Singapore's Intended Nationally Determined Contribution

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Anshari Rahman
Assistant Director, International Policy
National Climate Change Secretariat

National Circumstances

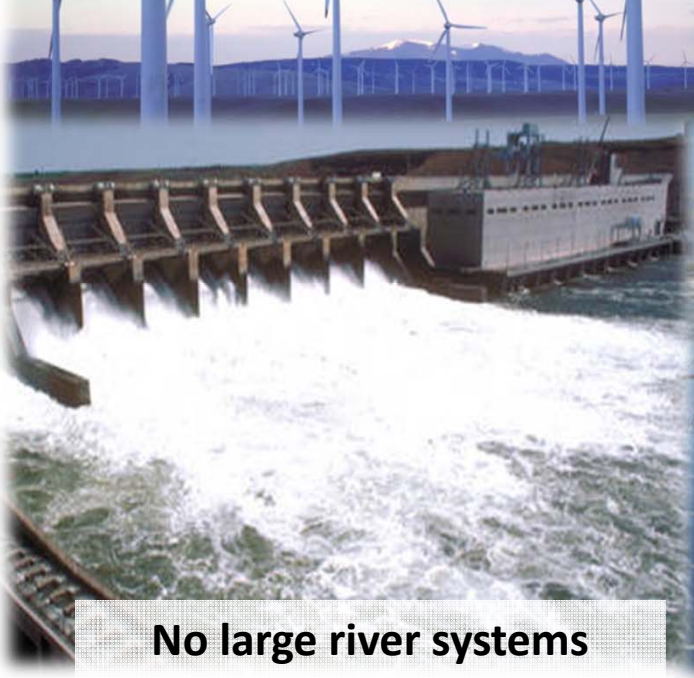
- Small (716km^2) island city-state, low-lying, flat coastline
- Highly urbanised, densely populated - 7,540 people per km^2
- Rising temperatures and sea levels, increasing frequency of days with intense rainfall
- Development constraints
  - Singapore's lack of natural resources and hinterland required the development of a strong export-oriented manufacturing base

- Import almost all our energy needs
  - High dependency on fossil fuels
  - No fossil fuel subsidies

Constraints in harnessing Alternative Energy

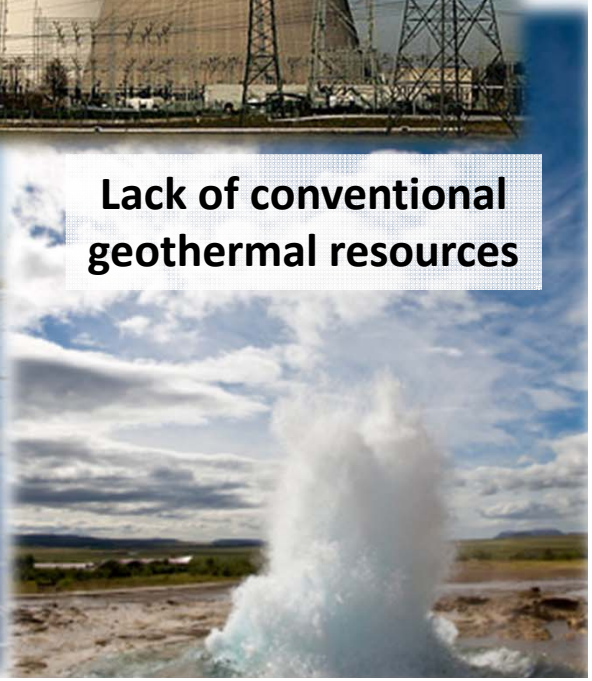
Low wind speeds

Nuclear energy technologies not yet suitable for deployment in Singapore



No large river systems

Unlikely to provide base-load because of intermittency & limited land

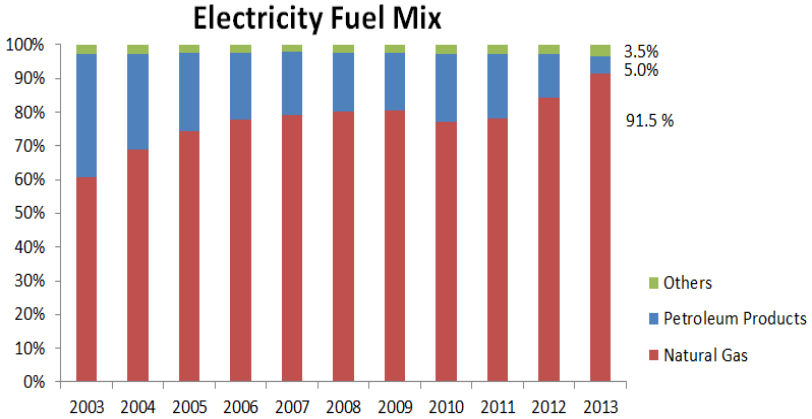


Lack of conventional geothermal resources

Long-Term Integrated Planning

Early Efforts

- Early switch from fuel oil to natural gas for electricity generation
  - Today, natural gas constitutes over 90% of power generation mix
  - LNG terminal commenced operations since May 2013



Source: Energy Market Authority (EMA), 2014

- Despite challenges, Singapore is significantly increasing deployment of solar PV systems

Solar panels at Punggol Housing & Development Board (HDB) blocks.

