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PUBLIC UTILITY REFORM



What lessons can we learn from IEG evaluations in the energy and water sectors?

*Financial, Private Sector, and
Sustainable Development
Department*

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ATTRIBUTION

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COVER PHOTO

Pictured from left:

Windmill, Nicaragua photo credit: Ihsan Kaler Hurcan

Electricity Transfer Station in Kenya. Photo credit: Andrew Stone

The control room at the thermal power station at Takoradi, Ghana, June 21, 2006. Photo credit: Jonathan Ernst/World Bank

The main drinking water pipeline for 750 households in Alapars and Karenis communities (Kotayk region) being fully rehabilitated. Armenia. Photo credit: Armine Grigoryan / World Bank

Wegala Community Water Supply and Sanitation Project. Sri Lanka. Photo credit: Simone D. McCourtie / World Bank

Girl gathers drinking water from a community water pipe. Photo credit: Dominic Sansoni / World Bank

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Purpose, Scope and Approach

Purpose

This synthesis aims to provide an operationally relevant review of the findings and lessons from World Bank-supported utility reforms in the energy and water sectors, as identified in IEG evaluation products. The report summarizes IEG evidence of what worked and what did not work, and why, in WB support of public utility reforms in its client countries.

Scope and Approach

The synthesis draws primarily from IEG's major evaluations, Learning Products, Project Performance Assessment Reports (PPARs), and Country Program Evaluations completed over the period of 2008-2018. For the PPAR analysis, a coding template was prepared to classify the types of reforms and the achievement of outcomes. Project Appraisal Documents (PADs) were reviewed to evaluate the critical risks to implementation assessed at appraisal.

Limitations

The synthesis draws from existing IEG work that was conducted without an explicit lens of the utility reform's experience; consequently the evaluative evidence is uneven across different aspects of public utility reform.

Background and Context

What is Utility Reform?

Characteristics of Effective Utility Reform

Key Challenges

Theory of Change

What is Utility Reform?

Utility reform is a means to improve sector performance and is driven by its potential to unlock efficiency gains.

Reforming public utilities is an essential part of the World Bank's engagement in the energy and water sectors in client countries.

A public utility, as defined in this synthesis, can be a public agency, a government sub-department, or a municipality, that is engaged in the provision of energy and water services.

There are similarities between the role of public utilities in service delivery in the energy and water sectors – such as cost recovery, financial viability and operational efficiency – which enables the identification of cross-sectoral learning opportunities.

Customer service provision depends on the effectiveness of technical and commercial operations of a utility, and the legal framework and governance under which a utility operates.

Bank Strategic Engagement

In the energy sector, the Bank Group's strategy emphasizes the importance of improving the financial, operational, and institutional environment. ('Towards a Sustainable Energy Future for All', World Bank Group Energy Sector Strategy, 2013)

In the water sector, the Bank Group has put institutions at the top of its agenda, highlighting the need to strengthen public utilities to improve service delivery. ('A Water-Secure World for All', World Bank Group Water Sector Strategy, 2015)

Characteristics of Effective Utility Reform

A well-performing utility can be characterized as one that permanently provides services to all customers in full compliance with applicable quality standards (both for supply and commercial services), and that operates efficiently across all business areas within a framework of financial sustainability.

Effective utility reform is the foundation for improved and sustained service delivery and sector outcomes.

The steps to reform a utility should include both operational and financial aspects, covering three key business areas:

- 1) service supply to customers;
- 2) commercial activities;
- 3) management of corporate resources, such as planning, accounting, finance, human resources, procurement, logistics, information technology.



Key Challenges: Institutional Accountability and Financial Viability

Institutional accountability and financial viability are the two main challenges faced by public utilities in delivering improved outcomes in the energy and water sectors, as identified in Bank Group strategies.

Institutional arrangements, policies, and regulations: sector fundamentals, such as policy and regulatory frameworks and payment discipline, determine the parameters for a utility's performance. Creating the right accountability and incentives are essential for effective service delivery.

