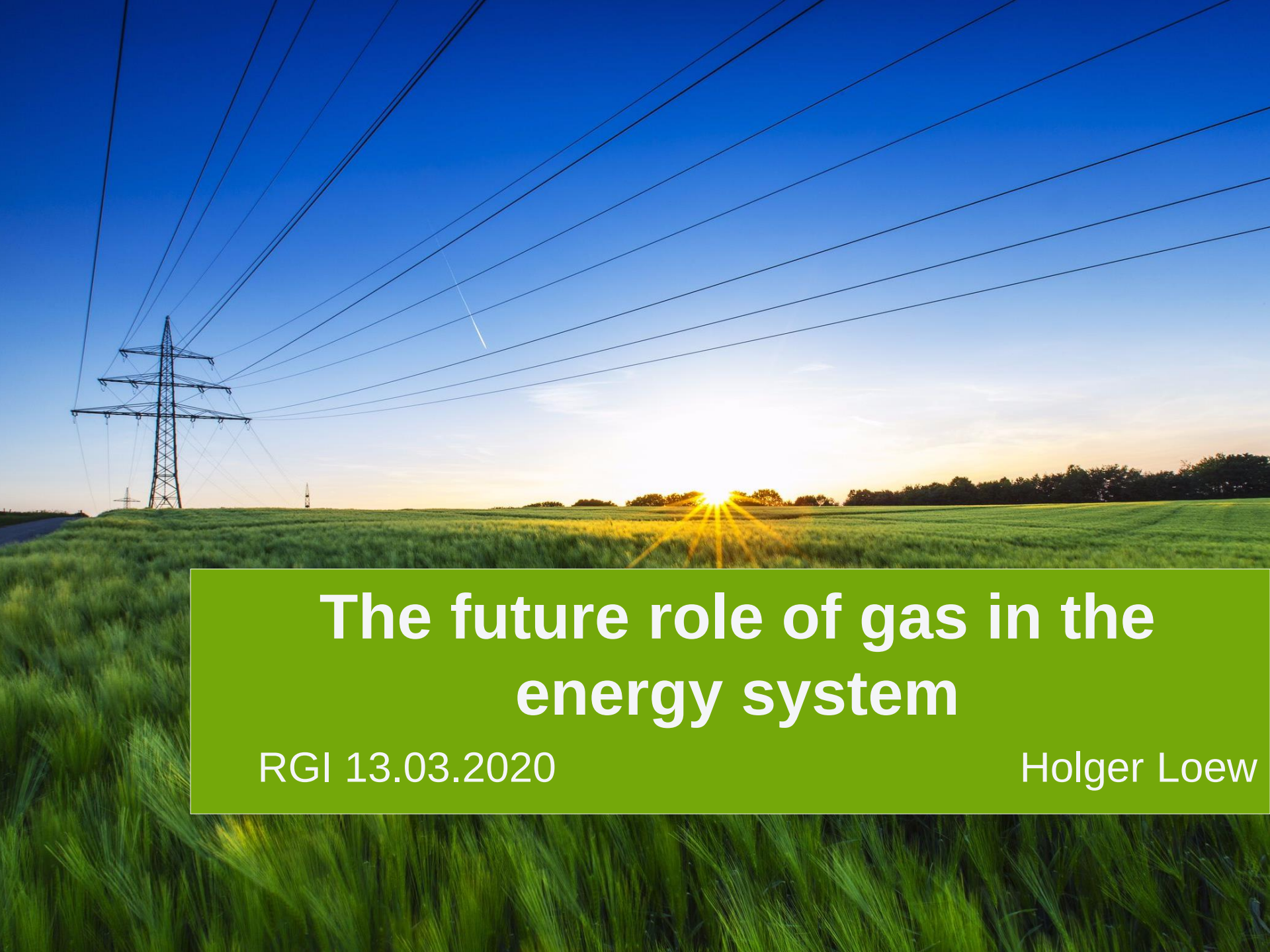


The future role of gas in the energy system

RGI 13.03.2020

Holger Loew

TYNDP what is eye-catching what is critical

Eye-catching

- Comply with the 1.5° C neutrality achieved by 2040 in the electricity sector and by 2050 in all sectors.
- Additional measures to reach net negative emissions after 2050 are necessary
- "Quick wins" A coal to gas switch in the power sector can save up to 150 MtCO2 by 2025
- Gas will continue to play an important role in sectors such as feedstock in non-energy uses, high-temperature processes, transport and aviation or in hybrid heating solutions.
-

5.2.1 Primary energy supply

…The vast majority of energy is from renewables..

- Global Ambition reaches 64 % by 2050
  Distributed Energy with a RES share of 80 %.

- 45 % of primary energy demand in Europe covert by Wind, solar and hydro
  In Distributed Energy
- 31 % in Global Ambition

while nuclear contributes approximately 10 % in both scenarios.

