

Pathways to Sustainable Energy

National approaches to a global challenge

Baku, 21 October 2016



Workshop agenda



	Content	Resource persons
09.00-09.10	Welcome and Introduction	UNECE
09.10-09.30	I. Project Overview: Pathways to Sustainable Energy. II. Review: Defining Sustainable Energy	UNECE
09.30-10.15	Country presentations Azerbaijan, Croatia, Moldova, Uzbekistan, Jordan	4-5 country representatives
10.15-11.00	Group work – Part I Regional Insights: Key drivers & regional trends towards the 2050 energy system	UNECE All participants
11.00-11.15	Coffee break	
11.15-12.00	Group work - Part I continued Group work - Part II Defining Sustainable Energy	UNECE All participants
12.15-12.50	Plenary	UNECE All participants
12.50-13.00	Wrap-up and Closure	UNECE

Expected workshop outcomes

- Reach out to member States of the UNECE region, in particular Eastern countries (CCA, Eastern Europe, Southeastern Europe), and beyond the UNECE region, to
 - Disseminate awareness about Pathways to Sustainable Energy Project
 - Grow the Pathways expert community
- Gather information and increase understanding about country perspectives on future sustainable energy systems (first regional workshop)
- Collect regional messages, trends and challenges that will shape future sustainable energy pathways, to feed into the Pathways project

UNECE Project: Pathways to Sustainable Energy



➤ Focal Question

**How can the UNECE Region attain
Sustainable Energy in the Future (2050)?**

➤ Overarching Goal

The capacities of UNECE member states to develop, implement and track national sustainable energy policies aligned with international agreements are increased and contribute to climate change mitigation and sustainable development.

Project Components

Output 1: Modelling of Sustainable Energy Pathways

Sustainable Energy Pathways for the UNECE region are identified and modelling results inform national energy strategies of member States.

Output 2: Conceptualisation of an early-warning system

A mechanism including indicators to track successful implementation of international climate and sustainable development agreements is introduced and made available to member States.

Output 3: Policy Dialogue

The understanding and capacities of national energy ministries to develop, implement and track national sustainable energy strategies is increased, and a regional dialogue exchange format is established.

Project Timeline 2016-2018

2016

- 21 Oct: Regional Workshop, Baku

2017

- Q1-Q4: Modelling of four Sustainable Energy Pathways to 2050
- 11-14 Jun:
 - Energy Ministerial „Challenges in achieving Sustainable Energy“, Astana
 - Regional Workshop, Astana / Presentation of intermediary modeling results
 - Policy Workshop with energy experts from the UNECE region
- 28-30 Sep:
 - Policy Dialogue at the 26th Session of the UNECE Committee for Sustainable Energy
 - Regional Workshop / Presentation and discussion of intermediary modeling results

