



The Development Goal of Major Infrastructure Projects in Laos from Development Principle to Practice

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Abstract— Major infrastructure projects (MIPs) has been considering at the national level that delivery through different principles. In Laos, the projects had concerned as “*public investment project*” that can be provided a different level of development goal. This research aims to explore the major infrastructure projects and its development goal of providing us a better understanding of infrastructure development. The principle of major public projects in Laos can highlight the character of major infrastructure projects in Laos and its development context. While case studies of major infrastructure projects had provided the possible meaning from practical aspects. Finally, the concept of *relevance and sustainability* had the concern as requirements for the goal formulation and for considering the overall development goals in the context of Laos.

Keywords—Major infrastructure projects, development goal, a context of Laos

I. INTRODUCTION

Lao PDR or Laos is a land-locked country in Southeast Asia with a population of 6.7 million people. The current transport network and urban service are a concern as in poor condition that has effectively cut off social and economic development, therefore in the 8th five years national socio-economic development plan had focused on infrastructure development as a priority sector¹. For pursuing infrastructure development goal, the “*Land-lock to Land-link*” strategy had proposed as a necessary prerequisite for poverty reduction and sustainable growth². Thus, major infrastructure projects in Laos remain as the development programs to improve public utilities and necessary infrastructure such road network, town development, and water supply to the remote areas [1][2], [3] for improvement of a basic environment to facilitate further growth, and regional integration.

For a better understanding of infrastructure development, this research aims to explore the major infrastructure projects and its development goal from different perspectives (as national level, sector level, and project level). The descriptive research conducts with the qualitative approach to highlight

the fate and characteristic of major infrastructure projects in Laos. Firstly, explore the meaning of major infrastructure projects and its development goals from the context of Laos. Then, the four case studies of major infrastructure projects in Laos had provided a better understanding of the phenomenon and highlighted the potential meaning of our concept.

II. LITERATURE REVIEW

A. Major infrastructure projects

Major infrastructure projects (MIPs) are mentioned as large-scale engineering facilities [4] as road, bridge, railways, hydropower, water supply, etc. Which provide fundamental public services for social production, economic development, and people's life. It has been considering at the national level that delivery through *Public investments projects, Direct provision, Traditional public procurement, State-owned enterprises, Public-Private Partnerships (PPP) and Concessions and Privatization* [5]–[7]. However, the public investment project is priority that had delivery by government, e.g. the governance principles of major public projects in six OECD countries, that concern as the national level with public governance in two parallel subsystems: the political and administrative process [8][9] [10][6][11].

The challenges of major infrastructure projects had defined from different context between developed and developing countries [12], e.g., there are eight challenges (factors) of major projects in developing countries as *Corruption, Financing, Technical and technology, Contractors, Social and culture, PM knowledge and skills, Resources and External environment*. While in developed countries had faced with *Complexity, Planning, Organization, External environment, and Cost overran*. Additionally, another dimension of major infrastructure project challenges that had defined by OECD as 1). *The issue of evaluating*: it is that the infrastructure needs to identify the relevant needs across sectors and regions, 2). *Prioritization*: that needs should take place based on planning, processes, and tools that allow aggregation of the many project dimensions and preferences of stakeholders, 3). *Suitable procedures and skills*: in terms of technical design, affordability and value for

¹ 8th Five-Year National Socio-Economic Development Plan (2016-2020): LAO PDR, Ministry of Planning and Investment

² ADB. 2006. *Country Partnership Strategy: Lao People's Democratic Republic, 2007–2011*

money issues need to be applied, 4). *In the construction phase*: the appropriate skills and systems should be available to ensure that project assumption is delivered upon or that changes are subject to appropriate scrutiny and 5). *In the operational stage*: the right incentives and tools for appropriate monitoring of asset performance and maintenance should be in place as well as mechanisms for reflection on the service provided [5].

