

A temporal strategy of waste management toward carbon neutrality by 2050 in Japan

2022 WtERT Asia Webinar III: Possible Ways to Build Collaborations

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Masaki Takaoka

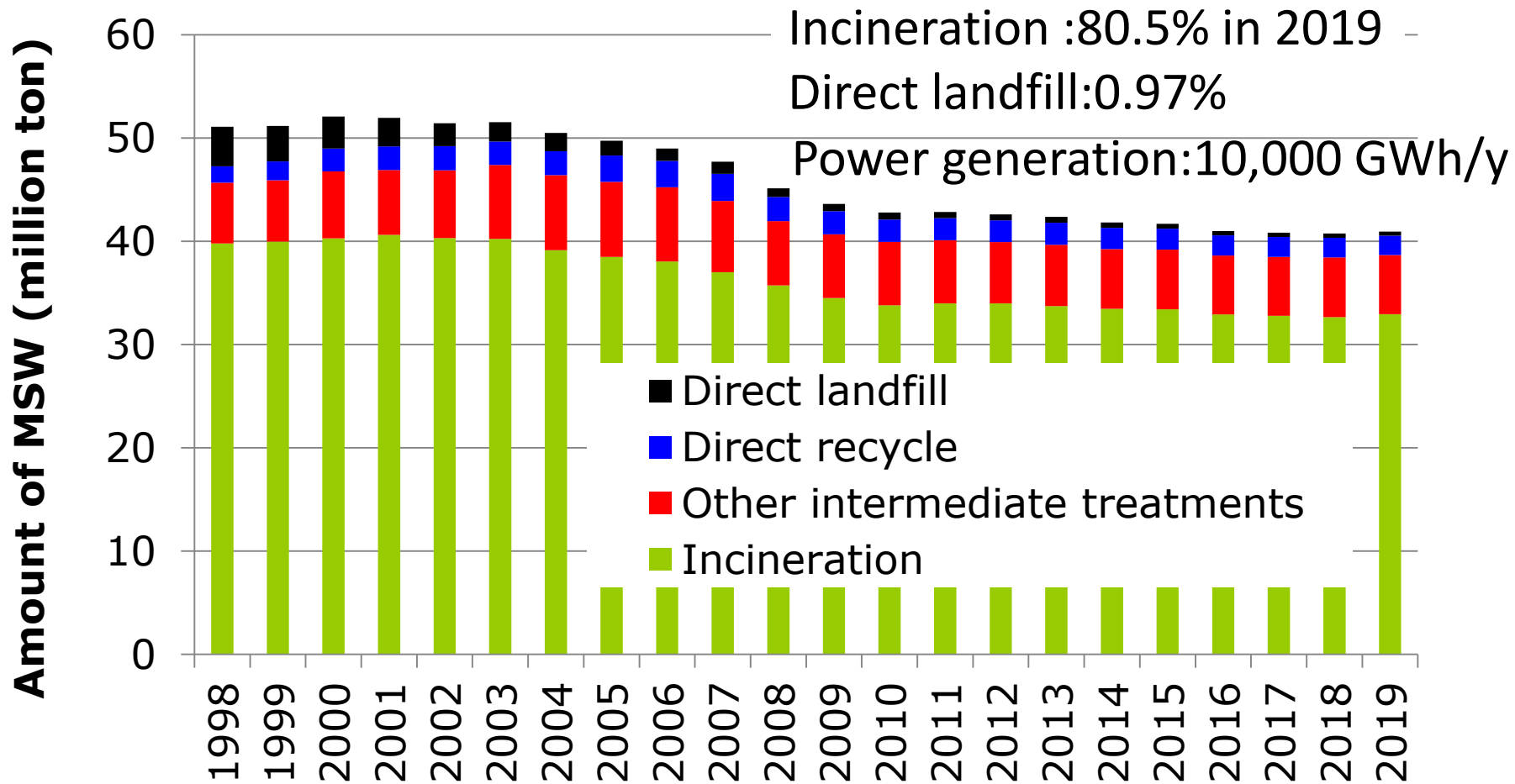


Department of Environmental Engineering,
Graduate School of Engineering, Kyoto University

Content

- **Waste Treatment in Japan**
- **Carbon Neutrality in Waste Sector**
 - **MSWI with CCUS**
- **Future Scenarios and Estimation**
- **Bilateral Collaborations (JCM)**
- **Conclusions & Future Challenges**

Trend of Treatment Type in MSW



Towards Carbon Neutrality by 2050

- Ex Prime minister Suga
- a cut in greenhouse-gas emissions in Japan to net zero by 2050 in his first policy speech on 26th October 2020.
- Original plan (compared to 2013)
- 26% reduction by 2030 and 80% reduction by 2050



