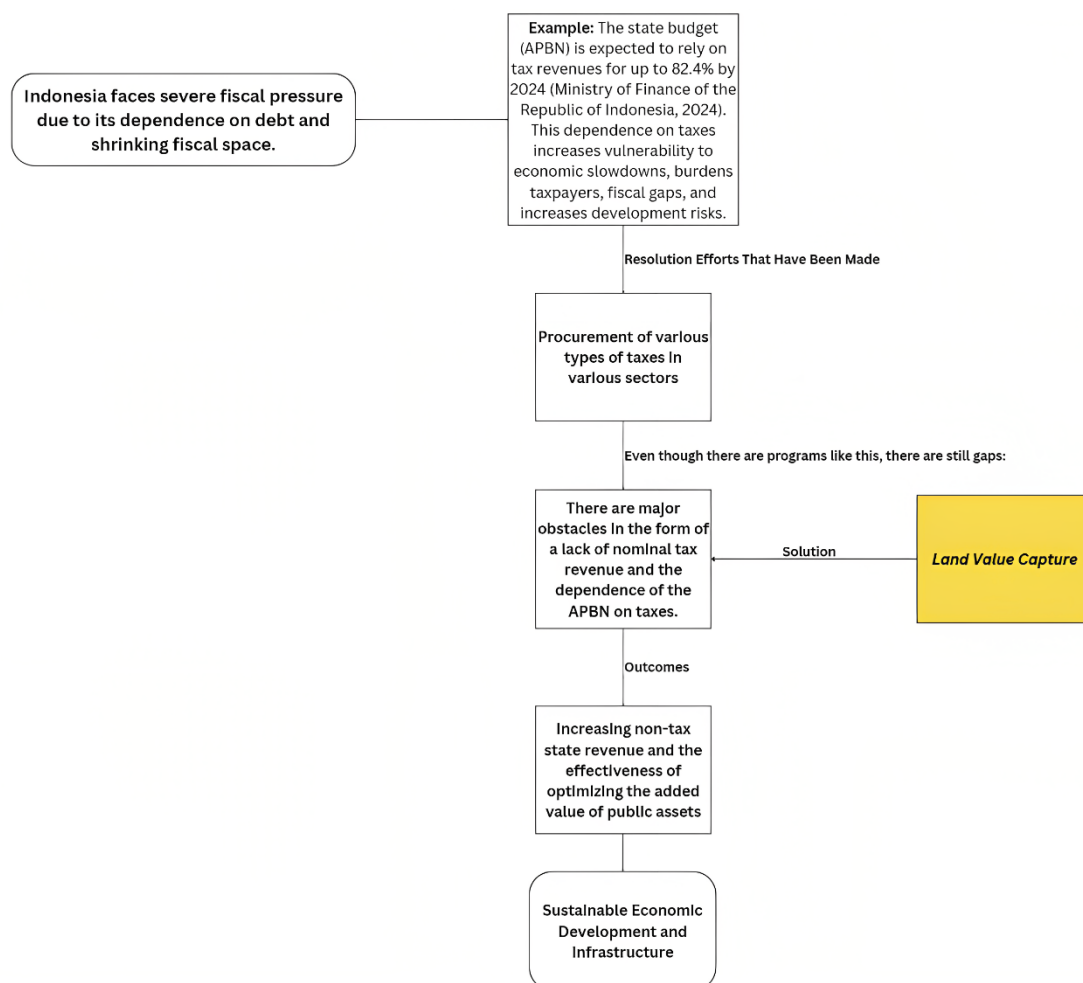


Fig. 2. Thinking framework

2. Methods

This study employs a qualitative research approach using a literature review method that focuses on conceptual analysis and policy assessment related to the urgency of institutionalizing Land Value Capture (LVC) in Indonesia's infrastructure planning. The choice of a qualitative framework is based on the study's aim, which is not to test hypotheses through empirical field surveys or experiments, but rather to construct a theoretically grounded argument. The emphasis lies in synthesizing knowledge from public economics theory, international case studies, and national policy documents, thereby allowing for a comprehensive understanding of LVC as both a fiscal instrument and a mechanism of distributive justice.

The qualitative literature review approach provides methodological strength because it enables the identification of cross-disciplinary connections between economics, spatial planning, and governance. As noted by Snyder (2019), integrative reviews not only summarize past findings but can also generate new conceptual frameworks and theoretical contributions when conducted systematically, critically, and transparently. This study adopts such an integrative approach by linking the economic theory of externalities and fiscal justice with policy practices from different countries and Indonesia's institutional context. Similarly, the International Journal of Management Reviews (1999) emphasizes that literature reviews can make substantial conceptual contributions, shaping new theories and research directions beyond mere descriptive summaries. In the same vein, Parajuli (2020) underlines that comprehensive reviews form the "backbone" of scholarly inquiry by ensuring credibility, identifying gaps in knowledge, and grounding the formulation of research problems. By drawing upon these methodological perspectives, this study positions the literature review not simply as an academic exercise but as a strategic analytical tool for framing LVC as a viable fiscal innovation in Indonesia.

