









### ENERGY



Opportunities for a Nexus Approach seen from the Perspective of the Energy Sector 5<sup>th</sup> Meeting of the Task Force on the Water-Food-Energy-Ecosystems Nexus

18 October 2017, Geneva









# Presentation Content





# Tracking Progress in Sustainable Energy

"Where are we standing today?"

- Global Tracking Framework: UNECE Progress in Sustainable Energy
- UNECE Renewable Energy Status Report

# Pathways to Sustainable Energy

"How do we achieve sustainable energy?"

UNECE Project Introduction



# Global Tracking Framework Global Results



## Progress fell short of what is needed to meet 2030 targets

- Electricity Access: Target: 100%, 2014: 85.3%
- > Access to Clean Cooking Fuels & Techn.: Target: 100%, 2014: 57.4%
- > Share Renewables in TFC: Target: 36%, 2014: 18%
- Energy Efficiency: Target: -2.6% CAGR, 2012-2014: -2.1% (compare CAGR 2010-2012: -1.9%)



For all targets: Rate of change insufficient

• EE closest to meet 2030 targets CAGR = Compound annual growth rate









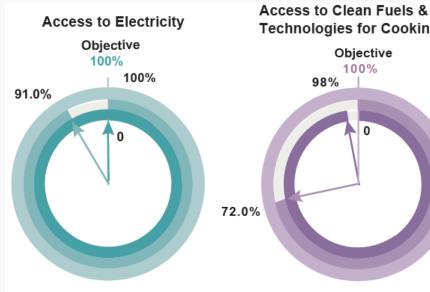


## Renewable Energy, Energy Efficiency & Energy Access **UNECE** Regional Results

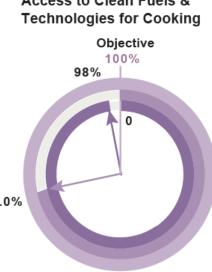




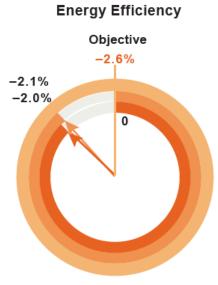
## **Energy Efficiency and Renewable Energy progress insufficient**



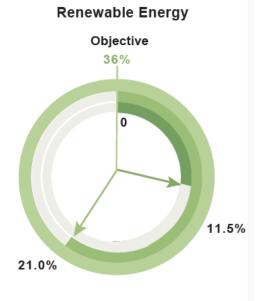
- Access to electricity, 2014, **UNECE** Region
- Access to electricity, 2030 IEA estimates, globally
- 2030 Target: Ensure 100% access to electricity



- Access to clean cooking, 2014, UNECE Region
- Access to clean cooking. 2030—IEA estimates, globally
- 2030 Target: Ensure 100% access to clean cooking



- Compound annual growth rate of primary energy intensity, 2012-14, UNECE Region
- Compound annual growth rate of primary energy intensity, 2012-30 -current trends, globally
- 2030 Target: Double the global rate of improvement in energy efficiency, expressed as compound annual growth rate (CAGR) of primary energy intensity



- Renewable energy share, 2014, UNECE Region
- Renewable energy share. 2030—IEA estimates, globally
- 2030 Target: Double the share of renewable energy in the global energy mix



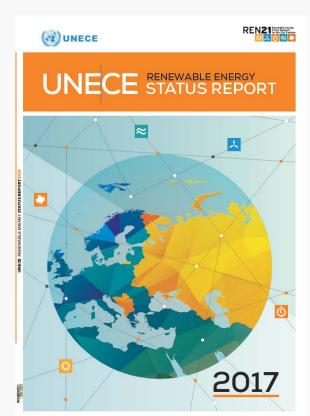


# UNECE Renewable Energy Status Report 2017 Tracking Progress across Renewable Energy and Energy Efficiency

Indicators



### Tracking Progress across renewable energy and energy efficiency indicators



- 17 countries of South East and Eastern Europe, the Caucasus, Central Asia and the Russian Federation
- First edition in 2015
- A **reliable data baseline** for increased investment activity
- Strong Involvement of key stakeholders for data collection and review: governments, IOs, and civil society
- Key finding: decline of RE investments. Why ? What to do?



Full report and info on GERE at: https://www.unece.org/energy/re.html

# UNECE Renewable Energy Status Report 2017 Key Findings



- South East and Eastern Europe, Caucasus, Central Asia and Russian Federation made strides into the realm of renewable energy and energy efficiency over the past two decades
- Governments advance in developing targets and policies that promote renewable energy sources are introduced in different forms across the region
- Numerous barriers remain (energy subsidies, legal & administrative complexities, awareness of affordability, etc.) and delay projects implementation
- Viewed from global perspective, capacity and investment in the covered 17 countries remain marginal



