

Sustainable Vision for Cities in Indonesia

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Background

By 2050, Indonesia is estimated to be the eight largest economy in the world, overtaking UK and France (Pricewaterhouse Coopers 2013), and will be inhabited by approximately 321.4 million people, making it the 5th largest population of the world under China, India, Nigeria, and the US, (United Nations, Department of Economic and Social Affairs, Population Division 2013).

Another study stated that by 2050, 85% of Indonesia's population would live in cities (Indonesia's National Planning Agency 2015). Indonesia's high rate of urbanization are caused by many factors such as the uneven distribution of development activities which focus mostly in cities especially on the Island of Java, the most populated island in the world.

The high density of cities can actually improve their efficiency in the use of resources and reducing energy consumption; productivity in creating products and services; allowing for compact development, prioritizing dense housing and promoting shorter mobility as well as technological innovation. Ideally, these conditions will trigger economic advances and the cities can become the engine of growth. In fact, 18 million of the 21 million job opportunities were actually created in Indonesian urban areas from the period 2001-2011.

However, if not properly planned and built, this rapid rate of urbanization can lead to environmental degradation and put pressure on water supply, sewage systems, public health as well as social aspect such as social disparity and high rate of crimes, traffic congestion, urban poverty. These impacts will in turn lead to declining quality of life in urban areas.

Currently, around 60% of Indonesians already lived in cities and experience all of the urban issues mentioned above. This can be seen from the rapid population growth and the high demand of urban services not accompanied by the readiness of urban management. This is a weakening factor of the role and function of a city.

In addition, the impacts of climate change will become a major threat to urban development worldwide. Cities in Indonesia are particularly vulnerable to the effects of climate change, mostly due to the following:

- Indonesia has more than 13,000 islands and nearly 65% of Indonesians live in coastal areas.
- Most economic activities and assets; social infrastructure; and government facilities, are concentrated in cities.

Climate change is already affecting homes, cities, and livelihoods. Many urban communities in Indonesia have experienced the impacts of climate change first hand. In 2016, 95% of disaster events in Indonesia were hydro-meteorological affected by climate and weather such as floods, landslides, tornado, and land fires (Agency of Meteorology,

Climatology, and Geophysics Indonesia 2016). Some of these impacts are irreversible. For example, Jakarta, the capital city of Indonesia, suffers from regular floods causing billion dollars losses and significant direct and indirect economic damages (Budiono, et al. 2016). There has also been an increase in health issues related to climate change such as respiratory problem from the worsening air pollution, malaria and dengue, diarrhea.

Disasters Statistic in Indonesia 2016

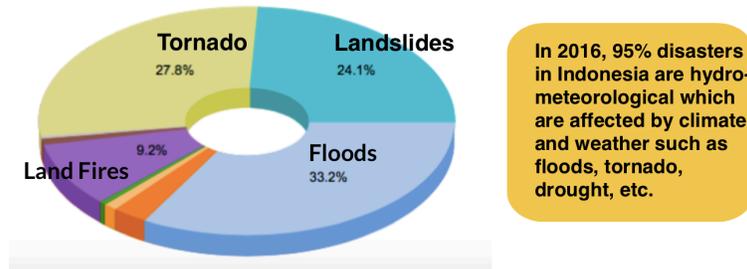


Figure 1 Statistic of disasters in Indonesia by the Agency of Meteorology, Climatology, and Geophysics Indonesia

There are several studies about Indonesia in 2050 that are related to climate change. Most of them depict a grim future. One study stated that Indonesia risks losing up to 1500 islands by 2050 and that the Jakarta airport which serves the capital and is about five kilometers from the seafront, will be under water by 2030 due to primarily land subsidence and coastal abrasion from rising sea level (Maplecroft 2014). Another study state that 42 million residents in coastal areas are in the risk of being displaced (Ministry of Fisheries and Maritime Affairs 2011).

Development Trends of Urban Areas in Indonesia

The other side of the coin, inefficient and ill-planned urban areas are some of the main causes of climate change. Moreover, the growth of urban areas in Indonesia is very rapid. By 2020, it is expected to grow 20 metropolitans, 50 cities above 500 thousand inhabitants, and more than 100 small towns. The rate of population growth in urban areas also reached 2.75% per year, greater than the national population growth rate of 1.17% per year. In addition, Indonesia has many small towns that will later grow into larger cities. These small towns have the potential to store carbon, but are high in emitting GHGs due to limited technological and mature planning and integrated applications.

