



Insights from the RAC GHG inventory process in Vietnam

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Department of Climate Change
Ministry of Natural Resources and Environment

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The inventory process in Vietnam: Type of data collected

Secondary data

Primary data

to derive refrigerant-related
and energy-related emissions
from the RAC sector

Inventory was carried out as part of activities under the project Cool Contributions fighting Climate Change (C4), funded by the International Climate Initiative.

Subsectors covered

Unitary AC

Chillers

Mobile AC

Domestic refrigeration

Commercial refrigeration

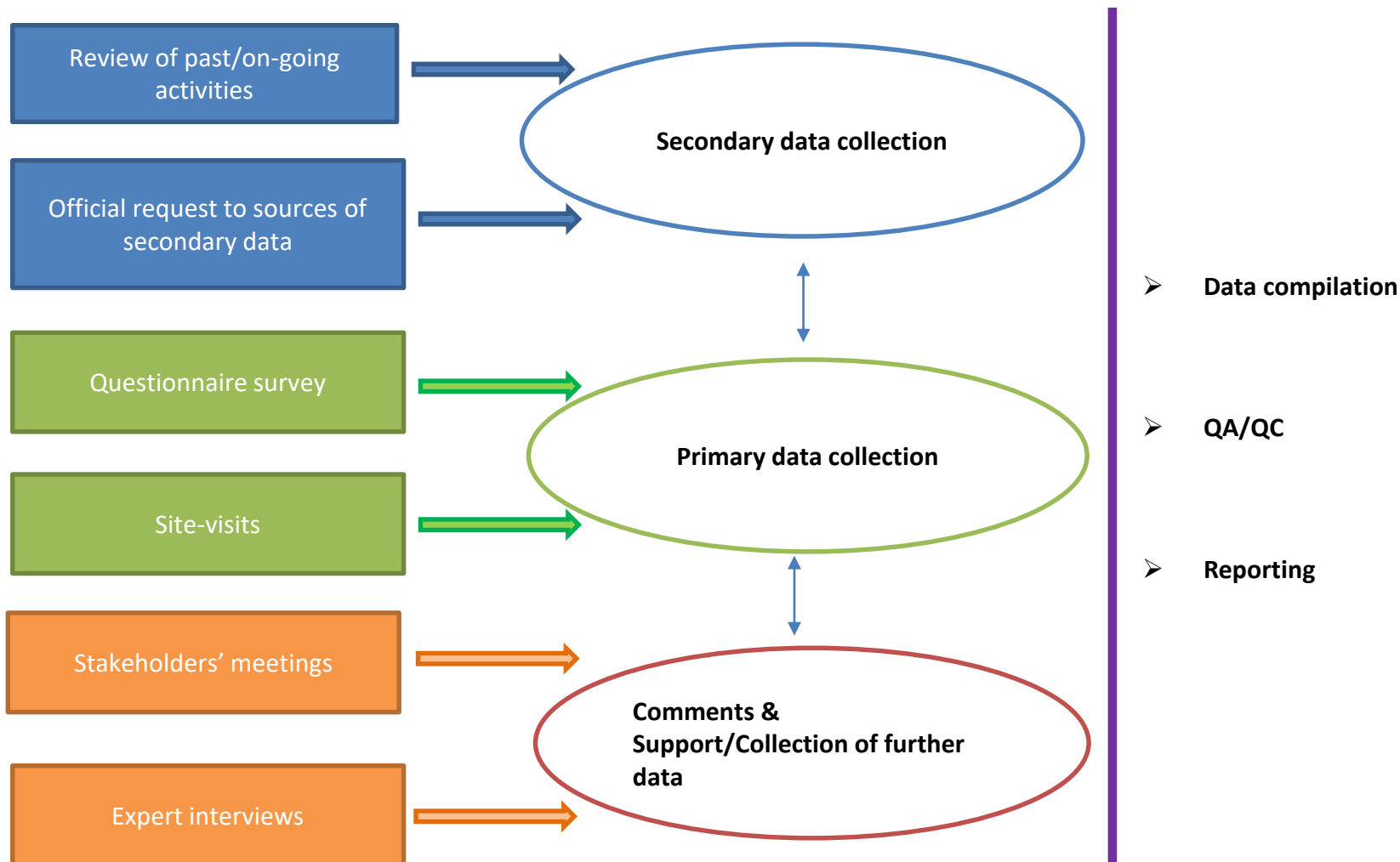
Industrial refrigeration

Transport refrigeration

The inventory process in Vietnam: Actors leading the inventory process

Actor	Role
NOU/DCC	<p>Overall responsibility and supervision for the appropriate implementation of inventory activities in close coordination with C4 project team</p> <p>Issuance of endorsement letters in order to obtain data for the inventory.</p>
