



# Main results of the study: “Status and Perspectives for Renewable Energy Development in the UNECE Region.”

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Deutsche Energie-Agentur GmbH (dena) - German Energy Agency

This project is part of the International Climate Initiative (IKI). The German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) supports this initiative on the basis of a decision adopted by the German Bundestag.



## Agenda.

- Background of the study.
- Main findings.
- Policy toolbox.
- Recommendations for the further work of GERE.



## Background of the study.

- Study was prepared between Oct. 2015 and July 2016, for the UNECE GERE working group.
- Main objective: encourage the uptake of renewable energies in the UNECE region by raising awareness on the status quo and the prevailing potential of renewable energy deployment, to support decision makers in meeting the encountered challenges.
- Available online, URL:  
[https://www.unece.org/fileadmin/DAM/energy/se/pdfs/gere/GERE\\_October\\_2016/Dena\\_Report\\_RE\\_2016.pdf](https://www.unece.org/fileadmin/DAM/energy/se/pdfs/gere/GERE_October_2016/Dena_Report_RE_2016.pdf)

### Room Document - Group of Experts on Renewable Energy/1/2016

Deutsche Energie-Agentur (dena) – German Energy Agency  
Division of Renewable Energy and Energy-efficient Mobility

Overview Report

**Status and Perspectives for  
Renewable Energy Development in the UNECE Region**

