

Opportunities and Challenges for the Development of Renewable Energy in Central Asia:

The UNECE Renewable Energy Status Report

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IRENA

Central Asia Consultation Meeting

Martin Hullin

Project Manager, REN21

martin.hullin@ren21.net



UNECE



is a **multi stakeholder network dedicated**
to the rapid uptake of
renewable energy worldwide.

Science & Academia:

IIASA, ISES, SANEDI, TERI, Fundacion Bariloche, NREL

NGOs:

CURES, GFSE,
Greenpeace, ICLEI,
ISEP, JREF, RCREEE,
WCRE, WFC, WRI,
WWF

Industry

Associations:

ACORE, ARE, CEC,
CREIA, EREF, GWEC,
IGA, IHA, IREF, WBA,
WWEA



International Organisations:

ADB, EC, ECREEE, GEF,
IEA, IRENA, UNDP,
UNEP, UNIDO,
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National

Governments:

Brazil, Denmark,
Germany, India,
Norway, Spain,
Uganda, UAE,
United States of
America

REN21 Renewables 2016 Global Status Report

Network of over 700 contributors, researchers & reviewers worldwide

The report features:

- Global Overview
- Market & Industry Trends
- Investment Flows
- Policy Landscape
- Distributed Renewable Energy for Energy Access
- Feature: Using Renewables for Climate Change Adaptation

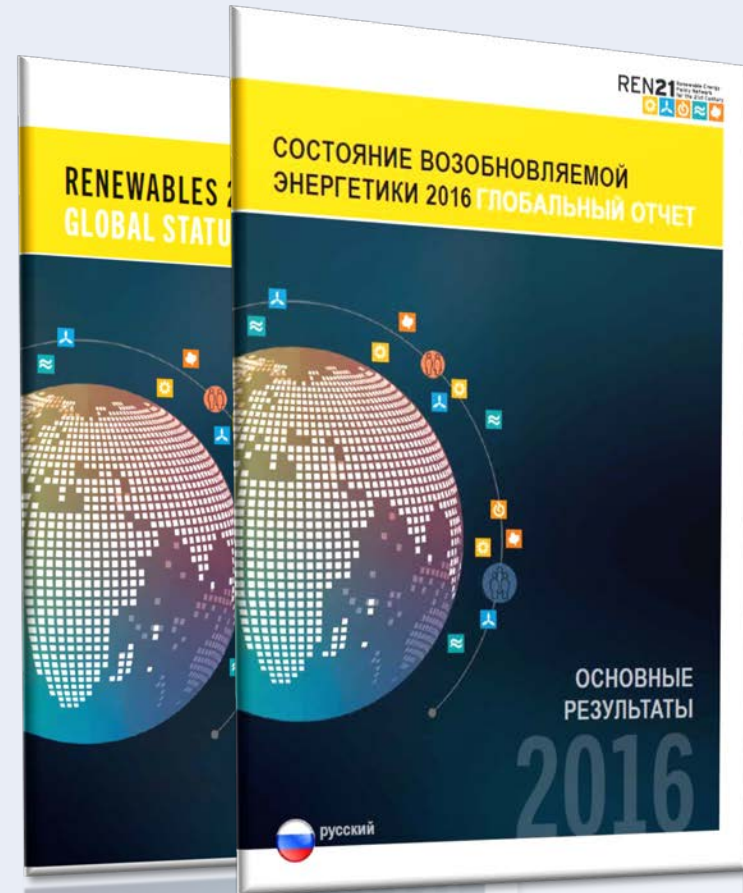
The report covers:

- All renewable energy technologies
- The power, heating & cooling, and transport sector
- Energy Efficiency



