



RESPONSABILITATE SI SOLIDARITATE

**GIE CEE & SEE
Decarbonisation WG**



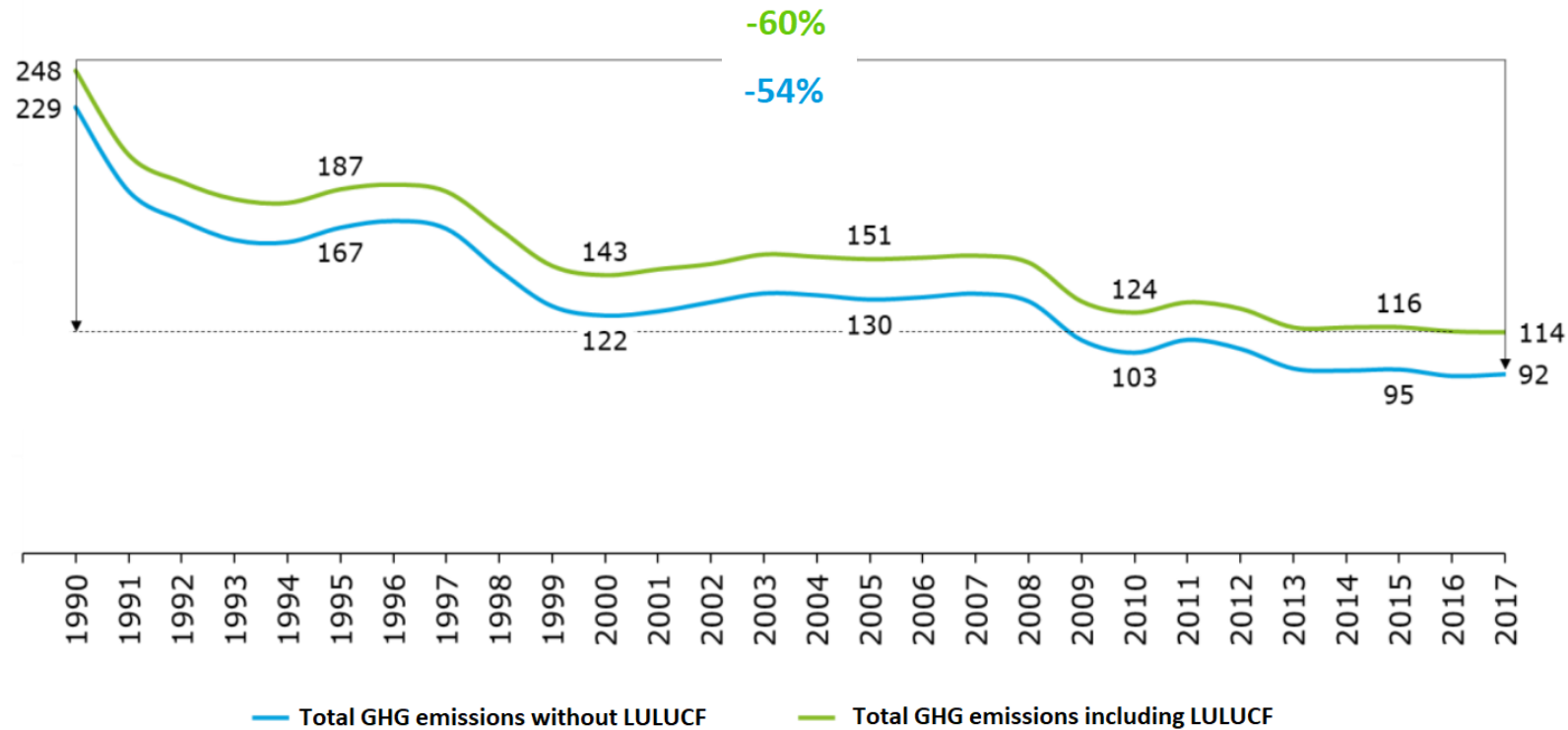
TELCO – July 9th 2020, 14:00 - 16:00

**Romania's NECP – updated version
&
TRANSGAZ engagement in the decarbonisation effort**

NECP

