

Training Workshop on the National System for the Greenhouse Gas Inventory
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NATIONAL GHG INVENTORY SYSTEM



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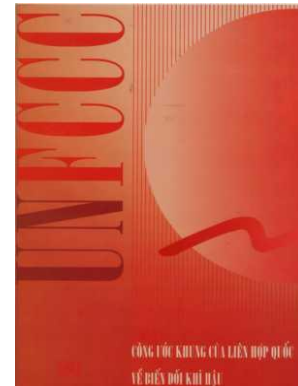
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General Information

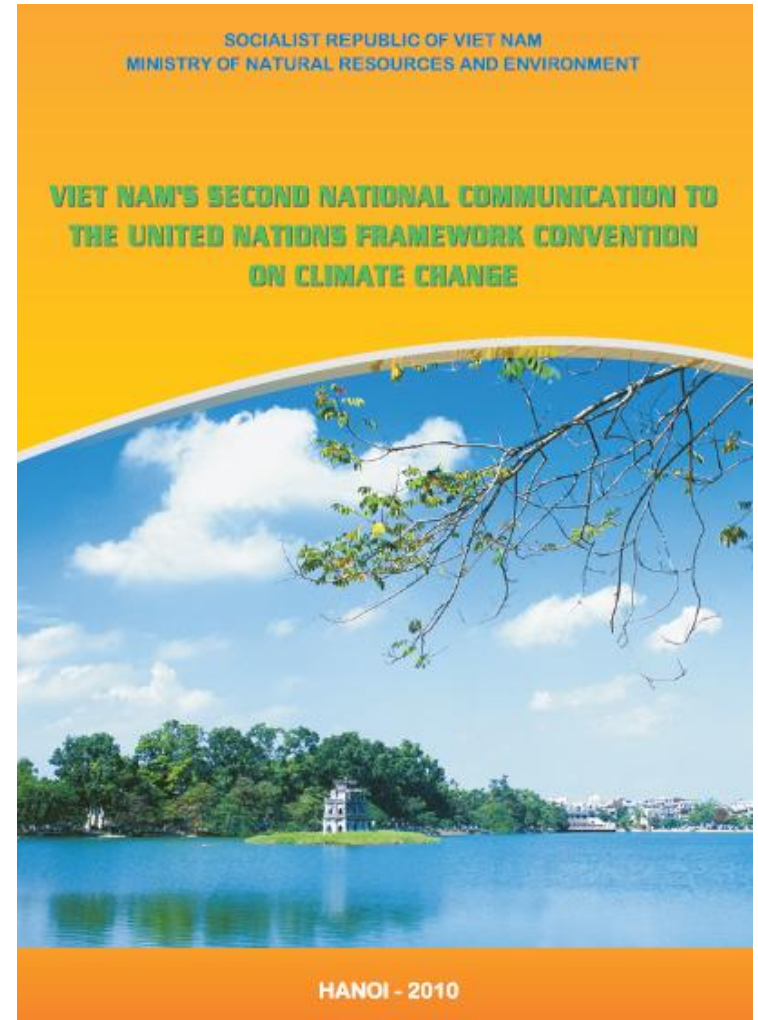
✓ Vietnam signed United Nations Framework Convention on Climate Change (UNFCCC) on 11 June 1992 and ratified it on 16 November 1994. Viet Nam also signed Kyoto Protocol (KP) on 03 December 1998 and ratified it on 25 September 2002.

✓ Vietnam is not required to reduce greenhouse gases (GHG) emission but to implement some common obligations, such as preparing its National Communications, carrying out GHG inventory, developing and assessing GHG mitigation and climate change adaptation options.

