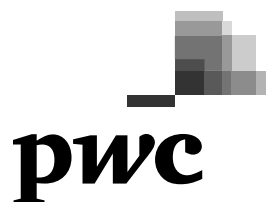


Task A: Sector performance and structural sector reform

&

Deliverable 4.1: Options study for GECOL restructuring report



Disclaimer and copyright note

This document has been prepared only for the International Bank of Reconstruction and Development ("IBRD") and solely for the purpose and on the terms agreed with the IBRD in our agreement dated 21 March 2017 relating to Task A.

The scope of our work was limited to a review of documentary evidence made available to us. We have not independently verified any information given to us relating to the services.

We accept no liability (including for negligence) to anyone else in connection with this document. We have agreed with you that the report will be provided by you to GECOL for their consideration. We would ask that it not be provided to anyone else unless otherwise agreed in writing by us.

This is a draft prepared for discussion purposes only and should not be relied upon; the contents are subject to amendment or withdrawal and our final conclusions and findings will be set out in our final deliverable.

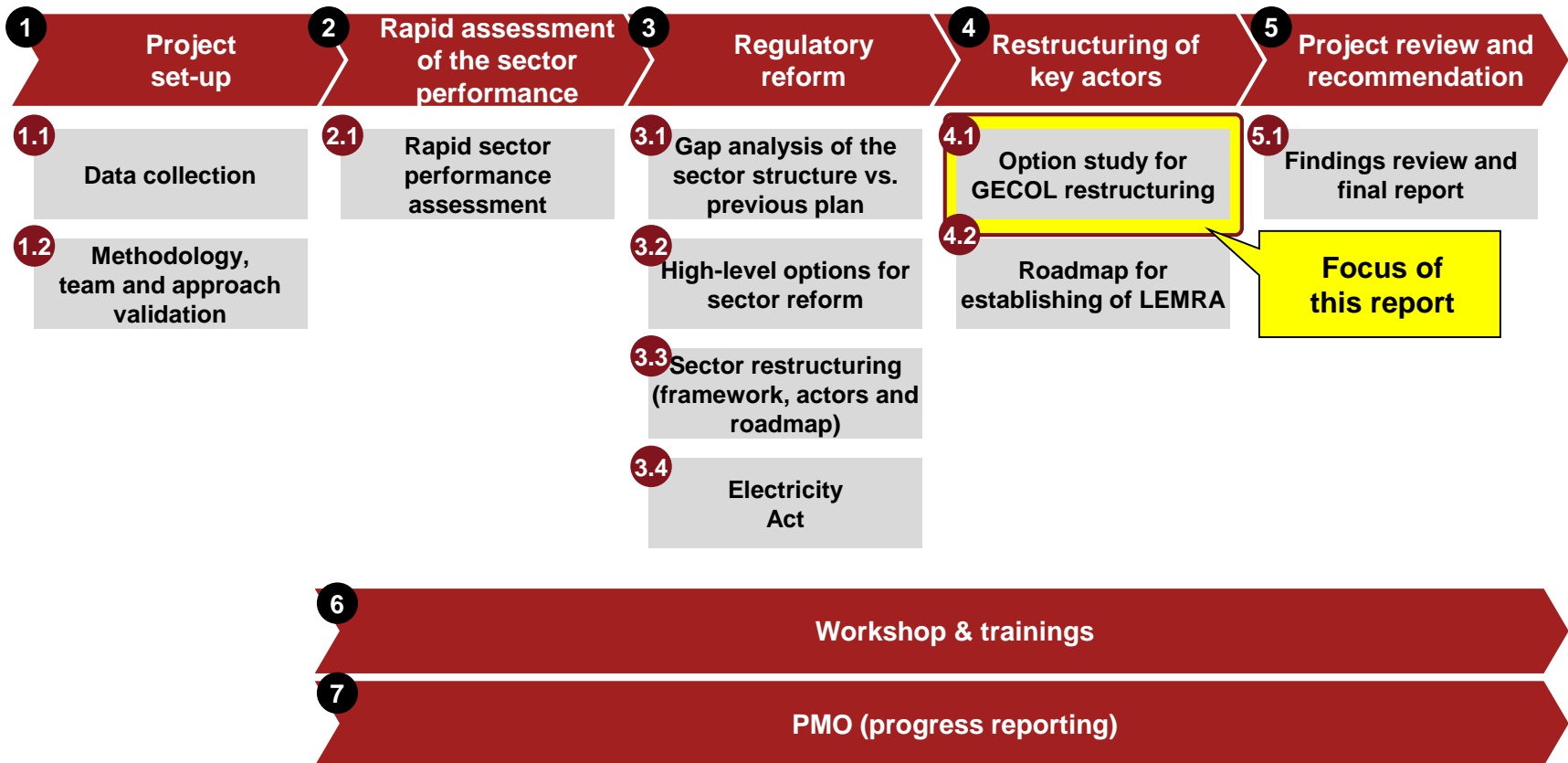
**© 2017
PricewaterhouseCoopers
LLP**

All rights reserved. In this document, 'PwC' refers to the UK member firm, and may sometimes refer to the PwC network. Each member firm is a separate legal entity.

*Please see
www.pwc.com/structure for
further details*

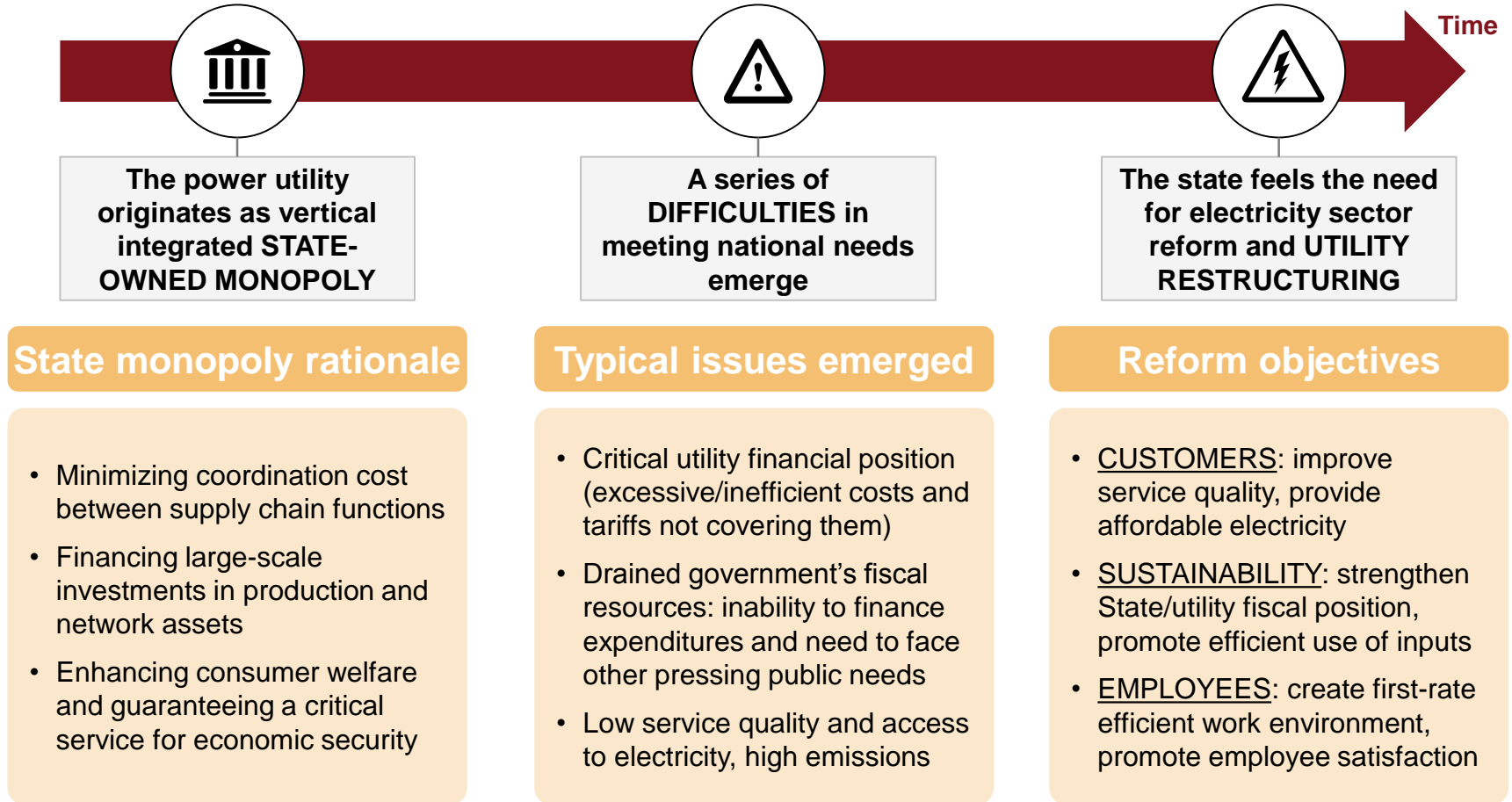
The present report focuses on assessing the options for GECOL restructuring, as by Task A ToR

Focus of this report



Power utilities have typically suffered common structural issues, thus experiencing the need for reform ...

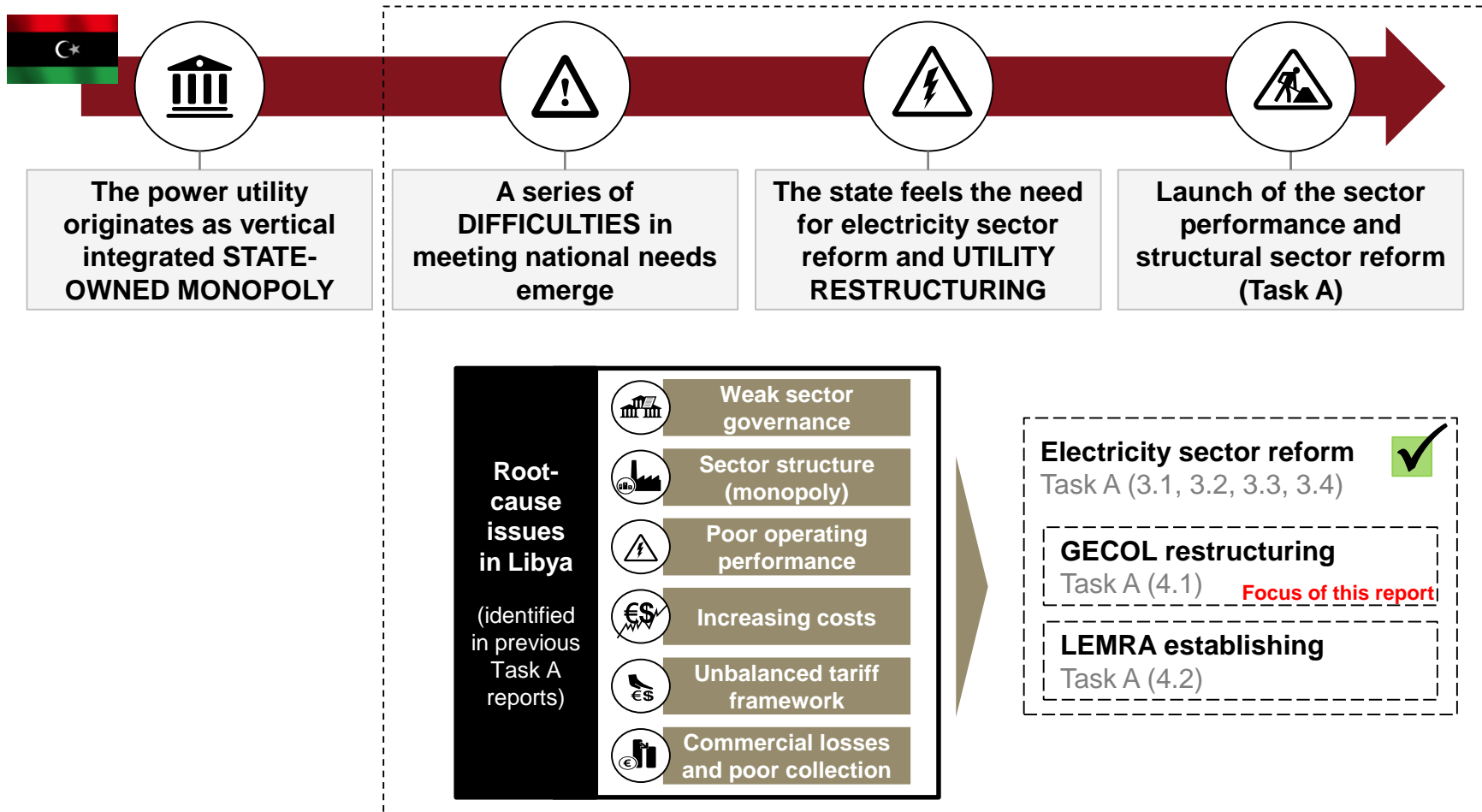
Typical power utility evolution process



Source: Strategy& analysis

...and for Libya the same experience led to the launch of the current project, which so far identified the sector reform

