A Strategic Road Map to Implement Eco-Sustainable Water Infrastructure *(Pembangunan Sumber Daya Air berbasis Lingkungan Berkelanjutan)* in Indonesia

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[1] Please note that this remains in draft form prior to future consultation.

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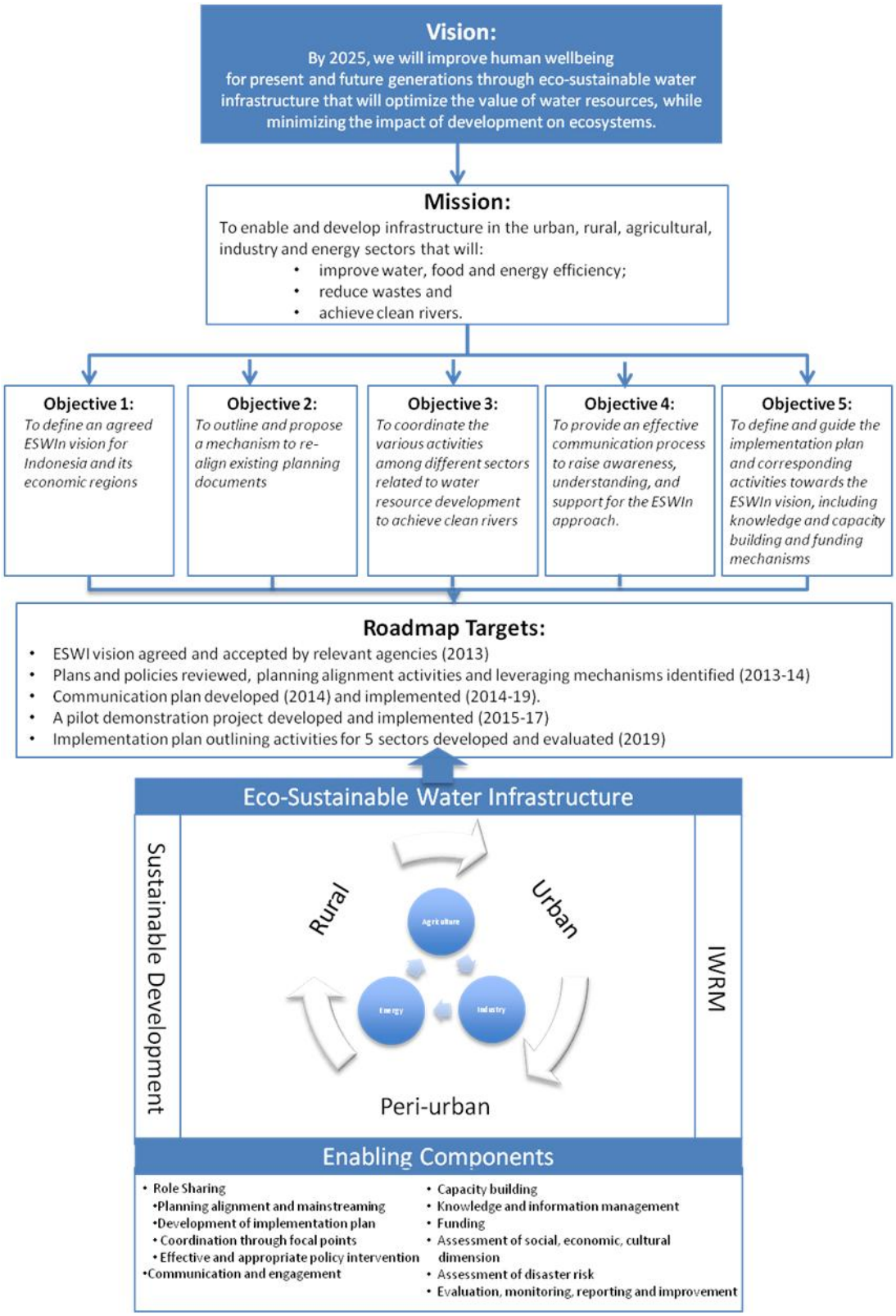
Summary


Vision:
By 2025, we will improve human wellbeing for present and future generations through eco-sustainable water infrastructure that will optimize the value of water resources, while minimizing the impact of development on ecosystems.
Mission:
To enable and develop infrastructure in the urban, rural, agricultural, industry and energy sectors that will:
• improve water, food and energy efficiency;
• reduce wastes and
• achieve clean rivers.
Objective 1:
To define an agreed ESWIn vision for Indonesia and its economic regions
Objective 2:
To outline and propose a mechanism to re-align existing planning documents
Objective 3:
To coordinate the various activities among different sectors related to water resource development to achieve clean rivers
Objective 4:
To provide an effective communication process to raise awareness, understanding, and support for the ESWIn approach.
Objective 5:
To define and guide the implementation plan and corresponding activities towards the ESWIn vision, including knowledge and capacity building and funding mechanisms
Roadmap Targets:
• ESWI vision agreed and accepted by relevant agencies (2013)
• Plans and policies reviewed, planning alignment activities and leveraging mechanisms identified (2013-14)
• Communication plan developed (2014) and implemented (2014-19).
• A pilot demonstration project developed and implemented (2015-17)
• Implementation plan outlining activities for 5 sectors developed and evaluated (2019)
Eco-Sustainable Water Infrastructure
Sustainable Development
IWRM
Rural
Urban
Peri-urban
Agriculture
Energy
Industry
Enabling Components
• Role Sharing
•Planning alignment and mainstreaming
•Development of implementation plan
• Coordination through focal points
• Effective and appropriate policy intervention
•Communication and engagement
• Capacity building
• Knowledge and information management
• Funding
• Assessment of social, economic, cultural dimension
• Assessment of disaster risk
• Evaluation, monitoring, reporting and improvement