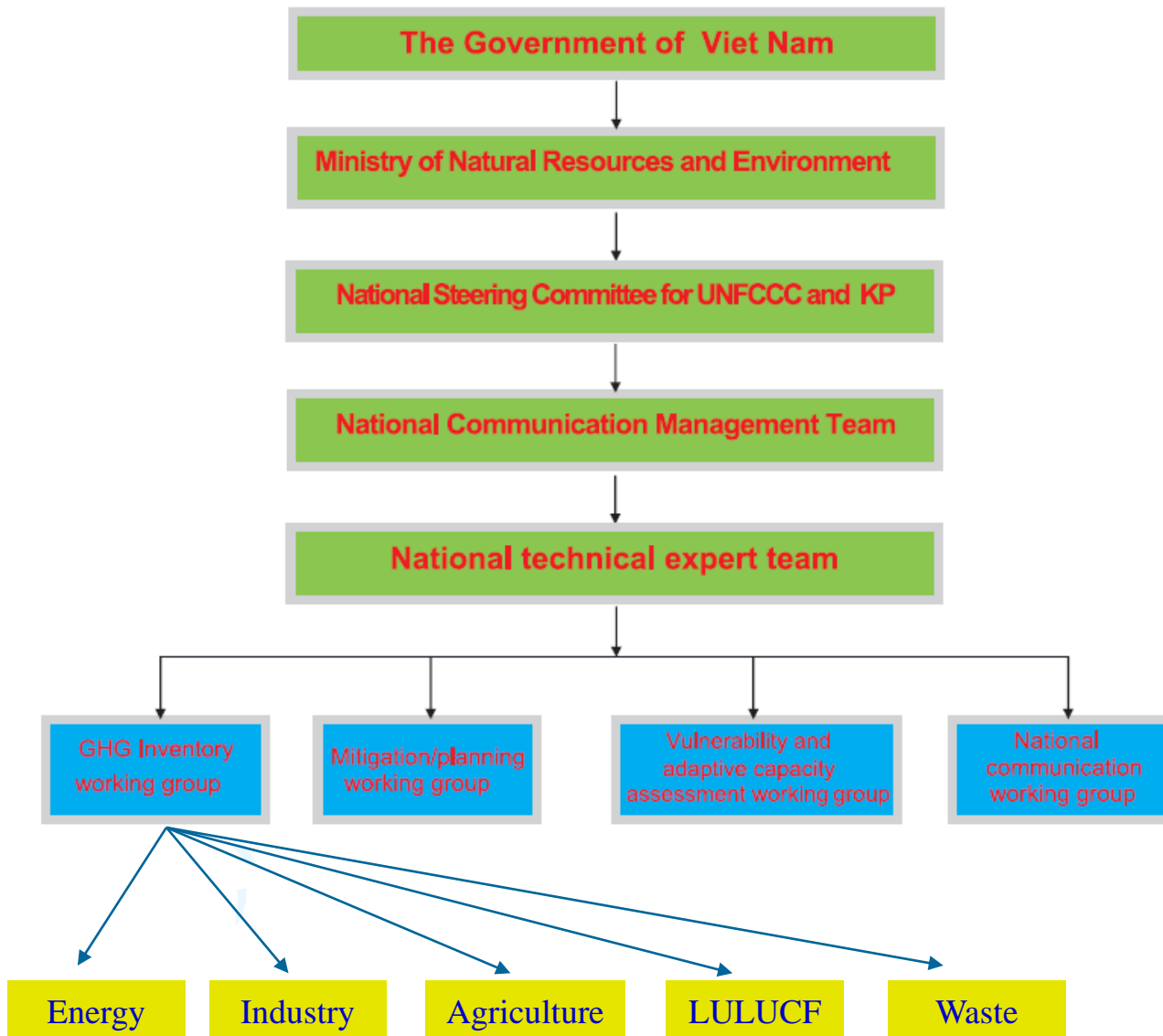


General Information

- ✓ Vietnam completed the development of the 2nd National Communication to the UNFCCC and submitted it to the UNFCCC Secretariat at the COP 16.
- ✓ It provides information on the national GHG inventory in 2000, analyses and assesses impacts of climate change, and recommends a number of feasible options for the adaptation to climate change and the mitigation of GHG emission in some major economic sectors in the near future.



