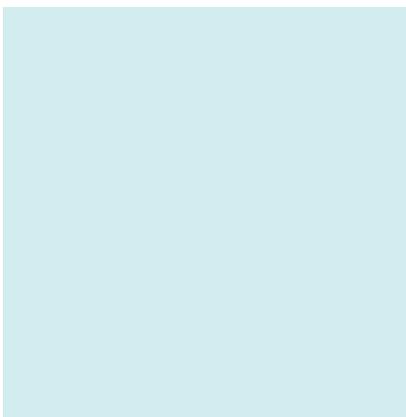




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# KSN Mamminasata

Moving Towards Green Growth



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dated 1 July 2014 (USD 1 = IDR 11,885)



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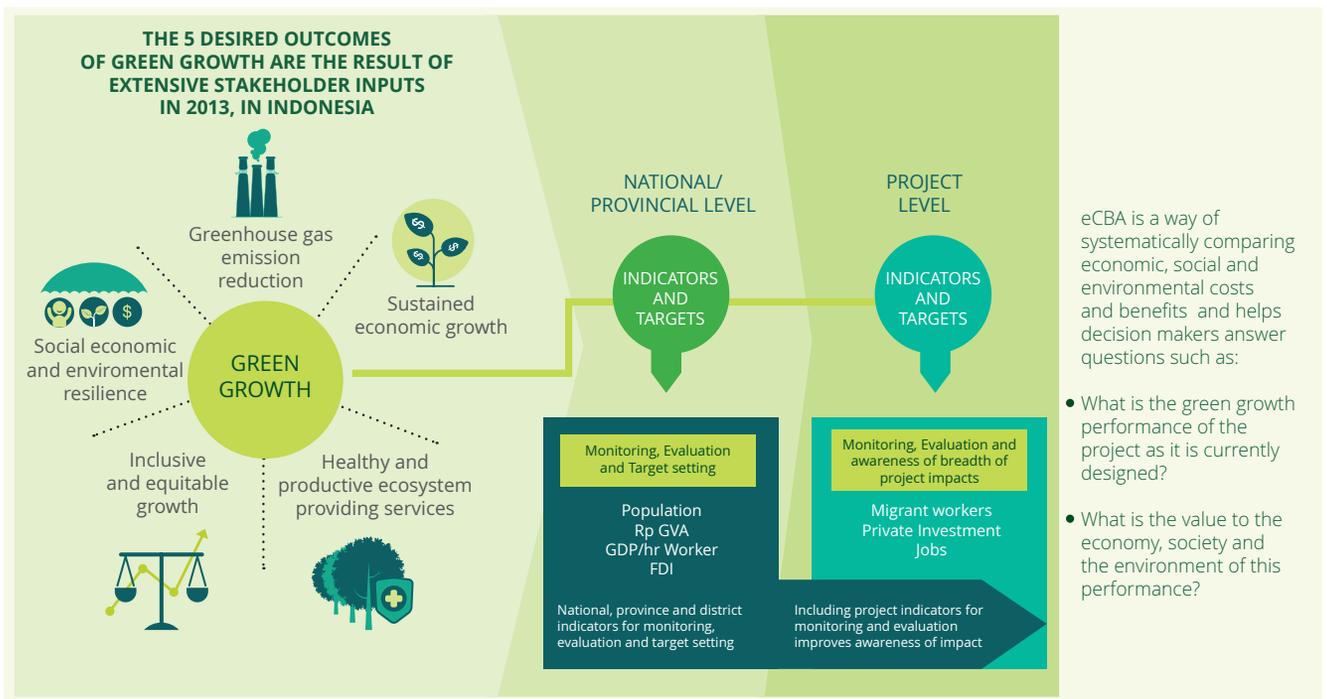
- ◆ The Coordinating Ministry of Economic Affairs, Ministry of Public Works and GGGI under the Indonesia Green Growth Program have jointly conducted an experimental extended Cost Benefit Analysis (eCBA) on the Strategic National Zone in Mamminasata, a metropolitan development plan in South Sulawesi.
- ◆ *Kawasan Strategi Nasional (KSN) Mamminasata* is being developed as a growth and service center for Eastern Indonesia. The eCBA systematically values the costs and benefits of re-designing and extending the project. This includes the often 'hidden' costs and benefits.
- ◆ Extensive consultation were held with key stakeholders between September 2013 and August 2014 to produce the eCBA study.
- ◆ The study identified green growth opportunities comprising of a wide range of economic, social and environmental benefits to society. These benefits are estimated to be worth a total of USD 355m (Net Present Value).
- ◆ Key building blocks to realize these green growth benefits include strong public-private cooperation, innovative financing mechanisms, cross-sectoral policy support and a clear regulatory framework.