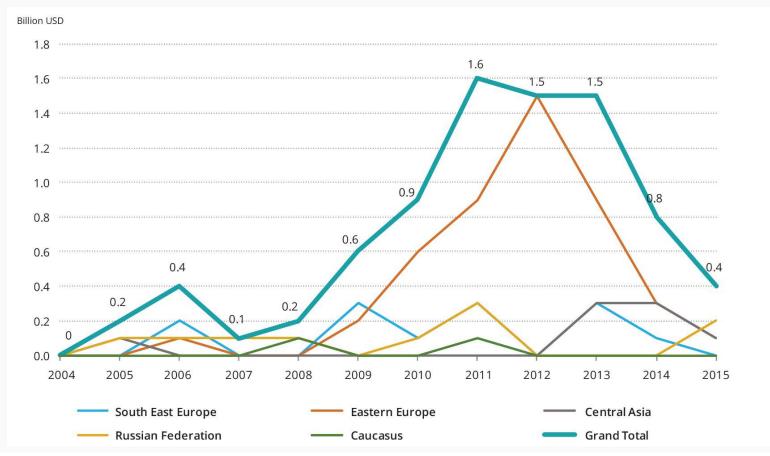
### **UNECE Renewable Energy Status Report 2017 Key Findings**



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## Renewable Energy Investment Overview, 2004 - 2014

- The covered countries only represent 0.2 % of new RE investment in 2015 worldwide
- Investment attraction remains an issue for RE development in the region





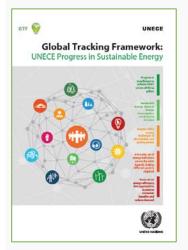
# Broadening the Set of Energy Indicators

Tracking Progress for Energy for Sustainable Development



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Defining energy indicators beyond SDG7 that allow a more holistic assessment of progress, while making the linkages to other energy-related SDGs.



### **Download**

https://www.unece.org/fileadmin/DAM/energy/se/pdfs/comm26/Room\_documents/CSE\_26\_2017\_INF\_9.pdf

(Room Document Inf.9 of 26<sup>th</sup> CSE session)





# Project Overview Pathways to Sustainable Energy



- Timeframe: May 2017 Sep 2019 (Current phase)
- Overarching Question

## How can the UNECE Region attain Sustainable Energy?

- Key deliverables
  - Development of policy and technology options / technology portfolio
  - Modelling of Sustainable Energy scenarios
  - Definition of adaptive policy pathways
  - Definition of Key Performance Indicators
  - Conceptualization of an early-warning system
  - 2-4 workshops to define & discuss policy options
  - High-level policy dialogue planned for 2019

https://www.unece.org/energy/pathwaystose.html





# UNECE Region Sub-regional Clusters





- Global Modelling
- UNECE modelling
- Regional subsets
  - North America
  - Western Europe
  - Central and Eastern Europe
  - Southeast Europe
  - Caucasus

- Central Asia
- Ukraine, Belarus, Moldova
- Russian Federation
- Turkey
- Israel



# Target Definition: Sustainable Energy Three pillars



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### **Energy Security**

Share of RE

primary)

- Resilience
- Robustness
- Reliability
- Energy imports vs. Exports

Energy Intensity (Final,

Investment requirements

- Energy affordability / prices
- Physical energy Access
- **Energy Services**

Sustainable **Energy** 

- Carbon intensity of GDP & of energy
- Air pollution
- Land use
- Water use
- Waste produced

**Environmental Protection** 

**Energy for Quality of Life** 



# Discussion Energy-Water-Food Nexus in the Project



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- Reaction to the presented slides
  - Inputs to the project set-up, modelling approach
  - Questions
- How to strengthen inclusion of nexus-relates aspects in the Project?
  - ... in the development of policy options
  - ... in the discussion and formulation of scenarios
  - ... in the development of policy pathways



# Panel Discussion Energy-Water-Food Nexus in the Project



ENERGY

## **Margalita Arabidze**

Head of Energy Efficiency and Renewable Energy Division, Ministry of Energy, Georgia

### Nafâa Baccari

Deputy Director of Renewable Energy National Agency for Energy Management,, Tunisia

## **Predrag Milanovic**

Adviser in the Department of Renewable Energy Sources, Ministry of Mining and Energy, Serbia

Moderated by **Stefanie Held**, Chief, Sustainable Energy Section, UNECE Sustainable Energy Division.



# Panel Discussion Energy-Water-Food Nexus in the Project



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- What information does the energy sector need for planning, for operation?
- What is the value of inter-sectoral studies for developing policies and strategies?
- What is the role of regional and transboundary cooperation in meeting energy sector commitments sustainably, taking advantage of inter-sectoral synergies?
- What experiences and lessons learnt exist in the formulation of holistic, cross-sectoral and adaptive policy making to address energy-related nexus (such acrosssectoral assessments on water resources implications)?













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# Thank you!

