



## WORLD BANK'S ROLE IN TRANSFORMATIONAL ENGAGEMENTS

**Lucio Monari**

Director – Energy and Extractives Global Practice  
World Bank

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# AGENDA

1. Mega trends are affecting the way we design infrastructure interventions
2. What is a transformational engagement in infrastructure
3. Typologies of transformational engagement in the energy sector:
  - Sectoral engagement
  - Project level
  - Technology

# Over the next few decades, the world will face enormous pressures

Demographic pressures (growth of population, middle class, cities) will increase needs for jobs, and physical and natural infrastructure; these will benefit from advancements in technology; but will be constrained by increased fragility, exclusion and natural resource degradation

## Climate Change



- World economy is expected to grow 2-3x by 2050
- BAU will imply needs for:
  - 40% more food
  - 55% more water
  - At least 2x increase in infrastructure [Currently \$1.5tn is invested by developing countries in infrastructure]
  - 80% increase in electricity production
  - 1bn additional cars on the road



Rural Urban  
Transformation



Natural Resource  
Management

## Technology



- Cost of solar power fell by 80% in the last 6 years; wind power by 50%
- Installed capacity of solar energy grew 40 times and that of wind 6 times in the last 10 years
- Cost of smartphones has decreased 5% per year (2008-2013)
- Concerns of inequitable access, privacy and security
- Loss of jobs due to automation could reach 50% in some countries/sectors



Fragility and Inclusion

Sustainable Infrastructure

## Definition

- Improve fundamentally the lives of the poor and disadvantaged people
- Produce demonstration effects that can be replicated or scaled up
- Generate spillover effects on multiple sectors of the economy, including stimulate private investment;
- Result in far-reaching impacts; or help client countries, regions on a sustainable development path

## Characteristics

### RELEVANCE

Addressed a major developmental challenge – such as poverty, equity

*Evidence from diagnostic or analytic work showing the constraint or problem addressed was of critical importance .*

### DEPTH OF CHANGE

Causes or supports fundamental change in a system or market; addresses root causes to support a change in trajectory

*Evidence of market change, systemic change, or behavioral change*

### SCALE OF CHANGE

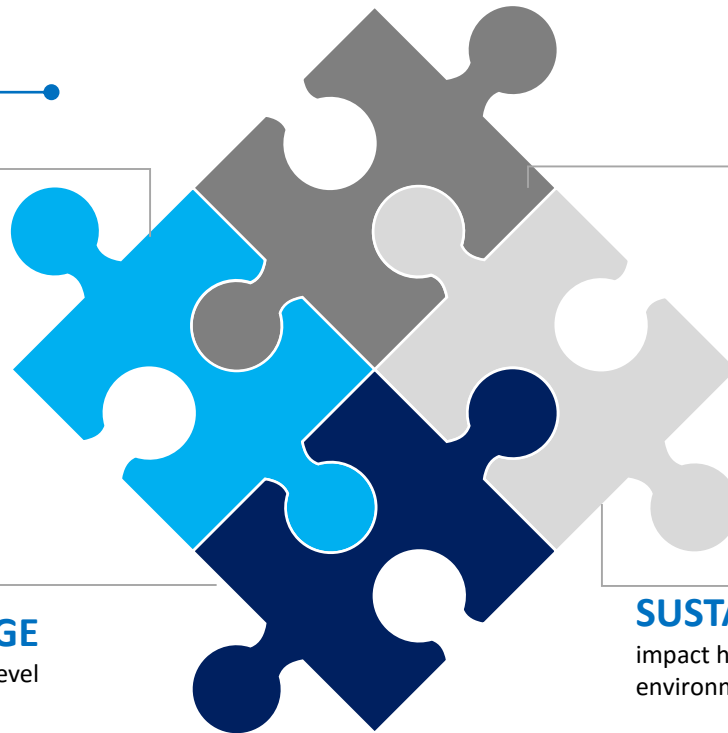
Causes large-scale impact at national or global level

*Evidence of scaling up of approaches and innovations, and replication; catalytic effects; demonstration effects; positive spillovers and externalities;*

### SUSTAINABILITY

impact has been economically, financially, environmentally sustainable in long term

*Evidence of financial, economic, environmental sustainability of results after engagement*



### Critical Pillar

Transformational engagements are a critical pillar of the World Bank Group's strategy for achieving its twin goals of extreme poverty elimination and shared prosperity.

### Increased Support

The 2013 World Bank Group strategy posited that increasing support for "transformational" engagements would be a key means to enhance the impact of its assistance

### WB Experience

WBG supported several successful transformational engagements

These engagements were difficult to do, require sustained effort over a long period, and constitute a small proportion of the Bank Group's portfolio

Some notable examples in the Energy and Extractives sector include interventions in Kenya, Ethiopia, Philippines, Turkey, Thailand/Lao PDR, Central/South Asia

### No Silver Bullet

*But...*

There is no single policy prescription for catalyzing transformational change.

Economic and social development is not a mechanistic, linear process.

It involves complex and multidimensional socioeconomic and political processes and interventions in systems that require contextualized and tailored solutions, adaptation, and active management of change processes.

### Some common characteristics

Most of the engagements supported fundamental change in a market, system, or behavior.

Project- or program-level interventions achieved large-scale impact through scaling up, replication, or demonstration effects of effective approaches and solutions.

Transformational engagements were differentiated most clearly from non transformational engagements by the extent to which the effects of the intervention were sustained, often because they involved comprehensive approaches to stimulating and sustaining systemic and behavioral change