- Price energy at market cost to reduce usage and encourage energy efficiency

- Pollution control laws encourage industries to switch to cleaner fuel sources

CLEANER ENERGY

Singapore's 2020 Pledge

To undertake mitigation actions leading to a reduction of greenhouse gas emissions by 16% below business-as-usual (BAU) levels in 2020, if there is a legally binding global agreement

- In the meantime, Singapore is taking actions to reduce its emissions to achieve its unconditional pledge of BAU-7 to 11% by 2020.
- Singapore is on track to achieve its 2020 pledge.

Climate Change Institutional Structure

Inter-Ministerial Committee on Climate Change
Chaired by Deputy Prime Minister Teo Chee Hean

IMCCC Executive Committee
Chaired by Permanent Secretary, National Climate Change Secretariat

Secretariat:
National Climate Change Secretariat

Mitigation

Long-Term Emissions and Mitigation Working Group
Chaired by NCCS and MTI

Negotiations

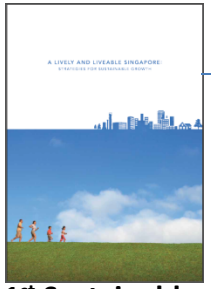
International Negotiations Working Group
Chaired by MFA

Adaptation

Resilience Working Group
Chaired by MND and MEWR

Ministry of Foreign Affairs Singapore
MND Singapore
Ministry of the Environment and Water Resources
MTI Ministry of Trade and Industry Singapore
Ministry of Transport Connecting Singapore
NCCS National Climate Change Secretariat Prime Minister's Office Singapore
Building and Construction Authority
CAAS Civil Aviation Authority of Singapore
EDB singapore
Energy Market Authority Smart Energy, Sustainable Future
HDB
iDA
ie Singapore Driving Singapore's External Economy
jtc Breaking New Ground
Land Transport Authority We Keep Your World Moving
MOF Ministry of Finance Singapore
MPA Singapore
National Environment Agency
National Parks Let's Make Singapore Our Garden
National Research Foundation Prime Minister's Office Singapore Research . Innovation . Enterprise
PUB Water for All · Conserve, Value, Enjoy
SPRING singapore Enabling Enterprise
URA Urban Redevelopment Authority

Recent Policy/Institutional Foundations



1st Sustainable Singapore Blueprint published

Announced 2020 pledge (Copenhagen)

2nd NC published

NCCS
NATIONAL CLIMATE CHANGE SECRETARIAT
PRIME MINISTER'S OFFICE SINGAPORE

Formation of NCCS under PMO

NCCS-2012 published

2009 2010 2012

Energy Conservation Act came into effect

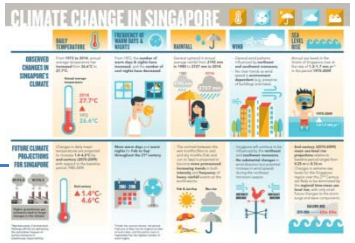
Roadmaps and EE Studies published

3rd NC/1st BUR published

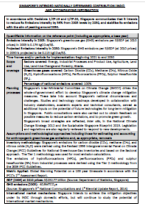
KYOTO PROTOCOL

Ratified 2CP

2nd Sustainable Singapore Blueprint published



2nd National Climate Change Study published



INDC submitted

2013 2014 2015

Planning process of Singapore's INDC

Energy Tech Roadmaps

McKinsey&Company ICF INTERNATIONAL

Energy Efficiency Studies

- Economy-wide
- Industrial Sector

Public Consultation

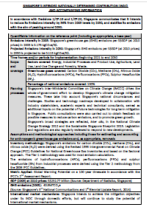
- Online Consultation
- Stakeholder/Sectoral Consultations

2012 — 2013 — 2014 — 2015 → **Singapore's INDC Submission**

Inter-agency technical analysis under IMCCC

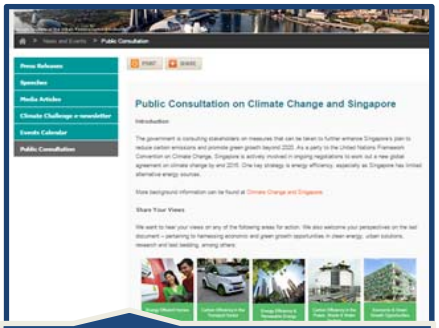
WRI Open Book (Guide)

WORLD RESOURCES INSTITUTE



Public Consultation

1H 2015



Online Feedback

Stakeholder and Sectoral Consultations

More than 1000 comments and suggestions received
Representatives from more than 200 organisations participated in consultations