Major infrastructure projects have undertaken various functions which affect the nation and its society that more difficult to coordinate and deal with the conflicts from various objectives rather than conflicts from general projects [4]. The main problem of major public projects [13] is stakeholders' interest (whether financial or political), they underestimate the risk and they are not held accountable to the central government. Which adopts a more overarching perspective of maximizing public benefits that cause as the megaproject paradox [14] including risk and accountability, overarching objectives, responsible decisions to ensure transparency, specify performance requirements, clear requirements and capital from private investors. Thus, in large complex infrastructure projects will require a governance system that needs to be scope [15] for the planning and implementation phases as the tool to promote sustainable infrastructure development in three primary respects such improve the quality of infrastructure, build consensus on governance reforms around infrastructure and concerted action to manage corruption risks on infrastructure [16].

B. The concept of development goal

In pursuit of infrastructure development goals, should be understanding to the context of the goal [17], [18], the goals should reflect the project relevant and politically prioritized that a proposed project to meet the main purpose of the project as well as goals related to significant side effects. Today, the government in many developing countries had delivery major infrastructure projects through PPPs, and it can be fulfilling the infrastructure development to achieve their goals as well as loans. Instead of direct public procurement, the projects are often delivered through the involvement of private-sector firms in the financing, design, delivery, and operation of the infrastructure [19]. PPPs model can achieve proper risk allocation in tollway projects that are developed under the PPP procurement system would enhance the project's performance [20] and contractual governance for risk allocation that implies early partner involvement, risk and benefit sharing and highly collaborative project delivery [21] and can be improving project performance [22], [23].

As the literature mentioned, the goal can be defined at different levels that subdivided into three categories as *societal goals* reflecting higher-level societal concerns across the needs of different parties, *it affects goals* reflecting of the users, and *result goals* formulated from the deliverers [17].

The goals should reflect the project-relevant that a proposed investment project aims to meet. It should include goals related to the main purpose of the project as well as goals related to important side effects. Therefore, the *main goals* should focus on society and the users, and which side effects are essential to avoid or limit, be relevant of societal needs, certain permanence, and concern to sustainable development [18] for making the right decisions as requirements for the success [24] with considering the overall goals and sustainability³.

Ensuring sustainability in projects are essential criteria in the process of developing successful projects [11]. Besides, the extent of the objectives in the development of public investment projects mainly in the front-end phase, ensuring the relevance and sustainability as an essential requirement [10]. Several projects have failed in this wider perspective because they are not required by or are the priority of the public, or the objectives of the projects are not aligned with the development strategies of the area. Because participatory project preparation and decision-making is a means of getting the relevant information about the problem, the needs, and priorities of the stakeholders, the possible alternative solutions, and uncertainties. While sustainability requirements need to be considered in the early stages of the project development process should include policy issues, economic and financial aspects, socio-economic aspects, institutional aspects, and environmental aspects [25]. Therefore, the goal of a public investment project which concerns public decisions and aspects [25] and the first goal of a public investment project should be a pursuit of relevance and sustainability. It is a decisive criterion to accept the defined goals, and it seems that relevance and sustainability are the most important requirements in major public projects [6], [10].

III. THE MAJOR INFRASTRUCTURE PROJECTS AND ITS DEVELOPMENT GOAL IN LAOS

A. Characteristics of major infrastructure projects

In Laos, major infrastructure projects had concerned under five-years national social-economic development plan⁴ as "*public investment project*." According to the Public Investment Law⁵, the public investment project generally means the "*utilization of state budget, natural resources, properties and other development plans which are periodically endorsed by the National Assembly*" (Article 2, *Public Investment Law*). As the law had mentioned the normal public investment projects are in the five types as Type 1, 2, 3, 4 and 5 depending on the costs and lifespan of project implementation, e.g. *Type 1*: costs more than 400 billion Kip (about 46.7 million USD), with a construction period of fewer

³ <https://ec.europa.eu/jrc/en/science-update/six-steps-achieving-sustainable-development-goals>

⁴ 8th Five-Year National Socio-Economic Development Plan (2016-2020): LAO PDR, Ministry of Planning and Investment

⁵ Lao PDR, Public Investment Law

than 7 years, and *Type 2,3,4,5* are less. However, major infrastructure project had mentioned as public investment project at national level that mentioned as “*public investment project at national level is the project with meaning to cover the hold country, relevant to many central and local organizations, it is the project with characteristic of strategy, provide the high benefit, it can drive the development and sustainable. Public investment project at the national level is unlimited of cost*” (Article 17, *Public Investment Law*). It can be meant to cover the hold country, relevant to many central and local organizations, and it is the project with the characteristic of strategy, provide the high benefit, it can drive the development and sustainable that will be approval by “*Lao National Assembly*.” Although, the project may take place by domestic-funded (government's budget) or using the development budget provided by domestic funds and Official Development Assistance (ODA) funds (in the loan, grant aid, and NGO). However, the projects must be in line with the National Socio-Economic Development Plan (NSED) valid at each period.

