

A photograph of an industrial facility with various pipes, valves, and machinery, overlaid on a dark grey diagonal shape.

GHG ABATEMENT ROADMAP FOR THE INDUSTRIAL SECTOR IN THAILAND

LINDEE WONG

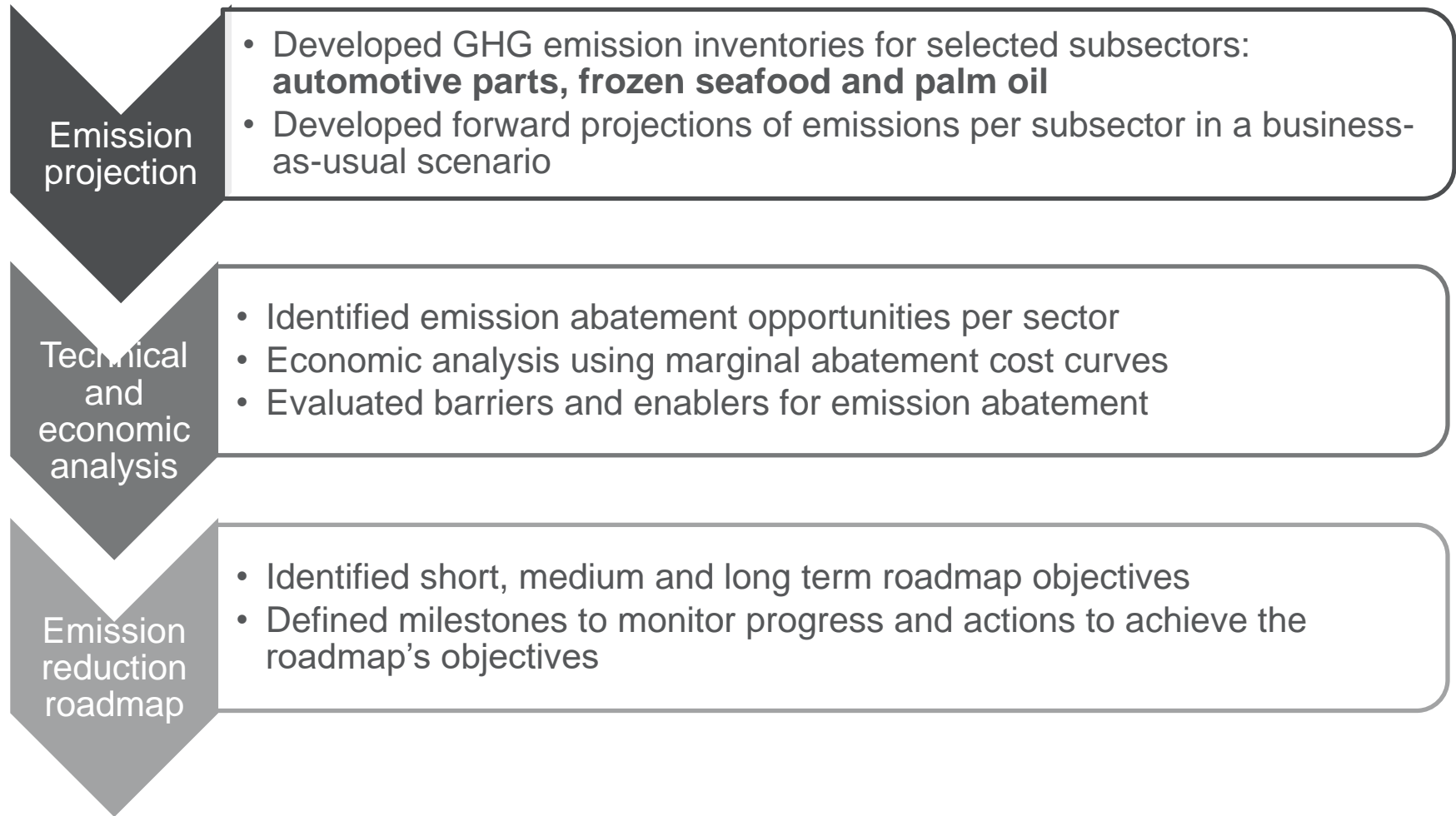
2 NOVEMBER, 2017

IEPPEC 2017 THAILAND

ECOFYS

A Navigant Company

APPROACH TO DEVELOPING AN EMISSION REDUCTION ROADMAP

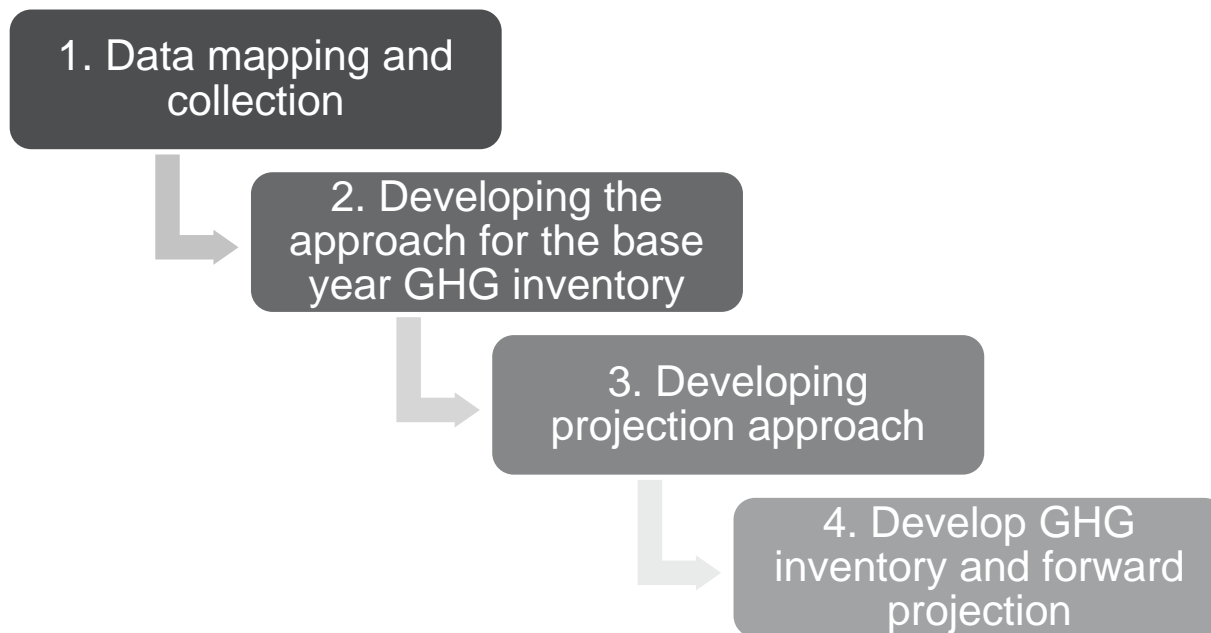


