National Council for Sustainable Development

Global Green Growth Institute

From Business-As-Usual future to building a Green and Sustainable City

Future scenarios and actions for Phnom Penh

Presentation from City for all Conference Phnom Penh 2016

City for all!

Phnom Penh, 23 November 2016

Presented by: Fiona Lord and Sitak Sath

Contents

Urban Lifelines

Productivity

Jobs

Environment

Health

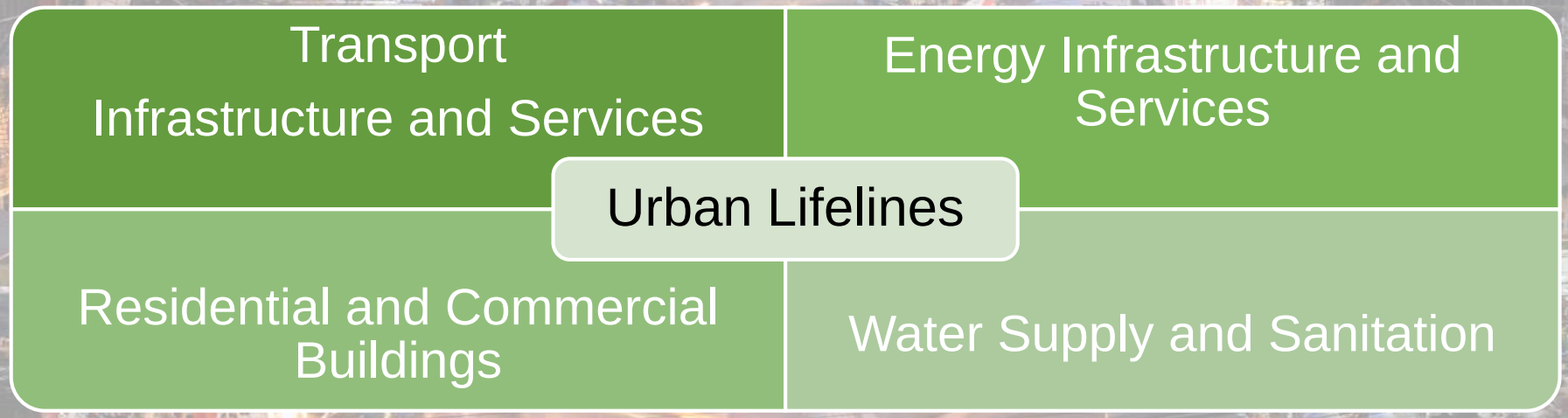
Urban lifelines provide infrastructure and basic services for our cities, including for the well-being of our communities, strengthening of our urban economies and shaping the environments of our cities.