2.1 Data collection and sources

To ensure comprehensiveness and reliability, the study draws from multiple types of sources. Academic literature was collected through systematic searches in databases such as Google Scholar, Scopus, and ScienceDirect, which provided peer-reviewed journal articles, working papers, and conference proceedings. Given the global relevance of LVC, sources were not restricted to Indonesian cases but included studies from a wide range of countries that have experimented with land-based financing mechanisms.

Complementary to academic literature, policy and institutional documents were also reviewed. These included publications from multilateral organizations such as the Asian Development Bank (ADB), World Bank Group, Organisation for Economic Co-operation and Development (OECD), and United Nations-Habitat, which have produced frameworks and empirical assessments of LVC across both developed and developing economies. At the national level, Indonesian government documents were examined, including the National Medium-Term Development Plan/*Rencana Pembangunan Jangka Menengah Nasional* (RPJMN), the State Budget and Financial Note/*Rancangan Anggaran Pendapatan dan Belanja Negara* (RAPBN), as well as regulations related to spatial planning, infrastructure financing, and local taxation. These sources were essential in contextualizing how LVC might fit within Indonesia's fiscal and legal frameworks.

The inclusion criteria for selecting literature and policy documents were defined as follows: (1) direct relevance to the theme of Land Value Capture; (2) clear connection to infrastructure financing and spatial planning; (3) credibility of the source, prioritizing peer-reviewed or institutional publications; and (4) timeliness of information, with a preference for works published in the last 5–10 years. Exceptions were made for classical economic theories proposed by David Ricardo, whose insights on land value and economic surplus form the conceptual foundation of LVC.

2.2 Research process and analytical framework

This research process was conducted in four sequential stages. The first stage was literature collection, namely systematically identifying references related to the principles, instruments, and practices of Land Value Capture (LVC) in both international and Indonesian contexts. The sources obtained were then cataloged based on themes such as legal frameworks, financing mechanisms, the role of the private sector, and social impacts. The second stage was comparative analysis by conducting cross-country comparisons of three reference case studies, namely Hong Kong, the United Kingdom, and India. The selection of these three countries was based on criteria that included economic and governance models, types of LVC instruments, and development contexts. Hong Kong was considered relevant because it represents a successful market-based model through its “Rail + Property” scheme, which focuses on long-term land leases and joint development, which is suitable for potential Public-Private Partnership (PPP) projects in Indonesia. The United Kingdom is an important example of tax-based LVC instruments through the Community Infrastructure Levy (CIL), which is directly linked to the spatial planning system, thus providing insights for adaptation in local taxation and spatial planning regulations in Indonesia. India was selected because it provides lessons in the context of a developing country with a federal structure more similar to Indonesia, where their experience with betterment levies and Town Planning Schemes highlights both challenges and opportunities in facing rapid urbanization and diverse sub-national capacities. The third stage is policy synthesis, which integrates the results of comparative analysis with the legal, fiscal, and socio-economic conditions in Indonesia, focusing on four main themes: the fiscal potential of LVC, integration with spatial planning, mechanisms for private sector involvement, and social justice implications. The results of this synthesis are aimed at formulating strategic recommendations that are not only theoretically coherent but also practical to implement within the Indonesian governance framework. The final stage is conceptual validation to ensure the theoretical robustness of the research findings. This validation is carried out by referring to established principles of public economics, such as the theory of positive externalities, which explains the social benefits of infrastructure projects, and the Benefit Principle of Taxation, which affirms the moral and economic justification for redistributing land value increases that are not obtained by the public. Through linking empirical results to theoretical models, this study confirms that LVC is a fiscally legitimate and socially equitable instrument.

2.3 Analytical techniques

The analytical process was conducted manually through critical reading, thematic recording, and conceptual mapping. Each source was coded according to its contribution to one or more thematic categories. The relationships between variables—such as the link between land value increments, fiscal capacity, and equity—were then analyzed to highlight both synergies and trade-offs. This thematic analysis facilitated the development of a conceptual model that positions LVC as a bridge between public infrastructure investment, private sector participation, and equitable distribution of economic gains.

2.4 Rationale for the methodological approach

The choice of literature review as the core methodology is not incidental but deliberate. In the context of LVC, empirical data specific to Indonesia remain scarce, given that large-scale national-level implementation has not yet occurred. A literature-based approach therefore allows for the transfer of knowledge from international best practices while critically evaluating their applicability to Indonesia's conditions. Furthermore, the literature review method enables engagement with both normative debates (justice, legitimacy, efficiency) and practical concerns (legal frameworks, institutional capacity, fiscal instruments).

