

VISTA-day 2019:

The Global energy transition and the 1.5 degree target:

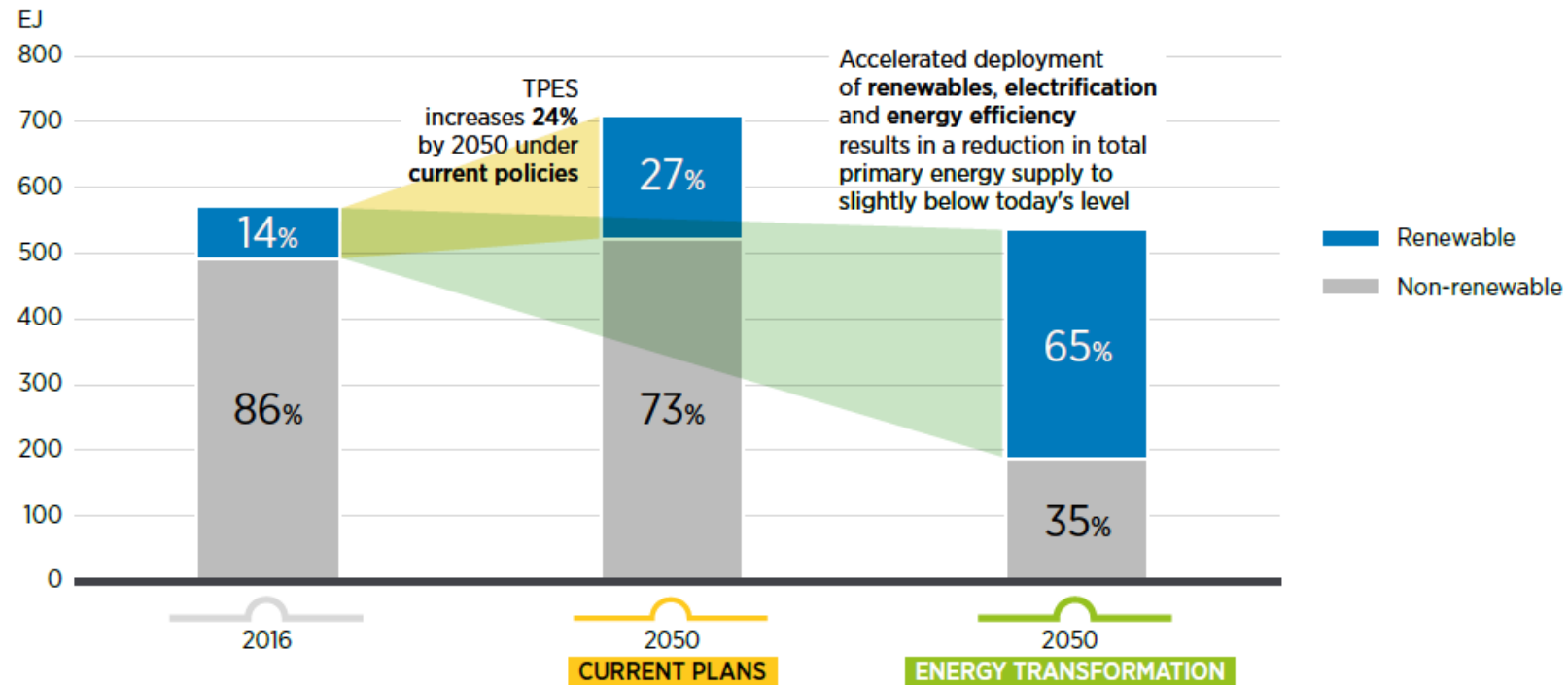
Vista Board/Anders Elverhøi

# Purpose of the meeting

- Bring together high-level experts, in order to review our knowledge
  - On the global energy transition and strategies
  - The role of different policies and technologies
  - The markets for energy commodities like natural gas, oil and coal
  - On a global, European and Norwegian scale.
  - Norway: the effects of the energy transition both on our own emissions and on our value creation from energy resources.