STEPS TO DEVELOP THE EMISSIONS BASELINE

For each sub-sector:

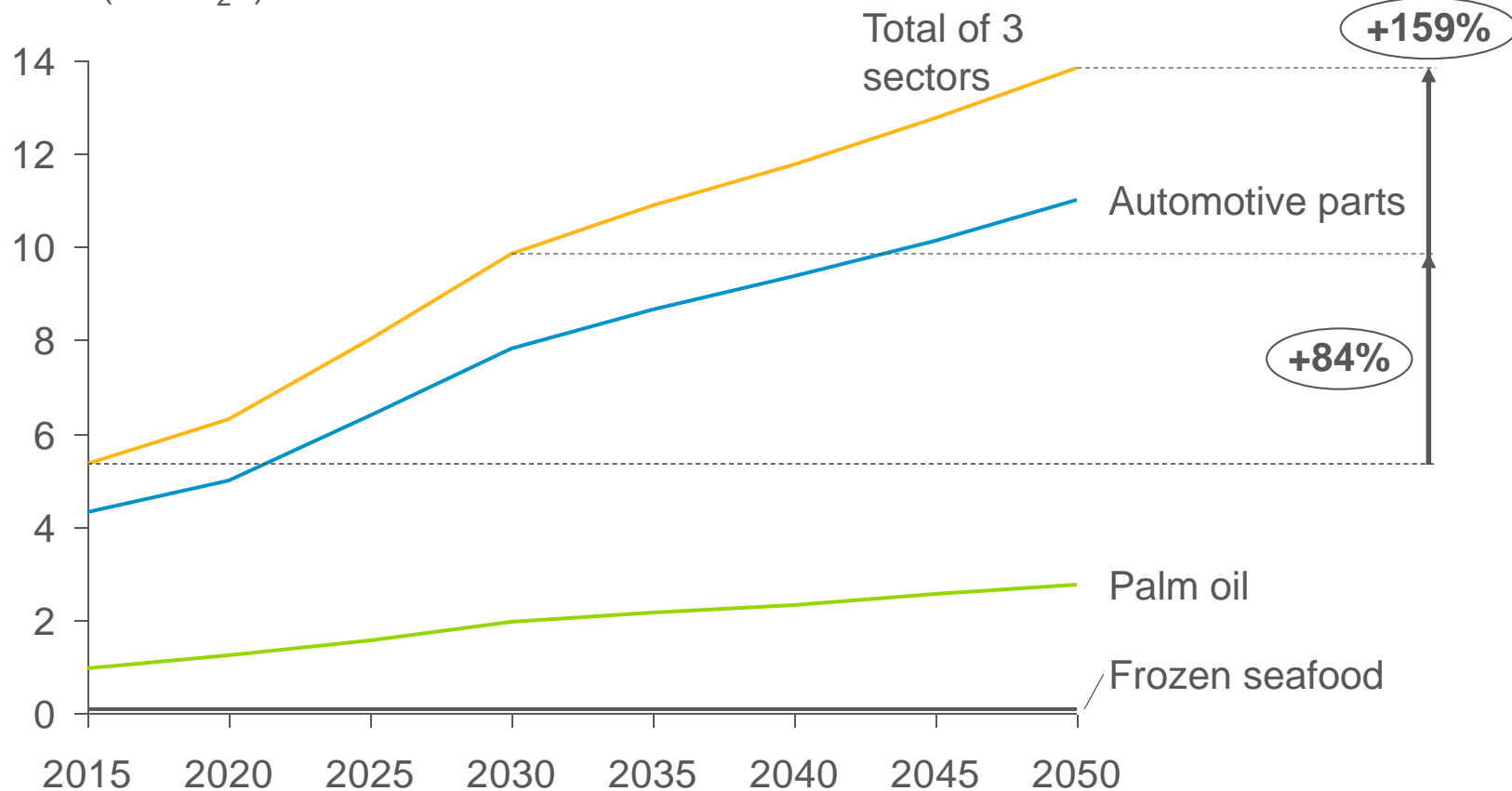
- Improve existing GHG inventories (data and understanding of emissions is limited)
- Review existing emission projections
- Develop new business as usual projections

Steps:



SUBSTANTIAL BASELINE GROWTH IN EMISSIONS FROM THESE SECTORS WERE PROJECTED

Emissions (MtCO₂e)



