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IRENA Work on Renewable Energy Potential in South East Europe

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RE SEE Overview

- **Workshop in Abu Dhabi (2013)**
- **Developments in 2014 and 2015**
- **Proposed Activity for 2015 and 2016**

Abu Dhabi Workshop on RE SEE

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- **The countries of South East Europe have *considerable further potential* for cost-effective development of *renewable power resources* – hydroelectric, biomass, wind and solar.**

- **Wider dissemination of *empirical cost data on recently built power plants* would help inform countries in updating their NREAPs and considering renewable power options through 2030.**

- **Significant cost savings could be realized through a systematic *integrated resource planning* process to identify *the optimal mix of renewable and other power options* at regional level.**

Hydro and Wind Dominate Current RE Action Plans

South East Europe	Δ (GWh) 2009-20	Δ share (%) 2009-20
Electricity Δ (GWh)	42638	100%
Hydro small	4360	10%
Hydro large	19708	**46%**
Geothermal	379	1%
Solar	2865	**7%**
Wind	10591	**25%**
Biomass	4737	11%

Electricity	AL	BH	HR	MK	KO	ME	MO	UA	SR	SI
Total Δ (%)	100	100	100	100	100	100	100	100	100	100
Hydro small	**33**	2	**10**	**17**	**44**	**21**	0	2	**18**	5
Hydro large	**61**	**93**	**21**	**56**	**39**	**55**	5	**11**	**19**	**52**
Geothermal	0	0	3	0	0	0	0	2	0	0
Solar	0	0	3	2	0	1	0	**19**	0	8
Wind	3	5	**33**	**23**	**12**	**18**	**87**	**48**	**32**	**12**
Biomass	3	NA	30	3	4	5	7	17	**30**	**23**

PV Module Prices 2009-2015

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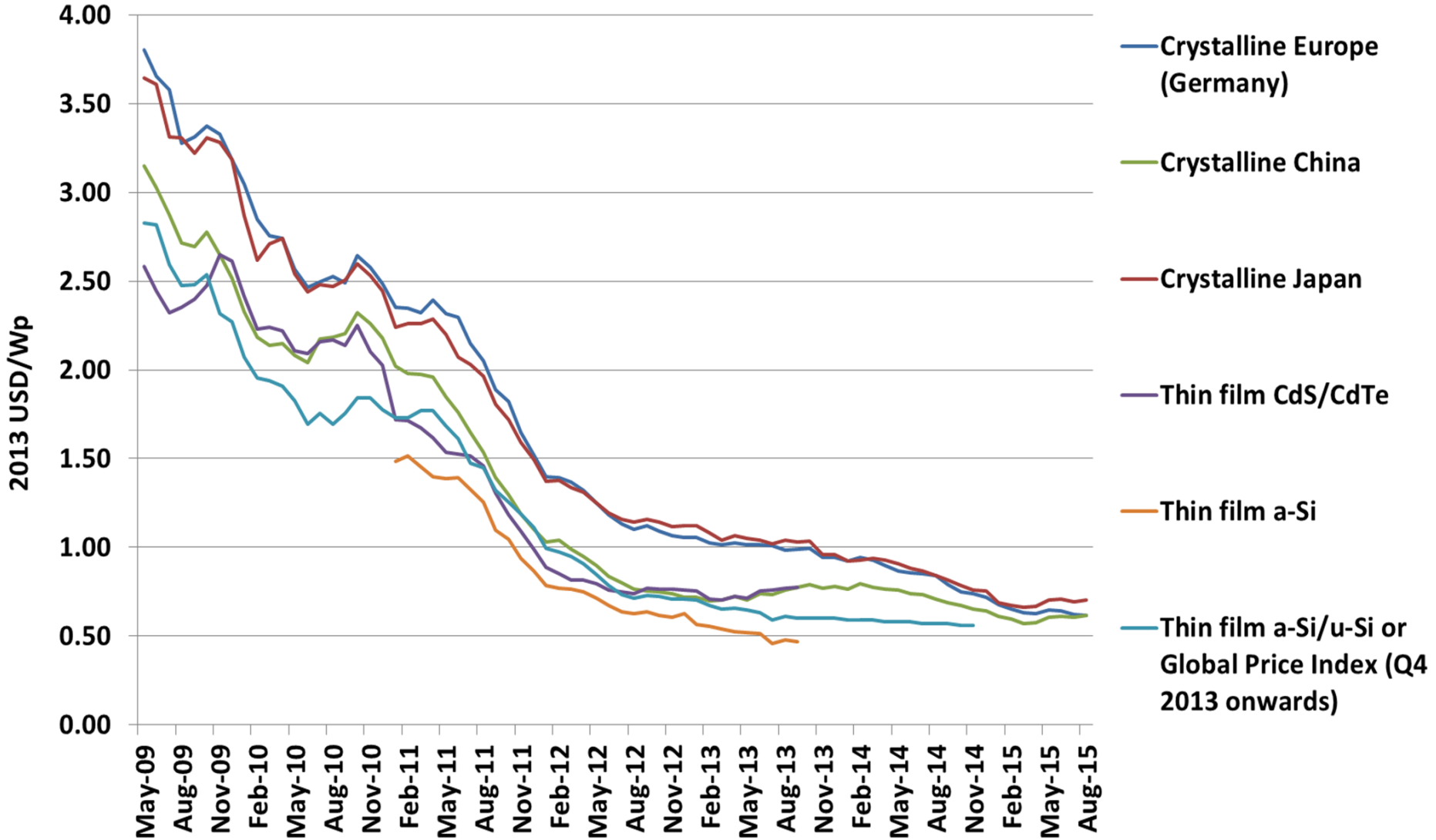