# The Global energy transition – and challenge

**Figure 1.3:** Renewable and non-renewable shares of total primary energy supply until 2050: Two scenarios



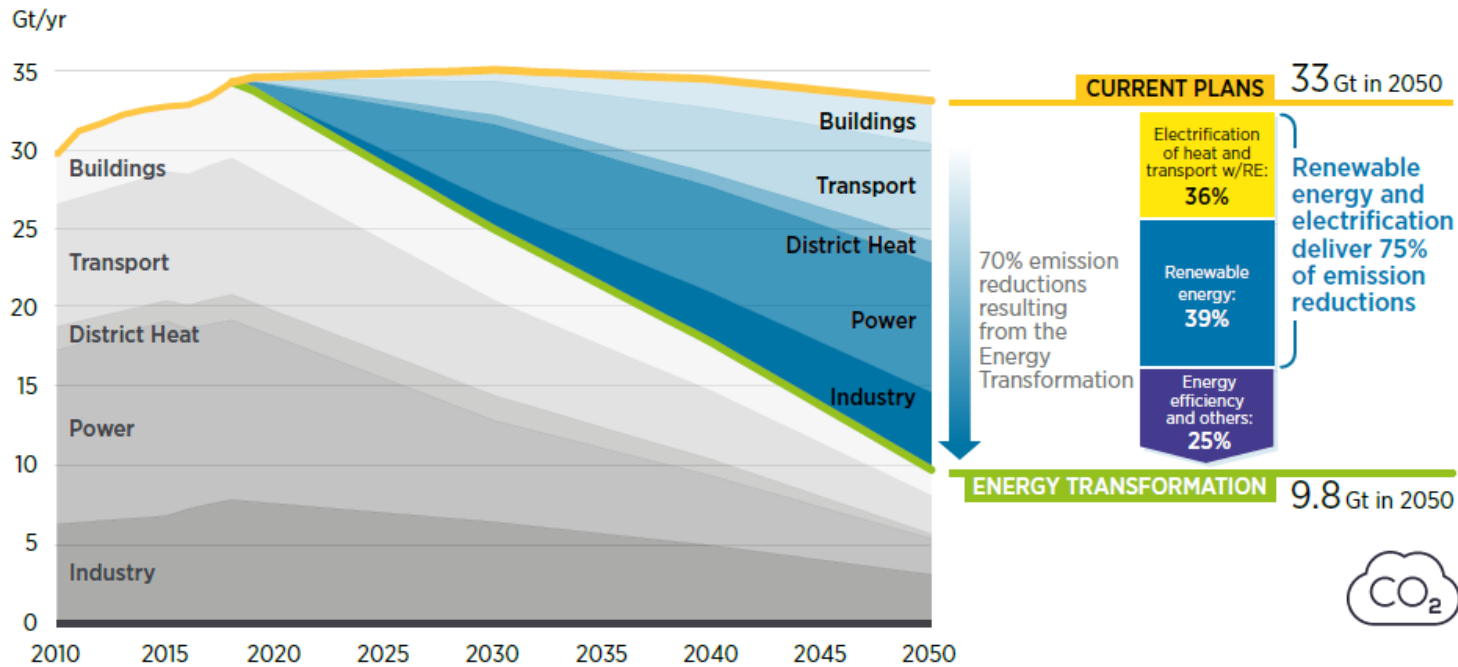
Based on IRENA, 2019b

Note: EJ = exajoule; TPES = total primary energy supply.

