

The Global Sustainable Energy Challenge:

A World Bank view



WORLD BANK GROUP
Energy & Extractives

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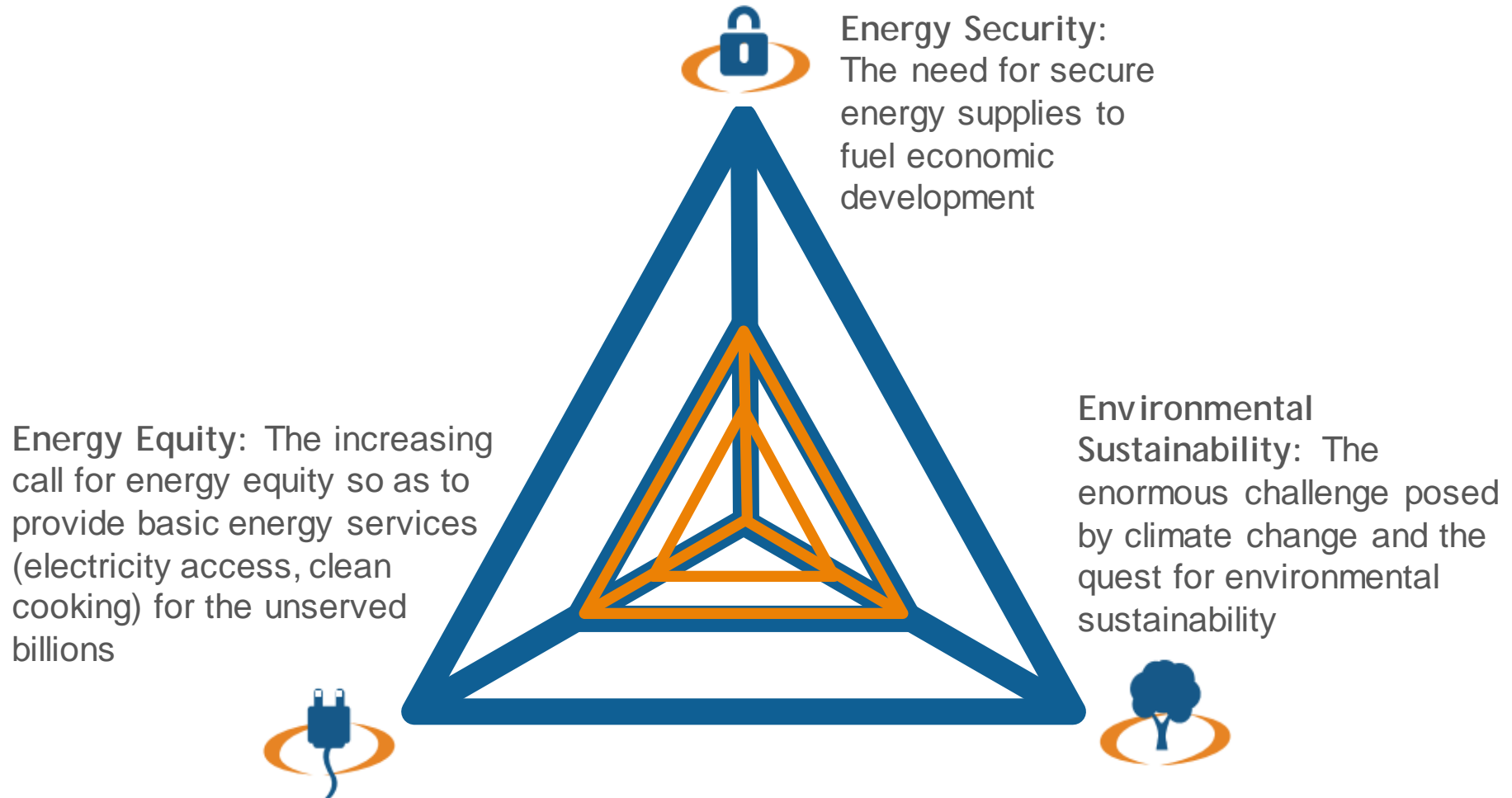
Energy & Extractives Global Practice

World Bank

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ENERGY TRILEMMA

Driving force of the international expansion of markets for clean energy



Source: World Energy Council, *World Energy Trilemma 2013*

SUSTAINABLE ENERGY FOR ALL (SE4ALL)