- Total emissions was approximately 5% of total manufacturing emissions

3 CATEGORIES OF EMISSION REDUCTION MEASURES WERE CONSIDERED

Increasing energy efficiency

- Good housekeeping and energy management
- Technical changes: crosscutting measures, sector specific measures, improving the efficiency of energy conversion



Switching to low carbon energy

- Shift to energy carriers with lower carbon content
- Renewable energy



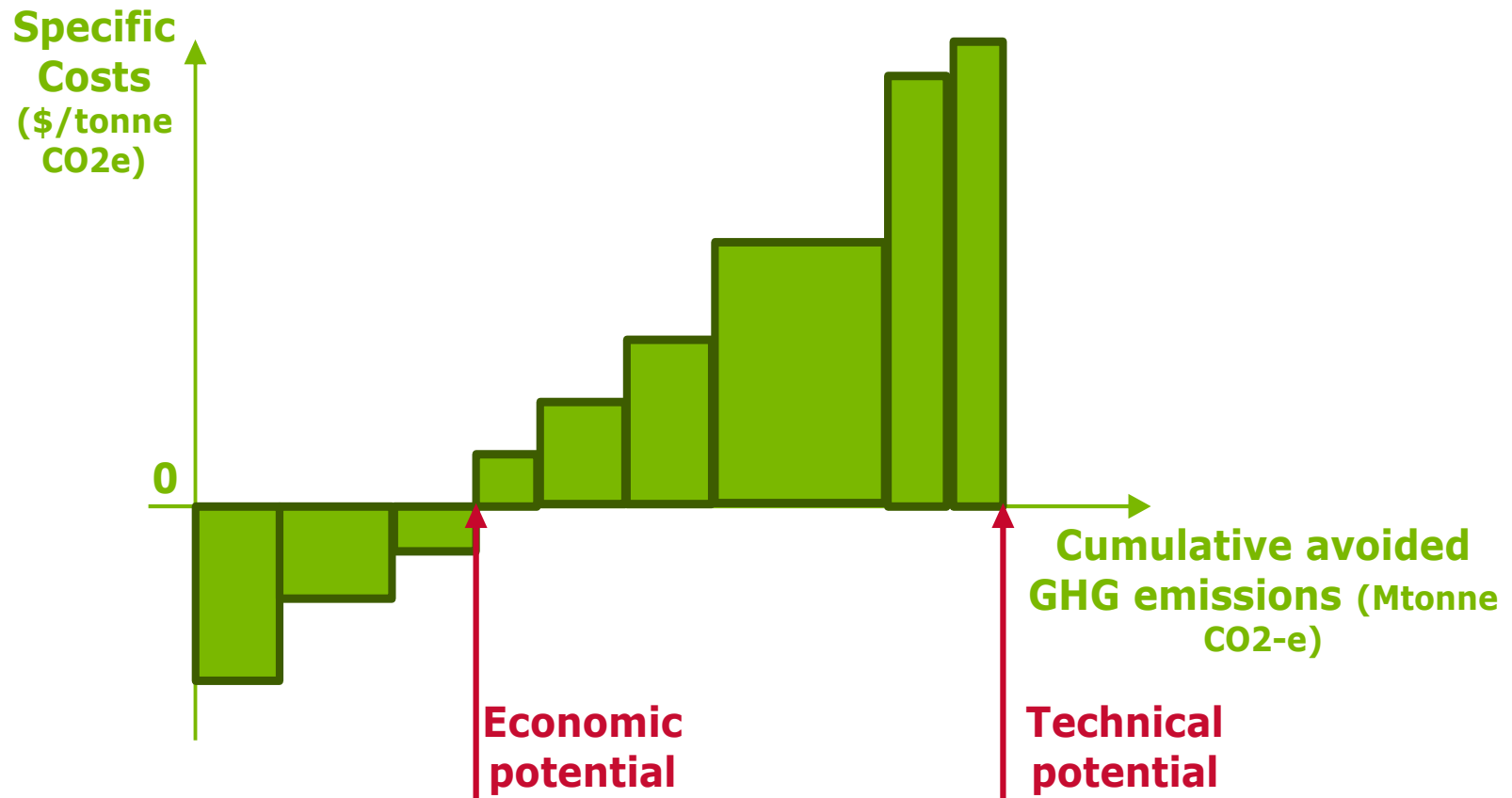
Reducing non-energy GHG emissions

- Reducing methane emissions from wastewater treatment
- Reducing HFC emissions from refrigeration



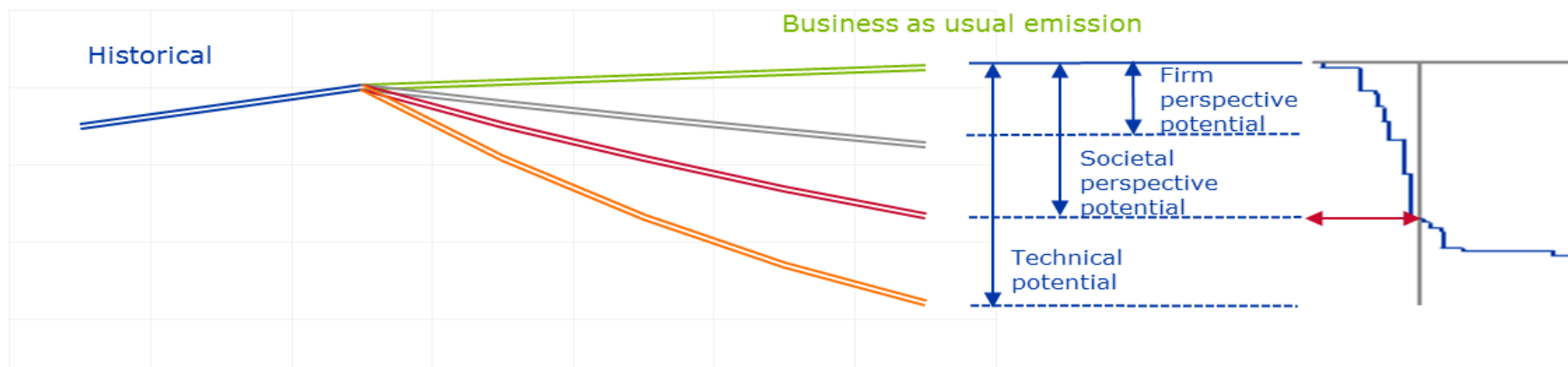
UNDERSTANDING A MARGINAL ABATEMENT COST CURVE (MACC)