The International Renewable Energy Agency

# The global emission challenge

**Figure 1.1:** Annual energy-related CO<sub>2</sub> emissions and reductions, 2010–2050



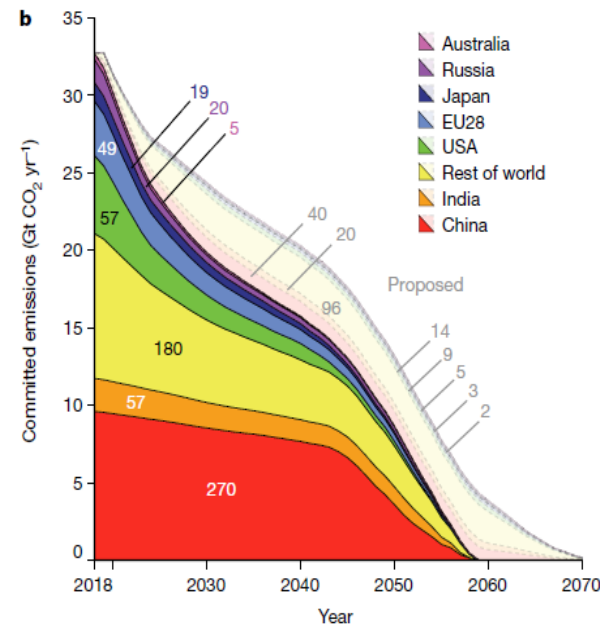
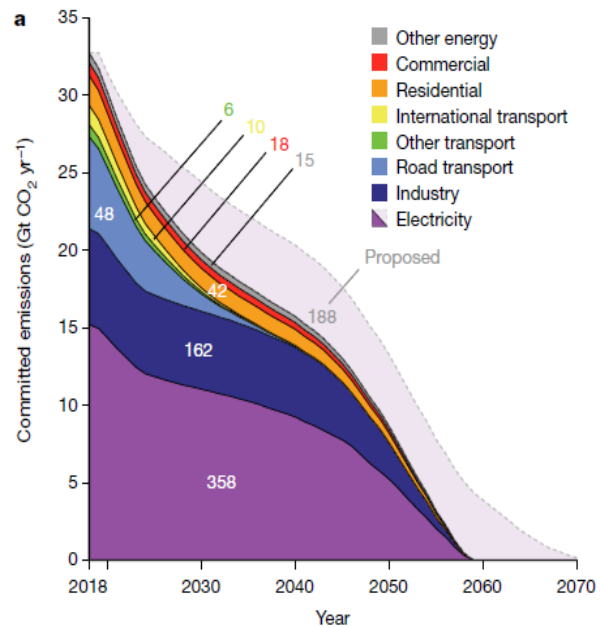
The world today has less than two decades to make serious cuts in carbon emissions.

Based on IRENA, 2019b.

Note: "Renewables" in the caption denotes deployment of renewable technologies in the power sector (wind, solar photovoltaic, etc.) and in direct end-use applications (solar thermal, geothermal, biomass). "Energy efficiency" denotes efficiency measures in industry, buildings and transport (e.g., improving insulation of buildings or installing more efficient appliances and equipment). "Electrification" denotes electrification of heat and transport applications, such as heat pumps and electric vehicles. Gt = gigaton; RE = renewable energy.