The integrative review approach also ensures that the study is adaptive to evolving conditions. LVC intersects with multiple policy areas, including land administration, fiscal decentralization, urban planning, and infrastructure development. By drawing on diverse literature, the study captures this multidimensionality and avoids narrow disciplinary bias. Finally, by situating the analysis within established economic theory, the study achieves conceptual depth, providing not only recommendations but also theoretical contributions to the understanding of LVC as a fiscal tool in developing economies.

3. Results and Discussion

3.1 Concept and principles of Land Value Capture (LVC)

Land Value Capture (LVC) is a policy framework and financing approach designed to recover part of the economic value that is generated by public infrastructure investments. In many cases, when governments invest in major infrastructure such as new roads, railways, airports, or mass transit systems, the surrounding land and property values increase significantly. This increase in value is not created by the landowners themselves, but rather as a result of public action, investment, and policy decisions. Without intervention, these unearned gains tend to accrue only to private landowners and developers, while the public sector bears the financial burden of financing the infrastructure. LVC offers a mechanism for governments—at both national and local levels—to reclaim a portion of this value appreciation in order to fund ongoing or future infrastructure development. This idea is rooted in the principle of fiscal equity: those who benefit disproportionately from public investment should contribute proportionately to its financing (Peterson, 2009).

The theoretical foundation of LVC is closely linked to the Virtuous Value Cycle, which has been popularized by the Asian Development Bank (ADB) as a model for sustainable infrastructure financing. This cycle illustrates the dynamic relationship between infrastructure investment, economic value creation, and reinvestment. It begins with the stage of value creation, where the economic, social, and environmental potential of a proposed infrastructure project is carefully assessed. For example, constructing a mass transit line in a densely populated urban area can unlock higher productivity, reduce travel time, and improve environmental quality, all of which contribute to raising land values in adjacent zones. Following this, value realization occurs when the infrastructure is built and begins to stimulate economic activity, creating tangible benefits such as improved accessibility, higher property demand, and business growth. The third stage, value capture, is where governments deploy fiscal or regulatory instruments to collect a portion of the incremental value from those who directly benefit from the project. Finally, the captured value is funneled into the value funding or value recycling stage, which sustains further infrastructure development, maintenance, or delivery of essential public services. In this way, the Virtuous Value Cycle generates a self-reinforcing loop of development and funding, reducing reliance on conventional borrowing or taxation while ensuring equitable distribution of benefits.

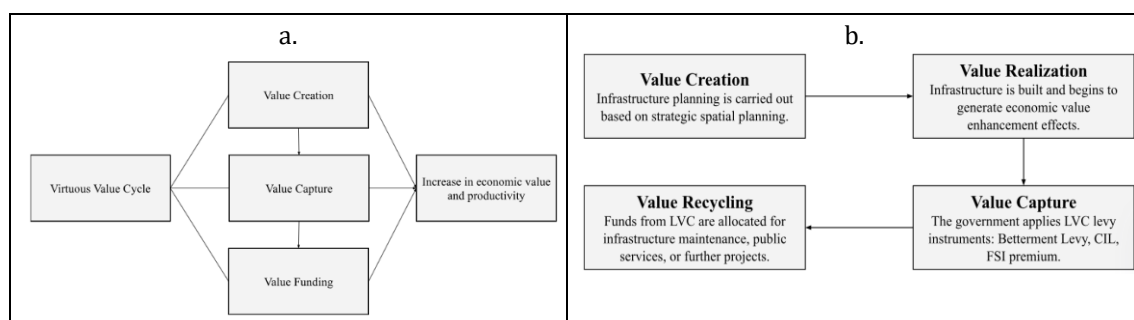


Fig. 3 (a) Virtuous value cycle; (b) Stages of Land Value Capture (LVC)
(Indonesia's Coordinating Ministry for Economic Affairs & Asian Development Bank, 2021)

At its core, LVC leverages the economic and productivity gains resulting from infrastructure development (such as increased land values, higher tax revenues, and job creation) as alternative funding sources beyond conventional financing. It operates through two main approaches: tax/fee-based and development-based mechanisms. For example, integrated public transport systems can enhance property values, thereby expanding the local tax base. Governments can optimize this potential through asset data updates and improved accessibility. Funding can also be sourced from schemes such as user pays, government pays, and beneficiary pays, as well as instruments like bonds backed by projected land value increases.

The implementation of LVC generally follows four interconnected stages (Figure. 3(b)). Value Creation begins with strategic spatial planning to ensure that infrastructure development aligns with broader urban and regional objectives. This is followed by Value Realization, where the constructed infrastructure starts generating tangible economic benefits, such as improved accessibility and increased land values. Subsequently, Value Capture occurs as the government applies specific instruments, such as Betterment Levy, Community Infrastructure Levy (CIL), or Floor Space Index (FSI) premiums, to collect a portion of the economic gains. Finally, in the Value Recycling stage, the captured funds are allocated for infrastructure maintenance, public services, or further development projects, thus creating a sustainable funding cycle that reinforces long-term urban growth and development.