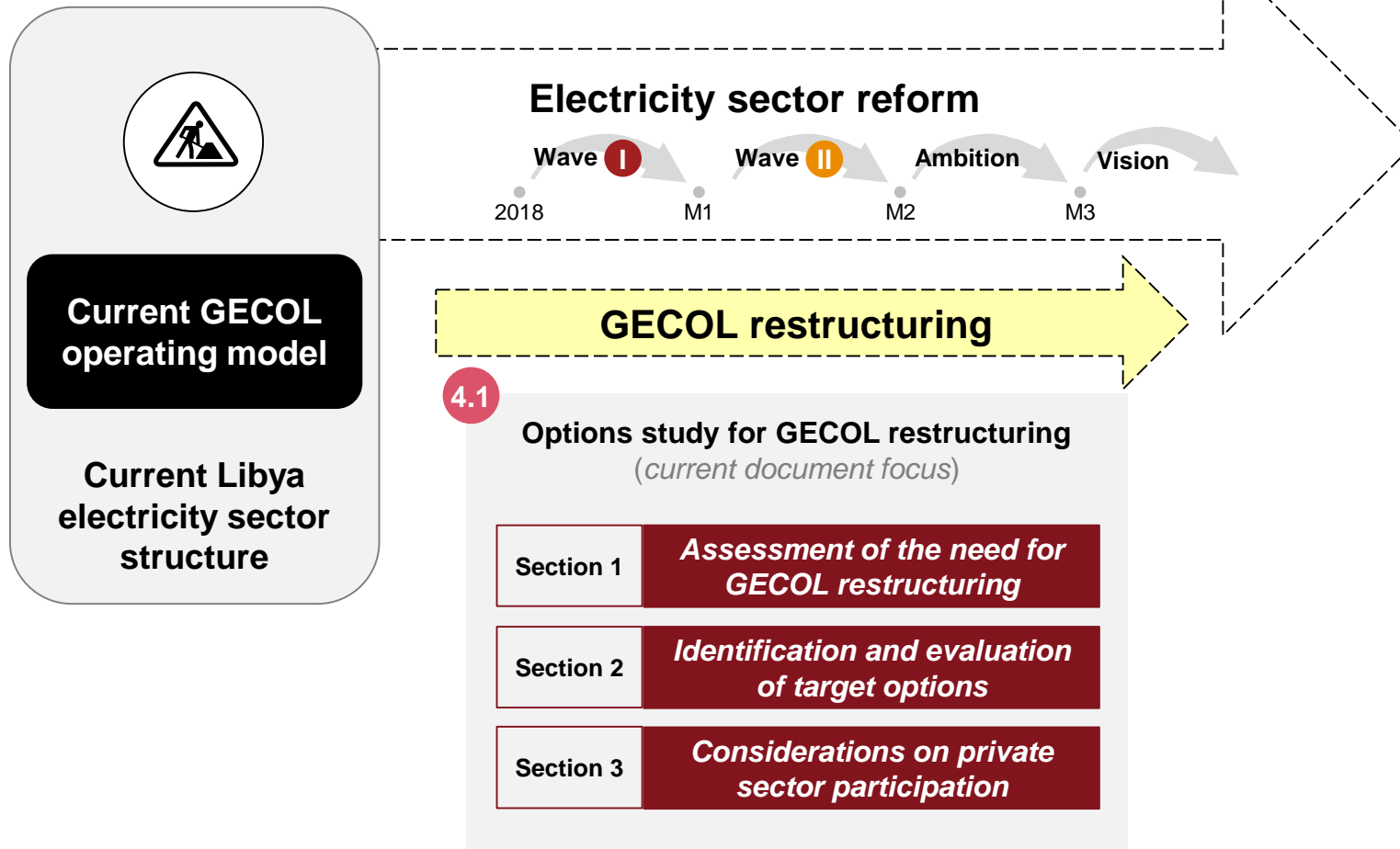
Libyan power utility restructuring process



Source: Strategy& analysis

The present document will lay-out the options for GECOL restructuring (then further deep-dived in Task C)

Current report focus



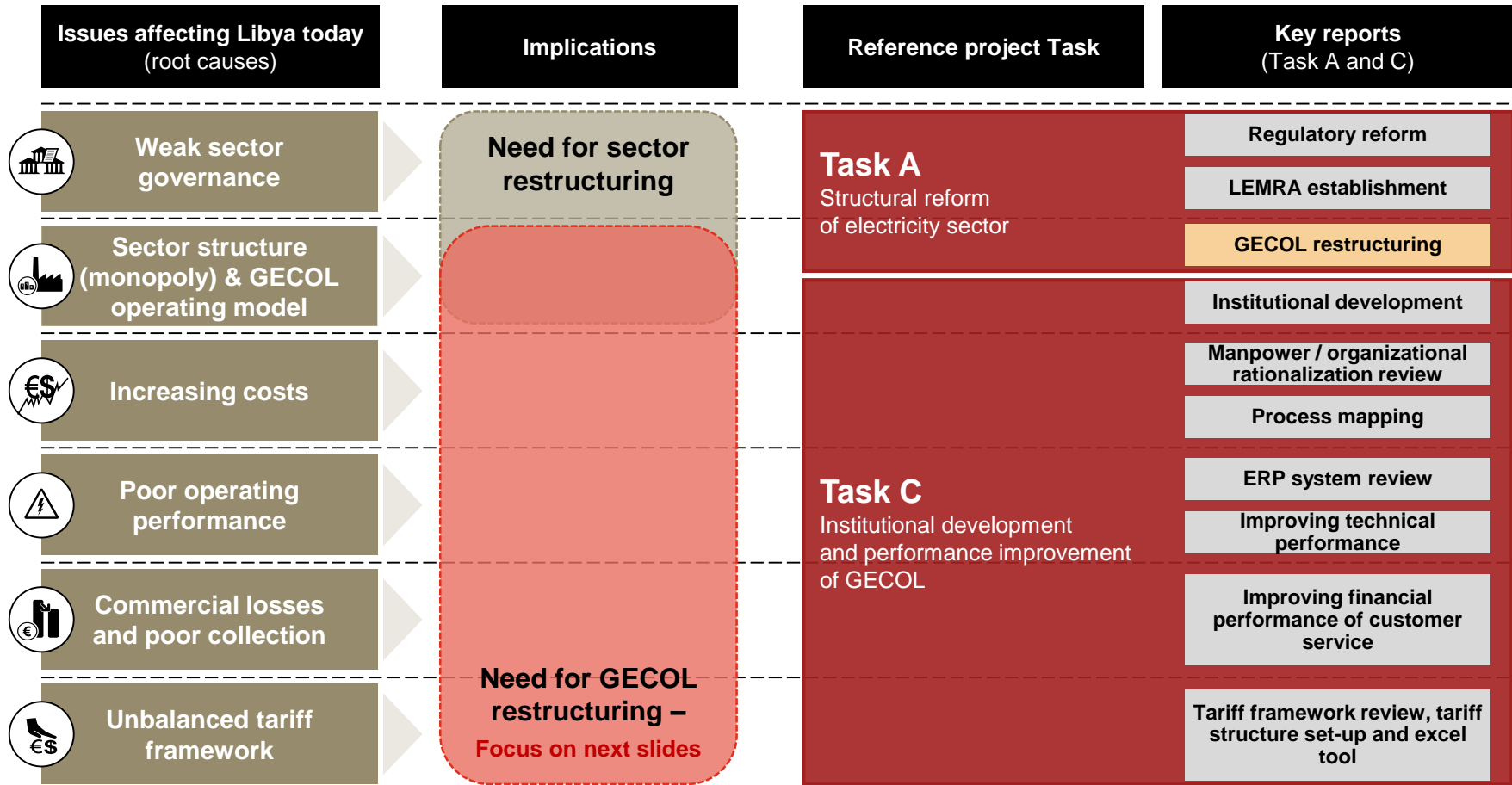
Assessment of the need for GECOL restructuring

Identification and evaluation of target options

Considerations on private sector participation

In Libya, most of the identified issues directly concern GECOL, thus driving the need for restructuring

Major issues and implications



Source: Strategy& analysis

The current GECOL structure and operating model is clearly not aligned with the target organizational dimensions

GECOL organization / operating model issues

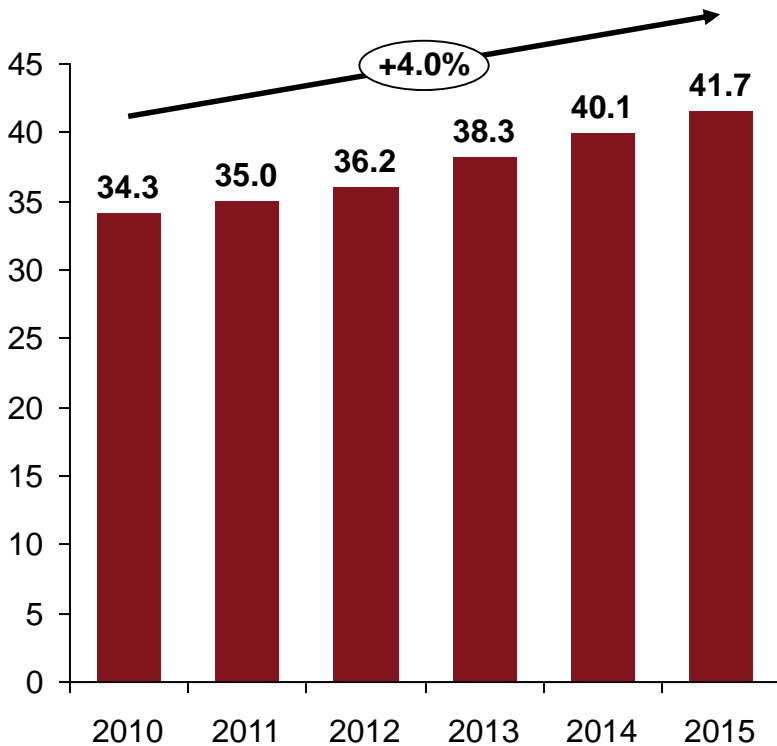
Identified issues	Criteria for the assessment of GECOL's operating model					
	I Clearly defined operating model	II Alignment vs. best practices	III Results accountability	IV Efficiency	V Preparation for future evolution	VI Alignment with Strategic Priorities
1 BU "concentration" and limited levers for effective BU management		!	!	!	!	!
2 Fragmentation of engineering & projects		!		!		
3 Lack of a strong AFC function	!	!	!	!		!
4 Sub-optimal set-up of ICT	!	!	!		!	
5 HR&O responsibilities partially outside MD area	!	!	!	!		!
6 Unclear role of Contracts & Development Accounts		!	!	!		
7 BoD overstaffed and including functions typically under MD	!	!	!	!	!	!

