

# UNECE: Tracking Progress on Energy for Sustainable Development



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Symposium on SDG 7 (Energy) Preparing for 2018 High-Level Political Forum on Sustainable Development



Oslo, Norway  
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# UNECE and Energy for Sustainable Development

## Conclusions and recommendations

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- 1. Current data quality and methods require enhancement**
- 2. Current indicators are insufficient for SDG7**
- 3. SDG7 does not reflect energy for sustainable development**
- 4. Additional conventional indicators could complement**
- 5. Additional unconventional indicators will be needed**

### Recommend

- A. Modify existing indicators for SDG7**
- B. Complement reports with a broader range of available indicators**
- C. Develop indicators and data capabilities for desired destination**

# Global Tracking Framework

## Global Results

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

- **Electricity Access** Target: 100% 2014: 85.3%
- **Access to Clean Cooking** Target: 100% 2014: 57.4%
- **Share of Renewables in TFC** Target: 36% 2014: 18%
- **Energy Efficiency** Target: -2.6% 2012-2104: -2.1%  
(compare CAGR 2010-2012: -1.9%)

**Rate of change insufficient for all targets**  
**EE closest to meet 2030 targets**

# Graphical summary of results

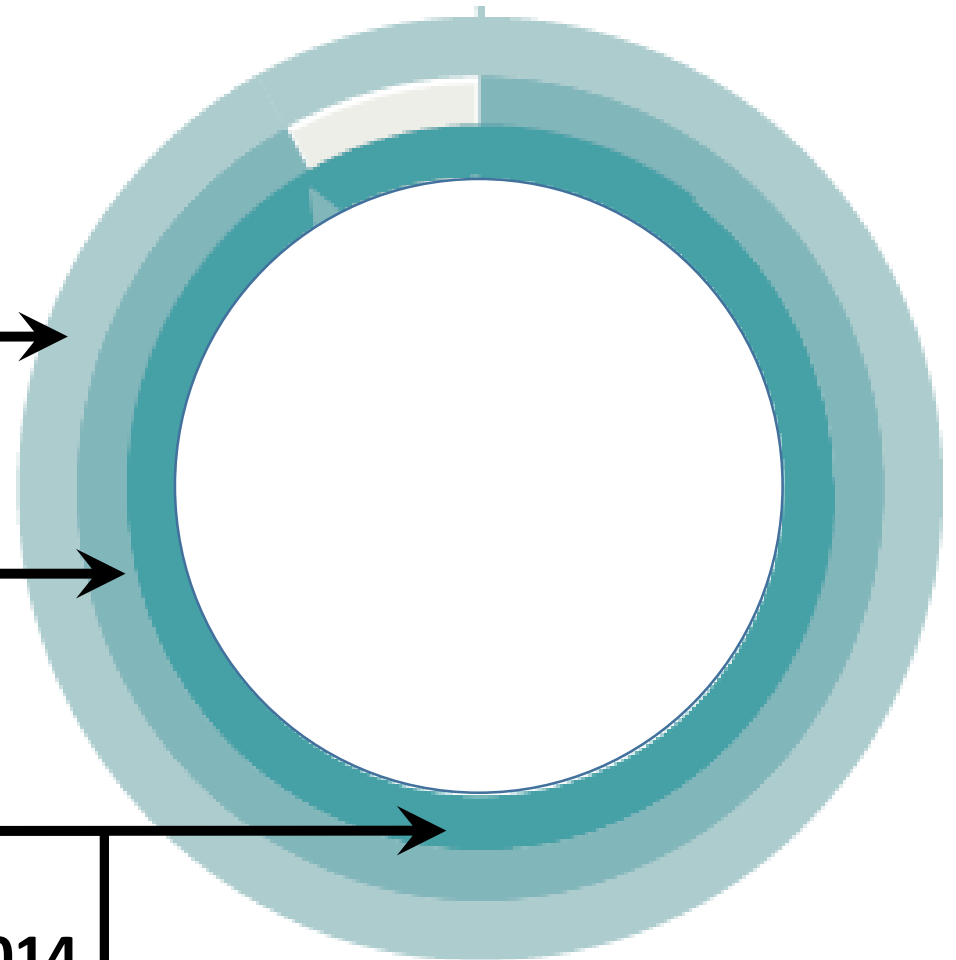
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2030 Target