The development-based approach engages the private sector in land development. While initial financing challenges may arise, these can be addressed through public–private funding arrangements, such as Public–Private Partnerships (PPP). Investor confidence is crucial and can be fostered through clear cost-sharing arrangements, equitable schemes, limits on existing tax burdens, and transparent, structured returns on investment. Ultimately, LVC not only opens new revenue streams for the state but also embodies the principle of fiscal equity, ensuring that those who benefit the most from public infrastructure contribute proportionally to its costs.

3.2 Implications of LVC implementation in Indonesia

The implications of Land Value Capture (LVC) for Indonesia can be understood most clearly through the lens of public economics, particularly the theory of externalities. Infrastructure development is well known for generating a range of positive externalities, such as improved accessibility, higher land and property values, increased logistical efficiency, and expanded economic opportunities. These benefits are not always reflected in the market, because the beneficiaries—landowners, developers, and businesses located near new infrastructure—often do not pay for the extra value they gain. This creates a market failure, where the Marginal Social Benefit (MSB) of infrastructure exceeds the Marginal Private Benefit (MPB) received by individuals (Stiglitz & Rosengard, 2015). Figure 4 illustrates this idea, showing how infrastructure projects produce positive spillovers that are not fully internalized by private actors. In such cases, LVC becomes a corrective instrument by internalizing externalities, ensuring that part of the additional surplus is recaptured for the public. This is achieved through fiscal instruments such as betterment levies, land value increment taxes, development charges, or property tax adjustments, which are then recycled into infrastructure financing. The logic is not only economic but also ethical: if public investments generate windfall gains for private actors, then a portion of these gains should be returned to the public purse to finance further collective benefits.

The intellectual justification for LVC in Indonesia is further reinforced by classical economic thought. Ricardo (2005) argued that land value increases resulting from public works represent an economic surplus, distinct from improvements arising from individual effort or private capital. According to Ricardo's theory of rent, landowners gain unearned income simply by virtue of owning land in locations where public investments occur. This surplus, being socially created, provides a legitimate and efficient tax base. Taxing or

capturing part of this increase does not distort incentives for production; rather, it redistributes unearned gains more equitably. In this way, LVC embodies the principle of distributive justice, ensuring that the gains from development are not concentrated in the hands of a few landowners but are instead shared with the broader community. For Indonesia, which continues to grapple with social inequality and spatial disparities, this principle is particularly relevant. By diversifying non-tax state revenue (PNBP) sources away from extractive industries such as mining or fossil fuels, LVC creates more inclusive and sustainable fiscal channels grounded in urban and spatial development.

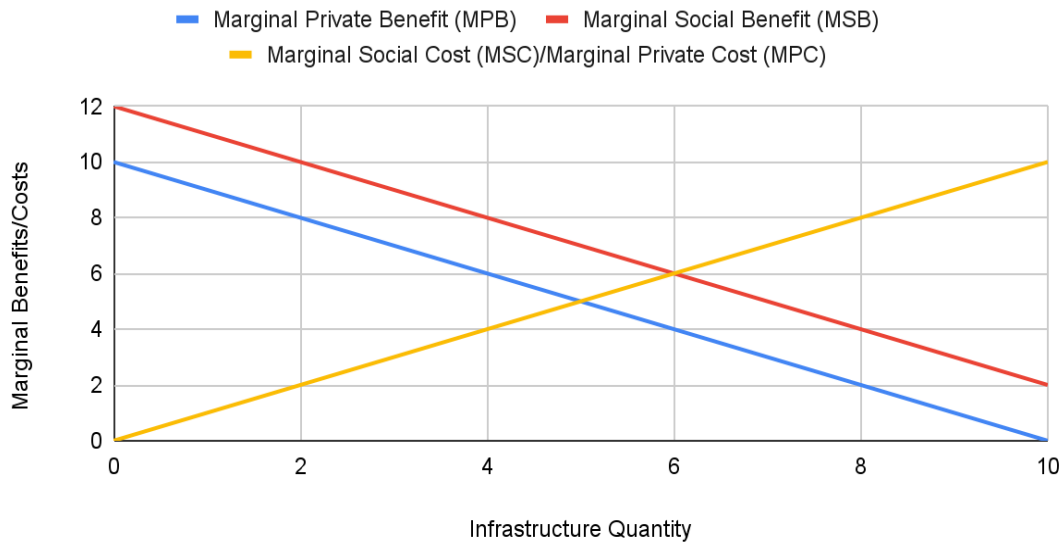


Fig. 4. Analysis of LVC with positive externalities from public infrastructure

Concrete examples of LVC's application in Indonesia already exist, demonstrating both the opportunities and challenges of institutionalizing this approach. One notable case is the Jakarta MRT Transit-Oriented Development (TOD) project. The establishment of the MRT system significantly increased land and property values along the corridor. The government capitalized on this by revising Pajak Bumi dan Bangunan (PBB), or property taxes, in these areas to capture a portion of the value increment (Neraca.co.id, 2022). Another example is found in the development of the new capital city (Ibu Kota Nusantara, IKN), where the state sought to minimize fiscal pressures by leveraging private sector participation. For instance, PT. X financed civil servant housing through a Public-Private Partnership (PPP) scheme, effectively mobilizing private resources in exchange for access to development opportunities in and around the capital (OECD, 2020). Both examples highlight the dual role of LVC as a fiscal tool for easing state budget pressures and as a mechanism for aligning public policy goals with private incentives.

