Singapore's Experience with Updating the NDC

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Outline

- 1. National circumstances
- 2. Overview of enhanced NDC
- 3. Process of updating NDC
- 4. Challenges
- 5. Key takeaways

Our national circumstances limit our solution space...



Dense urban landscape

- » Small, low-lying, highly urbanised and dense island state
- » Accommodate housing, commercial centres, transport hubs
- » High population density of 8,000 per sq km







Export-oriented and open economy

- » Lack of natural resources and hinterland
- » Manufacturing, finance and business services are pillars of our economy

Limited alternative energy options

- » Less favourable climatic conditions for large scale deployment of hydro, wind and geothermal
- » Solar energy is the best option but limited by intermittency and land constraints
- » 95% electricity generated from natural gas

National circumstances

Enhanced NDC

Process

And aim to mitigate the effects of climate change with minimum possible economic and social disruptions

<u>Mitigation</u>: Work towards a low carbon future



Total emissions in 2017: ~52 MtCO₂e

<u>Adaptation</u>: Build up climate resilience to have a liveable island-city-state

• Rising sea levels

Food security

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- Water security and drought
- Floods
- Vector-borne diseases
- Urban heat island effect



Source: Ministry of Communications and Information

National circumstances

Enhanced NDC

Process

Challenges

Key takeaways

Despite our constraints, we have pushed ahead to submit an enhanced NDC





Enhanced NDC

Process

We have put in place mitigation measures to transform our industry, economy and society to reduce emissions and improve competitiveness

	POWER GENERATION Constraints Energy efficiency At least 2 GWp of solar energy by 2030 Low-carbon technologies	INDUSTRY C Energy efficiency System-level solutions Low-carbon technologies	TRANSPORTZero private vehicle growth9 in 10 peak period journeys on "Walk- Cycle-Ride" by 2040Cleaner vehicles by 2040	BUILDINGS 80% green buildings by 2030 Super Low Energy Programme	HOUSEHOLDS Mandatory Energy Labelling Scheme Minimum Energy Performance Standards Green Towns Programme	WASTE & WATER Circular economy approach Waste Waste Recycling Energy efficiency of desalination and used water treatment
CARBON TAX Initial rate of \$\$5/tCO2e Trajectory and level after 2023 to be reviewed						

Enhanced NDC

Process

There are many ways to enhance NDCs



Source: World Resources Institute publication on Enhancing NDCS: A guide to strengthening national climate plans by 2020.

National circumstancesEnhanced NDCProcessChallengesKey takeaways

We have enhanced our target...

	INDC (submitted in 2015)	Enhanced NDC (submitted in Mar 2020)
Headline Pledge	To reduce Emissions Intensity (EI) by 36% below 2005 levels by 2030, and stabilise emissions with the aim of peaking around 2030.	To peak emissions at 65MtCO2 e around 2030.
Form of target	Emissions intensity target	Economy-wide absolute GHG emissions limitation peaking target
Coverage of gases	6 GHGs : Carbon Dioxide (CO_2) , Methane (CH_4) , Nitrous Oxide (N_2O) , Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur Hexafluoride (SF_6) .	7 GHGs : Carbon Dioxide (CO ₂), Methane (CH ₄), Nitrous Oxide (N ₂ O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur Hexafluoride (SF ₆) and <u>Nitrogen Trifluoride (NF₃).</u>

Enhanced NDC

Process

...and improved the transparency of our NDC reporting

	INDC (submitted in 2015)	Enhanced NDC (submitted in Mar 2020)
Methodological approaches	Revised 1996 IPCC Guidelines GWP from IPCC 2 nd AR	2006 IPCC Guidelines GWP from IPCC 5 th AR
Implementation details	General information on solar energy R&D plans, energy efficiency initiatives and international collaborations.	More ambitious solar energy goals, introduction of economy-wide carbon tax with no exemptions for covered facilities, and sectoral measures.
Structure	Applied para 27 of 1CP/21 as template	Applied Katowice ICTU guidance as template

Developing our NDC / LEDS was a whole-of-government process



National circumstances

Enhanced NDC

Process

A single holistic exercise to develop LEDS and enhance NDC

- LEDS will serve as reference to inform subsequent NDCs.
- LEDS and NDC enhancement integrated within context of national policy framework, takes into account
 national circumstances, mitigation potential from emerging technologies and international cooperation, and
 consultations with key stakeholders.