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Sustainable Energy Division

UNECE

Date 25 I 10 I 2017, Geneva









# UNECE Group of Experts on Renewable Energy Water-Energy Nexus





### 2016-2017:

- Participation of GERE in Drina River Basin project to promote a water-energy integrated approach for increased uptake of renewable energy
- Publication: Good practices and policies for inter-sectoral synergies to deploy renewable energy: The water-energy-foodecosystems nexus approach to support SDGs (ECE/ENERGY/GE.7/2016/6)

### 2018-2019:

- Combine energy nexus related activities with the Task Force
- Type of cooperation: Hard Talks, Matchmaking events, and Renewable Energy investment assessments
- Further cooperation to be identified



More on GERE: <a href="http://www.unece.org/energy/se/gere.html">http://www.unece.org/energy/se/gere.html</a>

# Pathways to Sustainable Energy Project Implementation (Phase I)



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# **Trends**

May 2017 - Dec 2017

#### **Sustainable Energy Storylines**

- Definition of trends & uncertainties
  - Narrative Descriptions

## Research Questions (Case Studies, Deep Dives)

- Definition of particular thematic or sub-regional aspects, policies
- Definition of research questions

#### **Technology Assessment**

- Trends and cost evaluations for sustainable energy technology options

#### **Energy Policies Research**

- Current policies
- Other polices (NDCs, energy related)

# Analysis

June 2017 - Oct 2018

#### Modell preparation

- Definition of Input Assumptions (drivers) & Indicators (energy security, climate, quality of life, etc.)
- Adaptation of SSP datasets based on (new) data requirements
  - Quantfication of SE target
- Model development / finalisation

#### **Modelling / Assessment**

- Energy scenarios: energy supply, demand, technology mix, costs, climate budget, etc.
- Modelling / testing of policy options
- Topical / Sub-regional deep dives

#### **Policy options**

- 2-3 Policy energy expert workshops

# Results

Feb 2018 - Jun 2019

#### **Adaptive Policy Pathways**

- Policy Briefs
- Policy dialogues

#### Case Studies / Deep Dives Results

- 3-5 selected SE Scenarios

#### **Technology Pathways**

Portfolio, Roadmap

#### **Early-Warning System**

- Defining KPIs
- Concept development

### **Engagement of Energy Expert Community**

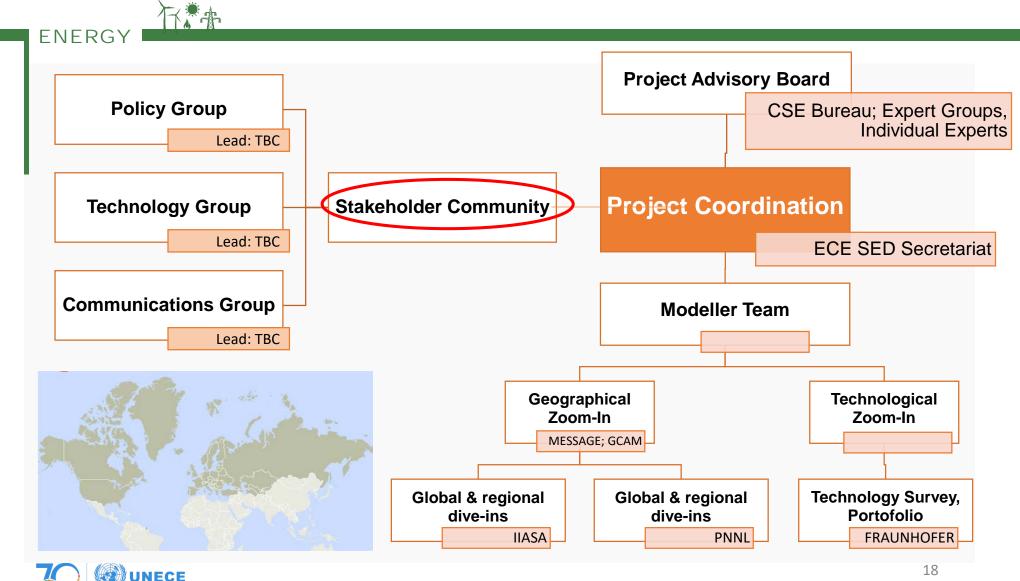
- Storylines
- Technology trends
- Policies

- Defining assumptions / indicators
- Developing policy options
- Policy energy expert workshops

- Outreach
- Policy dialogues



# Project Stakeholder Community Pathways to Sustainable Energy



# Project Timeline Engagement with the Expert Community

IFESD = Internat. Forum on Energy for Sust. Dev.



# DRAFT Research Questions Draft Deep Dives & Case Studies\* (Technology, Policy, Regional)



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### Focal question: How can countries attain sustainable energy by 2050?

- I What is the optimal energy-mix for different sub-regions within the UNECE region in order to help achieve the 2030 Agenda and create a sustainable energy system?
  - Energy mix
  - Role of sub-regional energy trade / Regional cooperation
  - Geopolitical consequences by increased RE upscaling / SE transition (tbd)
  - Country leadership
- II What can be drivers for the transition towards a sustainable energy system?
  - Policies
  - Technologies
  - Infrastructure
  - Finance / Investments
- III How to track progress towards achieving and for maintaining a sustainable energy system?
  - Key performance indicators for continuous improvement & feedback-loop
  - "Early warning" system