The benefits of implementing LVC extend beyond mere revenue generation. By being grounded in measurable asset value appreciation, LVC inherently promotes fiscal transparency and accountability. When increases in land value are objectively measured and linked to specific public investments, it becomes easier to justify taxation or levies in the eyes of citizens. This transparency minimizes opportunities for waste, corruption, or misuse of funds. Moreover, LVC provides a structured way to manage non-tax state revenues/*Penerimaan Negara Bukan Pajak* (PNBP) effectively, thereby strengthening Indonesia's fiscal resilience. Instead of relying solely on volatile revenue sources—such as those linked to global commodity cycles—LVC generates more stable and predictable streams tied to long-term infrastructure and spatial development. These revenues can then be redirected to underfunded but socially critical sectors, such as welfare programs, education, healthcare, or regional equity initiatives, which are often overlooked in favor of profit-driven infrastructure.

However, the successful institutionalization of LVC in Indonesia requires significant reforms and capacity building. At the legal and regulatory level, Indonesia must develop a comprehensive national framework for LVC that clarifies ownership rights, revenue-sharing mechanisms, and permissible instruments. At present, fragmented land laws and inconsistent tax enforcement undermine the ability of local governments to capture value systematically. Integrating LVC into spatial planning processes is equally important, ensuring that infrastructure development is coordinated with zoning, land use, and long-term urban strategies. Moreover, local governments—who play a frontline role in property taxation and land management—need performance-based fiscal incentives and training to effectively adopt LVC instruments. Without strong local institutional capacity, even the best-designed policies will fail to deliver.

For Indonesia, LVC should not be seen merely as a novel financing innovation but as a central pillar of strategic fiscal reform. By linking infrastructure development directly with fiscal returns, LVC enhances allocative efficiency, ensuring that scarce public resources are directed to projects with the highest potential for value creation. It also strengthens distributive justice, by redistributing land-based windfalls to society at large, and improves sustainability, by creating a cycle where today's investments finance tomorrow's needs. If effectively institutionalized, LVC has the potential to redefine development in Indonesia as a fair value cycle investment, opening pathways to fiscal self-reliance while reducing dependence on external borrowing or extractive industries.

The urgency of adopting LVC is further underscored by global and domestic challenges. In an era marked by climate change, digital transformation, and geopolitical uncertainty, fiscal flexibility and resilience are crucial (World Bank Group, 2021). Indonesia's infrastructure needs remain vast, with financing gaps estimated in the hundreds of billions of dollars. Conventional funding sources—such as state budgets, development loans, and foreign aid—are insufficient to meet these demands without risking fiscal instability. LVC, by contrast, leverages domestic assets that are both latent and renewable: land and spatial value. Indonesia already possesses the prerequisites for success: substantial urbanization momentum, increasing land demand in strategic growth centers, and widespread public aspirations for equitable development. What remains is the political will to fully institutionalize LVC as a new pillar of non-tax revenue and a flagship strategy for fiscal modernization. When designed with a commitment to social equity, LVC can become a genuine instrument of economic democratization, transforming spatial value into public value, connecting development with communities, and creating a fiscal system that is not only strong but also just and dignified (Smolka, 2013). This is where both the urgency and promise lie: even amid constraints, there is always a path to growth. With its full potential realized, LVC stands as one of the most effective strategies Indonesia can adopt today for a more self-reliant, equitable, and globally competitive future.

3.3 International comparative analysis of LVC strategies for infrastructure development

With the massive development of public infrastructure in Indonesia, maintenance costs for these assets are inevitably rising. To address this challenge, Land Value Capture (LVC) is a strategy worth considering (Chang & Phang, 2017; Kiggundu, 2009; Sharma & Newman, 2018). However, the implementation of LVC heavily depends on institutional context, land ownership structures, spatial planning systems, and the fiscal and administrative capacity of each country. Therefore, an international comparative study is crucial for Indonesia to understand the role of LVC as an infrastructure financing tool and an instrument for sustainable urban growth management.