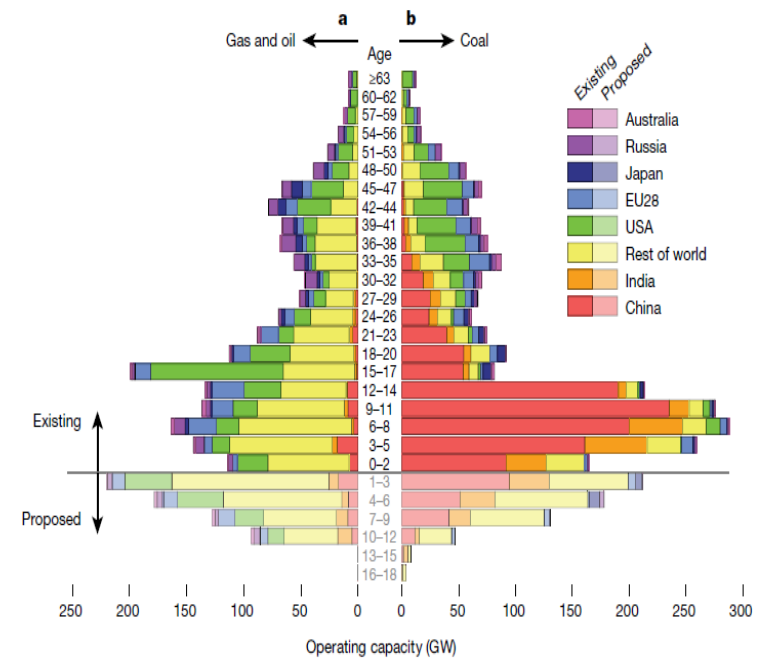
# The hard facts -

Tong et al : *Our estimates suggest that little or no new CO<sub>2</sub>-emitting infrastructure can be commissioned, and that existing infrastructure may need to be retired early (or be retrofitted with carbon capture and storage technology) in order to meet the Paris Agreement climate goals*



Gas/Oil

Coal

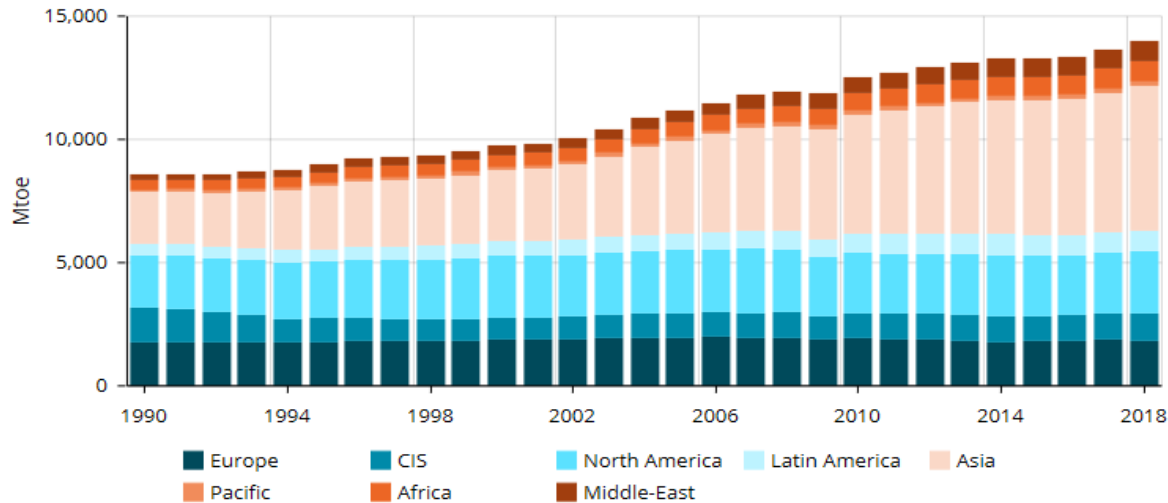


Committed annual CO<sub>2</sub> emissions from existing and proposed energy infrastructure.

Age structure of global electricity-generating capacity.

Committed emissions from existing energy infrastructure jeopardize 1.5 °C climate target Tong et al, Nature, vol 572, 2019