Industry

Education

Community

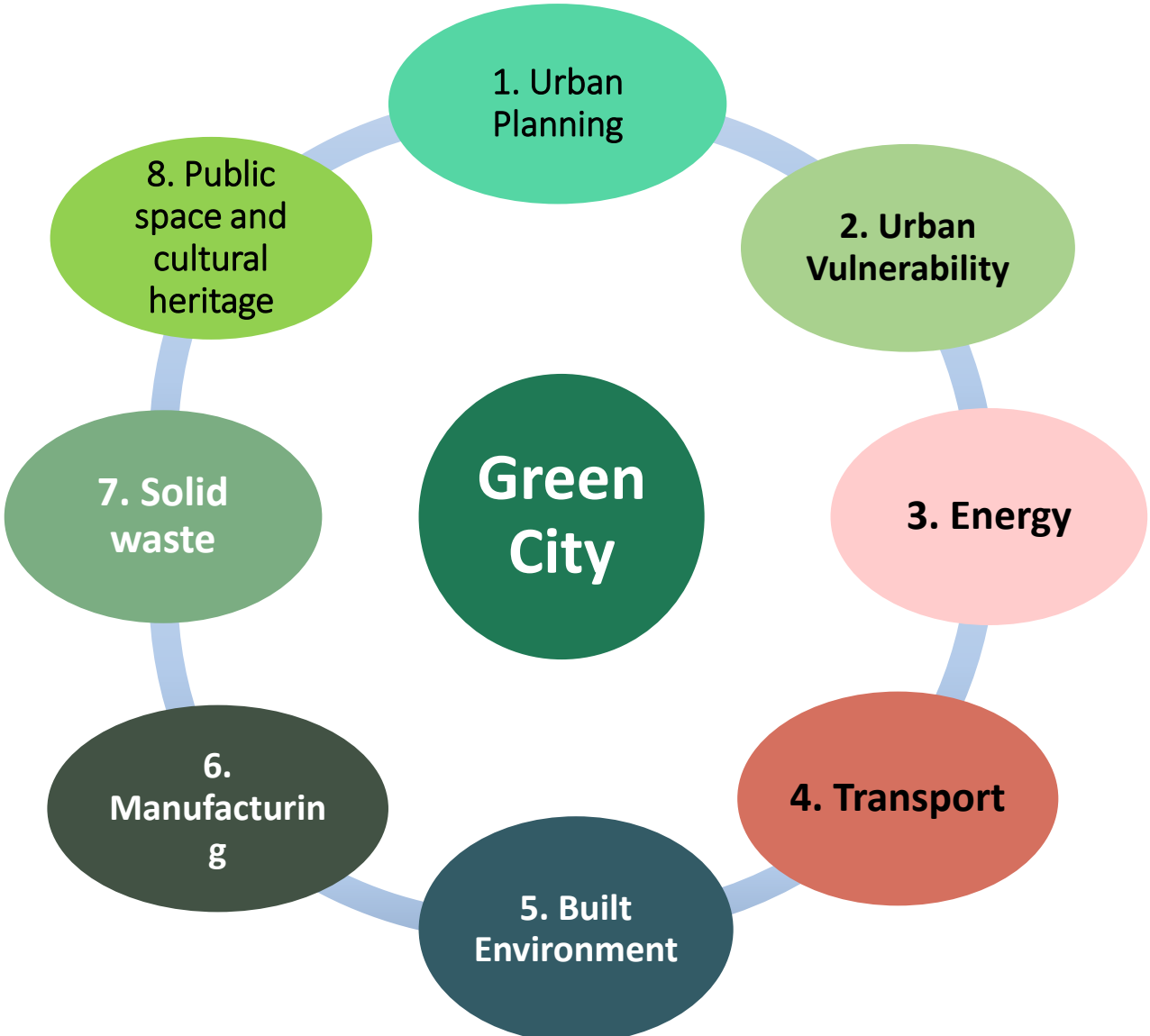
Economy



Background on urbanization in Phnom Penh

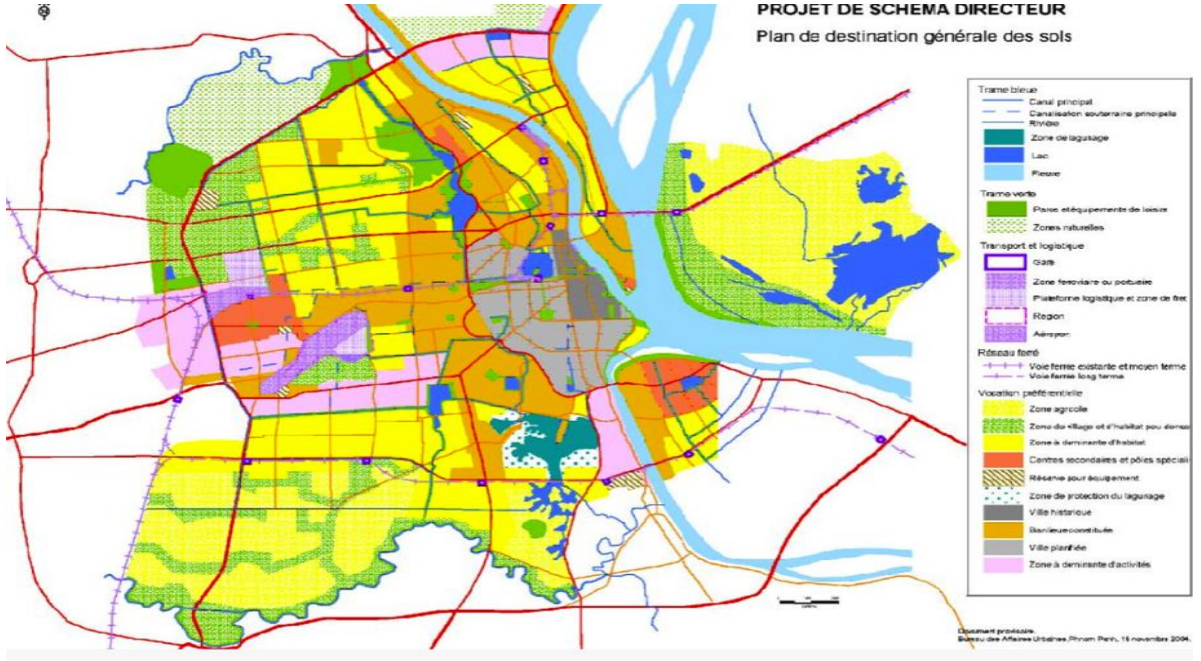
1. Rapid urbanization: 4.4% annually since 2001
2. Urban sector accounts for half of Cambodia's GDP
3. Essential infrastructure for water supply, sanitation, waste management, transport and energy services has been unable to match the rate of urban growth.
4. Unstructured urbanization in Cambodia is already beginning to result in the economic, social and environmental costs

Business-As-Usual Scenarios for Urban Green Growth across Eight Key Sectors in Phnom Penh



Business-as-usual scenario for urban planning

- “Privatized planning” reducing city functionality
- Loss of critical natural resources, public spaces
- Poor communities displaced, no low-cost housing options
- Compromised cityscapes
- Uncontrolled sprawl



Transport lifeline threatened…

- High increase of private vehicles in the absence of public transit systems
- Traffic congestion and air pollution impacting city life
- Unregulated city traffic, parking
- Rail- and water-based, non-motorized transport absent
- Bus system marginalized

Business-as-usual scenario for urban transport lifeline

- High increase of private vehicles
- Traffic congestion and air pollution impacting city life
- Unregulated city traffic, parking
- Rail- and water-based, non-motorized transport absent
- Bus system marginalized
- Increased air pollution
- Reduced road safety

….. Urban vulnerability increased….

Uncontrolled property development, inadequate drainage and wastewater infrastructure, and the steadily growing unpredictability of climate caused frequent flooding which has adversely affected economic growth.

Business-as usual scenario for urban vulnerability

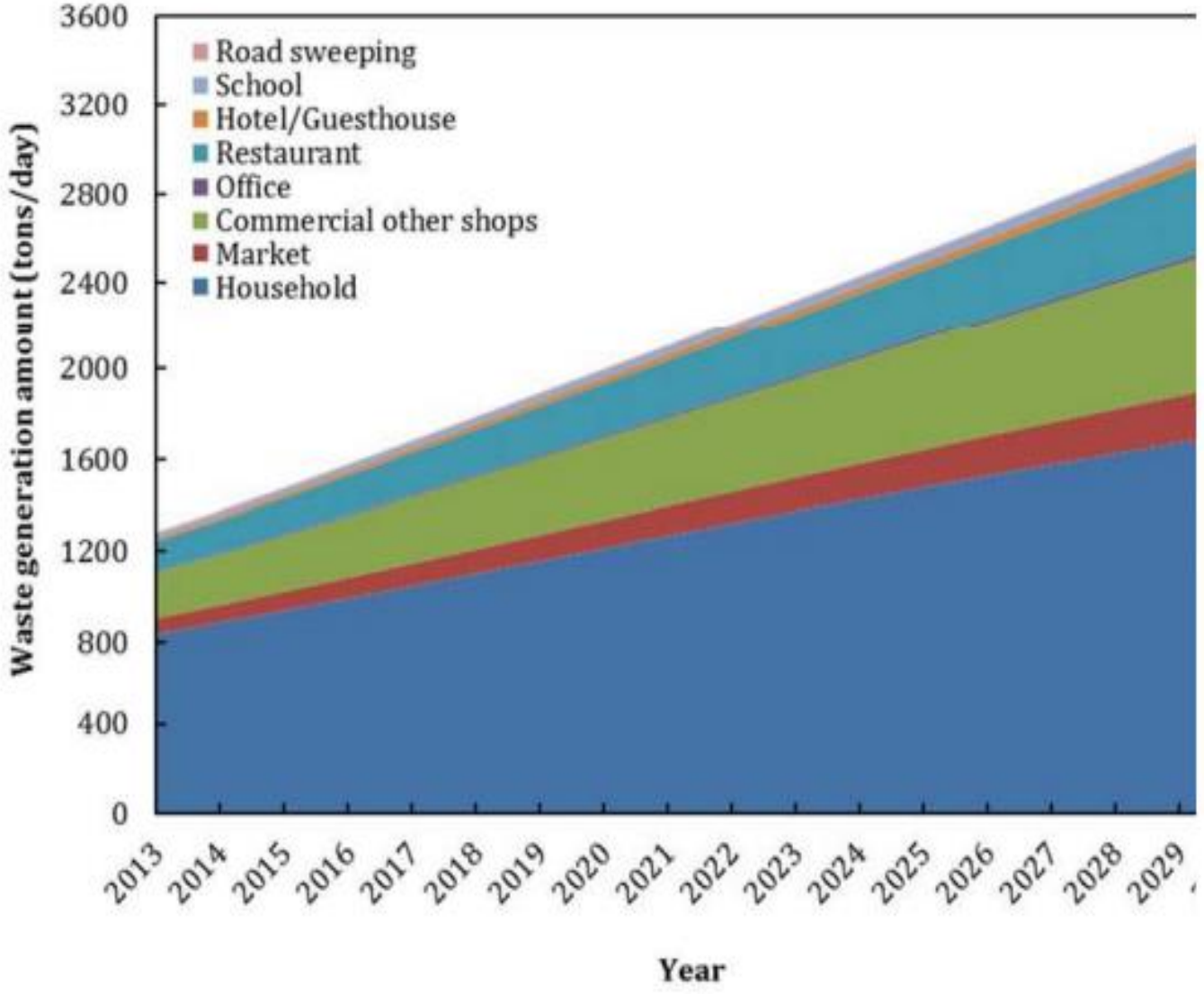
- Flooding episodes worsening, due to paving and construction
- Natural risks compounded by worsening climate change
- Insufficient sanitation and effluent treatment in residential areas
- Wastewater largely untreated
- Lakes and wetlands become septic
- Additional urban risks from some industrial operations

Weak solid waste management

- Low solid waste collection across some parts of the city
- Random disposal with impacts on waterways, urban environment
- Recycling limited to scavengers
- No urban sanitary landfill, no waste-to-energy operations
- Threats to public health

Business-as-usual Scenario for Solid Waste Management

- Low solid waste collection across some parts of the city
- Random disposal with impacts on waterways, urban environment
- Recycling limited to scavengers
- No urban sanitary landfill, no waste-to-energy operations
- Threats to public health