Strengthening sector planning, utility management, capacity and skills are needed to improve sector outcomes.

Enabling private sector investment: The sectoral fiscal, financial, and regulatory framework also define and set the context for leveraging markets and the private sector to support service delivery.

Institutional Accountability

Recovering the cost of service is at the core of sector reform.

Maintaining the commercial viability of utilities is vital to the provision of adequate and reliable services, regardless of whether the service delivery agents are under public or private ownership. Commercial viability entails the ability to generate sufficient income to meet operating payments and debt commitments, and to allow for growth while also maintaining service standards.

The operational efficiency of service providers is crucial to their financial viability.

Financial Viability

Theory of Change

in WB Support for Utility Reform



Political economy, Country characteristics, external actors, macro economic events, etc.

World Bank Institutional Support

Main Evaluation Findings: What works Successful Interventions in the Energy and Water Sectors

Energy

*Transmission, Distribution
and Disaster Reconstruction
Project, Vietnam*

*Energy Sector Reform Loan,
Brazil*

*Poverty Reduction Support
Financing, Rwanda*

Water

*Water Rehabilitation and
Management Project,
Peru*

*Water Supply
Development Project,
Vietnam*

*Provincial and Peri-Urban
Water, Cambodia*

Energy: importance of improving accountability and regulatory performance

The World Bank has long supported client countries in developing and reforming their respective policy and institutional frameworks in response to the long-term and emerging development needs of the sector.

The World Bank has been generally successful in supporting the improvement of legal and regulatory frameworks for public utilities in the energy sector.

*IEG analysis of key performance indicators (KPIs) for policy reforms involving sector planning and regulations in the electricity sector showed that almost 90 percent of projects achieved their targets (FY2000-14).**



In Vietnam, the World Bank operations helped incrementally implement tariff and market regulations, through policy reforms and technical support to the electricity sector regulator (ERAV).



In Brazil, the World Bank supported a series of regulatory reforms, including rebalancing retail tariffs to reflect service cost accurately, eliminating subsidies for large, industrial consumers; reviewing distributor tariffs to ensure they were cost-reflective; revising high-voltage transmission tariffs to reflect fully geographic cost variations, leading to more economic generation siting; and resolving financial disputes among electricity companies caused by the energy crisis.



In Rwanda, the World Bank (through DPOs), IFC (through advisory), and Public-Private Infrastructure Advisory Facility (PPIAF) helped the government develop sector regulatory structures and separate water and electricity utilities to improve governance, accountability and transparency. Institutional and policy reforms transformed the Rwanda Energy Group into a commercially operated state-owned enterprise and helped attract private finance. In 2018, 52 percent of generation capacity in Rwanda was under private ownership, one of the highest shares in Sub-Saharan Africa.

* 177 of the 186 projects reviewed included KPIs focusing on institutional framework and capacity, 174 focused on sector planning and management, 56 focused on sector regulation and agency. IEG 2015. World Bank Group support to electricity access, FY2000-2014: An independent evaluation.

Water: importance of client capacity, incentives, and transparent rules

Provider performance and incentives drive service delivery outcomes in the water sector.

Transparent rules on accessing funds for water supply improvements strengthen institutional accountability.

*IEG's water and sanitation evaluation (FY2007-16) found that World Bank support for institutional building enabled its client countries to achieve qualitative improvements in sector investments.**



In Peru, the utility Sedapal radically changed its corporate management approach and work culture, including adopting a new performance-based compensation and incentive system driven by reaching results targets. Sedapal started conducting financial performance benchmarking in the context of its credit rating, with an objective for public listing. IEG's field-based PPAR confirmed a steady improvement in access coverage, basic service parameters, and operational and financial performance.



In Vietnam, a performance-based contracting arrangement was carried out by the Ho Chi Minh City water utility to reduce water losses. The results were impressive: leakage was reduced by approximately 50 percent with minimal network replacement.