Project Timeline 2016-2018

2018

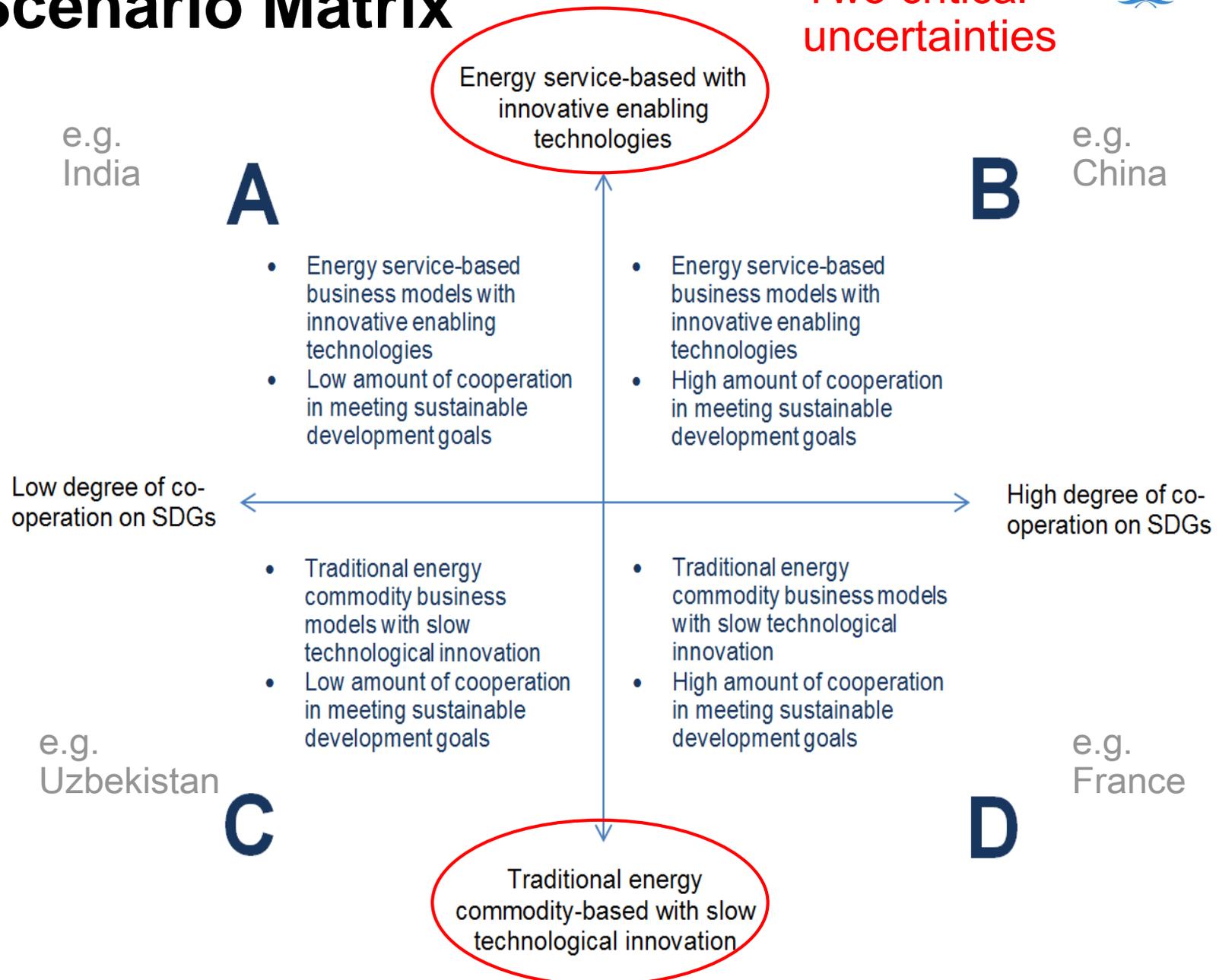
- Development of Policy Recommendations: Policy and Technology Pathways
- Q3/Q4:
 - Policy Dialogue at the 27th Session of the UNECE Committee for Sustainable Energy
 - Regional Workshop / Presentation and discussion of intermediary modeling results
- Q4:
 - High-level Policy Dialogue in an UNECE member State to discuss modeling findings and policy recommendations

2019

- Possible: UN Energy Ministerial, informed by policy recommendations from the project

Scenario Matrix

Two critical uncertainties



DRAFT Global (UNECE) Storylines



Scenario A Technology development in home markets, with service-based business models and decarbonisation of fossil fuels through CCS and system-wide efficiency.

Scenario B Service-based business models with emergence of energy “prosumers”, increased decentralisation, and aggressive application of low-carbon technologies with renewables, gas, nuclear and storage.

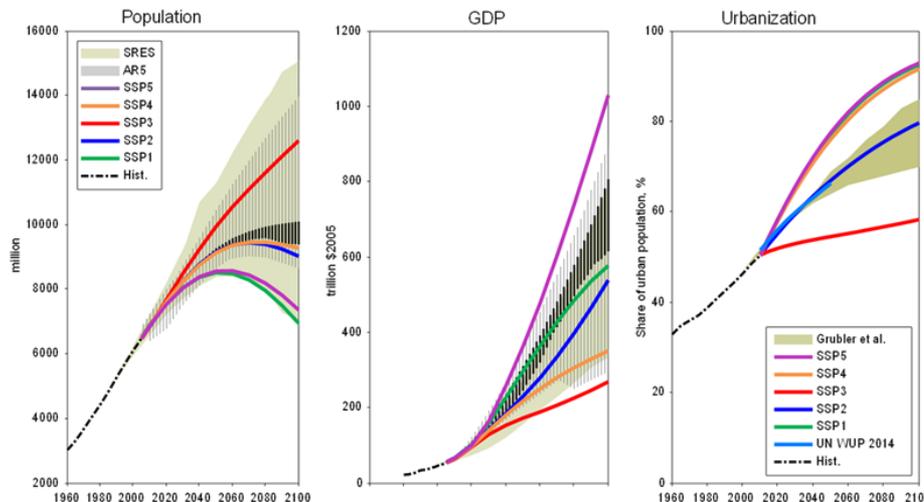
Scenario C Strong acceleration of energy efficiency measures from source to use leading to improved energy intensity; focus on domestic energy sources with CCS, nuclear, and domestic storage.