Share of RES

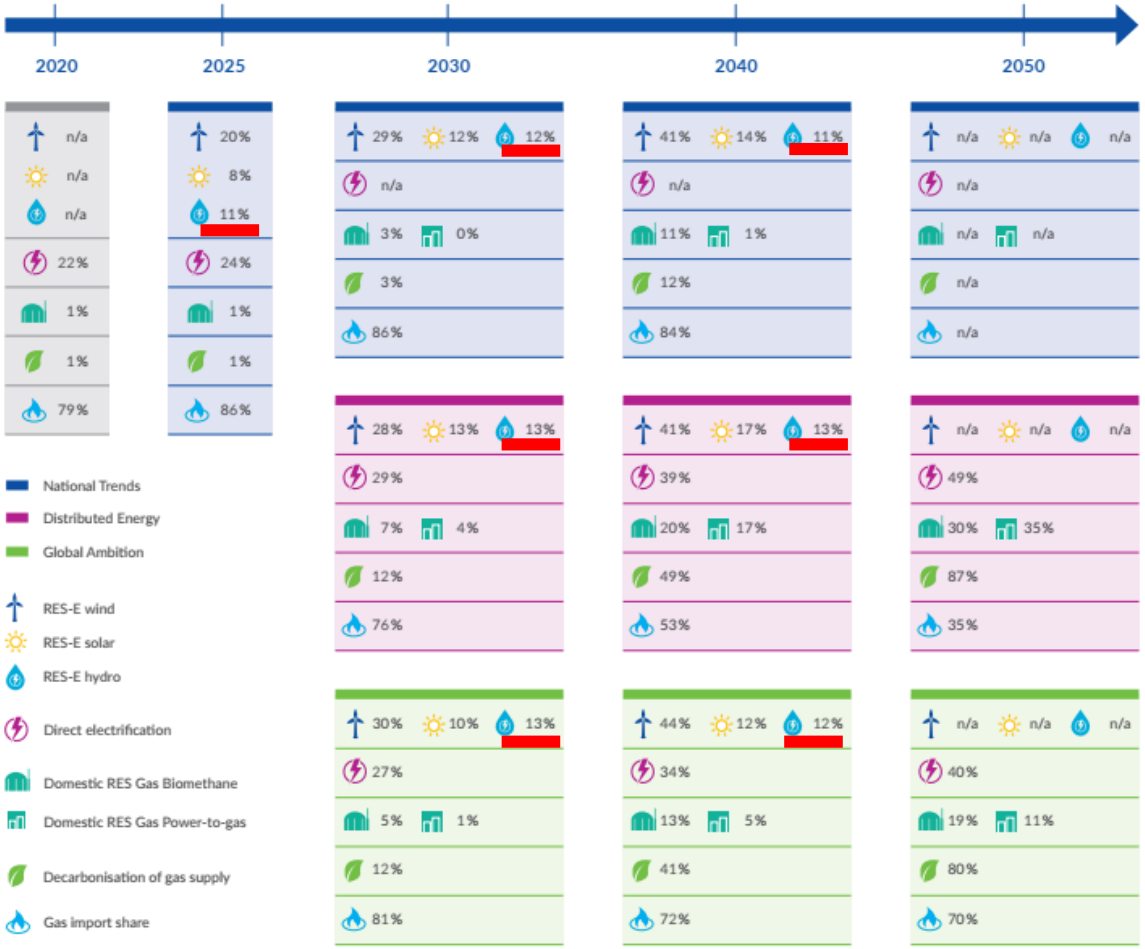


Figure 5: The TYNDP 2018 scenarios for 2030 and 2040 are defined by three storylines

Renewables Grid Initiative

5.2.1 Primary energy supply

…The vast majority of energy is from renewables..

- Global Ambition reaches 64 % by 2050
  Distributed Energy with a RES share of 80 %.

- 45 % - 11-13 % **~ 33 %** wind and Solar of primary energy demand in Europe covert by Wind, solar and hydro In Distributed Energy
- 31 % - 11-13 % **~ 19 %** wind and Solar in Global Ambition

EU 2030 Ziele; Erhöhung des Anteils **von Energie aus erneuerbaren Quellen** auf mindestens 32 % (Endenergieverbrauch)