C4 project team/GIZ	<p>Provision of methods and tools for drawing up the inventory, data collection and data analysis.</p> <p>Support to the implementation of the inventory' activities in close coordination with NOU/DCC and the consultants.</p>
Consultants (local and international)	<p>Implementation of inventory activities and delivery of outputs according to the agreed schedule, technical and quality requirements.</p>

The inventory process in Vietnam: Data collection and aggregation process



The inventory process in Vietnam: Source of secondary data

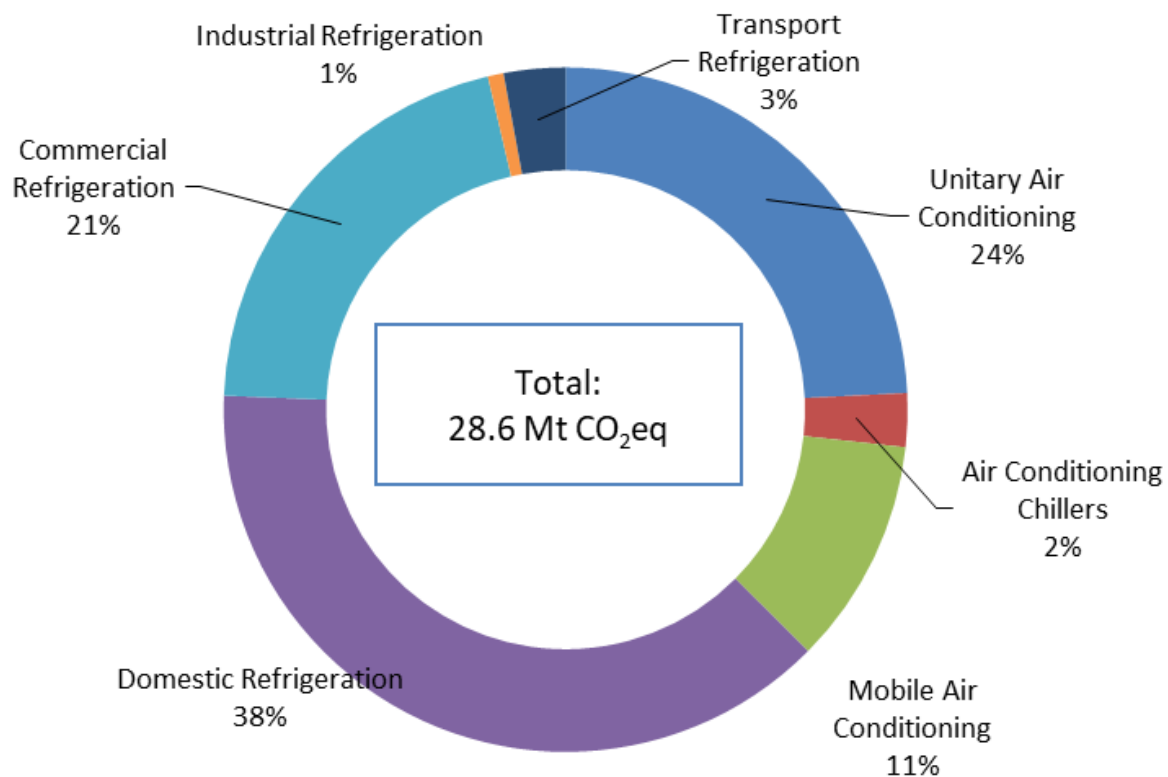
Source of data	Data collected
MONRE	National GHG inventory, NCs, BURs
DCC	HCFC, HFC and ODS surveys
GSO	Data on domestic production of refrigeration equipment (refrigerator, freezer, display storage), air conditioners, automobiles
Directorate of Fisheries – MARD	Data on ships equipped with RAC
Vietnam Register, MOT	Data on automobiles
Housing and Real Estate Market Management Agency – Ministry of Construction	Data on buildings with area > 2,500 m ²
VIETNAMCHEMIA – MOIT	Data on refrigerants which are required to register for import
VAMA	Data on automobile market
General Department of Vietnam Customs – Ministry of Finance:	Data on IMPORT/EXPORT of RAC, import of refrigerants