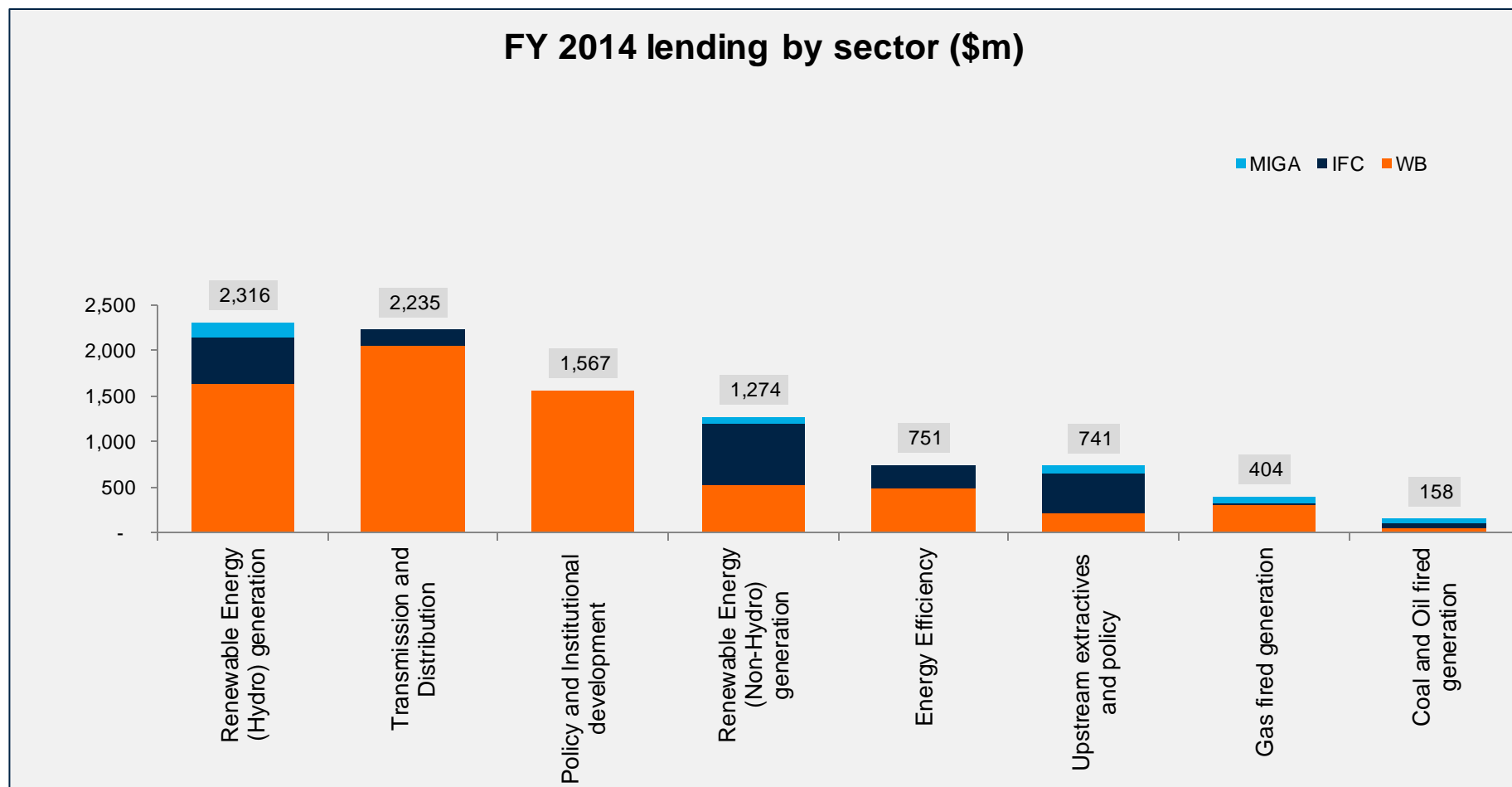
The Sustainable Energy for All (SE4ALL) initiative is a multi-stakeholder partnership between governments, the private sector, and civil society, co-chaired by UN Secretary General and President of the World Bank.