IEA estimate of global progress  
by 2030 at current rates

Measured Progress  
in UNECE region in 2014



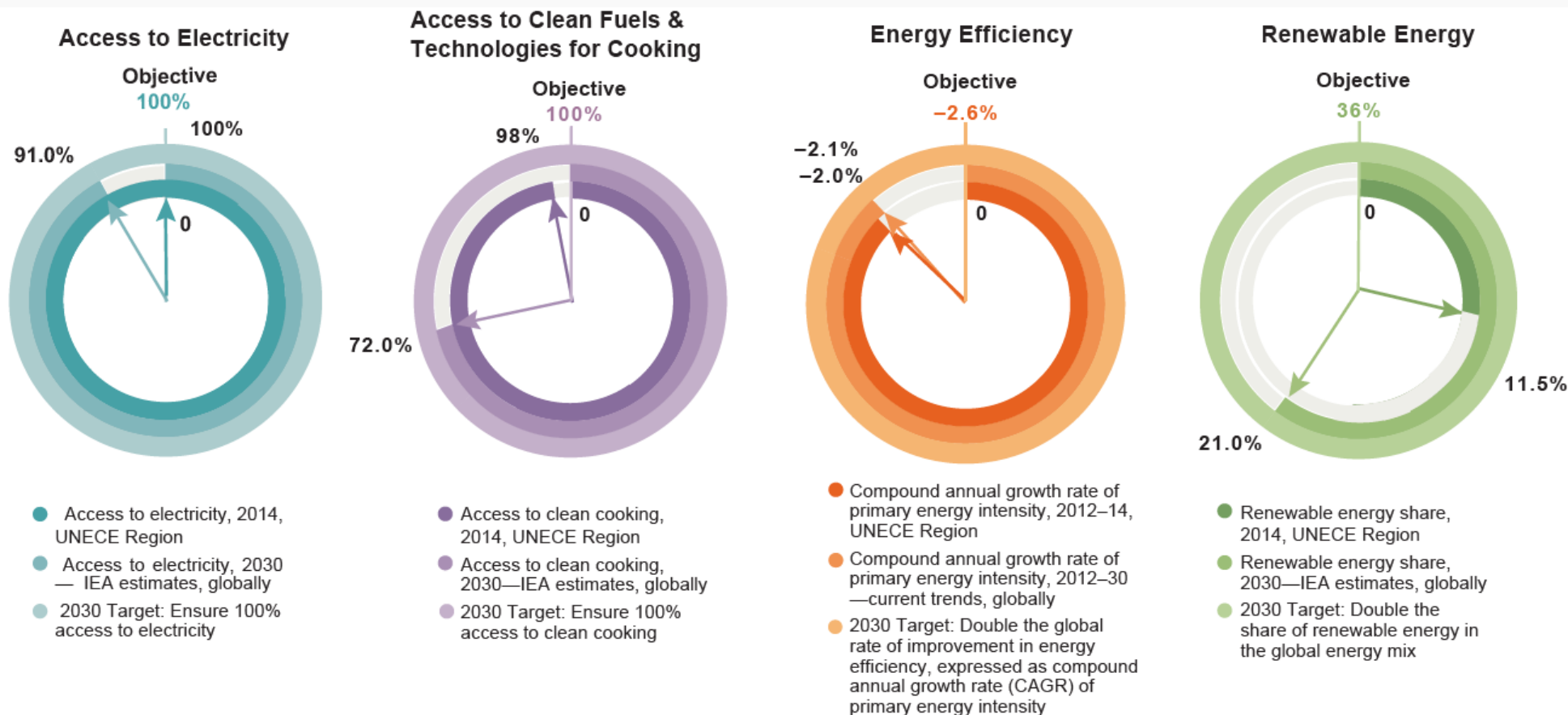
# Renewable Energy, Energy Efficiency & Energy Access

## SEforAll Indicator Results

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## Energy Efficiency and Renewable Energy: progress insufficient



