



# FROM DESCRIPTION TO PRESCRIPTION:

Planning Intervention  
for Sustainable Beringin Watershed  
2040

# **From Description to Prescription: Planning Intervention for Sustainable Beringin Watershed 2040**

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# ACCRONYMS

APO	: <i>Alat Pemecah Ombak</i> (Breakwater)
BAPPEDA	: Development Planning Agency at Sub-National Level
BBWS	: River Basin Management Board
BKM	: Community Self-Reliance Agency
BPBD	: Regional Disaster Management Agency
BPDAS-HL	: Center for Watershed Management and Forest Protection
BPR	: Rural Banks
BPS	: Central Bureau of Statistics
BSB	: <i>Bukit Semarang Baru</i>
CSR	: Corporate Social Responsibility
DAS	: Watershed
Dinsos	: Social Affairs Agency
DLH	: Environmental Agency
DPPP	: Agriculture, Plantation and Fisheries Office
DPU	: Public Works Agency
DRM	: Disaster Risk Management
Eco-DRR	: Ecosystem Disaster Risk Reduction
FGD	: Focus Group Discussion
FRMT	: Flood Resilience Measurement Tool
ICZM	: Integrated Coastal Zone Management
KIC	: <i>Kawasan Industri Candi</i> (Candi Industrial Estate)
KIW	: <i>Kawasan Industri Wijayakusuma</i> (Wijayakusuma Industrial Estate)
KLHK	: Ministry of Environment and Forestry
KOTAKU	: <i>Kota Tanpa Kumuh</i> (Program from Ministry of Public Work and Public Housing)
KSB	: Community based Disaster Resilience in Sub-district
LPMK	: State Institute for Community Empowerment
MCK	: Bath Wash and Toilet
MDPL	: Meters Above Sea Level
Musrenbang	: Development Planning Forum
NGO	: Non-Governmental Organization
PDAM	: Local Water Company
PKK	: Organization of Women / Family Welfare Program
PLN	: State Electricity Company
PRB	: Disaster Risk Reduction
RTRW	: Spatial Planning Document
RPRHL	: Management Plan for Forest and Land Rehabilitation
RT	: Block
RW	: Neighborhood
SDGs	: Sustainable Development Goals
SMEs	: Small Medium Enterprises
TPS	: Temporary Waste Disposal Facilities

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# FOREWORD

First of all, my highest appreciation for the publication of this planning studio report made by an enormous team involved both lecturers and students at the Master Program in Urban Regional Planning, Department of Urban and Regional Planning, Diponegoro University. This report is jointly edited by Dr. Wiwandari Handayani, Maya Damayanti, Ph.D., and Intan Hapsari Surya Putri, who are also contributors in this book.

By taking the location of Beringin Watershed area, this report attempts to elaborate on the problems and potentials of the planning area into more comprehensive planning actions and interventions. Initially started with a contextual planning concept, scenarios and strategies were proposed from different levels; micro-, meso-, and macro-level. At the micro-level, economic development and sustainable livelihood were the two defined strategies to improve the community's quality of life. While at the meso-level, protecting coastal natural environments and reducing vulnerability were proposed to deal with environmental issues from the upstream, midstream, and downstream areas. Finally, establishing integrated and coordinated governance at the watershed area were recommended at the macro level for a non-structural measure related to the institutional capacity development.

This report is also an excellent example of planning studio practice. The publication makes the report more reachable by overall readers, governments, and practitioners with urban and regional planning backgrounds. It is also an attempt to disseminate the results to different related stakeholders to understand the comprehensive approaches in watershed planning from a descriptive concern into more prescriptive actions.

Last but not least, I would like to thank you very much, both lecturers and international class students, for the high efforts to produce this report. Hopefully, this report could positively contribute to the planning practice, particularly in the watershed area

Head of Master Program in Urban and Regional Planning  
Department of Urban and Regional Planning

Dr. Iwan Rudiarto

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# OPENING ADDRESS

Semarang, like the other coastal cities in the Northern Coast of Central Java, is facing various environmental problems. Abrasion and accretion have led to the degradation of the coastal environment, the burden of development and soil compaction have caused land subsidence, which in turn, compounded with climate change, has resulted in the increasing sea level. A solution to these problems is urgently needed. Otherwise, many other issues will inevitably emerge and exacerbate the city's vulnerability to coastal hazards.

To respond to these problems, as well as to optimize benefits for the community's greatest possible prosperity, the northern coastal areas need to be managed in a comprehensive, integrative, environmentally friendly, and sustainable manner. Comprehensive management refers to the thorough supervision and implementation of every aspect within the coverage area, from the upstream (catchment area boundary) to the downstream (12 miles from the coastline). Integrative means it involves all stakeholders; the government, private sectors (business), academic institutions, and the community. Environmentally friendly management aims at coastal areas development within its environmental carrying capacity. Sustainable management refers to the attention given to the ecological principles, socio-economic and cultural principles, socio-political principles, legal and institutional rules.

Conducted in the Semarang City Coastal Zone, particularly in the Beringin watershed area, we are very supportive of the implementation of this study. The selected study area, especially the Tugu District, has a very high strategic value. The development of industrial activities and the National Strategic Project for the Semarang - Kendal Toll Road (Harbor Toll) is one of the national flagship programs contained in Presidential Decree 79 of 2019 regarding the Acceleration of Economic Development in Central Java. We should anticipate various efforts so that the goals of economic development can be achieved without leaving environmental sustainability behind.

The Central Java Government initiated the concept of Integrated Coastal Zone Management (ICZM) to overcome the complexity of the problems. ICZM is defined as an integrated approach of planning and management, in which all policies, sectors, and interests are well accounted for, with appropriate considerations are given at various scales, and all coastal stakeholders are involved in a participatory manner. Coastal management is entrusted by integrating all sectors; social, economic, spatial, and technical, from upstream and downstream. We do hope that it can provide optimal results and can be implemented with the provision funding either from the State Budget, Local Government Budget, or international assistance.

We hope that this report can contribute to the development of ideas and solutions in overcoming environmental and other emerging problems in the Beringin watershed of Semarang City, and in other watershed areas in Indonesia.

Head of Central Java Public Works Water  
Resources and Spatial Planning Agency

Ir. SR Eko Yuniyanto, Sp.1

# OPENING ADDRESS

For over a decade, Semarang City has been endeavoring appropriate city planning and development, community capacity enhancement, and governance system improvement as a mean to build stronger urban resilience and sustainable development. In addition, the City Government, pioneered by the Regional Development Planning Agency (*BAPPEDA*), has engaged the public and private partners, including universities, to contribute even more by providing them strategic roles to hold. The academic institutions' involvement in the field of urban planning is paramount important, as they are expected to make a significant contribution through the development and sharing of knowledge, research, and community service.

As the leading growth center in Central Java Province, the development of Semarang City has exceeded far beyond its administrative boundary. The current state of population growth and commercial activities in the western area of Semarang has led to the rapid development of new settlements, which in turn, causes a lot of problems to the surrounding environment. The demand for space to meet the community's activities is sky high, while the space availability is very limited. Accordingly, several national projects are being strategically implemented in order to keep the balance between the environment's sustainability and the population needs, one of which is Beringin River Normalization. Planned to be completed by 2022, the normalization is part of a multi-year national program that aims to address the floods in Beringin Watershed, which affect not only its physical environment, but also the social-economic condition of its local community. Therefore, to succeed in this program, full participation and solid collaboration between the communities, private sectors, developers, academic institutions, and government at city, provincial and national level is a must.

As an effort to overcome the problems in Beringin Watershed, Semarang Planning Agency welcomes the study from the Master Program in Urban and Regional Planning of Diponegoro University to elaborate Planning Intervention for Sustainable Beringin Watershed in 2040. The implementation of the ICZM – Eco DRR concept, which aims to optimize the local potency and to balance the natural environment preservation and local capacity development with a better governance system, is expected to tackle the problems in Beringin Watershed. We do hope that the continuation of the implementation of this study can succeed in bridging the theory into practical guides and tools, which benefit the local authorities and the community's planning and development activities. Now, it is our turn, as one of the main actors of Semarang City planning and development, to tailor the development of Semarang City with the planning concept in this study, certainly for achieving sustainable and resilience Semarang City generally, and Beringin Watershed specifically.

Head of Semarang Regional Development  
Planning Agency

Dr. Bunyamin

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# OPENING ADDRESS

If there was ever an exemplary city in Indonesia that demonstrates leadership in urban development and growth over the last decade, it will have to be Semarang. However, the region is and still will face compound risks – floods, land subsidence, landslides and drought exacerbated by a rapidly urbanizing metropolis. As a coastal city, its transformation dynamics are representative of many cities alike across the Indonesian archipelago. Apart from the looming threat of climate change and sea level rise, Indonesian cities must also ensure that its institutions evolve with the times – adopting new approaches and new ways of thinking that is urgently needed to secure its future now.

Institutional evolution has to start from its foundations – human capital, governance and technical know-how. The role of educational and research institutions is critical in addressing these core tenets. To address a climate resilient and sustainable future, a comprehensive and integrated approach is necessary. In Semarang, the issue of floods and water security cannot be separate from spatial planning, economic development, hydrological engineering and community adaptation practices. To prepare for the future, there is a need to produce new leaders that can fluidly span across previously compartmentalized disciplines – planning, architecture, engineering, landscape and geography. In short, promoting systems-thinking across scales.

There is also a need to create a generation of active citizens that understands the power of bottom-up approaches and the ability to mobilize collective action and structure collaborations across sectors and social strata. To do this, there is a need to cultivate participatory approaches in understanding contexts, conceptualizing solutions, and implementing interventions. The next generation of practitioners will have to be nimble in synthesizing information from the field and yet thinking critically about the broader system.

The context of Semarang also presents an exciting opportunity to engage with ongoing initiatives and collaborations with international institutions – a real living laboratory to innovate new planning practices.

The methodologies developed in the planning studio “From Description to Prescription: Planning Intervention for Sustainable Beringin Watershed 2040” presents an optimistic direction in the way future practitioners will engage with building urban resilience in Indonesian cities. Starting with the watershed as a system forecasting into the future, the studio simulates the potentials of the planning practice of a near future – visionary, systems-based, interdisciplinary and most importantly – grounded.

Coordinator of Water as Leverage  
Local Task Force

Barry Beagen, M.Arch.