Target organizational dimension ! Target organizational dimension negatively impacted by current organization

Source: Strategy& analysis

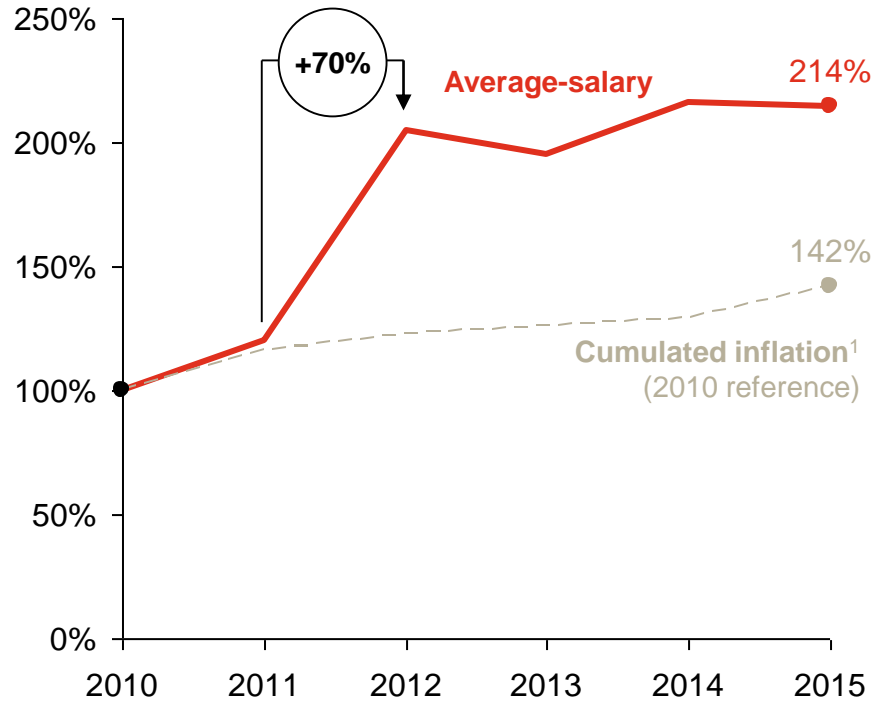
Both the number of FTEs and the average salary is significantly growing...

FTEs evolution (2010-15, '000)



Average-salary evolution (2010-15, LD / FTE)

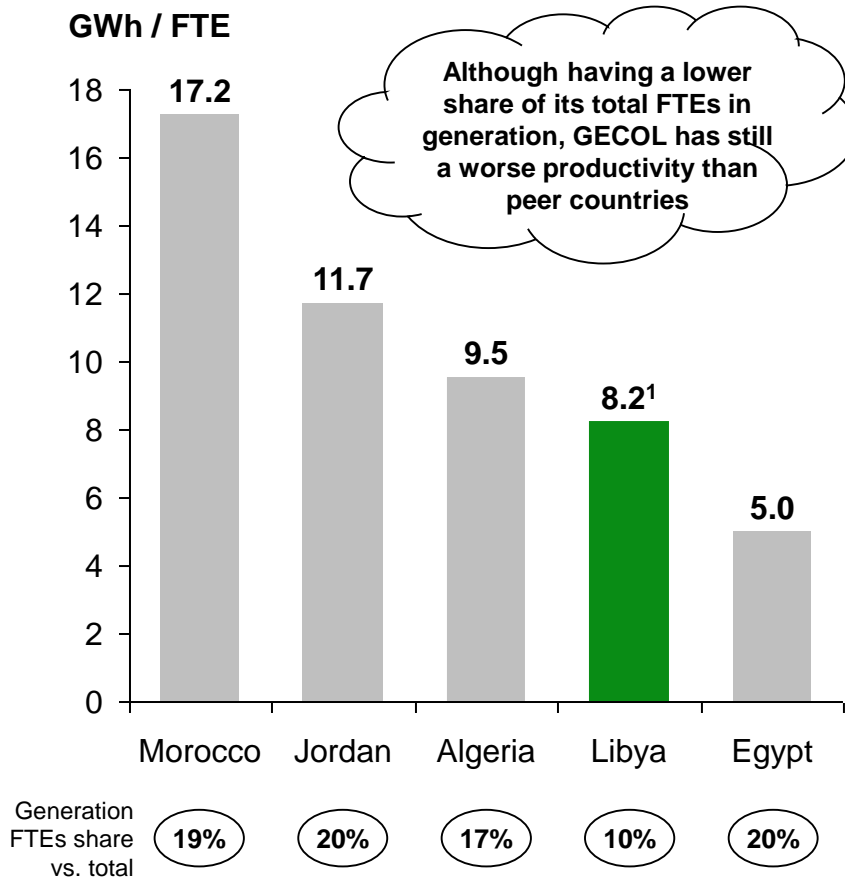
Indexed vs. 2010
(100% = 2010 reference)



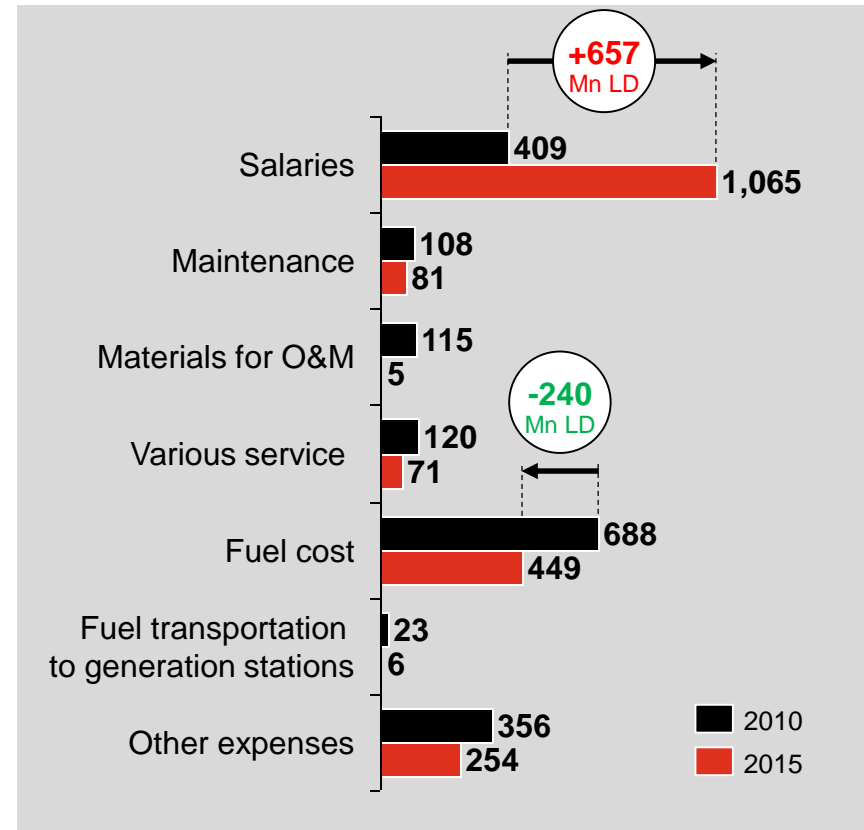
1) IHS, inflation consumer prices
Source: GECOL data collection ID13, Strategy& analysis

...leading to low productivity and a considerable increase in personnel costs

Productivity benchmark (2015)



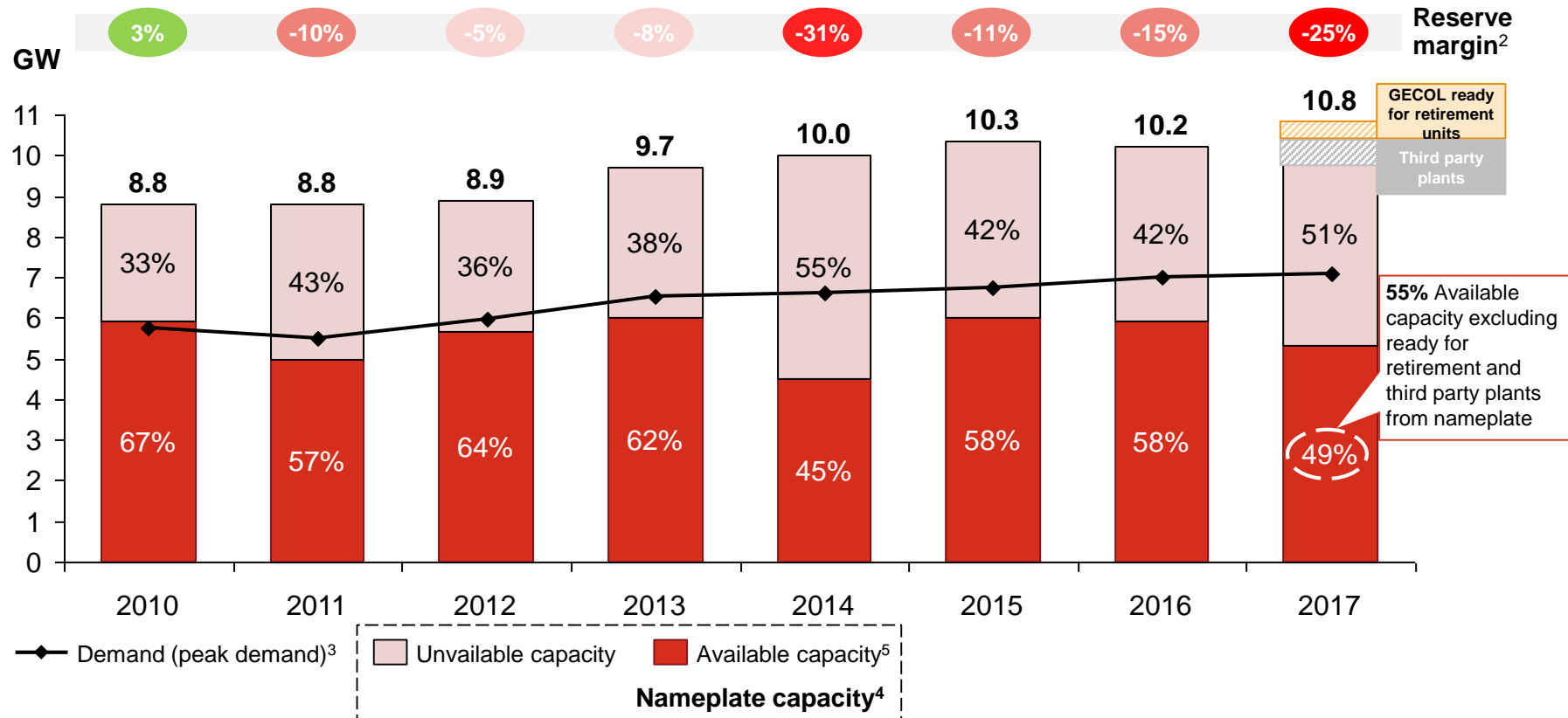
GECOL costs evolution (2010-15, Mn LD)



Note: includes Sonelgaz, ERC, CEGCO, SEPGCO, AES, QEPKO, ONEE-BE, Masen, and EEHC Generation Companies; 1) Updated with new data received
 Source: GECOL data collection ID17, GECOL data collection ID24, Corporate Annual Reports, Electricity Sector Regulatory Agencies Annual Reports, Strategy& analysis

The technical performance has dramatically worsened, severely impacted by low generation availability

S/D evolution¹

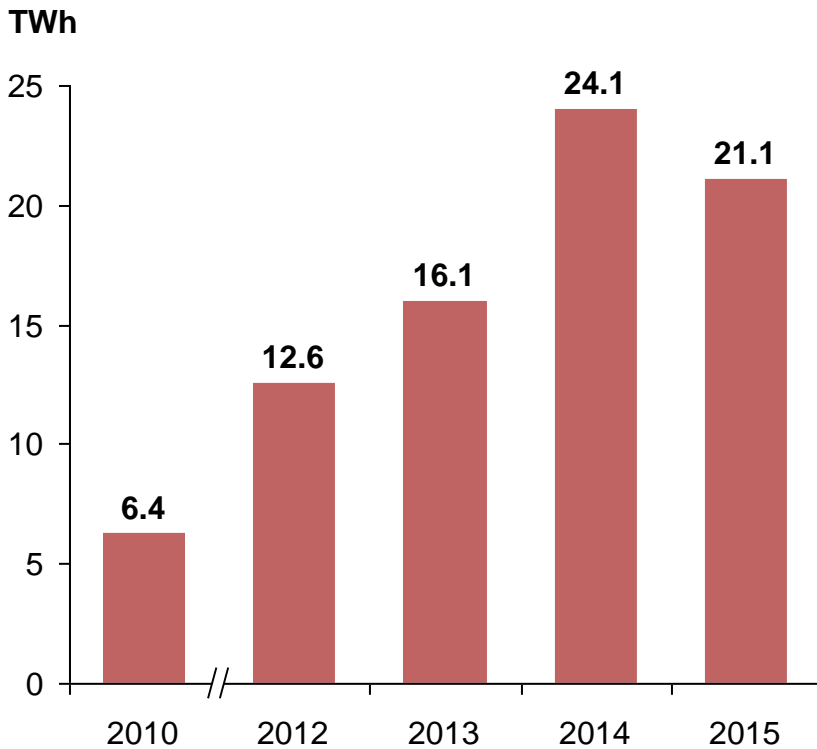


1) Tripoli West unit 1 and 3 are assumed to be retired respectively in 2013 and 2011, University small gas plant is assumed to be retired in 2016; 2) (Available capacity – Peak demand) / (Peak demand); 3) Demand at generation level. Demand for 2017 is forecasted demand under Scenario C-Slow political stability scenario-UPDATED; 4) Nameplate capacity estimated considering unit rated nameplate capacity and year in which the unit came in service. Total nameplate capacity includes 3rd party plants and units that are considered ready for retirement in 2017; 5) Considers only time availability computed on generating unit hours of operations during the year;