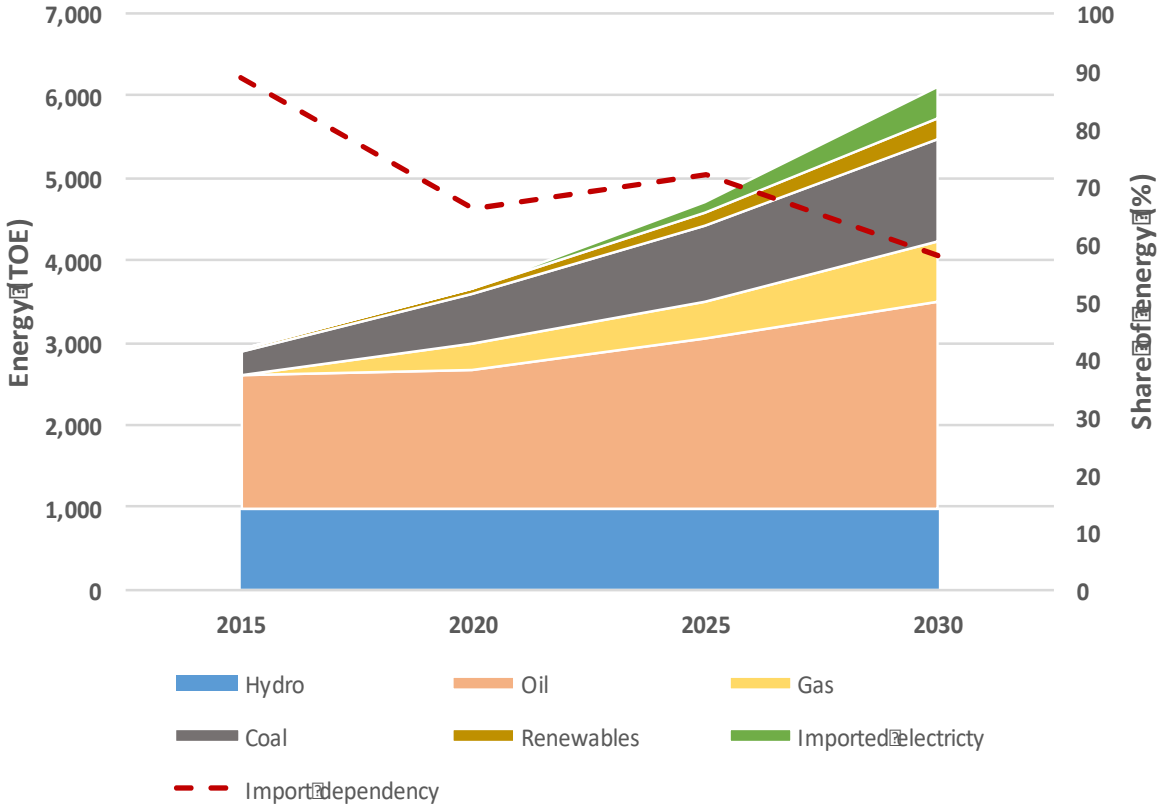


Power Shortages and high energy costs..

- An estimated 36% of firms in Cambodia use generators, with over 20,000 generators in Phnom Penh alone
- Domestic and foreign firms identify the high costs and electricity supply shortages as a main constraint to doing business in Cambodia
- A 2009 study by IFC found that 4% of firms' sales were lost due to power outages
- Lack of use of renewable energy and energy efficiency measures in industry and households undermines sustainability
- Reliance on traditional biomass for energy supply leads to deforestation

Business-as-usual scenario for the urban energy lifeline

- Rapid growth in electricity demand fuelled by coal and hydropower
- High costs of electrical power
- Low electrification rate in poor neighborhoods
- No penetration of renewables, energy-efficiency, off-grid power production
- Dependency on bio-mass for cooking and use of diesel generators with health impacts



Business-as usual scenario for the built environment lifeline

- High-rise buildings demanding high energy, water, street usage
- A number of “gated communities” isolated from the city network
- Absence/unenforced building by-laws, construction codes
- Lack of low-income housing, buildings of appropriate design
- Increased GhG emissions from buildings

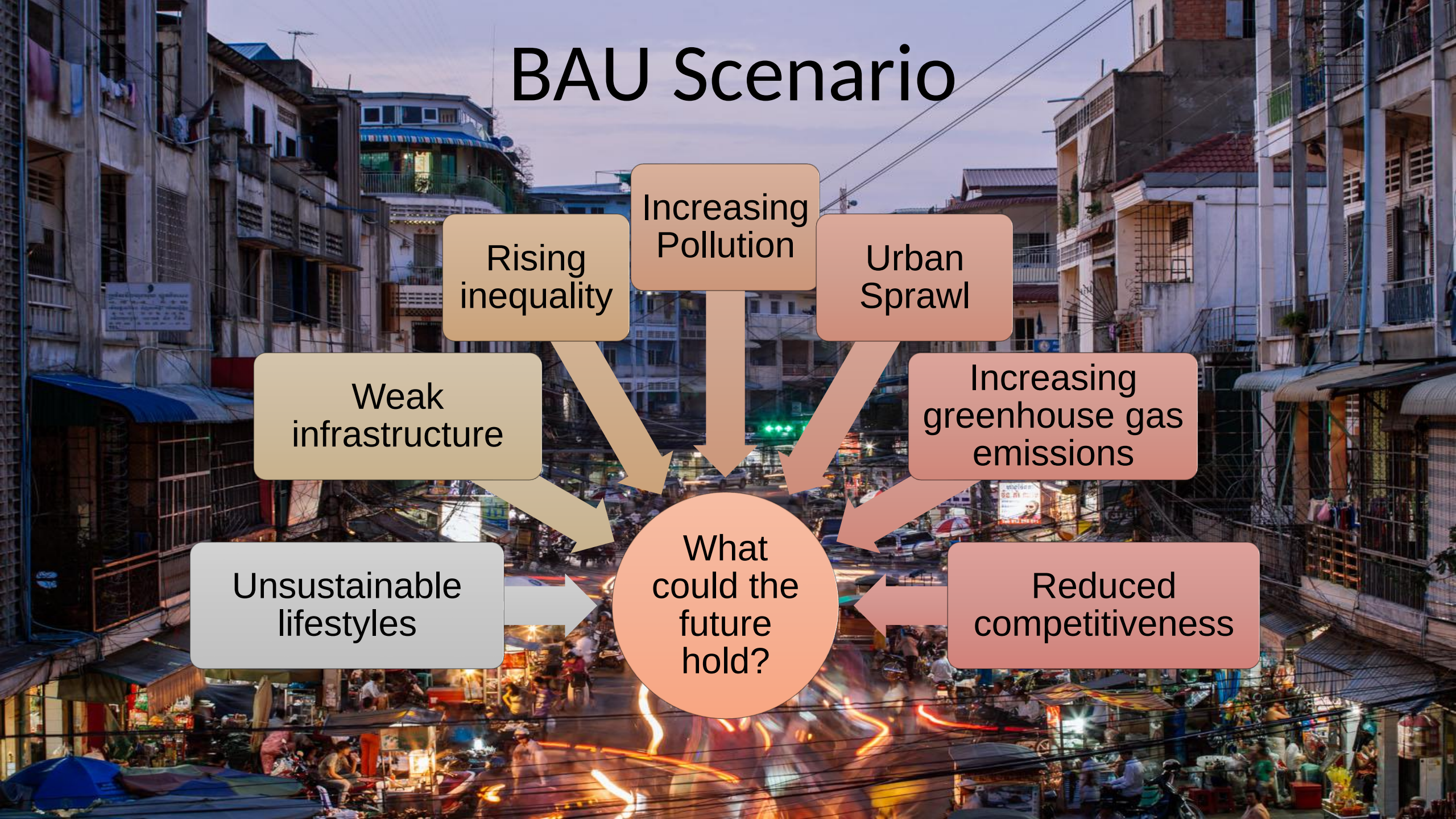
Business-as-usual scenario for the manufacturing sector – urban lifeline