I. Background

A. Water challenges in Indonesia

Indonesia is the second largest country in Asia and the Pacific in terms of total renewable water availability[2]. It has average annual rainfall over 2500 mm, but this falls disproportionately over the year. During the rainy season from May to September, the country receives 80% of annual rainfall while the remaining 20% falls over a 7 month period. In addition, rainfall is not evenly distributed over the country. For example, areas such as Bali and Java have abundant rainfall (~2000 mm/annum), while other areas (such as Nusa Tenggara) receive very limited rain (~400-600 mm/annum). The spatial and periodic distribution of rainfall poses a challenge to Indonesia's water supply and water resource management, despite its abundant water resources.

In addition, sanitation and drinking water are serious challenges. Over recent decades, rapid urban and industrial development has contributed to a decline in water quality as well as water availability. As a result, securing potable and clean water has been challenging. Inadequate and aging water infrastructure and lack of operation and maintenance capacity have compounded these problems. The increasing demand for water due to rapid population and economic growth will further aggravate water security in the future.

In the past, the development of water resources and infrastructure played a critical role in stimulating rapid economic growth and reducing widespread poverty in Indonesia. However, in recent years growing demand for water has put pressure on aging infrastructure, requiring substantial long-term investment. Given the importance of the role that water infrastructure has played in the socio-economic development of Indonesia, inadequate and inefficient water infrastructure along with worsening water

[2] United Nations Economic and Social Commission for Asia and the Pacific. 2012. Statistical Yearbook for Asia and the Pacific 2012. Bangkok, Thailand.

security will likely most likely negatively affect national development prospects in the long term.

To address the challenges facing water resource management, the Government of Indonesia has initiated a water resources sector reform programme that encompasses policy, institutional, legislative and regulatory measures. In parallel, the Government has undertaken actions at the central and local levels to address the challenges of water scarcity and use.

Overall, there remains a need for a new approach toward water infrastructure development and a shift in paradigm to include community participation, effective institutions and good information systems, and adequate data to augment conservation, utilization and control[3].

B. Concept of eco-efficiency

The dominant paradigm of natural resource management by centralized authorities has resulted in unsustainable use of those resources, while sub-national authorities often lack the means and legal powers to bring about change. This is especially so in the cross-boundary dimensions of water systems, which suffer from a lack of coordinated response and management of resources over different levels of the government. This necessitates a fundamental shift in the management and use of resources, including the development of effective and collaborative institutional frameworks and relationships. However, developing countries, including Indonesia, face challenges in transforming towards a new paradigm of infrastructure development and ecosystem services that enhances productivity through adequate investment in those resources while pursuing rapid economic development.

[3] Sugiyanto and C. Samekto. 2008. *The Status and Challenges of Water Infrastructure Development in Indonesia*. Presented in the First Regional Workshop on the Development of Eco Efficient Water Infrastructure for Socio-Economic Development in Asia and the Pacific Region; Seoul, November 10-12, 2008.

a) What is Eco-Sustainable Water Infrastructure (ESWIn)?

For Indonesia, eco-efficient water infrastructure is often referred to as eco-sustainable water infrastructure (ESWIn). It can be defined as an *integrated approach in water infrastructure development to achieve ecological and economic efficiency through i) maximizing the value of water related services; ii) optimizing use of natural resources and; iii) minimizing impacts on ecosystems.* In Bahasa Indonesia, *ESWIn* could be referred to as *"Pembangunan Sumber Daya Air berbasis Lingkungan Berkelanjutan"*.

For water resources, the eco-efficient infrastructure approach represents a paradigm shift of water resource management from market-based efficiencies dominated by water supply to a more holistic strategy based on multiple objectives and balancing ecosystem services, economic development and human welfare. In so doing it also can be seen as complementing the outcomes of the United Nations Conference on Sustainable Development, held in Rio de Janeiro, Brazil, in June 2012 (the Rio+20 Conference) which called for a shift to a green economy in the context of sustainable development and poverty eradication[4].

Water is recognized to be at the core of sustainable development and is closely linked to a number of key global challenges[5]. In this connection, eco-sustainable infrastructure contributes to achieving sustainable development and poverty reduction by enhancing resource efficiency including energy and water resources. Therefore, eco-sustainability in water infrastructure should be accepted as an implementing strategy to achieve Millennium Development Goal (MDG) 1 (poverty reduction) and MDG 7 (environment protection) in a complimentary manner.

Eco-sustainable infrastructure includes not only innovative physical components such