The inventory process in Vietnam: Source of primary data

Sub-sectors	Number of returned questionnaires			Market share in 2016
	Total	Manufacturer	Importer- distributors	
Unitary AC	10	6	4	66%
Chiller	10	0	10	38%
Mobile AC	8	7	1	77%
Domestic Refrigeration	7	5	2	69%
Commercial Refrigeration	9	6	3	70%
Industrial Refrigeration	13	8	5	61%
Transport Refrigeration	3	3	0	84%
TOTAL	60	35	25	

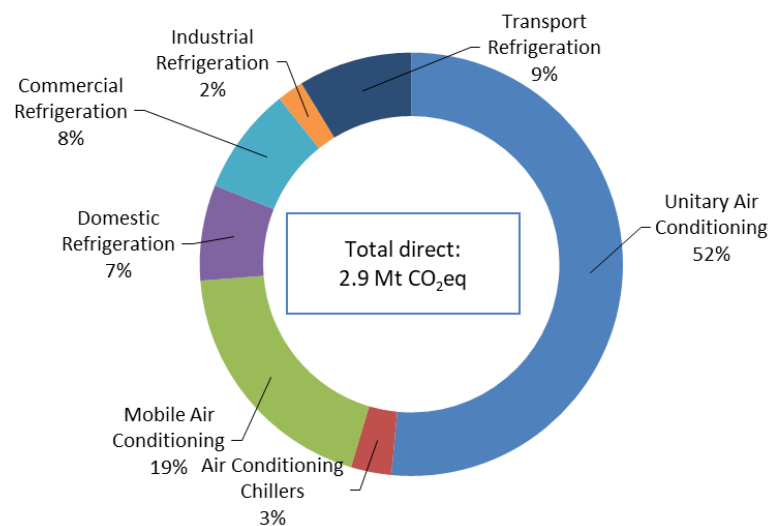