# The Global energy transition – what to do?



Data Source: Enerdata

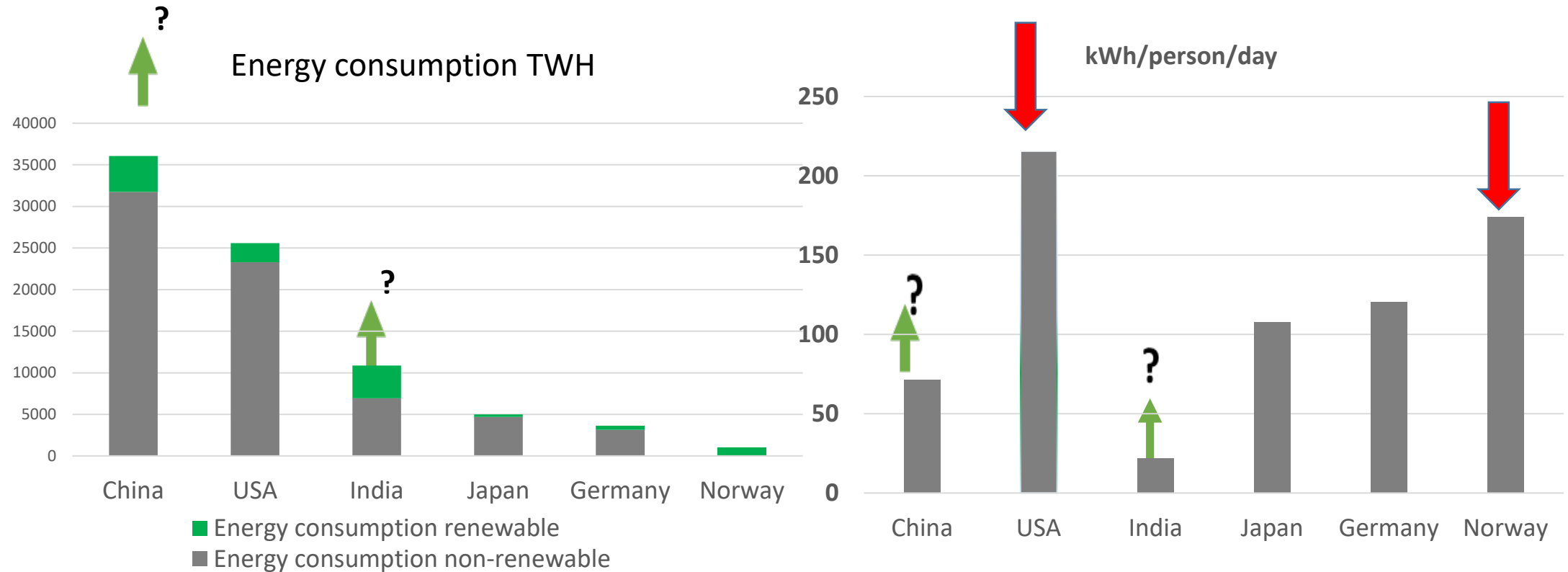
Total energy consumption:

Acceleration in energy consumption in 2018 (+2.3%) driven by high growth in electricity and gas demand

*“Achieving climate neutrality requires a broad array of **social, economic, and technological transformations**—in essence, reinventing the ways we power our homes and economies, move people and goods from place to place, and manage our lands”*