Existing and new urban areas are the center of human activities that emit huge amount of greenhouse gas (GHG) emissions especially from economic activities and population growth. Most of the GHG emissions come from transportation, energy consumption, building and infrastructure, industries and waste. Cities in the world occupy only 3% of the land on earth but consume 60-80% of energy and produce 75% of world GHG emissions (United Nations 2015).

In Indonesia, activities in the cities also contribute enormous emissions. For example, in 2005, Jakarta emitted 35 million tons of CO_{2e}, compared to 2.1 billion tons of CO_{2e} throughout Indonesia. It is projected to increase to 113.94 million ton CO_{2e} by 2030 (Jakarta Environmental Agency 2005).

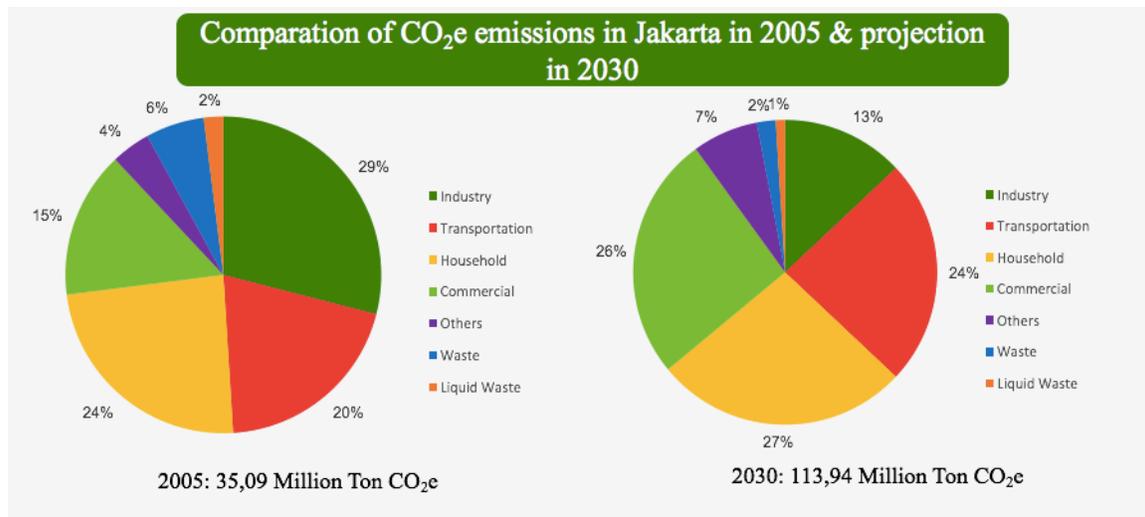


Figure 2 Comparison of carbon emission of Jakarta by 2005 and 2030



Figure 3 Jakarta's daily traffic which creates high level of pollution and GHG emissions

The negative impacts of urbanization in big cities and metropolitan areas, among others:

1. excessive exploitation of natural resources around the city to support and promote economic growth;
2. uncontrolled urban sprawl and continually converting productive agricultural land into built-up areas;
3. declining quality of urban physical environment;
4. declining quality of life in urban communities;

5. dependent and unfocused development of new settlement areas causing additional burden for the core city (autonomous city);
6. the formation of metropolitan and megapolitan areas requiring an increase in the quantity and quality of infrastructure and demanding better urban management.

The National Government's Response

These current conditions and worsening future predictions need to be anticipated and require a serious response at every scale and opportunity. There is a clear need to shift from business as usual practices to a more sustainable and climate resilience future in Indonesian's cities as well as to improve people's welfare. Failure to respond immediately will create a high risk of cities collapse.

Considering that, development of cities and regions in Indonesia should immediately execute the principles of the following:

1. low-carbon development through climate change mitigation activities,
2. climate resilience through adaptation activities, and
3. encourage environmentally sustainable living through the promotion of sustainable communities.

These actions should be done in an integrated manner. The national government has integrated the principles of sustainable and climate resilience into the development planning both in medium and long-term. The climate actions and the path for a sustainable future should be carefully and comprehensively planned for a long-term perspective because once a city is built, the infrastructures and the land-use patterns will be locked for decades. In this case, urban planning that has not been based on a qualified science approach will make a city less competitive in the long run.