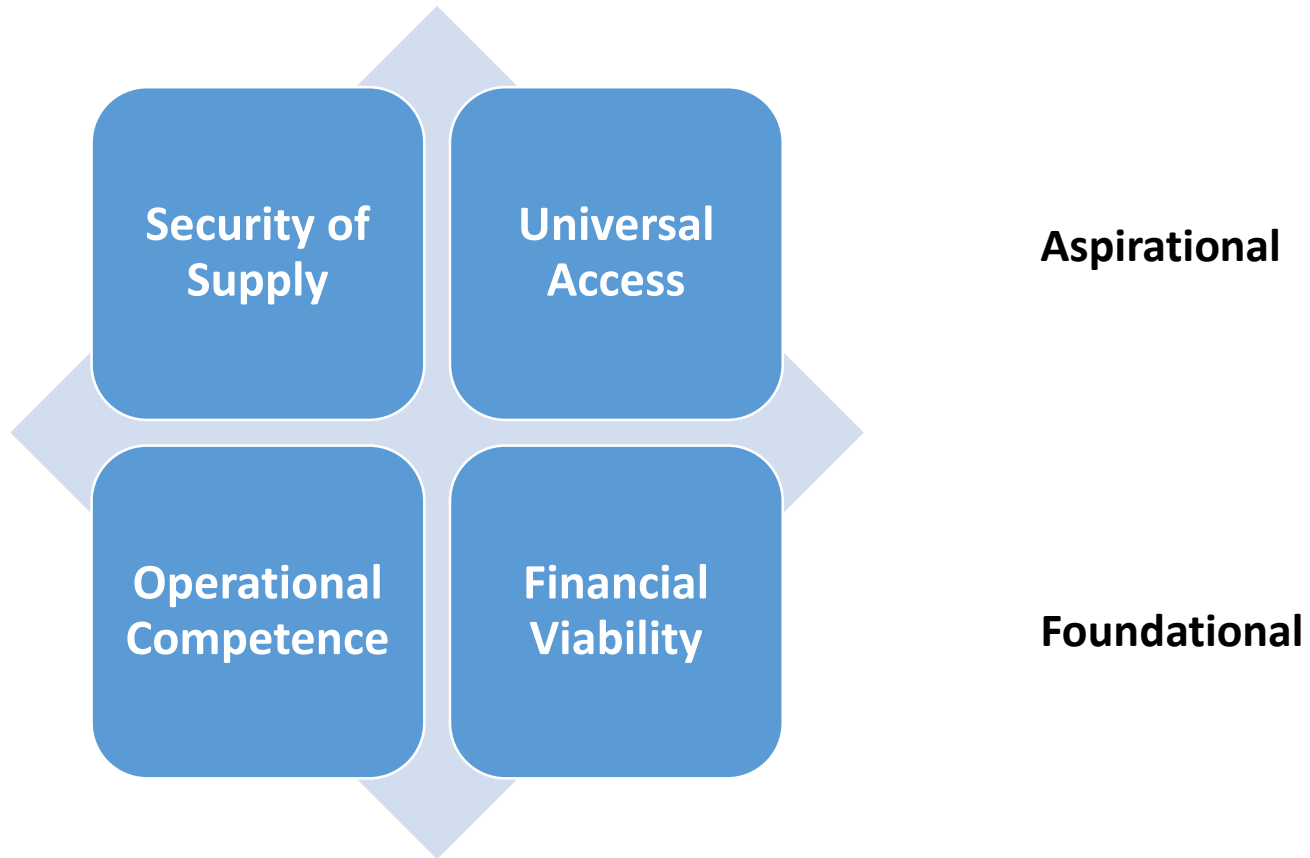


# CASE STUDIES

World Bank supported Transformational Engagements at sectoral level

# ENERGY SECTOR: Four inter-locking challenges

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# 1. Security of Supply: the Africa Challenge

Electricity output growth	<-5%	-5% - 0%	0% - 5%	5% - 10%	>10%
Number of countries	3	3	5	8	4

- Almost total absence of planning culture and capacity
- Regional disparities – resources such as gas or hydro localized in specific countries
- Majority of countries have small systems, preventing benefits of economies of scale
- Most African countries experience chronic power shortages and associated load shedding
- An important subset of countries are locked into high cost small scale diesel power generation with oil price exposure
- This has serious economic consequences
  - High economic costs associated with unserved energy
  - Reliance on expensive stop gap emergency rental power



## 2. Universal Access: the Africa Challenge

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Access to electricity	<= 20%	20% - 40%	40% - 60%	60% - 80%	80% - 100%
Number of countries	14	15	9	6	4

- Access is a public good and requires concessional financing, including for business models involving the private sector
- Current low rates of investment cast doubt on achievement of universal access by 2030 as per SDG7
- Rural areas are often remote and have dispersed populations
- Countries face serious affordability issues when extending access beyond urban areas
- Grid extension faces rising costs and falling revenues at margin needing to safeguard financial equilibrium of utility

### 3. Operational Competence: the Africa Challenge

Hours of outages per month	>40	40 - 30	30 - 20	20 - 10	< 10
Number of countries	9	3	6	8	10
T&D losses	>40%	40% - 30%	30% - 20%	20% - 10%	< 10%
Number of countries	4	3	16	12	5
Bill collection rate	< 60%	60% - 70%	70% - 80%	80% - 90%	> 90%
Number of countries	3	2	5	8	21

- A competent utility needs to supply acceptable quality of service at a reasonable level of efficiency
- Governance of utility often falls short and information systems often lacking to support oversight of utility performance
- Unplanned expansion, underinvestment in grid, lack of adequate maintenance impact operational quality
- Bringing private sector to manage utilities is often a complex process

## 4. Financial Viability: the Africa Challenge

Full cost recovery ratio	<=20%	(20%,40%]	(40%,60%]	(60%,80%]	>80%
Number of countries	0	10	9	14	6
Operational cost recovery ratio	<=20%	(20%,40%]	(40%,60%]	(60%,80%]	>80%
Number of countries	0	3	4	8	24

- Only 19 African countries recover operating costs for electricity and of these only 2 recover full costs; often because costs are very high
- Subsidies take a variety of forms and are often implicit
  - Direct fiscal transfers placing strains on public finance
  - Deferred capital expenditure undermining quality and coverage of service
  - Under-pricing of fuels for power generation
  - Energy cross-debts among state-owned enterprises

## Context for sector reforms

### First generation reforms

- Created a sector regulator, the **Electricity Regulatory Board (ERB)**
- Unbundled Kenya Power and Lighting Company Limited (partially state-owned vertical integrated utility), into **Kenya Electricity Generating Company Limited (KenGen)**, in charge of generation, and
- **Kenya Power and Lighting Company (KPLC)**, in charge of transmission, distribution, and retail

### Second generation reforms

- Was introduced with the enactment of the **Energy Act 2006**.
- ERB was transformed into a single energy regulatory body – the **Energy Regulatory Commission (ERC)**
- **Kenya Electricity Transmission Company Limited (KETRACO)**, was set up for new transmission assets
- **Geothermal Development Company Limited (GDC)** for upfront steam field development works
- **Rural Electrification Authority (REA)** for accelerating rural and community electrification

## Context for last mile access

- GoK has adopted the **Last Mile Connectivity Program (LMCP)** as the primary grid densification vehicle - to connect all consumers within 600 meters of a transformer

1993



**Energy Sector Policy Framework**, promoted the separation of policy and commercial functions, adoption of cost reflective tariffs and liberalization of the generation sector.

1997



**Electric Power Act** created the Electricity Regulatory Board and established a framework for unbundling Kenya Power Corporation in KenGen and KPLC.

1997



**Sessional Paper No. 4** created GDC, KETRACO and REA.

2006



**Energy Act** consolidated the laws relating to the energy sector, established a single sector regulator (ERC) and the Energy Tribunal.

