



# Global Tracking Framework for Sustainable Energy & Pathways to Sustainable Energy Project

4<sup>th</sup> Session of the Group of Experts on Energy Efficiency

1 November 2017, Geneva





## Tracking Progress in Sustainable Energy

“Where are we standing today?”

- Global Tracking Framework: UNECE Progress in Sustainable Energy

## Pathways to Sustainable Energy

“How do we achieve sustainable energy?”

- UNECE Project Introduction

# Global Tracking Framework

## Global Results

### ENERGY



### 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

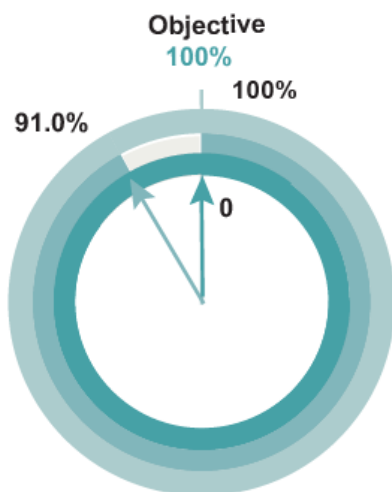
## UNECE Regional Results

### ENERGY



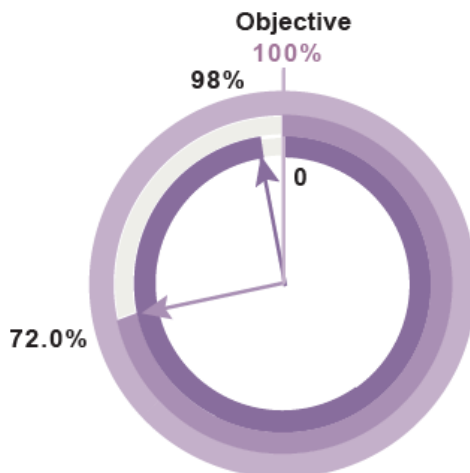
## Energy Efficiency and Renewable Energy progress insufficient

### Access to Electricity



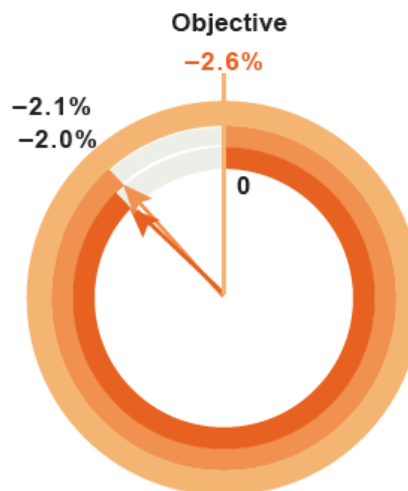
- Access to electricity, 2014, UNECE Region
- Access to electricity, 2030 — IEA estimates, globally
- 2030 Target: Ensure 100% access to electricity

### Access to Clean Fuels & Technologies for Cooking



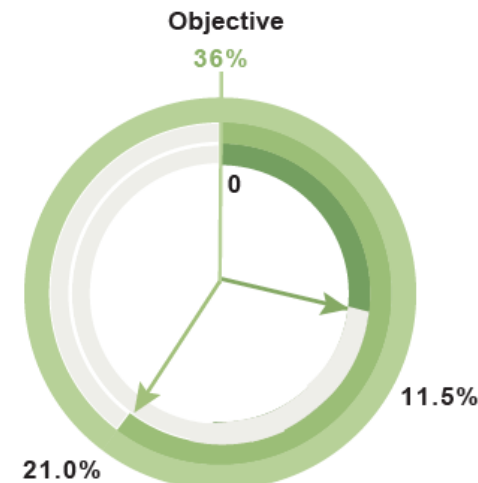
- Access to clean cooking, 2014, UNECE Region
- Access to clean cooking, 2030—IEA estimates, globally
- 2030 Target: Ensure 100% access to clean cooking

