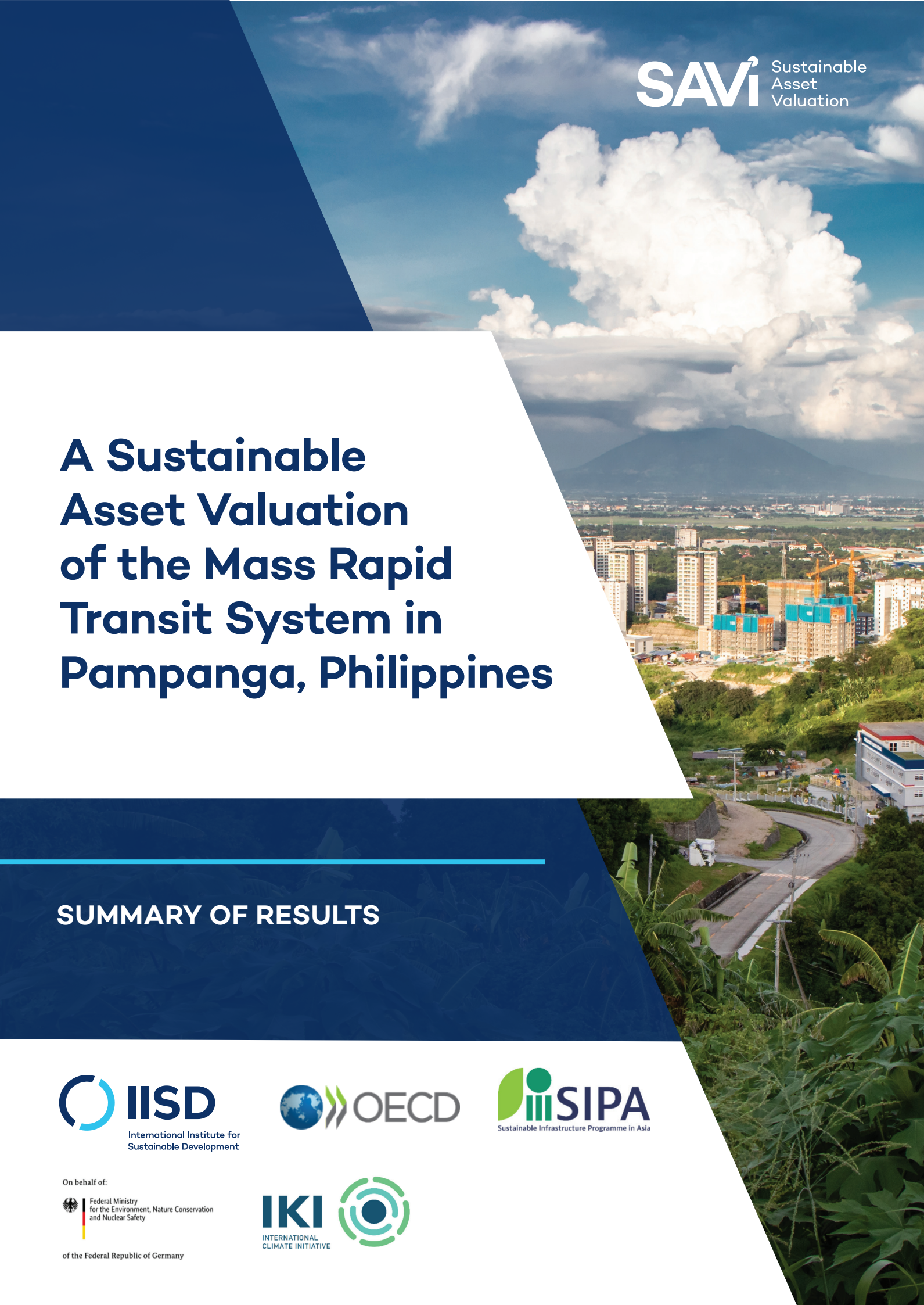
SAVi Sustainable Asset Valuation



A Sustainable Asset Valuation of the Mass Rapid Transit System in Pampanga, Philippines

SUMMARY OF RESULTS

IISD International Institute for Sustainable Development

OECD

SIPA Sustainable Infrastructure Programme in Asia

On behalf of:

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

of the Federal Republic of Germany

IKI INTERNATIONAL CLIMATE INITIATIVE

A Sustainable Asset Valuation of the Mass Rapid Transit System in Pampanga, Philippines

Summary of Results

The province of Pampanga in the Philippines, located north of Metro Manila, has a total area of 200,220 hectares and a population of more that 2 million inhabitants as of 2015 (National Economic and Development Authority [NEDA], 2021). Although Pampanga's economy is predominantly agricultural-based, it is home to three cities: San Fernando, Angeles, and Mabalacat.