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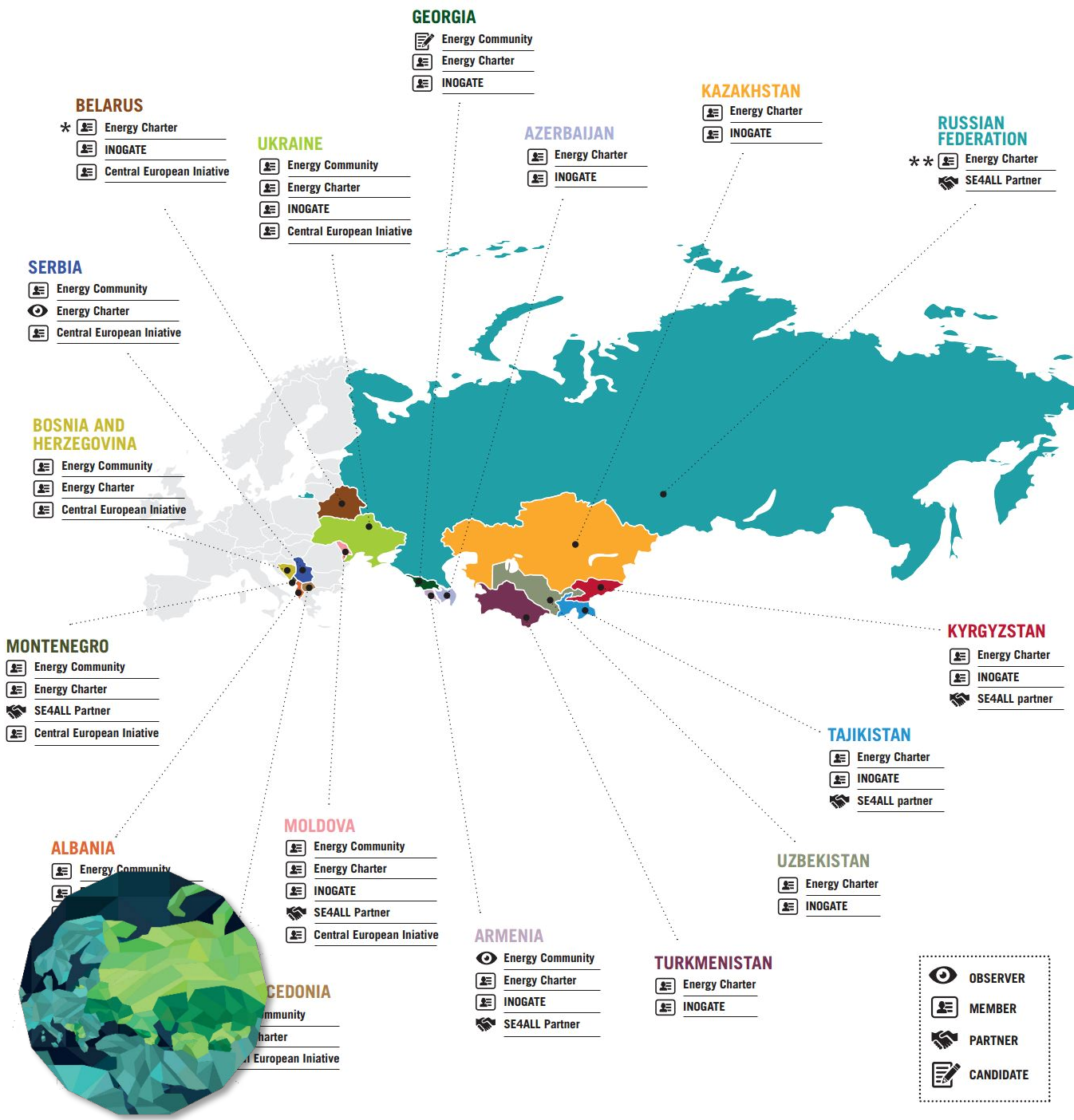
Country Data available on www.ren21.net/map



The UNECE Renewable Energy Status Report

- Detailed look at the status of renewable energy in select 17 countries in the UNECE region
- Part of the initiatives of the UNECE Group of Experts on Renewable Energy (GERE)
- Utilisation of the established REN21 global data collection process from formal and informal sources
- Objective to obtain a reliable data baseline for increased investment activity
- Strong Involvement of governments, international organisations (IEA, EBRD, European Commission, World Bank, UNDP, etc.) and civil society during data collection and review





- Covered countries very diverse in terms of territory, economic, social and political characteristics
- Overall population of over 300 Million
- Density ranges from 6,4 persons/km to 123,9 persons/km
- Three countries amongst coldest globally in terms of heating degree days
- Countries partake in different forms of regional energy cooperation

