



# Building Better Cities: ASEAN Looks to the Future

The rapid growth of urbanization signals a significant demographic shift that will change the way people live and the way our human settlements function. New infrastructure and systems are needed to support the growing population, and now is the time to plan and im-

plement more resource-efficient and compact and connected urban form, which will make cities more livable and more sustainable. We face a strategic and historic opportunity to change global material and energy flows by changing the way we design and manage cities.

## ASEAN cities are projected to add 205 million new urban residents by 2050



The ASEAN economy will triple in size by 2040



overall increase in incomes and living standards



increased demand for resources

Over 100 million new urban residents will be living in small cities of under 500,000 residents, equivalent to 200 new cities.

### If current practices continue...



**Agricultural land will be lost**, as urban areas expand. ASEAN countries could lose 15% or more of their agricultural productivity



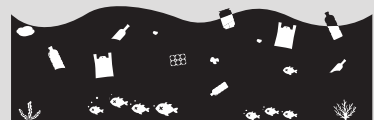
**Electricity demand will triple** from 2015-2040, and coal use will increase



Unplanned growth will **increase inequality and slums**. 73 million urban residents of ASEAN live in slum developments



Air pollution – from industry, transport, construction, biomass and waste burning – will increase. In 2016, air pollution was linked to more than 225,000 death in the ASEAN



Poor urban waste management will **increase air, water, land and marine pollution**. Plastic debris pollution affects marine life and ecosystems



**Flooding risks** will be made worse by the loss of wetlands due to urban expansion



Construction will increase demand for cement, sand and steel, **hurting air quality and rivers**. Increased extraction and production of building materials will exacerbate climate change



Many ASEAN cities are in low-lying coastal areas. As they grow the **effects of rising sea levels and coastal storms** will increase

# Strategic infrastructure transformations initiated today can lay the foundations for a sustainable urban ASEAN in 2050.



Infrastructure like buildings, water treatment systems, transportation systems and power plants have decades-long life spans, often exceeding 30 years or more.

## PATHWAYS:

- 1 Plan for urbanization** at the national and pan-ASEAN levels to balance economic growth across a range of city sizes, while preserving high-value agricultural lands and ecosystem services.
- 2 Promote compact, mixed-use, accessible, and inclusive urban form** at the regional and city level to reduce land expansion, streamline infrastructure provision, and promote diverse sustainable mobility options. The 5D Compact City Framework (next page) is a helpful tool for planners to develop compact, connected and poly-centric cities.
- 3 Develop zero-slum cities through inclusive land use planning** that prevents slum formation, and in situ rehabilitation of existing urban slums in safe, resource-efficient and climate-resilient multi-story construction.
- 4 Promote resilient buildings and electric grids that use energy and other resources efficiently as part of an integrated system** (see page 4), leveraging advanced and vernacular building technologies, engaging user behaviors and cultural norms, and linking renewable energy in cities with the pan-ASEAN electric grid.
- 5 Promote resource efficiency across the city** through exchange of “waste” energy and materials across industries and sectors.



**Planners need to link resource efficiency, inclusive development and climate and disaster resilience in building livable cities for a growing urban population.**

# The 5D Compact City Framework Is An Essential Tool

A city can combine multiple nodes of high-density development with a rich mix of housing, jobs and amenities at the neighborhood level, connected via transit lines and surrounded by medium and low-density areas in the rest of the metropolitan area.

**HIGH DENSITY:** Approx. 15,000 persons/km<sup>2</sup>

**LOW DENSITY:** Approx. 7,500 to 10,000 persons/km<sup>2</sup>



## DENSITY

Maximizing compact urban form while mitigating negative aspects such as air pollution and congestion



## DIVERSITY OF USE AND INCOME

Neighborhoods with mixed income groups and diverse opportunities for jobs, commerce, and leisure



## DESIGN

Shaping cities so that urban residents benefit from the advantages of dense areas. Good design includes walkability, traffic safety controls, and tree cover.



## DISTANCE TO TRANSIT

Transit options should ideally be accessible within 400-800m



## DESTINATION ACCESS

Sustainable transportation modes that take people where they want to go

## How Dense?

The challenge: How to achieve density targets in a way that makes the urban environment an enjoyable place to live and work. **Average** density is less important than **articulated** and **accessible** density.

Articulated density – High-rise multi-use construction around transit nodes are situated next to mid-rise buildings in street networks with human-scale blocks that facilitate walking and diverse travel modes

## Where should the city grow?

Determining urban boundaries and 'red lines' can be a powerful policy tool to guide urban development, but should be based on rigorous analysis and consideration of spatial and economic development realities, to balance between containing urbanization and allowing flexible growth of the population and economy.



LEGEND:

- █ High-rise construction/midrise buildings
- Transit nodes
- █ Accessible areas

For small cities, the benchmark is to support 500,000 residents with a land area of 50 km<sup>2</sup>.

# Using An Integrated Multi-Sector Approach to Optimize Efficiency

Developing an integrated urban transportation, energy, and building system that helps maximize resource efficiency and symbiosis across industry and city infrastructure

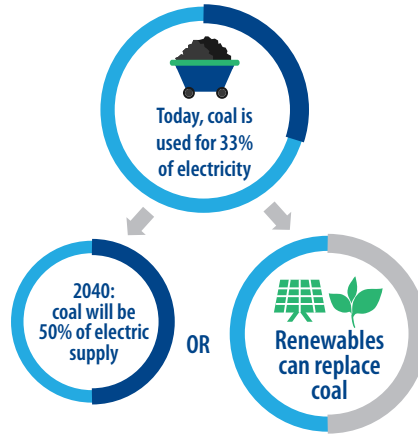
## TRANSPORTATION

Transportation strategies should be based on the size and function of cities. Mobility solutions will look different for large cities and small cities. Mass transit may be cost-effective for large cities, while small cities (under 500,000) can focus on active transport like cycling and walking, shared transit, public transport, and rail links to other cities.

**The goal is to reduce motorized travel demand and therefore air pollution, congestion, and traffic accidents.**



## ENERGY



Decisions today will lock in dependence on fuel sources. Energy efficiency and renewable energy can help to reduce reliance on coal. Sustainable bio-energy sources are good options for all ASEAN countries. Smart grids and micro grid will be advantageous for distributing power, both within urban neighborhoods and across small islands.

## BUILDINGS AND INDUSTRY

Electricity use in ASEAN is expected to triple by 2040, and much of the increased demand will be for energy use in buildings. Up to 48% energy savings could potentially be achieved with green building designs, making use of vernacular and passive designs that account for cultural norms. District cooling is more efficient and can be paired with renewable technologies like sea water cooling and solar thermal heating.

**Waste, energy and material from industry can be reused for district heating/cooling (up to 30 km. away) and building construction.**



Active transport like cycling and walking, in addition to shared and public transport options, should be encouraged by cities of all sizes.

Renewable energy sources should be located close to urban demand to minimize costs and avoid transmission losses.

Green building designs could achieve up to 48% energy savings.



This infographic is based on the report: UN Environment (2018). Sustainable Urban Infrastructure Transitions in the ASEAN Region: a Resource Perspective. United Nations Environment Programme, Nairobi.  
 "The full report and the summary for policy makers can be downloaded at: <https://resourceefficientcities.org/resources/>