The recently proposed mass rapid transit (MRT) system will cover the entire province with a focus on intra-connection, aiming to link its cities and municipalities and generate economic activity. More specifically, the MRT system is expected to improve access to transport, reduce congestion and time spent on transportation, as well as reduce CO_2 emissions and exposure to air pollution in Pampanga's urbanized areas. The project will consist of five transport lines, including four bus rapid transit lines and one light rail transit line.

In collaboration with NEDA, we carried out a sustainable asset valuation (SAVi) assessment of the proposed MRT's impact at the regional level, estimating the socio-economic and environmental benefits of its implementation and identifying how it can increase the well-being of the region's residents. The main objectives of the integrated assessment are to provide knowledge and raise awareness on the impact of sustainable infrastructure on parameters such as congestion, commuting times, CO_2 emissions, and employment creation. The assessment will also demonstrate the economic benefits for society, including the avoided costs of traffic accidents, vehicle operating costs, and fuel use. The outlining of the project-specific benefits and the identification of the sustainable infrastructure scenario were done in collaboration with the NEDA.

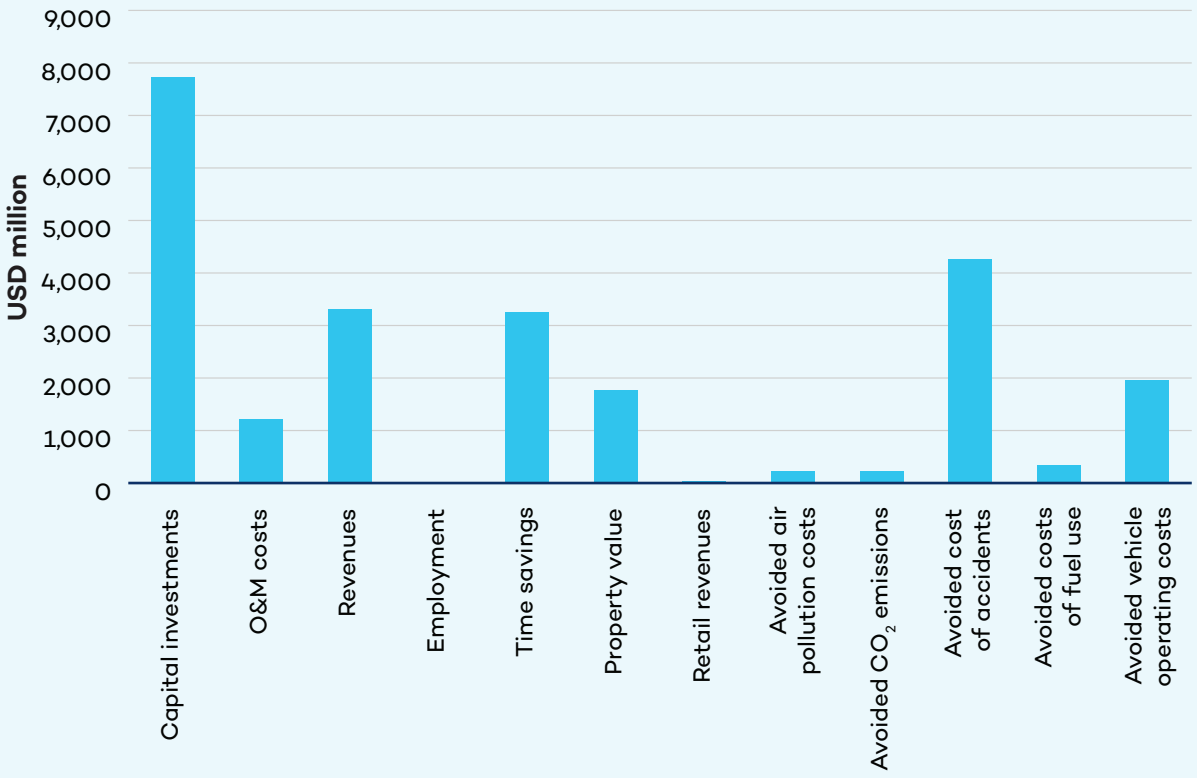
The SAVi methodology provides policy-makers and investors with a comprehensive analysis of the costs and benefits of an infrastructure project or policy intervention throughout its life cycle. We consider a wide range of economic, social, and environmental risks and impacts that are typically overlooked in traditional valuations, looking below the surface for the broader knock-on effects of implementing a transport project. This helps make the case for investment in sustainable infrastructure projects that deliver societal value. More details on the methodology, scenarios, and data assumptions used for this assessment can be found in the methodology note published jointly with this summary.

Our assessment shows that the MRT system in Pampanga has a wide range of economic, social, and environmental benefits that are not considered in traditional infrastructure assessments. **The MRT system will have significant economic benefits related to avoided costs of traffic accidents, time savings, and avoided vehicle operating costs, as well as positive changes in property value, retail revenues, and reduced levels of air pollution**. The SAVi assessment also shows the resulting fuel use savings and CO_2 emissions reductions.