## Introduction

A fundamental objective of the joint program is mainstreaming green growth within Indonesia's economic planning and development processes. To this end, the Green Growth Program is developing a framework and toolkit that can be used by a variety of government agencies especially those involved in planning and 4 economic activities, including investment appraisals. This framework, developed with stakeholders in 2013 and 2014, aims to make green growth measurable in terms of **five desired outcomes**, using a series of national, regional and project-level indicators.

Green Growth Assessments, including extended Cost Benefit Analysis (eCBA) are tools developed to measure and compare the Green Growth Performance of investments. Extensive stakeholder consultation has been done to support measurement.

The toolkit can be used at a high-level to prioritise projects with high green growth potential, or those that would benefit from a green growth re-design. At a more detailed level, the toolkit can be used for Green Growth Assessment at the site level using economically rigorous tools such as eCBA. This Green Growth Assessment is an eCBA drawing on project-level indicators.



# How can we re-design a project to improve its green growth performance?

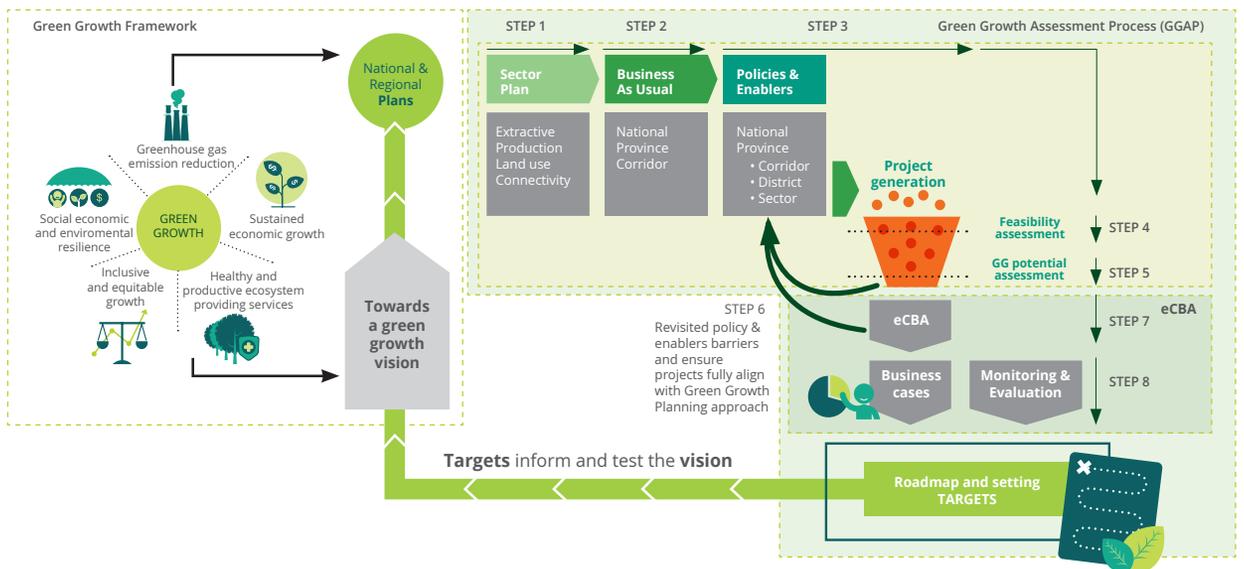
What are the synergies and trade-offs in re-designing a project?

How much capital investment is required to achieve this improved performance?

What policy instruments are needed to drive investment and behavioral change?

We have performed a Green Growth Assessment on the KSN Mamminasata project in South Sulawesi to understand the scale of opportunity to re-design the project, improving social, economic and environmental outcomes.