2016



**New Energy Bill (TBA)** transposes the devolution introduced in the new Constitution of 2010.

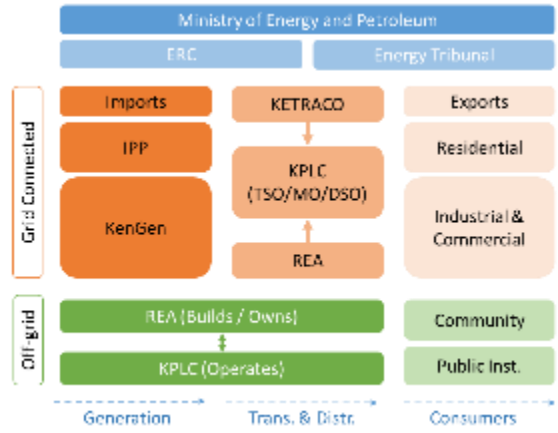
## WB engaged and engages across the entire value chain (from generation to last mile access) through investments and technical assistance

### Market Structure

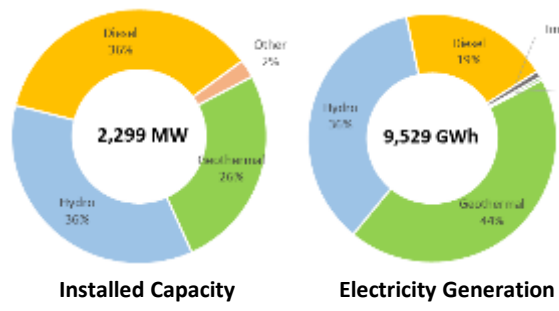


Unbundled during past decade, there are 5 key market players across power sector value chain:

- KPLC is the single buyer, TSO and DSO
- KenGen owns 70% of generation assets
- Ketraco develops new transmission assets
- REA is in charge of rural electrification
- GDC develops geothermal steamfields

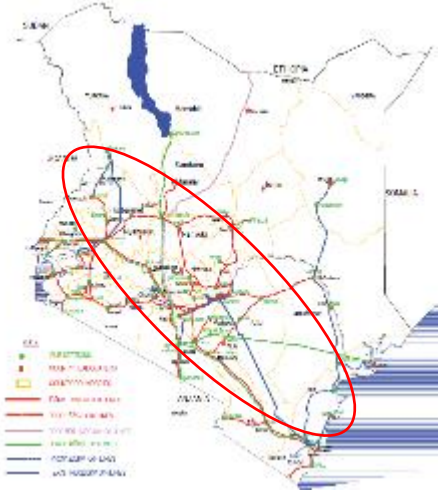


### Generation Structure (June 2015)



- Historically, hydropower and diesel generation were the main generation technologies in Kenya, followed by geothermal.
- The commissioning of 280 MW of new geothermal capacity in Dec 2014 and Aug 2015 (Olkaria 1 U5&6 and Olkaria 4) radically change the generation mix.
- Geothermal is now the largest source of electricity with 44% share, largely displacing more expensive diesel generation.
- Reducing the dependency on diesel generation allowed Kenya to reduce approx. 12% the generation cost.
- Renewable energy (incl. hydropower) represents approx. 62% of the installed capacity and 80% of the total electricity generation.

### T&D Infrastructure








- Historically developed over the Mombasa-Nairobi-Lake Victoria corridor. Vast areas in the northern part and some counties in the southern remain marginalized.
- A densification program – Last mile program – is currently connecting households located up to 600 meters of the existing LV lines in urban and peri-urban areas of Kenya.



**Access to competitively-priced, reliable, quality, safe, and sustainable energy is essential for achievement of the vision.**

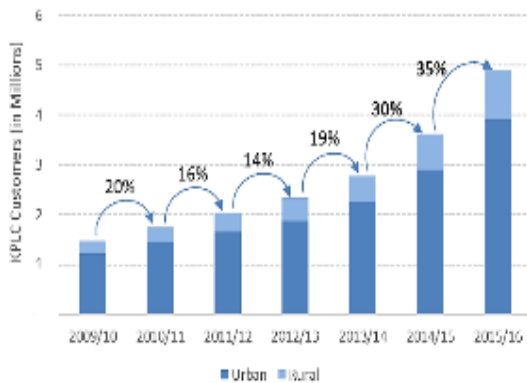


**MoEP  
Strategic  
Plan  
2013-2017**

-  5,500 MW of new generation capacity by 2016
-  4,600 km of new transmission lines
-  75-80% of electricity access
-  12,000 Primary schools with electricity access
-  6,000 Public institutions with electricity access

## WB supported electrification programs + Pipeline programs on grid/off-grid access

**KPLC customer connections (millions)**



**43%\* of the population with electricity access by June 2016.**

- - 1.2 M new connections over the past FY
- - 100% increase in the KPLC residential customer numbers
- - Last mile connectivity project key

**12,300 primary schools electrified (on- and off- grid) between 2013 and June 2015. More supported by pipeline projects**

- - 95% of public primary schools with electricity access
- - 150% increase w.r.t 2013 figures

**Ensuring consumer affordability in a financially sustainable manner.**

- The LMCP design encompasses a substantial decrease in the connection fee charged to household customers – from KES 35,000 (\$343) to KES 15,000 (\$147)

**Pipeline: Expand electricity services to underserved areas**

- through mini grids and standalone systems towards achievement of universal access