# Energy Services

## Beyond Physical Access

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Access: 100% for electricity & 98% for clean cooking fuels



### Access Realities

- For some, limited power supply, outages, poor service quality, despite 100% access
- Human comfort and safety depends on substantial heat services in most UNECE countries
- Significant challenge to upgrade, renew older un-insulated housing stock, with locked-in fossil fuel dependence

### Energy Poverty

- Low-income households trade off heat, food, or other needs
- Some households spend more than 10% of income on energy
- Addressing GHG emissions without energy efficiency could worsen energy poverty

*'Efficiency first' offers a least cost approach to improving service and access.*

# Energy Efficiency

## Demand and Supply Side Perspectives

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**SE4ALL Indicators: 8MJ/USD in 1990 to 5.1MJ/USD in 2014  
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.*

# Renewable Energy

## Integration Challenges

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### SE4ALL Indicators: Share RE in TFC: 5.9% (1990) to 11.5% (2014)

**Overall, significant fossil fuel lock-in, but**

- More market-based support mechanisms are applied
- Traditional wood stoves offer efficient low-cost RE
- Experience and lessons learned from countries with significant RE upscaling within the region
- Challenges exist regarding market design to manage variability, and financial incentives to provide needed back-up

**With 100% access, the role of utilities is critical**

- Market design is key to managing variability,
- Capacity pricing motivates renewable energy that complements system load dynamics,
- Need to enable economic demand and supply side choices.
- Clear accountabilities for back up.