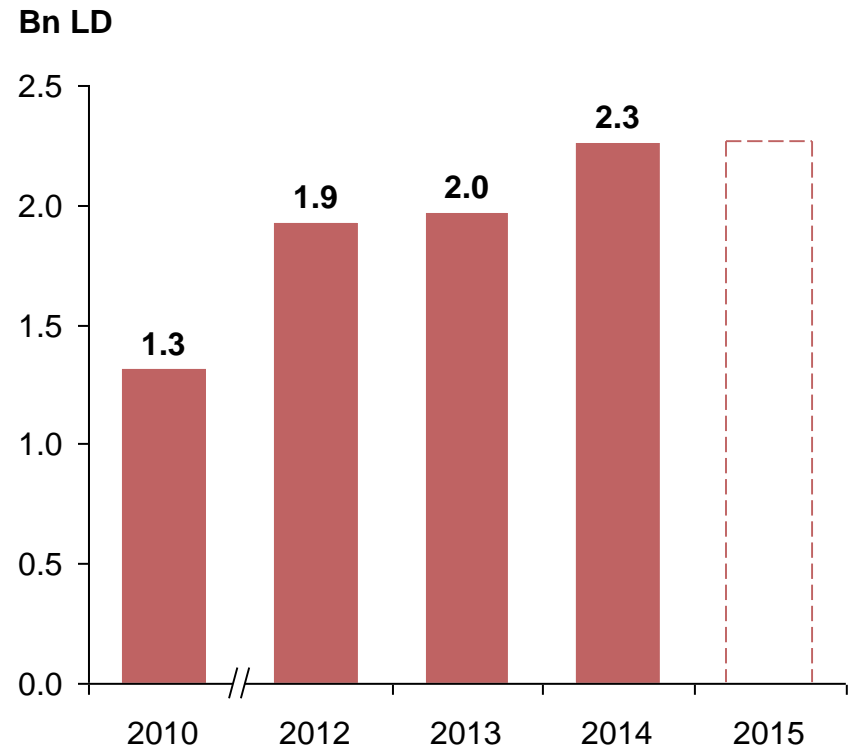
Source: GECOL data collection ID4, Awardbrand - Improving GECOL technical performance report (Data received from GECOL Generation department), Strategy& analysis

Commercial losses and bad debt have steadily increased

Evolution of commercial losses



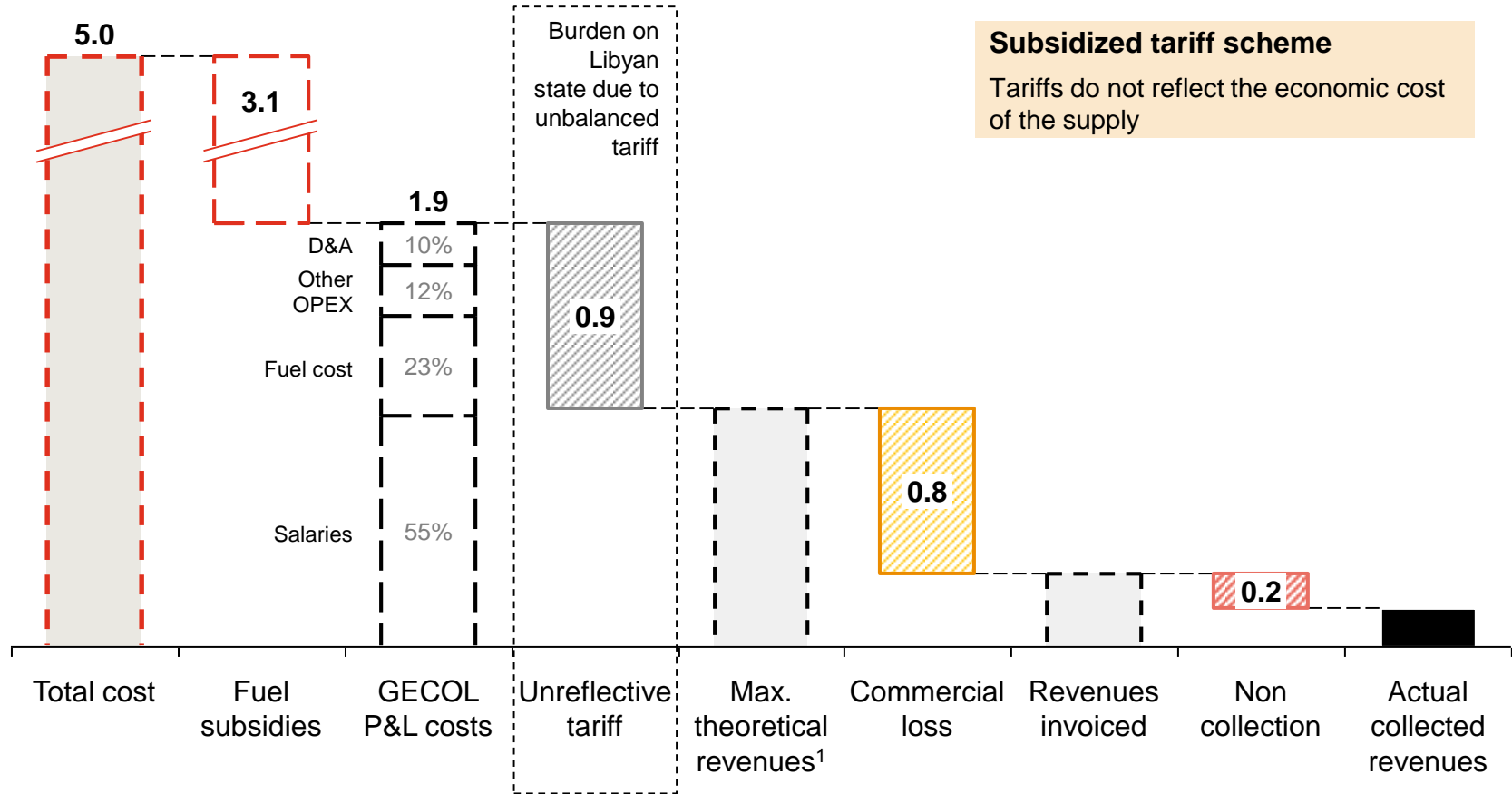
Evolution of receivables



Source: GECOL data collection ID12, GECOL data collection ID37

An unbalanced tariff, combined with commercial losses and bad debt, is affecting the sector sustainability ...

Burden on the sector (Bn LD, 2015)

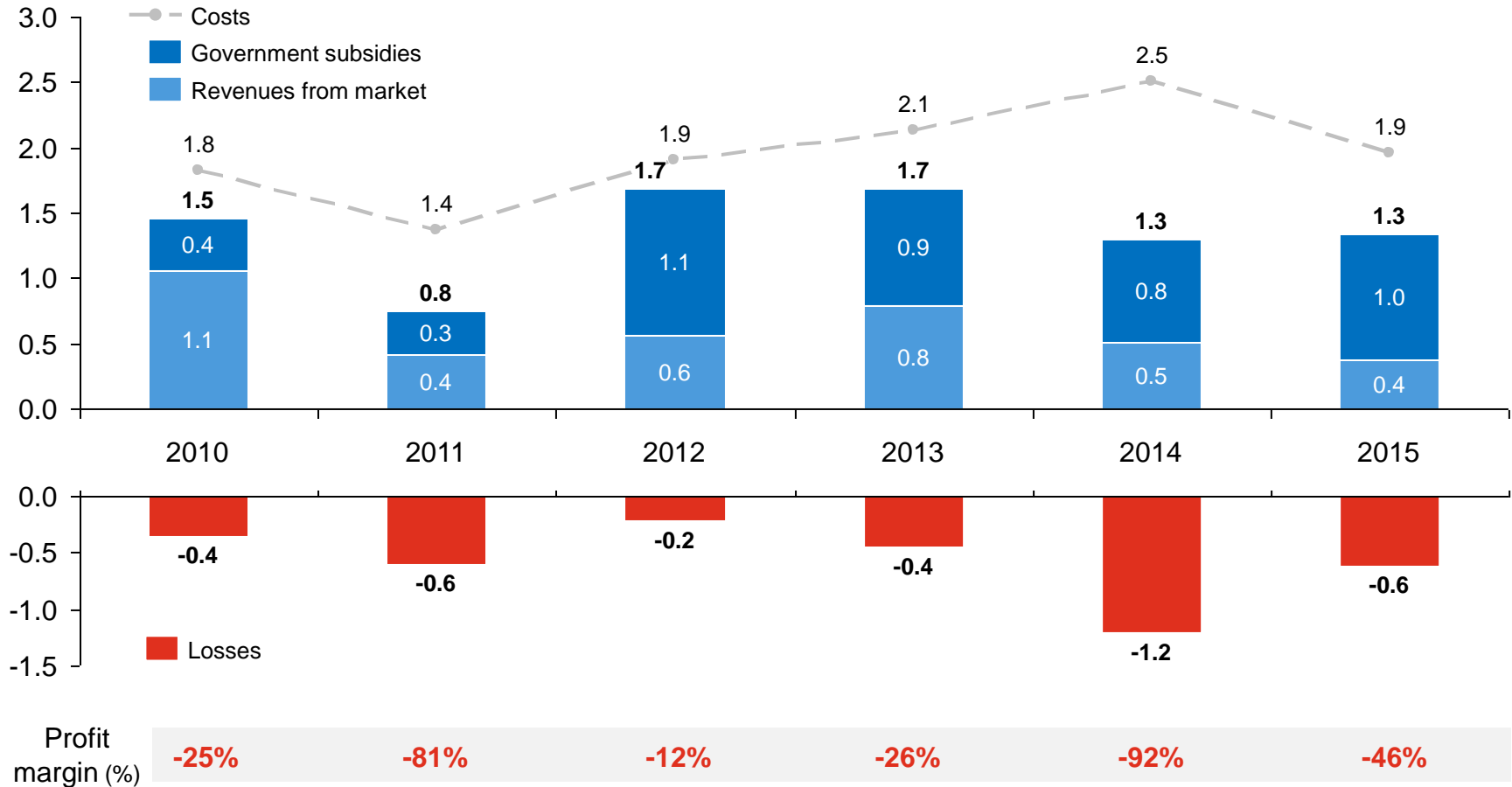


1) Sum of (Tariff by customer class) x (Consumption by customer class)

Source: GECOL data collection ID2, GECOL data collection ID7, GECOL data collection ID13, GECOL data collection ID37, Strategy& analysis

... Leading GECOL to incur in heavy losses ...