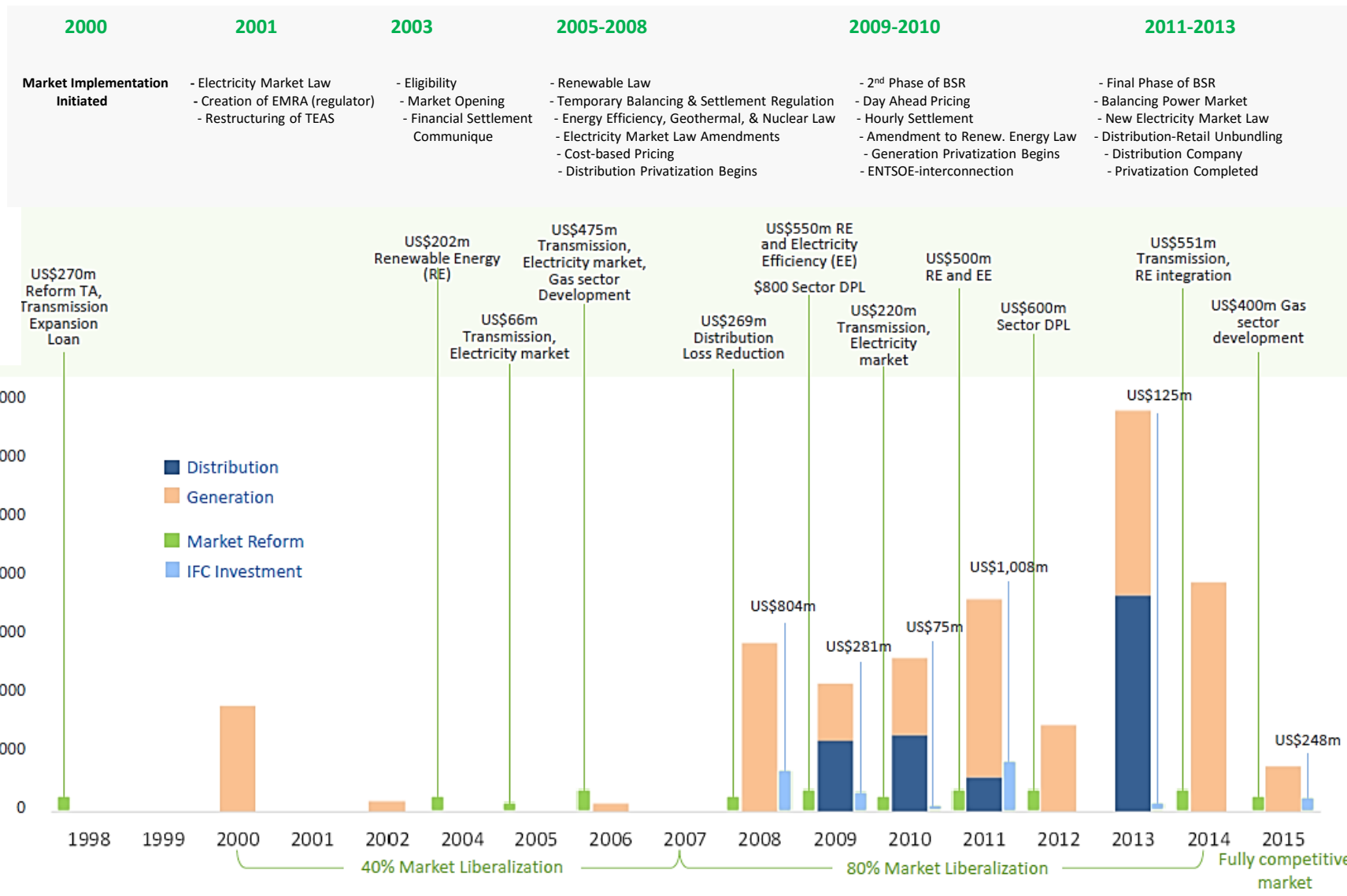
## Background

Turkey's energy market reforms were launched in 2001 as part of the government's response to a deep economic crisis with the support of the IMF and WB. Electricity Market Law and a Natural Gas Market Law were both enacted in 2001 for sectoral restructuring

## Market based reforms

- **Electricity market Development:** to establish a competitive market environment capable of attracting private investment and promoting efficiency
- **Legal, Regulatory and Institutional Framework:** Energy Market Regulatory Authority (EMRA) was established to cover natural gas, LPG, and petroleum markets.
- **Restructuring State-Owned Companies** into 3 - Transmission, Generation and Distribution companies
- **Unbundling of Functions** between market and regulated activities
- **Open Access and Open market:** Grid unbundling and option to choose their electricity suppliers
- **Centralized Balancing, Settlement, and Trading Arrangements**
- **Energy Markets Operation Company (EPIAŞ) and TETAŞ as the Manager of Sovereign-guaranteed PPA**
- **Tariffs:** Cost reflective regulated tariffs, non regulated tariff to be decided by market
- **Subsidies:** shall not be provided through tariffs, but rather through a direct subsidy mechanism
- **Privatization of Distribution**

Creating markets required sequenced WBG support to reforms over time





**WBG  
Investment  
and TA  
support**

WBG assisted in the design and implementation of the energy reform program in Turkey over the last decade, through

- **IBRD: \$3.5 billion in Investment and T.A. lending and \$2.1 billion Sector Policy Financing**
- **IFC: \$1.5 billion in leading RE and Gas Generation**
- **MIGA: \$300m in Guarantees**

Total PPI in Turkey Power Sector over 16 years: 92% of investment in last 8 years, 10 years after 1<sup>st</sup> IBRD Sector Reform Loan & Transmission investment  
**(\$55.4 billion in Power + \$6 billion in Gas)**

**Impact**

- **An electricity market with over 800 participants (by 2014) had been developed, and growth steadily sustained from a participation of 77 in 2003**
- **>30,000 megawatts (MW) of market-based, private-sector power generation capacity was commissioned between 2001 and 2014**
- **A wholesale electricity market was created in 2006, which handled about 30 percent of electricity consumption in Turkey on average in 2015 with nearly 600 participants**
- **Cost-based pricing was implemented for electricity tariffs that were established by the EMRA and became effective on July 1, 2008.**
- **Fully competitive market by 2015 (85% liberalized by 2014). All distribution companies privatized**
- **16,000 MW renewable energy generation capacity addition**



# CASE STUDIES

World Bank supported Transformational Projects

## Background

In 1993, a MOU was signed between governments of Lao PDR and Thailand to support the development of power projects in Lao PDR and Nam Theun 2 hydroelectric power project was identified

## Strategic Context

**Global:** First major World Bank hydro project in a long time; perceptions of governance in Laos; Asian financial crisis  
**Country: (Need):** Small landlocked economy with limited choices for growth; significant aid dependence; high hydropower potential; rapidly growing regional power demand; weak human and institutional capacity;  
**(Risks):** Weak investment climate; limited law and regulation; weak enforcement

## Project Details

Build, Operate, Transfer 25 year concession for Nam Theun Power Co. (NTPC)  
**Approved: March 31, 2005 by the WB board**  
**US\$1.3 Billion cost, financed by 27 parties, of which World Bank:**

- **US\$20m IDA Grant, Up to US\$50 IDA guarantee, Up to \$200 MIGA guarantee**

Generating 1,070 MW

- 1000MW to be sold to Thailand; 70-80MW for domestic grid

**Debt/Equity: (\$920m/\$330m) -> 2.78**  
Inter river-basin transfer from Nam Theun to Xe Bang Fai  
Reservoir from 80km<sup>2</sup> to 450km<sup>2</sup> depending on season

## Opportunity

A \$1.3 billion project, mobilizing large scale private sector capacity, building things across hundreds of square kilometers, resulting in \$2 billion in long-term revenues for Government, and requiring significant new capacities, has the potential to be a developmentally transformational project for a small country.

## Challenge for WB

Project preparation in low capacity country

- Feasibility and impact assessments, Contractual and financial arrangements, Development benefits, Monitoring

Preparing the Country for the Project

- Policy, regulatory, and institutional environment, Avoiding “ring-fenced perfection”: Developing the surrounding areas, Revenue management