Results of inventory in Vietnam: Total BAU emissions 2015

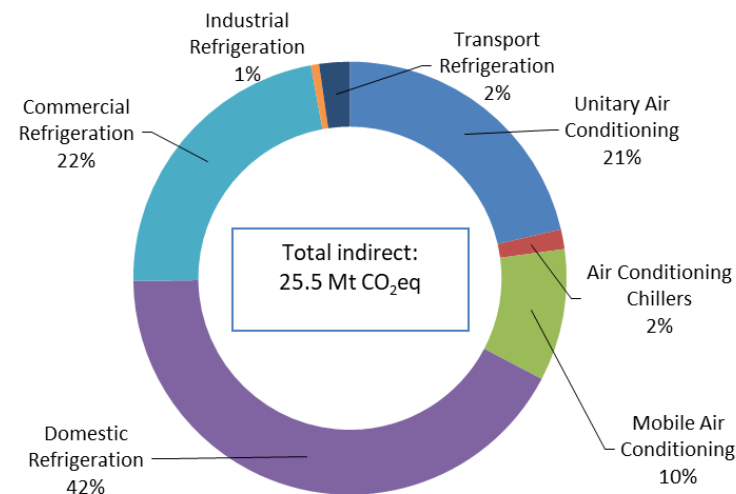


Corresponds to 9% of Vietnam's total GHG emissions

Results of inventory in Vietnam: BAU 2015 in direct and indirect emissions



Direct Emissions

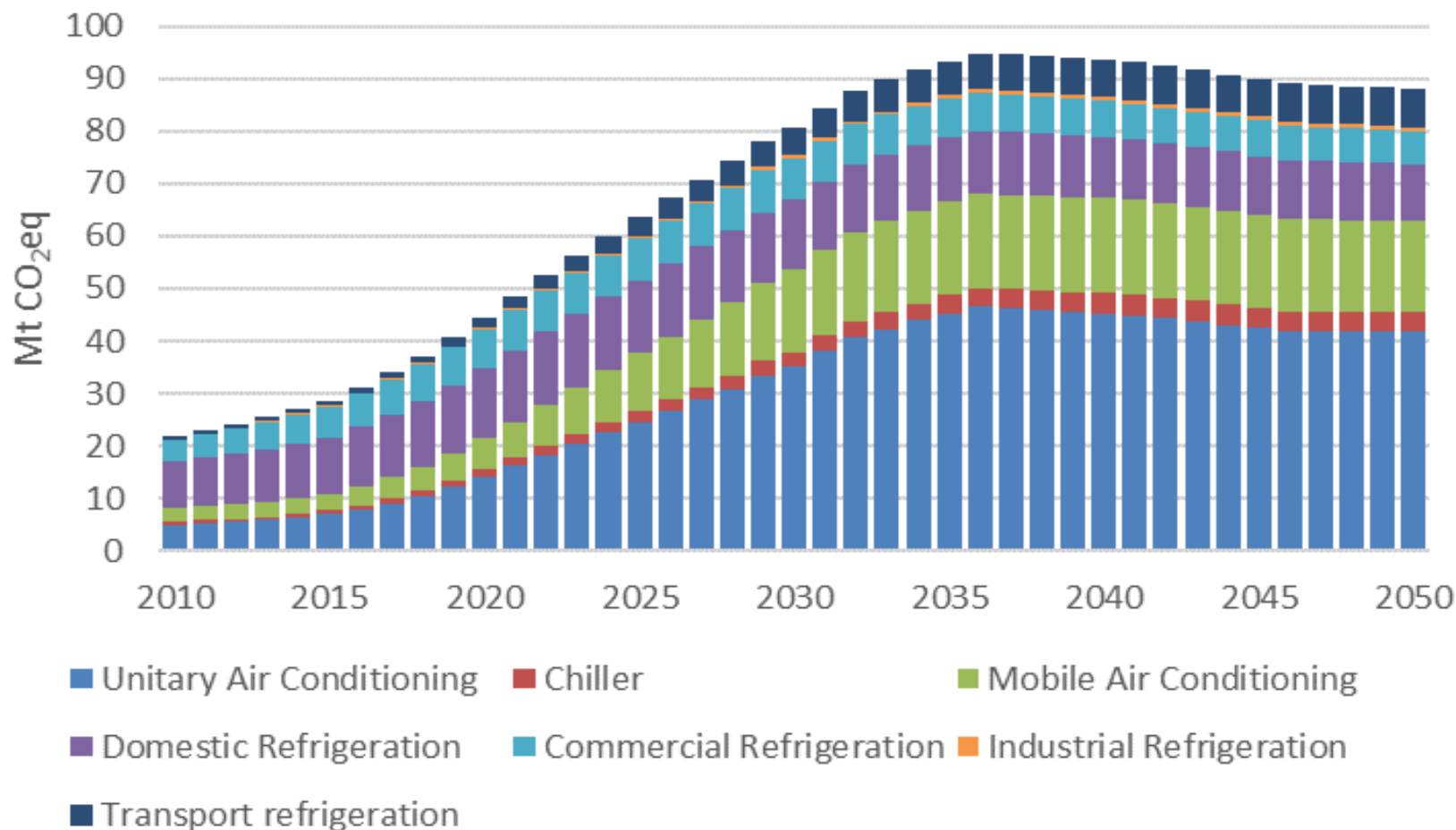


Indirect Emissions

Corresponds to 17% of Vietnam's energy-related GHG emissions

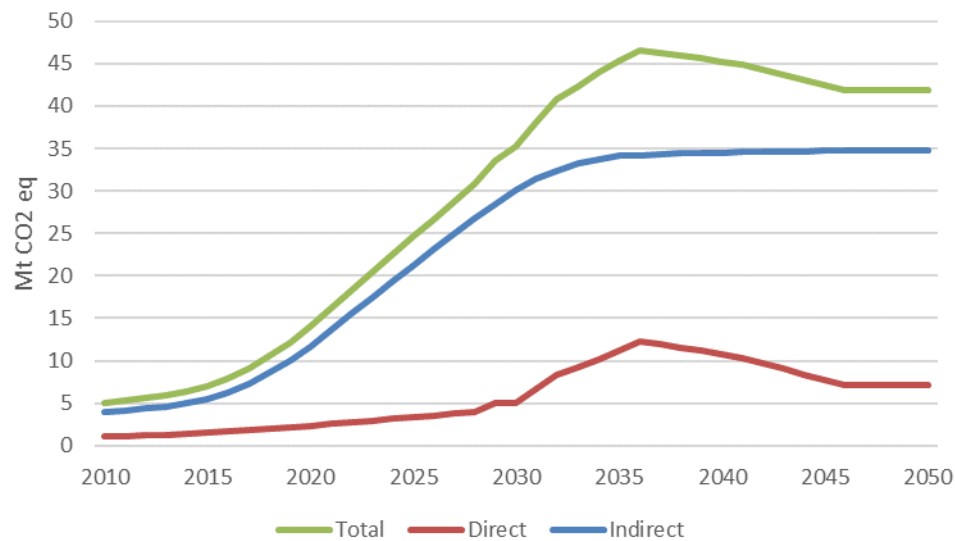


Results of inventory in Vietnam: Total BAU emissions (projection)