A prominent example of LVC implementation is Hong Kong. By integrating LVC with a Public-Private Partnership (PPP) scheme, the country successfully combined transport infrastructure development with property development through the model known as Rail + Property. This model is formalized through a partnership between the government and the MTR Corporation, a public-listed railway operator where the government holds a majority stake. In this case, the MTR Corporation is granted the right to develop supporting

properties around MRT stations. The increase in land value resulting from this development is then monetized through commercial and residential property projects, with the revenue used to cover the infrastructure construction costs. This model has proven successful, contributing an estimated 50-60% of MTR Corporation's total profit, supported by state land ownership and strong cross-sectoral coordination (Li & Love, 2022).

The success of the Rail + Property model in Hong Kong demonstrates that LVC can be directly integrated into public infrastructure financing schemes through transport-oriented property development (Cervero & Murakami, 2009). However, this approach is highly dependent on state land ownership and a centralized institutional structure. On the other hand, countries like the United Kingdom showcase an alternative LVC approach that is more based on taxation and direct contributions from the private sector, particularly in major projects like Crossrail in London.

To finance the construction of Crossrail, the UK government implemented the Business Rate Supplement (BRS) and the Community Infrastructure Levy (CIL). The BRS is an additional tax levied on large businesses in London that are deemed to directly benefit from the Crossrail project, while the CIL is a tax on new property developers who will profit from increased accessibility and land value along the Crossrail line. These two instruments represent a more decentralized and tax-based form of LVC, yet still aim to capture the economic value added from public infrastructure.

Unlike the integrated approach in Hong Kong, the model used in the UK emphasizes fiscal policies based on accountable and transparent land value financing to encourage private sector contributions to development (Greater London Authority, 2010). The success of this model is evidenced by the consistent application of the BRS until the 2024–2025 fiscal year, where the government continues to levy a charge of 2 pence per pound on high-value business properties (above £70,000) in the London area. This approach has not only successfully financed a significant portion of Crossrail's construction but also reflects the government's capacity to maintain fiscal continuity democratically through private sector involvement. The LVC mechanism in the UK shows that capturing land value can be designed in a decentralized yet effective manner, as long as there is a transparent fiscal governance system, a fair threshold policy, and public participation strengthened by institutional legitimacy (Greater London Authority, 2024).

Table 1. International practices of Land Value Capture Instruments (LVC)

Country	Model	Strengths	Weaknesses	Relevance to Indonesia
Hong Kong	“Rail + Property” model – integration of transport infrastructure and property development through MTR Corporation (PPP scheme with government land leases).	- Generates sustainable revenue (50–60% of MTR profit).- Strong integration of spatial planning and infrastructure.- Demonstrates effective PPP with state-led coordination.- Reduces reliance on government subsidies.	- Highly dependent on centralized state land ownership.- Requires strong institutional capacity and coordination.- May not be replicable in decentralized systems.	- Offers lessons for integrating PPPs with LVC.- Relevant for major transport corridors and new city development (e.g., IKN, toll roads).- Requires adaptation to Indonesia's fragmented land ownership and decentralization.
United Kingdom	Tax-based model – Community Infrastructure Levy (CIL) and Business Rate Supplement (BRS) to fund projects like Crossrail.	- Transparent, rules-based fiscal instruments.- Encourages private sector contributions.- Democratically accountable and legally institutionalized.- Long-term fiscal continuity.	- Requires robust fiscal administration and reliable land valuation.- Complex to enforce in weaker governance systems.- Risk of resistance from private developers.	- Relevant for embedding LVC into Indonesia's taxation and spatial planning laws.- Can inform property tax reform and local government revenue mechanisms.- Challenges due to

				weak tax enforcement and uneven local capacity.
India	Mixed instruments – Betterment Charges, Premium Floor Space Index (FSI), Value Capture Finance Policy; applied in Metro projects and Smart Cities Mission.	- Contextually closer to Indonesia as a developing country.- Demonstrated large-scale application (e.g., Pune Metro generated ~USD 1B).- Offers multiple flexible instruments (charges, premiums, policy framework).	- Weak land records and cadastral systems.- Inconsistent implementation across states.- Political economy challenges (resistance from landowners, developers).	- Provides realistic lessons on opportunities and pitfalls in developing contexts.- Highlights importance of land administration reform (e.g., SVLN in Indonesia).- Shows potential in TOD zones, urban corridors, and pilot projects.

The successful LVC strategies in Hong Kong and the UK differ from the model used in India. India's efforts to institutionalize LVC in a developing country context are highly relevant to Indonesia, as India also faces challenges of land fragmentation, limited fiscal capacity, and rapid urbanization (Goytia & Cristini, 2020; OECD, 2022; NITI Aayog, 2022). The Indian government, through its Smart Cities Mission and mass transit projects like the Metro, has begun adopting several forms of LVC, such as Betterment Charges, Premium Floor Space Index (FSI), and the Value Capture Finance Policy. Under the Betterment Charges model, the government levies a fee on landowners whose property values increase due to infrastructure projects. Additionally, with FSI, developers are required to pay more to build higher than the regular limit, especially in transportation corridors. Furthermore, the government has implemented a national Value Capture Finance Policy, encouraging local governments to systematically apply various LVC schemes. The success of some of these models is demonstrated in the Pune Metro development. LVC is estimated to have contributed up to Rs8,000 crore (approximately USD 1 billion) out of the total project cost of Rs11,420 crore (World Bank, 2019).