Energy overview

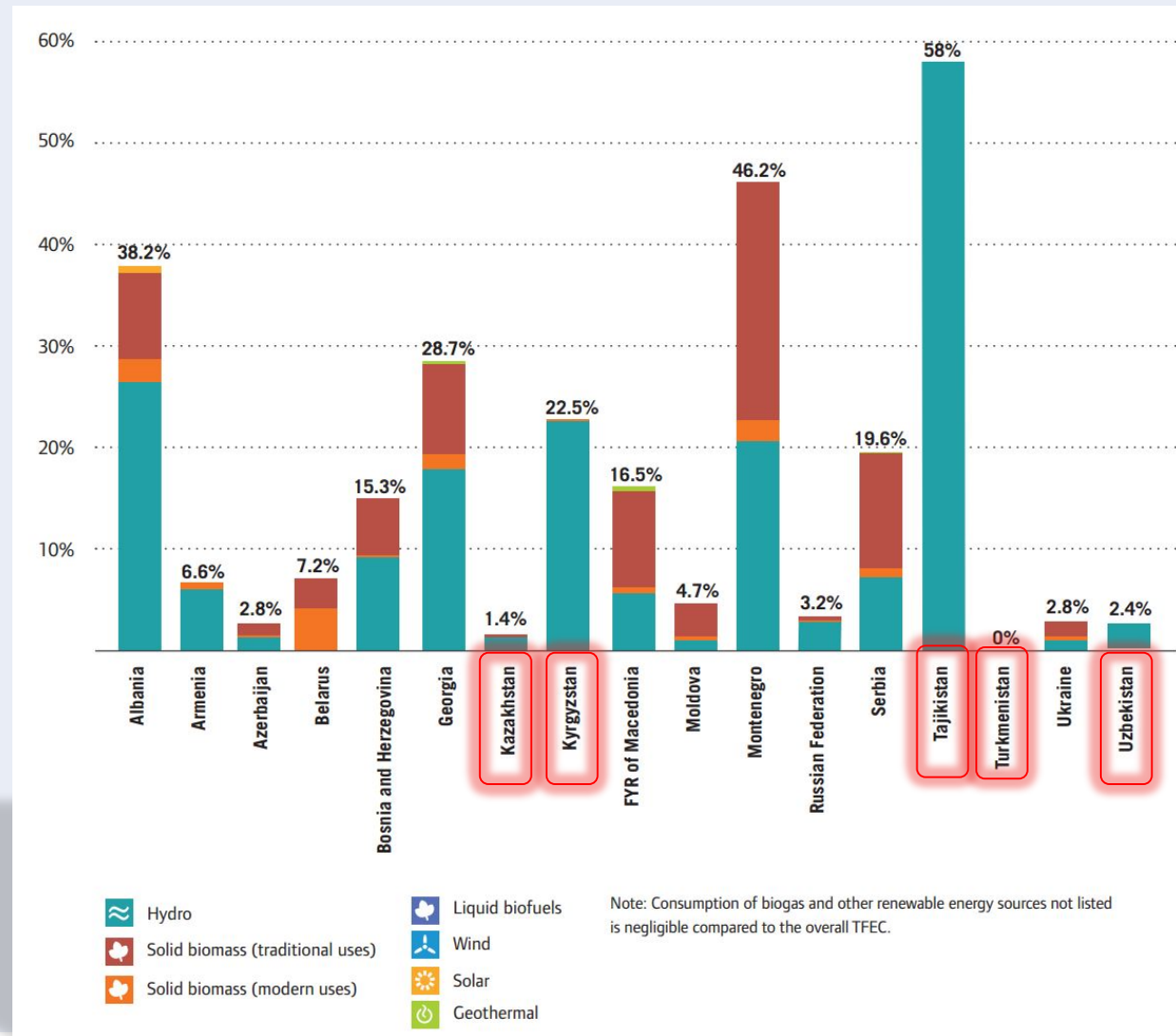
| | Energy imports, net (% of energy use) 2011 | Energy Subsidies as % of GDP 2015 | Energy use per capita (MJ/capita) 2011 | Electrification rate (% of population) 2012 |
|------------------------|--|---|--|---|
| Albania | 34% | 1,9% | 32 253 | 100% |
| Armenia | 67% | 4,3% | 38 362 | 100% |
| Azerbaijan | -377% | 6,3% | 57 332 | 100% |
| Belarus | 86% | 7,0% | 129 695 | 100% |
| Bosnia and Herzegovina | 35% | 37,0% | 77 268 | 100% |
| Georgia | 68% | 5,2% | 33 099 | 100% |
| Kazakhstan | -107% | 11,0% | 195 565 | 100% |
| Kyrgyzstan | 51% | 26,4% | 25 133 | 100% |
| Macedonia (FYR) | 44% | 18,7% | 61 833 | 100% |
| Moldova | 96% | 5,8% | 39 088 | 100% |
| Montenegro | 36% | 16,7% | 76 013 | 100% |