### Energy Efficiency



- 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



- 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

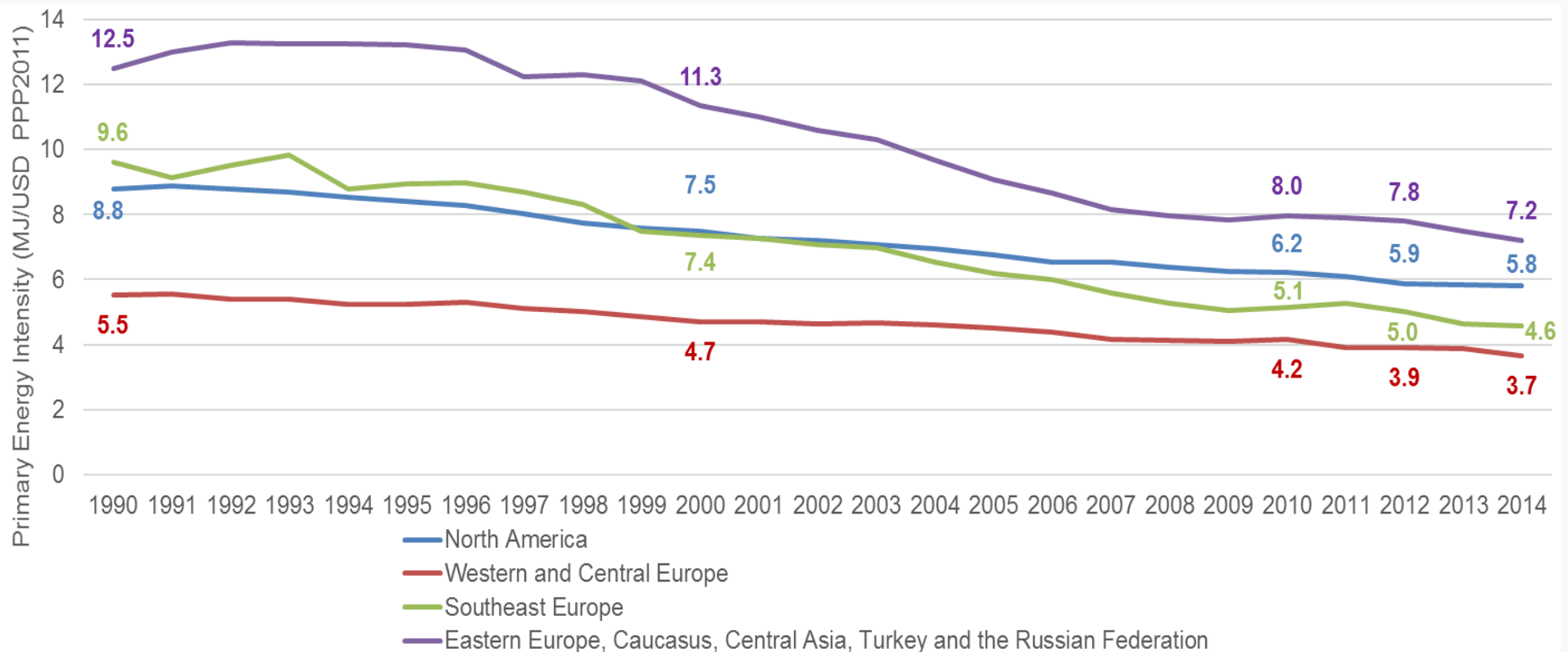
# Energy Efficiency

## Energy Intensity Decrease in UNECE Sub-Regions



ENERGY

Decline from 8MJ/USD in 1990 to 5.1MJ/USD in 2014 (2011ppp)



# Energy Efficiency

## Demand and Supply Side Perspectives

ENERGY



**SE4ALL Indicators: 8MJ/USD in 1990 to 5.1MJ/USD in 2014 (2011ppp)  
3.9EJ avoided TFC between 2012 -2014**

### Supply Side Energy Efficiency

- Fossil fuel power plant efficiency grew from 36% in 1990 to 41% in 2014
- Gas fired generators improved from 37% in 1990 to 49% in 2014, the highest amongst regions
- Electricity T&D losses declined from 8.2% in 1990 to 7.2% in 2014, the lowest amongst the regions
- Natural gas T&D fell from 1.2% to 0.6%

