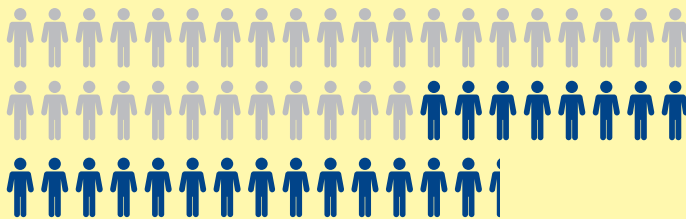


# Building Better Cities: ASEAN Looks to the Future

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

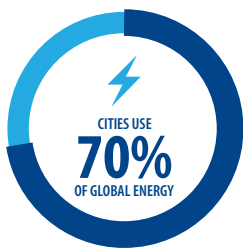
and implement more resource-efficient and compact urban form, which will make cities more livable and more sustainable. We face a strategic and historic opportunity to change global material and energy flows by changing the way we manage cities.

ASEAN Cities are projected to add **212 million new urban residents** by 2050 to the 320 million current urbanites in the region



UN projections indicate that while current large ASEAN cities will continue to grow, about half of future urban population growth is expected in smaller cities of population less than 500,000 people.

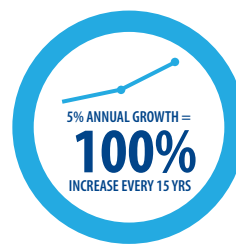
Cities of different sizes need different approaches and solutions, that match their resources and demands for housing, energy, and transportation.



**WHY ARE CITIES IMPORTANT?**  
Energy use in cities accounts for more than 70% of global energy use and GHG emissions.



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



A city with a 5 per cent annual growth rate can expect its population to double roughly every 15 years.



Seven key sectors that dominate natural resource use and their impact on the environment and human wellbeing: energy, water, shelter/buildings, transportation, sanitation/waste management, public spaces, food supply.

## If current practices continue...



Agricultural land will be lost as urban areas expand: Vietnam is expected to lose 15% of its prime agriculture land to urban expansion.



Pollution from industry and transport will have increasing health impacts.



Poor urban waste management will increase air, water, land and marine pollution



Flooding risks will be made worse by the loss of wetlands



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

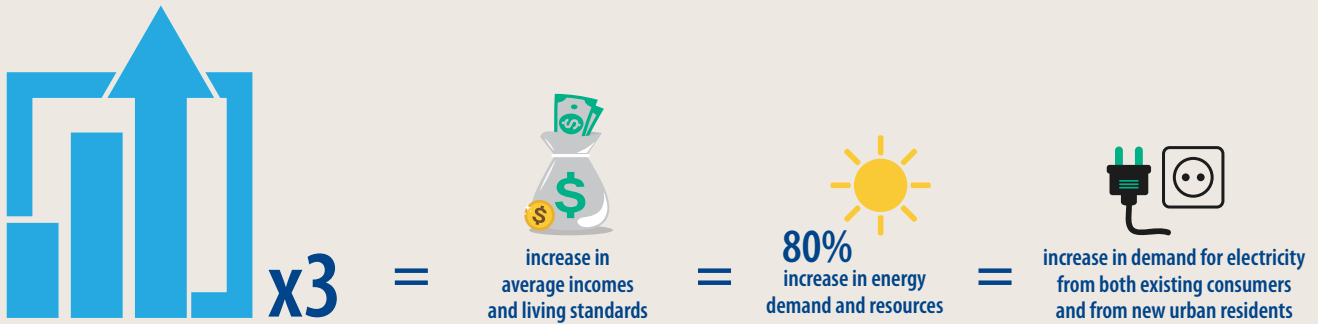


Unplanned growth will increase inequality and slums.



Construction will increase demand for cement and sand, hurting air quality and rivers

# ASEAN will experience steady economic growth, tripling in size by 2040.



**225,000 deaths**  
from air pollution (2016)



**73 million**  
urban residents of ASEAN  
live in slum developments (2014)



Percent of households that own a car

Viet Nam	2%
Indonesia	4%
Philippines	2%

Energy demand is projected to increase 80% by 2040, while the economy triples in size.

Urban infrastructure can't keep pace with population growth in the fastest growing cities, leading to informal settlements and slums, inequality and fragmentation.

Urban growth means more waste generation and pollution of air, land, water, and marine areas. Indonesia, Philippines, Vietnam, Thailand and Malaysia are already among the top ten contributors globally of plastic debris pollution to oceans, affecting marine life and ecosystems.

Many of ASEAN's cities are located in low-lying coastal areas, with exposure to rising sea levels and increasingly intense coastal storms.