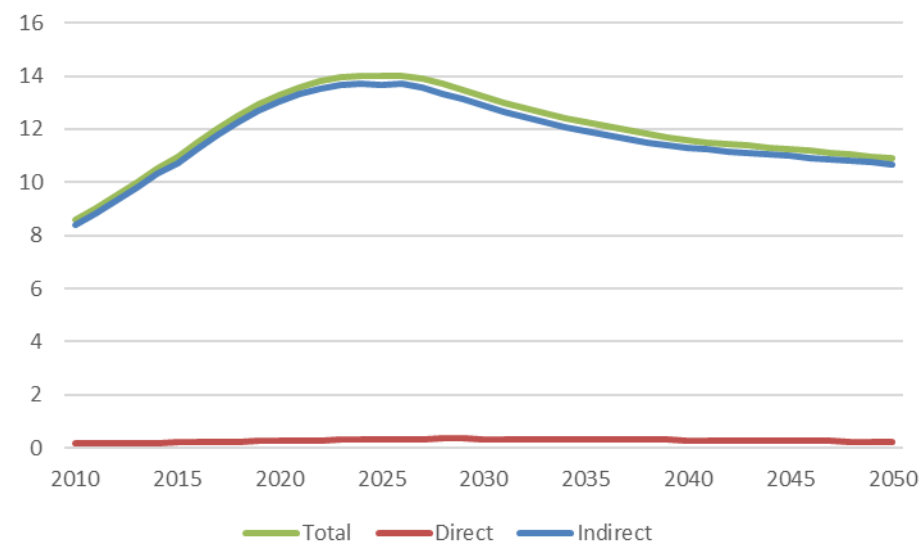


Results of inventory in Vietnam: BAU Projection for some subsectors

UAC

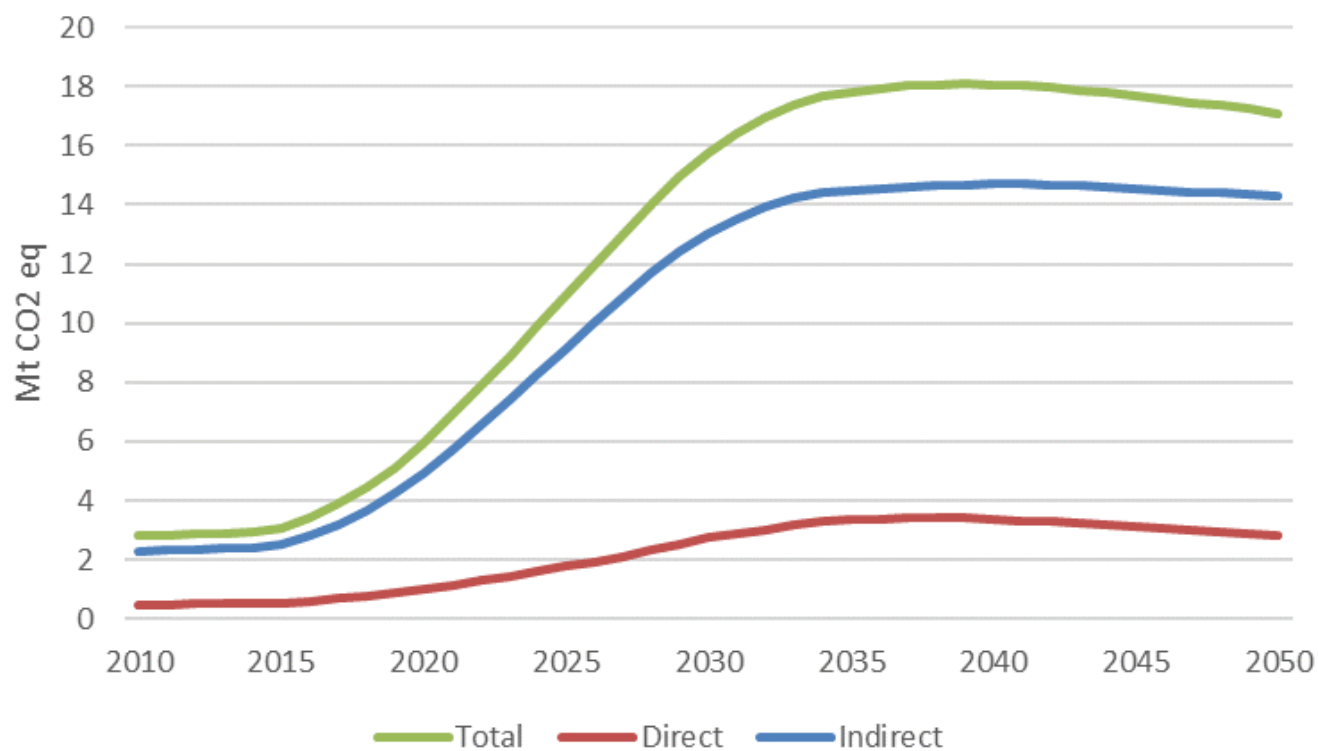


DomRef



Results of inventory in Vietnam: BAU Projection for some subsectors

MAC





Challenges and lessons learned

Challenges

- Big amount of statistical data needed to be sorted
- Time constraint (especially due to new year)
- Questionnaires were complicated and required a lot of time
- Reliability of sales growth rates provided by companies
- COP/EER of appliances may be different in operation