In Cambodia, the Phnom Penh's Water Supply Authority established leak detection teams to find and fix leaks throughout the water supply distribution system. It introduced "performance incentives" (through which the most efficient teams receive monetary rewards of up to 25 percent of a technician's annual salary) based on comparing the ratio of leaks at the beginning of the year to the ratio at the end of the year. The utility was successful in reducing nonrevenue water over the past two decades from 70 percent to about 7 percent.

* 122 of 163 projects had capacity building components. Only half of all projects with capacity-building components had specific KPIs to assess the activities' results. Typical KPIs are the numbers of persons and training days for utility management and staff trained in administrative, technical, and financial matters, or participants in knowledge exchange programs.

World Bank Support to Financial Viability

***A multifaceted approach
to addressing financial
viability***

***Energy: Development
Policy Operations vs
Investment Project
Financing***

***Energy Performance
Results***

***Energy Performance:
DPOs vs IPFs***

***Energy Performance:
Programmatic DPOs vs
single- and multi-tranche
DPOs***

***Energy Performance:
Turkey's Energy Sector
programmatic DPOs
(2009-13)***

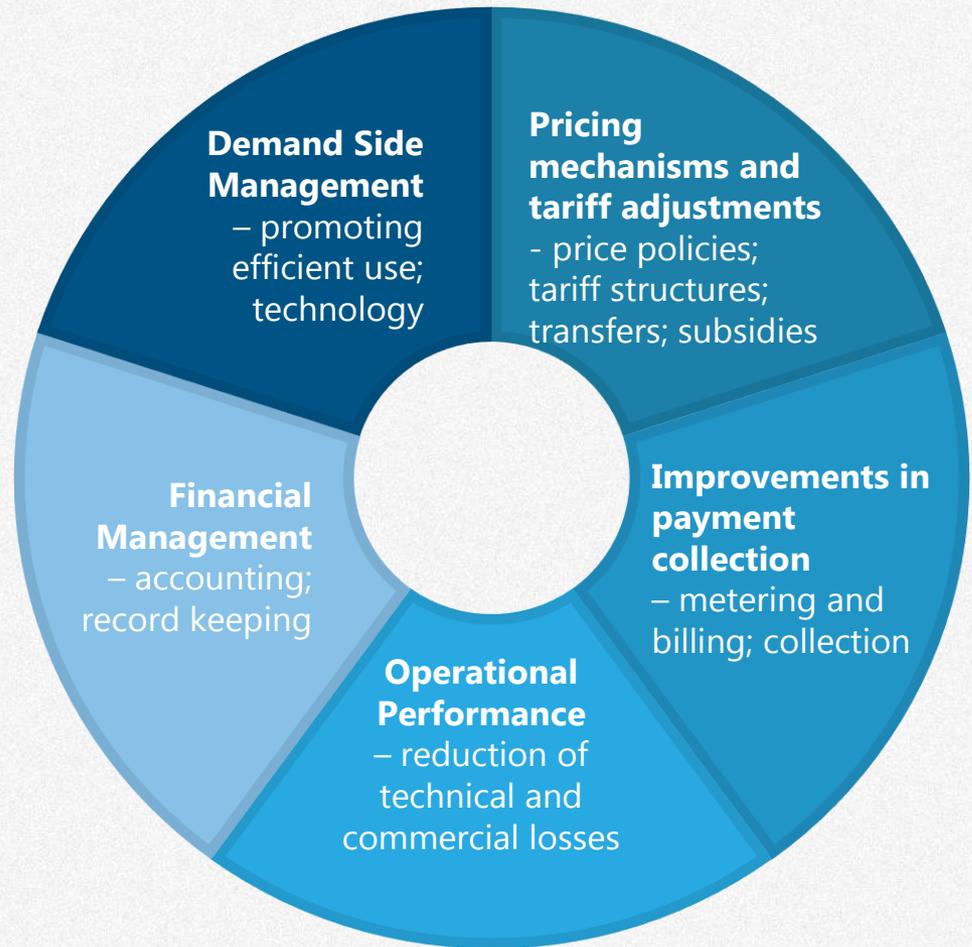
***Water Performance
Results***

***Water Performance:
Tariff Adjustment***

***Energy and Water:
Financial Sustainability
Results***

***Weakening sustainability
of sector financial
performance outcomes***

A multifaceted approach to addressing financial viability



IEG analysis of performance indicators reveals a range of World Bank interventions geared to support financial viability in both the energy and water sectors