| Russian Federation | -78% | 16,0% | 216 281 | 100% |
| Serbia | 31% | 34,7% | 93 674 | 100% |
| Tajikistan | 30% | 7,1% | 11 691 | 100% |
| Turkmenistan | -164% | 23,2% | 202 591 | 100% |
| Ukraine | 32% | 60,7% | 115 929 | 100% |
| Uzbekistan | -21% | 26,3% | 67 389 | 100% |

- Several countries are facing a number of regional energy challenges:
 - Energy security - seasonal power outages - aging energy infrastructure
 - high energy subsidies - administrative „red tape“
- While electrification rates are high, multidimensional problems like reliable heating and energy poverty in select communities remain



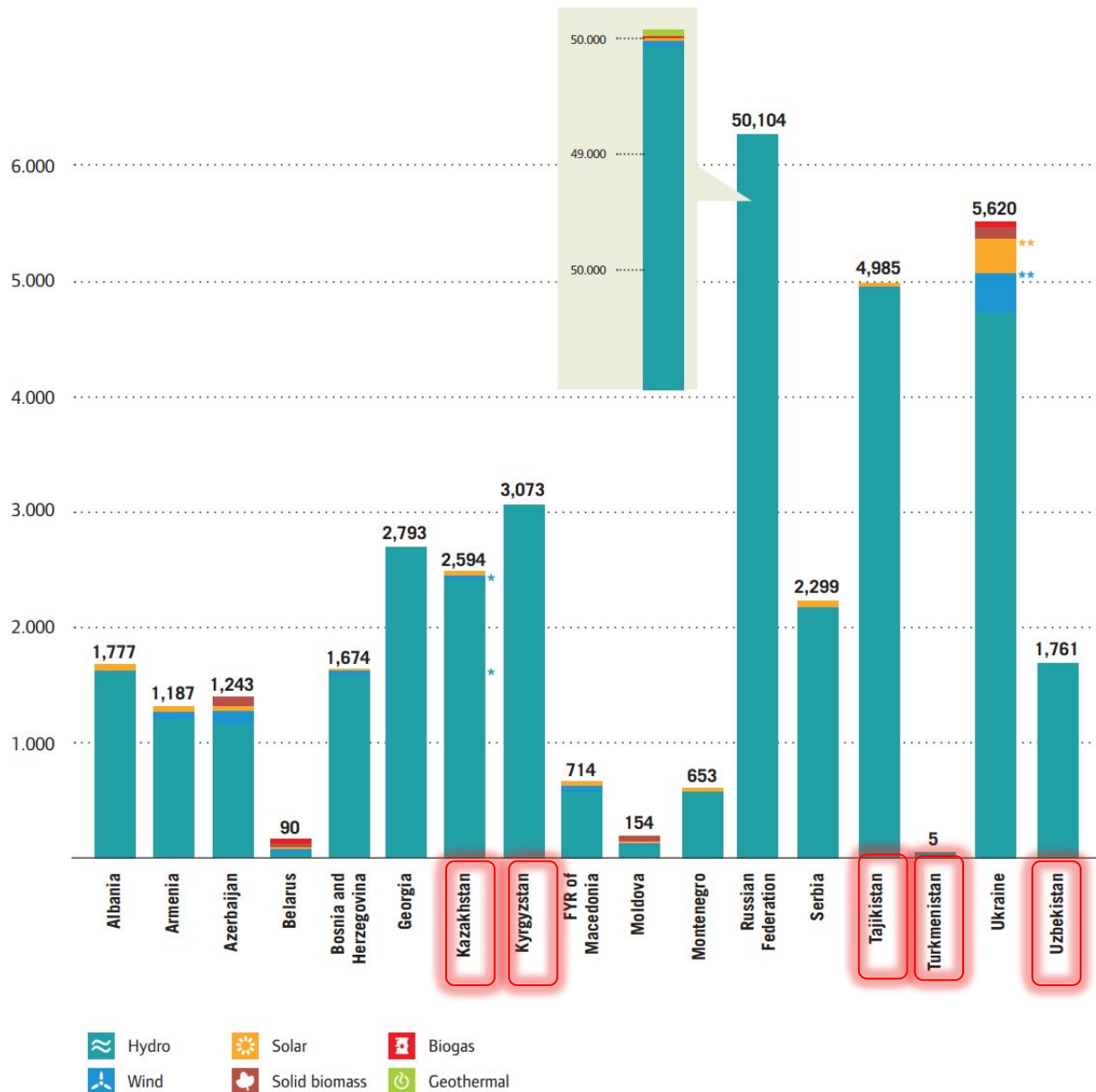
Share of Renewable Energy in Total Final Energy Consumption, 2012