- Many plants energy-inefficient, waste of power and of money
- Rising carbon emissions, air pollution, chemical waste flows into waterways and land
- Unhealthy or unsafe factory-floor environments for workers
- Large environmental footprint, intense use of resources

Business-as-usual scenario for public Spaces and Cultural Heritage

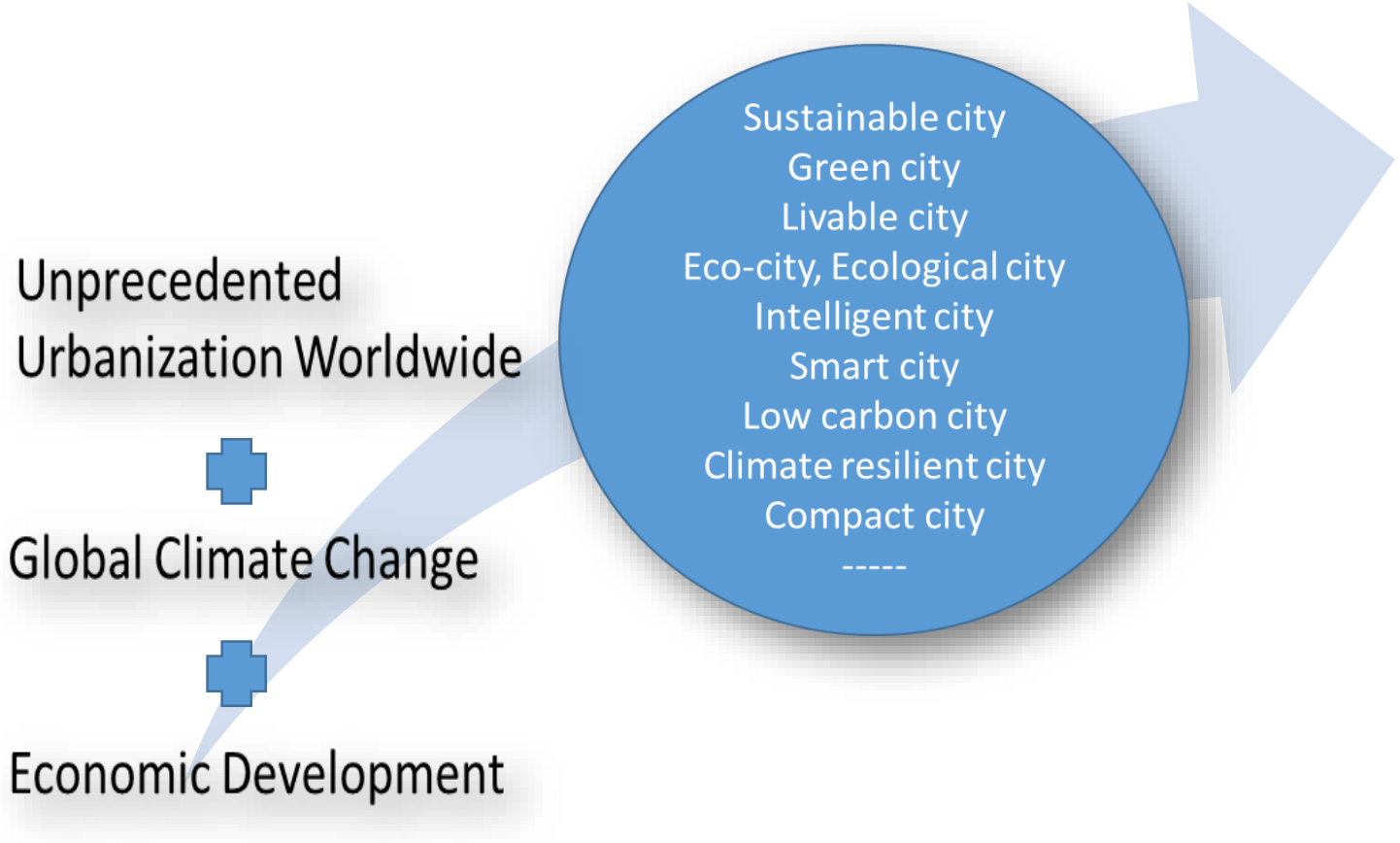
- Sidewalks taken over by private parking, vendors
- Very few public spaces in new city neighborhoods
- Rapid loss of irreplaceable cultural heritage buildings
- Limited pedestrian areas in the city despite opportunities

BAU Scenario



What is Green City Development?

Efforts to make better cities



- ***The "Green City" is an umbrella term that covers various notions of sustainable urbanism***

- *With a focus on the complementarity between economic performance and environmental quality of cities*

- *"A city/town/city-region which pursues resource efficient, low-carbon, climate resilient and socially equitable urban development, generating green job opportunities"*

What is Urban Green Growth?

City Inputs

Urban Green Growth Outcomes

Key Elements of Green City Development

Cities, as an integrating platform

- Green city development requires:
- Sub-national (or city) scale of intervention
- Spatially targeted planning
- Integrated urban management across diverse sectors

Green City Development: Key Concepts

Green Infrastructure

- **Affordability/accessibility** of green technologies/solutions needed for **green infrastructure** provision
- Effective infrastructure planning and investment derives economic development and quality of life

Infrastructure has a long lasting impact
Need to adopt proactive green infrastructure strategies

Green Infrastructure = "Low Carbon, Climate-resilient" infrastructure

Sector	Typical Time scale
Water infrastructure(dams, reservoirs, sanitation facilities)	30-200yr
Transportation infrastructure(port, bridges)	30-200yr
Building and housing (insulation, windows)	30-150yr
Land-use planning(in flood plain or costal areas)	Shorter than 100 yr
Urbanization(urban density, parks)	Shorter than 100 yr
Coastline and flood defenses(dikes, sea walls)	Shorter than 50 yr
Electricity generation facilities(coal-fired power plants)	50-60 yr

Green Cities Development – key concepts: Compact cities

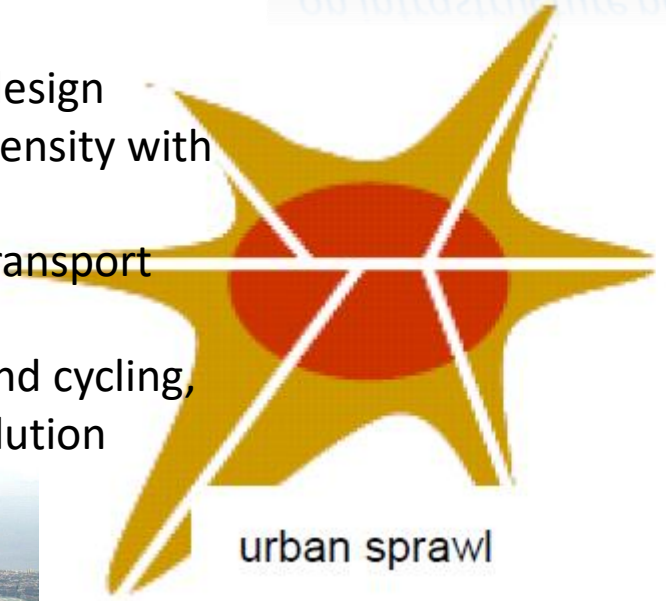
- ## Urban Sprawl vs. Compact City

Increases the distance between homes, businesses, services and jobs, which raise the cost of providing infrastructure and public services by at least 10% and up to 40%: $500 vs. $750 on infrastructure per person each year(NCE, 2015)

Urban Sprawl:
The spreading of a city and its suburbs over more and more rural land; in other words, low density residential and commercial development on undeveloped land