- 46% reduction by 2030 and Net zero by 2050

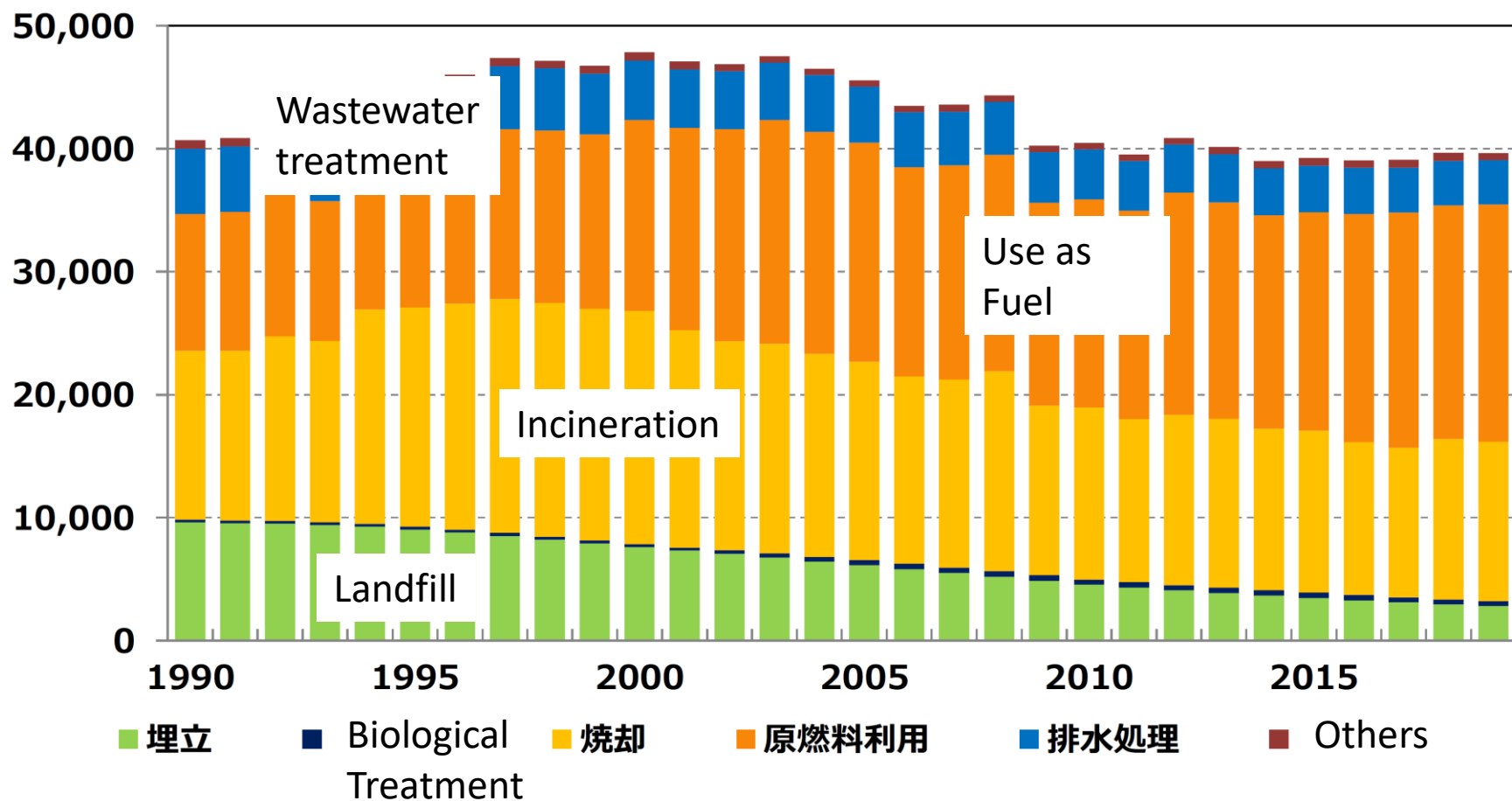


Policy development in each ministry

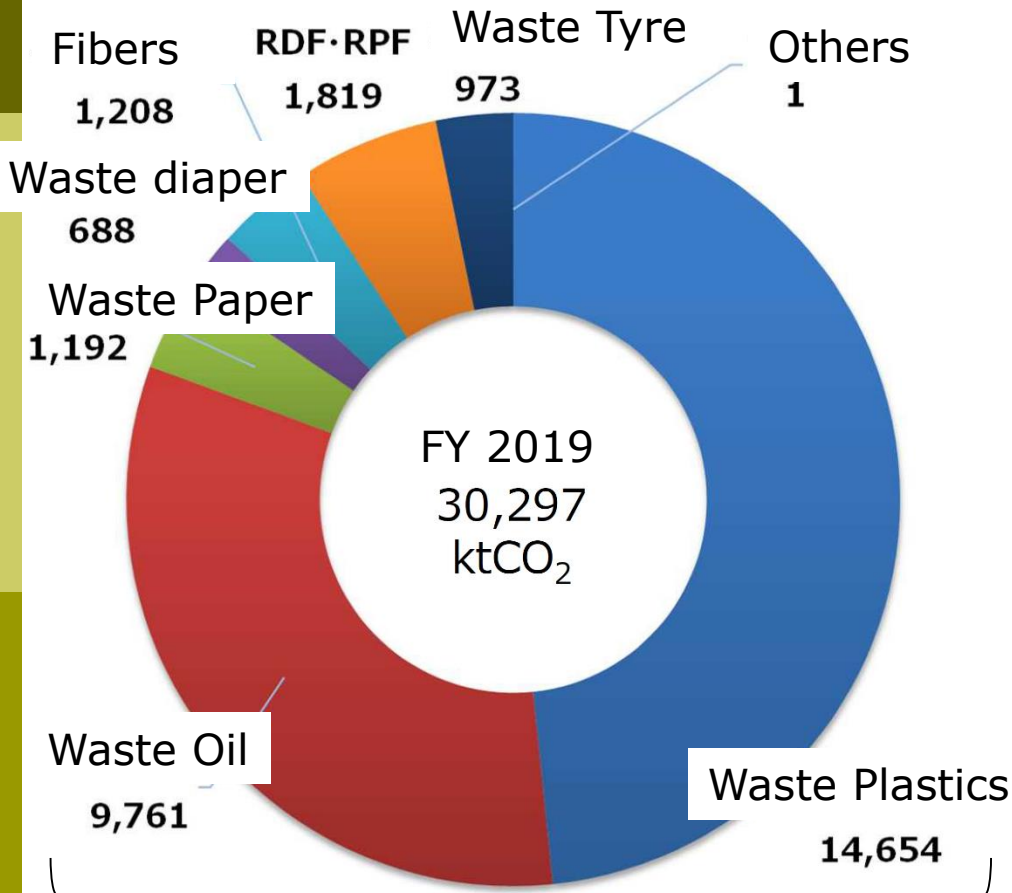