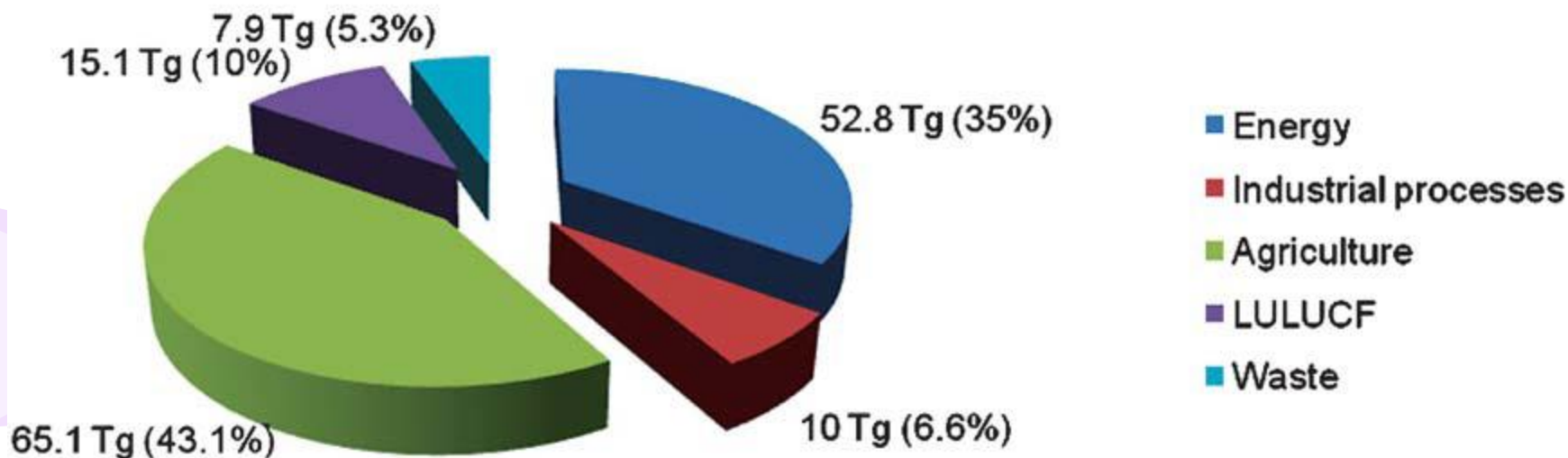
National GHG Inventory System



Institutional arrangement for national GHG Inventory

National GHG Inventory System

- ✓ The national GHG inventory for the year 2000 was conducted in accordance with the Revised Guidelines of IPCC for energy, industrial processes, agriculture, LULUCF, and waste sectors, with respect to the most important GHGs: CO₂, CH₄ and N₂O.
- ✓ Total GHG emissions in 2000 amounted to 150.9 million tonnes of CO₂ equivalent.



Projections of GHG emission from three main sectors for 2010, 2020 and 2030 (million tonnes of CO₂ eq.)

High scenario

Sector	2010	2020	2030
Energy	113.1	251.0	470.8
Agriculture	65.8	69.5	72.9
LULUCF	-9.7	-20.1	-27.9
Total	169.2	300.4	515.8

Medium scenario

Sector	2010	2020	2030
Energy	110.4	224.4	387.2
Agriculture	65.8	69.5	72.9
LULUCF	-9.7	-20.1	-27.9
Total	166.5	273.8	432.2

GREENHOUSE GAS EMISSION MITIGATION OPTIONS

- ✓ Based on the identification of GHG sources and sinks, GHG mitigation options were developed for three main sectors: energy, agriculture and LULUCF.
- ✓ 28 GHG mitigation options were developed and assessed which included 15 options for the energy sector (including transportation), 5 options for the agriculture sector and 8 options for the LULUCF sector.