- A graph that indicates the marginal cost (the cost of the last unit) of emission abatement for varying amounts of emission reduction.

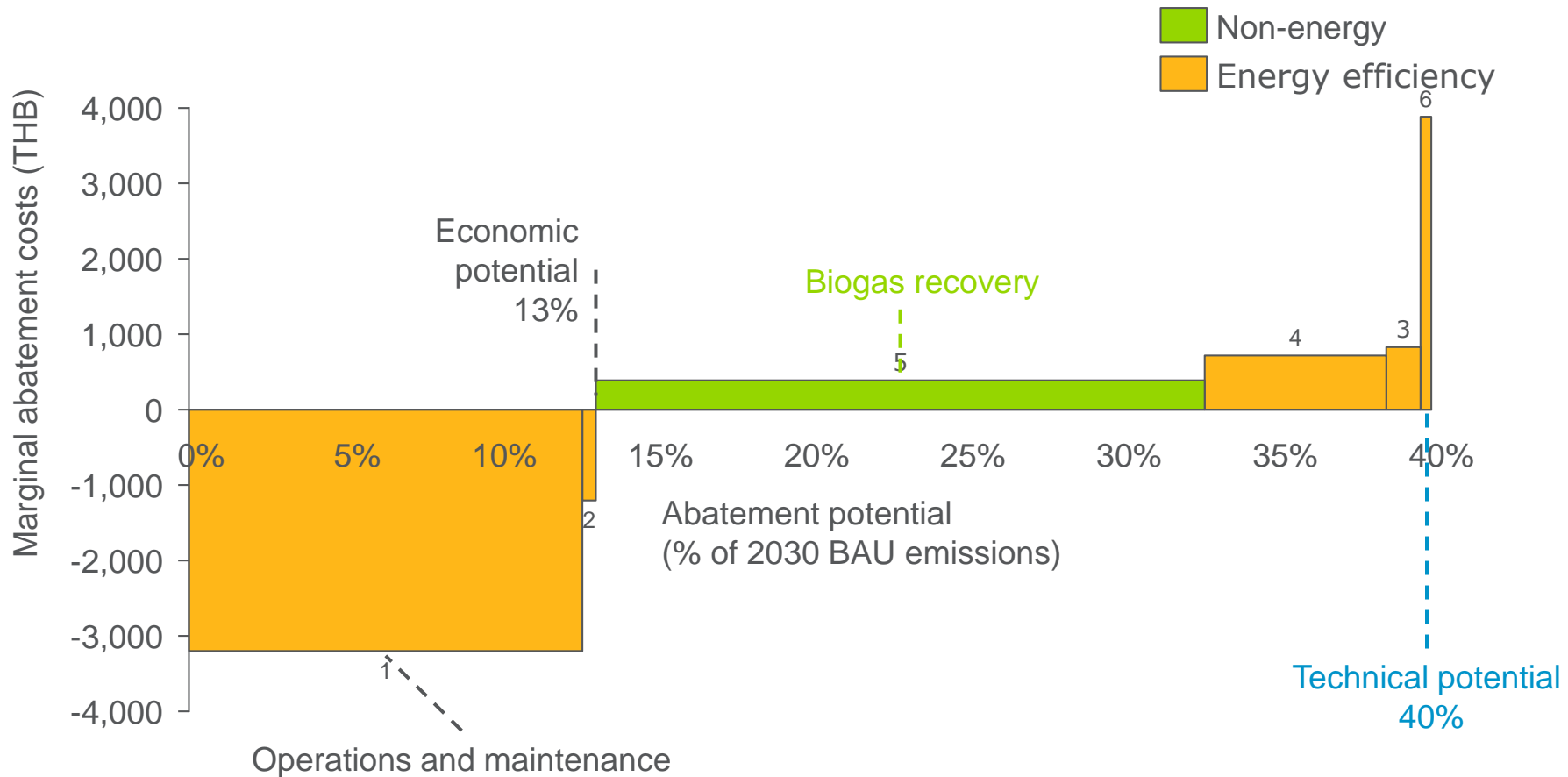


FRAMEWORK FOR SCENARIO ANALYSIS

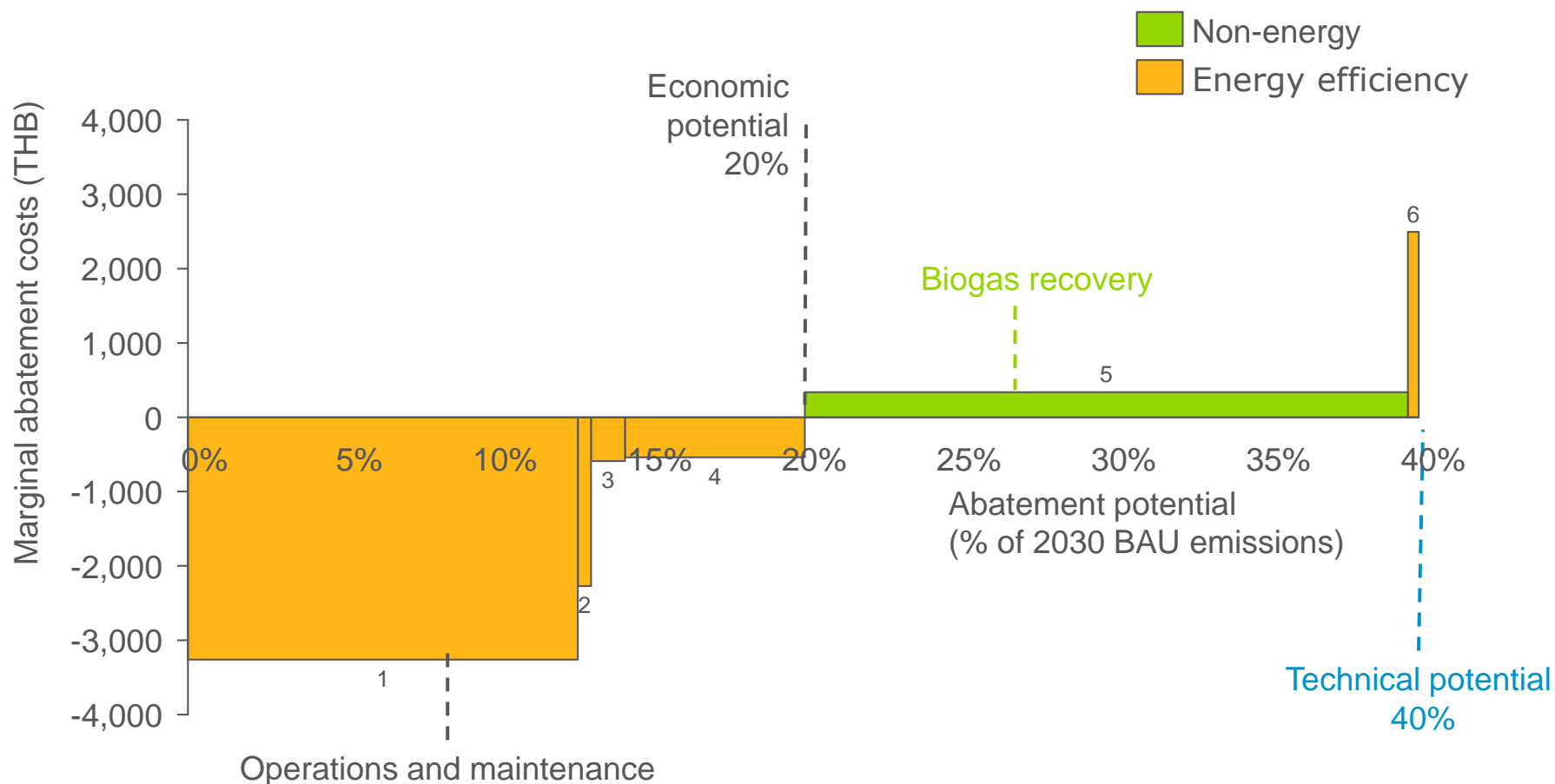
- **Business as Usual (BaU):** is the reference scenario and assumes that current policies remain the same, as do other key trends, it represents a semi-frozen technology scenario.
- **Cost effective abatement (societal perspective):** this assumes adoption of all measures that are cost effective from a societal