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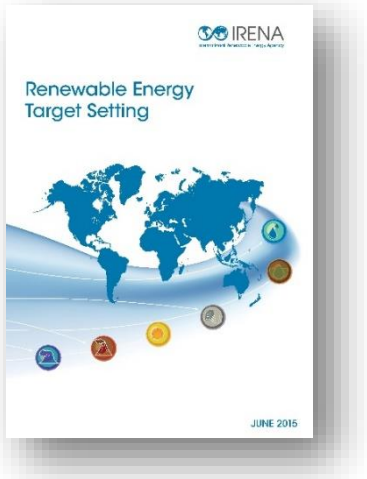
Renewable Energy Target Setting and Support Schemes

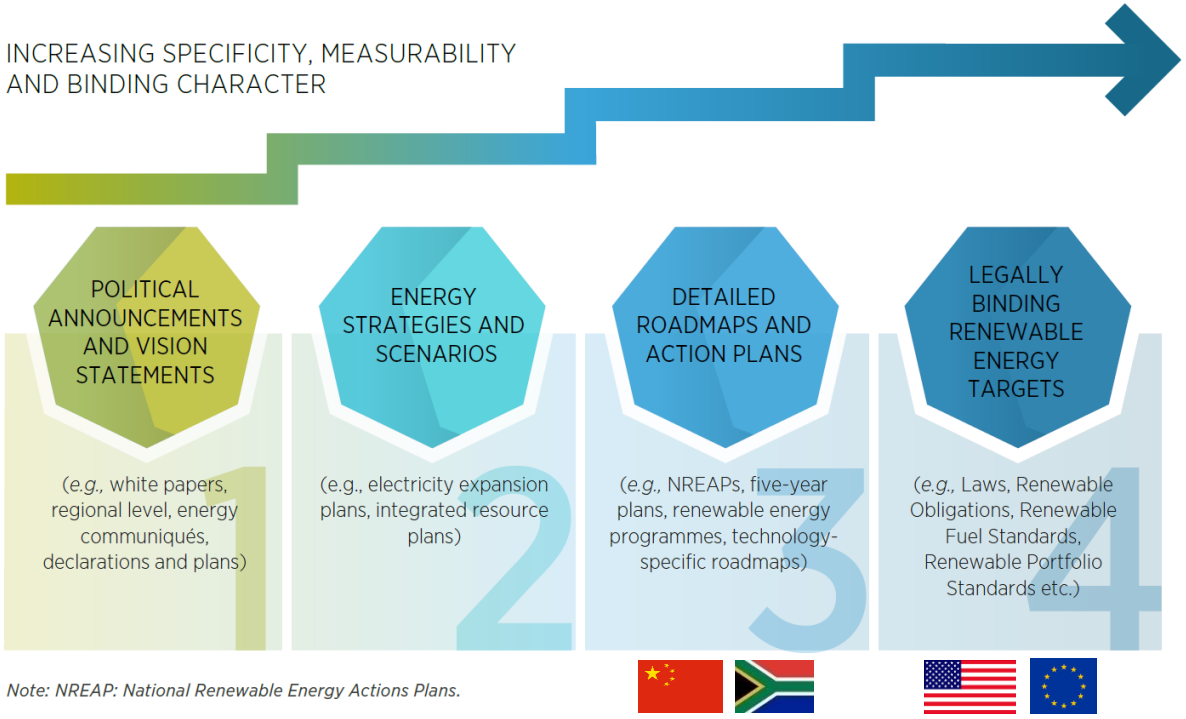
Regional Workshop on Renewable Energy in Central Asia

26 April 2017

Targets in the global renewable energy landscape

173 countries have at least one type of renewable energy target **– up from 43** in **2005**



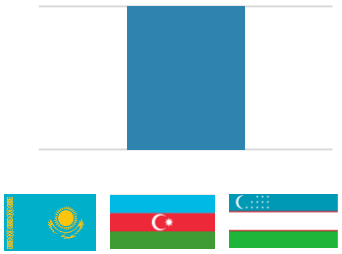


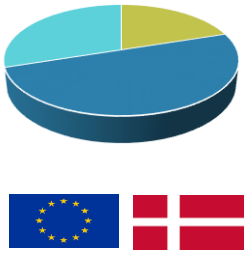
Note: NREAP: National Renewable Energy Actions Plans.

Source: IRENA (2015), Renewable Energy Target Setting.