# The Global energy transition –

## How to change our energy consumption – “high” versus “low”



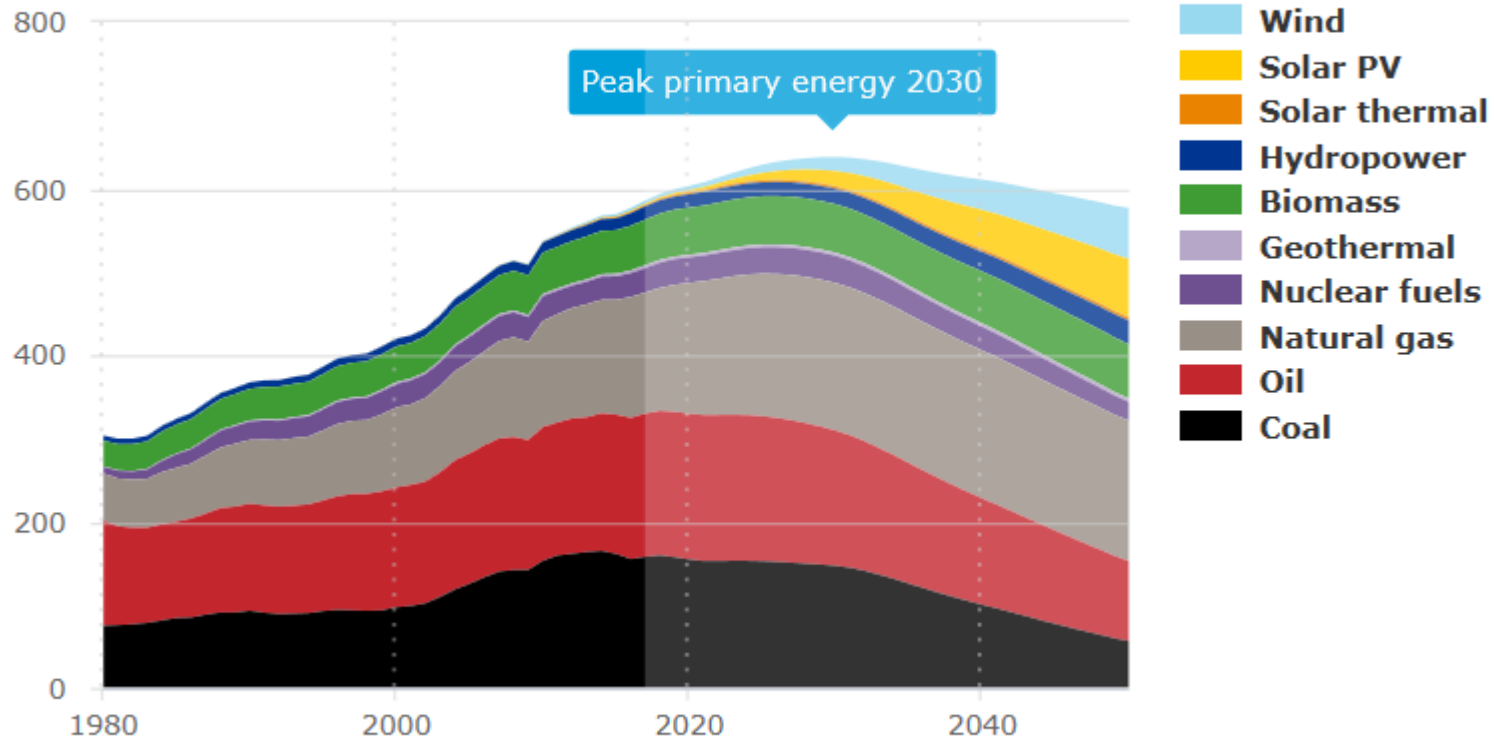
Data Source: Enerdata, The World Bank, [www.worldpopdata.org](http://www.worldpopdata.org)

*..reinventing the ways we power our homes and economies, move people ..,*

# The Global energy transition –

## World primary energy supply by source

DNV GL Energy Transition Outlook 2019  
Units: EJ/yr



Historical data source: IEA WEB (2018)

DNV GL - ETO 2019

In a 2020-2050 perspective, fossil resources will remain an important contributor to global energy consumption