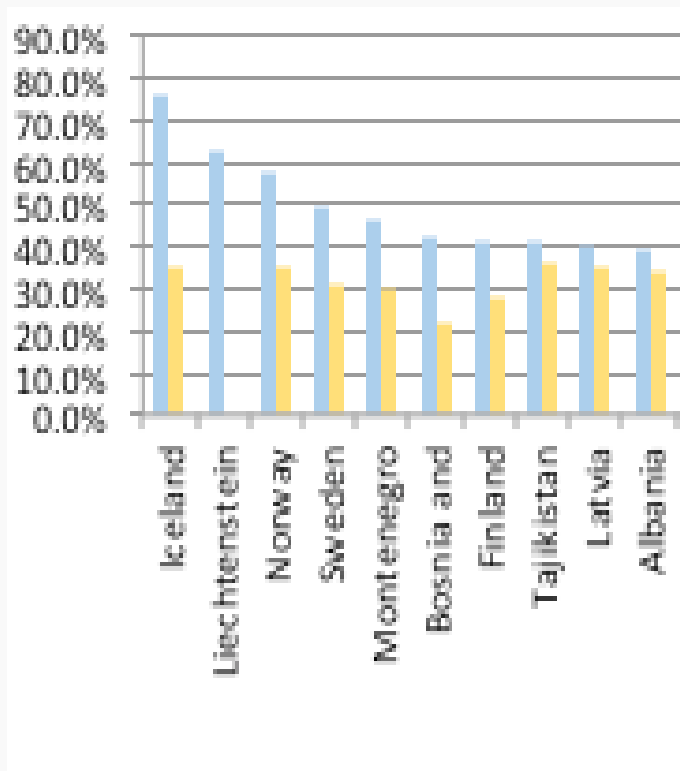
# Renewable Energy

## Additional Indicators

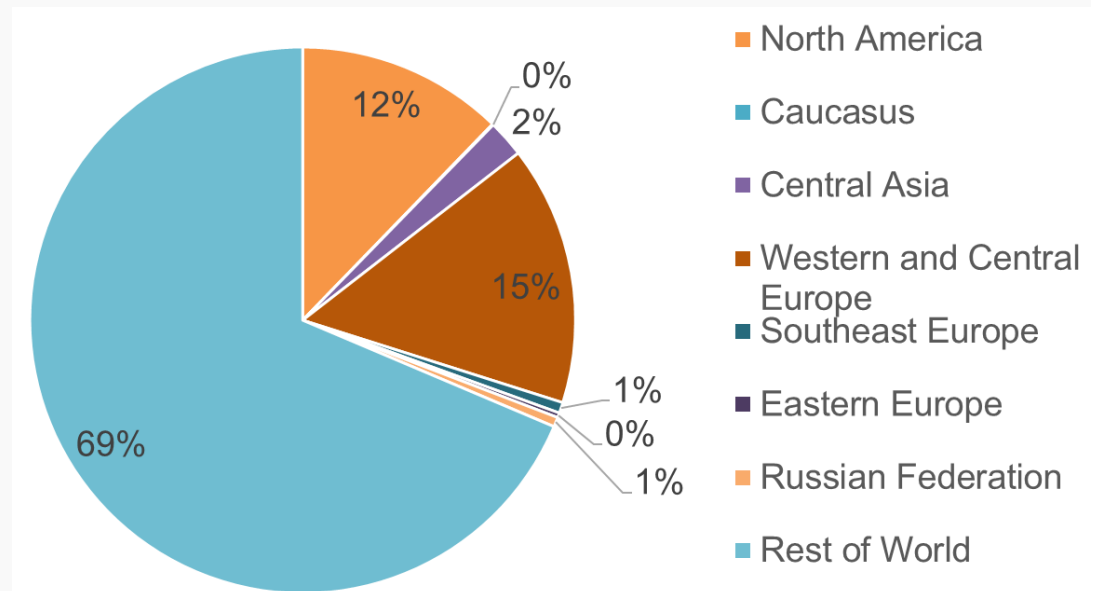
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### Differences Share of RE in TPES and TFC



### Renewable Energy Capacity Additions (2013-2015)



- U.S.: 192 GW in 2013 to 219 GW in 2015
- Western and Central Europe: From 2000-2015, 23% of global capacity additions.