Lessons learned

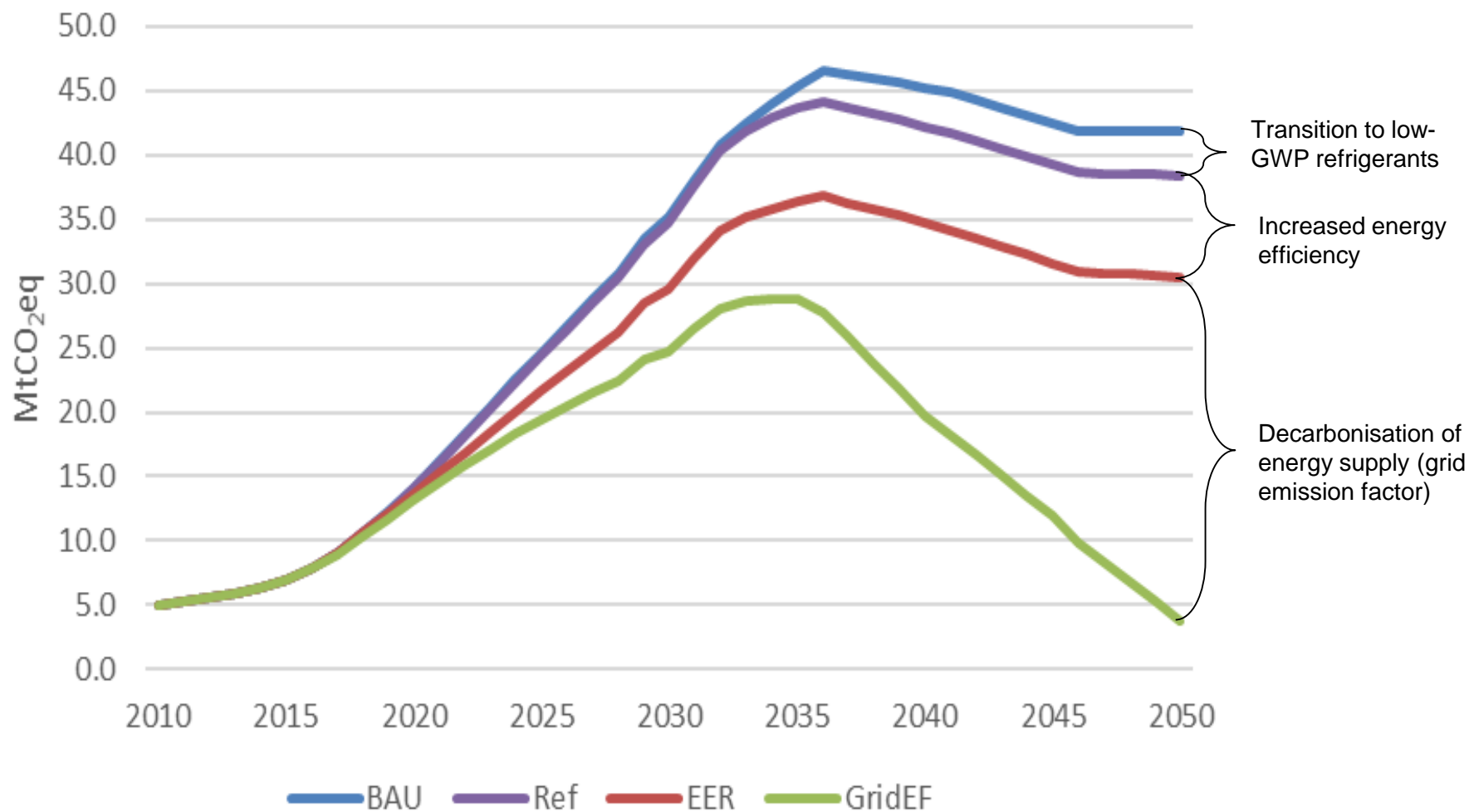
- Knowledge of RAC sector very important for the inventory
- Verification through stakeholder workshop was very useful to confirm data and provide data providers information on the process



Potential of the RAC GHG inventory for Vietnam

- ✓ Good overview of data and data sources for the sector
- ✓ AC and domestic refrigeration determined as key subsectors with high GHG emissions
- ✓ Data can be used for national GHG reporting to UNFCCC
- ✓ Data can contribute to assessment of measures for Kigali Amendment
- ✓ Potential mitigation measures can be assessed to contribute to Nationally Determined Contributions (NDCs) of Vietnam
 - Advance transition to ultra low GWP refrigerants
 - Increase MEPS for potential subsectors (UAC)

Potential mitigation scenarios for ACs





DEPARTMENT OF CLIMATE CHANGE

Thank you for your attention!