3.4 Discussion of results and policy recommendations

Implementing Land Value Capture (LVC) in Indonesia demands a national legal framework to address the country's fragmented fiscal and land governance systems. A direct transfer of foreign models is unfeasible due to key differences in institutional context. For instance, the highly centralized land ownership and powerful transport authority that underpin the success of Hong Kong's "Rail + Property" model do not exist in Indonesia's decentralized system (Goytia & Cristini, 2020). Similarly, the UK's tax-based approaches, like the Community Infrastructure Levy (CIL), rely on a robust fiscal administration and rule of law that Indonesia is still developing (OECD, 2022). Even India, a more comparable developing nation, serves as a cautionary tale, demonstrating how weak land records and lack of local political will can hinder LVC implementation despite having a national policy in place (NITI Aayog, 2022).

Therefore, the comparative insights from these countries are not blueprints but guides for adaptation. A comprehensive national LVC framework is crucial to consolidate rules and clarify the roles of central and local governments. This framework must define the legal scope of LVC instruments and articulate revenue-sharing mechanisms to ensure local participation and fiscal equity. Without this legal certainty, implementation risks being inconsistent and vulnerable to challenges. The focus should be on a hybrid model that adapts foreign concepts to Indonesia's unique context, emphasizing legal reforms, capacity building, and a phased, evidence-based rollout through pilot projects.

The timing of LVC integration is also critical. Rather than being considered as an afterthought once infrastructure is built, LVC should be embedded early in the

infrastructure and spatial planning processes. By incorporating LVC at the planning stage, governments can strategically design projects to maximize land value creation and estimate the fiscal potential of capturing future increments. This approach requires accurate and reliable land valuation systems, which remain a challenge in Indonesia. The development of the National Land Value System (Sistem Valuasi Lahan Nasional, SVLN) provides a promising institutional solution. By standardizing land valuation and making it accessible to policymakers, the SVLN can serve as the backbone for evidence-based LVC design. Accurate data on land values not only enhances transparency but also reduces disputes and builds confidence among landowners, developers, and investors. Furthermore, integration with digital land administration systems and cadastral mapping could strengthen accountability, minimize speculation, and streamline tax collection.

To broaden the financing base and foster innovation, Indonesia should consider a hybrid model that combines LVC with Public-Private Partnerships (PPP). This hybridization allows the state to leverage private sector expertise, capital, and efficiency while ensuring that a share of the value created accrues back to the public. One of the most successful global models for such integration is Hong Kong's "Rail + Property" model under the Mass Transit Railway (MTR) system (Cervero & Murakami, 2009; Aveline-Dubach & Blandeau, 2019). In this model, the transit operator not only develops and operates rail infrastructure but is also granted property development rights around transit stations. The profits generated from these developments effectively subsidize the costs of infrastructure construction and operation. By capturing the uplift in land value through property development, the MTR has been able to achieve financial sustainability and minimize reliance on government subsidies.

For Indonesia, this model can be adapted contextually to infrastructure projects such as the Jogja-Solo-Yogyakarta International Airport (YIA) Toll Road, which links strategic urban centers with a major international airport. By integrating LVC with PPP, the government could allow private developers to co-invest in infrastructure construction in exchange for development rights in adjacent areas. The surplus generated from rising land values—through commercial, industrial, or residential projects along the toll corridor—would then be shared between the government and private actors as a refinancing source. This model aligns private incentives with public goals: developers gain access to profitable projects, while the state secures financing and ensures that public infrastructure is fiscally sustainable. Importantly, such arrangements require clear cost- and risk-sharing frameworks, legal safeguards to prevent monopolization, and transparent mechanisms for redistributing benefits.

The transition toward nationwide LVC adoption should not be attempted in one sweeping reform but rather through phased implementation, beginning with pilot projects in strategic areas. These pilots would serve as proof-of-concept cases, demonstrating both the feasibility and benefits of LVC. Priority areas include Transit-Oriented Development (TOD) zones in metropolitan regions and National Tourism Strategic Areas/*Kawasan Strategis Pariwisata Nasional* (KSPN), which have high potential for land value appreciation due to concentrated public investment and rising private demand. For example, TOD zones around Jakarta's MRT, Greater Bandung's commuter rail system, or Bali's tourism corridors could generate significant land value increments. By implementing LVC instruments in these areas, governments can test mechanisms such as development charges or CILs in real-world contexts, collect empirical data, and refine legal and administrative procedures. Successful pilots would then provide models for scaling up LVC nationwide.