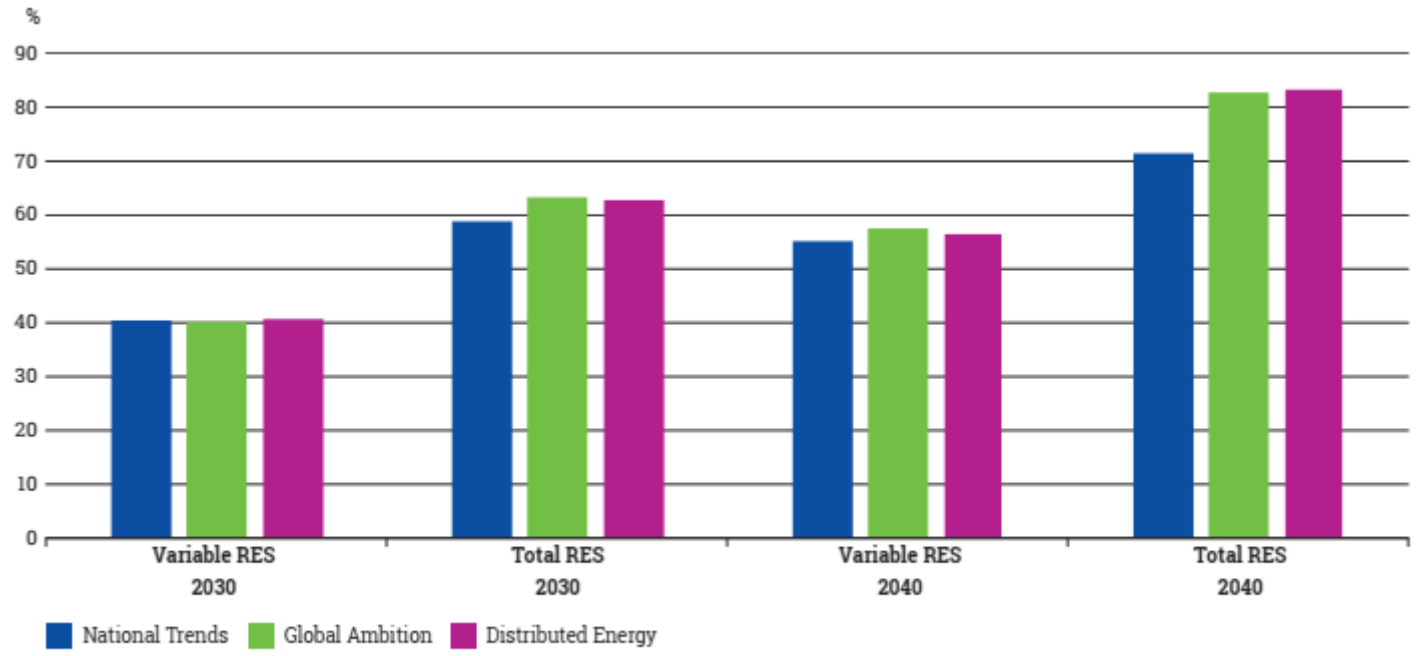


Figure 16: Percentage share of electricity demand covered by RES

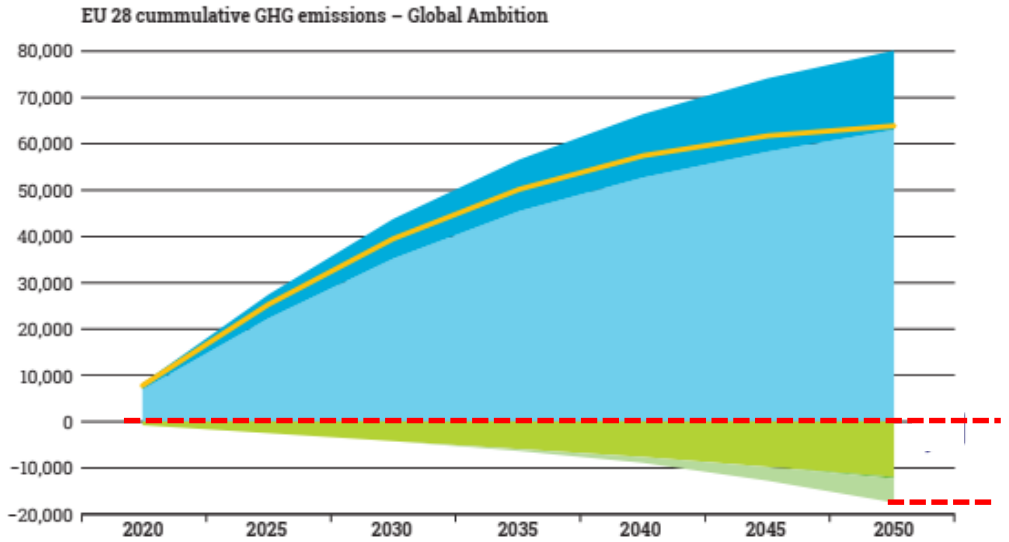
Biomass

Biomass and energy from waste materials

- 35 % in Distributed Energy they cover of the primary energy
- 33 % in Global Ambition