Energy: Development Policy Operations vs Investment Project Financing

*The World Bank mainly supports the financial viability of the energy sector through two instruments: Development Policy Operations (DPOs) and Investment Project Financing (IPFs)**

Development Policy Operations (DPOs)

DPOs provide quick-disbursing direct budget financing to governments for policy and institutional reforms aimed at achieving a set of sector-specific development results.

Under DPOs, policy reform measures (prior actions) typically focus on the adoption of cost-recovery tariffs, payment collection, and the reduction of commercial losses (such as metering); cost rationalization; and government subsidy transfers. Reforms related to transparency, governance, and accountability have also become more common.

Investment Project Financing (IPFs)

IPFs contain financial management components, sometimes accompanied by financial covenants.

Under IPFs, the typical approach is to combine financial covenants with financial performance-enhancing measures such as cost recovery plans, payment collection improvement, tariff setting methodology and adjustment, and operational performance improvement, and physical infrastructure investments.

* PforR is a relatively recent instrument that could not be considered in this synthesis report as there is a lack of existing IEG evaluative evidence.

Energy Performance Results

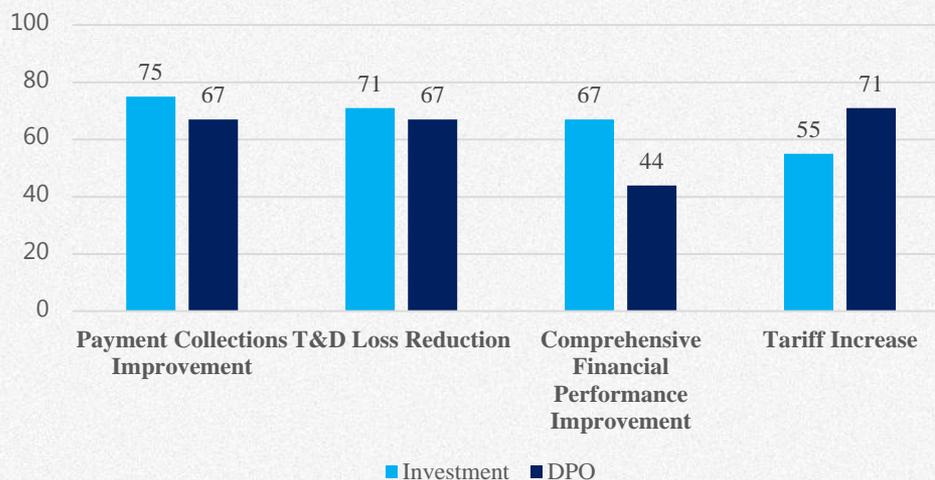
Out of WB electricity sector operations approved or closed during FY2000-15, there were 49 DPOs (commitment of US\$10.7 billion, with US\$6 billion directly related to the electricity sector) and 41 investment projects that contained components and covenants for improving sector financial performance (accounting for US\$5.2 billion out of US\$42.8 billion of WB overall loan commitments in the electricity sector).

IEG rated each performance indicator based on the achievement of targets.

IEG found that, overall, both DPOs and IPFs adequately identify sector financial performance drivers.

DPOs and IPFs were comparably successful across selected financial viability targets, with two notable differences.

Performance of Financial KPIs rated MS or better (%)



Source: 2016. Financial Viability of the Electricity Sector in Developing Countries: Recent Trends and Effectiveness of World Bank Interventions. World Bank Group. *IEG/OPCS harmonized methodology for project evaluations uses a 6-point criteria for project ratings ranging from Highly Satisfactory (6) to Highly Unsatisfactory (1). *T&D Transmission and Distribution

Energy Performance: DPOs vs IPFs

Investment projects (IPFs) performed better than DPOs on improving the overall financial performance of utilities.