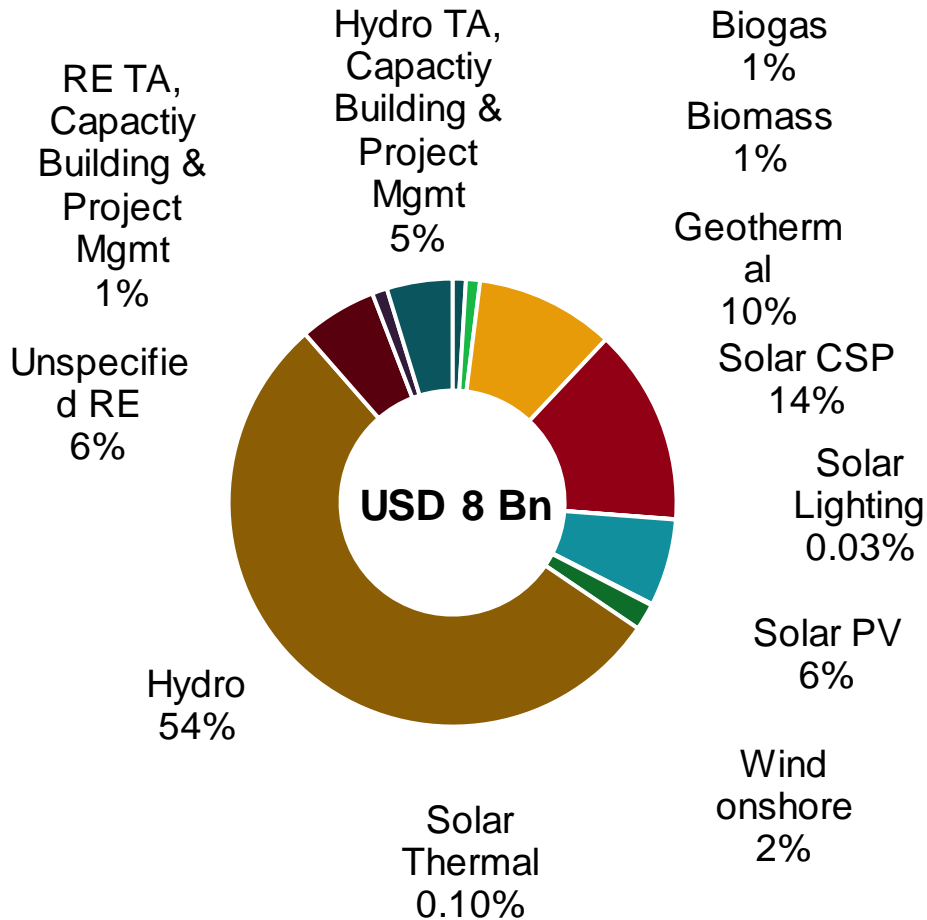
By **2030** it aims to:

- 1** Achieve universal access to energy, including energy and modern cooking fuels
- 2** Double the rate of improvement in energy efficiency from 1.3% to 2.6% per annum
- 3** Double the renewable energy share of power produced and consumed from 18% to 36%

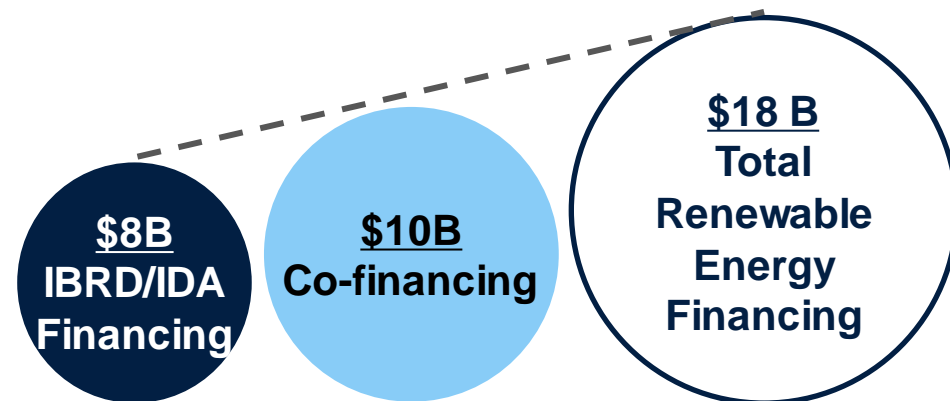
WBG Energy Lending: FY14 by sector



RE PORTFOLIO AND FINANCING LEVERAGE (FY10-15)



- Renewable Energy Mapping Program
- System Strengthening for integration of Variable Renewable Energy
- Scaling up solar electricity (focus on Africa)
- Lighting Africa & Lighting Asia
- Global Geothermal Plan: Phase II
- Leveraging private sector
- Scale up of policy and regulatory work