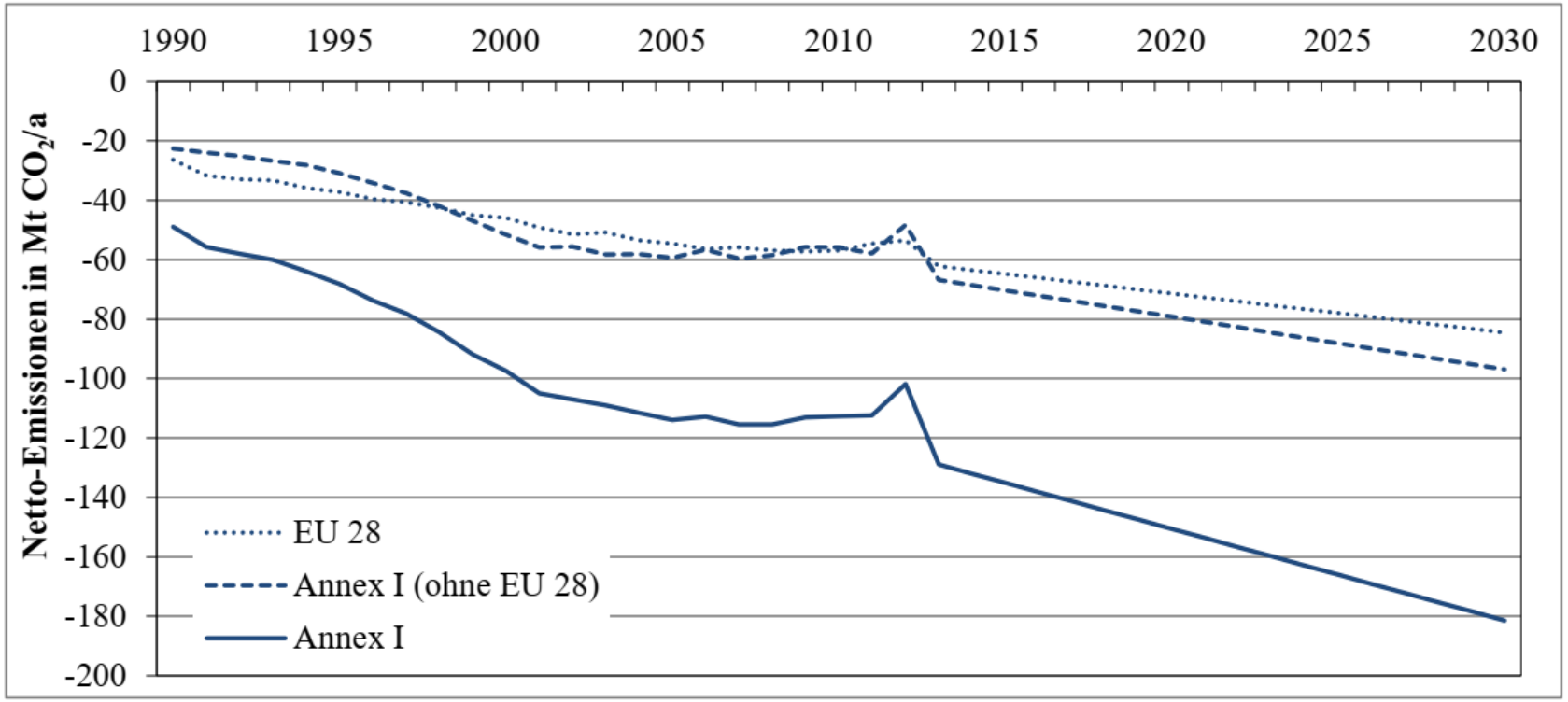
mix. Biomass can be directly used in industrial processes, or as feedstock to produce biofuels or biomethane – both can be used in all sectors, with a main focus in power generation, transport and heating.

Biomass in LULUCF



	2020	2025	2030	2035	2040	2045	2050
Cummulative non-CO_2 emissions	1,525	5,086	8,285	11,123	13,599	15,713	17,467
Cummulative CO_2 emissions	6,781	22,286	35,159	45,160	52,669	58,295	62,575
Cummulative credits from pre-and postcombustive CCU/S and BECCS	0	0	-149	-629	-1,426	-2,780	-4,901
Cummulative credits from BECCS	0	0	0	0	0	-178	-731
Cummulative credits from LULUCF	-627	-2,253	-3,963	-5,757	-7,635	-9,598	-11,644
Net Cummulative CO_2eq emissions	7,679	25,119	39,332	49,896	57,206	61,631	63,497

Abbildung 26: Emissionszeitreihen für AR-Aktivitäten basierend auf den Konventionsdaten von 1990 bis 2012 und einer Projektion für 2013 bis 2020