Evolution of GECOL P&L (subsidiaries included) (Bn LD)

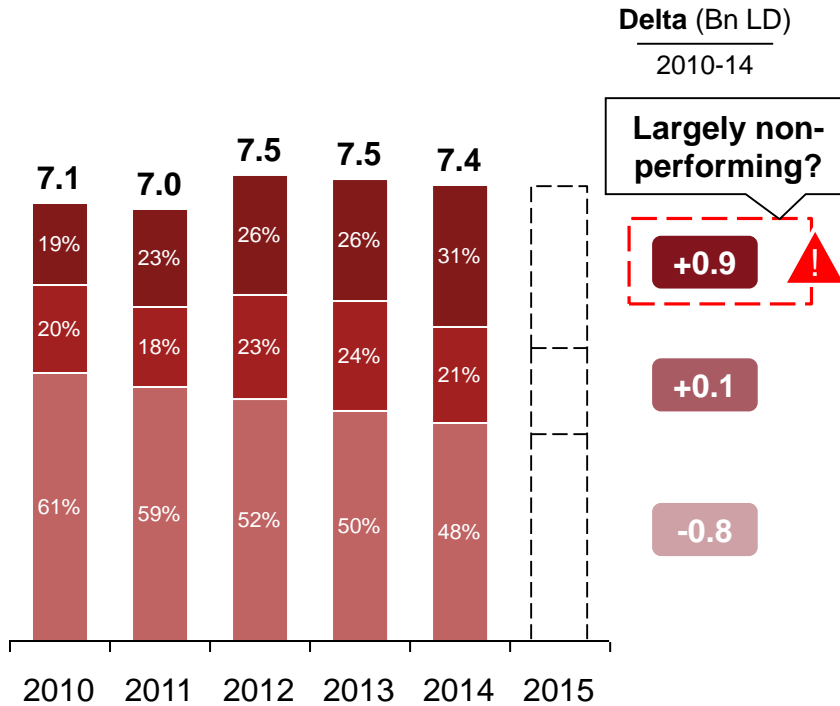


Source: GECOL collection ID13, Strategy& analysis

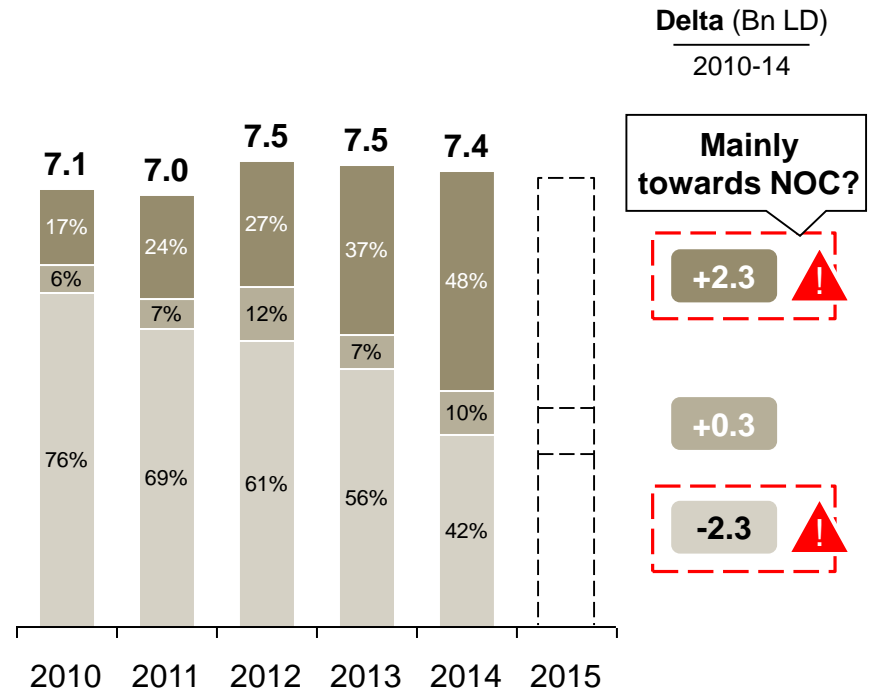


... And putting at risk its long-term financial viability

GECOL Total Assets (Bn LD)



GECOL Total Equity and Liabilities (Bn LD)



Source: GECOL collection ID13, Strategy& analysis






Assessment of the need for GECOL restructuring

Identification and evaluation of target options

Considerations on private sector participation

For each root-cause issue identified, we have developed two restructuring options that GECOL may consider

Possible options by issue

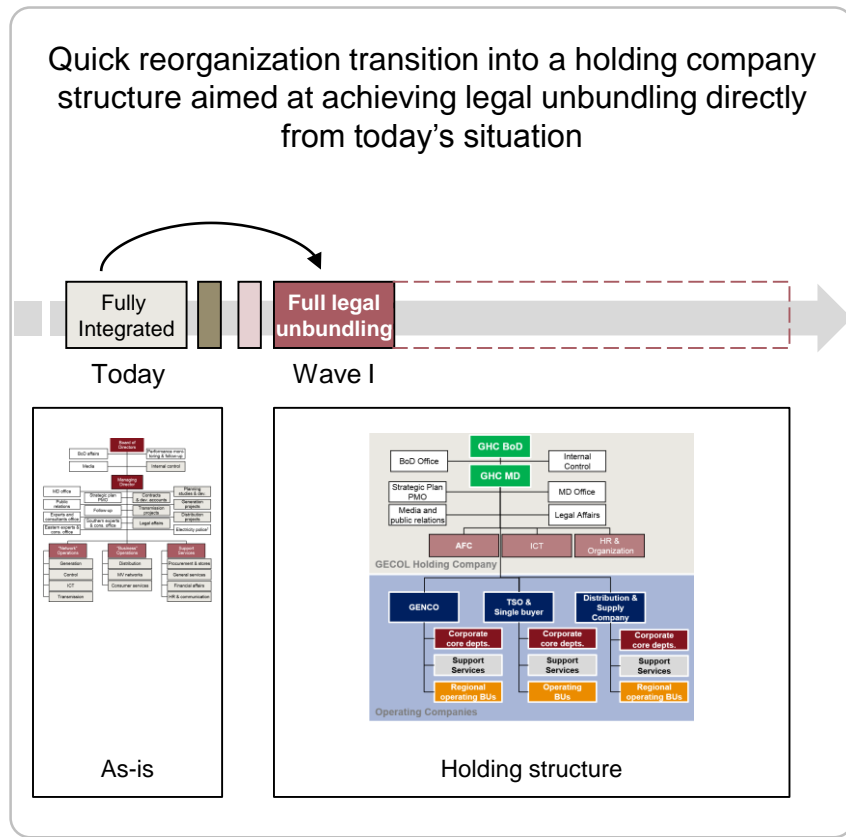
Root-cause issues in Libya	Option 1	Option 2
 <p>Sector structure (monopoly) & GECOL operating model</p>	<p>RADICAL Quick reorganization transition into holding company structure aimed at achieving legal unbundling by 2019</p>	<p>GRADUAL Gradual reorganization evolution following a progressive unbundling path towards legal unbundling by 2031</p>
 <p>Increasing costs</p>	<p>DRASTIC Adopt a direct “push” approach by downsizing the organization to optimal efficiency targets</p>	<p>CONSERVATIVE Adopt a retaining approach by granting long-term sustainability of change for all the different stakeholders involved</p>
 <p>Poor operating performance</p>	<p>PRIVATE PARTICIPATION Attract private resources to improve sector performance and increase power generation capacity to meet demand</p>	<p>IN-HOUSE Improve service quality by leveraging internal resources and meet demand by developing an in-house investment plan</p>
 <p>Commercial losses and poor collection</p>	<p>AGGRESSIVE Achieve 100% billing and 99% collection by 2021 through an aggressive metering program and police enforcement</p>	<p>PROGRESSIVE Address theft and insolvency ultimately improving progressively GECOL's billing</p>
 <p>Unbalanced tariff framework</p>	<p>SHARP Achieve a fully cost reflective tariff with a sharp increase in rates by 2021</p>	<p>PRUDENT Gradually increase tariff achieving a partial coverage of P&L costs and cost of fuel subsidies by 2026</p>

Source: Strategy& analysis

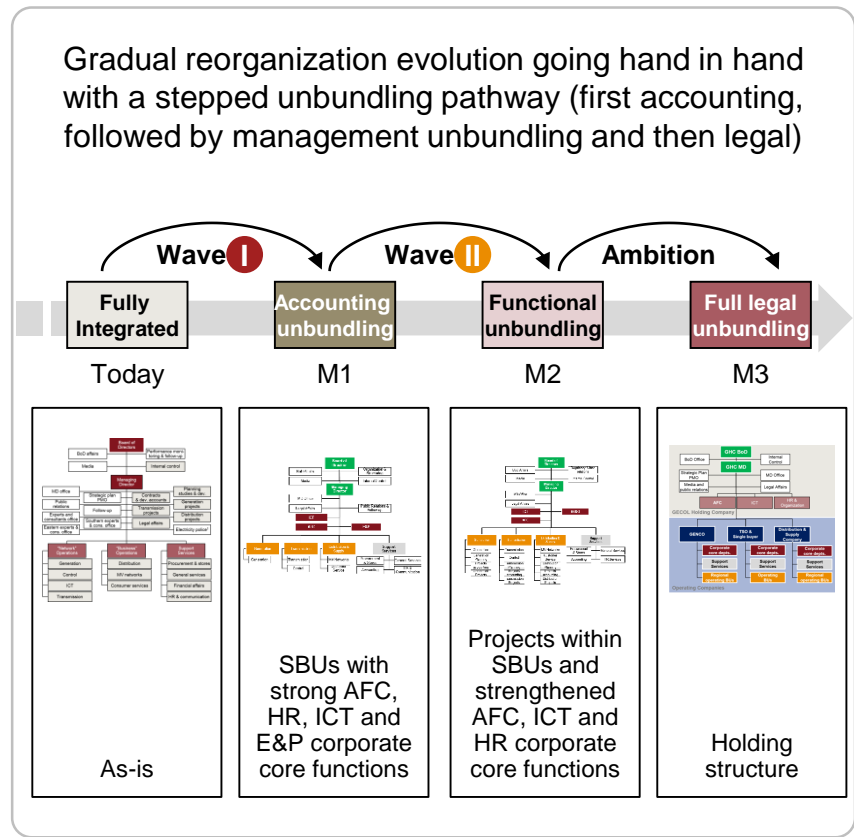
Depending on the unbundling approach chosen, GECOL may undertake a different organizational restructuring approach

Reorganization options

Option 1 **Radical**



Option 2 **Gradual**



In line with the unbundling process recommended, the gradual reorganization option is preferable

Options assessment

	Option 1 Radical	Option 2 Gradual
PROS	<ul style="list-style-type: none"> Possibly ensures results accountability and improved operational efficiency Rapid evolution away from monopoly towards more competitive sector structures 	<ul style="list-style-type: none"> Enabled early-on SBUs accountability for results and independent management Parallel change of organizational structure, processes and operating model
CONS	<ul style="list-style-type: none"> Challenging implementation both in terms of target structure and timing Marked disruption risks for GECOL Inflexible employee redeployment 	<ul style="list-style-type: none"> Lengthier change process
RISKS	<ul style="list-style-type: none"> Delayed benefits realized due to inefficiency of resulting operating companies Lost synergies and potential replication of activities among operating companies 	<ul style="list-style-type: none"> Delayed unbundled industry structure and risk of being “trapped” into intermediate steps without reaching the final target
EASE	<ul style="list-style-type: none"> Large consensus and leadership required Extensive coordination effort needed among organizational units Required accounting and functional separation 	<ul style="list-style-type: none"> Persistent effort and commitment to ultimate target necessary



1) Strategy for institutional development of GECOL report

Source: Strategy & Analysis

To control the increasing costs (i.e. personnel), GECOL may follow either an intrusive or a conservative approach

Manpower cost-cutting options

Option 1

Drastic



Adopt a direct “push” approach – focused on maximizing the financial result, directly downsizing the organization to reach optimal efficiency targets

Example of possible solutions (illustrative)

Dismiss	Temporarily or permanently terminate employment for a group of employees
Retrain for outside jobs	Train managers and staff professionals to be hired outside the company
Incentivize to leave	Ask employees to take voluntary lay-offs, or offer buyouts & early retirement
Loan staff, furlough	Lend employees to another company, or schedule unpaid employee furloughs

Option 2

Conservative



Adopt a retaining / re-skilling approach (preferring the socio-economic result), granting long-term sustainability of change for all the different stakeholders involved

Example of possible solutions (illustrative)

Freeze hiring and reallocate	Institute a hiring freeze and reassign employees to new department/positions
Retrain for inside work	Leverage current resources to fill unmet needs (e.g. train new technicians)
Freeze salary and benefits increases	Temporarily reduce/freeze promotions, wages, benefits (e.g. paid holiday time)
Curtail overtime	Enhance productivity and limit/suspend approval for high-cost overtime hours

Given the current country situation and the high social costs involved, a moderate approach may be preferable

Options assessment



	Option 1 Drastic	Option 2 Conservative
PROS	<ul style="list-style-type: none"> Relevant cost savings immediately achievable (e.g. due to collective layoffs) Possibility to quickly gain efficiency and align organizational structure to best practices 	<ul style="list-style-type: none"> Sustainable approach minimizing socio-economic impact Opportunity to address unmet needs (e.g. lack of plant technicians)
CONS	<ul style="list-style-type: none"> Severe economic impact on dismissed employees, especially in developing countries Possible short-term increase in costs (e.g. due to buyout or early retirement payments) 	<ul style="list-style-type: none"> No/limited impact on efficiency/productivity achievements and limited cost savings Possible employee dissatisfaction
RISKS	<ul style="list-style-type: none"> Popular opposition, protests Long-term socio-economic impact on national economy (e.g. unemployment, GDP decrease, poverty, inflation/deflation, etc.) 	<ul style="list-style-type: none"> Limited financial / operational impact Need for reallocation or training to fill current positions / expertise gaps
EASE	<ul style="list-style-type: none"> Solution design subject to pressure from unions Implementation dependent upon Government's approval 	<ul style="list-style-type: none"> Lack of strict application of Government's directions (enforcement of hiring freeze failed so far – unauthorized hiring ongoing)