DPOs were more effective in influencing tariff adjustment than covenants of IPFs.

IPFs and dedicated sector-specific DPOs typically included similar financial targets, such as adoption of cost-recovery tariffs, payment collection improvement, and reduction of technical and commercial losses. Payment collection is much more likely to improve if new meters and Management Information Systems are introduced.

IPFs performed better than DPOs in comprehensive financial performance improvement. For the comprehensive financial performance of utilities, this included broader policy programs, such as a financial recovery plan, debt restructuring, privatization, and commercialization. 67 percent of IPFs were effective in supporting comprehensive financial performance, compared to 44 percent of DPOs.

The relatively long implementation periods of IPFs may allow more time for hands-on operational support and corrective measures within the process.

DPOs were more effective than IPFs in tariff adjustment. 71 percent of DPOs were effective in supporting tariff reforms, compared to 55 percent of IPFs. Tariff methodology and adjustment was the second most frequent financial target in IPFs, after comprehensive financial performance improvement.

Looking at individual covenants in IPFs, compliance ranged from 43 to 88 percent. The lowest compliance was for utility profitability-related covenants, such as operating margins and rate of return on assets or equity.

The lowest result under DPOs was in reducing government subsidies.

DPOs by design are contingent on the government undertaking policy reform measures (prior actions).

Energy Performance: Programmatic DPOs vs single- and multi- tranche DPOs

Programmatic DPOs showed better outcomes than single- and multi-tranche DPOs

IEG found that single tranche electricity sector DPOs tended to be excessively complex and oversized, with unrealistic targets for short timeframes.

Multi-tranche loans proved to be less flexible in their conditionalities.

Programmatic DPOs

A well-conceived programmatic series proved a highly effective approach for supporting a clearly defined, medium-term financial recovery program. This approach captures the medium- to long-term nature of most significant financial and related sector reforms. It also provides sufficient flexibility to adjust to new developments and changing circumstances.

A programmatic approach is especially useful when the government's reform direction is clear; but the timing and details of implementation need to stay flexible.

Single-tranche DPO

Experience showed that it was unrealistic to expect a single-tranche DPO to address long-standing structural weaknesses successfully, much less place the sector on the road to financial sustainability.

Findings suggest that reforms covered by single-tranche DPO should be designed as complementary to other World Bank operations, whether through investment lending or technical assistance.

Energy Performance: Turkey's Energy Sector programmatic DPOs (2009-13)

Policy reforms supported by the World Bank led to positive sector outcomes

Key Evaluation Findings

- The programmatic DPOs helped the government to introduce cost-reflective tariffs and improve payment performance for transactions in the electricity wholesale market.
- Policy reforms helped attract substantive private capital. Imbalances in electricity supply-demand were largely avoided due to large-scale private sector investment in generation capacity that increased 81 percent over 2008-12.
- Distribution company privatization resulted in more efficient management, more physical investment in distribution assets, reductions in non-technical losses, and improved service quality.



Factors of Success

Strong country ownership, where reform initiatives were underway and World Bank engagement helped facilitate the reforms.

Operation design underpinned by robust analytical work and focused on the most critical aspects of sector financial performance (such as cost-based electricity pricing and full payment collection), which resulted in financial stability in the sector. Large-scale privatization of the sector strengthened these improvements.

The World Bank's **comprehensive and sustained operational engagement** in the electricity sector: the DPOs were complemented through a series of concurrent investment projects.

Turkey: First Programmatic Electricity Sector Development Policy Loan and Second and Third Programmatic Environmental Sustainability and Energy Sector Development Policy Loans Programs. IEG PPAR 2015

Water Performance Results

The overall rates of compliance with financial covenants were low in the water sector.