As mentioned in the 8th Five-Year National Socio-Economic Development Plan (2016-2020), the priority development programs for infrastructure sector had focus on connecting regional to national integration, poverty reduction and sustainable development growth including upgrade roads and railway to connect with neighboring countries, such as the Greater Mekong Subregion (GMS), Asian Highway, National road, Railway Project, new international airports, etc. Moreover, the plan also focuses on necessary infrastructure development, such as provincial and district roads, water supply, wastewater system to ensure that all districts have roads access and basic public utilities in the rural areas.

B. Infrastructure development goal

Based on national characteristics, situation, and the national development priorities, the (NSED) vision 2030 of infrastructure development can be summarized the goal into three levels:

- National level: reduce poverty by developing necessary Infrastructure, land and water transportation to support international integration and expand the road network from rural municipalities to the priority districts and zones. The urbanization in the municipalities through the development of necessary essential infrastructure and build necessary equipment to upgrade communication between Lao PDR and neighboring countries to move toward the international standards. Moreover, the infrastructure development in this level also focus on sustainable development growth to ensure availability of water supply, sanitation, and basic infrastructure to promote sustained, inclusive, economic growth, productive employment, and industrialization⁶.

⁶ 8th Five-Year National Socio-Economic Development Plan (2016-2020): LAO PDR, Ministry of Planning and Investment

- Sectoral level: aim to promote the connecting regional to national integration and connectivity by 1) improve multi-modal transport system, mainly: road, rail, inland water, and air transports. 2). Providing efficient transport infrastructure and facilities as transit transport routes. 3). Facilitating cross border transport and mobility between and among neighbors and countries in the region⁷.
- Project level: we cannot mention the development goal in the project level because every major infrastructure project has its specific goal, e.g., GMS projects focus on corridor town development of increased trade along the major transport corridors in the GMS⁸, National road projects aim to promote regional and international connectivity⁹, Lao-China railway projects aim to changes this new connectivity in Laos¹⁰. However, the overall goal of public projects should be meeting five criteria¹¹ as relevance, effectiveness, efficiency, impact, and sustainability.

IV. CASE STUDIES

A. Case1&2: The cases of urban development projects (GMS1&GMS2)

Greater Mekong Subregion1 (GMS1) project was started June 2012, including three corridor towns: Kaysone Phomvihane, Phine, and Dansavanh district. The towns along the East-West Economic Corridor (EWEC) that links the Lao PDR, Viet Nam, Thailand and Myanmar. Although, the second project represented *Greater Mekong Subregion2 (GMS2)*, from July 2015 the project along the North-South Economic Corridor (NSEC) had been implemented including two towns, Houayxay, and Luang Namtha district which links Lao PDR with China, Thailand, and Myanmar.

The grant projects (GMS1&GMS2) will contribute to maintaining economic growth, achieving poverty reduction targets, ensuring sustainable development and supporting regional integration in line with the National Socio-Economic Development Plan, 2010-2015 as 1) Strategic Local Economic Development Plans, 2) community awareness on project activities and environmental sustainability improved, 3) priority urban infrastructure investments implemented, 4) institutional capacities for managing public investments strengthened and . Moreover, it likely to contribute to poverty reduction through employment creation, in the short, medium and long- term by provided job opportunities and targeted

⁷ Lao PDR, Public Works and Transport Development Sectors 2016 - 2020

⁸ ADB, Greater Mekong Subregion Corridor towns development project – TA-8425 REG LAO PDR

⁹ Public Works and Transport Development Strategy 2016-2025

¹⁰ http://www.chinadaily.com.cn/business/2017-08/07/content_30359991.htm

¹¹ Lao PDR, Ministry of Planning and Investment, *Manual for Public Investment Project Evaluation*, June 2014

skills development. With increasing investments to serve as dynamic centers of investment and economic growth for a local community in the hinterlands of the corridor towns for the development of urban infrastructure and essential support services.