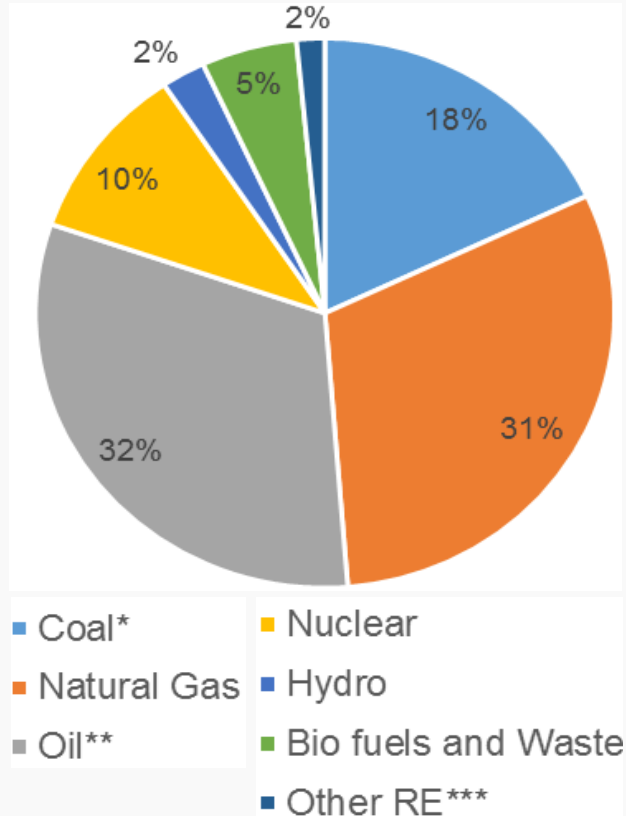
# Beyond SDG7 Pillars

## Fossil Fuel

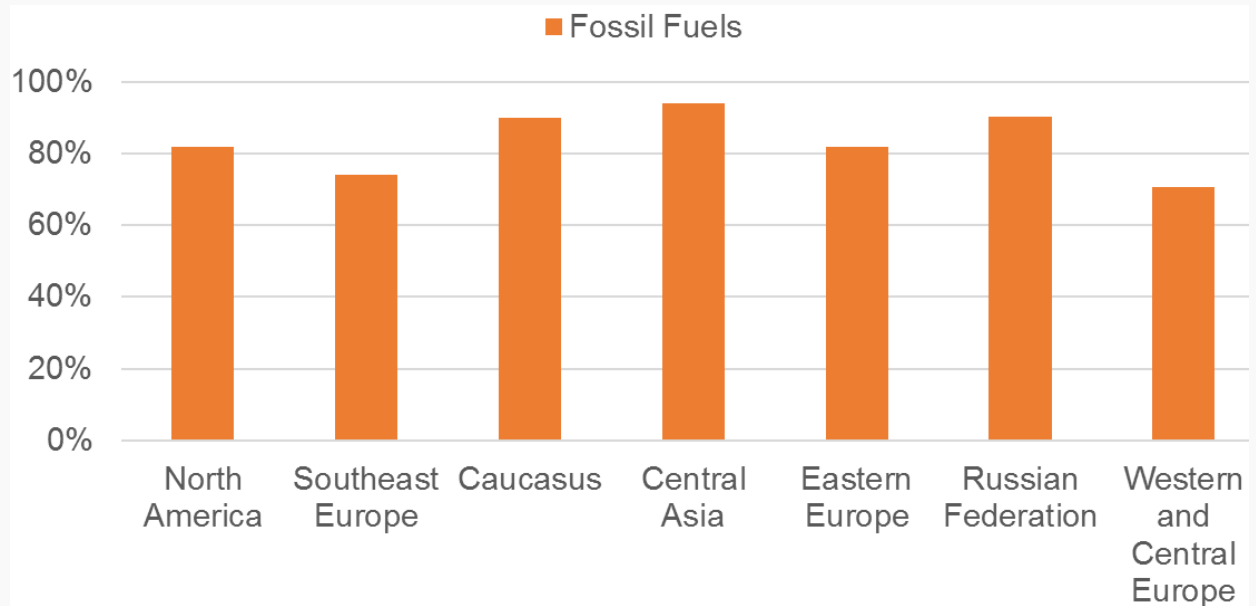
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### UNECE Energy Mix (% of TPES, 2014)