Financial covenants in IPFs were the most frequent instruments for incentivizing water utilities to improve financial performance in client countries.

The DPO instrument was not used significantly to reform the water sector. IEG's water sector evaluation found that only two DPOs were carried out by the World Bank during the 10-year period (in Morocco and Madagascar).

Financial Covenant Compliance Rates in World Bank Water Projects

	Tariff Adjustment or Collection	O&M Cost recovery	Debt Service Coverage Ratio	Operating Margin & Operating Ratio	Capital Expenditure Coverage Ratio	Liquidity Ratio	Debt to Asset or Equity Ratio
No. of Projects with Covenants	37	33	32	13	13	9	7
Percentage of Projects fulfilling covenants	51	33	38	54	23	56	43

Compliance ranged between 23 percent and 56 percent across financial indicators.

Source: 2017. A thirst for change: an IEG evaluation of the World Bank Group's support for water supply and sanitation with focus on the poor, 2007-16. World Bank Group

Water Performance: Tariff Adjustment

Tariff adjustment was complied with in only half of investment projects.

Governments are generally politically averse to public water utilities passing the full cost of services on to consumers, and the utilities rarely charge remunerative tariffs because the beneficiaries cannot afford them.

Many water utilities are characterized by low ability to recover costs, often making them dependent on financial support from government and donors.

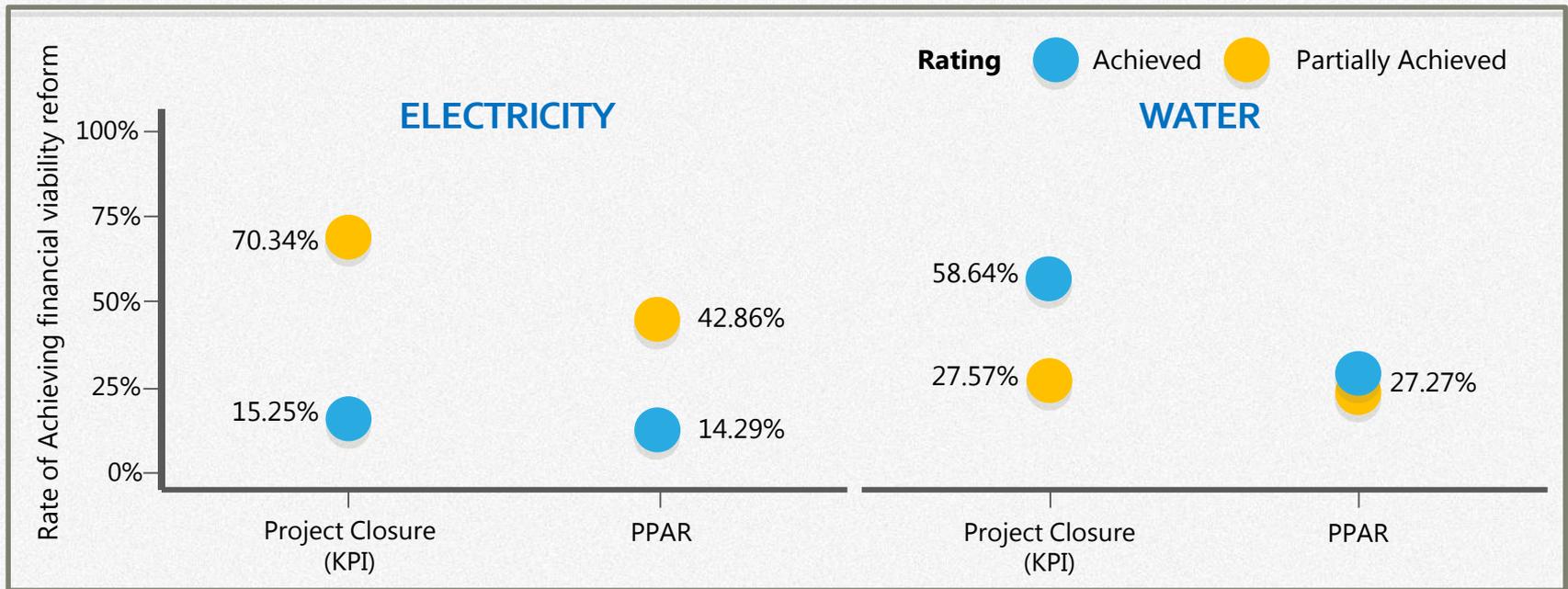
Service providers have little ability and often no incentives to manage their assets efficiently, which result in ever-deteriorating service quality and rising costs linked to deferred maintenance.