Scenario D Sustained high penetration of gas in the energy system beyond 2030 with increased application of renewable gas and networked collaboration.

Pre-determined quantified elements

IPPC's Shared Socio-Economic Pathways for 2100 - SSPs

- 2013: Development of narrative socio-economic scenarios, to derive emissions scenarios without and with climate policies
- Purpose: Integrated analysis of future climate impacts, vulnerabilities, adaptation, and mitigation
- 2013-2016: Quantified datasets for Population and GDP Growth, Urbanisation



- 2016: Integrated Assessment Model (IAM), detailed information on energy, land-use, and emissions projections

The Concept of Sustainable Energy

Sustainable Energy ...

... is any type of energy that can potentially be used well into the future without harming future generations. (adapted from Brundtland Report 1987, Definition of Sustainable Development)

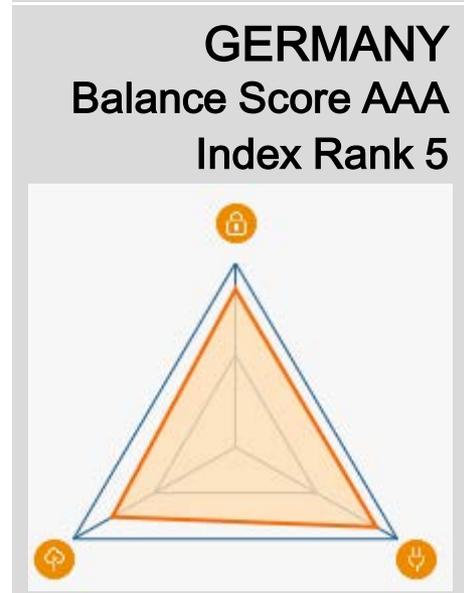
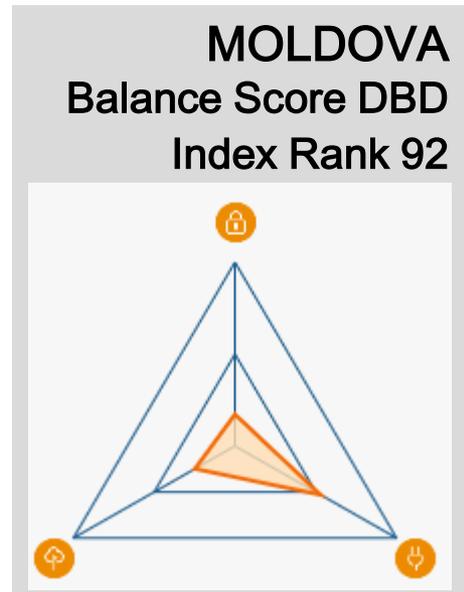
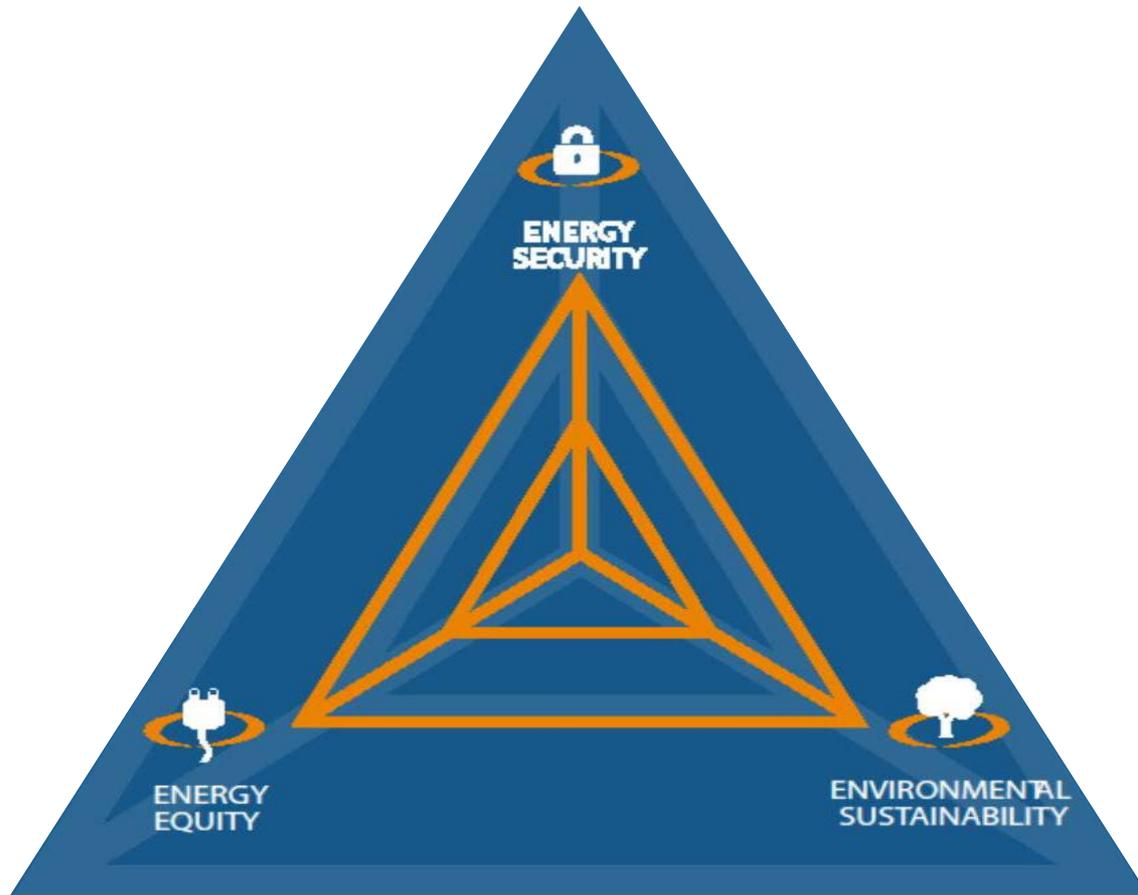
... is energy which has no or limited impacts on human health, the functioning of local and global ecological systems and the environment. Sustainable energy is the combination of energy savings, energy efficiency measures and technologies, as well as the use of renewable energy sources. (LG Action)