- ✓ Green Growth Strategy Through Achieving Carbon Neutrality in 2050 (METI)

GHG Emissions in Waste Sector

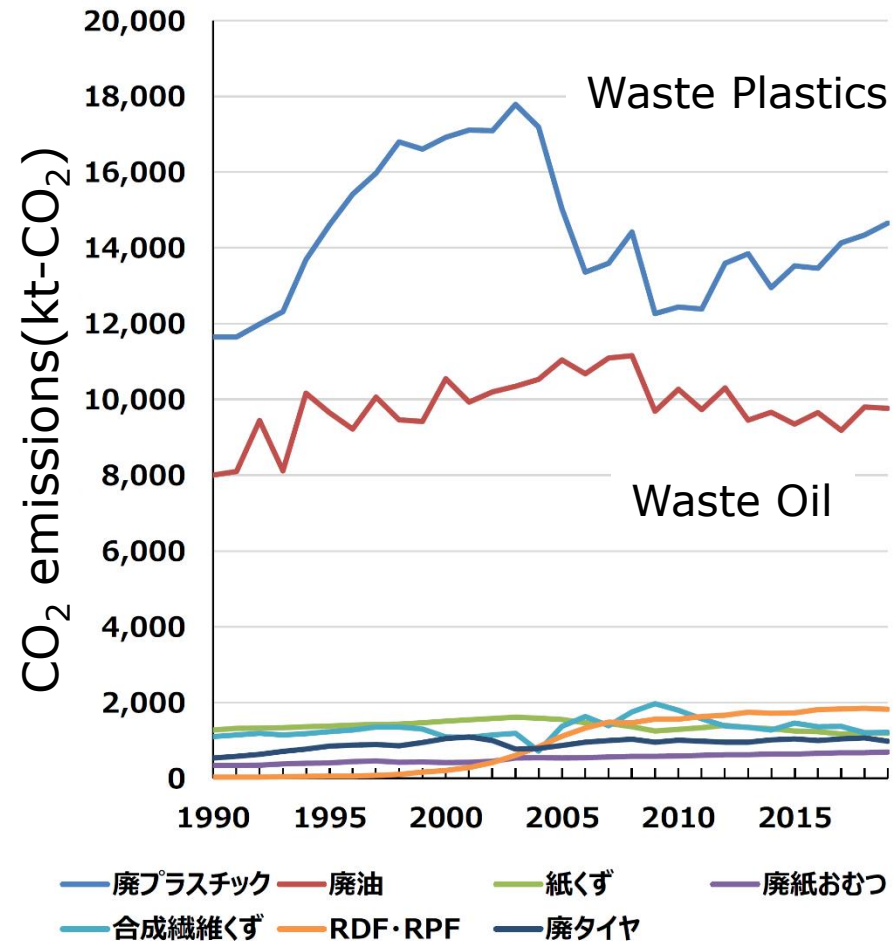
Greenhouse gas emissions(kt CO₂)