ENABLERS OF SUSTAINABLE ENERGY

**Assessing a country's
readiness for clean
energy investment**

Proper Planning

**Enabling policy,
laws and regulation**

Utility Performance

Resource Mapping

**Fair procurement
practices**

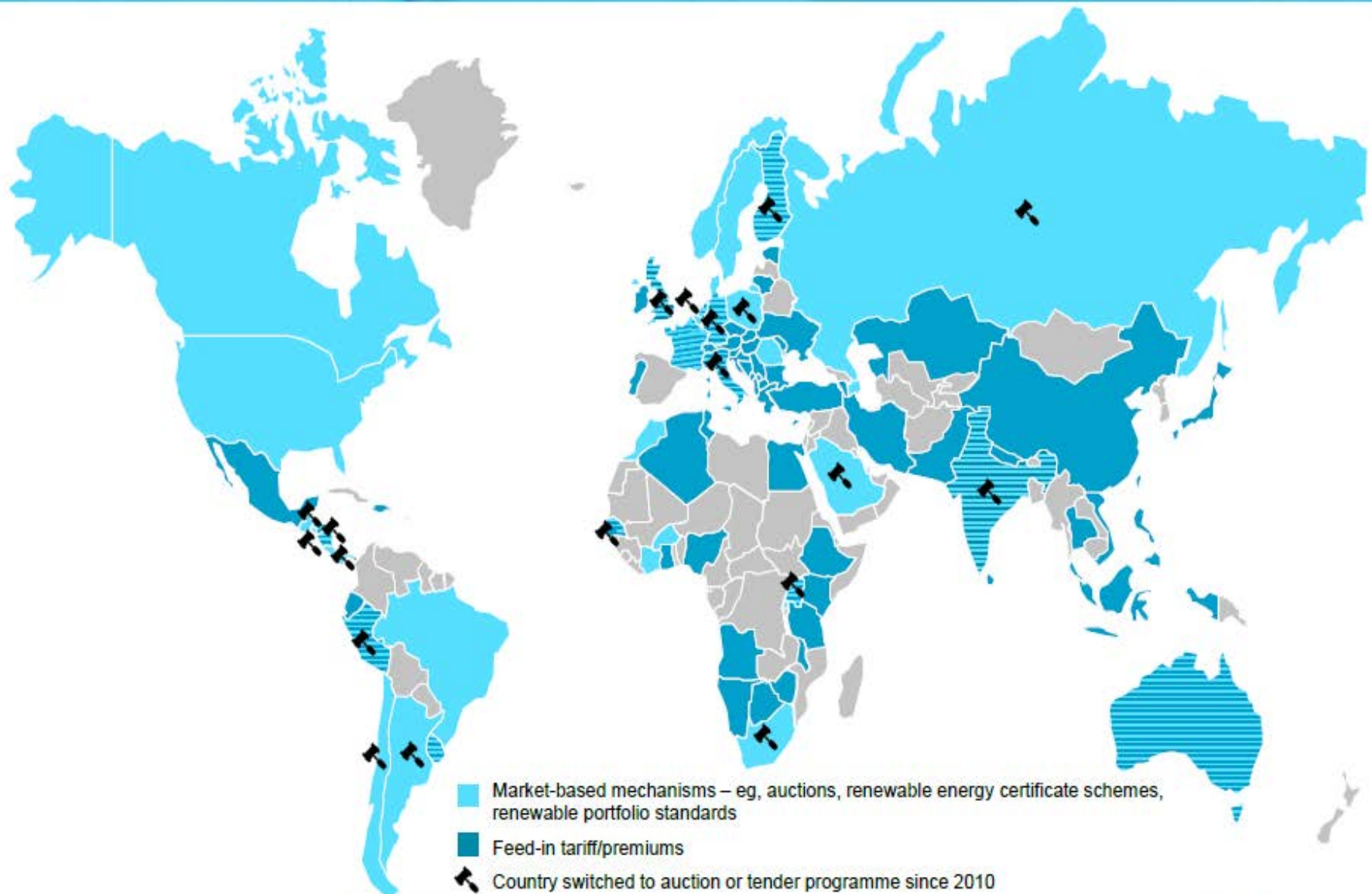
Electricity tariffs

**Capacity to
Integrate
Renewables**

**Network
Connection and
pricing**

Carbon pricing

PRINCIPAL STATE- AND NATIONAL-LEVEL POLICY MECHANISMS FOR RENEWABLES PROJECTS (IN FORCE OR PROPOSED)