...a system of processing, transportation, distribution and consumption of energy, which will be characterized by a constant, overwhelming reduction in consumption of non-renewable resources and environmental damage, while providing, at socially acceptable prices, universal access to energy. (K. Prandecki (2014): Theoretical Aspects of Sustainable Energy. In: Energy and Environmental Engineering 2(4): 83-90, 2014)

3 dimensions of sustainable energy:

- (1) Ecological
- (2) Economic
- (3) Socio-cultural

WEC - Energy Trilemma Index



SE4All – Sustainable Energy for All

Global Initiative to

- (1) provide universal **energy access**,
- (2) double the global rate of improvement in **energy efficiency**,
- (3) double the share of **renewable energy** in the global energy mix



2014 - 2024
UNITED NATIONS DECADE OF
SUSTAINABLE
ENERGY FOR ALL

2030 Sustainable Development Agenda



Goal 7:

Ensure access to affordable, reliable, sustainable and modern energy for all.



- By 2030, ensure **universal access** to affordable, reliable and modern energy services
- By 2030, **increase** substantially the **share of renewable energy** in the global energy mix
- By 2030, **double the global rate of improvement in energy efficiency**
- By 2030, enhance **international cooperation** to facilitate access to clean energy research and technology, (...), and promote investment in energy infrastructure and clean energy technology
- By 2030, **expand infrastructure and upgrade technology** for supplying modern and sustainable sustainable energy services for all in **developing countries** (...)