Preparing the International Community for the project

<b>Economic Growth (Lao PDR)</b>	<b>NT2 added about 3% to GDP growth</b> the year it began production, and has helped the Government strengthen its regulatory environment for hydropower.
<b>Climate mitigation</b>	<b>NT2 is exceeding its electricity production targets</b> for both Thailand and Lao PDR, and will help <b>avoid about 45 million metric tons of CO2 emissions over its lifetime.</b>
<b>Revenue management</b>	<b>NT2 will provide around \$2 Billion in revenues</b> to the Government through electricity sales to Thailand, resources which the Government committed to spend on priority poverty reduction and environmental protection programs.
<b>Efficiency</b>	Global data suggests that large complex hydropower projects usually run over time and budget <b>NT2 was developed broadly on time and on budget</b> <i>(NT2 over-ran construction period by only 3 months. NT2 was costed at \$1.45 billion, including contingencies whereas final construction cost was \$1.32 billion)</i>
<b>Resettlement</b>	<b>NT2 resettlers are significantly better off than prior to the project, (97% of resettlers have met the target of doubling income)</b> but continued attention is needed to ensure livelihoods are sustainable
<b>Downstream</b>	<b>NT2 developed an unprecedented downstream program</b> but continued support is needed to ensure that no households are left worse off.  <b>17 hydropower projects (5,300MW) are currently under construction</b> and additional 56 (with potential installed capacity of 13,600MW) are under consideration
<b>Watershed</b>	<b>The NT2 Watershed is the best financed protected area in Lao PDR,</b> but continued focus is necessary to ensure that resources are translated into results on the ground.
<b>Benefit to Thailand</b>	<b>Competitive price</b> (4.2 US cents/kWh border) <b>Stable price:</b> Low escalation rate, No fuel adjustment Electricity delivery to northeastern provinces

# Trans-Anatolian Natural Gas Pipeline (TANAP) | CONTEXT

- This transformational project is an integral part of the Southern Gas Corridor, a \$40 billion program that aims to bring gas from the Caspian Sea to Europe.
- The project enhances and strengthens regional energy markets, cross-border trade and connectivity between the South Caucasus, Anatolia, the Balkans and South Eastern Europe.
- TANAP is critical piece of Turkey's energy supply security and a major step towards its goal of becoming a regional energy hub.
- The project provides Azerbaijan with access to new energy markets that expands revenue streams to help it diversity its economy. Georgia also benefits from its role as a transit country.



## Significance of IBRD's involvement

- Led to mobilizing and catalyzing other IFI financing on the underlying depth of IBRD's due diligence and policy dialogue.
- IFIs and Governments have explicitly sought IBRD's stamp of approval on this program – a recognition of IBRD's value addition.

## Renewed and strengthened partnership with middle-income countries

- IBRD deep engagement with Azerbaijan on governance and transparency in the energy and extractives and a step towards diversification of the economy.
- An integral part of a broad program of policy, technical and financial cooperation in Turkey supporting reform, investments and global knowledge and expertise (nearly \$6 billion of IBRD investments have been to the energy sector in the last 10 years.)
- Bank Group engagement in middle-income countries (e.g. in the ECA region) goes beyond investments and into shaping broader energy security challenges together with institutions such as the European Commission, EBRD and EIB

## Environmental and Social

- IBRD's application of international best practice on environment and social issues
- Involvement in Citizen/stakeholder engagement, as well as fiduciary aspects.

## One WBG engagement

- IBRD and MIGA worked jointly to maximize the institutions' financial and development impact for the benefit of the clients by deploying a blend of financing and guarantee to leverage commercial debt for the project.

# Central Asia South Asia Electricity Transmission and Trade Project (CASA 1000)

## Situation

- The Kyrgyz Republic and Tajikistan have a surplus of electricity during the summer. Nearby in South Asia, Afghanistan and Pakistan suffer from chronic electricity shortages

## Objective

- A new electricity transmission system to connect all four countries, called CASA-1000, would make use of hydropower resources in the Central Asian countries by enabling them to transfer and sell their electricity surplus during the summer months to the deficient countries in South Asia. The CASA-1000 project would also complement the countries' efforts to improve electricity access, integrate and expand markets to increase trade, and find sustainable solutions to water resources management.

## Landmark Cooperation between countries

- This project demonstrates landmark cooperation among the Kyrgyz Republic, Tajikistan, Pakistan, and Afghanistan. CASA-1000 will help transform the region and signify an important step toward realizing the planned Central Asia-South Asia Regional Electricity Market (CASAREM). The CASAREM initiative will also develop inter-regional cooperation between Central Asia and South Asia.

## And financiers (including the WB)

- CASA-1000 has the support of the World Bank Group, Islamic Development Bank, United States Agency for International Development (USAID), US State Department, United Kingdom Department for International Development (DFID), Australian Agency for International Development (AusAID), and other donor communities.

## Role of WBG and broader development partners

- World Bank (US\$ 526.5 m) leads the financing with the support of Islamic Development Bank (US\$ 155 m), European Investment Bank (US\$180 m), European Bank for Reconstruction and Development (US\$ 110 m), the US (US\$ 15 m) and UK Governments (US\$ 46 m) and the Afghanistan Reconstruction TF (US\$ 40 m).
- The IFC is also acting as an advisor on behalf of CASA countries for the selection of the infrastructure EPC contractors and operator.
- The development partners continue to play an important convening role in maintaining countries' commitment to CASA, strengthening cross-country coordination and further in providing additional financing required for meeting project financing gap when becomes known

## Transformational Impact

- Once implemented the project will support a trade of 1300 MW of electricity between Central Asia countries (Tajikistan and Kyrgyz Republic) and South Asia countries (Afghanistan and Pakistan).
- In the longer term the project will enable the development of a regional electricity market linking Central Asia and South Asia regions which will help in meeting electricity shortages and improving security of supply in the regions as well as in leveraging third party access electricity trade opportunities.
- Despite delays in infrastructure procurement, commitment from all countries for the implementation of the CASA 1000 project remains very high with strong political support at the highest levels