In the absence of transparent and predictable subsidies, service providers cannot finance asset rehabilitation and the investments necessary to meet growing consumer demand, or even recover their operation and maintenance costs.

Energy and Water: Financial Sustainability Results

Sustaining financial viability proved difficult after World Bank operations closed in both energy and water sectors.

A comparison between pools of IEG KPI data and an IEG sample of post-project evaluations (38 PPARs) suggests that financial sustainability of utilities may have deteriorated after World Bank operations' closure.



Source: Electricity KPI: energy projects with financial viability reform KPI approved by FY2014; Water KPI: water projects with financial viability reform KPI approved during FY2007-16; PPAR: IEG's assessment of the financial viability reform of 38 PPARs. The assessment was conducted for a pool of the projects. *KPI Key Performance Indicator. See Annex C for KPIs used in this analysis.

Weakening sustainability of sector financial performance outcomes

World Bank teams tend to overestimate considerably the adequacy of mitigation measures to address identified risks.

Over-reliance on national strategies and policies as a guide to government commitment, may lead to the under-provision of political economy analyses for adequate political feasibility assessment.

World Bank teams were often over-optimistic that government would follow through on reform process.

At appraisal, 58 percent of reviewed PPARs assessed political economy factors as a critical risk for the implementation of the reforms (energy projects: 56 percent; water projects: 61 percent).

Risk factors included: weak government ownership and delays in the adoption of reforms; waning government commitment to push for reforms; reversal of reforms by successive governments; and political opposition to the sectoral reforms, including to privatization.

Taking the mitigation measures into account, 62 percent of projects assessed the political risk as 'low' or 'moderate'.

A lack of political economy analyses to inform politically sensitive actions tended to reduce the effectiveness of operations.

Political commitment to serious financial stabilization and cost-recovery objectives is often fragile because of the political sensitivity of measures, such as tariff adjustments towards cost-recovery levels.

The presence of reform measures in a national development strategy does not always guarantee their implementation or ownership, because operationalization of the strategy and the links to policy-making may be weak.

IEG found that reliance on a national development strategy as a guide to political feasibility may lead to the under-provision of crucial, more robust political economy analyses, which could help improve project design and mitigation measures.

Source: (i) IEG analysis of PPARs under this synthesis. (ii) IEG. 2016. The role of political economy analysis in development policy operations. Washington, D.C. : World Bank Group

Cross- cutting Lessons

*Cross-cutting Lessons for Energy and Water
Sector Operations:
Institutional Accountability*

*Cross-cutting Lessons for Energy and Water
Sector Operations:
Financial Viability*

Cross-cutting Lessons for Energy and Water Sector Operations:

Institutional Accountability

Institutional capacity building, private sector involvement

- Accountability of service providers and effective management correspond with better utility performance and results.
- Sustainability of reforms requires competent institutions and strong administrative capacity.
- Improving sector performance through reform or restructuring can be a first step towards attracting private sector investment.

Political economy can inform specific design elements, complementary interventions and sustained support

- In both the energy and water sectors, the evidence shows that utilities' operations and management are closely linked to the political economy in which they operate. Political economy can inform specific design elements, including choices of programmatic instruments vs. standalone operations, or front-loading vs. back-loading of important reform actions in a programmatic series.
- The DPO-supported sector reform program's time horizon and complementary investment projects should reasonably match the time required for effective government action.
- The World Bank's experience shows that complementary interventions and sustained support contribute positively to favourable and enduring results.