The design of RE targets varies widely

Share of energy demand (%) or Fixed amount (GW, GWh)

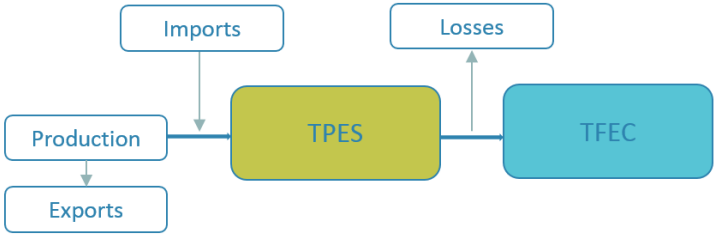




- As of mid-2016, **67 countries** had targets for renewable power installed capacity and/or generation.
- Can be technology-specific or neutral:
  - Tajikistan: 100 MW small hydro by 2020
  - Azerbaijan: 1 GW electricity by 2020
  - Kazakhstan: 1.04 GW electricity by 2020

Source: REN21, Global Status Report 2016.

Total primary energy supply (TPES) vs. Total final energy consumption (TFEC)

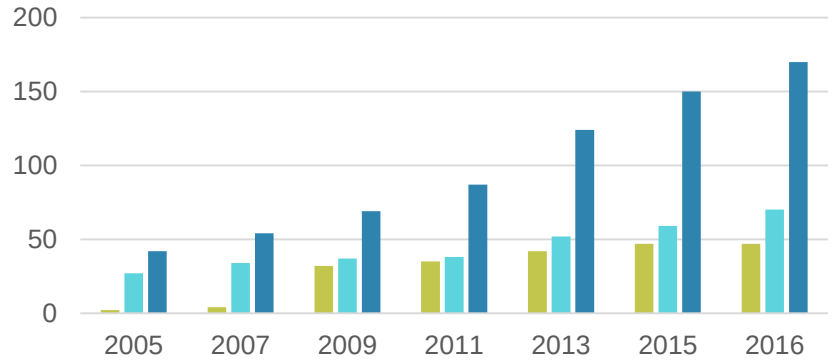


- As of mid-2016, **23 countries** had targets as a share of **TPES, 57 countries** had targets as a share of **TFEC**, while **8 countries** had set targets for **both**.
- Shift to targets defined in TFEC rather than in TPES
- Focus on the actual energy consumption, not primary energy inputs used.

- In 2005: 15% of TPES from renewables by 2020
- In 2009: 15% of TFEC from non-fossils by 2020
- In 2016: 20% of TFEC from renewables by 2030

The design of RE targets varies widely

By Sector: Electricity, Heating, Transport



- While renewable **electricity targets** are the most widespread type, **heating/cooling** and **transport targets** have increased significantly over the last decade.
- As of mid-2016, 47 countries with **heating/cooling** targets, 70 countries with transport targets and 170 countries with electricity targets

Source: REN21, Global Status Report 2005 - 2016.

Technology-neutral or Technology-specific

- Support specific deployment, when they are most suitable in terms of **resource availability** matching peak demand.
- Sustain the **development of the local value chai**n of selected technologies.
- Support the **diversification of the energy mix** to increase energy security.

The design of RE targets varies widely

Long-term or Short-term

- **Long-term** targets provide a key signal to stakeholders about the long-term opportunities.
- **Short- to medium-term** targets (e.g., three to five years) enable more effective implementation and rapid learning from the policy process and can coincide with investment and electoral cycles.
- The periodic nature of five-year planning allows for a high level of flexibility and adjustment as the targets are reviewed and adjusted regularly.
- Some countries have set both.

Mandatory or Aspirational

- The majority of targets today remain **non-binding** due to difficulty that governments face in implementing self-enforcement mechanisms.
- Legally binding targets **reassure investors** as they are less vulnerable to changes in the political climate.
- They **require compliance and enforcement mechanisms and an institutional structure** to monitor and enforce them.

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Key functions of RE targets throughout the policy-making cycle

To explore — policy formulation	• Develops the information base by gathering data • Complements/validates information through consultation • Reveals gaps in knowledge • Increases the transparency of policy making • Stimulates debate, raises awareness and acceptance
To guide and motivate — policy implementation	• Provides clear direction of policy to stakeholders • Signals political commitment • Motivates stakeholders to take action • Anchors strategic priorities and scenarios • Fosters accountability
To regulate — policy evaluation	• Supplies concrete milestones for evaluation and adjustments • Shows deficiencies in current operations • Provides opportunities to take action to correct deviations • Exposes data needs and discrepancies

Key lessons for setting effective RE targets

- Effective targets are connected to high-level national priorities and backed by strong political commitment
- Stakeholder engagement strengthens ownership and feasibility of targets
- Targets ideally combine a long-term vision anchored in short-term concrete milestones to maintain momentum
- Metrics of renewable energy targets have important implications for implementation and monitoring
- Making targets mandatory matters – Who is obligated and how also matter
- Striking the right balance between ambition and realism is vital to the success of targets
- Targets alone are not enough. They need to be accompanied by a clear strategy and backed by specific policies and measures.