ASEAN cities will either see a boom in vehicle purchases, or will leapfrog to public mobility options and avoid car-centric urbanization, leveraging existing travel behaviors that don't rely on cars.

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

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



### 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.
- 3 Develop zero-slum cities through inclusive land use planning that prevents slum formation, and in situ rehabilitation of existing urban slums in resource-efficient and disaster-resilient multi-story construction.
- 4 Promote resource-efficient and resilient buildings and electric grids by 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 Can Use The 5D Compact City Framework



## DENSITY

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



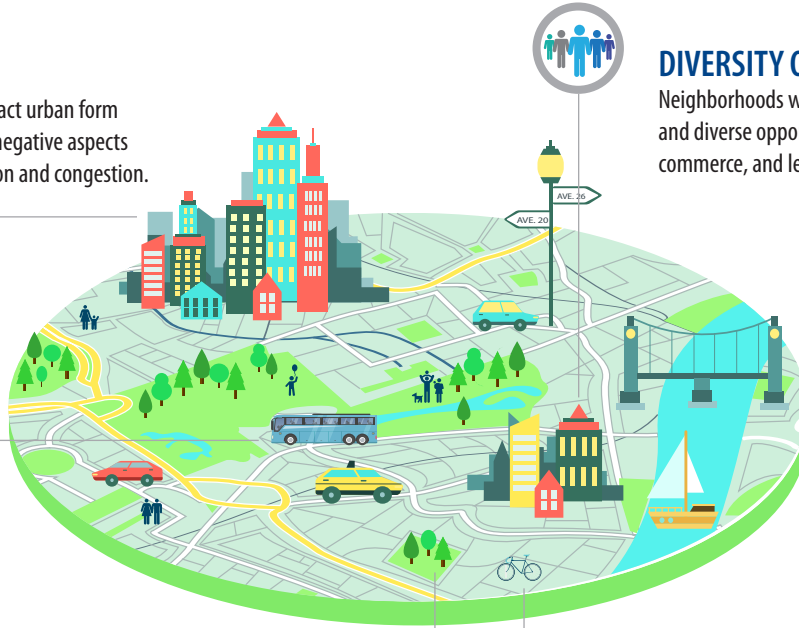
## DIVERSITY OF USE AND INCOME

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



## DISTANCE TO TRANSIT

Transit options should ideally be accessible within 400-800m.



## DESIGN

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

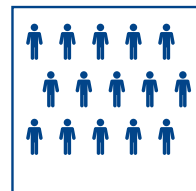


## DESTINATION ACCESS

Sustainable transportation modes that take people where they want to go.

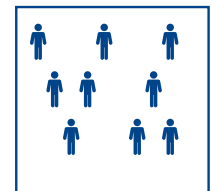
## How Dense?

A city can combine multiple nodes of high-density development throughout a city, connected via transit lines and surrounded by medium and low-density areas in the rest of the metropolitan area. 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.



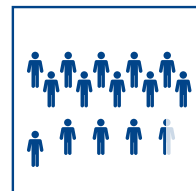
### HIGH DENSITY

15,000 persons/sq. km



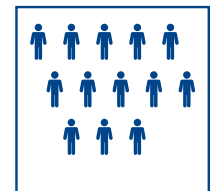
### MEDIUM DENSITY

7,500-10,000 persons/sq. km



### JAKARTA

14,600 persons/sq. km



### MANILA

13,000 persons/sq. km

**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.**

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.

 = 1,000 persons

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

# What Cities Need: An Integrated Multi-Sector Approach

Coordination between transportation, building, and energy policies and strategies will help to maximize resource efficiency and symbiosis.

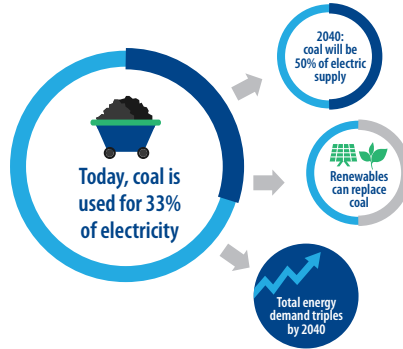
## TRANSPORTATION

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.

Solar and biomass are very good options for all ASEAN countries. Smart grids and micro grid will be advantageous for distributing power, especially across small islands.

## BUILDINGS

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 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.

**Cities in coastal locations can use natural wind patterns for passive cooling of urban structures.**



Small cities (under 500,000) can focus on active transport like cycling and walking.

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

Up to 48% energy savings could be achieved with green building designs.