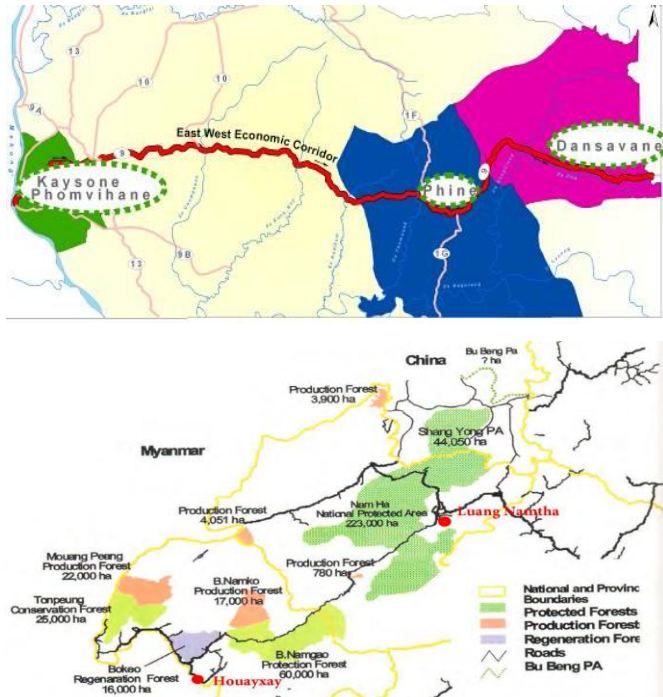


Figure 1. GMS1 and GMS2 projects

Source: ADB, GMS corridor towns development report

Development goals of GMS1 & GMS2

a) National perspective:

The primary development goal of GMS1 and GMS2 have the overarching objective of sustainable development growth. As the development of urban centers can sustainably support stronger rural-urban linkages through improved urban services and municipal infrastructure. It transforms the corridor towns into economic hubs by improving basic infrastructure for solid waste collection, improved connectivity and environmental sanitation for residents due to expanded urban roads and drainage systems, and livelihood opportunities associated with improved river port facilities and riverbank protection, and recreational areas. Moreover, the project is also likely to contribute to poverty reduction through employment creation in the short, medium and long term by an increase in private investments in urban services, and an increase in sustainable livelihood improvement activities such as vocational training opportunities and skills development.

b) Sectoral perspective:

The goal of infrastructure development focus to connectivity, provision of urban infrastructure that the main roads in districts, and access roads that link rural production areas to urban markets. Thus, on the developing priority

transport corridors had increase physical connectivity between the GMS countries for the movement of people, goods, and services, which links the Laos PDR with China, Viet Nam, Thailand, and Myanmar to serve as dynamic centers of investment and economic growth for increased trade and investments along the transport routes. Moreover, the development had provided many development targets through the four traditional areas of agriculture, forestry, education, and health. While there is a particular focus on tourism development in secondary destinations, includes businesses and tourists who will benefit from improved urban infrastructure.

c) Project perspective:

The key outputs of the GMS projects will provide the enabling environment for strategic local economic development, infrastructure investments, institutional capacity building and contains essential provisions for improved public administration. It can be adopted the local economic development plans with contributing to economic growth and competitiveness, and it also strengthened institutional capacity to provide project management support and capacity development to MPWT and the department of public works and transport (DPWT), provincial and local authorities. Additionally, the skills development will be provided to poor and unskilled laborers to enhance and capture local employment opportunities of the urban population and expansion of urban areas. Several corridor towns are now facing demands for urban infrastructure and essential support services as a result of project investments include generating employment and income for local people, strengthening heritage protection, increasing public-private cooperation and diversifying services that MPWT has adhered to the transparency and accountability elements of good governance.