A full technical report outlining the context, methodology and findings in detail is available upon request to the Joint Secretariat of the Green Growth Program.



## The practical implementation of this extended Cost Benefit Analysis involved 7 steps



Consult project stakeholders	Consult project stakeholders	Identify outputs, outcomes and impacts	Collect data from project documentation, local market, and international technology	Quantify costs and benefits of green growth interventions	Validate findings with stakeholders	Consider implications of results for policy
Review project documentation	Literature review	Assess materiality, identify scope for eCBA		Value cost and benefits to society		Consider implications for project re-design and investment

# KSN Mamminasata



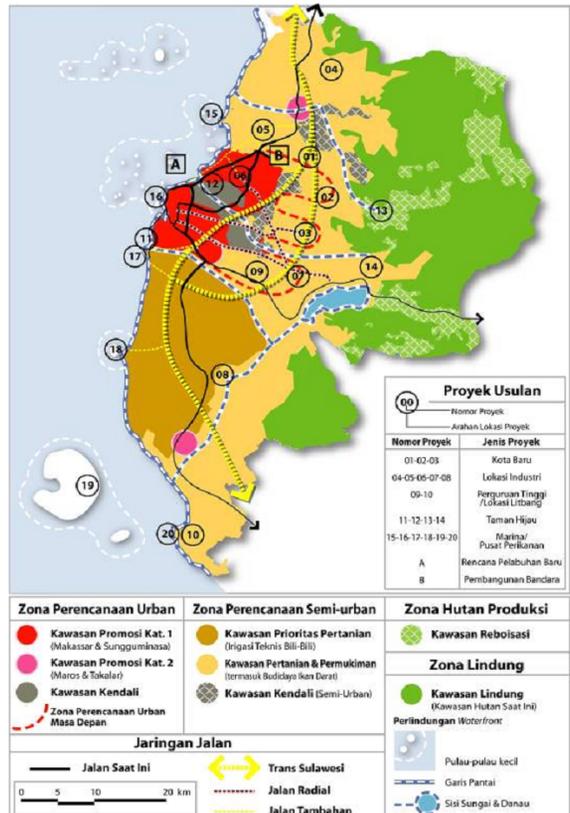
KSN Mamminasata is located in the province of South Sulawesi and covers four areas, including the city of Makassar, and the Gowa, Takalar, and Maros Districts. It is aimed as a growth and service center for the Eastern part

of Indonesia as well as for encouraging the development of trade, service, and other investments. The development of the Strategic National Zone has its origins in the 2003 Spatial Plan for Mamminasata.

## Key activities within the baseline development scenario for KSN Mamminasata include:

- Infrastructure development: road, rail, water supply
- Solid and liquid waste management
- Reforestation
- New settlement construction
- Industrial and maritime zones
- New university campus
- Land reclamation project (“Center Point of Indonesia”).

Mamminasata Map



# Green Growth Interventions: Results

Our “Green Growth Scenario” identifies three “green growth interventions” as well as analysis of their wider impact.

A short description of each is provided below, along with the costs and benefits of each intervention relative to Business As Usual.