Quelle: Eigene Darstellung nach UNFCCC Submissionen von 2014

Figure 24: Gas source composition: Distributed Energy

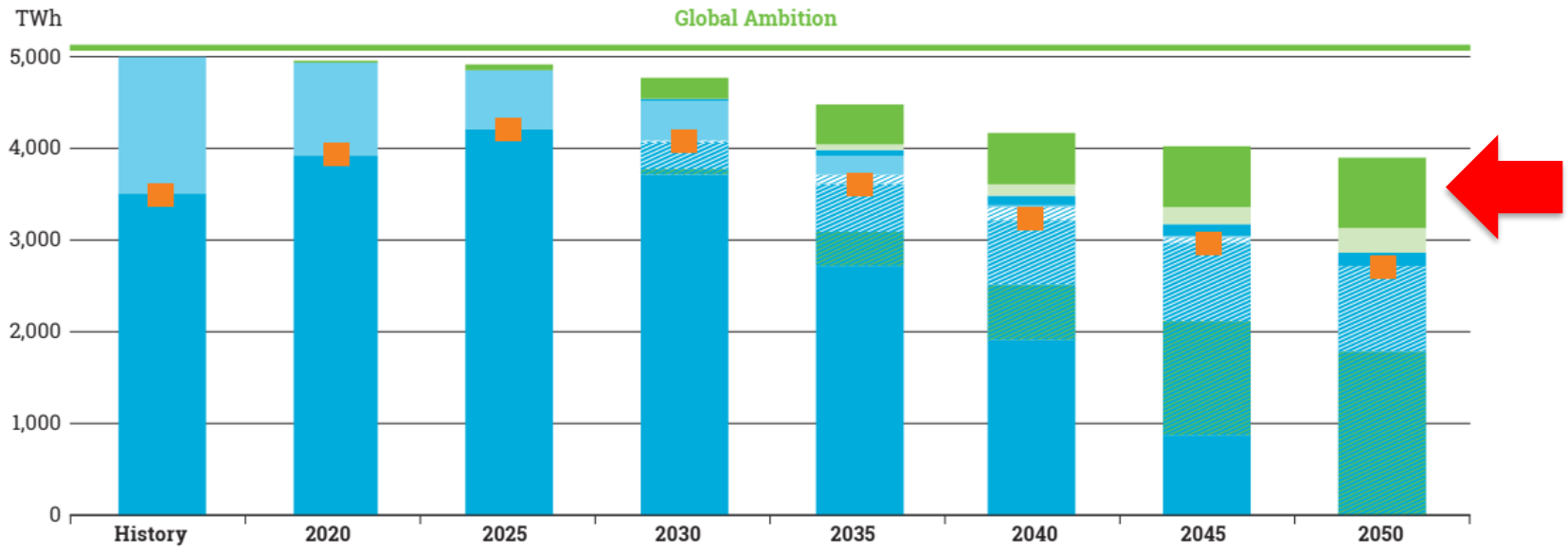
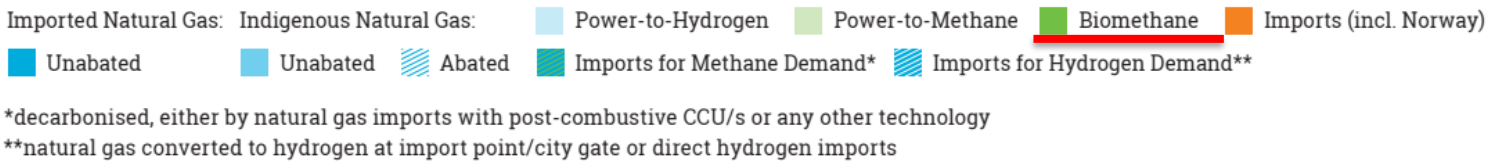


Figure 25: Gas source composition: Global Ambition



*decarbonised, either by natural gas imports with post-combustive CCU/s or any other technology
**natural gas converted to hydrogen at import point/city gate or direct hydrogen imports