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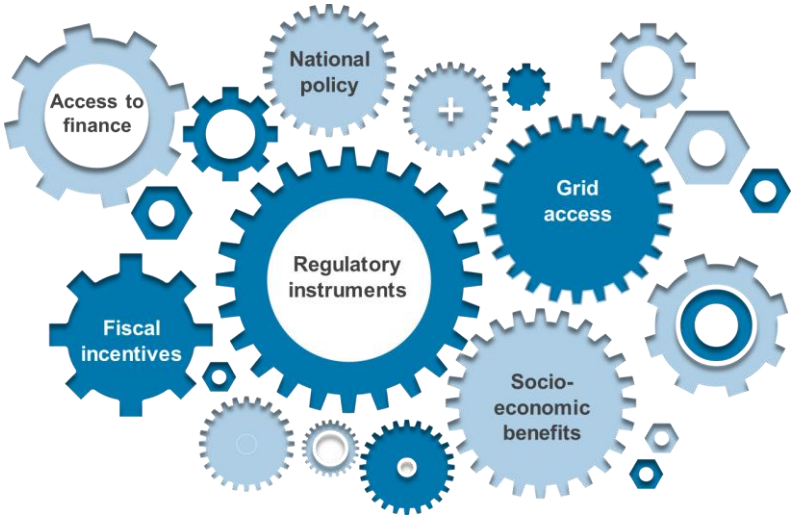
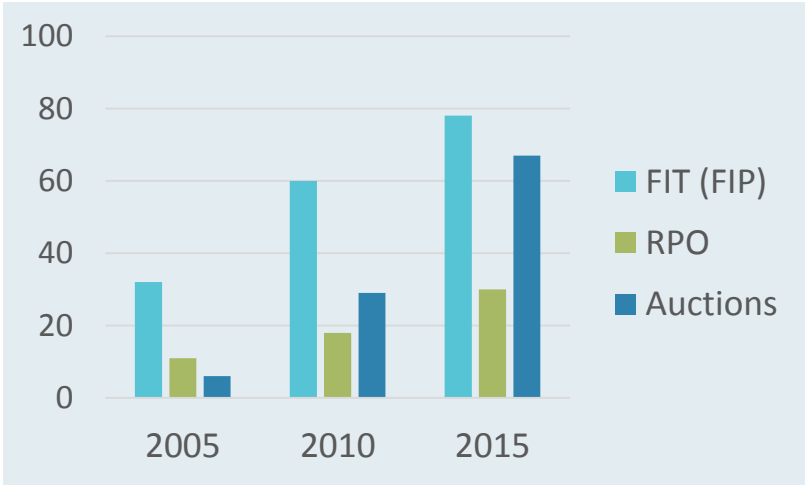
Types of renewable energy policies and measures

NATIONAL POLICY	REGULATORY INSTRUMENTS	FISCAL INCENTIVES	GRID ACCESS	ACCESS TO FINANCE[a]	SOCIO-ECONOMIC BENEFITS[b]
◆ Renewable energy target	◆ Feed-in tariff	◆ VAT/ fuel tax/ income tax exemption	◆ Transmission discount/ exemption	◆ Currency hedging	◆ Renewable energy in rural access/cook stove programmes
◆ Renewable energy law/ strategy	◆ Feed-in premium	◆ Import/export fiscal benefit	◆ Priority/ dedicated transmission	◆ Dedicated fund	◆ Local content requirements
◆ Technology-specific law/ programme	◆ Auction	◆ National exemption of local taxes	◆ Grid access	◆ Eligible fund	◆ Special environmental regulations
	◆ Quota	◆ Carbon tax	◆ Preferential dispatch	◆ Guarantees	◆ Food and water nexus policy
	◆ Certificate system	◆ Accelerated depreciation	◆ Other grid benefits	◆ Pre-investment support	◆ Social requirements
	◆ Net metering	◆ Other fiscal benefits		◆ Direct funding	
	◆ Mandate (*e.g.*, blending mandate)				
	◆ Registry				