### Fossil Fuel Shares in TPES UNECE Subregions (2014)



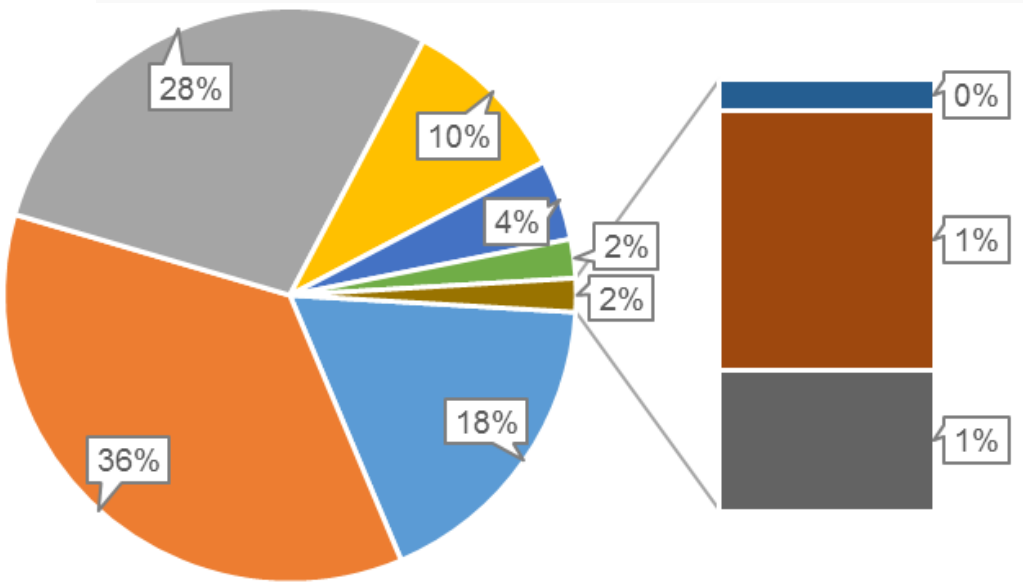
# Beyond SDG7 Pillars

## Greenhouse Gas Emissions

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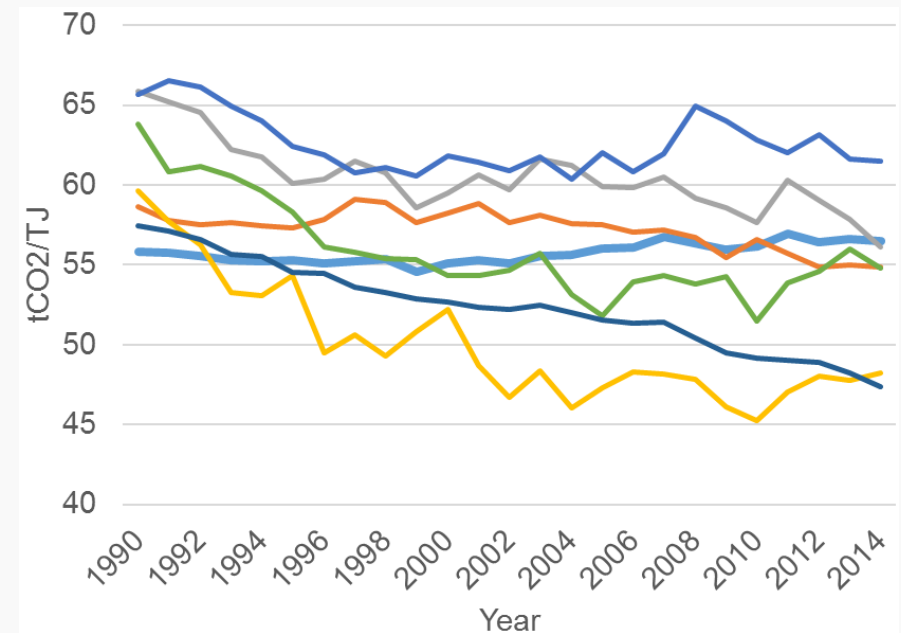


### Global/UNECE Share of CO<sub>2</sub> Emissions from FF (2014)



- North America
- Rest of world
- China
- Western and Central Europe
- Russian Federation
- Central Asia
- Caucasus
- Eastern Europe
- South East Europe

### Per-Capita FF related CO<sub>2</sub> per TPES for UNECE Subregions 1990-2014



- World
- North America
- South-East Europe
- Caucasus
- Central Asia
- Eastern Europe
- Western and Central Europe