GHG emissions evolution in Romania: 1990-2017

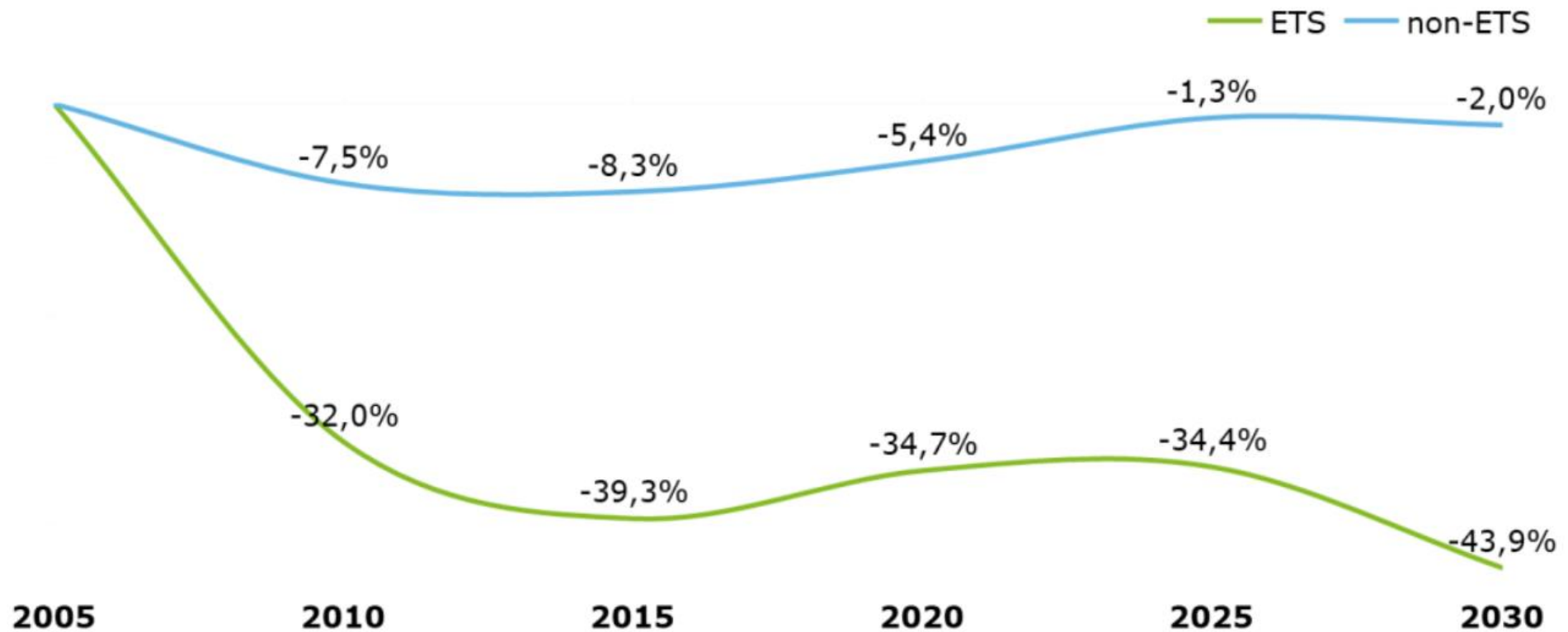
Mt CO2 eq.



LULUCF: Land Use, Land Use Change & Forestry

NECP

NECP INITIAL GOALS



NECP UPDATED TARGETS (April 2020)

Romania's NECP are changing from **WEM** scenario to **WAM** scenario.