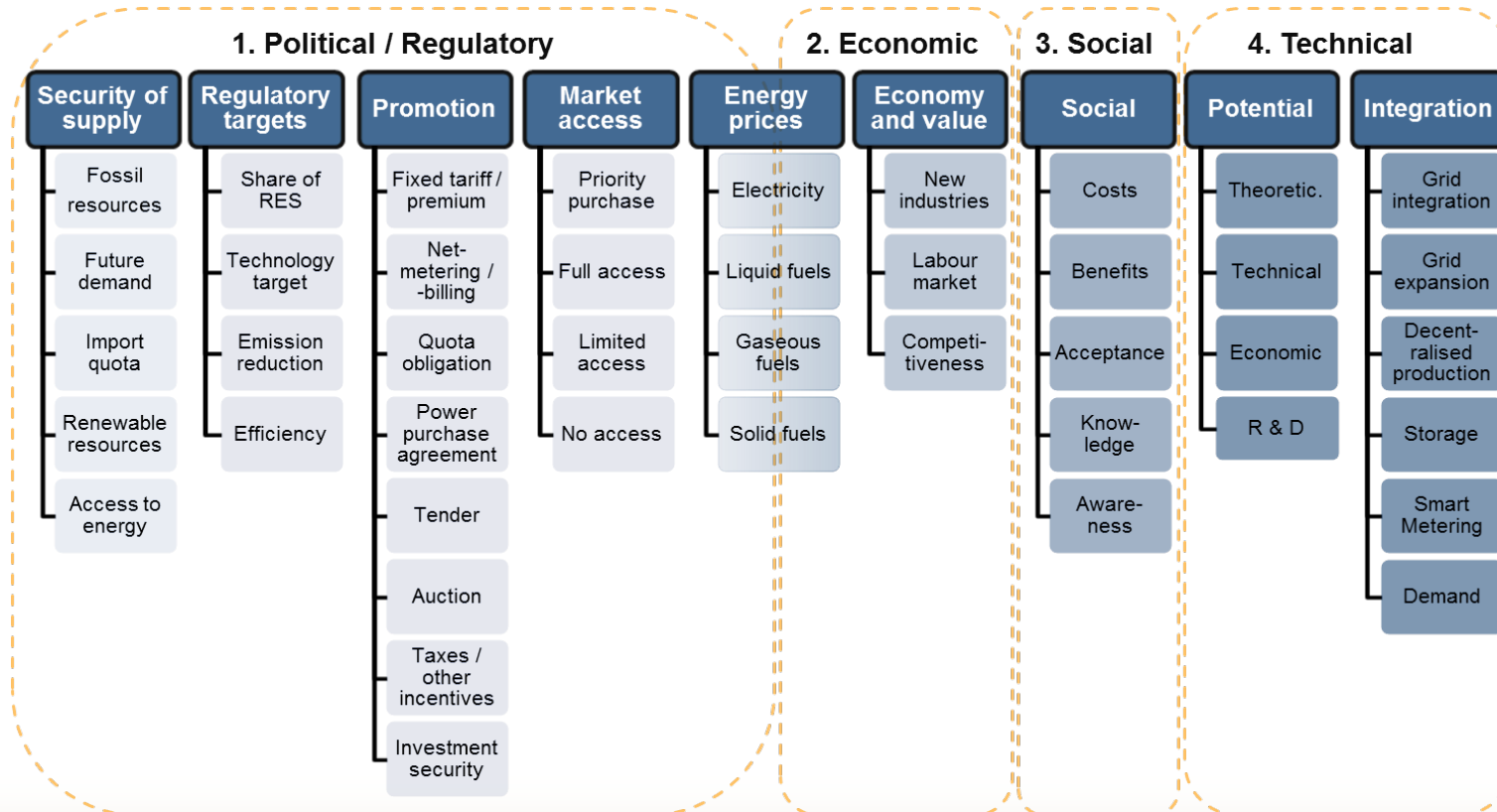
10/2015 – 07/2016

Capacity Development for Climate Policy in Western Balkan, Central and Eastern Europe and Central Asia

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# Key dimensions and important drivers for the market development of renewable energies.



Source: dena.



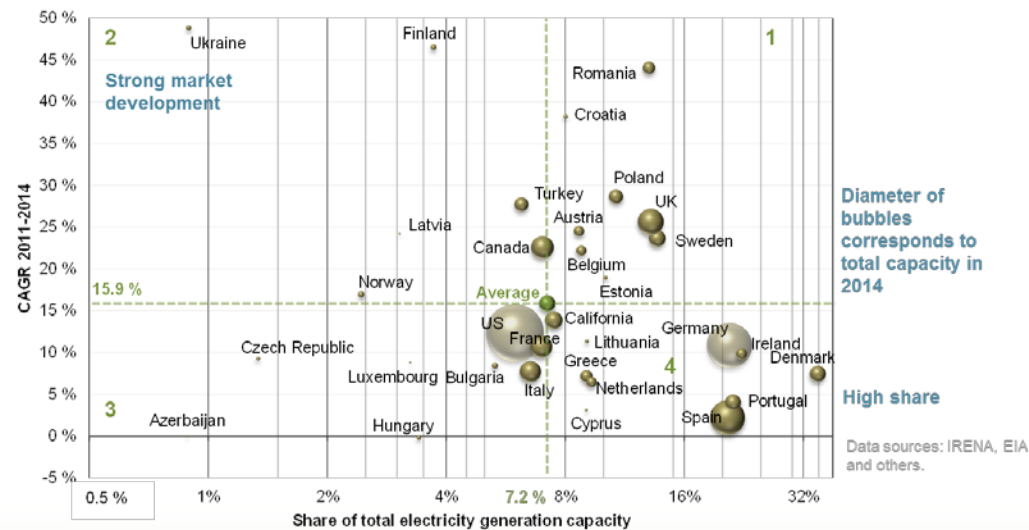
## Main finding: There is no „blueprint“ for a successful energy transition.

- The choice and best applicability of policy instruments depends on the particular structural characteristics of national energy markets: e.g. degree of state regulation, extent of installed capacity and expansion targets of renewable energies, administrative capacities for implementing promotion schemes.
- Case studies: analysis of six countries with different prevailing market conditions
  - Kazakhstan and Albania: countries with low renewable energy rates or no renewable energy capacity other than hydropower, feed-in tariffs have been identified as the main renewable energy promotion scheme.
  - Turkey, California/USA, Germany and France: primary policy objectives evolved from merely establishing and expanding renewable energy markets to achieving market-based and cost-efficient renewable energy deployment.
  - No universal approach for an ideal set of renewable energy policy options that will guarantee a strong expansion and integration of renewable energies.