Institutional Framework	Under the Inter-Ministerial Committee on Climate Change (IMCCC), the Long-term Emissions and Mitigation Working Group (LWG) provides whole-of-government planning framework to plan and track mitigation actions through top-down and bottom-up analysis, and to identify opportunities for synergies and trade-offs across sectors.
Key inputs	Technology roadmaps prepared by government, academia and industry on the potential of future technologies for long-term mitigation in Singapore, independent studies by external consultants, and feedback from public/ stakeholder consultations.
Methodology	A recursive-dynamic numerical model, MARKAL was used to simulate possible mitigation pathways, based on the possible technology options available to Singapore.
Structure	Applied Katowice ICTU guidance as template for information to be provided.

Enhanced NDC

Process

Illustrated as a journey to consult and engage our citizens



We had extensive stakeholder consultations on Singapore's climate strategy

Public consultations on potential long-term low-emissions strategies for Singapore were held between July and September 2019.

- Aim was to seek views on measures that Government, businesses, households, and individuals can take to facilitate Singapore becoming a low-carbon global city-state
 - Over 2,000 feedback received, from members of the public, environmental groups, academics, companies
 - Several engagement sessions held from August 2019 to January 2020 to facilitate in-depth discussions with various stakeholders across a wide variety of sectors, which include the transport, industry, buildings, infocomm and logistics sectors.

Wide variety of feedback on several different topics received

 For e.g. improving energy efficiency, adoption of clean energy, R&D into low-carbon technologies, enabling behavioural changes to drive collective climate action

Summary of feedback received published online in February 2020

 Feedback and suggestions taken into consideration in determining and implementing strategies to enable Singapore's long-term low emissions development.

With the Singapore Green Plan 2030 being the latest chapter in our journey

GREEN PLAN

City in Nature

Green, Liveable and

- Sustainable Home for Singaporeans Develop over 130 ha of new parks, and redevelop around 170 ha of
- existing parks with more lush vegetation and natural landscapes by 2026
- Plant 1 million more trees, and have every household within a 10-minute walk from a park by 2030
- Add 1000ha of green spaces by 2035

Green Government

Public sector will lead by example

- Peak public sector carbon emissions around 2025, ahead of national target
- Use tools and levers, including procurement, to influence others towards sustainability practices and awareness

The Singapore Green Plan 2030 is a national sustainability movement which seeks to rally bold and collective action to tackle climate change.

Energy Reset

Strengthen Green Efforts in Schools **Cleaner-energy Vehicles**

Sustainable Living

sector by 2030

neutral by 2030

Green Commutes

Green Citizenry:

30% by 2030

net carbon emissions from schools

75% of all trips to be on mass public

Expand rail network to 360km by early

capita per day by 20% by 2026, and

2030s, from around 230km today

by 2030 from 460km in 2020

Reduce waste and consumption

to 130 litres per capita per day

- Work towards two-thirds reduction of Cease new registrations of diesel cars and taxis from 2025, and require all newly-registered cars to be of cleaner-energy models from 2030 At least 20% of schools to be carbon
 - 7 EV-ready Towns with chargers at all HDB carparks by 2025
 - Expand network of electric vehicle charging points to 60,000 by 2030
- transport by 2030, up from 64% today Greener Infrastructure & Buildings Triple cycling path network to 1,320km Green 80% of Singapore's buildings
 - (by Gross Floor Area) by 2030 80% of new buildings (by Gross Floor
 - Area) to be Super Low Energy from 2030
- Best-in-class green buildings to see Reduce amount of waste to landfill per 80% improvement in energy efficiency (over 2005 levels) by 2030

Sustainable Towns & Districts Reduce household water consumption

- Reduce energy consumption in HDB towns by 15% by 2030
- Green Energy
- Quadruple solar energy deployment by 2025
- Green Singapore's electricity supply by tapping on cleaner electricity imports

It is a living plan which will evolve as we work with Singaporeans and partners from all sectors to co-create solutions for sustainability. Let's work together to make Singapore a green and liveable home.