perspective, i.e. from a total cost of ownership perspective, excluding taxes and with a low discount rate (5%).
- **Cost effective abatement (firm perspective):** assumes adoption of all measures that are cost effective from a firm perspective, but including taxes and using a commercial discount rate (12%)
- **Technical potential abatement:** which examines the technical abatement potential if cost was not an issue and maximum technical abatement potential was targeted



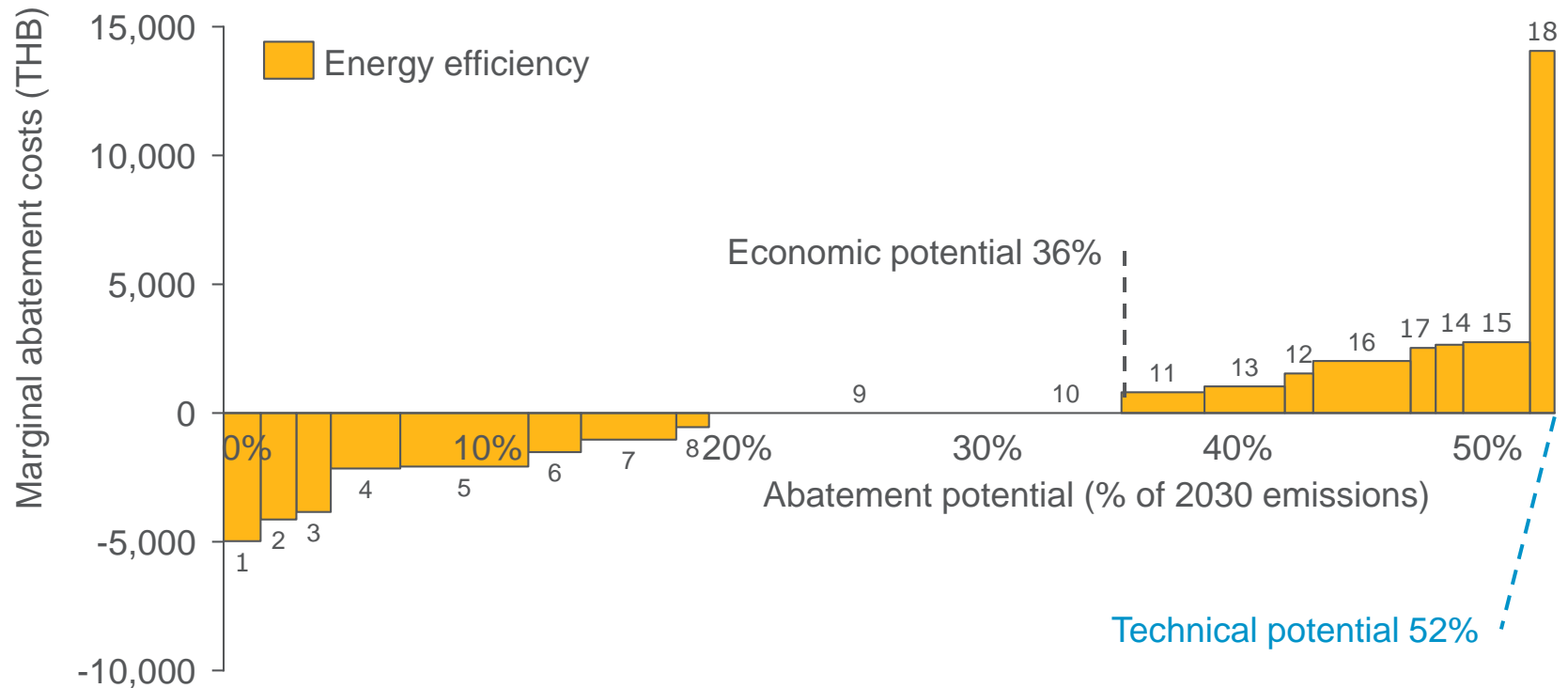
FIRM PERSPECTIVE MACC (12% DISCOUNT RATE): PALM OIL