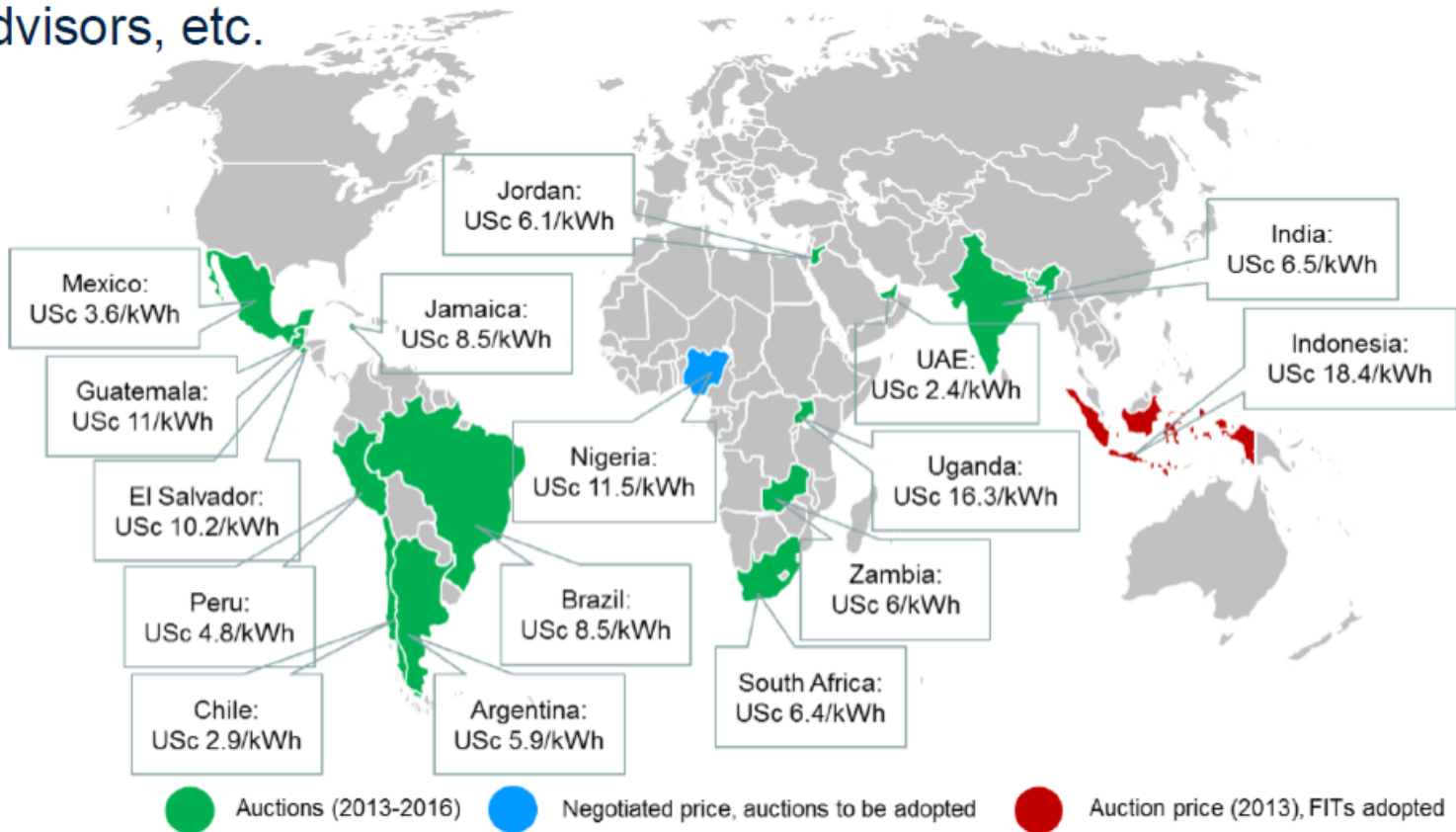


# CASE STUDIES

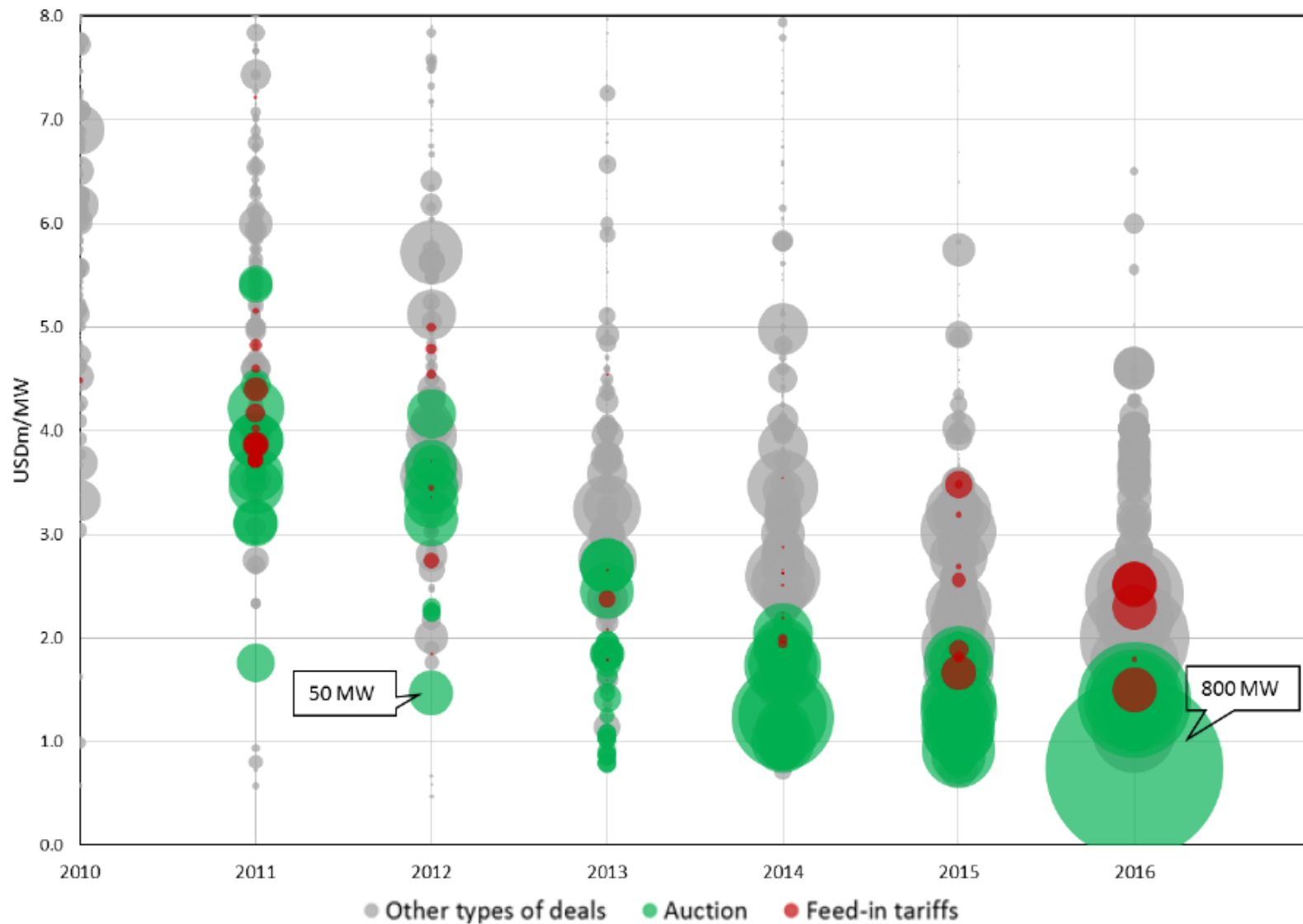
World Bank supported Transformational technologies

# Approach

- Financial analysis of 37 winning bid prices in recent auctions (2013-2016) in 14 countries, chosen from >500 winners in 50 auctions
- Market insights from BNEF and IHS databases
- Interviews with key developers, equipment manufacturers, transaction advisors, etc.