Trends in renewable energy support policies



Number of countries with renewable energy policies, by type



Implemented auctions and a feed-in tariff simultaneously

Used feed-in tariffs to set price cap for auctions

Used auctions to set feed-in tariffs

FITs Strengths and weaknesses - Keeping pace with rapidly decreasing costs

FITs

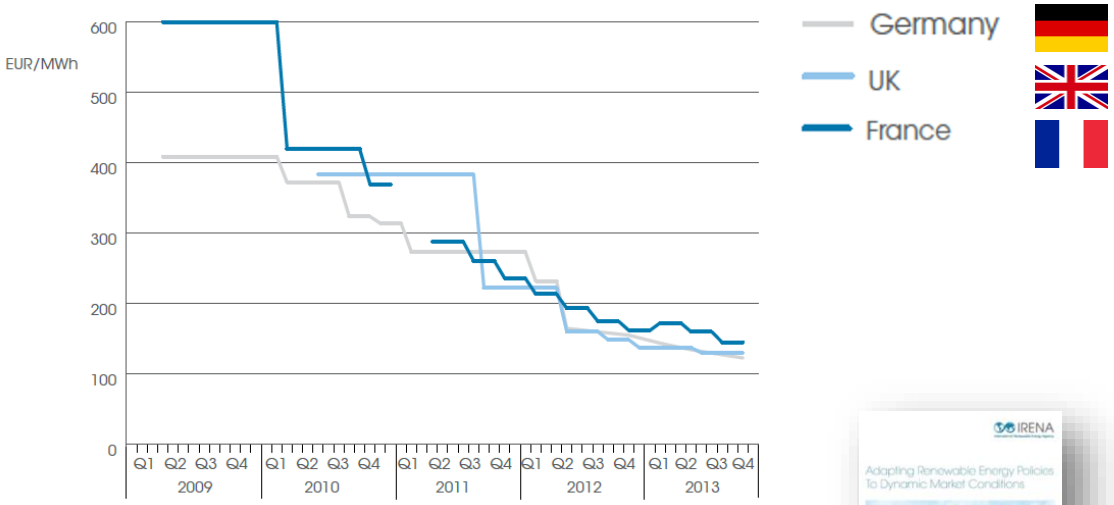
Strengths

- Limits the risks for investors also in emerging technologies
- Facilitates the entry of new players in the market
- Often funded by consumers and not exposed to public budget cuts
- Long term security drives technological development

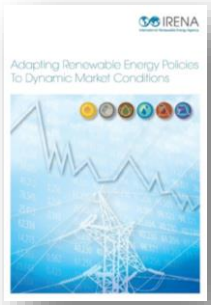
Weaknesses

- Costly with high deployment rates and Generation is not exposed to electricity market prices
- Tariff setting and tariff adjustment process is challenging and complex

PV FIT degression mechanism in Germany, the U.K. and France



Source: IRENA (2014), Adapting renewable energy policies to dynamic market conditions



FIPs Strengths and weaknesses - Keeping pace with rapidly decreasing costs

FIPs

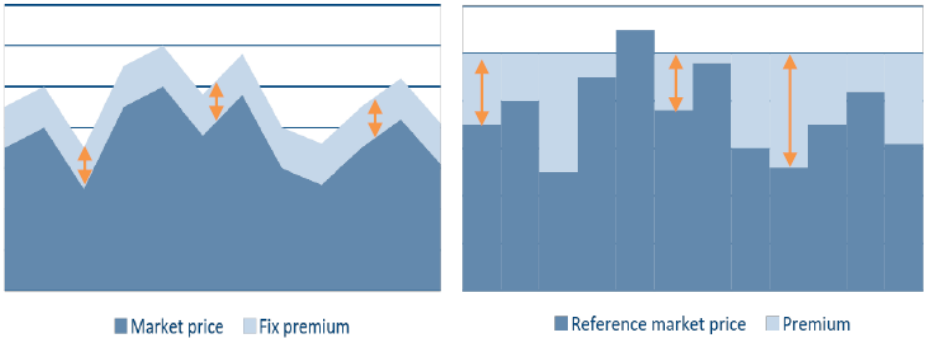
Strengths

- Fixed premiums encourage generators to react to market signals
- Sliding premiums or capped fixed premiums minimise the support cost
- Limit risk for investors, especially premiums with floor
- Flexible designs and well suited for liberalised electricity markets

Weaknesses

- Fixed premiums without floor create risk for investors
- Premium setting and adjustment process is challenging and complex