RE SEE Studies 2014-15

- UNECE Discussion Paper (2014), *Status of Renewable Energy in the ECE Region*
- REN-21/UNECE (2015), *RE Status Report*
- European Climate Foundation, *Policy Brief on Indigenous Energy Resources of South East Europe*
- EU funded BETTER for cooperation with SEE on RE: series of workshops, network of stakeholders (policymakers, system operators and investors)

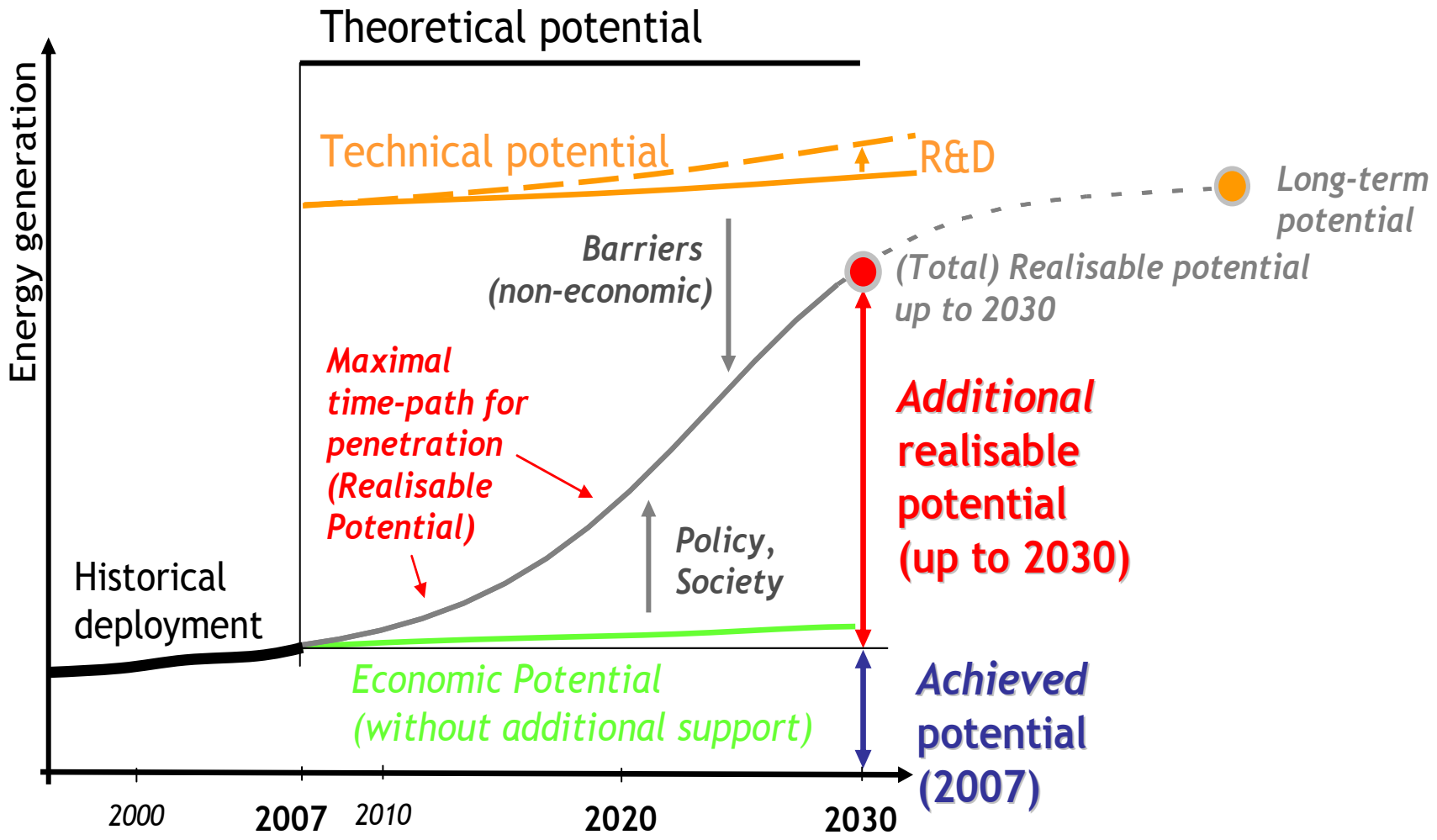
IRENA Project 2015-16

- Focus on Photovoltaics
  - Cost-Effective Potential
  - Cooperative Financing
- Focus on Broader RE Potential
  - Quantitative Assessment
  - Barriers and Strategies

Additional Slides on RE Potential in SEE

- Types of potential (schematic)
- RE Potential by 2030 as share of electricity needs
- PV potential by 2030 as share of electricity needs
- Key barriers to RE deployment in SEE
  - Financial barriers
  - Regulatory barriers
  - Administrative barriers