WEM - Modelling scenario with existing measures

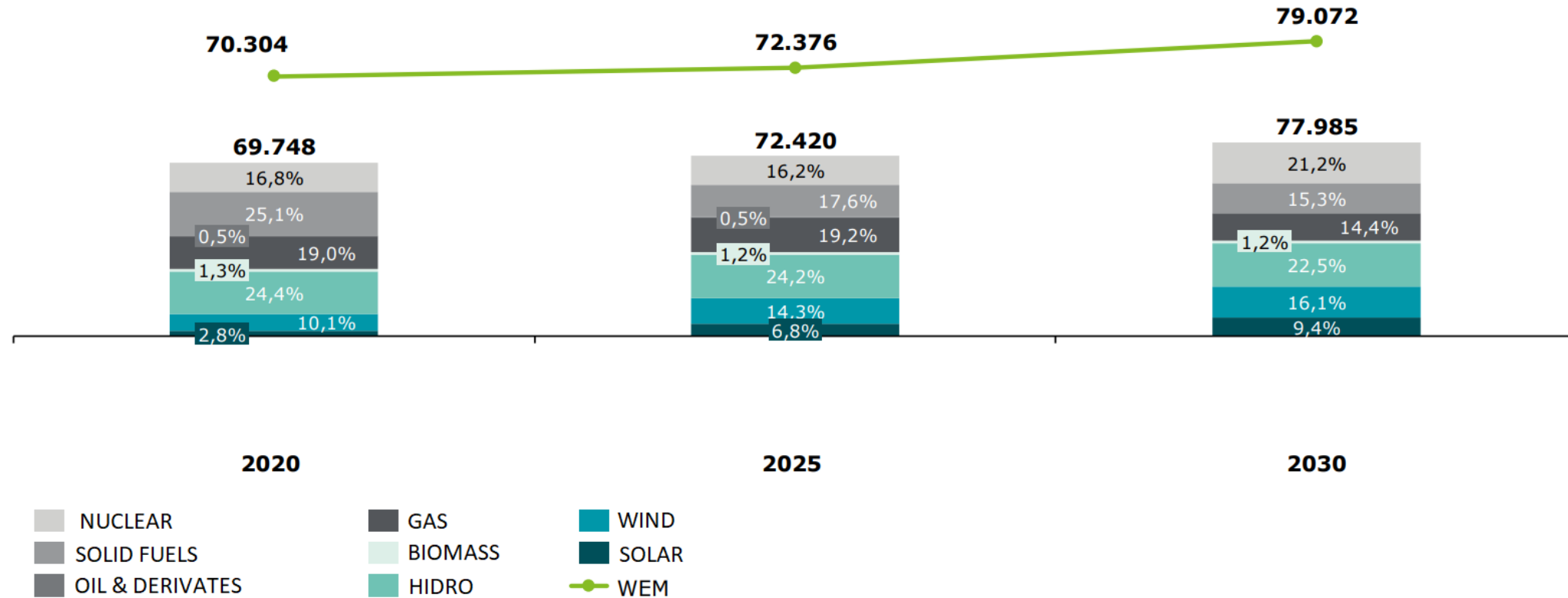
WAM - Modelling scenario with additional measures

According with the new EC recommendations all the strategic documents* are in an update process.

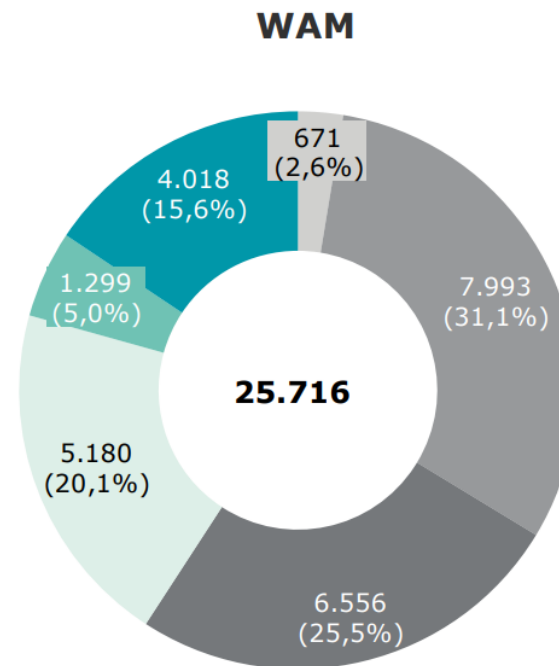
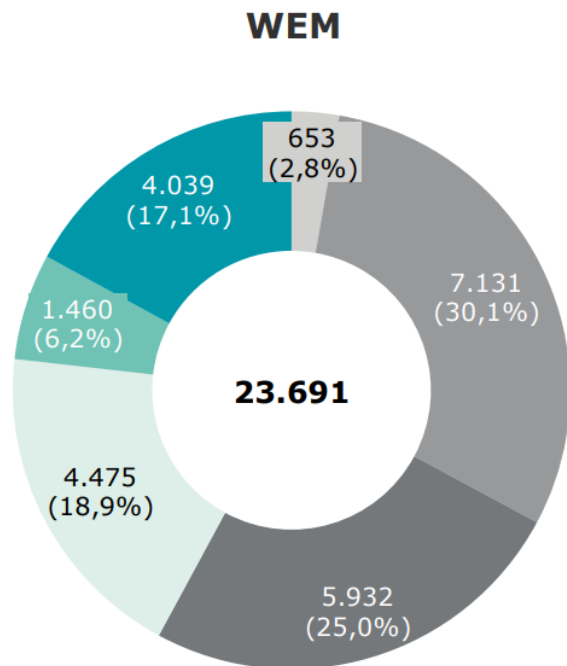
- * ● Land Use, Land Use Change & Forestry
- Reference Level in Forestry
- National Measuring Plan for Forestry
- National GHG Inventory

Example of new targets' impact

WEM vs WAM scenarios - gross electric energy production (GWh)



FINAL ENERGY CONSUMPTION, BY SOURCE [ktoe]