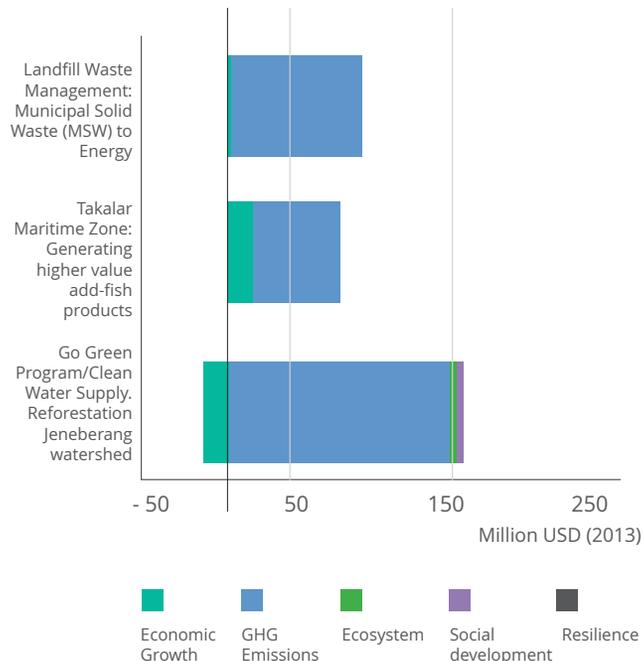
ACTIVITIES & BENEFITS	GREEN GROWTH INTERVENTION	DESCRIPTION
 <p><b>Go Green Program / Clean Water Supply</b> USD 150m</p>	<p>Reforestation of Jeneberang watershed</p>	<p><b>Baseline activity:</b> The Go Green Program aims to plant 25,000 hectares of forest across the four districts in KSN Mamminasata to compensate for historical deforestation in and around Makassar. One key related activity is to increase the supply of clean water from the Jeneberang river, passing through the Bili-Bili dam downstream. After treatment, this water will increase the volume of piped water provided to households and businesses in the region. However, the Bili-Bili Dam has suffered from high sedimentation levels due to deforestation in the Jeneberang watershed, upstream of Bili-Bili, potentially increasing costs of water treatment or making it not a feasible option.</p> <p>Proposed green growth intervention: Rehabilitation of the upper region of Jeneberang watershed to reduce sedimentation at the Bili-Bili dam. This will have positive impact and support the provision of clean water supply to households and businesses in the region.</p>
 <p><b>Landfill Waste Management</b> USD 109m</p>	<p>Municipal Solid Waste to Energy</p>	<p><b>Baseline activity:</b> Construction of a new landfill site at TPA Pattallassang. This will accommodate the rapidly growing volumes of waste in Makassar and the surrounding districts. Some of the (organic) waste is planned to be composted for local agricultural use, but much of the waste will decompose in TPA Pattallassang, producing landfill gas, which is primarily composed of methane, a greenhouse gas (GHG).</p> <p>Proposed green growth intervention: Installment of methane-capture and electricity generation technology at TPA Pattallassang. This would reduce GHG emissions from methane release, contribute to meeting the electricity needs of local communities and thus avoid building additional CO<sub>2</sub> emitting coal power plants.</p>
 <p><b>Takalar Maritime Zones</b> USD 96m</p>	<p>Generating higher value-add fish products</p>	<p><b>Baseline activity:</b> As part of the Takalar Maritime Estate, a series of activities are planned to make use of Sulawesi’s natural marine resources. This includes the development of fish processing, fish nurseries (aquaculture), research and development and upgraded catching facilities. This will result in significant volumes of fish waste.</p> <p>Proposed green growth intervention: Constructing industrial facilities to convert the fish waste into higher value-add products. This will support the development of local agriculture and aquaculture industries, and at the same time reduce pressure on natural fish stocks and reduce fish discards. Key activities will be the conversion of waste to fishmeal and fish oil, high-value, high-protein feed stocks. Fishmeal is too valuable to be used as fertilizer and instead can be used for poultry and pig rearing. Along with fish oil, it is also suitable for use in aquaculture.</p>

# Total Net Benefit USD 355m

We estimate that the aggregate net benefit generated across the three identified green growth interventions is USD 355m (Net Present Value at 10%). In context, this is equivalent to 6% of South Sulawesi's GDP, or 19% of government spending in 2012, and represents a benefit-cost ratio of over 6.9.

The largest return in absolute terms comes from the Go Green Program and Clean Water supply intervention which generates USD 150m in total benefits. This result strongly influences the overall cross-portfolio results, where the largest benefit category is GHG emissions.

The largest return in relative terms comes from the Takalar Maritime Zone, where it is proposed to generate higher value-add products from fish waste.



8

## Aspirational Interventions

There are a number of further green growth interventions suggested by stakeholders, the wider project team, and from available research. These interventions were all considered to have potential to significantly improve performance across one or more outcomes of Green Growth. However, they were not included in the eCBA results due to very high economic and financial costs, lack of practicality, and/or lack of data for a credible valuation. These policies are worth considering in the future, as they have the potential to yield even larger benefits, if the government and stakeholders manage to establish a policy environment conducive to green investment.