# Installed costs of solar PV are decreasing

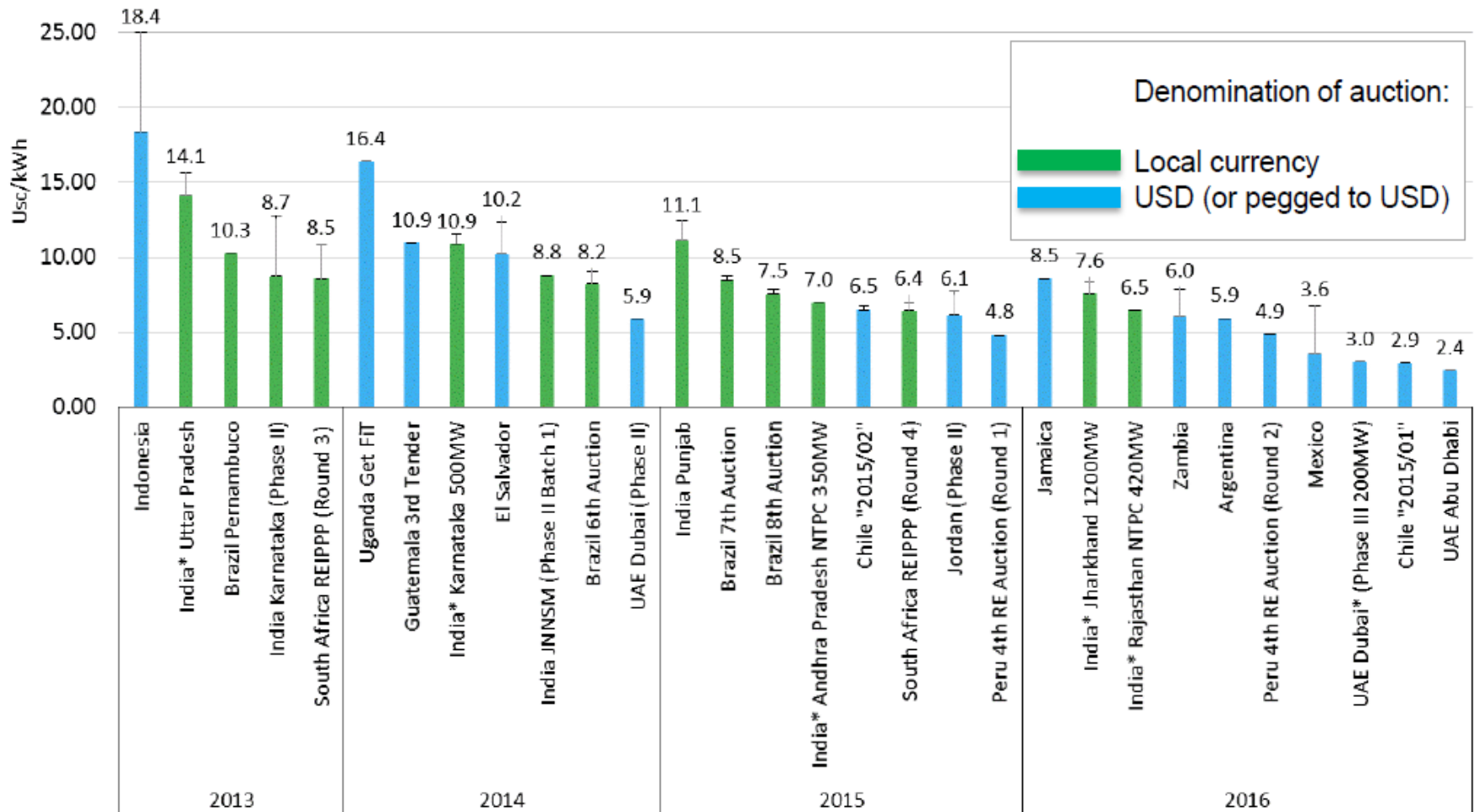


Note: Size of every bubble corresponds to the size of the respective PV plant

Source: World Bank based on BNEF and IHS data

- Installed costs of PV are as low as \$1 million/MW, especially when procured through auctions but also for some bilateral deals

# Prices of PV electricity are also decreasing



Note: The lowest winning bid (nominal price) in each auction is shown. Local currency prices were recalculated to USD with exchange rates at the time of announcement of each plant. Bars above the lowest winning bid represent ranges of all winning bids in every auction in cases when there were several winners. \*For India only the auctions with the highest and the lowest winning bid per year are shown (due to too many auctions being organized in India). Source: World Bank

- Competitive procurement consistently delivers prices below USc 10/kWh over the last 2 years with a clear declining trend

# Low prices are achievable

Estimates of financial details of projects based on a simple financial model:

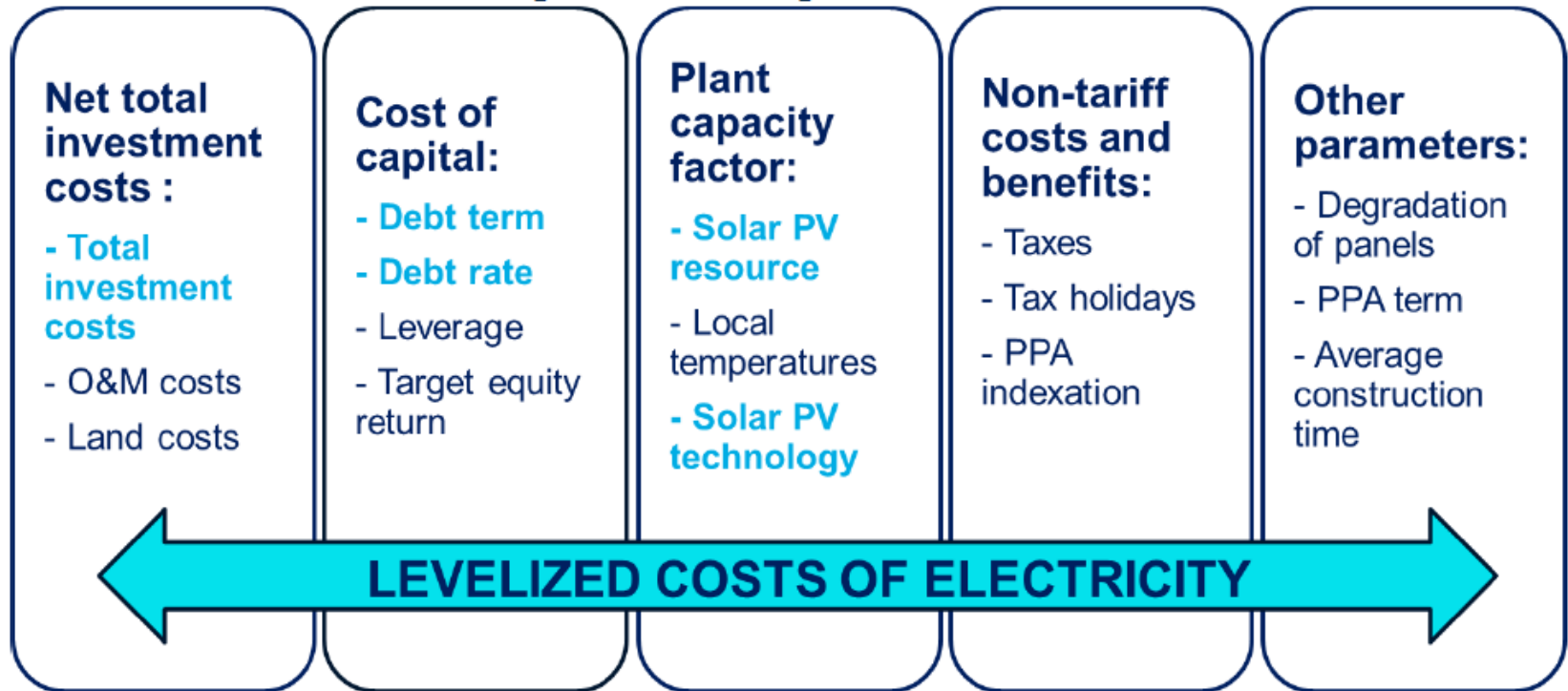
	Dubai 2016	Zambia 2016	S. Africa 2015	India 2014	Brazil 2015
Total inv. costs	0.75	1.1	1.25	0.9	1.23
Costs of capital*	5.2%	6%	8.0%	13.5%	8.5%
Capacity factor	25%	22.5%	22.5%	19%	22%
PPA term (years)	25	25	20	25	20
Exp. delivery	2018-2020	2017	2018	2016	2017
Size of plant	800MW	45MW	75MW	40MW	75MW
Project status	Announced	Announced	Permitted	Commissioned	Financed
<b>PV market price</b>	<b>2.99c/kWh</b>	<b>6.02c/kWh</b>	<b>6.45c/kWh</b>	<b>8.6c/kWh</b>	<b>8.5c/kWh</b>