Compact City:

- a sustainable urban spatial planning and design concept, which promotes relatively high density with mixed land uses
- Land use combined with efficient public transport system
- Urban layout which encourages walking and cycling, low energy consumption and reduced pollution



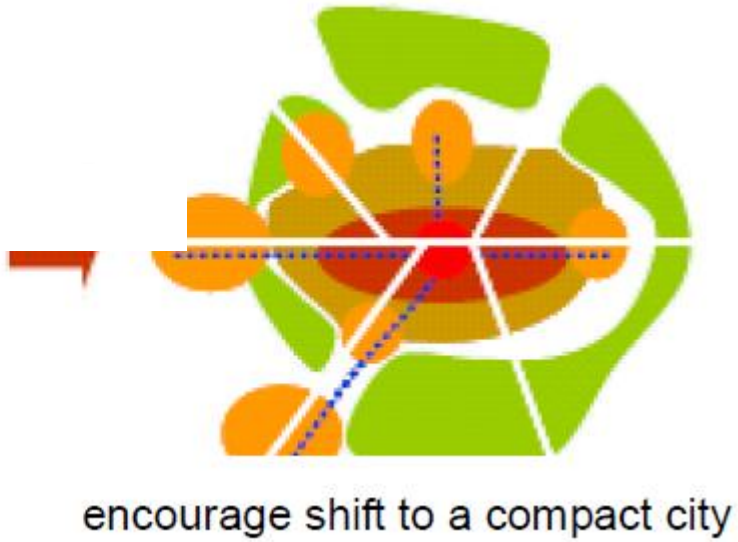


Image source: JICA

Green Cities Development – key concepts: Inclusiveness

Making cities more "inclusive"

- Ensuring the poor and vulnerable (including women) have access to the urban services they need to better their quality of life
- Not only to "distribute the results" of the development, rather to drives citizen-led development initiatives form earlier planning stage which enables involve various social classes in various development processes and to ensure that these classes benefit from the results

Climate change effects hit the poorest the most
Climate change is not gender-neutral: women are more vulnerable

Urban infrastructure/service provision in unplanned settlements

Climate change adaptation and mitigation

Poverty reduction measures for the poor and vulnerable including job creation

Green Cities Development – key concepts: Creating Green Jobs

Green Job creation as the cause and effect of the green transition

- Green jobs (ILO): Jobs are green when they help reduce negative environmental impact ultimately leading to environmentally, economically and socially sustainable enterprises and economies. More precisely green jobs are decent jobs that
  - *Reduce consumption or energy and raw materials*
  - *Limit greenhouse gas emissions*
  - *Minimize waste and pollution*
  - *Protect and restore ecosystems*

<u>'Green Job' creation for new urban population</u>

- Green jobs: Any decent job that contributes to preserving or restoring the quality of the environment whether it is in agriculture, industry, services or administration (ILO/UNEP)

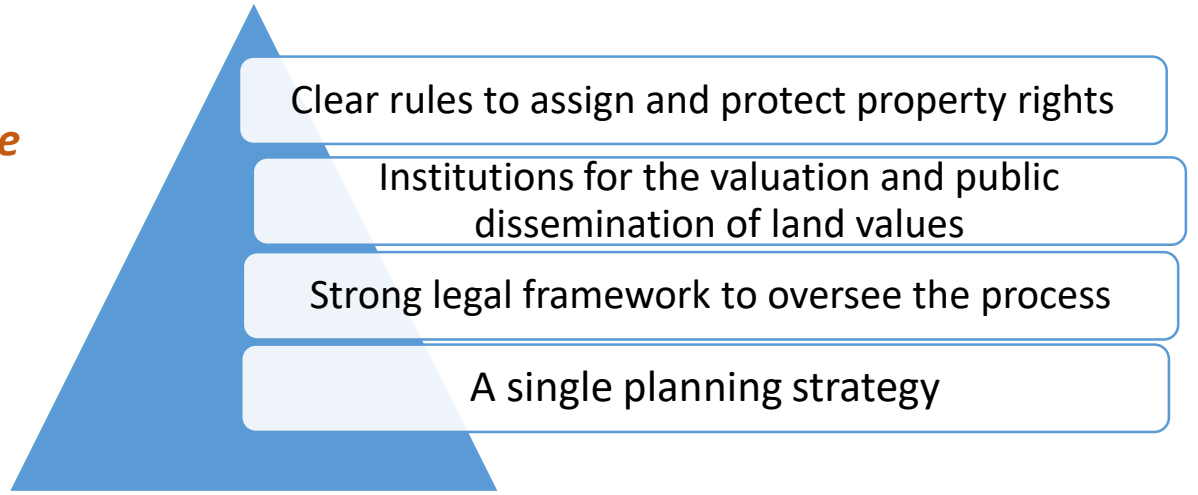
Urban job creation both for economic & inclusive development

Green Cities Development – key concepts: Plans & Finance

- ***Planning Cities vs. Financing Cities***

- Urban infrastructure financing has come from higher government levels – which raise the funds through taxes- and from government-owned or government sponsored institutions
- Local governments (in most developing countries) have limited options to raise own-source revenues and have little access to long-term credit market for investment
- New funding mechanisms with the engagement of various stakeholders such as public-private partnerships (PPPs): cities can leverage the value of their assets – mainly land- to finance public infrastructure

Conditions for land-based infrastructure financing: through land sale or lease



City Scenarios for Phnom Penh

How could the city develop over the next decade?

Business-as-usual
No significant urban transformation is made. City loses competitiveness, livability and attractiveness

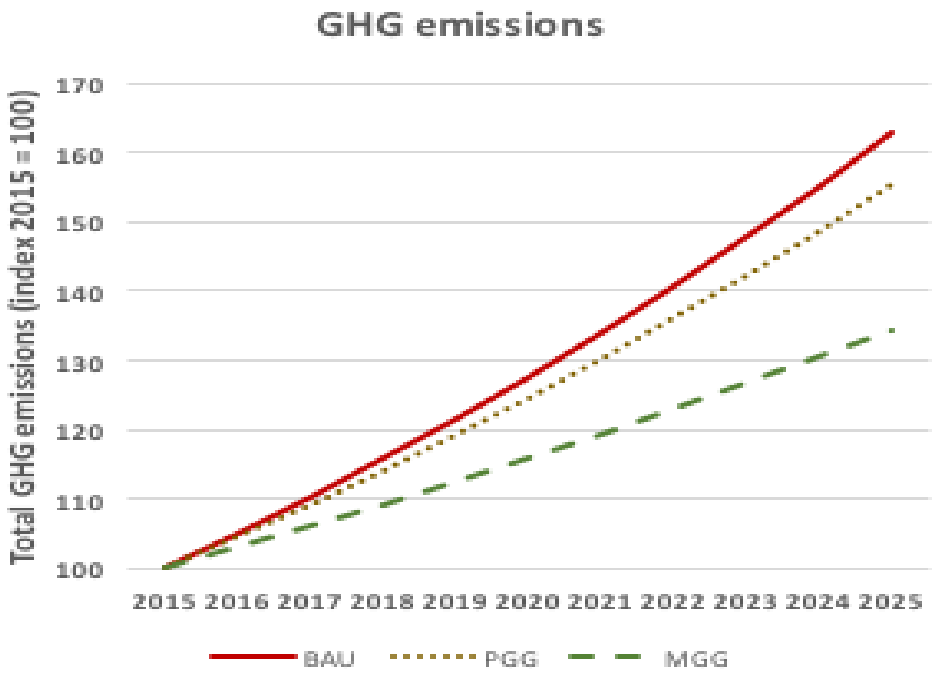
Impacts:
- High pollution
- Poor public health
- Economic loss
- Increased vulnerability
- Reduced natural capital