Although the stress and main focus to address climate change should be on adaptation efforts as befits a developing country, a substantial effort is still needed, aiming at mitigation efforts. In this regard, it is a country's best interest to develop its economy and society in a sustainable manner to help reduce global greenhouse gas emissions. Sustainable development will not limit growth, instead it will create new opportunities. *W* Business as Usual paradigm should shift to sustainable development which considers climate actions in every aspect of development activities. Sustainable practice must be the new norm.

Indonesia's Nationally Determined Contributions (NDC) describes unconditional greenhouse gas (GHG) emissions reduction target of 29% and a conditional 41% reduction by 2030 compared to business-as-usual projected emissions. Emission reductions in Indonesia's NDC are being implemented through five sources of emissions, namely energy; industry; agriculture; land-use, land use change and forestry (LULUCF); and waste. The current progress shows that Indonesia has increased the share of renewable energy in the energy mix by 11% from the target of achieving 23% by 2025.

Indonesia also remain committed to integrate sustainable development strategies into our national medium and long-term development plan. Recalling out initiative in 2009, we have committed to voluntarily reduce our greenhouse gas emissions to 26% by 2020 and 41% with international assistance and has been elaborated into a set of policies, legal frameworks, and programs. This target was articulated in Presidential Decree Number 61 and Number 71 in year 2011 respectively on the National Action Plan for Greenhouse Gas Emissions Reduction and Adaptation. The supporting tools have been

developed and operationalized, such as National System on Greenhouse Gas Inventory and National MRV system.

Indonesia is also developing the National Action Plan for Adaptation to Climate Change to respond to the increasing impacts affecting the communities.

A national level planning and regulation need to be developed in order to guide Indonesia's cities development to be sustainable in the decades to come. Some of the reasons are as follow:

1. Provide a legally binding umbrella for the National, Provincial, and City Government in urban development;
2. To be the basis for the synchronization of regulations and policies of the National, Provincial, and City Government related to urban development;
3. Organize and consolidate the role and function of the city according to its typology for sustainable urban development in Indonesia; and
4. Can be utilized as a planning instrument for Ministries/City Government Institutions in the preparation of urban development programs and activities;
5. Encourage businesses and communities to participate in urban development at the national and regional levels.

Building and transforming Indonesian cities to be smart and sustainable is also stipulated in Indonesia's medium and long-term development plan. Several programs and regulations are developed to support this, among others:

1. Green City Program

Green City Program consists of 8 components which can be the feature of sustainable cities in Indonesia in the future. The 8 components are as follow: Green Design and Planning, Green Open Space, Green Community, Green Building, Green Waste, Green Energy, Green Water, Green Transportation.

Currently, this program is run by the Ministry of Public Works and Housing and only able to apply 3 out of 8 elements: Green Design and Planning, Green Open Space, Green Community. This is due to budget constraint and sectoral boundaries. The rest of the elements are under the authority of other ministries among others: Ministry of Environment and Forestry and Ministry of Energy and Mineral Resources. The challenge is to make this program a national one including various ministries and government institutions.



Figure 4 Eight element of Green City Program by the Ministry of Public Works and Housing

2. Adipura Awards

Adipura award has been seen as the most prestigious award for cities since 1986 to showcase their stewardships toward environmental management. The criteria for selecting the best cities in sustainability and climate change actions consist of indicators of the physical condition of the urban environment in terms of urban cleanliness and open green space as well as indicators of non-physical environmental management, including institutions, management, and responsiveness.

The Role of City Government on Sustainable Development

The city government is also expected to adopt low-carbon development and to continue seeking a balance between its current and future development and poverty reduction priorities. Provinces and cities in Indonesia are taking climate change actions into their development plans. Based on a Presidential Decree, local governments are required to develop local action plan called Regional Action Plan on Greenhouse Gas Emission Reduction based on National Action Plan and development priorities. As of the end of 2013, 33 provinces have submitted their documents where most provinces follow the national emission reduction target.