B. Case3&4: The cases of transportation development projects (NR13&NR2)

The National Road 13 North (NR13) considering as the "Asian Highway" to fulfilled the new economic cooperation circle among "Golden Four Corner Belt" in three countries including China, Laos, and Thailand. Due to the drainage system of the whole road is not perfect and poor indivisibility. Therefore, the project had been rehabilitated and improved from May 2015. Likewise, The National Road No.2 (NR2) located in the northwest of Laos, it aims to link Thailand and Vietnam to Northern Laos, also considered a part of "Asian Highway Network." Although, the current road is in low standards and lack of maintenance. Thus the government had been developed from June 2013. The two NR13&NR2 have been a considering as the regional projects, upcoming country program, infrastructure and rural development program for improving connectivity with neighboring countries which makes the establishment of an accountable, effective, transparent, and responsive public administration to strengthen service delivery a key development objective that intent to transition from a "land-locked" to a "land-linked" country.

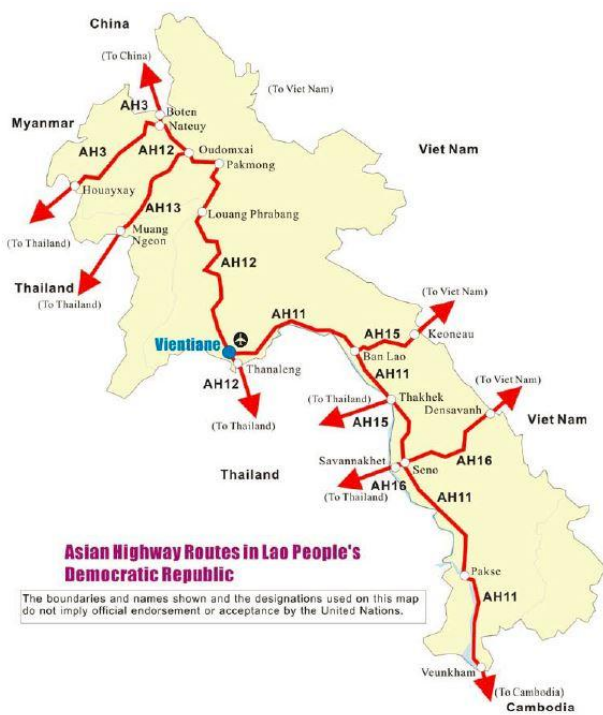


Figure 2. National Road 2th Project

Source of the picture: MPWT Report

Development goals of NR13&NR2

a) National perspective:

The main development goal of GMS1 and GMS2 have the overarching objective of sustainable development growth. As the development of urban centers can sustainably support stronger rural-urban linkages through improved urban services and municipal infrastructure. It transforms the corridor towns into economic hubs by improving necessary infrastructure for solid waste collection, improved connectivity and environmental sanitation for residents due to expanded urban roads and drainage systems, and livelihood opportunities associated with improved river port facilities and riverbank protection, and recreational areas. Moreover, the project is also likely to contribute to poverty reduction through employment creation in the short, medium and long term by an increase in private investments in urban services, and an increase in sustainable livelihood improvement activities such as vocational training opportunities and skills development.

b) Sectoral perspective:

The goal of infrastructure development focus to connectivity, provision of urban infrastructure that the main roads in districts, and access roads that link rural production areas to urban markets. Thus, on the developing priority transport corridors had increase physical connectivity between the GMS countries for the movement of people, goods, and

services, which links the Laos PDR with China, Viet Nam, Thailand, and Myanmar to serve as dynamic centers of investment and economic growth for increased trade and investments along the transport routes. Moreover, the development had provided many development targets from poverty reduction through the four traditional areas of agriculture, forestry, education, and health. While there is a particular focus on tourism development in secondary destinations, includes businesses and tourists who will benefit from improved urban infrastructure.

c) Project perspective:

The key outputs of the GMS projects will provide the enabling environment for strategic local economic development, infrastructure investments, institutional capacity building and contains essential provisions for improved public administration. It can be adopted the local economic development plans with contributing to economic growth and competitiveness, and it also strengthened institutional capacity to provide project management support and capacity development to MPWT and the department of public works and transport (DPWT), provincial and local authorities. Additionally, the skills development will be provided to poor and unskilled laborers to enhance and capture local employment opportunities and with the rapid growth of the urban population and expansion of urban areas. While Several corridor towns are now facing demands for urban infrastructure and essential support services as a result of project investments, include generating employment and income for local people, strengthening heritage protection, increasing public-private cooperation and diversifying services that MPWT has adhered to the transparency and accountability elements of good governance.