- Many suggestions on opportunities across all sectors, and ways to achieve this (e.g. public education, incentives, regulation)
- Overview of feedback, and agencies' responses, have been published at https://www.nccs.gov.sg/consultation2015

Planning process of Singapore's INDC

BOX 2.3 SINGAPORE'S PROCESS FOR DEVELOPING AN INDC

The development of Singapore's INDC is a work-in-progress. It is supervised by the Inter-Ministerial Committee on Climate Change (IMCCC), which is chaired by the Deputy Prime Minister and supported by the National Climate Change Secretariat, the national coordinating agency for climate change issues under the Prime Minister's Office. This process involves a government-wide approach to discuss and develop an appropriate set of climate measures that takes into account Singapore's national circumstances and challenges. For example, what is the long-term mitigation potential for a small city-state of 5.47 million people with limited access to alternative energy sources? How does Singapore achieve energy security and environmental sustainability?

Under the IMCCC, a Long-Term Emissions and Mitigation Working Group (LWG) was formed to envision Singapore's post-2020 future in a carbon-constrained world. The LWG provides the planning framework for government agencies to work together to discuss and identify the mitigation actions through a combination of top-down and bottom-up analysis. An iterative process has been adopted whereby government agencies consider mitigation actions in their respective sectors and the possible measures are evaluated in terms of cost effectiveness and practicability. External consultants are also engaged to conduct independent studies on possible mitigation measures, taking into account Singapore's circumstances, international best practices and data on best available technology, among other data and analysis. Technology roadmaps, prepared by the government in collaboration with industry stakeholders, academic experts, and technical consultants, serve as additional inputs for estimating the potential of future technologies for long-term mitigation in Singapore. Public consultations are also being carried out to obtain public feedback on possible further measures to reduce GHG emissions and to promote green growth. This process also helps to create greater public awareness and understanding of Singapore's climate actions. Inputs from these various channels are then analyzed by the LWG and considered for inclusion as part of Singapore's mitigation contribution under its INDC.

"...government-wide approach to discuss and develop an appropriate set of climate measures…"

"…identify the mitigation actions through a combination of top-down and bottom-up analysis…"

"External consultants… Technology roadmaps… public consultations… inputs from these various channels are then analysed…"

World Resources Institute/UN Development Programme Feature on Singapore's INDC Process

Singapore's INDC

Reduce Emissions Intensity (EI) by 36% from 2005 levels by 2030, and stabilise emissions with the aim of peaking around 2030

- EI projected to decline by 2.5% annually from 2021 to 2030, compared to 1.5% annually from 2005 to 2020

	Emissions Intensity ($kgCO_2e$/S$GDP)
2005	0.176
2030	0.113

36% reduction

- Singapore's EI ranks favourably amongst the lowest 20% in the world (113th out of 140 countries) *
- To achieve the 2030 Emissions Intensity level, Singapore's emissions are expected to stabilise at around 65 MT CO_2e based on current projected growth.

*Source: IEA Key World Energy Statistics, 2014.

Accompanying Information on Singapore's INDC

- Timeframe: Beginning 2021 to end 2030
- Sectors covered: Energy, Industrial Processes and Product Use, Agriculture, Land Use, Land-Use Change and Forestry, Waste.
- Greenhouse gases covered: Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur Hexafluoride (SF6).
- Fairness and ambition: Highlights Singapore's national circumstances, challenges and efforts.
- International market mechanisms: Singapore intends to achieve the mitigation objectives under its INDC through domestic efforts, but will continue to study the potential of international market mechanisms.

Carbon markets can help

- Markets drive innovation
- Enhances existing carbon mitigation measures
- Shifts abatement efforts towards the lowest cost opportunities

Integration increases effectiveness

- Linking markets help countries expand the range of abatement opportunities
- Greater liquidity
- Ensures a level playing field
- Greater convergence towards a global carbon price

Accompanying Information on Singapore's INDC

- Adaptation challenges

- Adaptation planning is an ongoing effort

Singapore's International Collaborations

- Singapore hosts international forums to share experiences

Singapore International Water Week | WORLD CITIES SUMMIT | SIEW | International Green Building Conference 2015 Singapore

- Close international partnerships to share best practices and technical knowledge (Over **<u>10,700 officials</u>** have benefitted from climate change and sustainable development programmes)

BCA and UNEP established the BCA Centre for Sustainable Buildings (2011)

Regional Workshop on Scaling up Climate Finance in the Asia Pacific (April 2013)

Summary

- Singapore's INDC is an ambitious pledge:
  - Limited access to alternative energy
  - Significant early mitigation actions
  - Further reduction in EI beyond 2020
  - Stabilisation of emissions with the aim of peaking around 2030
  - Not conditioned on international assistance

- Singapore's INDC is a result of careful planning, robust studies and extensive consultation

- Mitigation efforts to achieve the INDC will involve all sectors, with energy efficiency as key strategy

- Singapore intends to achieve the mitigation objectives under its INDC through domestic efforts, but will continue to study the potential of international market mechanisms.

Thank you