- Often numbers still driven by traditional use of biomass and high shares of hydro
- Energy consumption stemming from modern renewables negligible – even when looking at preliminary 2014 data.



Renewable Energy for Power, Installed Capacity in MW, 2014

- Big variations from country to country
- Hydropower is backbone
- Other renewable energy technologies are nascent, with few regional exceptions
- Smaller developments are beginning to pick up



Hydropower share in regional comparison in total power production

FIGURE 4 | Share of hydropower in total power production, 2012

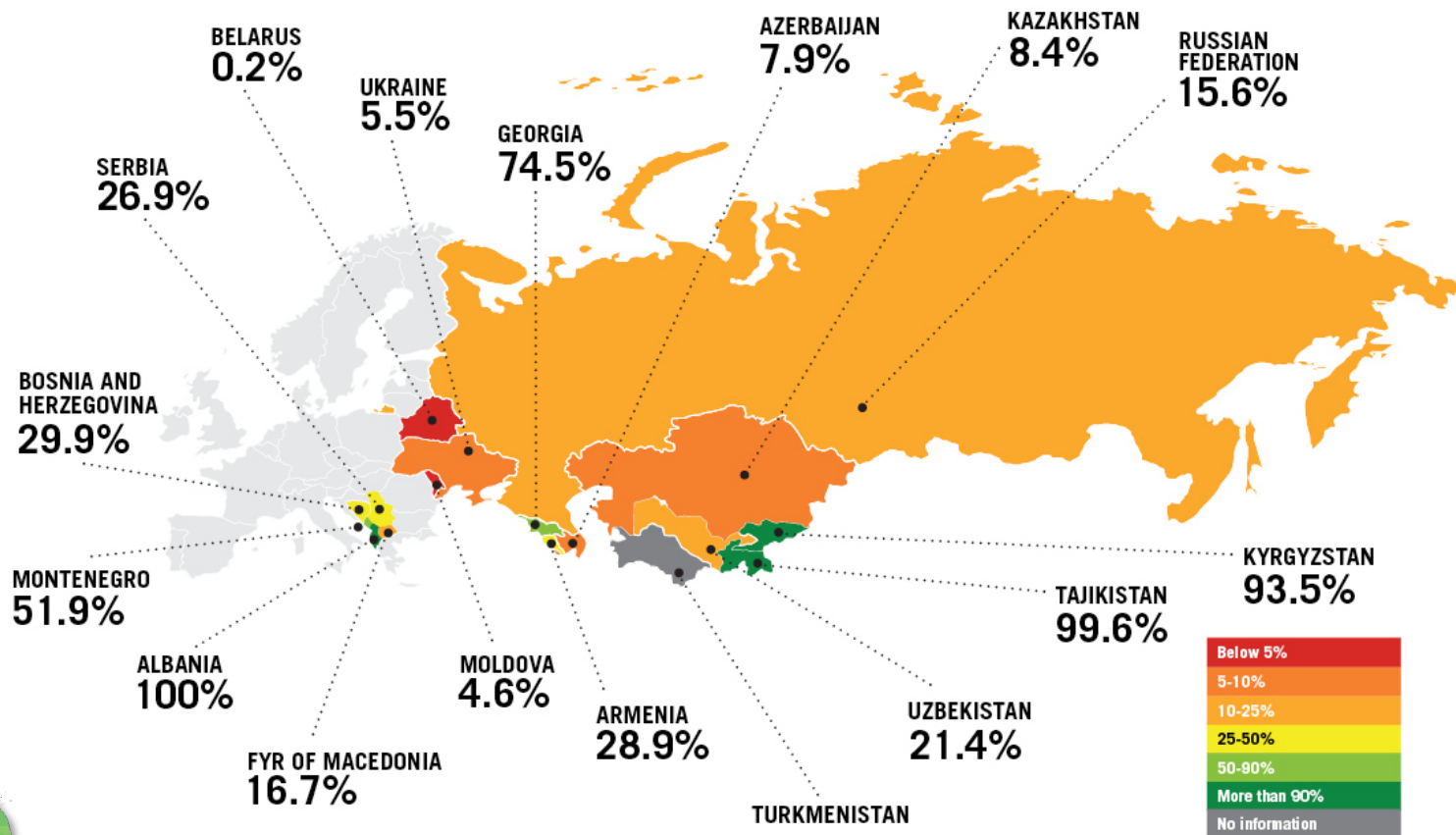


TABLE 5 | Selected projects providing renewable energy solutions in remote areas

| | PROJECT TITLE | DESCRIPTION |
|--------------|--|--|
| Kazakhstan | Renewable energy promotion in Kyzylorda oblast | Demonstration of the efficiency of solar PV systems as a power source for remote districts and settlements of Kyzylorda area, with the example of Moinak settlement and further replication by local communities and governmental authorities in other areas. |
| Kyrgyzstan | Home Comforts | Demonstration of the use of energy-efficient stoves, solar collectors for warm water and ECOSAN toilets in nine villages. The technologies are installed in public places, mainly buildings of the “Community Drinking Water Users Unions”, so that villagers can see and test them. In Chyrak, energy-efficient stoves were installed in the post office, and in Toguz Balak, they were installed in the village medical ambulatory. Financed by the European Commission. |
| Tajikistan | Do-It-Yourself Solar Water Heating System | Development of a solar water heating manual under the SE4All initiative as a pilot model for “East2East” exchange on sustainable energy solutions. The project, based on the transfer of know-how between Croatia and Tajikistan, included a workshop for local Tajik women. Financed by UNDP. |
| | Wind pilot project | Wind installation on the isolated island of Gyzylsu in the Caspian Sea, providing power to a local village as well as a desalination system. |
| Turkmenistan | Solar pilot project | Installation of three solar PV power and pumping stations in national nature reserves by the end of 2015 in order to provide electricity and water to isolated shelters in desert areas. Implemented within the framework of the EU-funded Sustainable Development Policies (SDP) project and in co-operation with the Ministry of Nature Protection. |
| Uzbekistan | Biogas plant | Installation of a biogas plant on a remote farm for space and water heating and cooking purposes. |



RE Policy and Target Landscape – UNECE (17)


- Positive progress has been made
- Targets are widely used and increasingly accompanied by regulatory policies
- Still significant room for improvement
- Only few examples of regional mandatory RE targets
- Still apparent that non-economic barriers hinder unfolding of full policy potential



| | Regulatory policies | | | | | | | | Fiscal incentive and public financing | | | | |
|------------------------|-------------------------------|--|-----------------------------------|---------------------------|--------------|--------------------------|-----------|--------------|---------------------------------------|---------------------------|--------------------------------------|------------------------------------|--|
| | Biofuels obligation / mandate | Electric utility quotas obligation / RPS | Feed-in tariff / premium payments | Heat obligation / mandate | Net metering | Renewable energy targets | Tendering | Tradable REC | Capital subsidy / rebate | Energy production payment | Investment or production tax credits | Public investment, loans or grants | Reduction in sales, energy, CO ₂ , VAT or other taxes |
| Albania | X | X | X | | | X | X | X | | X | | | |
| Armenia | | | X | | X | X | | | | X | | X | |
| Azerbaijan | | | X | | | X | | | | X | | X | |
| Belarus | X | X | X | | X | X | | X | | X | | | |
| Bosnia and Herzegovina | X | | X | | | X | X | | X | | | | |
| Georgia | | | X | | | | | | | | | X | |
| Kazakhstan | | | X | | | X | X | | | | | X | |
| Kyrgyzstan | | | X | | | X | | X | | X | X | X | X |
| FYR of Macedonia | | | X | | | X | | | | | | | |
| Moldova | | | | | | X | | | | | | X | X |
| Montenegro | | X | X | X | X | X | X | | | X | | X | |
| Russian Federation | | X | | | | X | X | X | X | X | | | |
| Serbia | | | X | | | X | | | | | | X | |
| Tajikistan | | | | | | X | | X | | X | X | X | |
| Turkmenistan | | | | | | | | | | | | | |
| Ukraine | X | | X | | X | X | | | | X | X | | X |
| Uzbekistan | | | | | | X | | | | | | | |

EE Policy and Target Landscape – UNECE (17)

