Singapore’s Experience with Updating the NDC

3rd GHG Inventory System Training Workshop (3-4 March 2021)

Presented by:
Alyssa Ng, Senior Manager (International Policy)
National Climate Change Secretariat
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 | Challenges | Key takeaways
And aim to mitigate the effects of climate change with minimum possible economic and social disruptions

Mitigation: Work towards a low carbon future

- Total emissions in 2017: ~52 MtCO$_2$e

Adaptation: Build up climate resilience to have a liveable island-city-state

- Rising sea levels
- Water security and drought
- Food security
- Floods
- Vector-borne diseases
- Urban heat island effect

Source: Ministry of Communications and Information
Despite our constraints, we have pushed ahead to submit an enhanced NDC.
We have put in place mitigation measures to transform our industry, economy and society to reduce emissions and improve competitiveness.

**POWER GENERATION**
- Energy efficiency
- At least 2 GWp of solar energy by 2030
- Low-carbon technologies

**INDUSTRY**
- Energy efficiency
- System-level solutions
- Low-carbon technologies

**TRANSPORT**
- Zero private vehicle growth
- 9 in 10 peak period journeys on “Walk-Cycle-Ride” by 2040
- Cleaner 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
- Recycling
- Energy efficiency of desalination and used water treatment

**CARBON TAX**
- Initial rate of S$5/tCO₂e
- Trajectory and level after 2023 to be reviewed
There are many ways to enhance NDCs

We have enhanced our target…

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Headline Pledge</strong></td>
<td>To reduce Emissions Intensity (EI) by 36% below 2005 levels by 2030, and stabilise emissions with the aim of peaking around 2030.</td>
<td>To peak emissions at 65MtCO$_2$e around 2030.</td>
</tr>
<tr>
<td><strong>Form of target</strong></td>
<td>Emissions intensity target</td>
<td>Economy-wide absolute GHG emissions limitation peaking target</td>
</tr>
<tr>
<td><strong>Coverage of gases</strong></td>
<td>6 GHGs : Carbon Dioxide (CO$_2$), Methane (CH$_4$), Nitrous Oxide (N$_2$O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur Hexafluoride (SF$_6$).</td>
<td>7 GHGs : Carbon Dioxide (CO$_2$), Methane (CH$_4$), Nitrous Oxide (N$_2$O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur Hexafluoride (SF$_6$) and <strong>Nitrogen Trifluoride (NF$_3$)</strong>.</td>
</tr>
</tbody>
</table>
…and improved the transparency of our NDC reporting

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Revised 1996 IPCC Guidelines</td>
<td>2006 IPCC Guidelines</td>
</tr>
<tr>
<td></td>
<td>GWP from IPCC 2(^{nd}) AR</td>
<td>GWP from IPCC 5(^{th}) AR</td>
</tr>
<tr>
<td>Implementation details</td>
<td>General information on solar energy R&amp;D plans, energy efficiency initiatives and international collaborations.</td>
<td>More ambitious solar energy goals, introduction of economy-wide carbon tax with no exemptions for covered facilities, and sectoral measures.</td>
</tr>
<tr>
<td>Structure</td>
<td>Applied para 27 of 1CP/21 as template</td>
<td>Applied Katowice ICTU guidance as template</td>
</tr>
</tbody>
</table>

National circumstances | Enhanced NDC | Process | Challenges | Key takeaways |
-----------------------|--------------|---------|------------|---------------|---------------|
Enhanced NDC           |              |         |            |               |               |
Developing our NDC / LEDS was a whole-of-government process

**AGENCIES**

National Climate Change Secretariat, Strategy Group (SG-NCCS)
Ministry of Sustainability and the Environment (MSE)
Ministry of Foreign Affairs (MFA)
Ministry of National Development (MND)
Ministry of Finance (MOF)
Ministry of Transport (MOT)
Ministry of Trade and Industry (MTI)
National Research Foundation (NRF)
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.

<table>
<thead>
<tr>
<th>Institutional Framework</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key inputs</td>
<td>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.</td>
</tr>
<tr>
<td>Methodology</td>
<td>A recursive-dynamic numerical model, MARKAL was used to simulate possible mitigation pathways, based on the possible technology options available to Singapore.</td>
</tr>
<tr>
<td>Structure</td>
<td>Applied Katowice ICTU guidance as template for information to be provided.</td>
</tr>
</tbody>
</table>

National circumstances | Enhanced NDC | Process | Challenges | Key takeaways |
------------------------|--------------|---------|------------|---------------|
Illustrated as a journey to consult and engage our citizens

- Energy efficiency studies by external consultants
- 2nd Sustainable Singapore Blueprint
- Singapore’s INDC submitted
- New/updated Roadmaps
- NCCS-2012
- Energy Tech Roadmaps
- Singapore’s NDC/LEDS submitted
- Carbon Tax

Public Consultations on NDC
  - Online Consultation
  - Stakeholder/Sectoral Consultations

Public Consultations on LEDS
  - Online Consultation
  - Stakeholder/Sectoral Consultations

National circumstances  |  Enhanced NDC  |  Process  |  Challenges  |  Key takeaways
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

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

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

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

<table>
<thead>
<tr>
<th>ICTU</th>
<th>What it means</th>
</tr>
</thead>
<tbody>
<tr>
<td>6(d) How the Party has addressed Art 4, para 4 of the Paris Agreement.</td>
<td>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.</td>
</tr>
<tr>
<td>6(e) How the Party has addressed Art 4, para 6 of the Paris Agreement.</td>
<td>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.</td>
</tr>
</tbody>
</table>