SDGs related to Energy

A white icon of a globe inside an eye shape, set against a green background.

13 CLIMATE ACTION
Take urgent action to combat climate change and its impacts

A white icon of three interlocking cubes, set against an orange background.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

A white icon of an infinity symbol with a circular arrow, set against a brown background.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION
Ensure sustainable consumption and production patterns

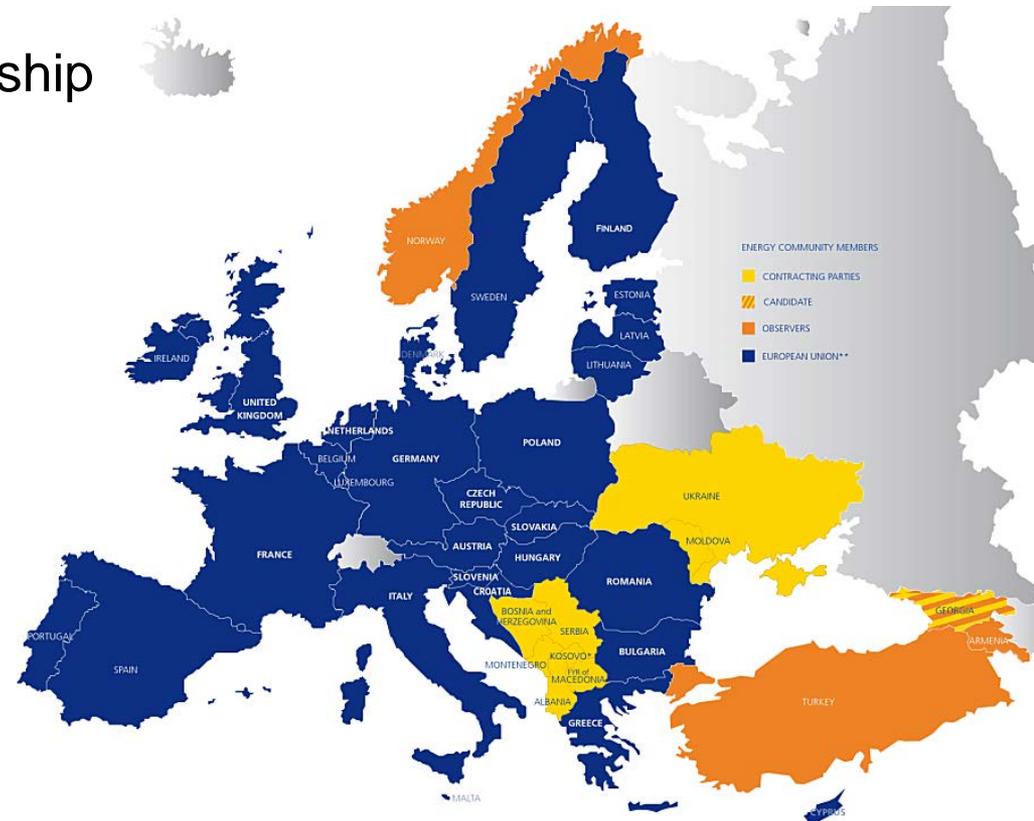
A white icon of a city skyline with a house, set against an orange background.