Types of RE Potential



RES-E Potential in SEE vs Electricity Demand in 2030

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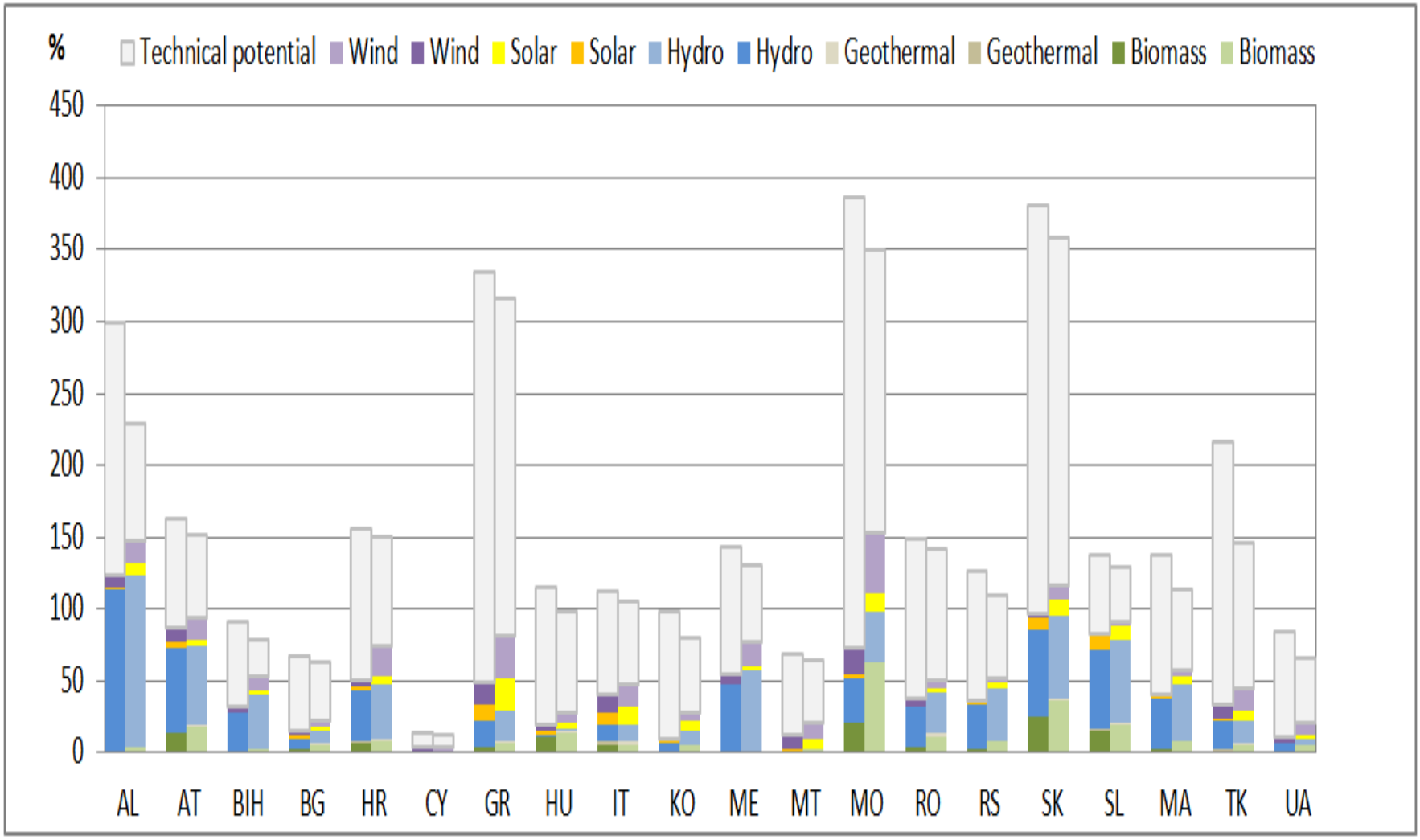