Green Economy

Sustainability as New Engine of Jobs and Growth

- New Enterprise Sustainability Programme to help local enterprises adopt sustainability practices
- Develop Singapore to be a carbon services hub, and a leading centre for green finance in Asia and globally by 2030
- Develop Jurong Island to be a sustainable energy and chemicals park by 2030

New Investments to be Carbon and Energy Efficient

Seek new investments to be among the best-in-class in energy/ carbon efficiency

Resilient Future

Safeguarding our Coastlines against Rising Sea Levels

- S\$5b dedicated to coastal and drainage flood protection measures
- Formulation of coastal protection plans for City-East Coast, North-West Coast (Lim Chu Kang and Sungei Kadut) and Jurong Island by 2030

Safeguarding Food Security

Produce 30% of our nutritional needs locally and sustainably by 2030, through developing land and sea space and skilled workers, funding support, and promoting R&D

Keeping Singapore Cool

Moderate the rise in urban heat with cool paint and by increasing greenery



For more information: see https://www.greenplan.gov.sg

Process

Translating our NDC enhancement to the Katowice ICTU guidance required some finesse ...

- To demonstrate transparency, applied Katowice ICTU guidance in tabular format.
 - Indicated N.A. and explained why for fields that were not applicable.
- Choice of absolute emissions target provides more predictability, transparency and facilitates tracking of progress.
- To avoid making overall document too lengthy, kept implementation details succinct and highlighted where additional details can be found (e.g. published Climate Action Plan to provide more details on mitigation and adaptation plans).
- To avoid duplication of information, included cross-references (e.g. Section 4.a(ii) on national circumstances is relevant for Section 6 on fairness and ambition) and included detailed adaptation efforts in Annex (as accompanying information on national circumstances but not adaptation component of NDC).

And we had to finalise the LEDS and enhanced NDC in the midst of COVID-19

- Whilst continuing efforts to suppress the outbreak and preparing for economic recovery from the COVID-19 pandemic, Singapore remains committed to support global climate action and to move towards low-carbon and climate resilient future.
- Despite uncertainties presented by pandemic, we finalised LEDS and NDC enhancement and submitted them early, in March 2020. This will guide long-term development and ongoing work to effect a well-managed transition to a low-carbon economy.
- Hope others will do likewise and help strengthen momentum of global climate action.

Final reflections on NDC enhancement/ LEDS preparations

- NDC enhancement / LEDS preparation useful for galvanising Whole-of-Government/Nation towards common aspiration of a low-carbon & climate resilient future, even amid new challenges, e.g. COVID-19
- 2. Don't have all the answers now, but LEDS will evolve to take into account experience, technology developments and international cooperation
- 3. No "one-size-fits-all" approach to NDC enhancement / LEDS development
- 4. International cooperation can create win-win partnerships to overcome constraints
- 5. Importance of institutional arrangements, technical work and stakeholder consultations to support NDC / LEDS preparations



Thank. You

Tips to demystify ICTU guidance

ΙΟΤΟ	What it means
1(c) For strategies, plans and actions referred to in Article 4, para 6, or policies and measures	If your NDC target comprises policies and measures (instead of a headline economy-wide target), provide details.
1(d) Target relative to reference indicator, expressed numerically,	What is your target in numerical terms (whether absolute, reduction from BAU or intensity level, etc), instead of in descriptive terms?
3(d), 4(d) References to mitigation co-benefits or economic diversification	Probably doesn't apply if you don't intend to count adaptation actions or economic diversification actions as contributing to fulfilment of the mitigation component of your NDC.
4(b) Specific information applicable to Parties, including regional economic integration organizations	Probably doesn't apply if you are not in the EU or a party to any joint effort sharing arrangement.
5(f)(iii) Information on how climate forcers not covered by IPCC guidelines are estimated	Probably doesn't apply if you don't intend to account for mitigation of climate forcers (apart from Methane) under your NDC.
6(c) How Art 4, para 3 has been addressed.	If this is an update to your 1 st NDC (and not your 2 nd NDC), this doesn't apply.

Tips to demystify ICTU guidance

ΙΟΤΟ	What it means
6(d) How the Party has addressed Art 4, para 4 of the Paris Agreement.	As a developing country Party, explain how your choice of NDC target demonstrates that you are moving over time towards economy-wide emission reduction or limitation targets from previous NDC target. If this is your first NDC, just indicate the type of NDC target you have.
6(e) How the Party has addressed Art 4, para 6 of the Paris Agreement.	If you are a SIDS/LDC and decided to communicate strategies, plans and actions for low GHG development reflecting your special circumstances (instead of or in addition to an economy-wide numerical headline target), please indicate so. As this appears to overlap with 1c, to avoid duplication, it may be useful to insert a cross- reference to your answer in 1c.