1) Process mapping and manpower rationalization report

Source: Strategy& Analysis

To improve operational performance, GECOL might either enable private participation or leverage in-house resources

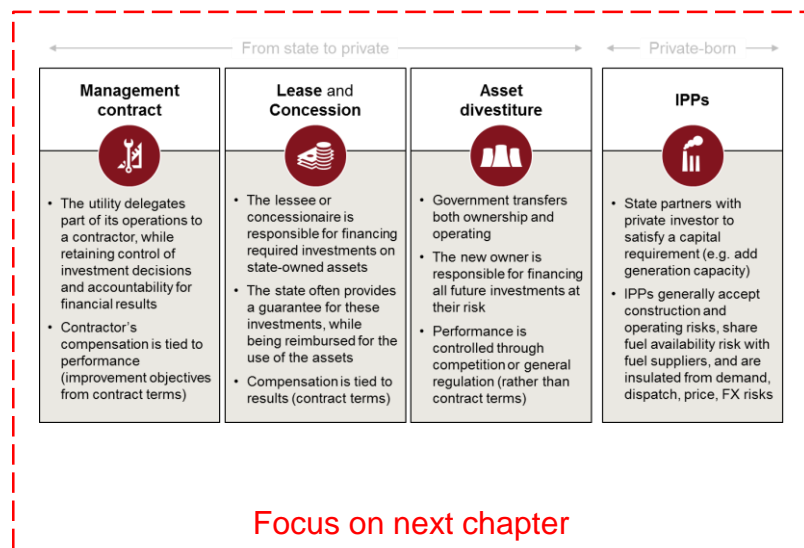
Operating performance improvement options

Option 1

Private participation



Attract private resources to improve sector performance, leverage external capabilities, and increase power generation capacity to meet demand requirements

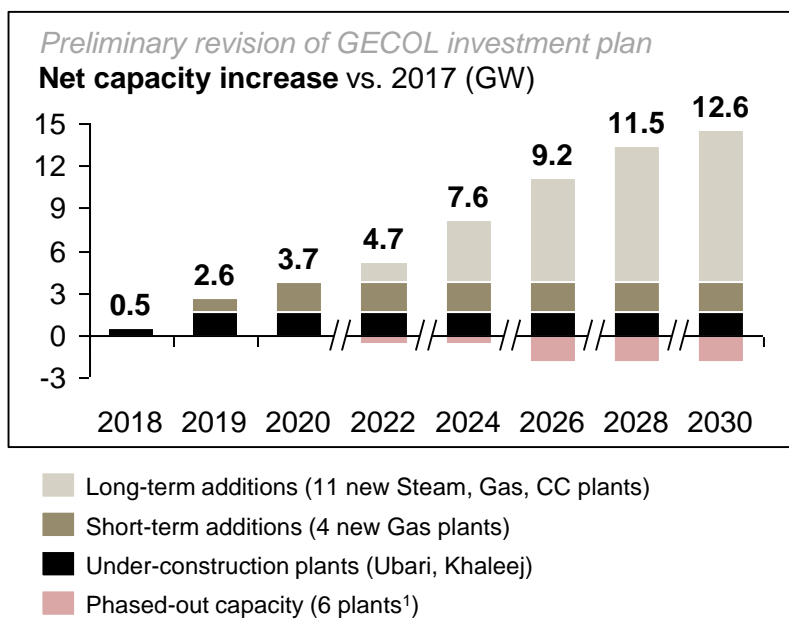


Option 2

In-house



Improve service quality by leveraging internal resources and meet increasing demand needs by developing an in-house (GECOL, State) investment plan



1) Include Steam (Khoms Steam, Tobruk, Misurata Steel) and Gas plants (Tripoli South, Zwetina Gas, Khoms Gas); Source: Strategy& analysis

Considering today's stability constraints, a solution closer to the in-house option seems the most achievable

Options assessment



Option 1

Private participation



Option 2

In-house



PROS

- Fast track capacity expansion once private investors commit to entering the sector
- Enabled growing electricity needs satisfaction without imposing large strains on national budget

- Focused in the short run on solving pressing sector's issues (i.e. load shedding) and subsequently on restructuring and expanding existing facilities



CONS

- Highly dependent on external forces (IPPs willingness to enter the sector)
- Several prerequisites for private investment attraction need to be satisfied

- Required government support to implement the intended investment plan



RISKS

- Heavy burden on government budget if GECOL is not able to adhere to PPA conditions
- If no investment in repairs is undertaken, unused and obsolete assets will populate GECOL's BS

- Delay in realization of investment plan combined with rising demand might worsen substantially reserve margin



EASE

- Required sovereign guarantees and letters of credit
- Large investments and effort required to satisfy prerequisites for private investment attraction

- Large government support needed for realization of investment plan

1) ERP System review and Improving technical performance report

Source: Strategy& Analysis

Aggressive invoicing and collection targets imply a dramatic change with respect to historical performance...

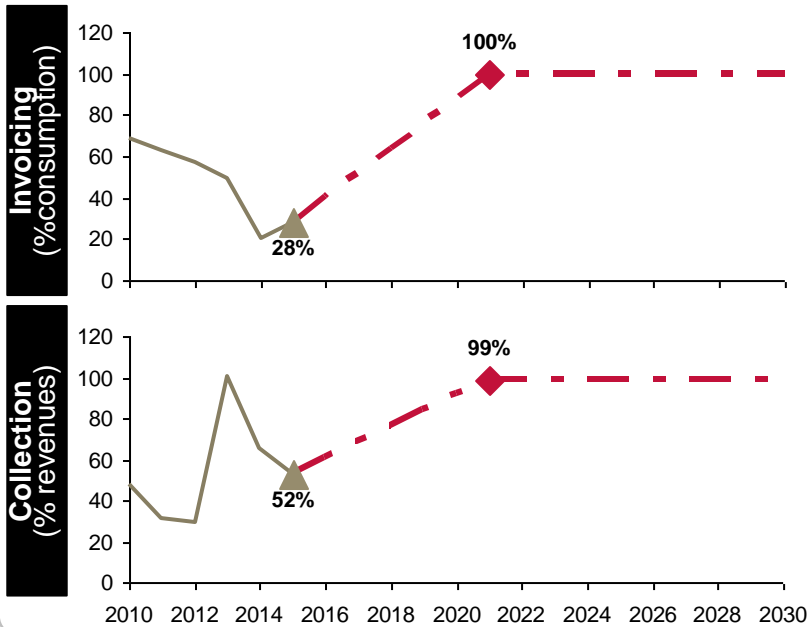
Commercial performance improvement options

Option 1

Aggressive



Achieve 100% billing and 99% revenue collection by 2021 through an aggressive metering program and police enforcement

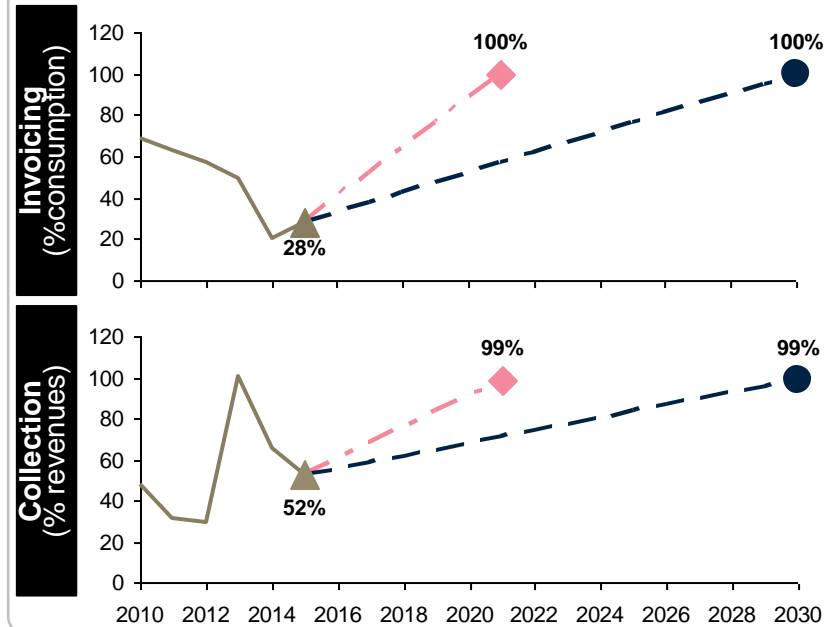


Option 2

Progressive











Address theft and insolvency ultimately improving progressively GECOL's billing and considering that the overall result will depend on the effect of the measures put in place



...hence, a more progressive option might be preferred in this case

Options assessment



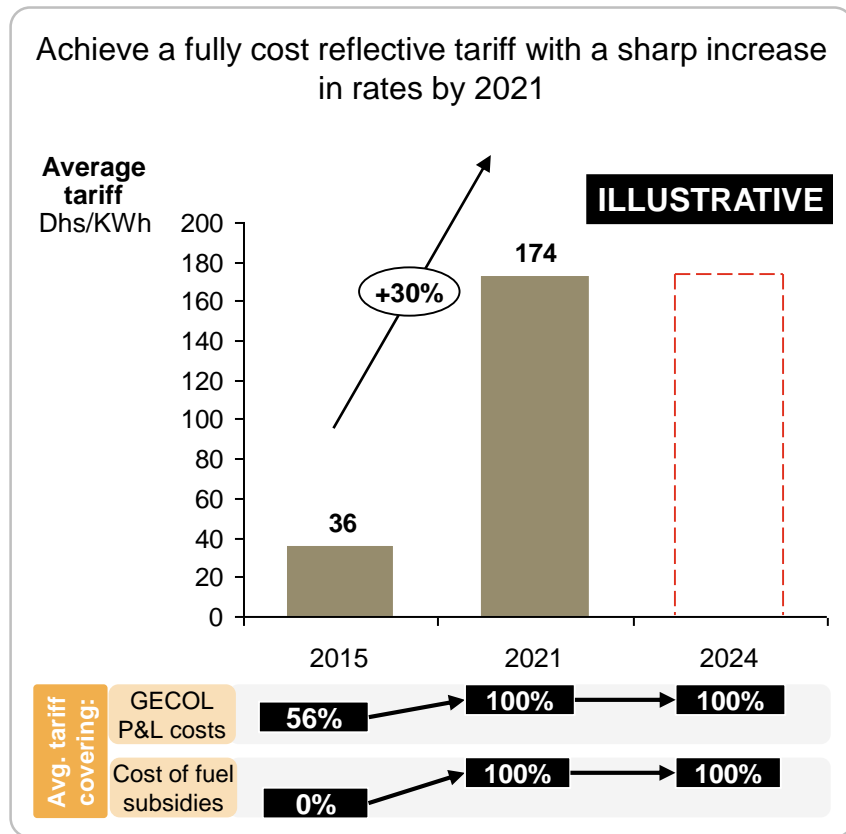
	Option 1 Aggressive 	Option 2 Progressive 
PROS 	<ul style="list-style-type: none"> Quick enhancement of GECOL's cash position (if successful) Short term improvement on government budget due to potentially reduced subsidies to GECOL (if successful) 	<ul style="list-style-type: none"> Gradual investment in metering technology will reduce negative impact on GECOL's financial situation Consistency with historical performance Less dependent on government support
CONS 	<ul style="list-style-type: none"> Costly investments in metering and invoicing technology required 	<ul style="list-style-type: none"> Lengthy gradual process requires careful planning and methodic implementation
RISKS 	<ul style="list-style-type: none"> Customer dissatisfaction might lead to retaliations against GECOL's employees Reduced impact of measures due to macroeconomic situation 	<ul style="list-style-type: none"> Delayed effects on GECOL's cash position
EASE 	 <ul style="list-style-type: none"> Option subject to large pressure for change by the public opinion Implementation dependent upon government financial support 	 <ul style="list-style-type: none"> Coordination between GECOL's employees and electricity police is key for success