*Significant scope to replace coal with gas and renewable energy power options*

### Demand Side Energy Efficiency

- Most countries have National Energy Efficiency Action Plans, but limited progress and compliance tracking
- Building energy efficiency is slow
- Solid appliance efficiency progress in North America and the EU
- Largely untapped industry energy management productivity potential
- Outside EU, vehicle fuel economy not progressing

*Further value in studying energy efficiency progress, potentials and prospects.*

# Project Overview

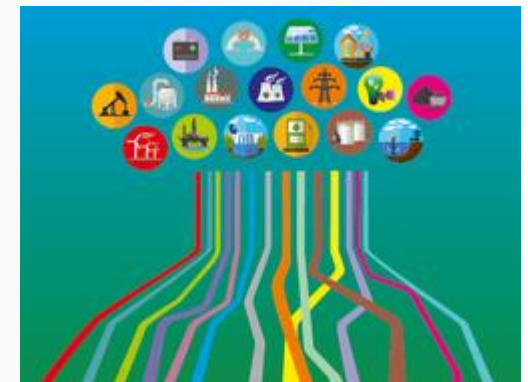
## Pathways to Sustainable Energy

### ENERGY



- Timeframe: May 2017 – June 2019 (Phase I)
- 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

ENERGY



- 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



# DRAFT Research Questions

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



### ENERGY

#### 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

# Target Definition: Sustainable Energy

## Three pillars



ENERGY

### Energy Security

- Energy Intensity (Final, primary)
- Share of RE
- Resilience
- Robustness
- Reliability
- Energy imports vs. Exports
- 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

**Energy for Quality of Life**

**Environmental Protection**

# Project Outline

## Technological Portfolio and Zoom-In (2017)



### ENERGY

#### Technology Portfolio

- Nuclear energy, hard/soft coal, natural gas, oil, biomass, wind, solar, CCS/ CDR, **energy efficiency technologies in final energy uses** etc.

#### Technology Zoom-In

- Energy Storage
- Power2X,
- CCS / CDR technologies
- **Energy Efficiency**

# Committee on Sustainable Energy

Flagship project: Pathways to Sustainable Energy



## ENERGY

- Overseen by the Committee
- Potential to link expert groups' work, making use of synergies
- The project's results can serve the group, and vice versa