11 SUSTAINABLE CITIES AND COMMUNITIES
Make cities and human settlements inclusive, safe, resilient and sustainable

...and others

EU Energy Community / Energy Package

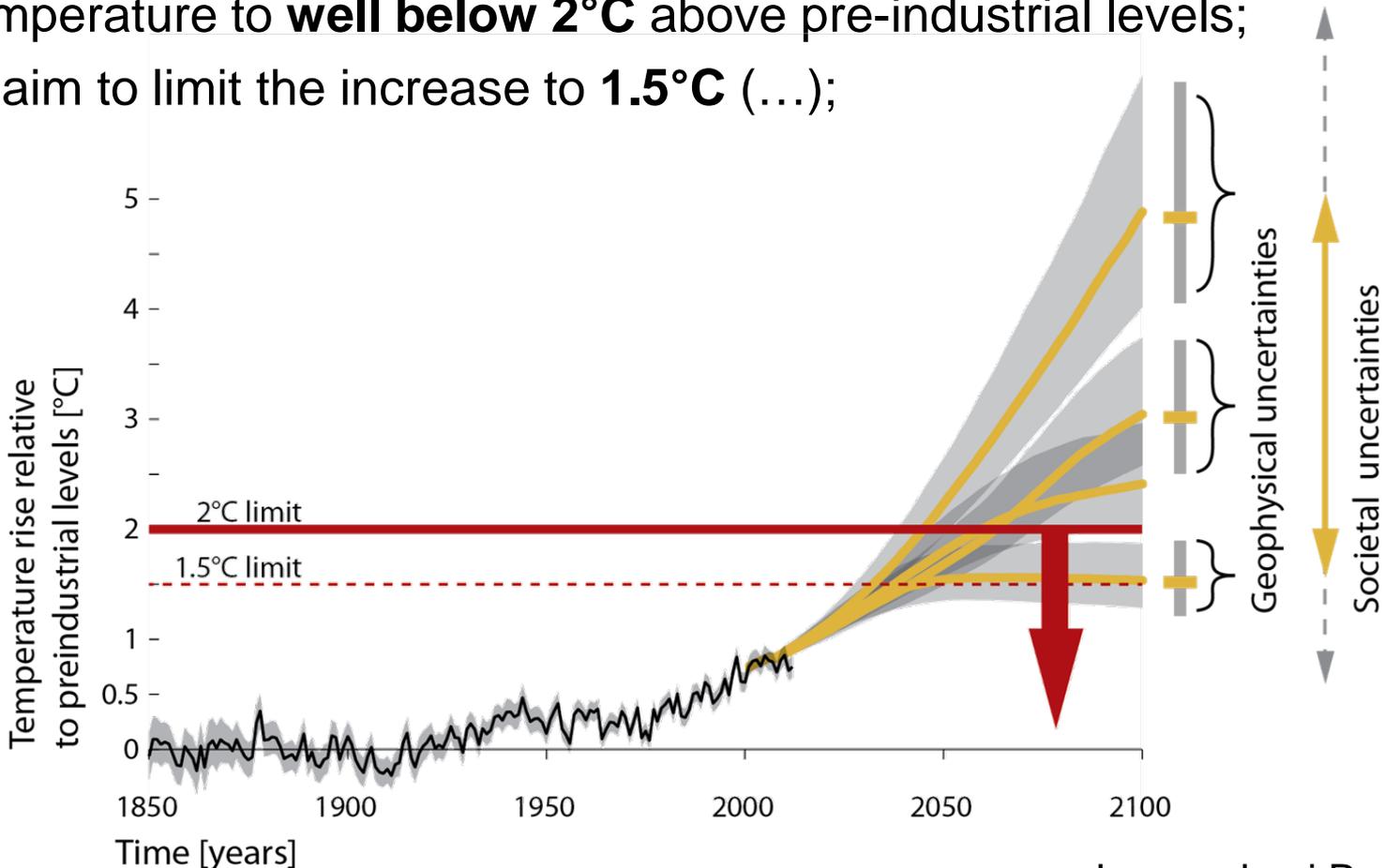
- Extends the energy legislation and internal market of the EU to third countries.
- Establishment of strategic partnerships with UNECE countries Azerbaijan, Turkey, Turkmenistan, and Ukraine.
- Reframing the energy relationship with Russia
- Ensuring energy security (in particular gas)
- Energy Efficiency Package (April 2016)