Mitigation options in the energy sector

Option E1: Innovative coal stoves

Option E2: Replacing coal with LPG in household cooking

Option E3: High-efficiency refrigerators

Option E4: Energy-saving compact fluorescent light bulbs

Option E5: High-efficiency air conditioner

Option E6: Solar water-heating appliances

Option E7: High-efficiency electric motors

Option E8: Innovative brick kilns

Option E9: Switching from DO to CNG in transportation

Option E10: LPG-fuelled cabs

Option E11: Using high-pressure sodium lamps in public lighting

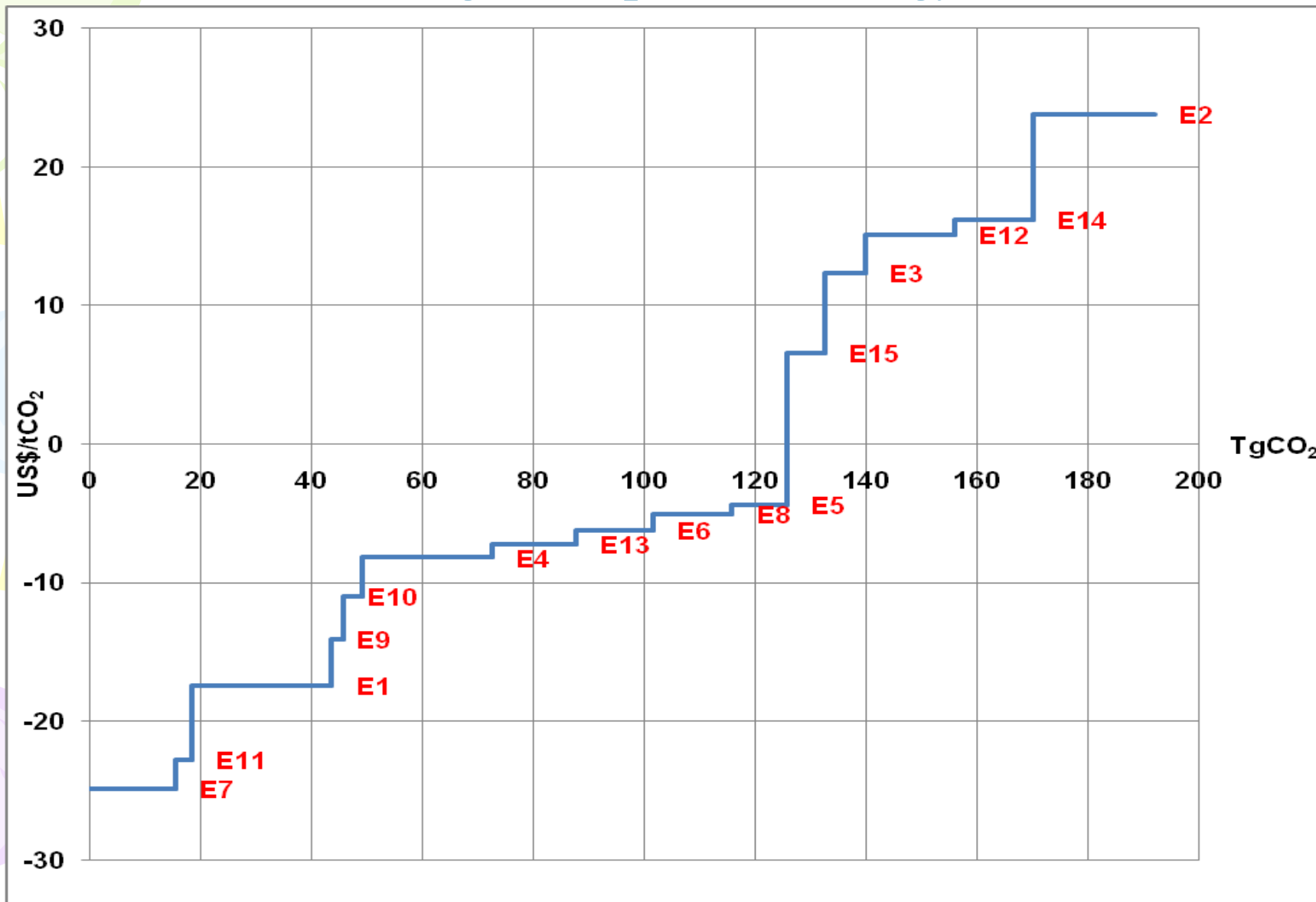
Option E12: Switching from coal-fired to LNG thermal power