**Key question-  
The future of  
energy  
commodities**



# Norway's role in the European energy transition

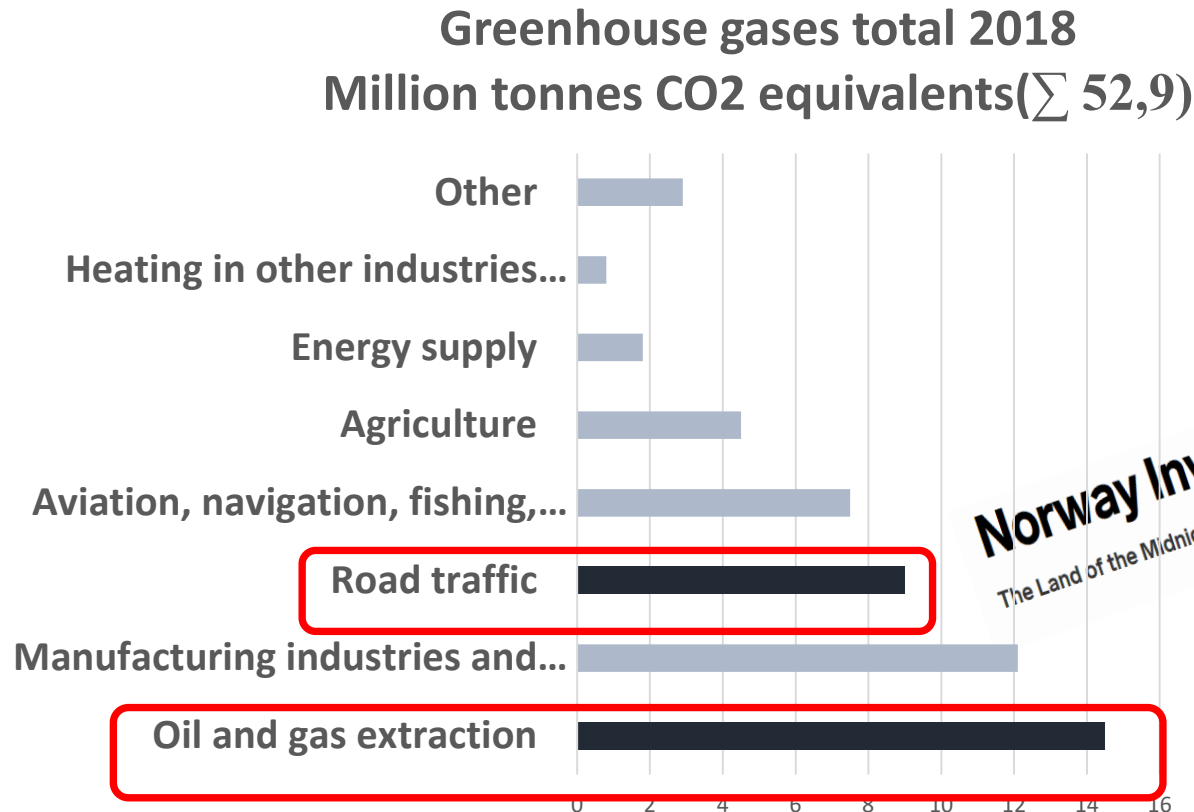


- Norway is:
  - well positioned to facilitate and support Europe's transition to a sustainable energy future.
  - a net exporter of energy
  - characterized by a domestic electric power system largely based on renewables.

**In 2017 Norway exported in the form of oil and gas 2250 TWh, or 15 times the electricity generation in Norway in the same year**

Egging and Tomasgard, 2018

# How to contribute nationally and globally



**Norway Invites You to Explore Its Electric Vehicle Paradise**  
The Land of the Midnight Sun—and one of Tesla's biggest markets—wants you to come experience the transportation future.

*The case for a supply-side climate treaty*  
The Paris Agreement can be strengthened by a treaty limiting global fossil fuel supply

# The Global energy transition and the 1.5 degree target

- 12.00 – 12.15 Opening: Vice President Anders Elverhøi/VISTA Board
- **The Global energy transition**
- 12.15 – 12.35 Status and challenges after the Paris-agreement: Jae Edmonds, Chief Scientist JGCRI
- 12.35 – 12.55 Global Energy transformation: A roadmap to 2050: Gayathri Prakash IRENA
- **The future of energy commodities**
- 12.55 – 13.15 The future of coal: Professor Franziska Holz, DIW Berlin
- 13.15 – 13.35 The future of oil and gas: Ottar Skagen, EquinorProgram
- 13.35 - 14.05 Coffee Break
- **The energy transition in Norway: value creation and climate objectives**
- 14.05 – 14.25 The role of Norway in the European energy transition Asgeir Tomasgard, CenSES/ NTNU
- 14.25 – 14.45 Integrated Energy and Transport Systems Øystein Ulleberg, Principal researcher, IFE
- 14.45 – 15.05 Norwegian climate objectives - tough targets and weak policies?: Cathrine Hagem, SSB
- 15.05 – 16.00 **Panel discussion**
- 16.00 – 16.30 Aperitif
- 16.30 – 19.00 Tapas