## Main finding: Expansion of renewable energies mainly due to rapid growth of wind energy and photovoltaics.

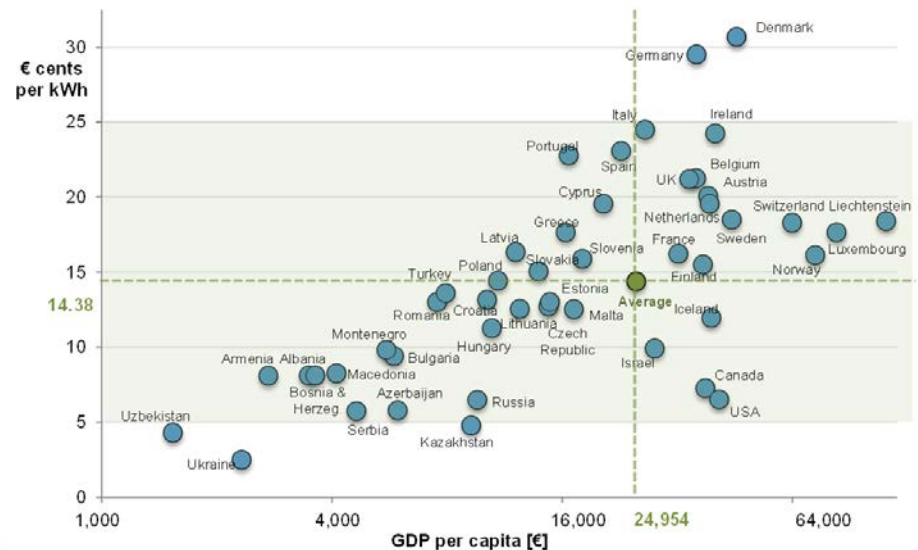
- In the early stages, promotion of renewable energies has taken place especially in developed and emerging UNECE countries.
- Investment costs have dropped, more transnational technology transfer and dissemination of renewable energy policy goals: increase in the uptake of renewable energies particularly in developing UNECE countries.
- In the UNECE region, hydropower is the most established renewable energy technology for electricity generation.
- Electricity capacities from renewable energy sources have grown substantially in the UNECE region since 2000.
- Growth mainly due to rapid expansion of wind energy and PV.





## Main finding: Electricity prices strongly influence the uptake of renewable energy technologies.

- Electricity prices are a crucial factor and vary significantly across the UNECE Region:
  1. Influence on social acceptance of renewable energy.
  2. Prices affect the economic viability of renewable energy technologies, as well as the effectiveness of renewable energy promotion schemes.
- Countries with particularly low electricity prices might constitute a difficult terrain for the uptake of renewable energies.
- It can be difficult to implement effective energy efficiency promotion schemes, since low electricity prices reduce energy saving incentives.
- Thorough consideration and monitoring of electricity price formation is crucial for the successful uptake of renewable energies.





## **Main finding:** Promotion schemes are predominant in the electricity sector and need to be expanded to the heat and building sector.

- Majority of member states have already adopted renewable energy promotion schemes:
  - 51 member states in the electricity sector, mostly feed-in tariffs or premiums, tax reductions and investment incentives.
  - 43 member states in the heat sector, most commonly for solar thermal energy.
  - In the building sector renewable energy promotion schemes are implemented by half of the UNECE countries. Another 11 UNECE member States are currently developing renewable energy promotion schemes or measures.
- But analysis shows deviation between promotion schemes and actual market development → Uptake of renewable energies largely depends on market access and the effective implementation of promotion schemes rather than their sheer existence.
- Greater emphasis on effective support mechanisms in the heat and building market needed.





# Policy toolbox.

- Based on the results, a toolbox for policy makers was developed.
- Overview of the impact dimension and description of all major renewable energy promotion schemes and measures.
- Discusses strengths and primary outputs and examples of countries worldwide, which have shown good practice when implementing promotion schemes.
- Aims to facilitate decision-making processes within the framework of promotion scheme implementations.