Note: \* Cost of capital in local currency for India and Brazil and before tax

Source: World Bank

- Prices of USc 6-8/kWh can be explained with standard parameters observed in today's markets (incl. development financing)
- Deals well below USc 6/kWh are possible but require very cheap and long-term debt, slim returns on equity, very low investment costs (including forward pricing), very good solar resource and tax benefits

# Drivers of PV electricity prices are country and plant-specific



- Auctions enabled to realize benefits of decreases in investments and financing costs and improvements in capacity factors
- Risk allocation in auctions is different than in FIT-based or negotiated deals and guarantees are often included, lowering prices
- Large international developers use several cost-reducing strategies reflected in the lowest announced PV prices

## What problem is Scaling Solar trying to solve?

### The challenge:

- ✗ Large, unmet demand for electricity in SSA
- ✗ Market scale and high perceived risk
- ✗ Procurement (delays & uncertainty)
- ✗ Lack of competition and high transaction costs

### The opportunity:

- ✓ Good solar energy endowment in SSA
- ✓ Solar PV is quick to build and cost-competitive
- ✓ Private investors' interest

## A WBG Solution: Scaling Solar

Scaling Solar: a suite of WBG services/instruments under a single umbrella

- ✓ Competitive, transparent procurement
- ✓ WB sector engagement
- ✓ Standardized, balanced contracts
- ✓ Competitive financing and risk mitigation instruments (WB Guarantee and PRI)
- ✓ "Packaged" approach

## How Does It Work in Practice?





## Broad market recognition in Africa:

- 1,000 MW+ under development,
- Mandate in 4 countries (Zambia, Senegal, Ethiopia, Madagascar) and active discussions in many more

## First implementation in Zambia validated concept

- lowest tariff in Africa to date, faster than anywhere else on the continent

## Strong momentum to roll out outside of Sub Saharan Africa

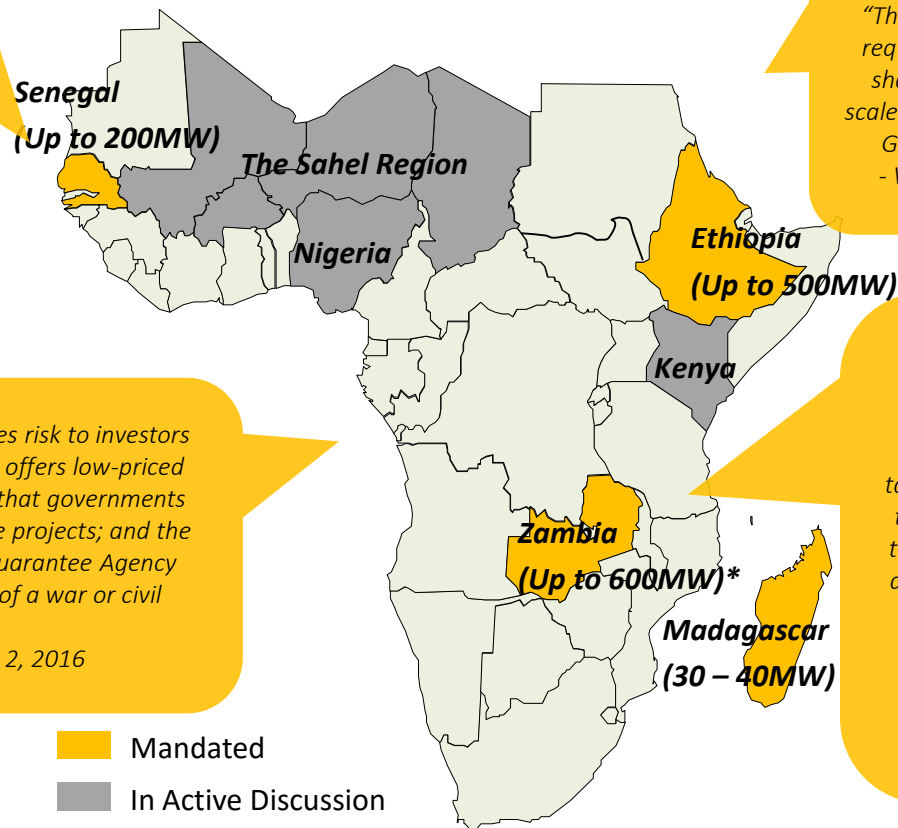
- Tunisia, Afghanistan, Cambodia...etc.)

*“Senegal follows Zambia in joining WBG’s Scaling Solar program”*  
*“The effort will bring a needed injection of electricity to Senegal, where just over half the population has access to electricity”*  
 - Bloomberg, Feb 10, 2016

*“[The Scaling Solar Program] reduces risk to investors with a suite of guarantees...the IFC offers low-priced loans; the World Bank guarantees that governments will buy the power generated by the projects; and the group’s Multilateral Investment Guarantee Agency offers political insurance in case of a war or civil unrest.”*  
 - Scientific American, Nov 2, 2016

*“The drive to create new markets will also require new guarantee instruments and a sharp focus on programmes that can be scaled for maximum impact. The World Bank Group’s Scaling Solar is one example.”*  
 - World Economic Forum, Jan 11, 2017

*“These are the lowest solar power tariffs seen to date in Africa, and among the lowest prices for solar anywhere in the world – a game changer for Zambia and other countries in the region facing electricity shortages”*  
 - PV Magazine, Jun 15, 2016



\* Including Zambia Round 1 of up to 100MW and Zambia Round 2 of up to 500MW, with first phase of up to 200MW



# THANK YOU

Questions?