Fixed or floating premium



Auctions Strengths and weaknesses - Keeping pace with rapidly decreasing costs

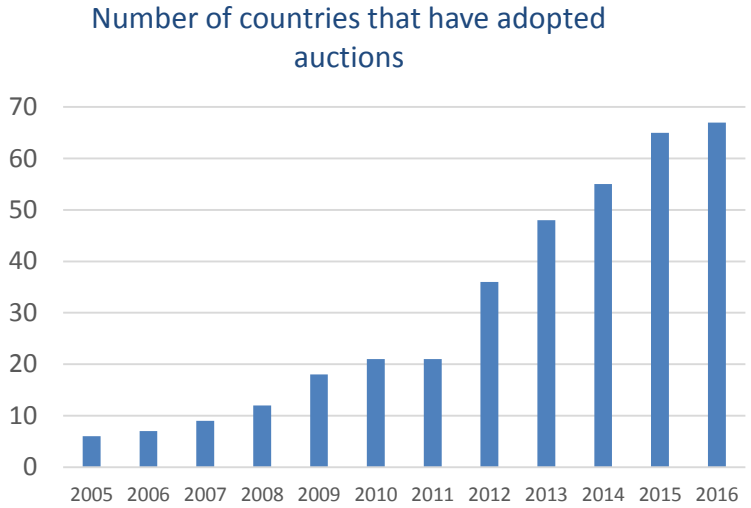
Auctions

Strengths

- Flexibility in the design according to conditions and objectives
- Permit real price discovery
- Provide greater certainty regarding prices and quantities
- Enable commitments and transparency