V. DISCUSSION AND CONCLUSION

The development goals in a *national perspective* are likely to the purpose of overall achievement that focuses on overall national development. Based on NSEDP, it was mainly promoting poverty reduction and sustainable development to ensure the development of necessary infrastructure. While, case studies are also likely to contribute more than poverty reduction and sustainable development, through improving rural development, and public service. e.g., the development goal of GMS1 and GMS2 have the overarching objective of public services through improved urban services and municipal infrastructure, and the development goal of NR13&NR2 focus on rural development to improve reliable road connectivity in Lao PDR that based on "land-locked to land-linked." While the *sectoral level* promotes the connecting regional to national integration and connectivity to improve a better transport condition. NR13&NR2 focus to connectivity as the main roads in districts, and access roads that be the key priority for the many public sectors, especially for social and economic development that linking people to resources, markets, and public services.

Moreover, the development goal of GMS1 and GMS2 had increased the foundation for more efficient movement of people, goods, and services from economic, tourism, social,

agriculture, education, and health sectors. In term of overall development goal of the *project*, the level can be mentioned in five criteria as relevance, effectiveness, efficiency, impact, and sustainability. However, every project has its own specific development goal, e.g., GMS1 and GMS2 focus on urban service development and NR13&NR2 focus on connectivity and rural development.

TABLE I. DEVELOPMENT GOAL OF MAJOR INFRASTRUCTURE PROJECTS IN LAOS

Goals	National level	Sector level	Project level
Development principle	<i>Poverty reduction, sustainable development</i>	<i>Connectivity, integration</i>	<i>Relevance, effectiveness, efficiency, impact, and sustainability</i>
Case studies	<i>Sustainable development, poverty reduction, rural development, and public service</i>	<i>Development of economic, tourism, social, agriculture, education, and health sectors</i>	<i>Building institutional capacity, human skills, trading, employment opportunities</i>

In the extent of public investment projects in the front-end phase, ensuring the relevance and sustainability as an essential requirement [10]. The relevance and sustainability of infrastructure development goal firstly can be mention as the relation between the principle of infrastructure development (development plan) and practical aspects (case studies), it had highlighted the relevance of three levels from the main purpose to be relevant of society needs. e.g., GMS1&GMS2 and NR13&NR2 focus on urban service, connectivity, integration, and rural development to serve society. The concern to sustainable development [18], the right decisions as requirements for the overall goals and the sustainability requirements need to be considered in the early stages of the project development process.



Figure 3. Level of infrastructure development goal

The infrastructure development goal in sustainability perspective can be mentioned as development goals in *national level*, e.g., GMS1&GMS2 have improved the public services, and NR13&NR2 focus on rural development and connectivity that purpose of the sustainability in the process of developing successful projects [11], to accept the defined goals as the most critical requirements in major public projects.

For a better understanding of infrastructure development in Laos, this research aims to explore the major infrastructure projects development goal from different perspectives. The research conducts with the qualitative approach to exploring the meaning of development goals. In Laos, the major infrastructure projects had been delivery through *public investment project* that can be provided three levels of development goal (national, sectoral and project level) can be concluded:

- National level: *Poverty reduction, sustainable development, rural development, and public service*
- Sectoral level: *Connectivity, integration, development of economic, tourism, social, agriculture, education, and health sectors*
- Project level: *Relevance, effectiveness, efficiency, impact, and sustainability, building institutional capacity, human skills, trading, employment opportunities*

In the extent of relevance and sustainability, firstly can be mention as the relation between the principle of infrastructure development (development plan) and practical aspects (case studies). The concern to sustainable development, the overall goals, and the sustainability requirements need to be considered at the national level.