FRAMEWORK TO GUIDE WBG FINANCE

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		GHG EMISSIONS	
		LOW ←	→ HIGH
COST	LOW	1. Strong case for support (e.g. energy efficiency, hydro, geothermal, solar/wind in high-cost environments)	2. Support in rare circumstances if a) Meets critical energy needs b) No lower-cost alternatives available in time or to scale c) No alternative finance. <i>Coal Screening Criteria still apply</i>
	HIGH	3. Support under certain conditions a) Concessional finance available to cover cost differential b) Strong country ownership	5. No case for support
		4. Support possible if strategic potential for technological innovation and global demonstration effects	

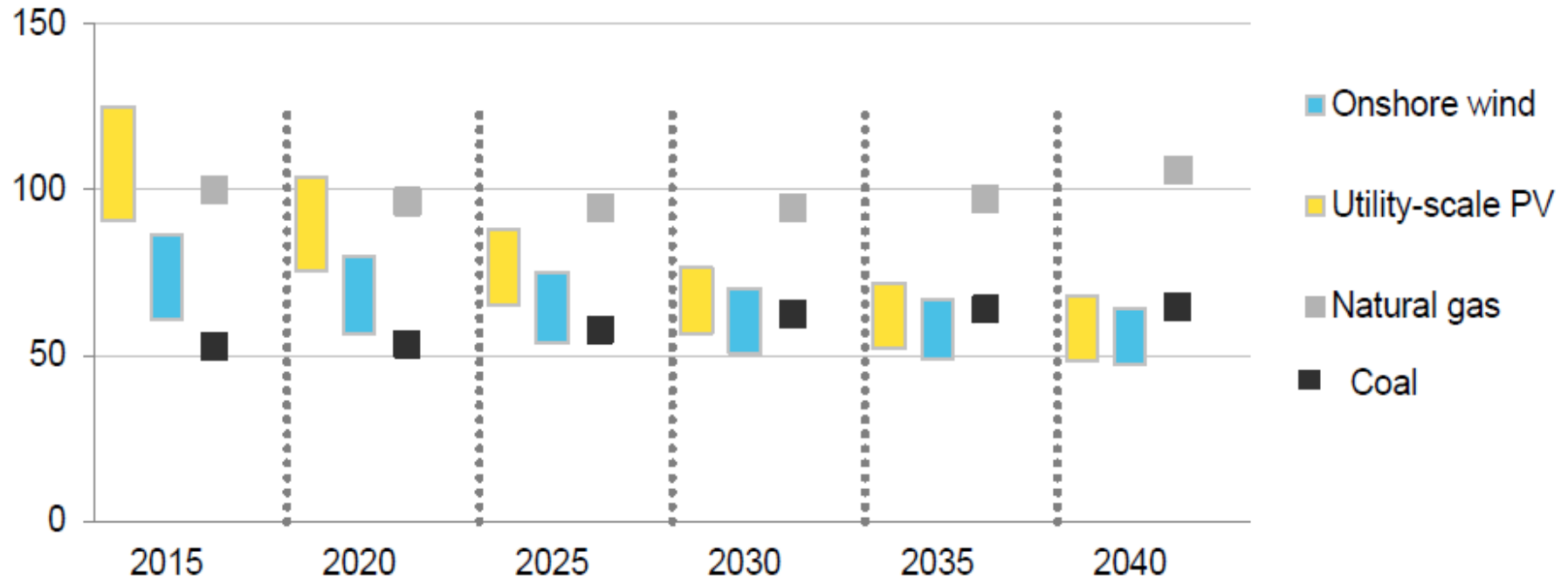
WBG INVESTMENTS ANALYZED W-W/O CARBON VALUE

**Social Values of Carbon recommended for the WBG
in US\$ per 1 metric tonne of CO₂ equivalent (in real 2014 US\$)**

	2015	2020	2030	2040	2050
Low	15	20	30	40	50
Base	30	35	50	65	80
High	50	60	90	120	150

Investment Projects calculate ex-ante GHG footprint. Projects undertake economic analysis with and without the social value of carbon and present these estimates for Management and Board consideration. High and low paths are offered for use in sensitivity analysis

CHINA LCOE (\$/MWH NOMINAL)



Note: Capacity factors – onshore wind: 25-35%; solar PV: 10-15%

Source: Bloomberg New Energy Finance: