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Urbanisation, Demographics and Adaptation to Climate Change in Semarang, Indonesia



POPULATION AND DEVELOPMENT BRANCH



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## Acronyms and Abbreviations

ACCCRN	Asian Cities Climate Change Resilience Network
BAPPENAS	National Development Planning Agency
BKKBN	National Population and Family Planning Board
BNPB	National Agency for Disaster Management
BPS	Central Statistical Bureau

CCROM	Centre for Climate Risk and Opportunity Management
CEO	Care Environmental Organization
СОР	Congress of the Parties
DFID	Department for International Development
DNPI	National Council on Climate Change
FPPI	Semarang Climate Change Forum
GCM	Global climate model
GDP	Gross domestic product
GHG	Greenhouse gases
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
ICCSR	Indonesia Climate Change Sectoral Roadmap
IPB	Bogor Agriculture Institute
IUCCE	Initiative for Urban Climate Change Environment
LECZ	Low elevation coastal zone
Kedung Sepur	Kendal-Demak-Ungaran-Salatiga–Semarang–Purwodadi
KLH	Ministry of Environment
KSN	National Strategic Area (Kawasan Strategis Nasional)
NGO	Nongovernmental organisation
PAKLIM	Policy Advice for Environment and Climate Change
RAN-API	National Action Plan Addressing Climate Change
RAN-GRK	National Action Plan on Greenhouse Gas (GHG) Reduction
RAN-MAPI	National Action Plan on Mitigation and Adaptation to Climate Change
SLR	Sea level rise
SMA	Semarang Metropolitan Area
STI	Secure tenure index
SST	Sea surface temperature
SAT	Surface air temperature
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNFPA	United Nations Population Fund

#### Introduction

Addressing the impacts of climate change is a strategic issue that requires a comprehensive and sustainable approach. As a result of climate change, global temperatures are expected to continue to rise, resulting in sea level rise and an increase in the frequency of extreme weather events such as floods, droughts, landslides and storms. These hazards are expected to affect natural ecosystems, as well as human communities through their costly impacts on basic services, infrastructure, housing, economic livelihood and health.

Cities in Indonesia face unique challenges in the context of climate change because of the country's geographic characteristics, as well as its rapidly growing economy. As an archipelagic nation, low-lying coastal areas and many small islands are vulnerable to the impacts of sea level rise. The country already suffers from drought, extreme temperature fluctuations, and land degradation and desertification, all of which are expected to worsen as a result of climate change.

Additionally, as an emerging economy, Indonesia is struggling to find the best way to balance national economic development with reductions in greenhouse gas (GHG) emissions and environmentally responsible development (Hayes, 2011). Unsustainable economic activities, land-use change and deforestation have resulted in Indonesia's position as one of the top three GHG emitters in the world (Sari *et al.*, 2007).

In addition to environmental changes, Indonesia has seen a steady increase in the portion of its population living in cities. About 50 per cent of the country's residents live in urban areas, a figure that is expected to increase to 65 per cent by 2025 (World Bank, 2013a; BAPPENAS, BPS, UNFPA, Population Statistics, 2005). This urban growth is occurring despite an overall decline in Indonesia's population growth rate (World Bank, 2012). It is estimated that approximately 40 per cent of this urban growth can be accounted for by migration and reclassification, as opposed to natural increases (Firman, 2004).

To the extent that these expanding cities are located in areas that are especially susceptible to the environmental hazards associated with climate change – as are the many coastal cities of Indonesia – cities are increasingly important sites of overlap between concentrated populations and exposure to environmental bazards. This makes

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