Promotion schemes and measures	Impact dimension	Description	Strengths / primary output	Good practice
<b>Official targets for renewable energies</b>	Political	Definition and official communication of (technology-specific) binding or non-binding expansion goals.	Planning security	<b>EU member States, USA (state level)</b>
<b>Market / grid access</b>	Political / Regulatory	Guaranteed grid access for independent power producers or autoproducers possibly restricted by capacity limits.	Market integration	<b>Chile</b>
<b>Net Metering / Net Billing</b>	Political / Regulatory	Billing mechanisms, in which renewable electricity generating entities are credited for the net value between their supplied electricity fed into the grid and their demanded electricity. Produced electricity surpluses can be remunerated as electricity credit counting towards future electricity demand (net metering) or as direct financial compensation at an agreed rate or tariff (net billing).	Market integration	<b>Australia, USA (state level), Turkey</b>
<b>Priority feed-in and feed-in tariff or premium</b>	Political / Regulatory	Priority feed-in prescribes the mandatory purchase of renewable energy electricity by utilities.  Feed-in tariffs or premiums grant long term stable remuneration for the feed-in of renewable energy electricity, either via fixed tariffs (feed-in tariffs) or at electricity market prices topped up by an adjusting market premium (feed-in premium).	Financial support, market integration, investment and planning security, investor diversity	<b>Germany, Italy</b>
<b>Green certificates, Renewable energy certificates</b>	Political / Regulatory	Tradable certificates, which are often used in combination with quota systems. The certificates are issued for each unit of generated and supplied renewable energy electricity.	Market integration	<b>Sweden, Norway</b>
<b>Quota system</b>	Political / Regulatory	Obligatory renewable energy share of energy electricity supply or demand, mandated from utilities.	Financial support, market integration, expansion control, cost effectiveness, promotion of innovation	<b>USA (state level), India (state level)</b>
<b>Auctions</b>	Political / Regulatory	Public bidding process, which awards long term electricity purchase contracts for an agreed amount of produced renewable electricity or for the electricity output from a certain auctioned quantity of renewable electricity capacity. Long-term contracts are awarded exclusively according to price-based criteria.	Financial support, investment security, market integration, expansion control, cost effectiveness, promotion of innovation	<b>Brazil, Uruguay, India</b>
<b>Tender</b>	Political / Regulatory	Multi-criteria auctions.	Financial support, investment security, market integration, expansion control, cost effectiveness, promotion of innovation	<b>Kenya, Japan</b>
<b>Renewable Heating Obligations</b>	Political / Regulatory	Obliged minimum share of energy demand for heating from renewable energy sources or CHP plants demanded from building owners.	Financial support, market integration, expansion control.	<b>Denmark, Germany</b>
<b>Further investment incentives</b>	Political / Regulatory	Investment subsidies, credit grants, reduced rates of interest, tax credits or exemptions, governmental R&D expenditures etc.	Financial support, promotion of innovation	<b>USA (federal and state level), Germany, France</b>



## Recommendations for the further work of GERE.

- In order to move towards practical solutions, the following four steps could be implemented to identify and address the specific barriers and challenges of renewable energy deployment in all UNECE member States.
  1. Cluster UNECE member States according to their main barriers and potential future challenges. Allows a targeted approach to increase the share of renewable energies.
  2. Based on the created clusters, GERE could establish barrier-specific working groups, which focus their activities on finding solutions for the respective barrier or challenge.
  3. Within the work of the barrier-specific working groups twinning partnerships could be set up between UNECE member States facing a particular challenge within their deployment of renewable energies and UNECE member States with more experienced renewable energy markets which have already overcome this specific barrier.
  4. Knowledge management: A web-based platform could be set up for exchanging best practice examples, sharing knowledge and ultimately helping to create a portfolio of new project ideas.



# Thank you for your attention!

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The **START UP ENERGY TRANSITION AWARD** - the First Global Start-up Award for Visionaries and Vanguarders fighting against climate change. It attracts innovative start-ups and supports them in making their visions become a key success factor for the worldwide energy transition. (Kick-off: Nov 2016 **Winning Ceremony March 2017**)

To support this, we will organize the **START UP ENERGY TRANSITION TECH FESTIVAL** to stimulate new business models by connecting the best of all interdisciplinary stakeholders. Start-ups from around the globe will work together with customers and investors to improve their products and to kick-off new ideas. **(March 2017)**

We create the **START UP ENERGY TRANSITION NETWORK** to ensure a continuous exchange of the best ideas and talents among the participants and our partners and sponsors. We want this network to accelerate co-operations and drive innovation within the international debate on climate change.

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Media partners get recognition as a publishing platform advocating for innovative business models and start-ups active in energy transition.

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