REFERENCES

- [1] MPWT, "Lao PDR_Infrastructure sector_Statistics [Lao]," 2017.
- [2] The World Bank, "The World Bank," 2016.
- [3] S. Parthynaikoo, "Landlocked To Landlinked: the Case of Economic Liberalisation and Integration of Laos," 2007.
- [4] B. Flyvbjerg, "Over Budget, Over Time, Over and Over Again: Managing Major Projects," in *The Oxford Handbook of Project Management*, 2011.
- [5] OECD, "Regulation of Insurance Company and Pension Fund Investment OECD REPORT TO G20 FINANCE MINISTERS AND CENTRAL BANK GOVERNORS," OECD Rep. 2015, no. September, pp. 1–37, 2015.
- [6] O. Jonny Klakegg and T. Haavaldsen, "Governance of major public investment projects: in pursuit of relevance and sustainability," *Int. J. Manag. Proj. Bus.*, vol. 4, no. 1, pp. 157–167, 2011.
- [7] Z. A. Auzzir, R. P. Haigh, and D. Amaratunga, "Public-private Partnerships (PPP) in Disaster Management in Developing Countries: A Conceptual Framework," *Procedia Econ. Financ.*, vol. 18, pp. 807–814, 2014.
- [8] K. F. Samset and G. H. Volden, *Governance Schemes for Major Public Investment Projects_A comparative study of principles and practices in six countries*, no. 47. 2016.

- [9] O. J. Klakegg, T. Williams, and O. M. Magnussen, "Governance Frameworks for Public Project Development and Estimation," *Proj. Manag. J.*, vol. 7, no. 3, pp. 47–67, 2008.
- [10] O. J. Klakegg, "Pursuing relevance and sustainability: Improvement strategies for major public projects," *Int. J. Manag. Proj. Bus.*, vol. 2, no. 1, pp. 499–518, 2009.
- [11] T. Williams, O. J. Klakegg, O. M. Magnussen, and H. Glasspool, "An investigation of governance frameworks for public projects in Norway and the UK," *Int. J. Proj. Manag.*, vol. 28, no. 1, pp. 40–50, 2010.
- [12] N. Mackhaphonh and G. Jia, "Megaprojects in Developing Countries and their Challenges," *Int. J. Business, Econ. Manag. Work.*, vol. 4, no. 11, pp. 6–12, 2017.
- [13] Z. Bauman et al., "Megaprojects and Risk: An Anatomy of Ambition," *Megaprojects Risk An Anat. Ambition*, vol. 75, no. 3, pp. 90–123, 2017.
- [14] A. van Marrewijk, S. R. Clegg, T. S. Pitsis, and M. Veenswijk, "Managing public-private megaprojects: Paradoxes, complexity, and project design," *Int. J. Proj. Manag.*, vol. 26, no. 6, pp. 591–600, 2008.
- [15] R. Miller and B. Hobbs, "Governance Regimes for Large Complex Projects," *Project Management Journal*, vol. 36, no. 3, pp. 42–50, 2005.
- [16] L. Hass, L. Mazzei, and D. O'Leary, *Setting Standards for Communication and Governance*. 2007.
- [17] K. A. Brekke, N. Olsson, and O. J. Klakegg, "Improved planning of public investment projects," in *Concept Report No. 9, Concept-programmet*, 2005.
- [18] O. J. Klakegg, "Formulation of objectives in major public investment projects," in *Concept Report no. 6, Concept Program*, 2006.
- [19] D. Walker and M. Jacobsson, "A rationale for alliancing within a public-private partnership," *Eng. Constr. Archit. Manag.*, vol. 21, no. 6, pp. 648–673, 2014.
- [20] M. P. Abednego and S. O. Ogunlana, "Good project governance for proper risk allocation in public-private partnerships in Indonesia," *Int. J. Proj. Manag.*, vol. 24, no. 7, pp. 622–634, 2006.
- [21] J. R. Turner and S. J. Simister, "Project contract management and a theory of organization," *Int. J. Proj. Manag.*, vol. 19, no. 8, pp. 457–464, 2001.
- [22] J. Halman and B. Braks, "Project alliancing in the offshore industry," *Int. J. Proj. Manag.*, vol. 17, no. 2, pp. 71–76, 1999.
- [23] M. Suprpto, H. L. M. Bakker, H. G. Mooi, and M. J. C. M. Hertogh, "How do contract types and incentives matter to project performance?," *Int. J. Proj. Manag.*, vol. 34, no. 6, pp. 1071–1087, 2016.
- [24] C. Biesenthal and R. Wilden, "Multi-level project governance: Trends and opportunities," *Int. J. Proj. Manag.*, vol. 32, no. 8, pp. 1291–1308, 2014.
- [25] OECD, "Principles for Evaluation of Development Assistance," *DAC Princ. Eval. Dev. Assist.*, pp. 1–11, 2008.

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