Since the introduction of the sustainable concept to city governments, some mayors step up to lead the way for sustainable cities. The National Government has used the New Urban Agenda as a reference in developing cities in Indonesia. Central Government through the Ministry of Public Works and Public Housing is the central agency for taking care of urban physical development. In addition, the Ministry of Home Affairs, Ministry of Health, Ministry of Education and Culture, Ministry of Environment and Forestry, Ministry of Religious Affairs, National Agency of Disaster Reliefs, and others are also responsible for creating cities that are habitable, inclusive, and harmonious. To be optimal, the activities of all those ministries need to be synchronized.

But the role of local government, especially the city government is even greater. They are the ones facing everyday urban problems, such as floods, landslides, fires, brawls, traffic jams, pollution, crime, and so on. The city governments should have bigger budgets for urban development to realize the New Urban Agenda. On the other hand, the central government needs to play a more important role in improving the capacity of local government staffs, set the environmental standards, providing technical assistance, monitoring, and other activities that are strategic.

Businesses, academics and local communities also need to be mobilized to jointly build a better urban environment. Presumably their current role is still minimal, sporadic, and incidental. In the future, the various parties need to act together.

Realizing a Sustainable Vision for all Cities in Indonesia through Innovation

Creating long-term predictions until the year 2050 involves a lot of uncertainties. The world is now changing very fast due to globalization and super rapid advancement of technology. The challenges faced Indonesian cities will also increasing and changing. Cities need to respond to this by continuously solving problems adapting to the current trend.

To be able to prepare for 2050, Indonesian cities need to tackle current problems which are recurring since decades and have the potential to multiply. The Indonesian Planning Agency has developed an analysis to help understand the challenges and solutions.

1. The rapid population and economic growth trigger the emergence of new metropolitans, new cities and small towns. Indonesia need to set a clear

- guidelines and standard in order to avoid repetition of mistakes and unsustainable practices from the other existing cities.
2. Uneven distribution of development budget which tend to focus on cities on the island of Java. Even cities in Java experience economic and social disparity within the citizen.
 3. The difficulties to meet the basic service standard especially in the area of providing clean water and air, waste and sewage management, decent public transportation, open green space especially for the marginalized community which also trigger slums area and high rate of unemployment.
 4. A lot of big cities in Indonesia are located in a coastal or disaster-prone area which make them very vulnerable to climate change impacts and environmental disasters.
 5. The low level of governance of the local government institutions in urban development and management.

Based on the National Planning Agency, the government of Indonesia has envisioned the future of its cities by 2045 as “Sustainable and Competitive Cities for People’s Welfare” which consist of 5 pillars (Indonesia's National Planning Agency 2015)

1. A safe, comfortable and livable city
2. Green cities with resilience to climate change and disasters
3. Smart and competitive cities based on technology and ICT
4. Building Indonesian urban identity based on physical character, local economic and cultural superiority
5. Establish intercity and rural-urban interconnection within the territorial-based National Urban System

To achieve the vision of sustainable city development in the future through 5 pillars then 6 missions are to be implemented:

1. Achieve equitable development of the city according to its role and function in the Urban System;
2. Developing infrastructure facilities to meet Urban Service Standards (SPP)
3. Build a decent, safe, and comfortable city-based dwelling based on diverse environmental, social and cultural environments
4. Controlling the space and activities of urban development by maintaining the carrying capacity of the environment
5. Developing economically and productively competitive, efficient, and ICT-based productive, urban, and urban competitive activities; and
6. A more transparent, accountable, and participatory governmental and institutional manifesto.

Conclusion

Creating long-term predictions until the year 2045 or 2050 involve a lot of uncertainties. The world is now changing very fast due to globalization and super rapid advancement of technology. The challenges that the Indonesian cities will face will also increasing and changing. Cities need to respond to this by continuously solving problems adapting with the current trend. This sounds like an enormous challenge but it can also provide inspiring opportunities.

One of the key successes can derive from creating enabling circumstances for innovation to grow. Currently, we know a lot than before but we do not know it all. Indonesian cities need to be equipped information to quickly adapt. Build aspirations by

informing what's going on, what's the impacts, and what needs to be done. Then let the public be involved in determining the solutions.

Indonesian cities should welcome innovators and entrepreneurs which can transform business models, advanced technological condition to promote low-carbon development and climate resilience communities. Cities are actually a great place to let this happen. Thus, cities might be the source of emissions and trigger problems, but they can be a hub for innovation that will likely create the next green revolution which can save Indonesian cities from the danger of living above 2 degrees Celsius.

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