CO₂ Emissions in Waste Incineration and Use as Fuel



Incineration of waste plastics and oil should be avoided, and the materials should be recycled as raw material for chemicals.



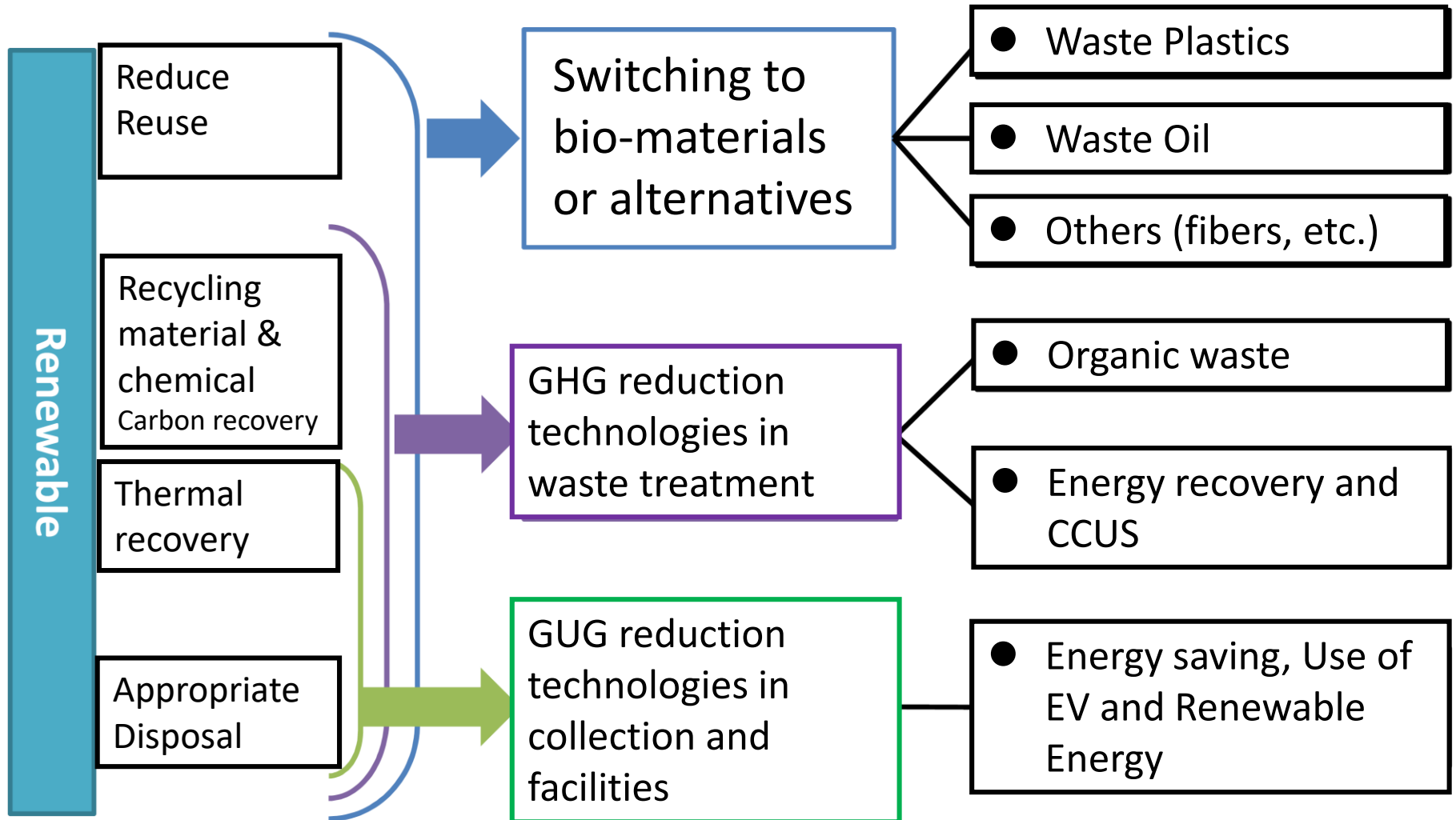
Source: MOE

Countermeasures to Net Zero

【3R+Renewable】

【 Direction 】

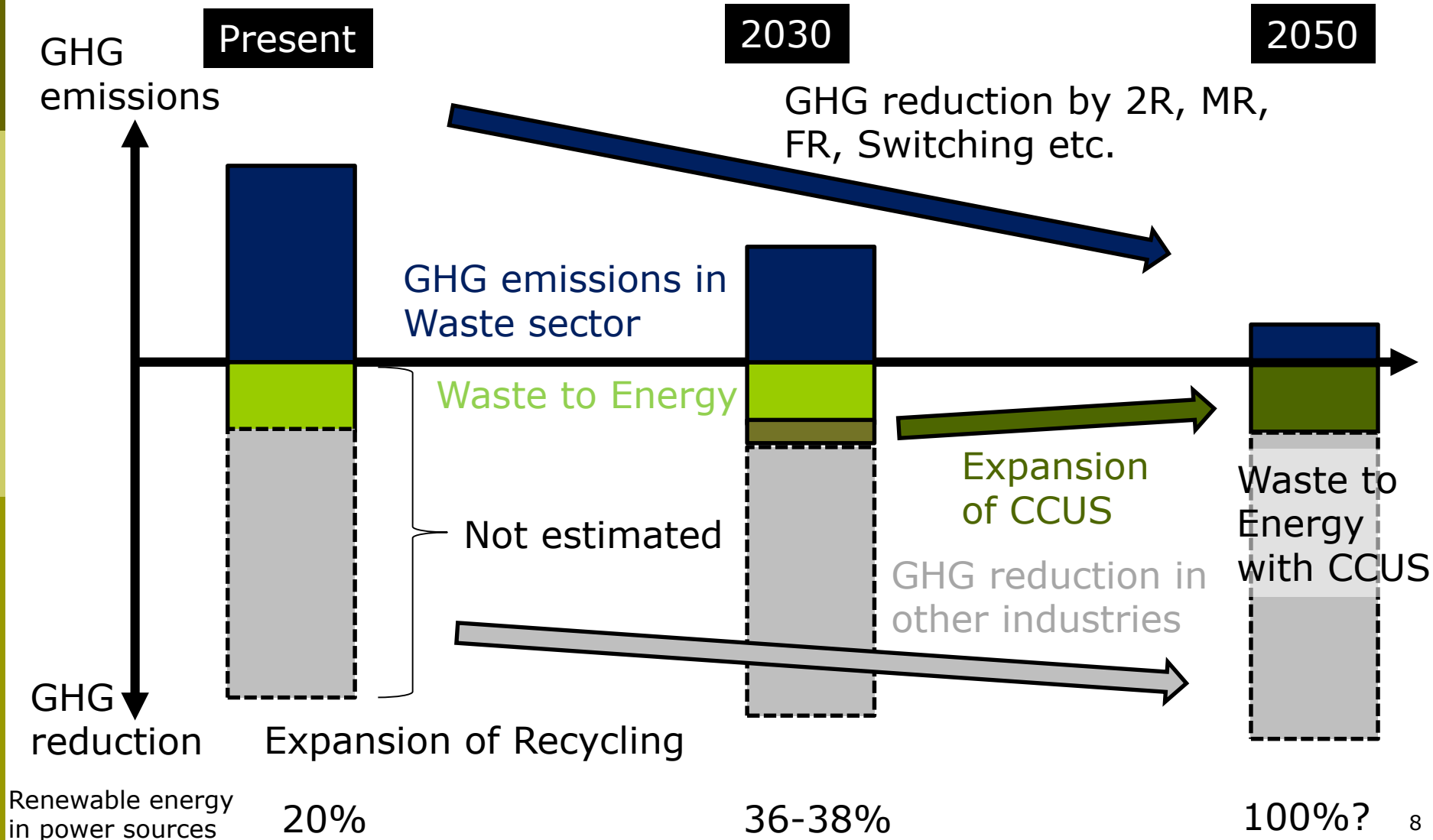