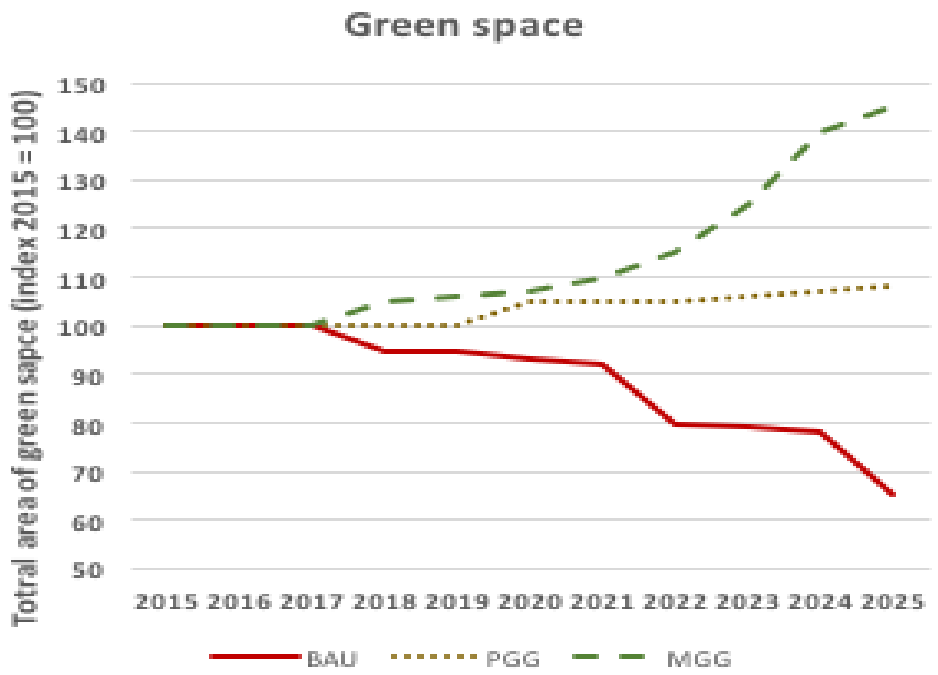
Piloting green growth
Improvements are made in some areas, sectors. City maintains current status, with hope for further transformations later

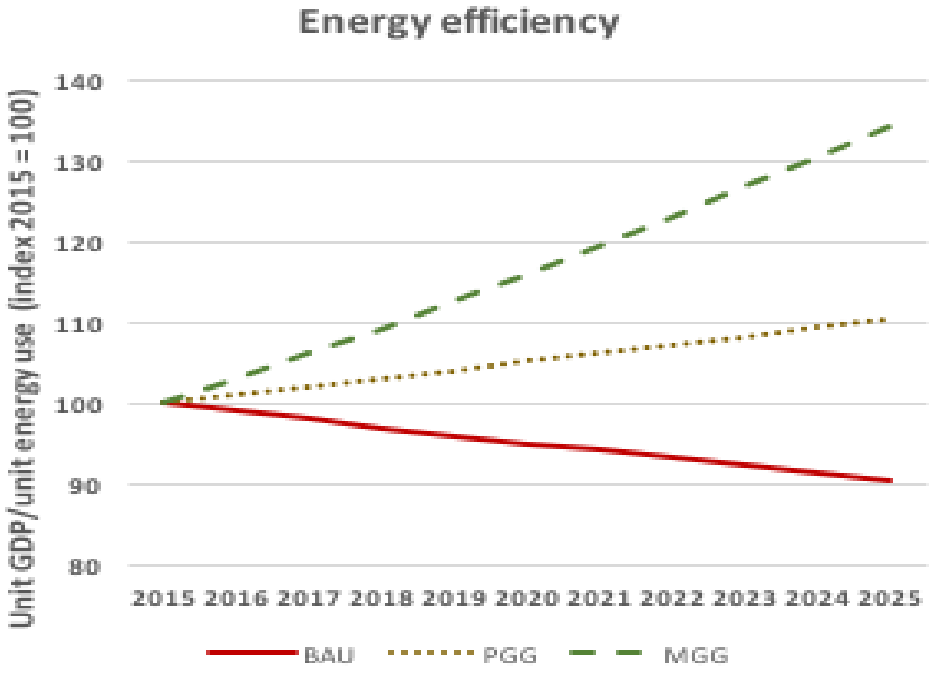
Impacts:
- Reduced pollution, but still lower air and water quality
- Some economic losses
- Some vulnerability
- Some improved services

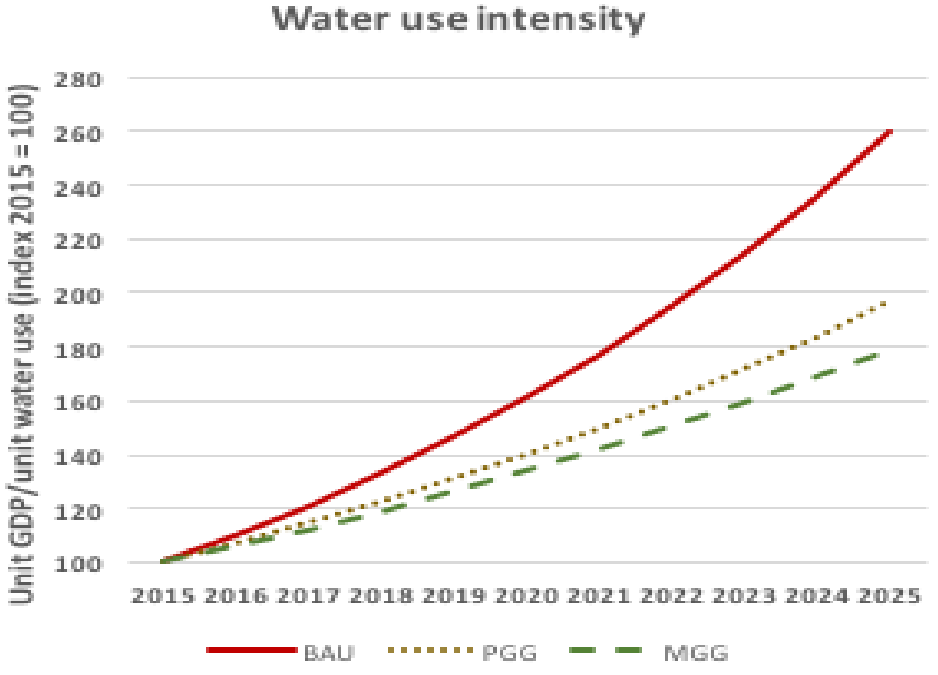
Mainstreaming green growth Radical change enacted. City improves in livability, competitiveness, attractiveness, and social inclusion

Impacts:
- Good air and water quality
- Improved health
- Access to services
- Economic productivity
- Improved livelihoods


GHG emissions
Total GHG emissions (index 2015 = 100)
170
160
150
140
130
120
110
100
2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
BAU
PGG
MGG


Green space
Totral area of green sapce (index 2015 = 100)
150
140
130
120
110
100
90
80
70
60
50
2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
BAU
PGG
MGG


Energy efficiency
Unit GDP/unit energy use (index 2015 = 100)
140
130
120
110
100
90
80
2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
BAU
PGG
MGG