Option E13: Small-scale hydropower replacing coal thermal power

Option E14: Wind power replacing coal-fired thermal power

Option E15: Rice husk power replacing coal thermal power

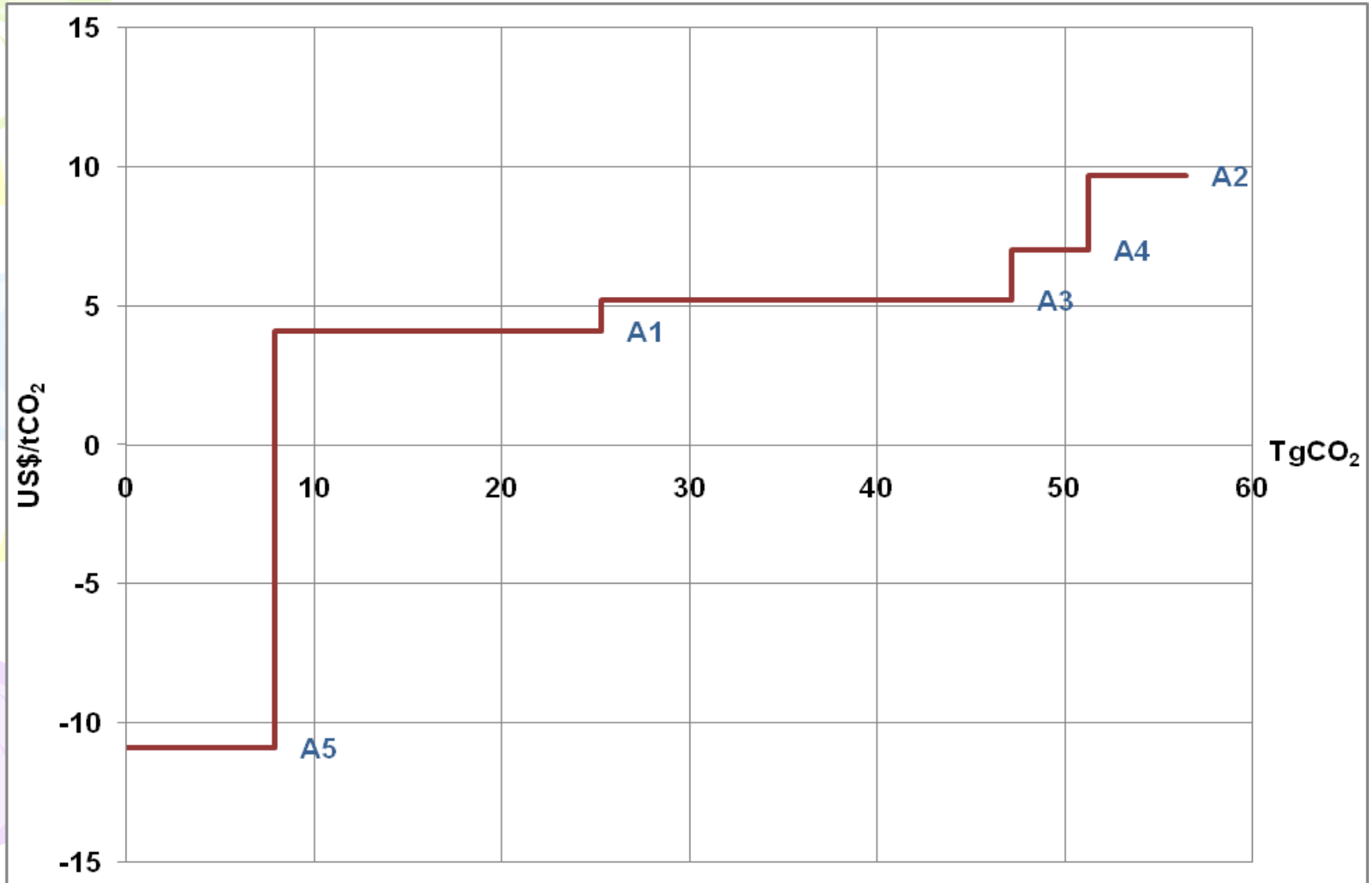
Cost of emission reduction initiatives curve for 15 mitigation options in energy



Mitigation options in the agriculture sector

- Option A1: Biogas replacing cooking coal in lowlands
- Option A2: Biogas replacing cooking coal in mountain areas
- Option A3: Rice paddy field water drainage in the Red River Delta
- Option A4: Rice paddy field water drainage in the South Central Coast
- Option A5: MUB cattle feeds

Cost of emission reduction initiatives curve for mitigation options in agriculture



GHG mitigation options in the LULUCF sector

Option F1: Protection and sustainable management of existing production forest areas

Option F2: Conservation of existing protection forests

Option F3: Reforestation of large timber forests in conjunction with natural regeneration