We found that the MRT will generate a cumulative, discounted (at 3.5%) net benefit of PHP 360.3 million (USD 6,402 million)[1] considering a project period of 30 years, from 2023 to 2053. When accounting for the full range of the project's economic, social, and environmental benefits, the results show an integrated benefit-to-cost ratio (BCR) of 1.72. In contrast, when these benefits are not accounted for—as in traditional assessments of public transport projects—the return on investment looks far less attractive from a financial perspective (BCR of only 0.62). This disparity demonstrates the importance of considering the full range of economic, social, and environmental benefits and costs of public transport projects. Demonstrating a project's full economic return can be critical in leveraging the necessary financial resources for implementation.

The greatest impact of the MRT in Pampanga is the avoided cost of traffic accidents, valued at a cumulative discounted PHP 239.7 million (USD 4,259 million) as a result of the shift from private vehicles to the use of the MRT system. Time savings make up the second-biggest impact, valued at PHP 182,367 million (USD 3,240 million), followed by the avoided vehicle operating costs that will result from the shift to the public transport network, amounting to a cumulative PHP 109,988 million (USD 1,954 million). Because the MRT system will consist of five different lines that will extend across the whole of the region of Pampanga, capital investment costs are considerably high, amounting to a cumulative PHP 434,696 million (USD 7,722 million) until 2053. At the same time, revenues from the use of the MRT system and the purchase of tickets are projected to reach PHP 185,637 million (USD 3,298 million) cumulatively.

Figure 1. Monetary value of investment costs, revenues, added benefits, and avoided costs of the MRT in Pampanga (discounted at 3.5%, cumulative 2023–2053)



Source: Authors.

[1] Using an exchange rate of 1 PHP = 0.0177646 USD as of March 25, 2024. https://www.xe.com/currencyconverter/convert/?Amount=185637&From=PHP&To=USD

Integrated valuations like the SAVi assessment provide a fuller picture of the long-term effects of infrastructure projects by integrating these values into the traditional calculations of BCRs. A traditional BCR for this project, considering only the tangible impacts (e.g., capital and operations and maintenance costs for the MRT system, revenues from MRT use, income created from employment, avoided costs of fuel use and avoided vehicle operating costs), amounts to 0.63 for every PHP invested. This would, therefore, not be considered an investment-worthy project by traditional standards.

However, the sustainable BCR (S-BCR), which considers the project from a societal point of view and is based on the estimation of the full range of economic, social, and environmental added benefits and avoided costs, is 1.71, demonstrating the considerable value the proposed MRT system in Pampanga would deliver.

Table 1. Summary of key results of the MRT in Pampanga

Net results		
	Unit	**MRT in Pampanga**
Cumulative net benefits (undiscounted)	PHP million	503.049
Cumulative net benefits (discounted)	PHP million	**360.377**
Cumulative net benefits (discounted)	USD million	**6.4**
BCR		0.63
S-BCR		**1.72**

Source: Authors.

The SAVi assessment demonstrates that advancing sustainable transport infrastructure investments, such as the MRT system in Pampanga, Philippines, requires identifying, assessing, and valuing these societal benefits and avoided costs so that city planners and project developers can advocate for their implementation and financing.

It is critical that policy-makers design and implement processes to recognize and account for these wider values so that decisions are made that deliver transport investments that provide the greatest benefits to society while minimizing their environmental impacts.

About SIPA

The Sustainable Infrastructure Programme in Asia (SIPA) is funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety under its International Climate Initiative. SIPA is implemented by the Organisation for Economic Co-operation and Development and international partners. It aims to help selected Central and Southeast Asian countries scale up energy, transport, and industry infrastructure investments and shift them toward infrastructure projects consistent with low-emission, resilient development pathways and the Sustainable Development Goals.

Why Use SAVi?

SAVi calculates the environmental, social, and economic risks and externalities that impact the financial performance of infrastructure projects. These variables are typically ignored in traditional financial analyses.

SAVi is a simulation tool that is customized to individual infrastructure projects. It is built on project finance and systems dynamics simulation.

Visit the SAVi webpage: iisd.org/savi

About SAVi

SAVi is a simulation service that helps governments and investors value the risks and externalities that affect the performance of infrastructure projects.

The distinctive features of SAVi are:

- Valuation: SAVi values, in financial terms, the material environmental, social, and economic risks and externalities of infrastructure projects. These variables are ignored in traditional financial analyses.
- Simulation: SAVi combines the results of systems thinking and system dynamics simulation with project finance modelling. We engage with asset owners to identify the risks material to their infrastructure projects and then design appropriate simulation scenarios.
- Customization: SAVi is customized to individual infrastructure projects.

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