Water use intensity
Unit GDP/unit water use (index 2015 = 100)
280
260
240
220
200
180
160
140
120
100
2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
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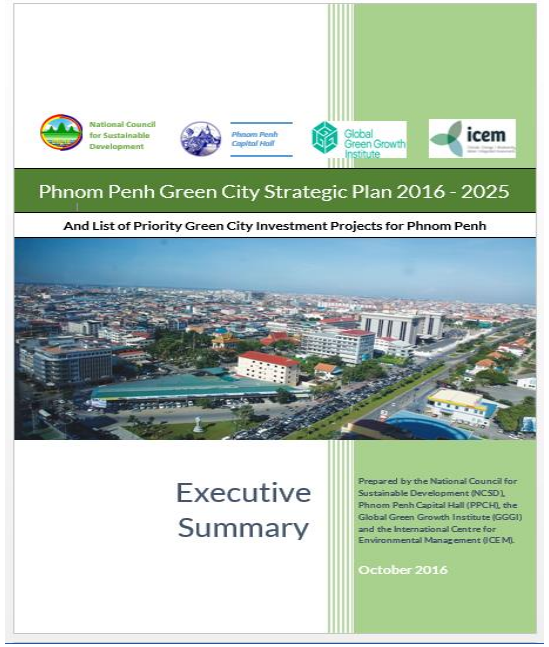
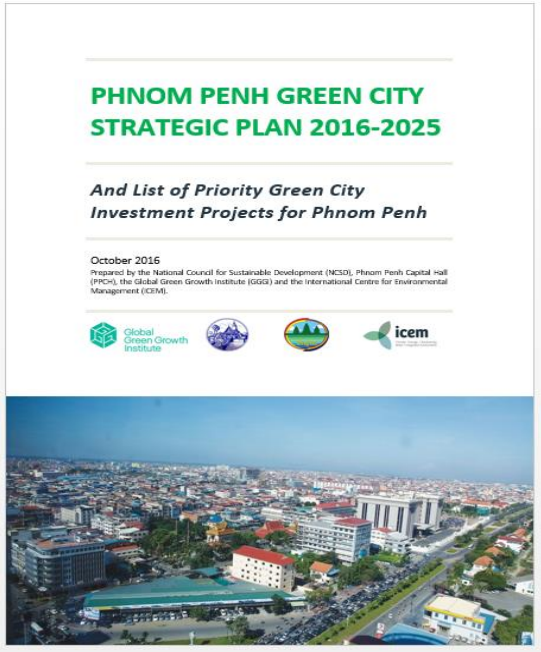
Green City Strategic Plan for Phnom Penh 2016-2025

DRAFT Green City Strategic Plan 2016-2025





Contents of the Green City Strategic Plan 2016-2025

1. **Introduction / Purpose**
2. **Vision and Mission for Green City**
3. **Goals and Objectives for Green City**
4. **Strategic Analysis**
   - Phnom Penh masterplan
   - Baseline analysis
   - Sector-by-sector analysis
5. **Green City priority actions**
   - Sector-by-sector actions
6. **Green City Development projects**
   - concept notes for 48 projects
   - project notes for 13 priority projects
7. **Green Growth Scenarios of the city**
8. **Implementation arrangements**

Green City Planning Consultation Framework

GGGI support to NCSD as the lead

National Council for Sustainable Development (NCSD)

General Secretariat for Sustainable Development (GSSD)

Department of Green Economy

Phnom Penh Capital Hall

Key stakeholders-Development partners, NGOs, Private Sectors, academia

UN agencies, (UN-Habitat, UNDP)
Civil society (NGO Forum, NGOs)
Development banks (e.g. ADB)
Private sector (Chambers of Commerce)
Development Partners (e.g. GIZ, JICA, Australia, EU, France, USAID)

Primary goal of the NCSD and GSSD is to provide an inter-ministerial discussion arena and platform to forge consensus among ministries

Primary goal of the Department of Green Economy is to help execute policies, regulations or laws that are internally agreed to implement the National Policy and Strategic Plan on Green Growth

Key government stakeholders

Municipal Government and district authorities
Ministry of Economy and Finance
Ministry of Environment
Ministry of Planning
Ministry of Interior, NCDD
Ministry of Land Management, Urban Planning and Construction
Ministry of Public Works and Transport
Ministry of Mines and Energy
Ministry of Industry and Handicraft
Ministry of Water Resources and Meteorology
Ministry of Tourism
Council for Development of Cambodia
Ministry of Commerce
Electricity Authority of Cambodia

Green City Plan Consultation Process

April 2015 to November 2016

- **7 bilateral meetings** with Phnom Penh City Hall
- **6 workshops**: multi-stakeholder, co-organized by GGGI and NCSD, and including public sector, Phnom Penh districts, development partners, NGOs, private sector and academic institutions
- Technical consultations were held with ministries
- Capacity building **study tour to Melaka**, Malaysia for ministries and Phnom Penh officials.
- Capacity building workshops on themes: transport, financing green cities and green cities.

Chapter1: Introduction

Purpose of the Green City Strategic Plan

The Green City Strategic Plan for Phnom Penh provides a roadmap for Cambodian policymakers, local administrators and their national and international development partners in order to pursue the implementation of urban green growth in the context of tackling climate change, while simultaneously pursuing economic development, poverty alleviation and social inclusion.

Chapter 2: Overall Vision & Mission
Chapter 3: Overall Green City Goals

Vision: By 2025, Phnom Penh will become a clean, green and competitive city offering a safe and quality lifestyle to its residents.

Mission: To guide planning of Phnom Penh and promote public and private investment to ensure effective and sustainable economic and social development of the city.

Overall Green City Development Goals:

- De-couple economic growth from environmental impacts
- Increase social inclusion, reduce poverty levels, and improve urban welfare
- Provide urban resilience for all citizens to natural, climatic and other risks
- Ensure urban competitiveness and attractiveness to businesses

Prioritized Actions in Each Sector

Priority Actions for Green City Development

1. Urban Planning

1. Define protection areas where no infrastructure or building activities may take place
2. Strengthen capacity for enhanced local governance and enforcement of urban regulations by all stakeholders.
3. Plan for compact, low-carbon urban forms providing for high agglomeration density and for an optimal use of urban infrastructure.
4. Provide land for low-income residential areas and concentrate factories away from housing.

2. Urban Vulnerability

1. The city's natural lakes, streams and wetlands are protected and not used for further commercial development.
2. Green and blue corridors are restored or created throughout the city.
3. To capture rainwater, reduce flooding and increase biodiversity, the existing green space per person ratio of 1.1 m2 will be doubled.
4. Decentralized wastewater treatment systems will be operating in poor and vulnerable peri-urban communities.

3. Energy Sector

1. Energy management plans are instituted, and appropriate EE measures (and renewable installations) are identified and implemented
2. All electrical appliances and cook-stoves tested and labelled following national standards, energy efficiency labelling is in Khmer
3. All new government, commercial and industrial buildings have renewable energy installed
4. Time-of-day tariff adopted for the Phnom Penh/Kandal central grid

4. Urban Transport

1. Comprehensive and integrated traffic management system in place, adequately resourced and staffed.
2. Parking regulations are enforced and adequate parking provision that all sidewalks are easily passable by pedestrians.
3. A plan in place to encourage cycle use in the city, including segregated lanes and cycle paths.
4. Discourage the use of private motorized transportation and encouraging EE use and low-emission vehicles.

