



# Pathways to Sustainable Energy Project

Policy and Technology Options to Achieve Sustainable Energy

14 June 2017, Astana





# Presentation: Framing the Target: Sustainable Energy in 2050

- Energy for Sustainable Development: Energy-related SDGs, global climate targets and NDCs
- Importance and concepts of energy security
- The ultimate objective: Quality of Life

# Pathways to Sustainable Energy Project

## Overview

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.

# Target Definition: Sustainable Energy

Draft: 3 Components

ENERGY



**Energy Security**

- Supply to meet demand (but differing conceptualisations)
- ...

**Sustainable Energy**

- Energy affordability
- ...

- Air pollution control
- Climate commitments
- ...

**Quality of Life**

**Environmental Sustainability<sub>4</sub>**

# Target Definition: Sustainable Energy

## Energy-related SDGs



### ENERGY

- SDG6: Clean water and sanitation
  - **SDG7: Affordable and clean energy**
  - SDG9: Industry, innovation and infrastructure
  - SDG11: Sustainable cities and communities
  - SDG12: Responsible consumption and productions
  - SDG13: Climate action
  - SDG17: Partnerships
- 
- SDG1: No poverty
  - SDG8: Decent work and economic growth
  - SDG16: Peace, Justice and Strong Institutions



# Energy Security

As a component to conceptualize sustainable energy



## ENERGY

- Qualitative / Quantitative description

- Final energy intensity (SDG7)
- Share of RE (SDG7) (environmental sustainability?)
- Investment requirements (SDG7)
- Energy imports and exports
- Energy prices (oil price)

Other important

- Indicators
- -qualitative aspects ?

# Environmental Sustainability

As a component to conceptualize sustainable energy



## ENERGY

- Qualitative / Quantitative description
  - Carbon intensity (SDG13)
  - Carbon budget (temperature change)
  - Water use of energy sector (SDG6)
  - Pollutants (SDG9)

Other important

- Indicators
- -qualitative aspects ?

# Quality of Life

As a component to conceptualize sustainable energy



## ENERGY

- Qualitative / Quantitative description
  - Energy prices (end-consumer: electricity, heating, cooling, transport)
  - Food prices / consumption (SDG2)
  - Energy access (energy use?) (SDG7) (energy security?)

Other important

- Indicators
- -qualitative aspects ?





# Thank you!

Elisabeth Tinschert, Stefanie Held  
[Lisa.Tinschert@unece.org](mailto:Lisa.Tinschert@unece.org), [stefanie.held@unece.org](mailto:stefanie.held@unece.org)

Sustainable Energy Division

**UNECE**

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# Backup Slides

# 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)

# Sustainable Development

## SDG7: “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 energy services for all in **developing countries** (...)

# Sustainable Development

## SDG13: "Take urgent action to combat climate change and its impacts"

- Strengthen **resilience and adaptive capacity** to climate-related hazards and natural disasters in all countries
- Integrate **climate change measures into national policies**, strategies and planning
- Improve **education, awareness-raising and human and institutional capacity** on climate change mitigation, adaptation, impact reduction and early warning
- Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly **\$100 billion annually by 2020** (...)
- Promote **mechanisms for raising capacity** for effective climate change-related planning and management (...)

# Climate

## COP21: Paris 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** (...);
- on the need for **global emissions to peak as soon as possible** (...);
- to undertake **rapid reductions thereafter** (...).
- 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 (...).

### ➤ Transparency and global stocktake

- come together every 5 years to **set more ambitious targets** (...);
- **report** and track progress (...).

### ➤ Support

- (...) developed countries will continue to **support climate action** (...) in developing countries.
- Developed countries to mobilise **USD 100 billion per year by 2020** and extend this until 2025. A new and higher goal will be set for after this period.

\* The Paris Agreement further includes agreements on (1) Adaptation, and (2) Loss and damage

# Energy I/IV

## SE4All – Sustainable Energy for All

- Global Initiative to
  - (1) provide universal energy access,
  - (2) double the global rate of improvement in energy efficiency, and
  - (3) double the share of renewable energy in the global energy mix
- Connects private and public stakeholders to collaborate and benefit from identified High Impact Opportunities and High Impact Initiatives.