PV Potential in SEE vs Electricity Demand in 2030

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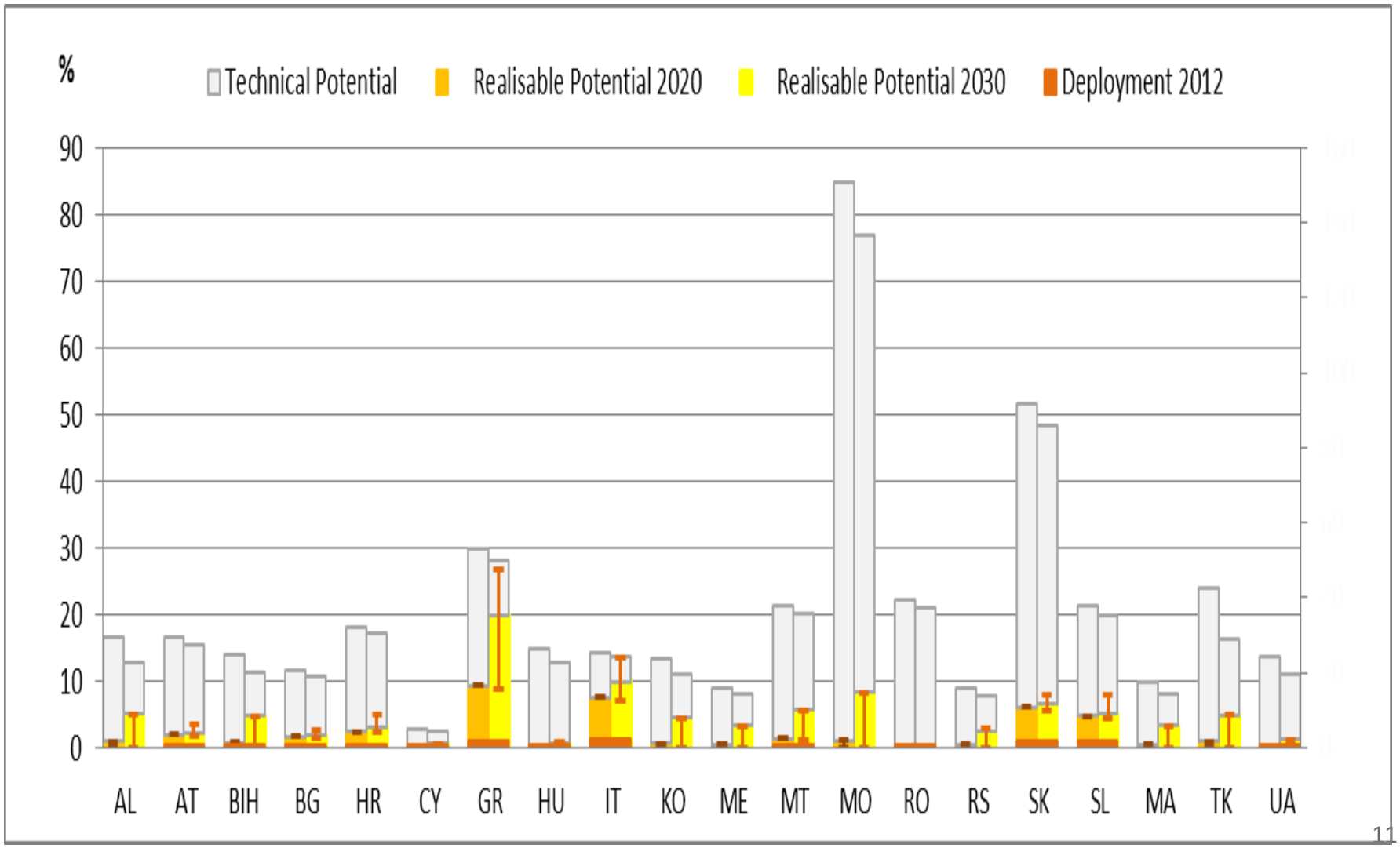

Reducing Financial Barriers

- Loan facilities and risk mitigation instruments are available for utilities.
- Attractive Power Purchase Agreements can elicit investment by IPPs.
- Cooperatives and public-private partnerships can help provide equity.

Reducing Regulatory and Administrative Barriers

- Regulations complex, opaque, inconsistent.
- Complex authorization procedures for new projects.
- Long costly procedures for transmission rights-of-way.
  - *How can procedures be streamlined?*
  - *Can procedures be organized in parallel?*
- Permits from many uncoordinated institutions.
- Zoning at local, district and national levels.
  - *How can zoning and permits be coordinated?*
- Fragmented land ownership may complicate siting.
  - *How can land ownership be clarified?*

Reducing Market Barriers

- **Need implementing legislation and operational direction.**
- **Need fuller opening to independent power producers.**
- **Need more transmission and distribution capacity.**
- **Need tariffs to reflect full costs of fossil-fueled generation.**
- **Need better framework for ancillary services and balancing.**
- **Unclear cross-border transmission capacity for trade.**
  - **Coordinated Auction Office to be established in Montenegro (for Albania, Croatia, Bosnia and Herzegovina, FYR Macedonia, Greece, Montenegro, Romania, Slovenia, Kosovo* and Turkey).**