- Energy Efficiency targets and policies are being pursued directly or through residential building initiatives
- Pushed by energy security concerns and by support of international donors
- Still significant room for improvement – especially in the industry and transportation sector

| | Energy efficiency target | National energy efficiency awareness campaigns | National energy efficiency regulations, standards or laws | Governmental institutions to formulate and implement energy efficiency strategies and policies |
|------------------------|--------------------------|--|---|--|
| Albania | X | | X | X |
| Armenia | | | X | X |
| Azerbaijan | | X | X | X |
| Belarus | X | X | X | X |
| Bosnia and Herzegovina | X | X | X | X |
| Georgia | | X | | X |
| Kazakhstan | X | X | X | X |
| Kyrgyzstan | | X | | |
| FYR Macedonia | X | X | X | X |
| Moldova | X | X | X | X |
| Montenegro | X | X | X | X |
| Russian Federation | X | X | X | |
| Serbia | X | X | X | X |
| Tajikistan | X | X | X | X |
| Turkmenistan | | | | |
| Ukraine | X | | X | X |
| Uzbekistan | X | X | X | X |

Global Investment in Renewable Energy

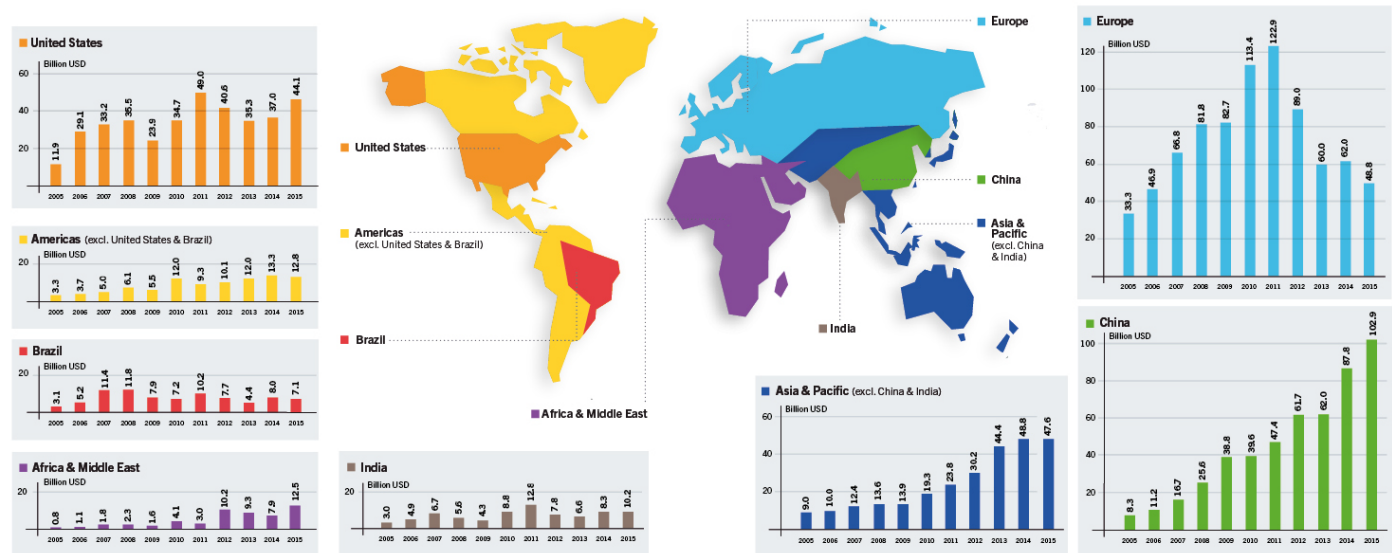
Developing & emerging countries:

- USD 156 billion
- Increase of 19% compared to 2014

Developed countries:

- USD 130 billion
- Decrease of 8% compared to 2014

Global New Investment in Renewable Power and Fuels, by Country and Region, 2005–2015



Data include government and corporate R&D.

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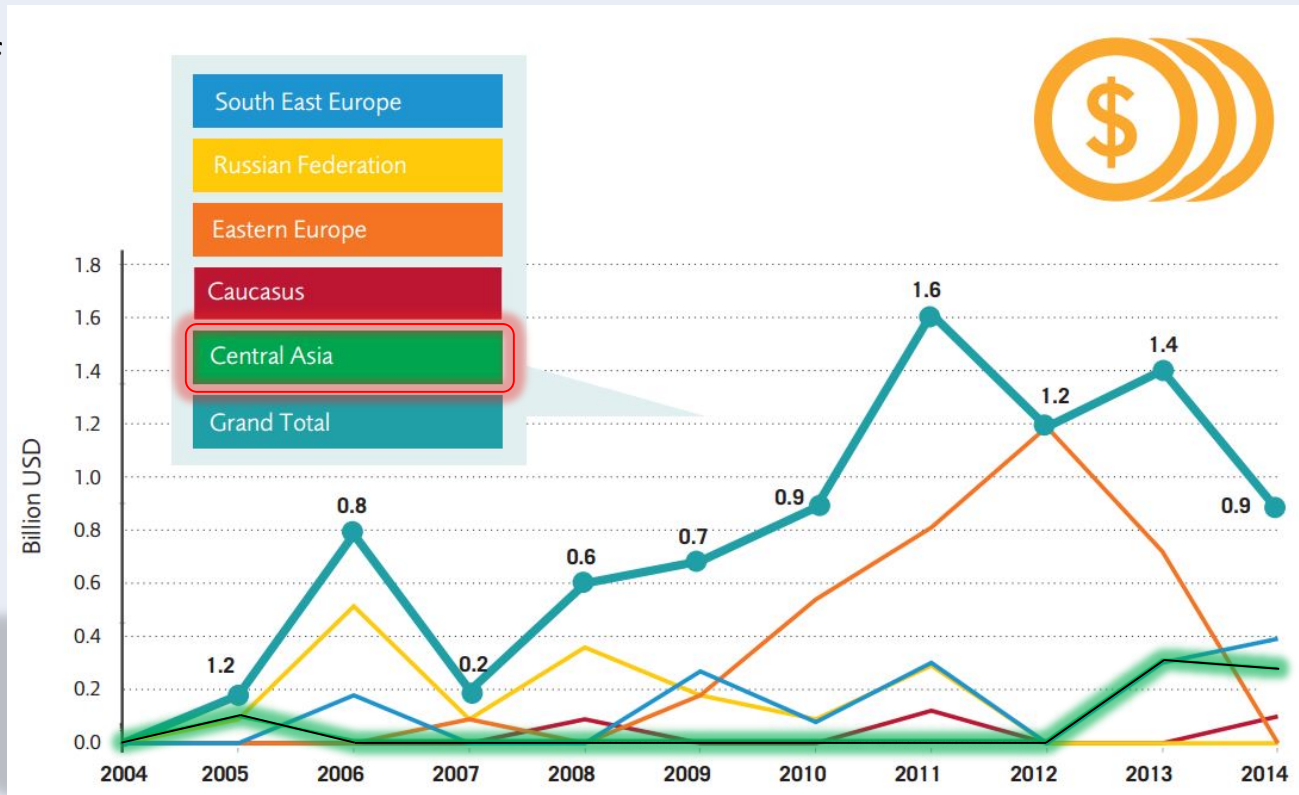
Source: BNEF