Option F4: Planting long-rotation large timber trees

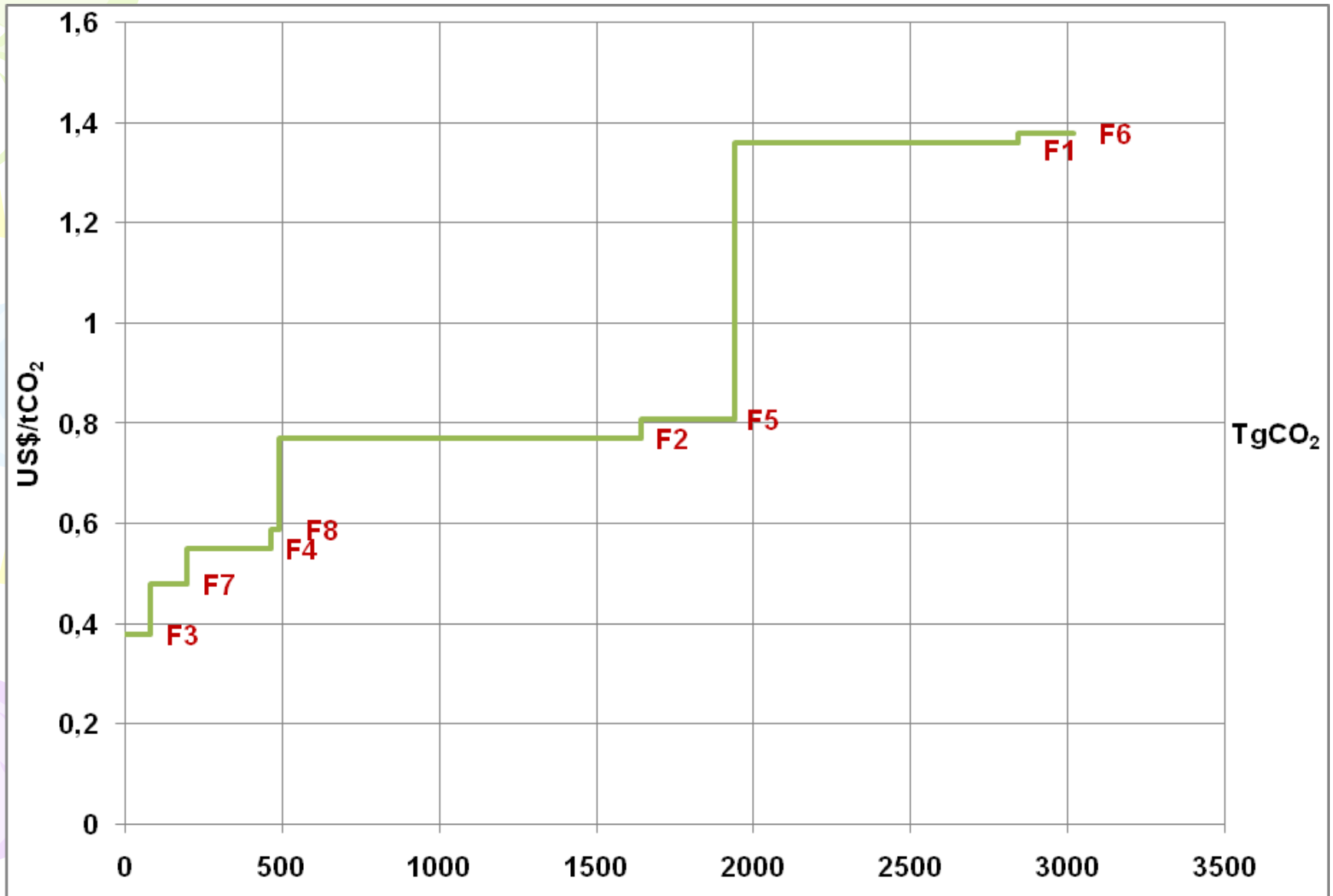
Option F5: Planting fast-growing trees for lumber

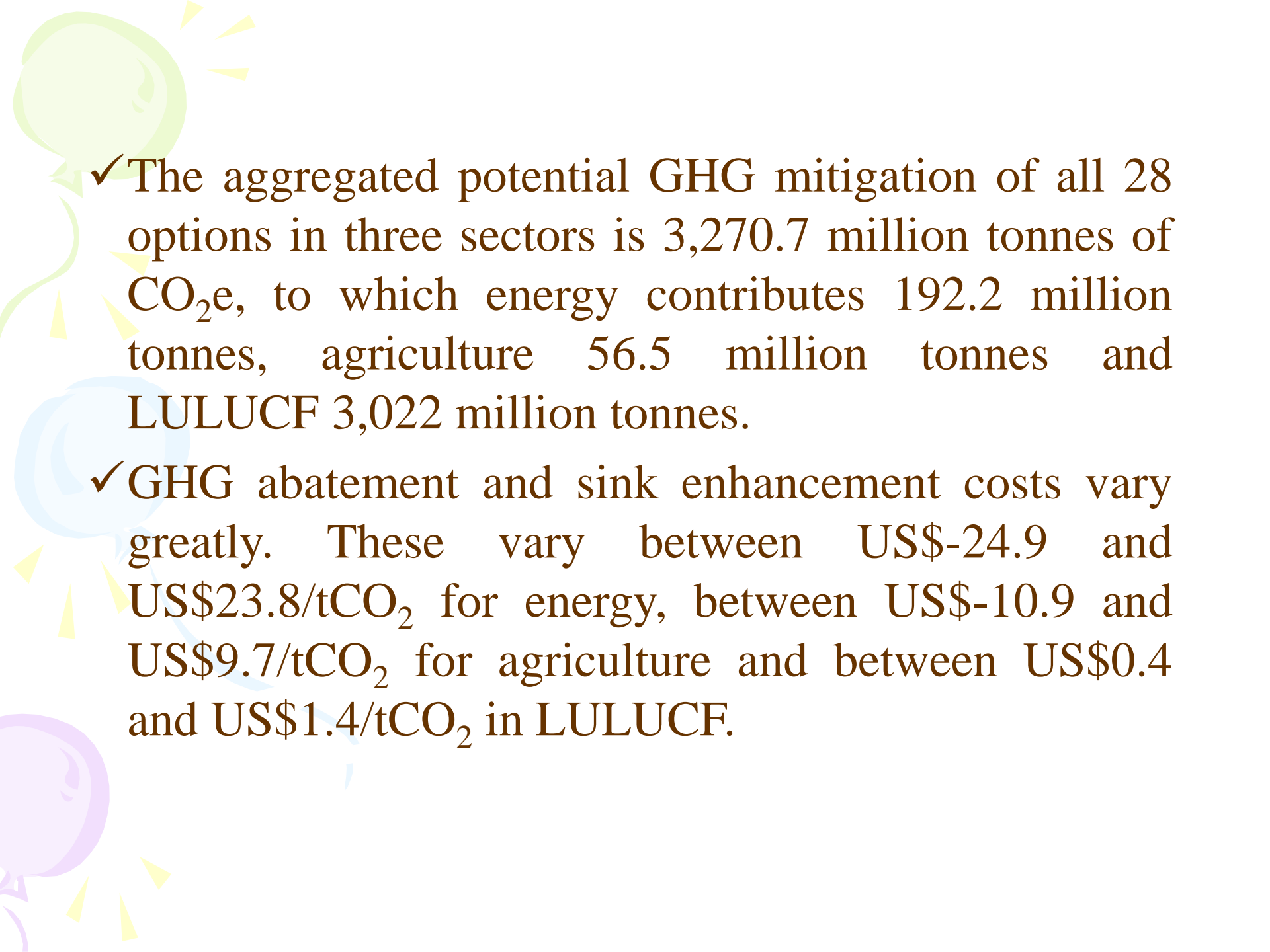
Option F6: Planting short-rotation pulpwood forest