1) Improving financial performance of customer service report
Source: Strategy& Analysis

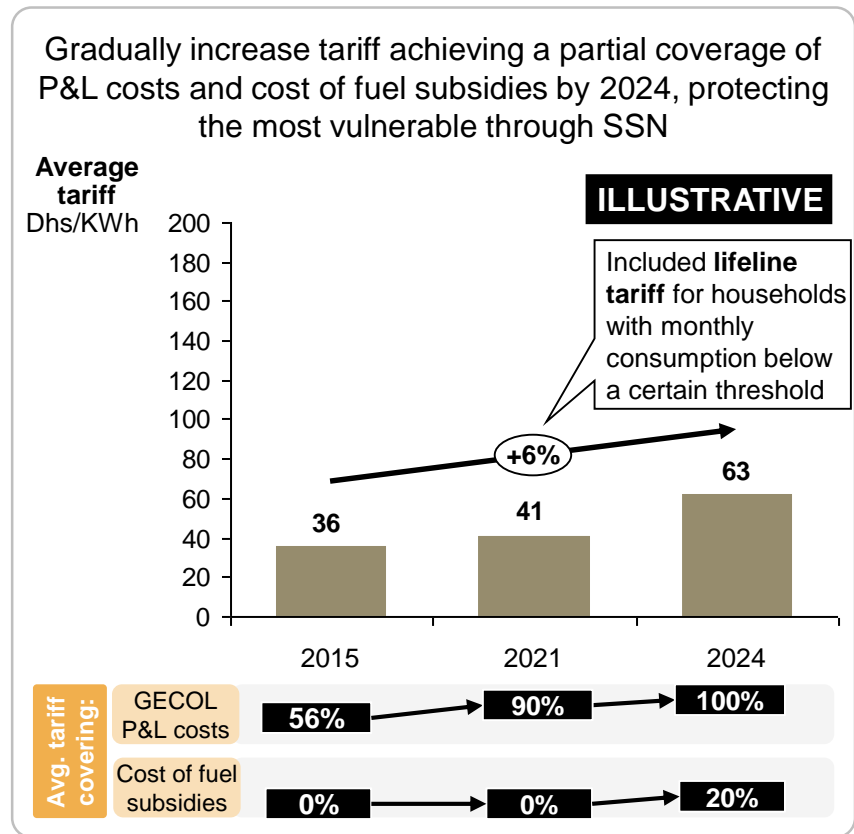
To achieve a more cost reflective tariff, GECOL may target to sharply increase its tariff rates or do it more prudently

Tariff framework improvement options

Option 1 **Sharp** 



Option 2 **Prudent** 



Source: Strategy & Analysis



A more prudent approach to tariff increase might help GECOL minimize customers' resistance ...

Options assessment



Option 1

Sharp



Option 2

Prudent



PROS

- Short term improvement on government budget due to potentially reduced subsidies (if successful)
- Quick enhancement of GECOL's financial situation (if successful)
- Customers strongly incentivized to reduce demand

- Softer impact on customers resulting in enhanced public acceptance
- Smooth implementation of required technology without heavy investments needed
- Gradual price increases might be paralleled by service level improvements



CONS

- Inconsistent with current macroeconomic situation and customers purchasing power
- Large investment in advanced metering technology to ensure billing and collection required

- Delayed benefits on GECOL's financial situation
- Key role of progressive service level improvements in guaranteeing public acceptance of increased rates



RISKS

- Peaking electricity theft and skyrocketing bad debt due to customers inability to pay bills
- High pricing not comparable with service level provided to customers

- Delayed GECOL's financial sustainability which might inhibit further sector development (unbundling path)
- Late adjustment of demand to new rates which might worsen reserve margin



EASE

- Overall strong economic situation improvement needed
- Required revolutionary change in customers approach towards electricity subsidization

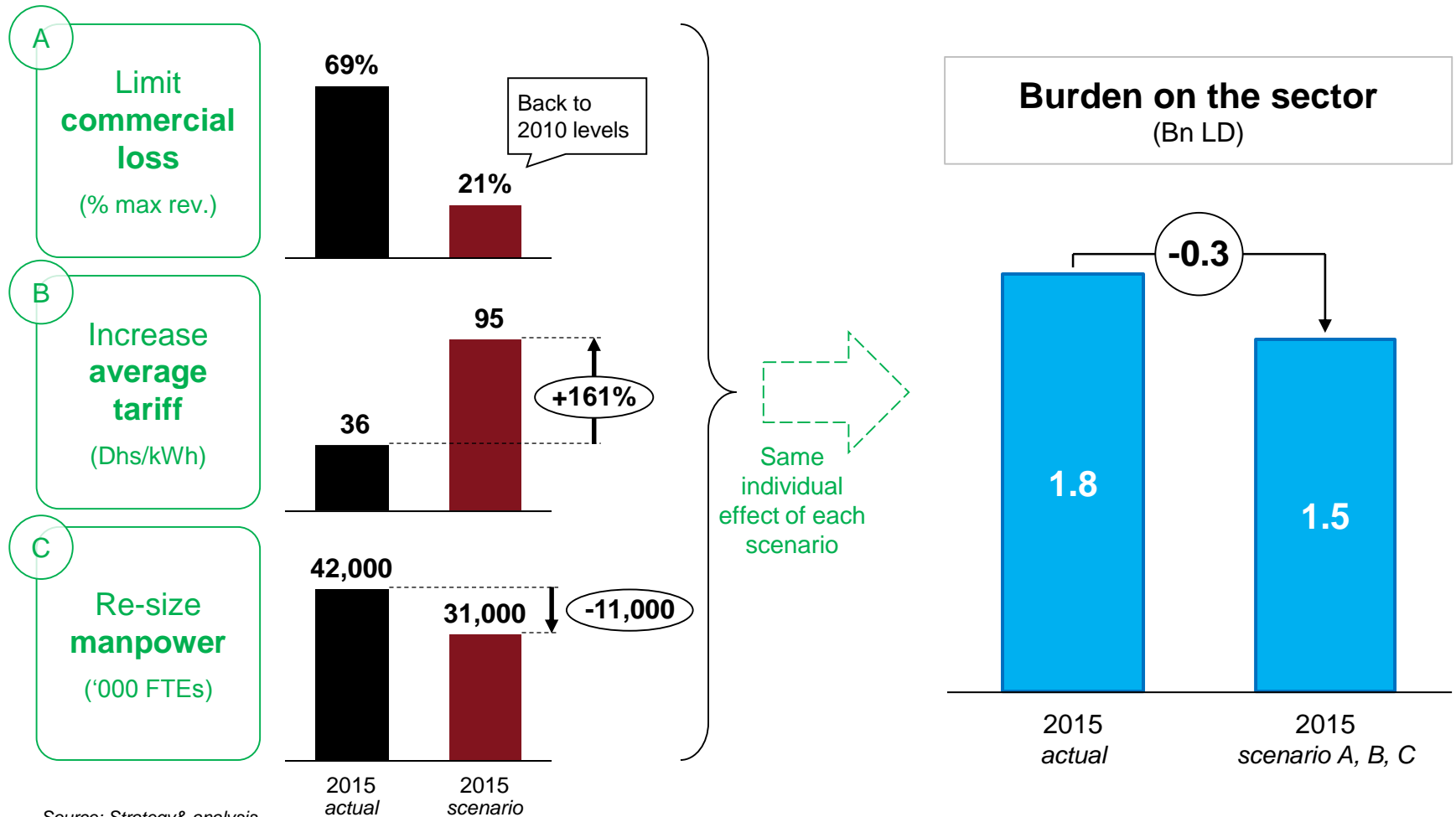
- Strong communication campaign needed to convey reasons for tariff increase to customers
- Strong government support needed throughout the process

1) Financial performance assessment and financial models report (tariff framework review, tariff structure set-up and reform pathway and excel tools)

Source: Strategy& Analysis

... And would be supported by the impacts of commercial losses decrease (equal to 160% tariff increase or 11k FTEs cut)

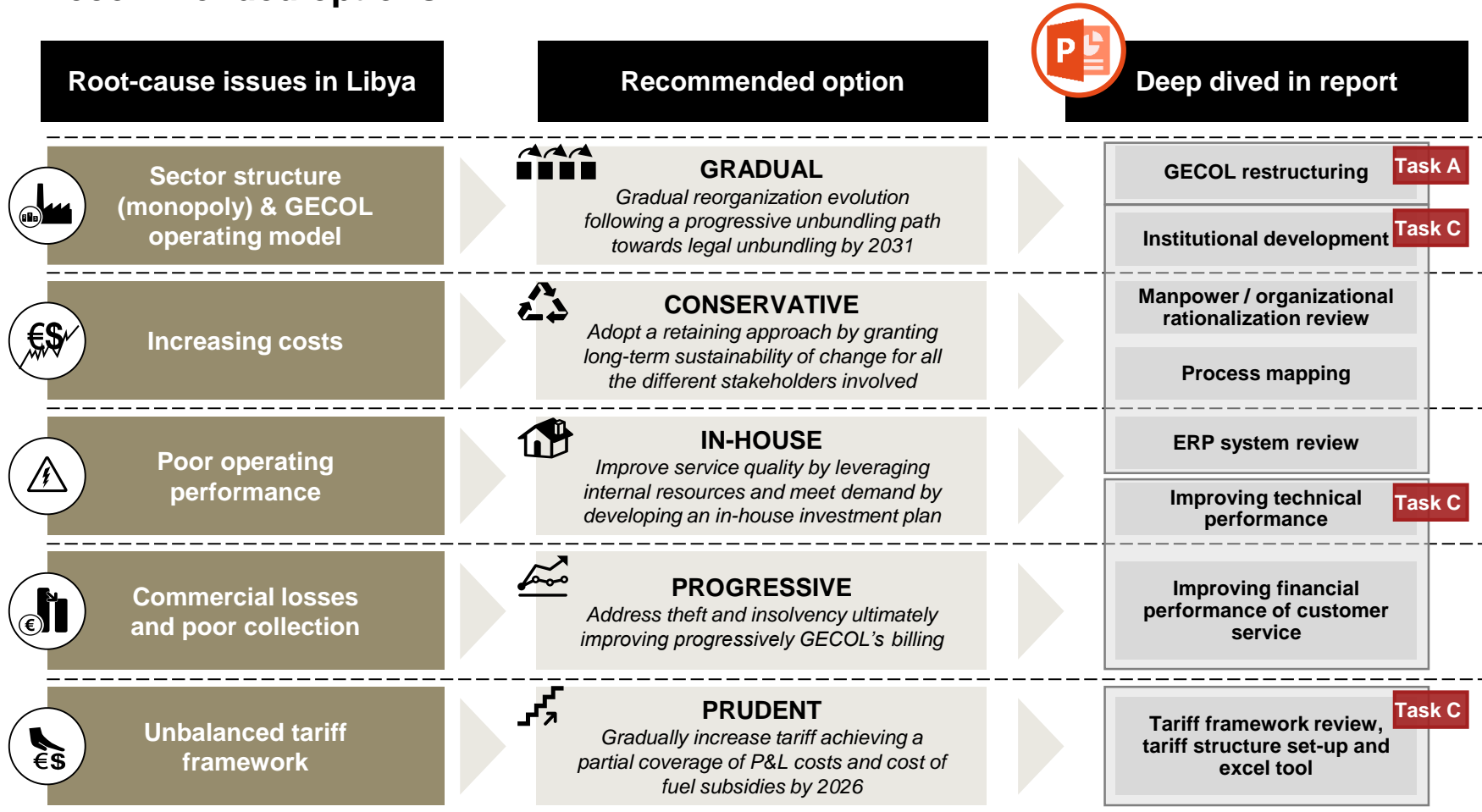
Comparison of scenarios achieving identical financial impact (2015)



Source: Strategy& analysis

In conclusion, our recommendation is to follow a series of gradual but yet very effective restructuring options