Investment flows in UNECE (17)

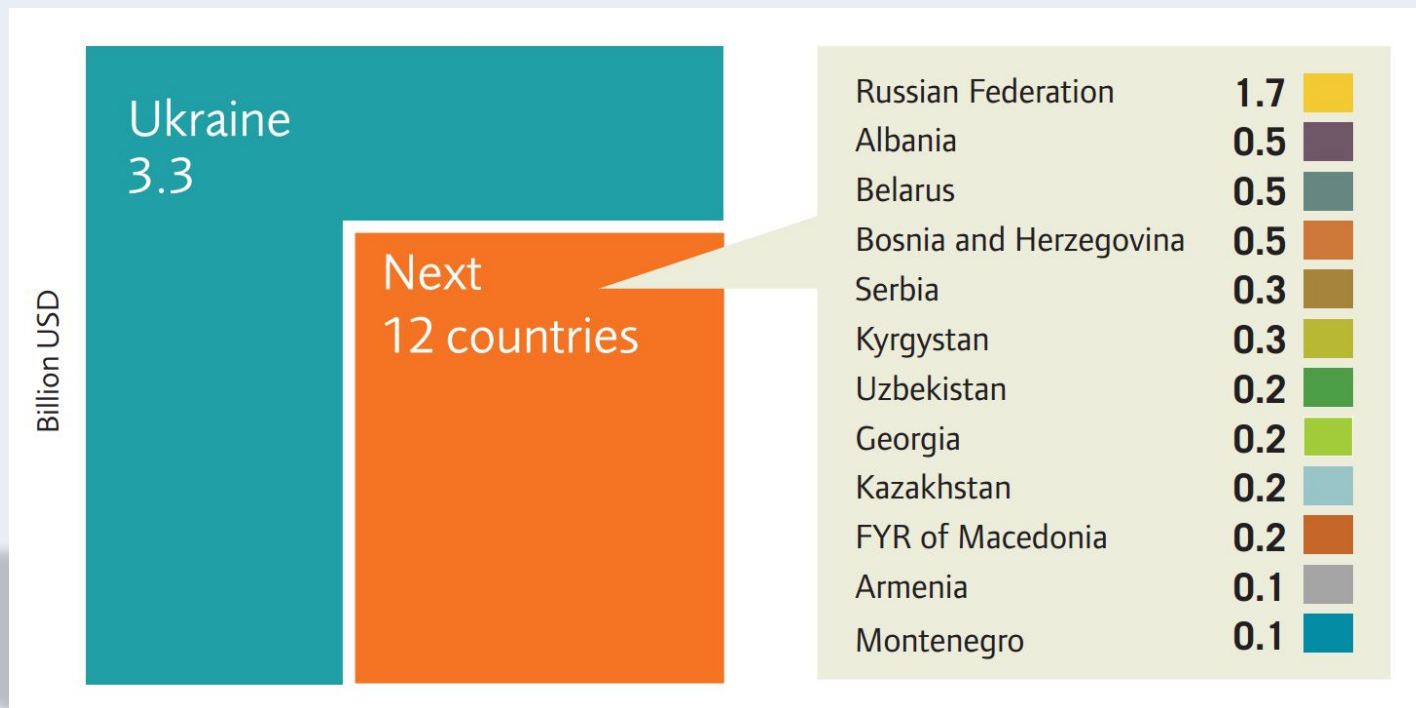
Renewable Energy Investment Overview, 2004 - 2014

- The covered countries only represent 0.5 % of new RE investment in 2014 worldwide
- Investment attraction remains an issue for RE development in the region
- Downward trend in investment activity since 2012 (in Eastern Europe & Russia)



Investment flows in UNECE (17)