Option F7: Growing long-rotation non-timber product forest

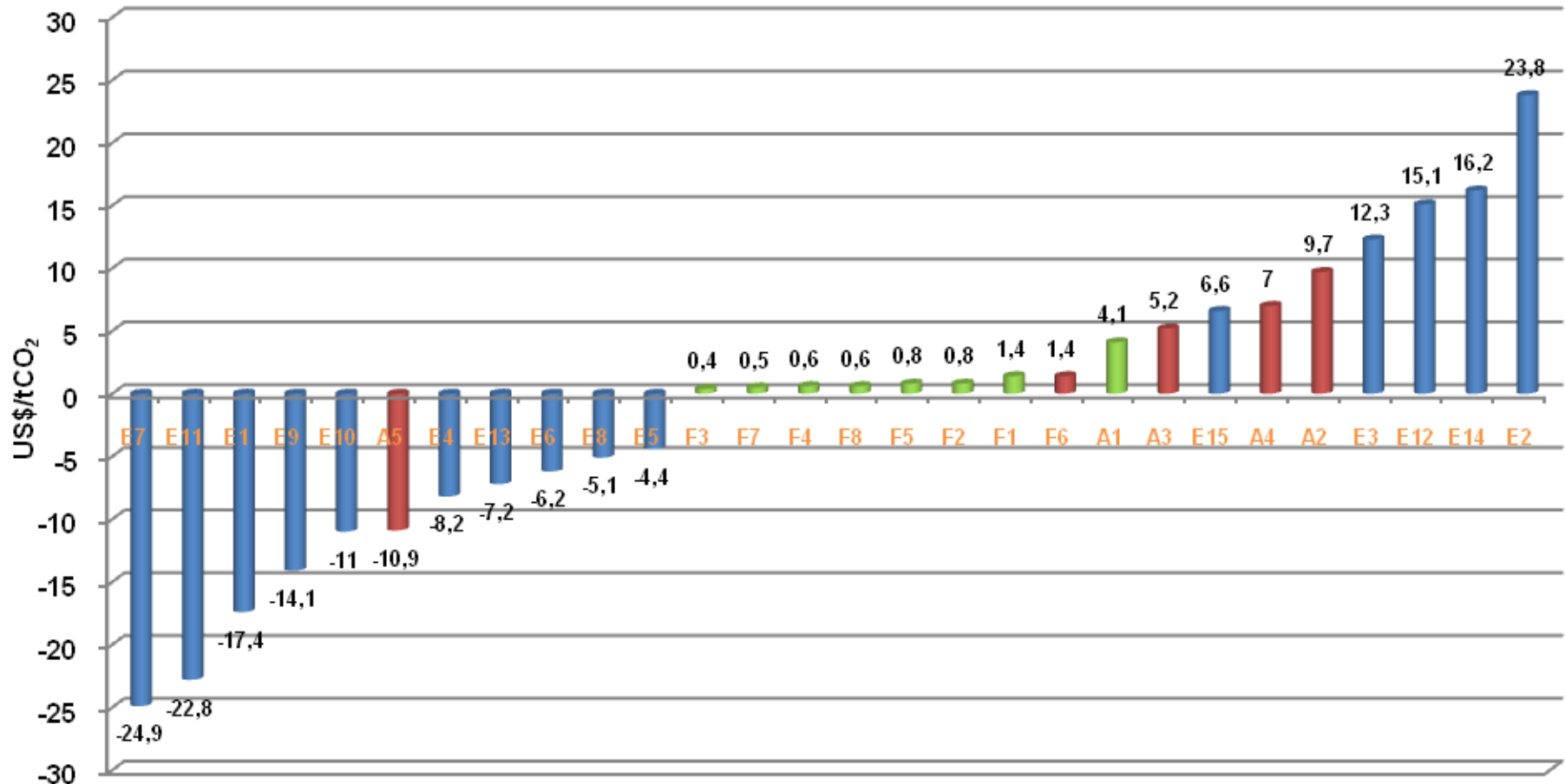
Option F8: Planting melaleuca forest on alkaline wetlands