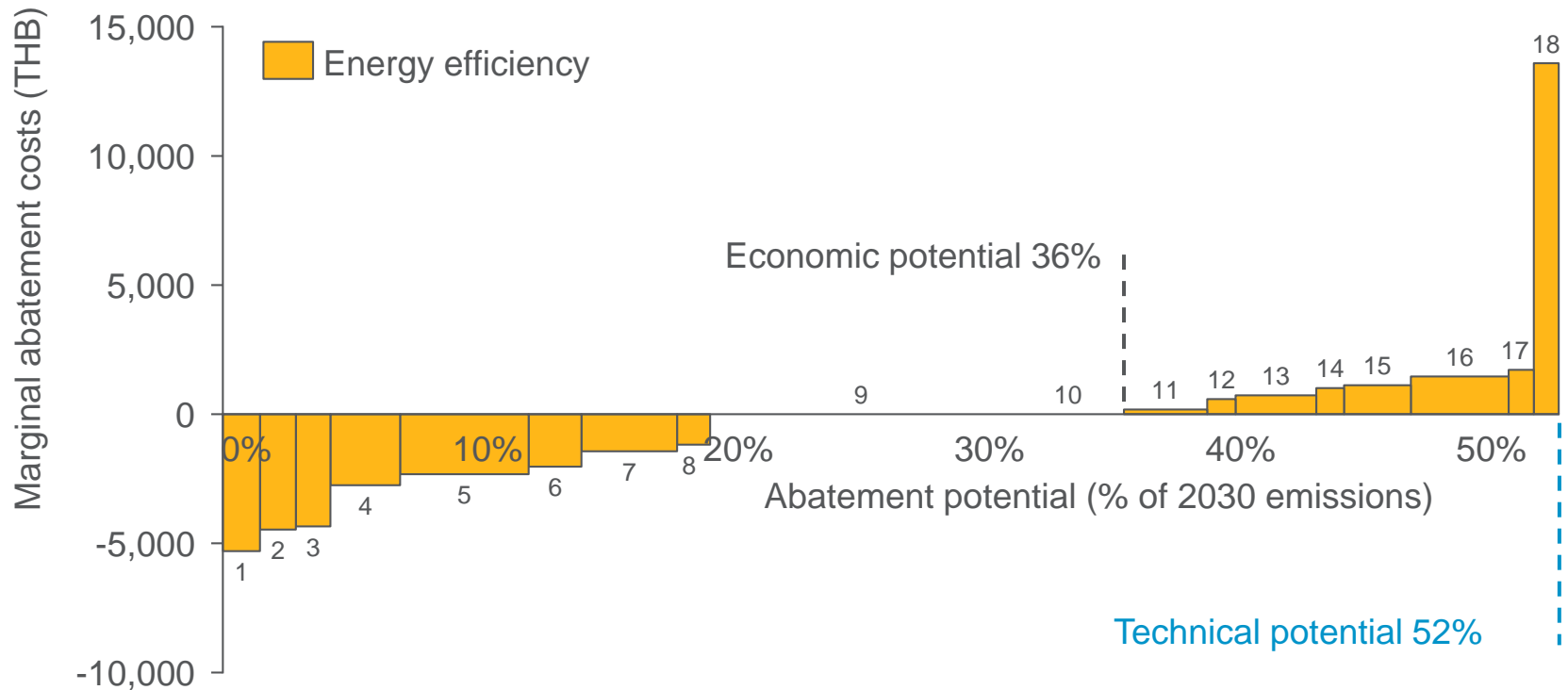
SOCIAL PERSPECTIVE MACC (5% DISCOUNT RATE): PALM OIL