Renewable Energy Investment Overview, 2004 – 2014 – selected countries



- Investment is unevenly distributed (regionally and by sector)
- Funding sources mainly originating in national governments, international donors and multilateral development banks.
- 2004-2014 investment in Central Asia below cumulative 0.8 Billion USD



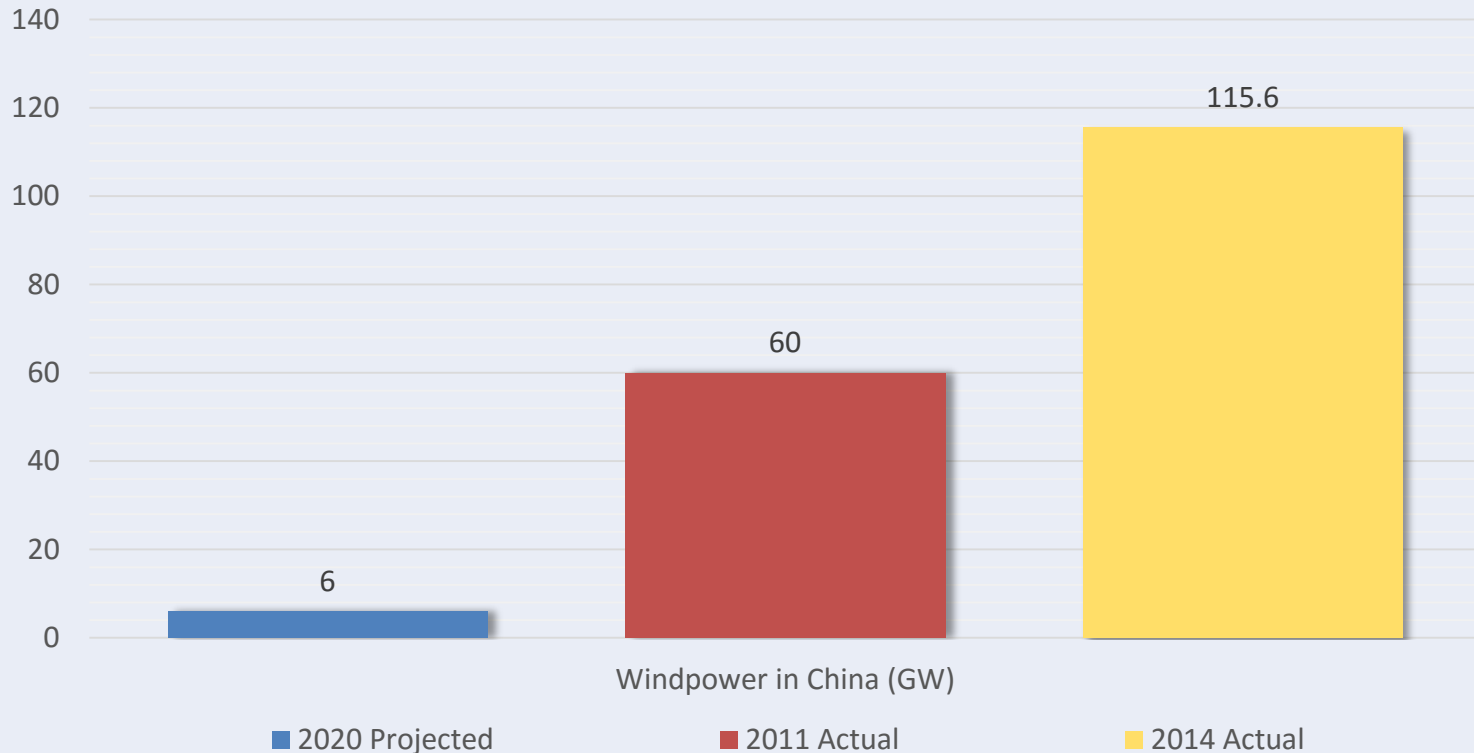
Conclusion I

- 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 present abundantly 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



Historic Projections Fall Short...

World Bank (1997) - Projection



“The 1997 report of the World Bank predicted a foundation in China for A100, the resources and technologies were there, but legislators and governments had 60 GW instead of a long-term in 115.6 path.”



THANK YOU

for your attention



*Global Status Report:
yearly publication
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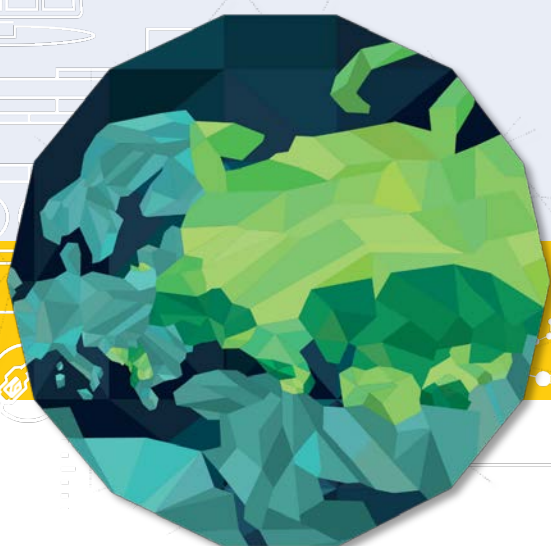
Global Futures Report



*REN21
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Martin Hullin

Project Manager, REN21
martin.hullin@ren21.net

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