Cross-cutting Lessons for Energy and Water Sector Operations:

Financial Viability

Operational efficiency, cost recovery

- Where operational inefficiencies result in high-cost service provision, improving utilities' operational efficiency before embarking on cost recovery through tariff reform works better, or these should go hand-in-hand.
- Inadequate cost recovery is a key driver of financial underperformance, but poor bill collection and operational inefficiencies (including excessive network losses) also have a significant role.
- Experience shows that where there are significant gaps in revenue stream, transparent and predictable subsidies may be warranted either in a transitory or ongoing basis.

Distributional issues, political economy

- Tariff reform remains one of the central regulatory challenges, and the institutional, political, and social barriers to tariff reform are considerable. Public opposition to tariff reforms reflects a lack of confidence in public service improvements and that vulnerable groups will be protected.
- It is important to understand the social impact of these reforms. Differentiated tariffs and targeted assistance programs are among measures to mitigate negative distributional impacts. Targeted programs would depend on the government's ability to reach vulnerable households through fiscally sustainable programs.
- To sustain improvements in the delivery of services, it is critical that the framework for reform support is informed by an understanding of political economy, and by behavioural and institutional economics.

Complementary Bank Resources

Water

- Mumssen, Yogita, Gustavo Saltiel, and Bill Kingdom. 2018. "Aligning Institutions and Incentives for Sustainable Water Supply and Sanitation Services: Report of the Water Supply and Sanitation Global Solutions Group, Water Global Practice, World Bank." World Bank, Washington, DC.
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Energy

- Foster, Vivien, and Anshul Rana. 2020. Rethinking Power Sector Reform in the Developing World. Sustainable Infrastructure Series. Washington D.C: World Bank.

Annexes

Annex A:

IEG Major Evaluations, Meso-and Learning Products, Working Papers

Annex B:

IEG Project Performance Assessment Reports

Annex C:

Financial Viability KPI s used in the analysis

IEG Major Evaluations, Meso-and Learning Products, Working Papers

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2. IEG. 2014. Bangladesh: Rural Electrification and Renewable Energy Development; and Power Sector Development Technical Assistance Project. Project Performance Assessment Report.
3. IEG, 2014. Project Performance Assessment Report. Socialist Republic of Vietnam - The Transmission, Distribution and Disaster Reconstruction Project; The Rural Energy Project; and the System Efficiency Improvement, Equitization and Renewables Project.
4. IEG, 2013. Senegal: Electricity Sector Efficiency Enhancement Project and Energy Sector Recovery Development Policy Credit Project
5. IEG, 2018. Project Performance Assessment Report. Rwanda-Fourth Poverty Reduction Strategy Grant; RW-Fifth Poverty Reduction Support Grant; RW-Seventh Poverty Reduction Support Grant -- P117495; RW-Sixth Poverty Reduction Support Grant
6. IEG, 2018. Project Performance Assessment Report. Armenia-Municipal Water Project
7. IEG, 2018. Project Performance Assessment Report. Nicaragua-Off-grid Rural Electrification (Perza); Off-grid Rural Electrification (Perza)
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IEG Project Performance Assessment Reports

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33. IEG, 2011. Project Performance Assessment Report. Lao-Provincial And Rural Infrastructure Project; LA-Laos Provincial Infrastructure Project; LA-Provincial Infrastructure Project
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35. IEG, 2010. Project Performance Assessment Report. Lesotho-Hiland Water 1b Project; LS-Community Development Support Project
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Financial Viability Key Performance Indicators (KPI) Used in the Analysis

Water

- Physical (reducing non-revenue water losses)
 - Improving operational efficiency
 - Demand side management
 - Profitability
 - Cost recovery: tariffs and subsidies
 - Revenue collection
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Energy

- Transmission and Distribution loss reduction
 - Tariff increase
 - Subsidies reduction
 - Payment collection improvement
 - Profitability
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