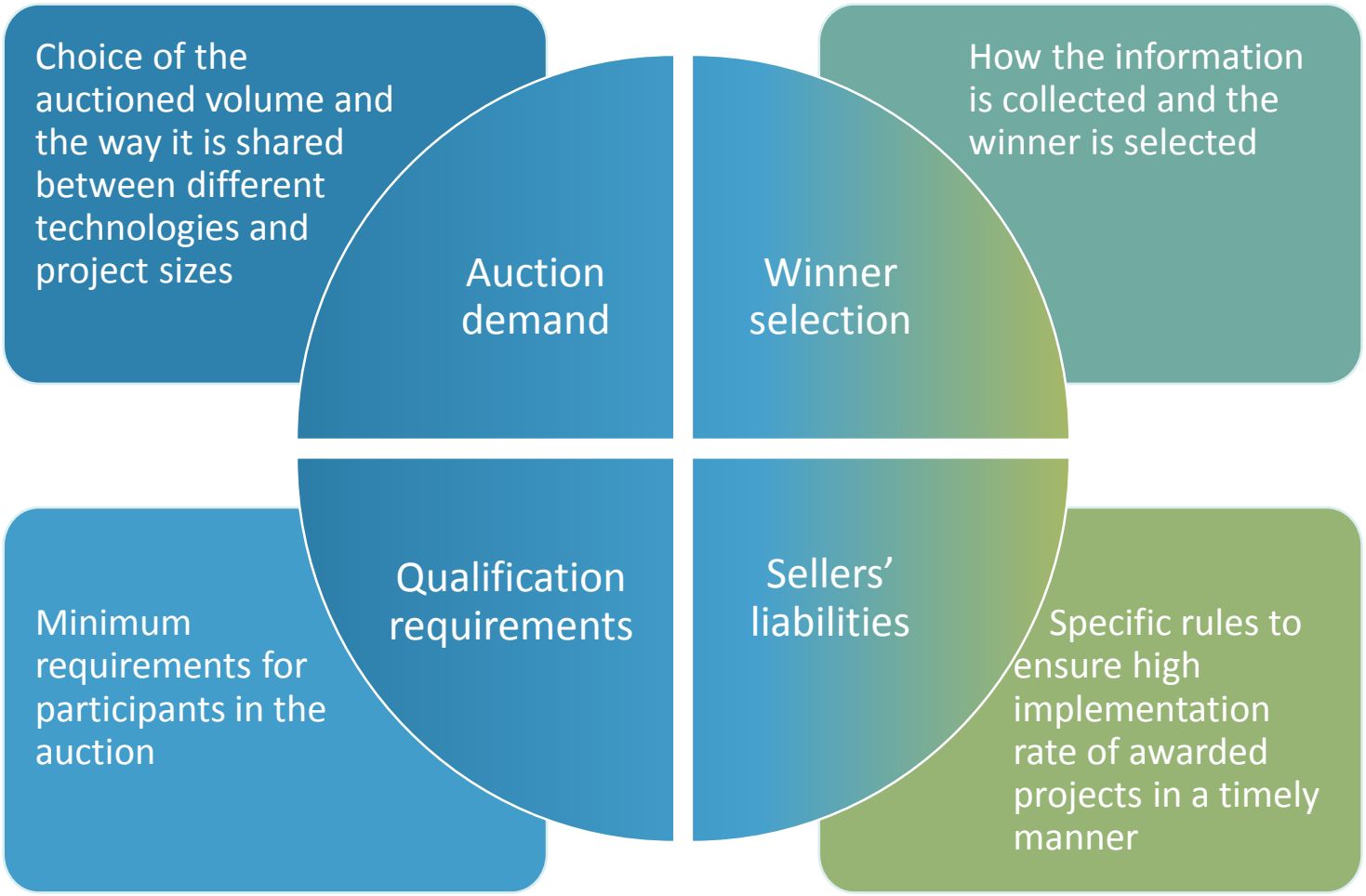
Weaknesses

- Are associated with relatively high transaction costs for both developer and auctioneer
- Risk of underbuilding and delays



Based on REN21 Global Status Report (2005 to 2016)

Auction design elements



IRENA and CEM, 2015

Key considerations in designing and implementing auctions

Increasing competition for cost-efficiency

- Increased participation of bidders
- Prevention of collusion and price manipulation