COP21: Paris Climate Agreement

➤ Mitigation: reducing emissions

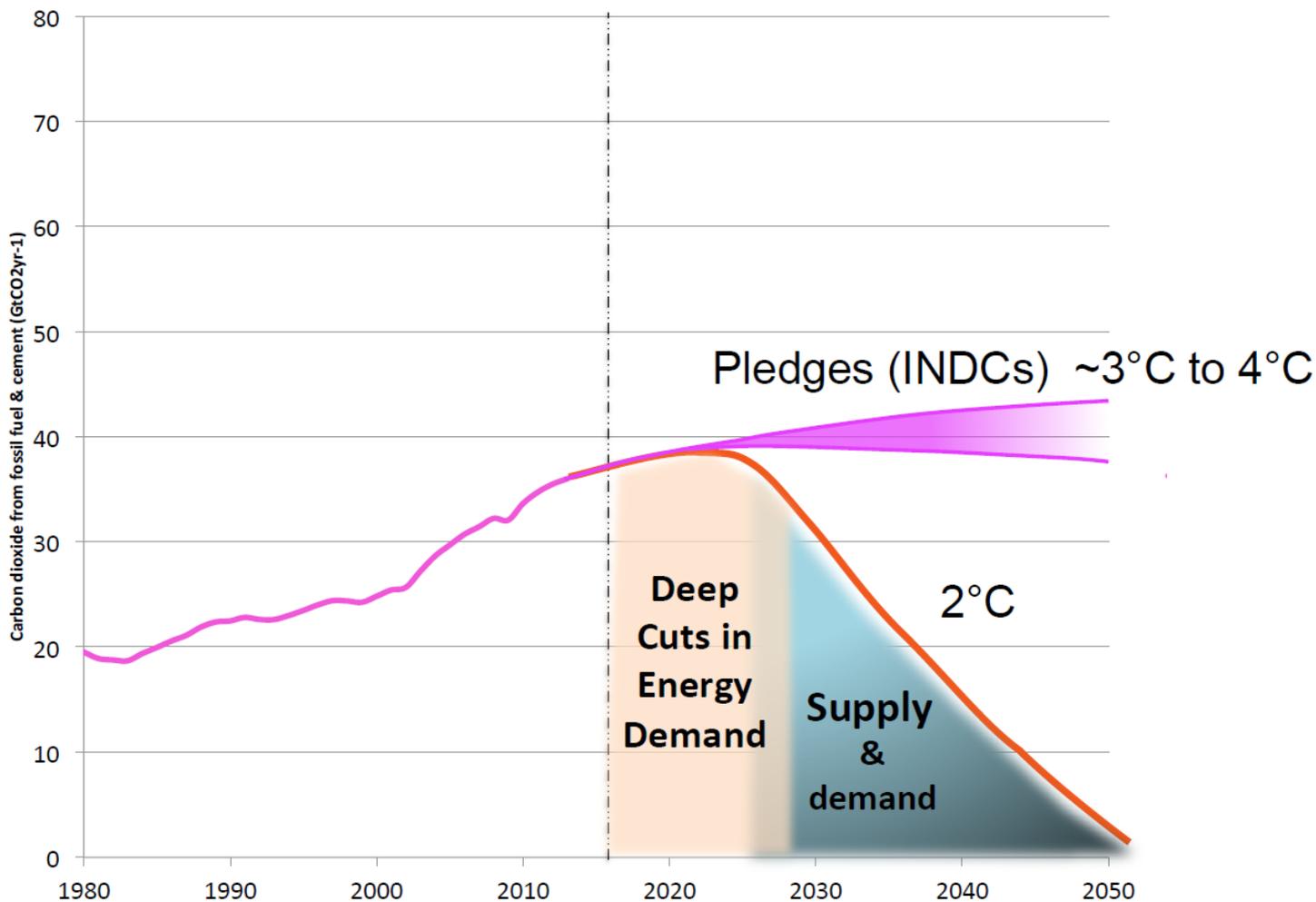
- a long-term goal of keeping the increase in global average temperature to **well below 2°C** above pre-industrial levels;
- to aim to limit the increase to **1.5°C** (...);



INDCs: Gap to reach 2°C Goal

- Before and during the Paris conference, countries submitted comprehensive **national climate action plans (INDCs – Intended Nationally Determined Contributions)**. These are not yet enough to keep global warming below 2°C (...).
- Existing studies show that without additional action, the existing INDCs are **insufficient to limit warming to below 2°C**
- Results of studies that assess temperature increases:
 - **With INDCs: 2.7 - 3.7 °C** (median chance) of warming compared with pre-industrial levels.
 - Comparison **BAU: 4 - 5° C**

Emissions Gap: Consequences for Energy



To keep within 2 degrees:

- Poorer & less-industrialised nations: *zero CO₂ by ~2050*
- Wealthy industrialised nations: *zero CO₂ by ~2035*

Thank you

Stefanie Held

Chief, Sustainable Energy Section

Secretary of the Committee on Sustainable Energy

UNECE

Stefanie.held@unece.org