Figure 24: Gas source composition: Distributed Energy

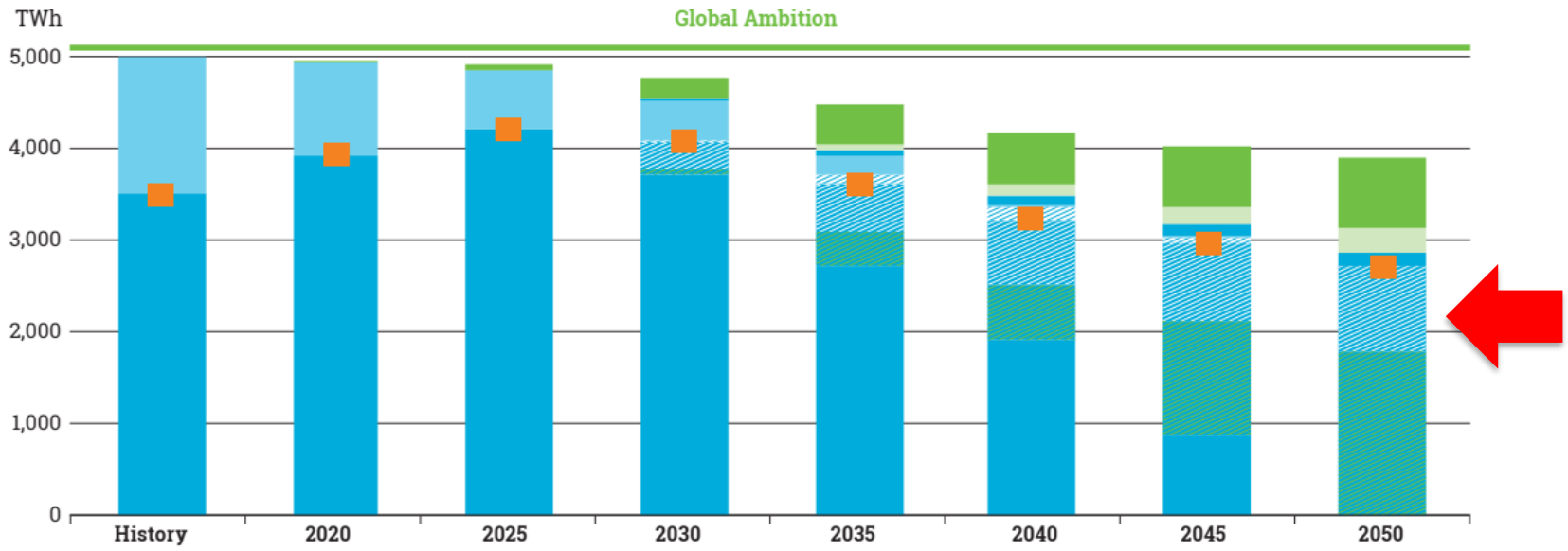


Figure 25: Gas source composition: Global Ambition

Imported Natural Gas: Unabated

Indigenous Natural Gas: Unabated, Abated

Power-to-Hydrogen

Power-to-Methane

Biomethane

Imports (incl. Norway)

Imports for Methane Demand*

Imports for Hydrogen Demand**

*decarbonised, either by natural gas imports with post-combustive CCU/s or any other technology