ACTIVITY	INTERVENTION
Centerpoint of Indonesia	Re-design of Center Point of Indonesia
Clean Water Supply	Avoid or minimize mining practices in Karst (Limestone) area to prevent contamination of nearby running water zones
Liquid Waste Management	Wastewater recycling Wastewater treatment
Mamminasata Metropolitan Road Network Development	Build paved feeder roads off Trans-Sulawesi highway to provide access for agriculture in Central Sulawesi which caters to demand in Makassar for consumption/export.
Takalar Maritime Zone	Sustainable fishing in line with maximum sustainable yield

# Policy Implications

ACTIVITY	NET BENEFITS	POTENTIAL POLICY / ENABLER
 <p><b>GO GREEN PROGRAM/ CLEAN WATER SUPPLY</b></p>	<p><b>USD 150m</b></p>	<ul style="list-style-type: none"> <li>• Implementation of Law 41/1999 on Forestry and Ministerial Decree No 02/PRT/M/ 2013 on Guidelines for Water Resource Management Plan</li> <li>• Compatibility of Land Use Plan with Spatial Plan</li> <li>• Provision of incentives for rehabilitation, conservation, management of forest ecosystem services</li> </ul>
 <p><b>LANDFILL WASTE MANAGEMENT</b></p>	<p><b>USD 109m</b></p>	<ul style="list-style-type: none"> <li>• Government guarantee that PLN will take up electricity generated from private IPPs</li> <li>• Reform of energy pricing system</li> <li>• Set tipping fee rate by government</li> <li>• Clearer government regulations on waste management to ensure predictable amount of generated waste</li> <li>• Compensation scheme for scavengers</li> <li>• Guidance and knowledge sharing on feasibility studies for waste to energy plants</li> <li>• Tax relief for investment in waste to energy equipment</li> <li>• Incentives for decentralised power provision</li> <li>• Investment in infrastructure</li> <li>• Collaboration between planners and PLN</li> </ul>
 <p><b>TAKALAR MARITIME ZONES</b></p>	<p><b>USD 96m</b></p>	<ul style="list-style-type: none"> <li>• Government subsidy for reduced waste/pollution per unit</li> <li>• Financial support for local fish meal industry</li> <li>• Support for knowledge sharing and training on fish waste processing industry</li> <li>• Tax reliefs for investment in waste to energy equipment</li> <li>• Profit-sharing mechanisms to fund social programs</li> </ul>

# Gol – GGGI Green Growth Program

Government of Indonesia and Global Green Growth Institute (GGGI) have developed a Program that is aligned with, and wholly supportive of, achieving Indonesia's existing vision for economic development planning.

The aim is to show, using real examples of Indonesia's development and investment plans at national, provincial and district levels, how economic growth can be maintained while reducing poverty and social inequality, maximizing the value of ecosystem services, reducing GHG emissions, and making communities, economies, and the environment resilient to economic and climate shocks.

## The joint Gol and GGGI goal is:

*“To promote green growth in Indonesia that recognizes the value of natural capital, improves resilience, builds local economies and is inclusive and equitable”.*

## The specific objectives to achieve this goal are:

- To ensure the green growth vision matches or exceeds existing development targets;
- To track the green growth priorities of Indonesia by providing relevant targets and indicators;
- To evaluate the implications of the country's current development path against green growth targets and indicators and assessing projects and potential policy and investment interventions against this baseline;
- To identify the key sectors and high green growth potential projects and investment interventions that will help deliver green growth development;
- To harness private sector engagement and investment in support of delivering green growth opportunities in Indonesia;
- To undertake economic modeling to analyze each project showing their financial returns and identifying any gaps in the incremental spend required to secure green projects



**For more information contact:**

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Indonesia 10310

[www.gggi.org/indonesia-green-growth-planning/](http://www.gggi.org/indonesia-green-growth-planning/)

**Important Notice:**

The Green Growth Program does not endorse the overall green growth performance of KSN Mamminasata or any other project, but rather highlights opportunities for improvements.

The results of this analysis are not suitable for investment decision making. While effort has been placed in using local information wherever possible, data has not been universally available, and international proxies feature in the analysis. Significant further due diligence would be required before undertaking any financial decision.