Limiting participation to bidders who can meet goals

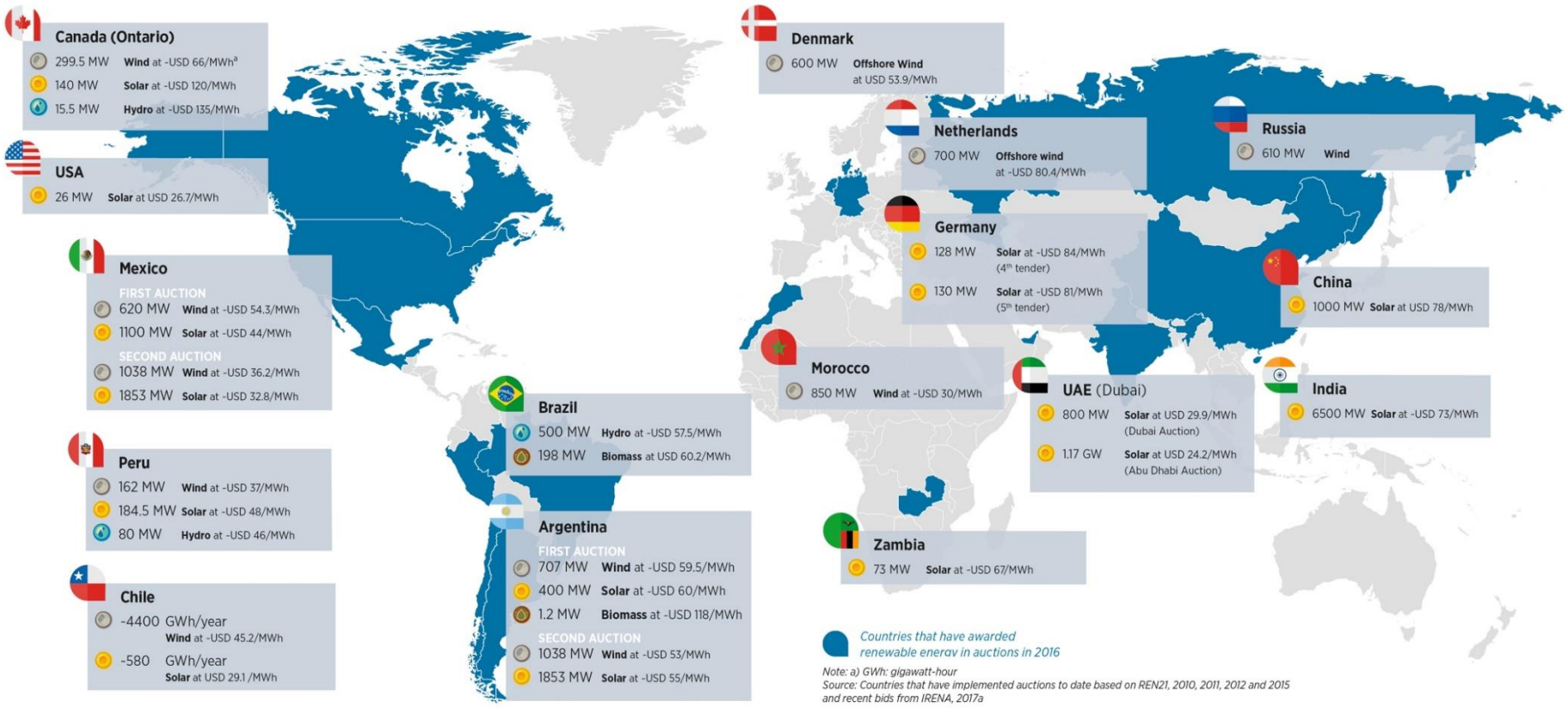
- Project delivery
- Deployment goals

Ensuring global socio-economic development goals

- Qualification requirements
- Multi-criteria selection

Renewable Energy Auctions

Recent highlights



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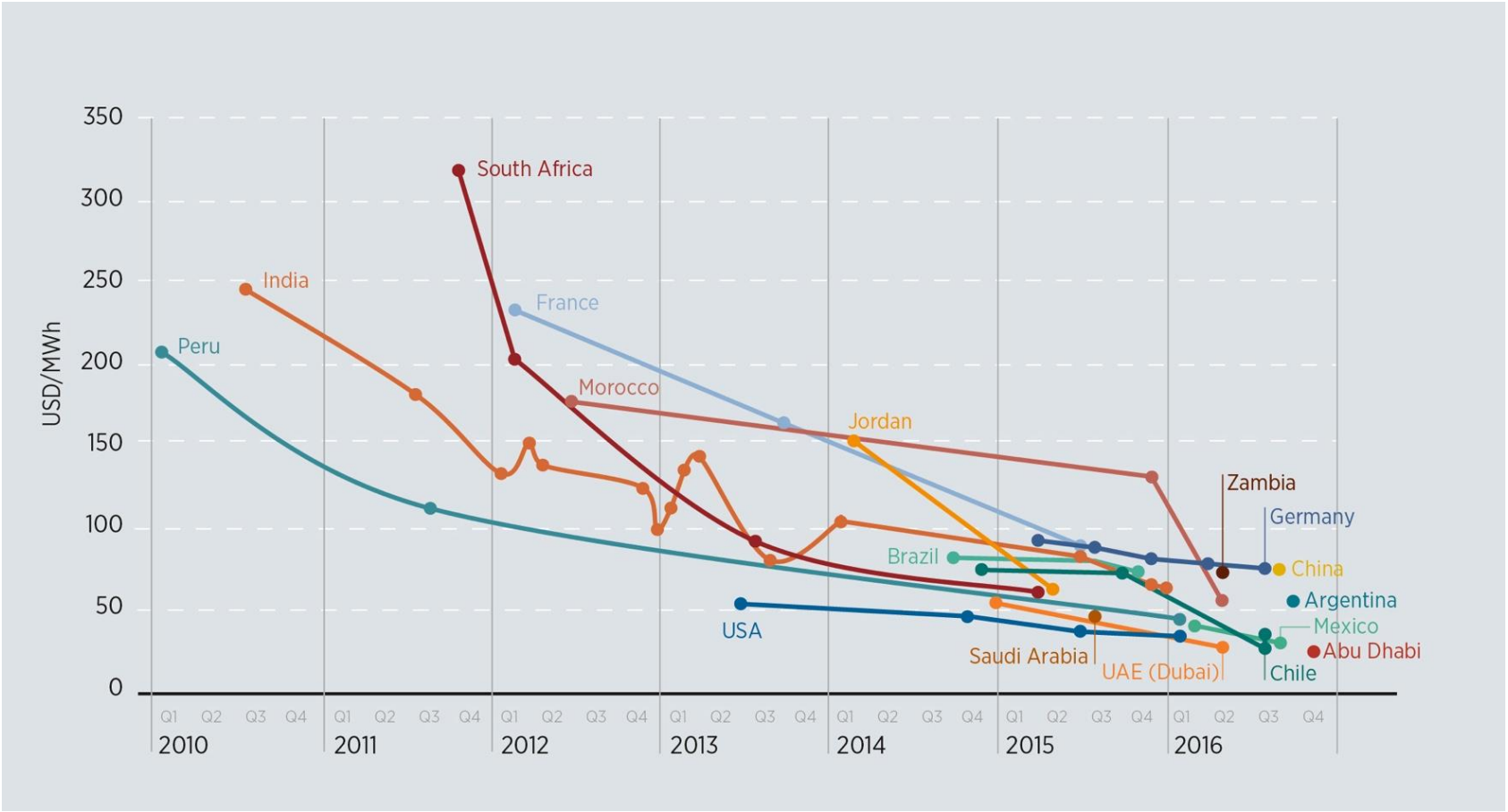
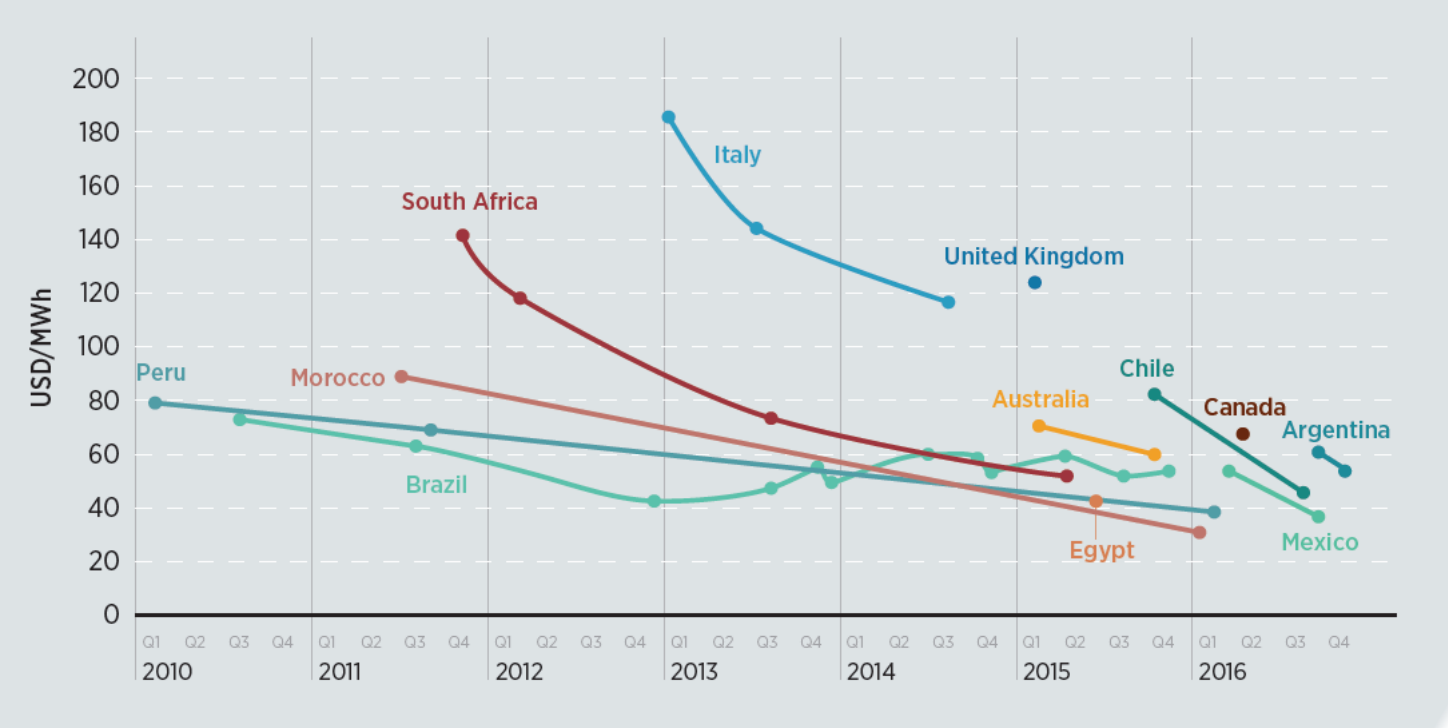
Price trends: solar PV auctions



Price trends: onshore wind auctions



Factors that impact the price

Key messages

Policy makers may want to consider the following:

- Different policy options are not mutually exclusive and each type can be used to address different technologies, capacities, markets and objectives.
- Auctions play an important role in the new generation of policies and they have become increasingly sophisticated in their design
  - Account for the trade-offs between different design elements
  - Tailor the design of auctions to the specific context and objectives
- Mobilising the scale of investment necessary requires an environment that is built on an enabling policy and regulatory framework that can catalyse private investments into the energy sector

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The way forward in planning and designing auctions

- Understanding the reasons behind the recent low prices is important to make informed policy choices.
- Auctions may underestimate the true costs of renewable energy (e.g. balancing costs) or lead to overly aggressive bidding.
- Risks of underbuilding and delays can be reduced with solid contracts and enforceable penalties. However, stringent compliance rules may deter the participation of small and/or new players.
- The extent to which the results are affected depends on choices regarding the design elements and how well adapted they are to the country's specific context (economic situation, structure of the energy sector, maturity of the power market and level of renewable energy deployment).
- The complex and dynamic environment of renewable energy auctions motivates constant innovation in the mechanisms' design.

Thank you!