SOLID FUELS
 OIL & DERIVATES
 GAS

ELECTRICITY
 HEAT
 RENEWABLES

Gas projects contributing to decarbonisation

CONVERSION FROM COAL TO GAS & COGENERATION



Lignite energy power plant ISALNITA



Lignite energy power plant TURCENI

Gas projects contributing to decarbonisation

Coal-based energy units conversion to gas-based units:

- Craiova, **200 MW, cogeneration on gas** (replacing today's 2x150 MW units on lignite)
- Turceni, **400 MW, cogeneration on gas** (replacing today's 330 MW unit on lignite);
- Işalnița, **2x400 MW, cogeneration on gas** (replacing today's 315 MW unit on lignite - starting with 2024 and another 315 MW unit on lignite - starting with 2025)

Additionally, there are scheduled investments for high-efficiency cogeneration capacities.

Gas projects contributing to decarbonisation

HYDROGEN

The use of hydrogen is viewed as strategic for two areas:

- energy system flexibility
 - RES electricity production potential 10X bigger than the demand (estimation for 2030)
 - unused energy – available for green hydrogen production
- energy transport infrastructure adaptation to energy mix with increased % of hydrogen
 - first phase (2025-2030)
 - second phase (2030-2040)
 - third phase (2040-2050)

TRANSGAZ contribution to decarbonisation

HYDROGEN

Undergoing study:

“Ways for introducing 2% hydrogen mix in the National Gas Transport System”

Working Group on Hydrogen

TRANSGAZ contribution to decarbonisation

DIGITISATION

Extension of SCADA system to all the cathodic protection stations along the whole length of gas transport system:

- reducing shut down times
- reducing intervention times
- increased friability
- reduced intervention costs

TRANSGAZ contribution to decarbonisation

ENERGY EFFICIENCY

Implemented measures:

- preventive maintenance for all energy-intensive equipment
- replacement of old, inefficient equipment with new efficient ones
- PV panels for SCADA system

Future measures:

- 2 gas expansion turbines (1 KW and 35 KW) for the recovery of expansion energy
- energy audit for all new development and modernisation project for the most energy efficient solution identification

TRANSGAZ contribution to decarbonisation

METHANE EMISSIONS

Implemented measures:

- aerial monitoring of the pipes
- natural gas recovery at interventions with mobile compressors
- increased use of local electric heating of M&R stations (mostly with Reiken cable)

TRANSGAZ contribution to decarbonisation

REPLACEMENT OF CONVENTIONAL WOOD HEATING SYSTEMS WITH GAS-POWERED HIGH EFFICIENCY UNITS

Opportunity study: „Extention of the transport network for broad access to natural gas”*



VS



* Finalised in May 2020

TRADITION, PROFESSIONALISM, PERFORMANCE!

TRANSGAZ contribution to decarbonisation

House heating situation in Romania:

- 8.5 million households
- 7.5 million households in use
- 2.5 million households heated with gas-powered units
- **3.5 million households heated with solid fuel** (wood mostly, less than 100.000 use coal) with an average age of over 20 years of the heating system

Gas vs. Wood as fuel:

- 45% less CO2 for the same caloric power

TRANSGAZ contribution to decarbonisation

Other advantages*:

- gas has a higher energy efficiency coefficient
- gas heaters are immensely more efficient than old wood-burning stoves
- less particulate matter (wood has 100X-1.000X higher PM10 & PM2.5 emissions in comparison with gas)
- wood exploitation has higher CO2 emissions (access roads, tree cutting vehicles, transport etc.)
- forests offer multiple environmental services (temperature, wind and rainfall moderation, biodiversity, soil stabilisation etc.)
- house comfort is higher for a gas unit vs a wood stove
- energy poverty is reduced by access to more diverse energy sources for heating

* no studies available to account for all the costs and benefits of wood vs. gas in real life conditions

TRANSGAZ contribution to decarbonisation

VISION:

- **public consultations** followed by information, education, and mentalities change programs
- **extension of gas transport system** to over 90% coverage of the administrative units
- **decentralized implementation** with a finance mechanism at regional and county level
- replacement of old heating systems with last generation, high efficiency, **micro-cogeneration fuel cells**, capable of a 20-40% **hydrogen** mix intake
- **reduced pressure on the electric energy system**, especially during peak demand hours
- **high flexibility** in supply and applicability (ex. addressing similar problems in the public building stock)
- horizontal industry involvement for stronger “**Circular Economy**” character
- addition of smart metering and management equipment (“**Digitalisation**”)
- parallel implementation of building stock energy efficiency programs (“**Renovation Wave**”)

REDUCTION POTENTIAL OF GHG EMISSIONS BY SHIFTING FROM WOOD TO GAS: 80%



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