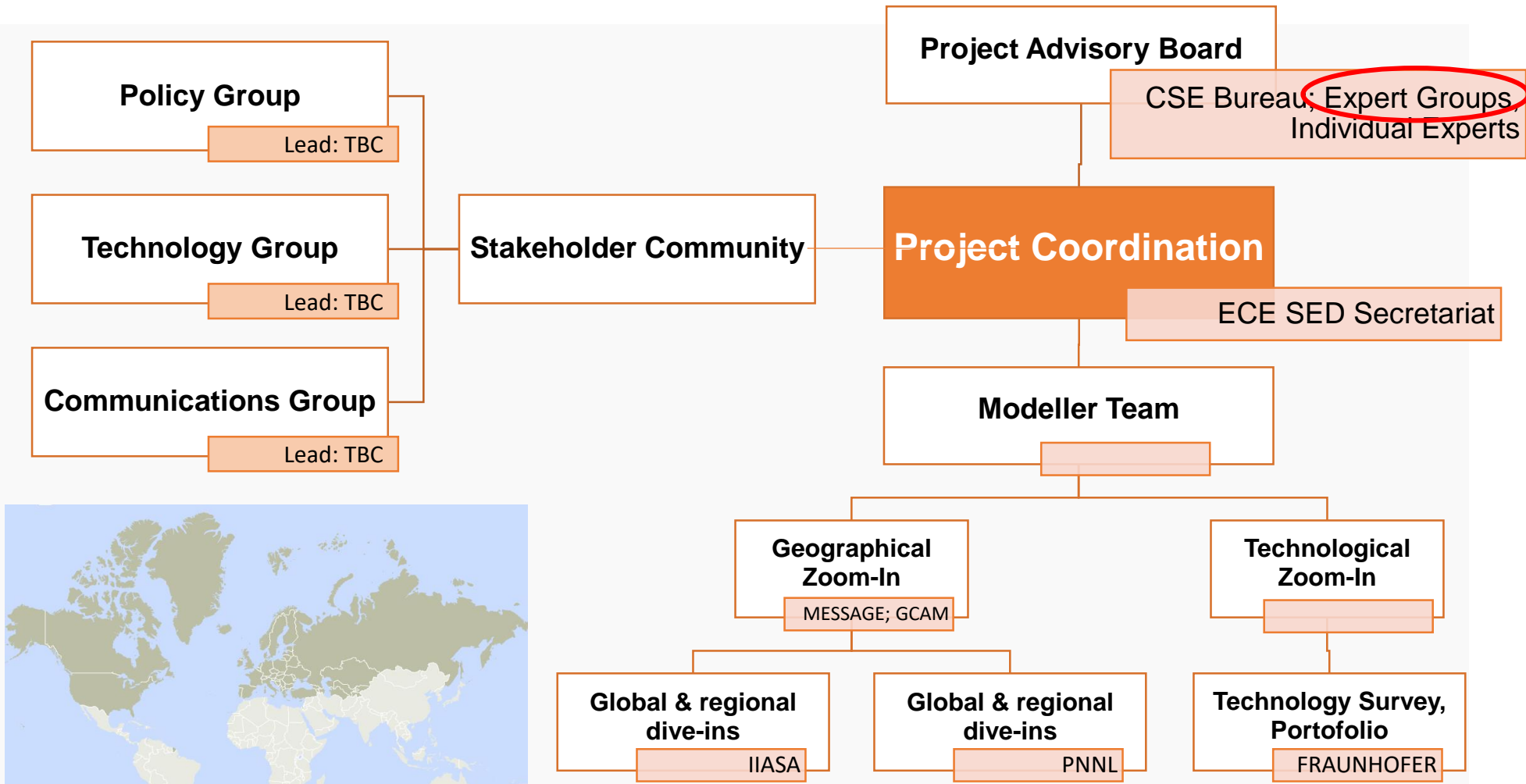
## Committee on Sustainable Energy

Group of Experts on Gas	Group of Experts on Coal Mine Methane
Experts Group on Resource Classification	Group of Experts on Renewable Energy
Group of Experts on Cleaner Electricity Production from Fossil Fuels	<b>Group of Experts on Energy Efficiency</b>

# Project Stakeholder Community

## Pathways to Sustainable Energy

ENERGY



# Project Timeline

## Engagement with the Expert Community



### ENERGY



CSE = Committee on Sustainable Energy  
IFESD = Internat. Forum on Energy for Sust. Dev.

## Expert Group's Involvement in the Project

ENERGY



- Reaction to the presented slides
- How to strengthen the expert groups involvement in the Project?
  - ... in the development of policy options
  - ... in the discussion and formulation of scenarios (workshops)
  - ... in the development of policy pathways
- How to formalize the interventions:
  - Work plan – Areas: Regulatory and policy dialogue addressing barriers to improve energy efficiency (finance); sharing experiences and best practices to improve energy efficiency in the industry sector
  - Focal point?
  - Involvement in policy or technology group?
  - Planning for 27<sup>th</sup> session of the Committee: Sep 2018



**For more information please visit the Project website:**  
<https://www.unece.org/energy/pathwaystose.html>



# Thank you!

Lisa Tinschert

[Lisa.Tinschert@unece.org](mailto:Lisa.Tinschert@unece.org)

Sustainable Energy Division

**UNECE**

Date 27 | 10 | 2017, Geneva