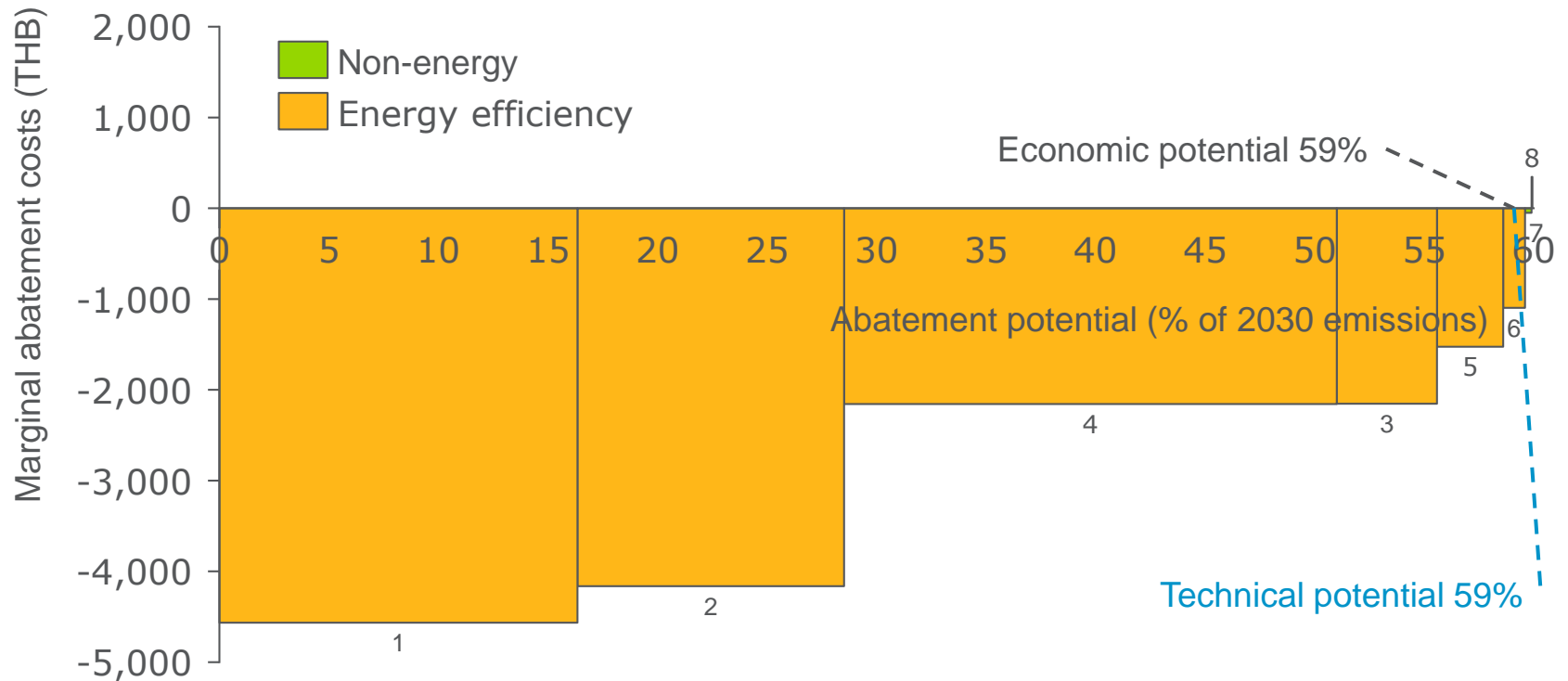
FIRM PERSPECTIVE MACC (12% DISCOUNT RATE): AUTOMOTIVE PARTS



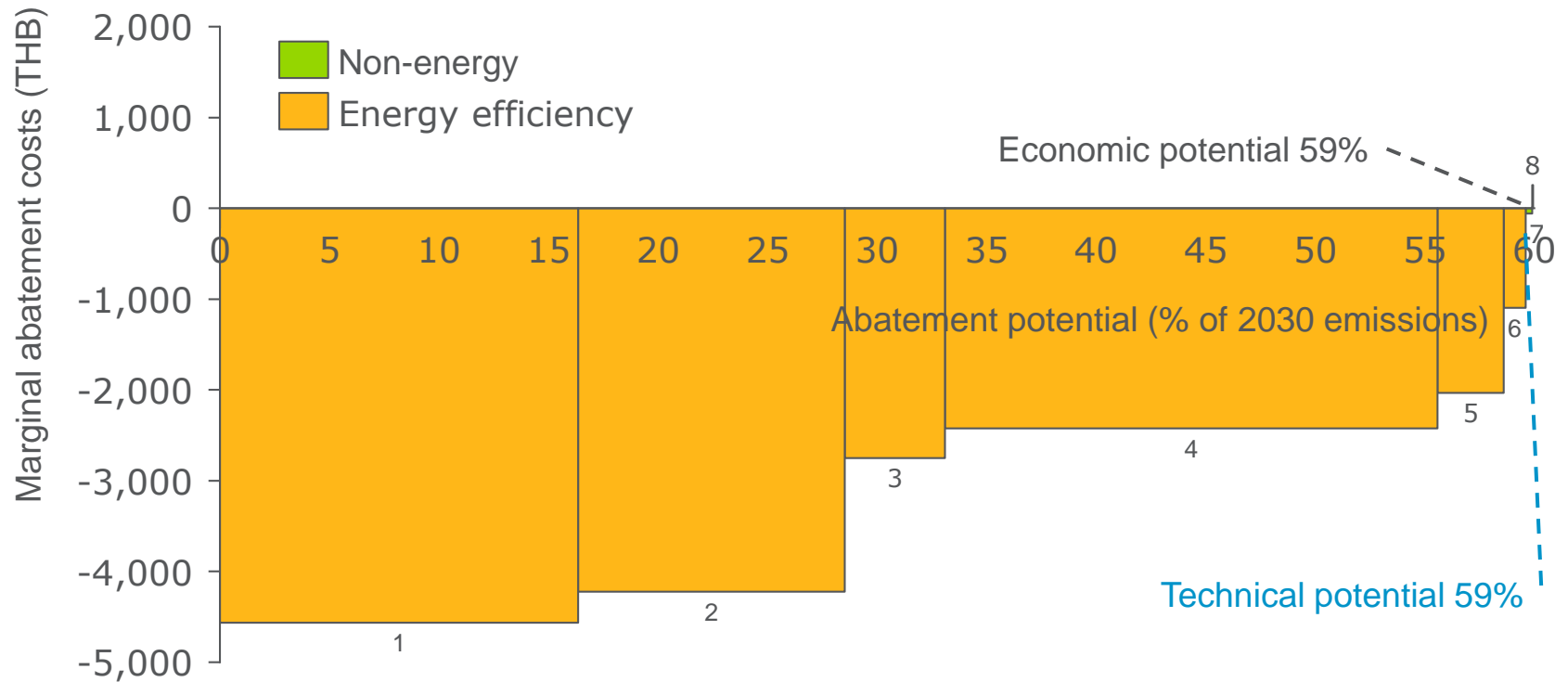
SOCIAL PERSPECTIVE MACC (5% DISCOUNT RATE): AUTOMOTIVE PARTS



FIRM PERSPECTIVE MACC (12% DISCOUNT RATE): FROZEN SEAFOOD



SOCIAL PERSPECTIVE MACC (5% DISCOUNT RATE): FROZEN SEAFOOD



BARRIERS TO THE TAKE UP OF COST-EFFECTIVE MEASURES

Barriers

- Lack of knowledge of abatement measures
- High operating costs
- Pressure of competitiveness
- Lack of government support
- Lack of vision by industry management

Solutions

- Capacity building in firms (management and operational staff) and government
- Communication and stakeholder engagement
- Developing clear policies and ensuring effective enforcement
- Financing

GHG ROADMAP IN THE FORM OF A LONG TERM AGREEMENT FRAMEWORK IS RECOMMENDED

- Findings from the study:
 - Data and understanding of emissions is limited
 - Responsibilities for climate change are split – not always effective
 - Laws and regulations exist, several agencies implementing plans and programmes
 - A wide range of barriers are perceived – financial and non-financial
- LTAs are therefore suited to Thailand because of:
 - Reduced costs and complexity to govt. and industry to implement
 - Potential opposition to mandatory / obligatory approach
 - Build on existing (DEDE) programmes
- Example LTAs include:
 - The Netherlands – LTAs for energy efficiency, which has achieved 2.4% average annual improvements in EE (30% over 15 years), compared to 1% for those not in LTA
 - Japan – Keidanren action plan, which has achieved 12% emission reductions compared to 1990 levels. Industries have increased targets 41 times.

A LONG TERM AGREEMENTS – THE 3 PHASE APPROACH

Phase 1

Short term objectives:

- Get the data 'right'
- Foundations for the LTA
- Policy evaluation
- Implement low hanging fruit measures

Actions:

- Improve GHG inventories,
- Create sector groups, request sector roadmap and establish support needs.
- Review policies and support mechanisms
- Sub-sector to already implement most cost-effective measures

Milestones:

- Data improvements
- Sector engagement
- Policy review
- Implementation

Phase 2

Medium term objectives:

- Reach Long Term Agreement with sub-sector for emission reduction
- Supporting mechanisms in place
- Begin implementing

Actions:

- Final Long Term Agreement with sector, with monitoring arrangement
- Support mechanisms and policies in place