**natural gas converted to hydrogen at import point/city gate or direct hydrogen imports

Figure 24: Gas source composition: Distributed Energy

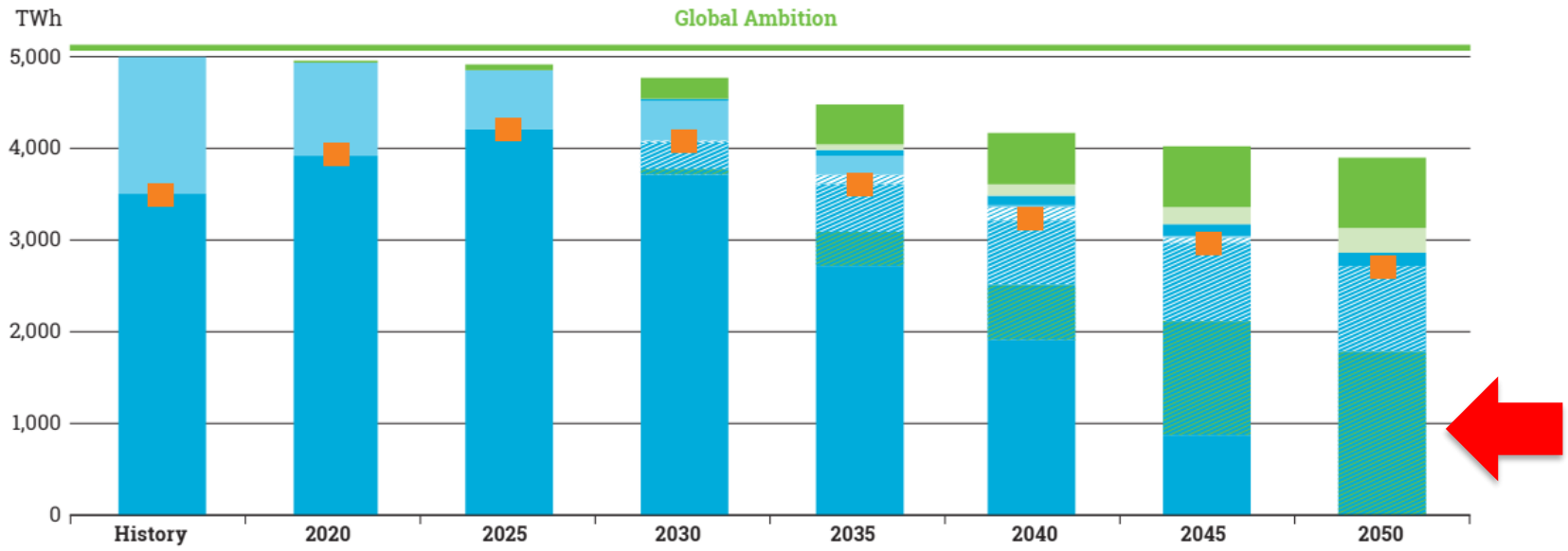
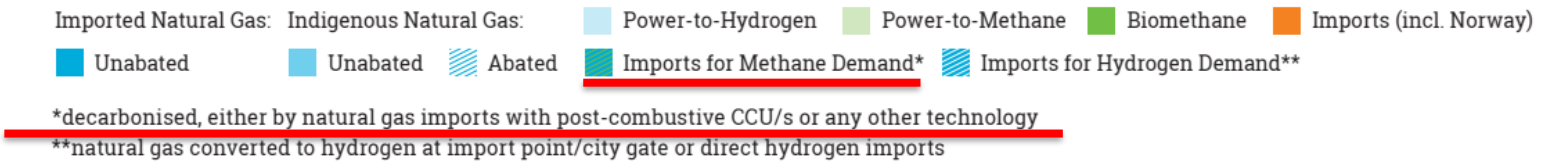


Figure 25: Gas source composition: Global Ambition



Paris Agreement Compatible Scenarios for Energy Infrastructure

https://www.pac-scenarios.eu/

Project partners

EEB European Environmental Bureau, CAN Europe — 150/140 European NGO members

REN21 — 80 members covering industry, intergovernmental orgs, NGOs, academia, and governments

Renewables Grid Initiative — 22 European TSOs and NGOs

In cooperation with

entsoe Reliable Sustainable Connected

entsog european network of transmission system operators for gas

Core tasks

- Scrutinize ENTSO-E scenarios for Paris compatibility
- Provide feedback on likely and desirable 'futures' that should be reflected by TYNDP scenarios
- Develop a own scenario supported by broad civil society base
- Further discussion how modelling can deal with new complexities
- Learn how to collaborate as a multi-stakeholder network on scenario development
- Raise global awareness about importance of grids and collaborative scenario development

Danke für Ihre Aufmerksamkeit