Priority Actions for Green City Development

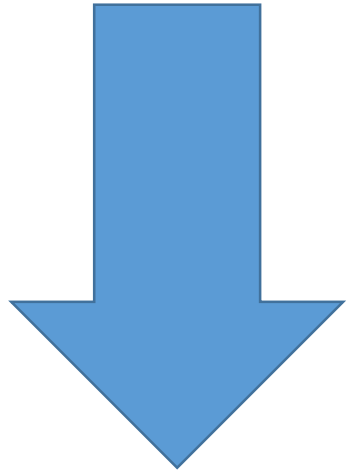
5. Built Environment 1. Affordable low-cost housing is available throughout the city for all socio-economic groups. 2. Slum areas are reduced and replaced with low-cost housing using locally available materials. 3. Guidance on constructing or retrofitting energy-efficient housing and buildings is available. 4. New large construction projects dedicate sufficient space for green and blues corridors, and adhere to green building standards.	**6. Manufacturing Sector** 1. Regulations in place to ensure energy efficiency, water use efficiency and pollution emission standards are in place for the manufacturing sector 2. Capital facilities in place for lending to energy efficiency and pollution control projects in the manufacturing sector. 3. Resource use assessments conducted for major industrial sectors in the city.
7. Solid Waste Management 1. Each district has the resources and capacity to manage waste collection companies. 2. A competitive market is established for districts to select waste collection companies most suitable. 3. Public awareness established to instruct households, commercial enterprises and markets of methods for waste separation and respective environmental benefits. 4. Implement waste-to-energy conversion or composting.	**8. Public Spaces and Cultural Heritage** 1. Public parks, gardens, and green / blue corridors are significantly expanded throughout the city. 2. More multi-functional recreational areas are developed. 3. Regulations are enacted and enforced to protect and renovate key cultural heritage buildings and sites. 4. A city or national budget is established to preserve cultural heritage buildings and sites.

Prioritizing Green City Projects

Theme	Criterion
Stakeholder priority	1. Perceived high need or demand or priority
Financial feasibility	2. Likely financial support from external sources (donor agencies and/or private entities)
	3. Cost savings benefits
Technical operational feasibility/ deliverability	4. Supportive policy and institutional environment for project implementation
	5. Tested technology and/or business model and/or project approach
	6. Availability of local operators/providers for project implementation
Project impacts	7. High green growth demonstration effect
	8. Poverty reduction or social inclusion benefits
	9. Green job creation benefits
	10. Environmental benefits

2 MCA WORKSHOPS:
Phnom Penh: March 25, 2016
Sihanouk Ville: April 24-25, 2016

48 projects



13 projects

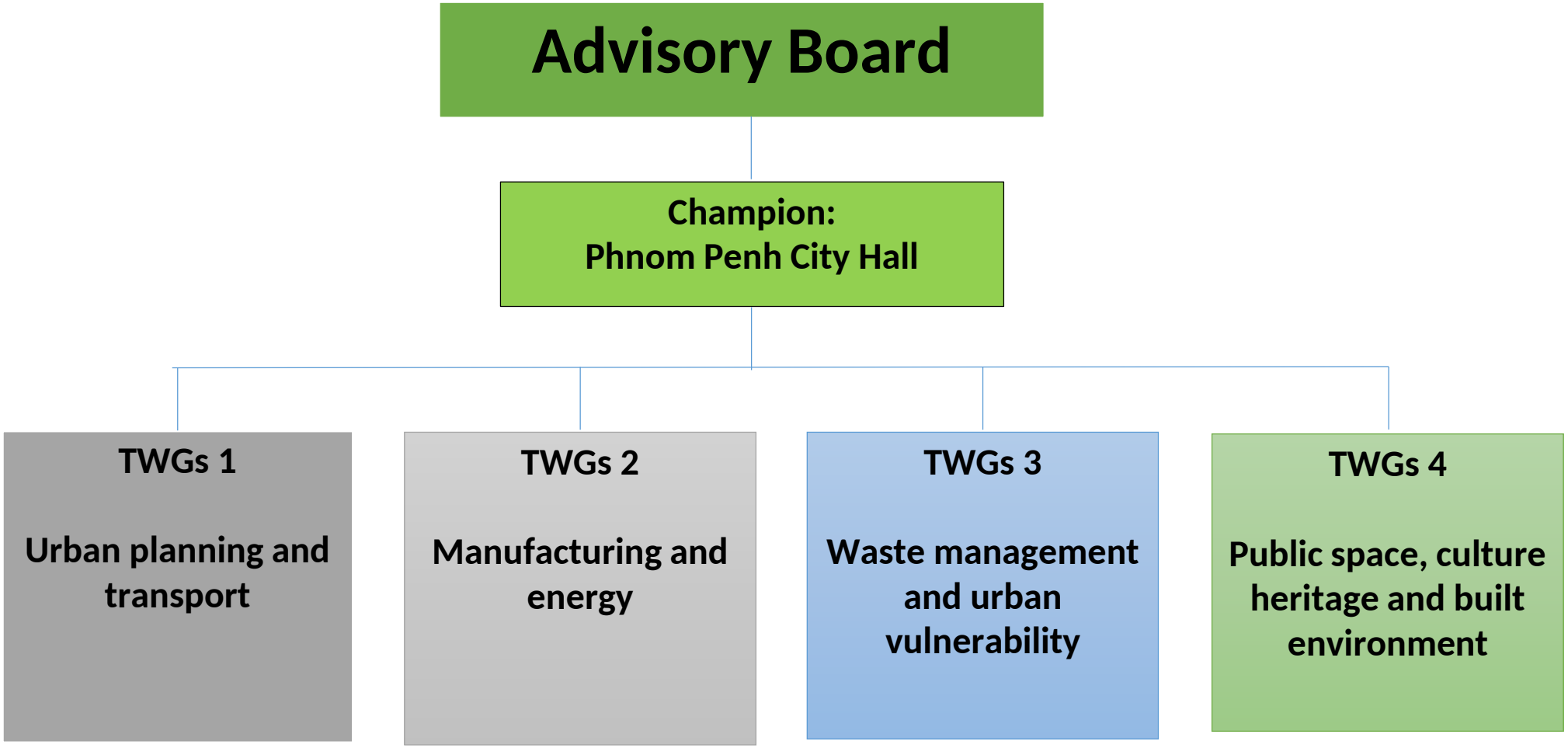
Prioritized Projects under the Green City Strategic Plan for Phnom Penh

No.	Project title	Sector
1	‘One Village, One Product' green handicraft manufacturing	Manufacturing
2	Planning of new industrial zones and clusters	Urban Planning
3	Policy and institutional support for renewable electricity generation	Energy
4	Parking support package for Phnom Penh	Transport
5	Demonstration of a decentralized wastewater system in a peri-urban area	Urban Vulnerability
6	Demonstration of a redesign of an existing park area for improved water retention and cooling	Urban Vulnerability
7	Household flood-proofing guidelines	Built Environment
8	Pilot energy-efficient street lighting	Energy
9	Promotion of solar water heaters	Energy
10	Pilot ESCO in Phnom Penh Special Economic Zone	Manufacturing
11	Guidelines for constructing energy efficient buildings (residential and commercial)	Energy
12	Pilot to Improve Access to Finance for Energy Efficiency at SMES	Manufacturing
13	Piloting pedestrianized area	Transport

Green City Projects already being supported

- Plastic bag reduction project
- Energy efficiency fund for SMEs
- Decentralized wastewater treatment
- Energy Efficient street lighting
- Urban transport
- Solid waste management strategy
- Energy Efficiency policy
- Eco-labeling
- Drainage and Sewerage Master Plan
- E-Waste Standards
- Urban Voice
- Disaster Risk Reduction Planning

Proposed Implementation Arrangement



Implementation: Financing, Innovation, Partnership and Collaboration

Possible funding sources include:

- PPCH and line ministry budget
- Development partners (ADB, JICA, AFD, etc.)
- International funds (GEF and GCF)
- Private sector investment.

Requires ongoing Partnership and Collaboration between

- Public sector, business and NGOs

Collaboration

Thank you!

Fiona Lord, Country Representative, GGGI Cambodia (Fiona.Lord@gggi.org)

Sitak Sath, Department of Green Economy, NCSD (sathsitak@gmail.com)

https://www.youtube.com/watch?v=qib4f2Llf94