- Sector implementing agreed GHG reduction measures

Milestones:

- Long Term Agreement
- Ensure right support mechanisms and policies are in place
- Implementation

Phase 3

Long term objectives:

- Examine success of LTA
- Improve existing agreement or introduce mandatory approach

Actions:

- Assess progress of Long Term Agreement – is it on target
 - Yes? extend and intensify
 - No? Develop and implement mandatory requirements

Milestones:

- Assessment of progress

2030 Target: improvement of emissions on BAU, aligned with or exceeding NDC target

CHALLENGES FOR USING LTAS IN THAILAND

Challenge	Solution
Companies are used to being told the requirements	<ul style="list-style-type: none"> • Making a law that cannot be enforced, has also proven ineffective, this offers a new approach • Non-compliance also leads to remedial action
Without obligation companies won't take actions	<ul style="list-style-type: none"> • Firms better engaged at outset, more likely to take ownership of results and implement actions • Obligatory approach remains an option
Little experience with this approach	<ul style="list-style-type: none"> • Large range of best practice to draw upon • There is experience – DEDE
Lack of capacity to implement	<ul style="list-style-type: none"> • This is a broader problem, not just for LTAs • LTAs require less capacity than alternatives
Not ambitious enough	<ul style="list-style-type: none"> • Government has option to only agree if target is ambitious enough • Also depends on how the target is framed
Lack of data to set baseline	<ul style="list-style-type: none"> • These issues can be solved as part of the LTA
Low starting point degree of industrial organisation	<ul style="list-style-type: none"> • First phase of an LTA addresses this issue, can be an initial result • Choose the right sector level at which to engage – i.e. association, grouping of major firms

CONCLUSIONS AND RECOMMENDATIONS

- Large cost-effective abatement potentials exist for the palm oil, automotive parts and frozen food industries.
- Barriers to the implementation of these measures can be overcome by:
 - Capacity building
 - Communication and stakeholder engagement
 - Targeted regulations and financing instruments
- An LTA framework implemented alongside supporting measures offers a tested and suitable basis for GHG emission reduction roadmaps. Such an approach is suitable for all industrial sub-sectors.