Effective implementation of LVC also depends on the capacity of local governments, who play a central role in property taxation, spatial planning, and land administration. In Indonesia's decentralized governance system, local governments vary widely in fiscal capacity, administrative resources, and institutional strength. Therefore, central government must complement legal frameworks with technical guidelines, training programs, and fiscal incentives that support local adoption of LVC. Training programs should focus on land valuation techniques, infrastructure-finance integration, public-private negotiation skills, and community engagement. Meanwhile, fiscal incentives—such

as performance-based grants linked to successful LVC implementation—could motivate local governments to actively embrace reform. For example, localities that successfully implement LVC schemes could receive additional transfers from the central budget or preferential access to infrastructure funding. Such incentives would not only promote adoption but also foster intergovernmental collaboration and policy coherence.

Moreover, community engagement and social acceptance are crucial to the sustainability of LVC in Indonesia. Landowners and residents must be assured that the revenues captured from rising land values are reinvested in ways that directly benefit them, such as improved services, better infrastructure, and more livable urban environments. Transparent communication campaigns, participatory planning, and citizen oversight mechanisms can build trust and reduce resistance to LVC charges. By making the value cycle visible—showing how captured revenues finance new development—governments can enhance legitimacy and strengthen the social contract.

Finally, the broader implication of institutionalizing LVC is its potential to transform Indonesia's fiscal landscape. By embedding LVC within legal, administrative, and planning systems, Indonesia can create a self-reinforcing cycle of growth and financing that reduces dependence on debt, improves fiscal equity, and ensures sustainability. In the context of increasing urbanization, infrastructure deficits, and fiscal pressures, LVC provides a pragmatic and equitable pathway to mobilize domestic resources. Its successful implementation would not only enhance infrastructure financing but also contribute to long-term fiscal resilience, spatial equity, and inclusive economic development.

4. Conclusions

The implementation of LVC is no longer merely an optional policy choice, but has become a strategic necessity in the effort to build a fair, sustainable, and adaptive infrastructure financing model that addresses the challenges of the times. Reliance on debt-heavy, conventional financing become increase unsustainably, yet Indonesia's fragmented fiscal and land governance system require foundational reforms. Global experiences show that while institutional contexts differ, they offer valuable lesson for Indonesia's LVC journey. Hong Kong's "Rail + Property" model shows how integrating transport and land development can create sustainable financing, while UK's Community Infrastructure Levy rely on shows the importance of transparent, rules-based fiscal system. Even India's mixed experience highlights the need for strong land records and local engagement, insights Indonesia can leverage to avoid similar mistakes. Rather than adopting wholesale solutions, Indonesia has the opportunity to build context-specific framework that blends these lessons with its own strengths, ensuring legal certainty, fiscal equity, and resilience against governance challenge.

A comprehensive national LVC framework should consolidate existing regulations, define the scope of LVC instruments, and set clear revenue-sharing mechanism between the central and local governments. Establishing a National LVC Task Force is an essential first step to coordinate across sectors and develop standardized technical guidelines. Integrating the National Land Value System/*Sistem Valuasi Lahan Nasional* (SVLN) into this framework will provide accurate, transparent land valuations critical for evidence-based planning and dispute reduction. Embedding LVC early in the infrastructure and spatial planning process, rather than as a post-construction consideration, will allow Indonesia to strategically design projects that maximize land value creation and fiscal returns.

Indeed, the process of implementing LVC is not easy, especially for developing countries such as Indonesia, which still face fiscal capacity constraints and institutional challenges. However, this is not impossible. Indonesia has strong assets to realize this: enormous land value potential, a strong spirit of national development, and an urgent need to create a fiscal system that is independent and resilient to global turmoil. Implementation should proceed through phased pilot projects in high potential areas, such as Transit Oriented Development (TOD) zones in Jakarta's MRT network, Greater Bandung's

commuter rail, and National Tourism Strategic Areas like Bali. These pilot project can test a mix of LVC instruments, such as betterment levies, development charges, or land readjustment, and provide empirical data to refine legal, administrative, and technical processes before national scaling. To ensure successful adoption, local government capacity must be strengthened through targeted training on land valuation, infrastructure-finance integration, public-private partnership (PPP) negotiation, and community engagement. Performance-based fiscal incentives, such as grants linked to successful LVC implementation, can further encourage local participation and intergovernmental collaboration.

Public trust and private sector participation are crucial for this project. Transparent communication campaigns, participatory planning, and citizen oversight mechanism can demonstrate how captured land value directly benefits the communities, reducing resistance, and enhancing legitimacy. A hybrid LVC-PPP model can broaden financing sources, aligning private investment incentives with public goals. For example, infrastructure like the Jogja-Solo-YIA Toll Road could integrate LVC by granting development rights to private partners in exchange for co-investment, with revenues shared transparently. By institutionalizing LVC through these legal, institutional, and participatory reforms, Indonesia can transform infrastructure from a fiscal burden into a self-sustaining cycle of value creation, securing long-term fiscal resilience, spatial equity, and inclusive economic development.

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