【 Key area 】



Source: MOE

Basic Concept of Net Zero in Waste Sector

Source: MOE

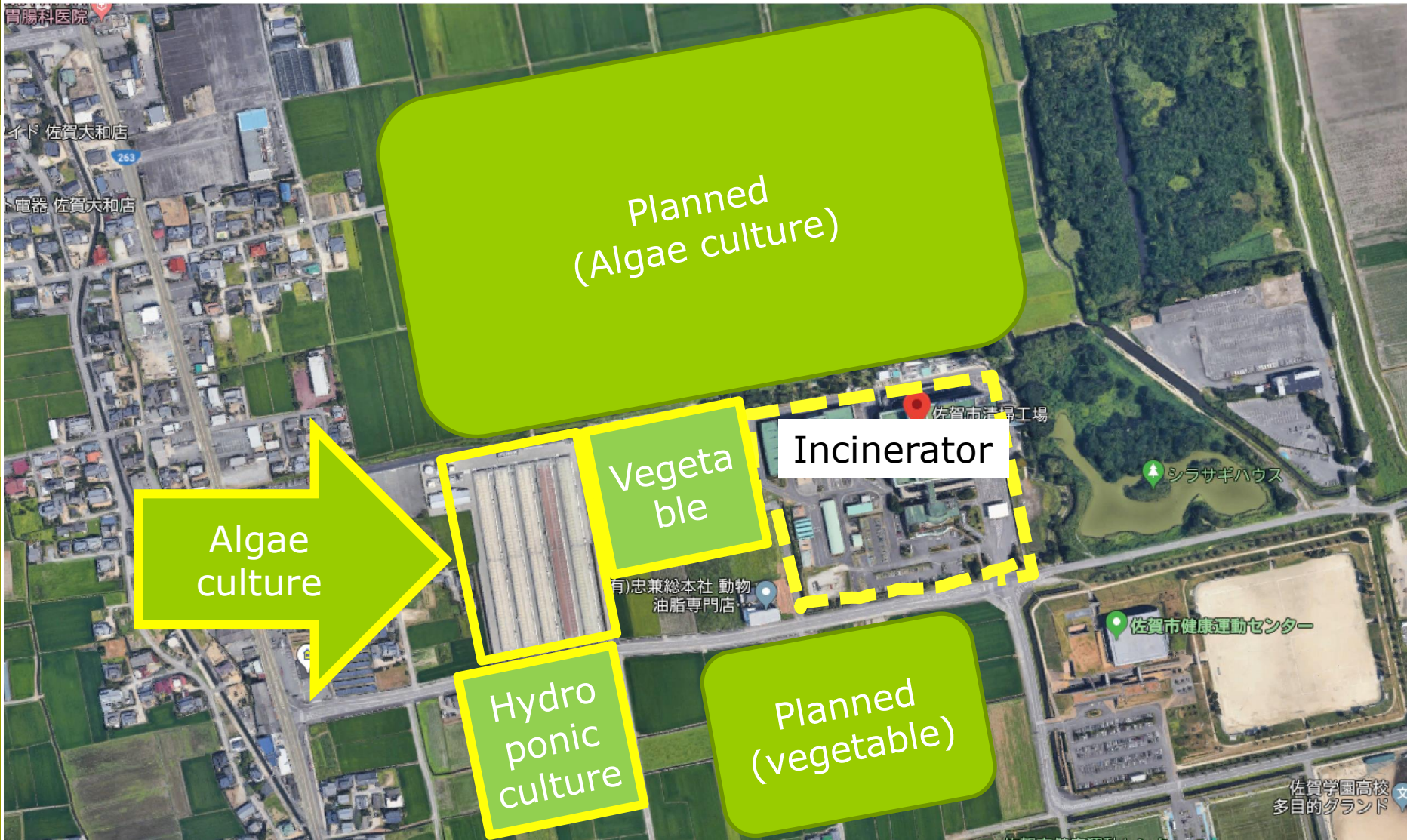


Waste to Energy + CCU (Saga)