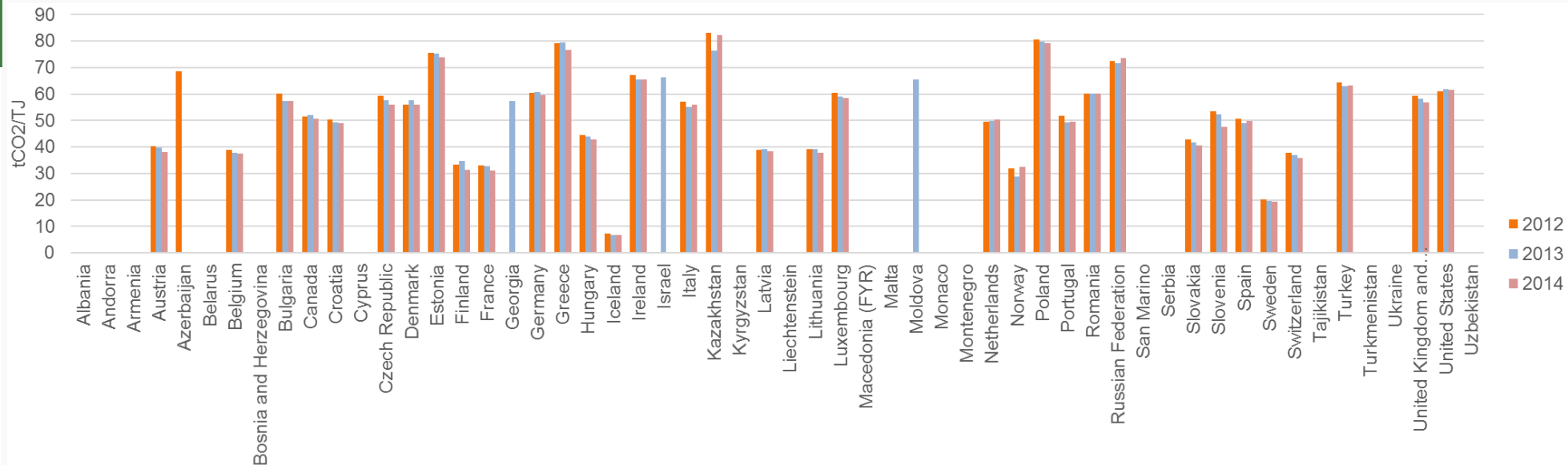
# Beyond SDG7 Pillars

## Greenhouse Gas Emissions

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### Energy-Sector Greenhouse Gas Intensity in TPES in UNECE countries (2012-2014)



- Data gaps for many countries
- Different reporting periods
- Mainly bottom-up reporting of emissions
- No independent verification of submitted data

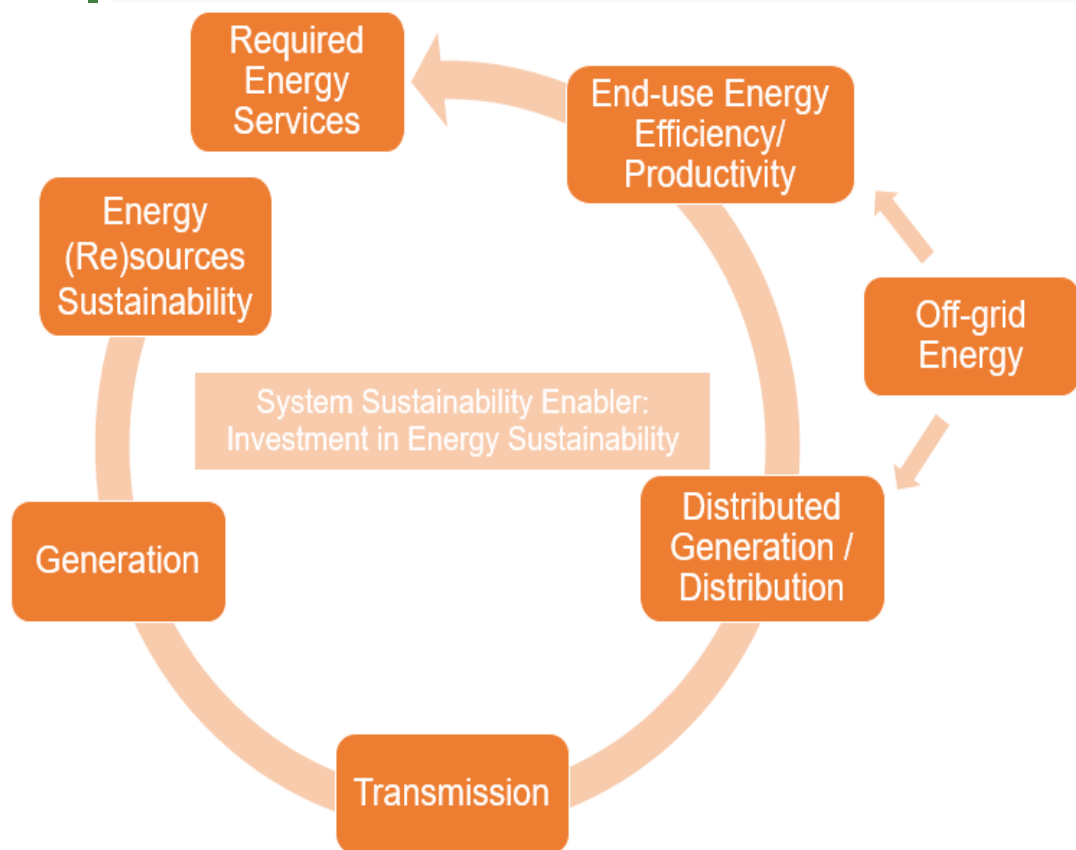
# Tracking Energy for Sustainable Development

Indicators across the Sustainable Energy System

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## A System Perspective on Energy for Sustainable Development