Cost of emission reduction initiatives curve for mitigation options in LULUCF



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- ✓ The aggregated potential GHG mitigation of all 28 options in three sectors is 3,270.7 million tonnes of CO₂e, to which energy contributes 192.2 million tonnes, agriculture 56.5 million tonnes and LULUCF 3,022 million tonnes.
 - ✓ GHG abatement and sink enhancement costs vary greatly. These vary between US\$-24.9 and US\$23.8/tCO₂ for energy, between US\$-10.9 and US\$9.7/tCO₂ for agriculture and between US\$0.4 and US\$1.4/tCO₂ in LULUCF.

Mitigation potential and cost of 28 options in energy, agriculture and LULUCF



A - Các phương án trong nông nghiệp
E - Các phương án trong năng lượng
F - Các phương án trong lâm nghiệp

Some related completed tasks and projects

- ✓ National GHG inventory for 1994 for 5 main sectors: energy; industrial processes; agriculture; forestry and land use change and waste (under the INC);
- ✓ National GHG inventory for 1998;
- ✓ Asia least-costs GHG abatement strategy (ALGAS);
- ✓ UNDP/GEF – Economics of GHG limitations - phase 1: establishment of methodology to assess climate change mitigation;
- ✓ Promotion of renewable energy efficiency and GHG emission abatement in Viet Nam (PREGA);
- ✓ National GHG inventory for 2000 (under the SNC);
- ✓ Calculate the total national GHG emissions to 2020 and 2025 and potentiality to change CDM in Vietnam for Master Plan IV.

Some on-going tasks and projects

- ✓ Global technology need assessments – initial phase funded by UNEP;
- ✓ Capacity Building for National Greenhouse Gas Inventory in Vietnam funded by Jica (completing the national procedures for project approval);
- ✓ Investigate and assess the total national GHG emission from cement production in Vietnam and research the potentiality to change to CDM of it for the period 2010-2020;
- ✓ National GHG inventory for 2008 (MONRE is considering for approval to implement this task in 2011);
- ✓ National Targeted Programme to response to climate change of Vietnam (including the development of the technologies to mitigate GHG emission and technologies to adapt to climate change

Limitations and constraints in national GHG inventory

- ✓ Related information and activities data for GHG inventory are inadequate, with built-in uncertainties and data management lacks coherence.
- ✓ The data collection process is slow. Data verification and validation are not undertaken on a continuous basis.
- ✓ The data collection system for greenhouse gas inventory is incomplete. A focal agency responsible for the national inventory's data collection, analysis, verification and update has not been established or designated.
- ✓ Research, assessment and verification for certain country-specific emission factors remains incomplete.
- ✓ A database supporting the inventory is not yet available.
- ✓ There is an inadequate pool of greenhouse gas inventory technical experts in the ministries and agencies. Inter-agency coordination remains to be desired.

Improvement Plan

- ✓ National GHG inventories have been produced for a comparatively short time with limited resources and expertise. Emissions processes are pervasive and complex and, consequently, emissions estimation techniques and data sources for the Vietnam inventory are still inadequate, particularly in some sectors.
- ✓ It is needed to develop the National Program for improving GHG inventories. The improvements will turn on both the development of activity data and emission factors.
- ✓ This program is aimed at reducing existing emission estimate uncertainties as much as possible, with development focused on key source categories, sources with high uncertainties.



THANK YOU VERY MUCH
FOR YOUR ATTENTION

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