- ❑ Saga City in 2016
- ❑ 300t/day stoker type
- ❑ 10t/day CO₂ recovery

Agricultural Use = No Longer NIMBY



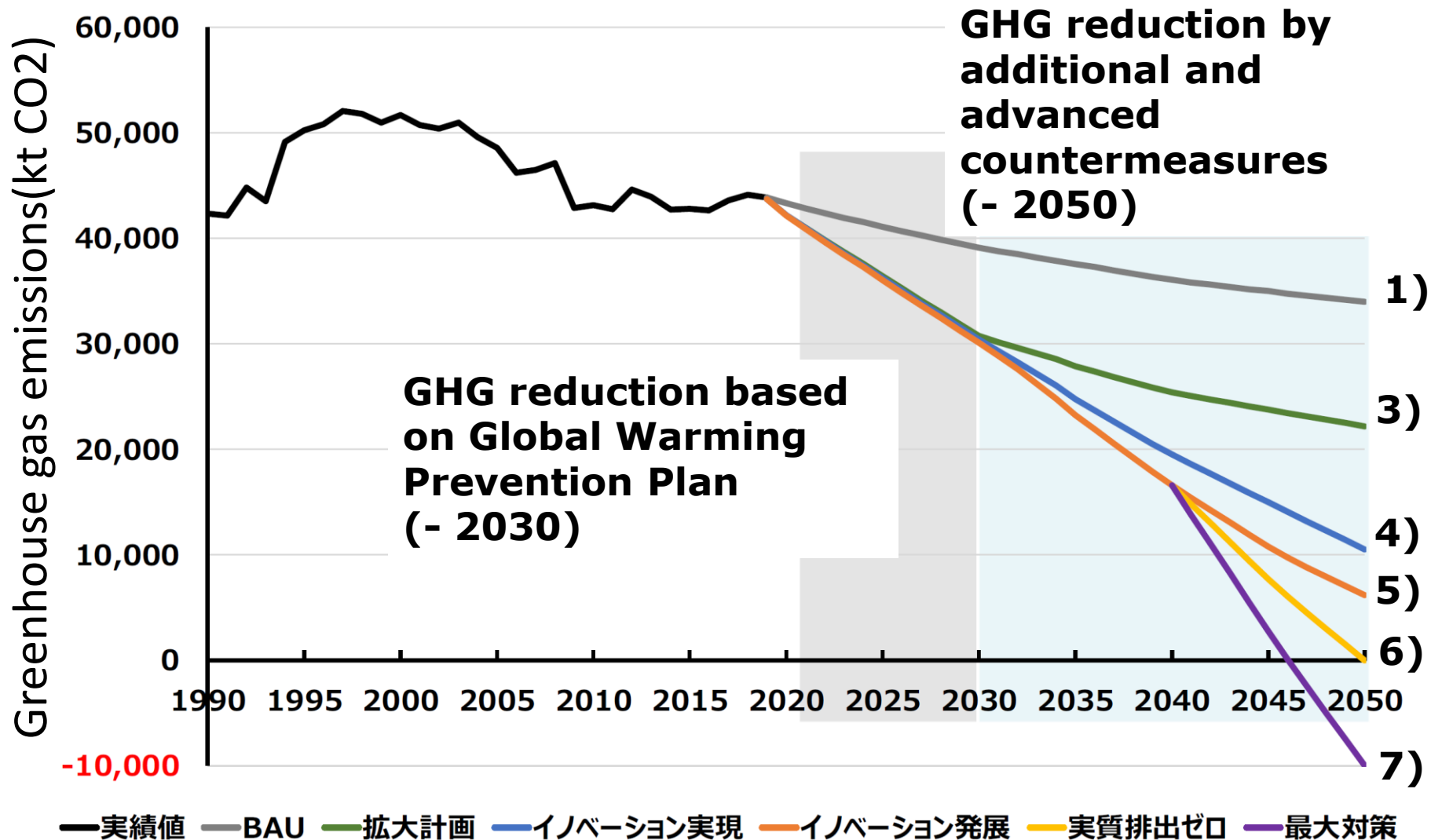
GHG Reduction Scenarios in Waste Sector

Source: MOE

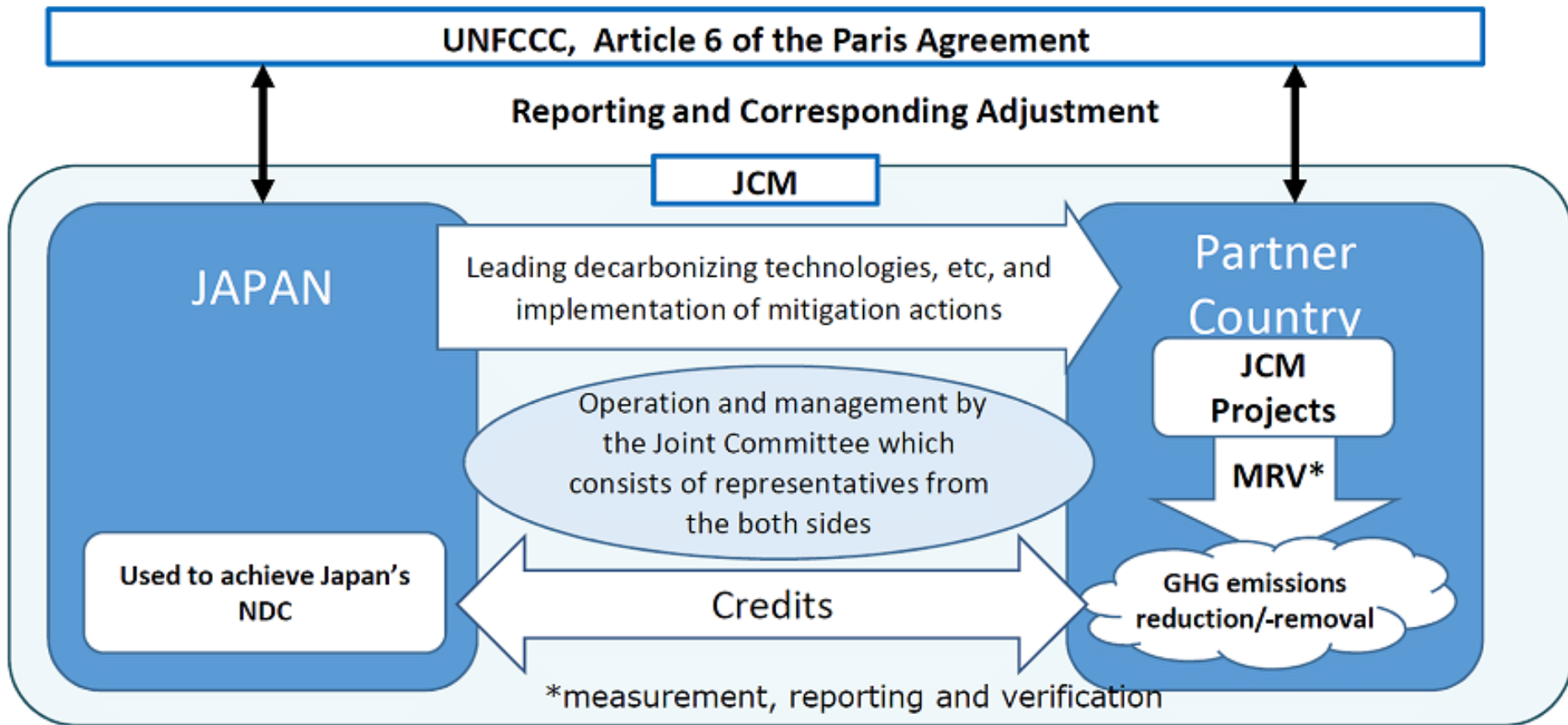
GHG reduction scenarios	GHG emissions in 2050 (thousands t-CO ₂)			
	Non energy – originated CO ₂	Energy originated CO ₂	CCUS	Total
1) BAU	29,602	4,367		33,968
2) Planned scenario based on existing goals, strategies and plans	20,270	1,933	-	22,203
3) Extended planned scenario (introducing countermeasures for energy orientated CO₂ emission)	20,270	1,911	-	22,180
4) Innovation scenario (GHG reduction technologies in key area)	9,031	1,468	-	10,499
5) Extended innovation scenario (Future GHG reduction technologies in key area)	6,164	0	-	6,164
6) Net zero scenario	6,164	0	-6,164	0
7) Maximum CCUS scenario	6,164	0	-16,138	-9,975

Timeline of Introduction of Countermeasures

Source: MOE



Bilateral Collaboration (The Joint Crediting Mechanism: JCM)



Start from 2013
17 countries:199 project @June 2019

Waste to Energy Projects

Power generation and avoidance of landfill gas emissions through combustion of municipal solid waste

Introduction of Waste to Energy Plant in Yangon City, Myanmar (2015)

Representative P: JFE engineering
Partner Participant: Yangon City Development Committee

Waste to Energy Project in Bac Ninh Province, Vietnam(2021)

Representative P: JFE engineering
Partner Participant: T&J Green Energy Company Limited



Waste to Energy Incinerator
(Grate)
Manufactured by Standard-
Kessel Baumgarte (Germany)

Processing Volume:
500t/day

(Municipal solid waste
350t/day and industrial
solid waste 150t/day)

Conclusions & Future challenges

- ❑ Waste to Energy is a promising option for preventing global warming in waste sector.
- ❑ The effective countermeasures for waste plastic and waste oil are essential for GHG reduction in Waste sector.
- ❑ The basic concept of net zero in waste sector was proposed and the strategy for carbon neutrality in this sector has been discussed.
- ❑ Seven basic scenarios have been considered and the GHG reductions based on the scenarios have been estimated.
- ❑ Even if various countermeasures are applied, the capture of 6.2 millions of CO₂ will be required to achieve net zero in 2050.
- ❑ JCMs scheme can be used for the diffusion of WtE.
- ❑ The future challenges are development of advanced GHG reduction technologies and cost allocation, etc.

Thank you for your kind attention!