### Broad set of indicators required

- Fossil fuels related aspects (share of FF in TPES, generation efficiency, etc.)
- Climate aspects such as climate intensity of the energy sector
- Nexus considerations such as for the energy-water-food nexus
- Quality of life

### Review of existing indicators

- Renewable Energy: Share of RE in TFC versus Share of RE in TPES, Investments into RE
- Move beyond physical access to quality of access, including affordability
- Energy as a Service

# Energy for Sustainable Development

## Scoping the SDGs

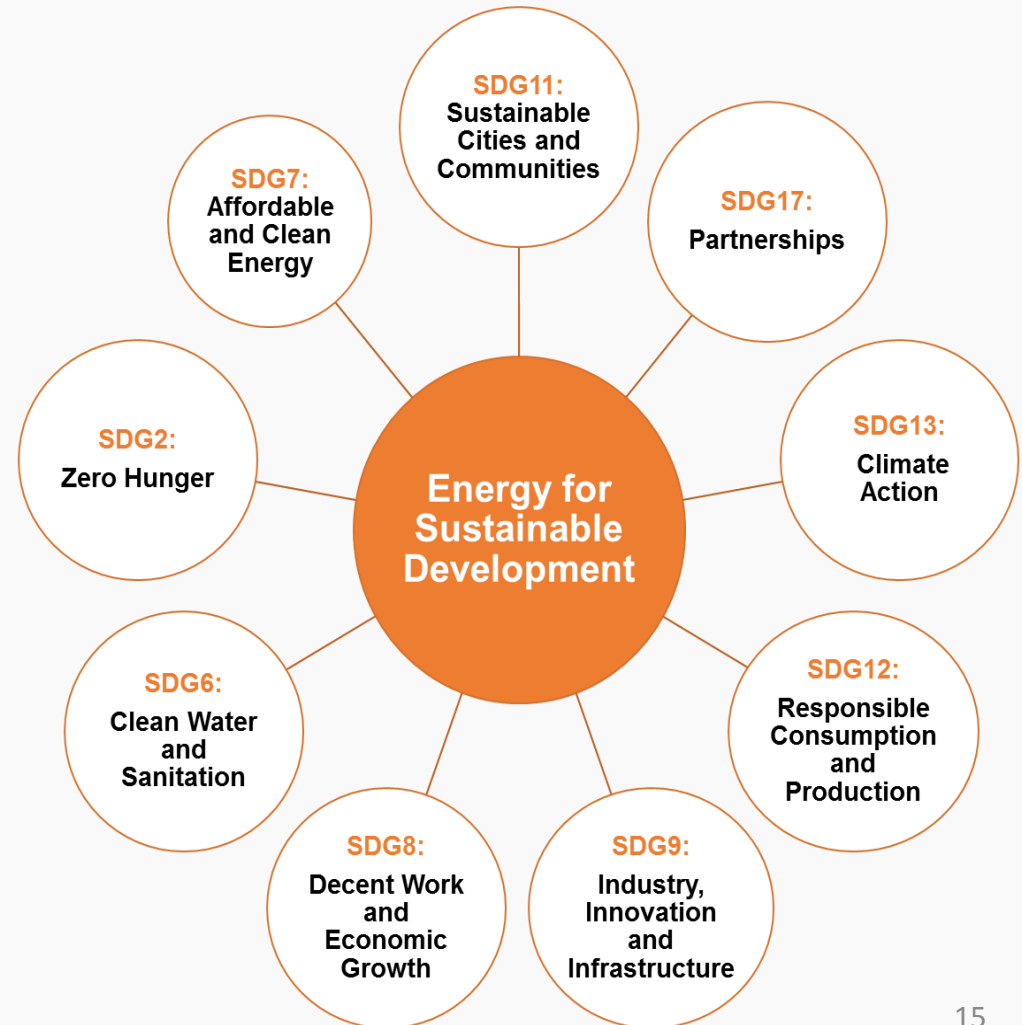
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### Objective

Need indicators to track progress on energy across the 2030 Agenda.

**Please see annex of UNECE report.**



# 2030 Agenda for Sustainable Development

## Energy-related SDGs



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- 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





# Thank you!

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**UNECE**  
Date 27 | 09 | 2017, Geneva