Recommended options



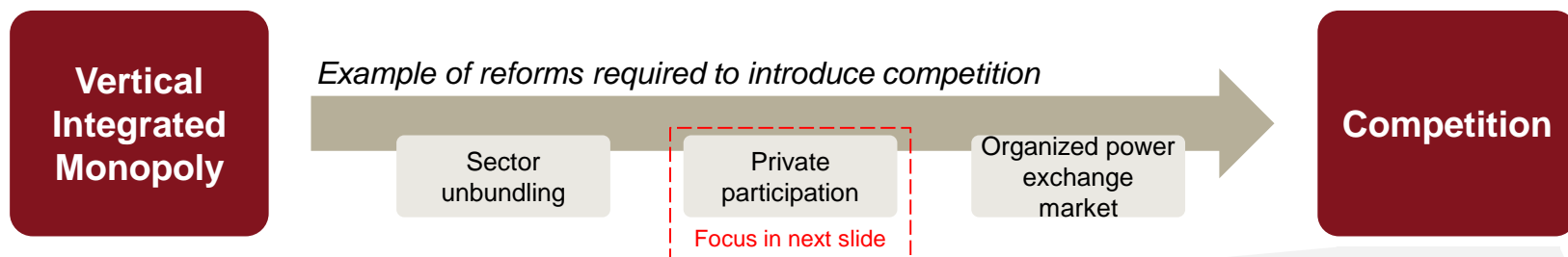
Assessment of the need for GECOL restructuring

Identification and evaluation of target options

Considerations on private sector participation

A reform process normally targets competition, and private participation is one of its key enabling steps

Reform process in developing countries



Competition objective

Price reduction

Service improvement

Possible impediments in developing countries

Utilities insolvency

preventing full payment of suppliers and deterring IPPs from developing large projects

Undeveloped capital markets

to provide financing on the scale and terms needed for investment in supply capacity

Lack of diversity in fuel supply

needed for competition among generators (liberalized fuel cost, availability of fuel types)

Inadequate legal infrastructure

for dispute resolution or enforcement of court decisions / property rights (courts/arbitration)

Insufficient T&D / control system

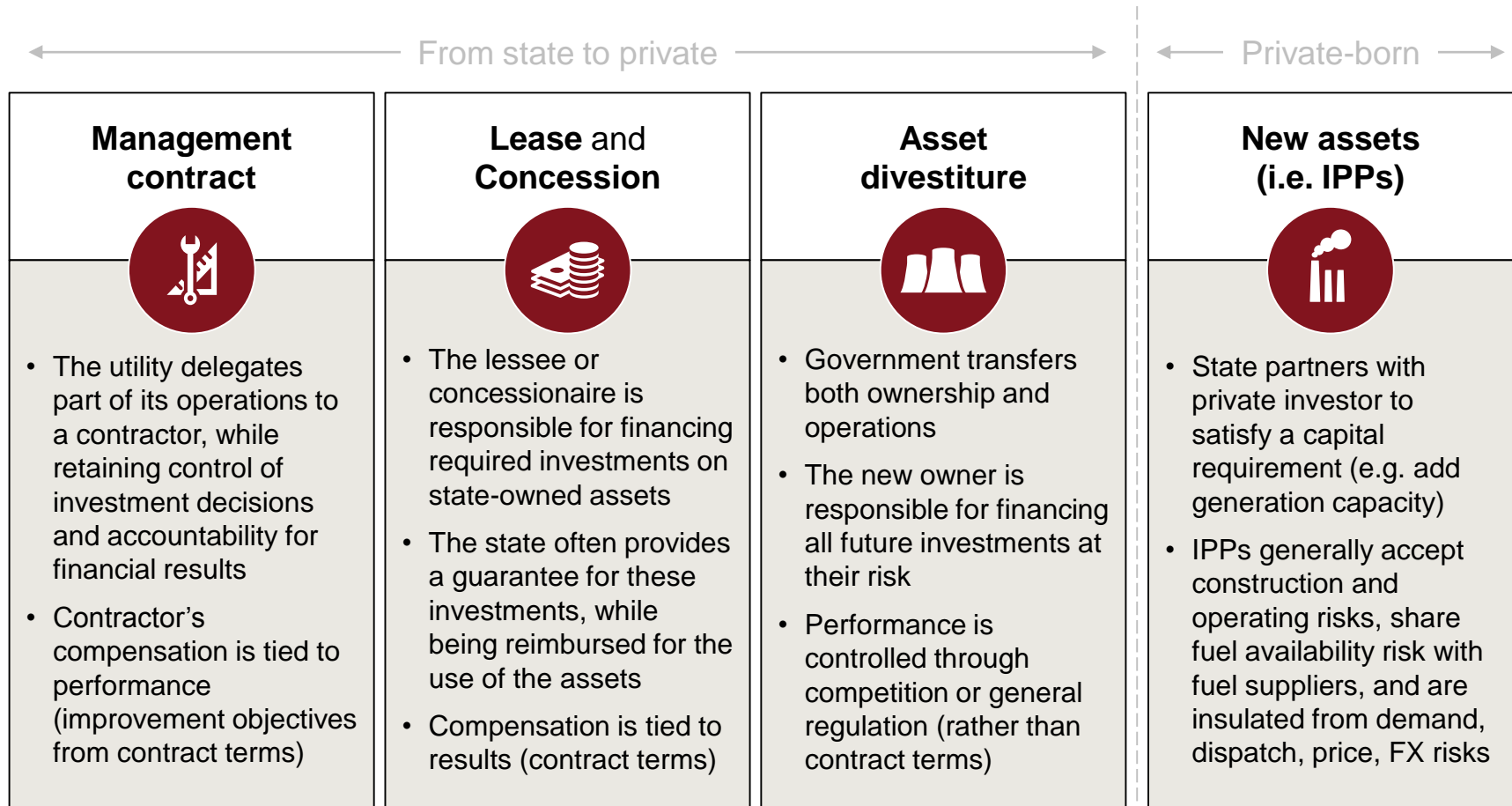
to manage the complex pattern of power flows in a competitive market

Limited market size

to support the number of viable sellers and purchasers needed for full competition

Different options for private participation exist...

Private participation types



Source: WBG, Strategy& analysis

...each characterized by a certain degree of private sector involvement & specific benefits for the electricity sector...






Private participation features

		Management contract	Lease	Concession	Asset divestiture	New assets (i.e. IPPs)
Allocation of responsibilities	Operations and maintenance	Private	Private	Private	Private	Private
	Commercial risk	Public	Private	Private	Private	Public and private
	Capital investment	Public	Public and private	Private	Private	Private
	Asset ownership	Public	Public	Public	Private	Private
	Duration	3-5 years	8-15 years	25-30 years	Indefinite	25-30 years
Benefits	Operations improvement	✓	✓	✓	✓	✓
	Assets O&M	✓	✓	✓	✓	✓
	Knowledge transfer	✓	✗	✓	✗	✓
	Access to state of the art technology	✗	✗	✗	✗	✓
	EPC	✗	✗	✗	✗	✓
	New finance for investment	✗	✗	✗	✓	✓
	Vehicle for liberalization	✗	✗	✗	✓	✓

Source: WBG, Strategy& analysis

...but also with several prerequisites for successful implementation which today Libya does not fully satisfies

Private participation prerequisites

			Management contract	Lease	Concession	Asset divestiture	New assets (i.e. IPPs)
Prerequisites for successful implementation	Cost-covering tariff, no commercial loss		Preferable	Necessary	Necessary	Necessary	Necessary
	Good system information		Sufficient to set incentives	Necessary	Necessary	Necessary	Necessary
	Good country risk rating		Not necessary	Good	High	High	High
	Political support		Low to moderate	Moderate	High	High	High
	Monitoring and regulatory capacity		Moderate	Good	Good	Strong	Strong

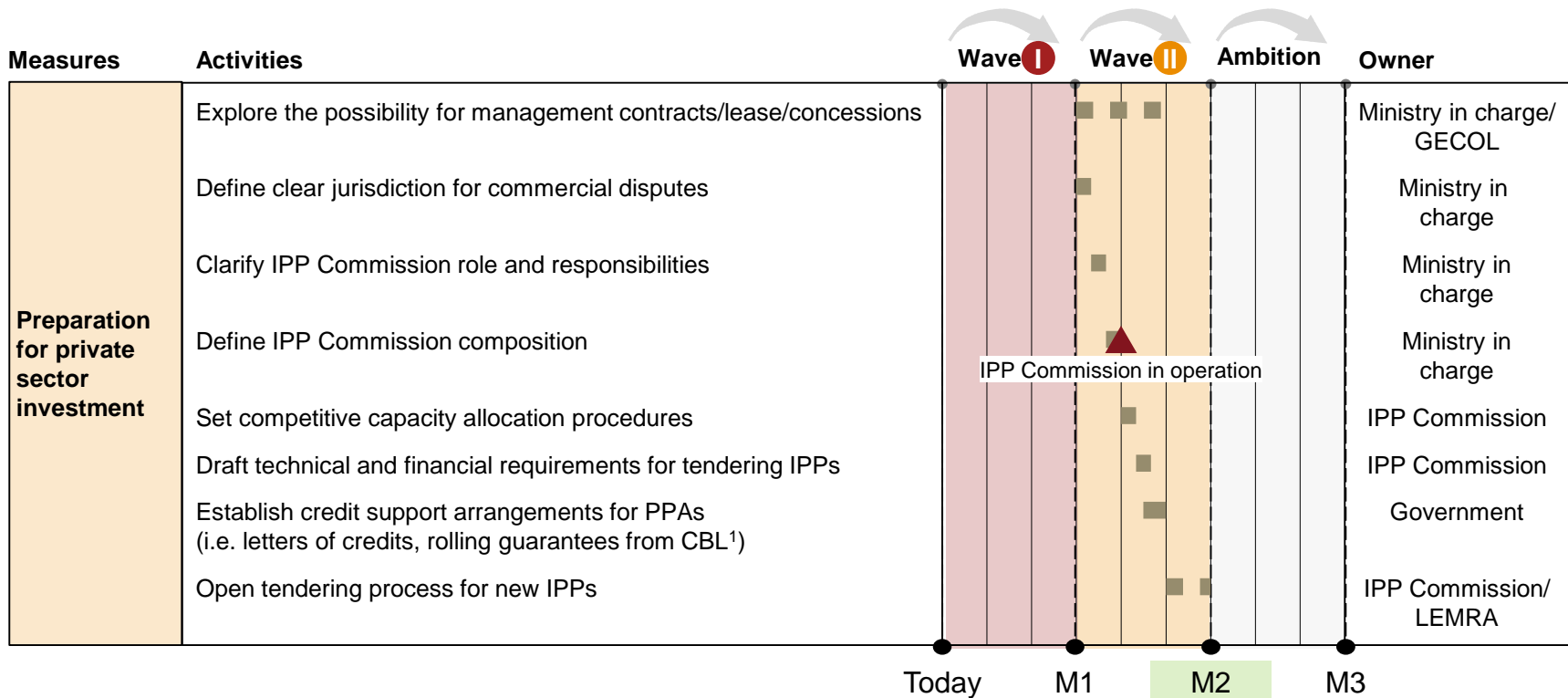


Libyan context:

 Not Applicable
  Satisfied
  Not satisfied

The identified reform roadmap foresees the introduction of private participation only starting from Wave 2 ...

Private sector investment roadmap¹



Note: M = Milestone

1) Current private sector investment in the Non-RES business – Comprehensive roadmap & private participation is currently under discussion

Source: Strategy& analysis

...mainly because today more threats than opportunities are expected to impact GECOL once IPPs enter the sector









Possible impact of IPPs introduction

IPPs impact on electricity sector			IPPs impact on GECOL
OPPORTUNITIES	Launch reform process	IPPs are often the first private investors in markets dominated by a state-owned utility, and can help launch or enhance the reform process by showing the benefits of private investment and management	<ul style="list-style-type: none"> • Foster private sector attraction and participation • Promote and contribute to GECOL's evolution
	Help meet demand needs	IPPs guarantee their output to the state-owned utility (acting as a single buyer) on the basis of a long-term PPA with a state-backed guarantee for the off-taking utility's performance	<ul style="list-style-type: none"> • Limit power generation requirements • Improve service quality and customer satisfaction
THREATS	Relieve reform pressure	Successful investments for IPPs may impede attempts to produce advanced sector-level outcomes, as IPPs success in reducing power shortages may relieve pressure on policy makers for needed reforms	<ul style="list-style-type: none"> • Reduce ext./internal willingness to lead change • Postpone advanced reform achievements
	Obstruct full competition fulfilment	High PPA prices under "take-or-pay" contracts may impede moves toward competition, as the differences with the lower prices emerging from a liberalized wholesale market become stranded costs	<ul style="list-style-type: none"> • Reduce competitive pressure and related price reduction/service improvement incentives
	Expose utilities to financial risk	The cumulative obligations to purchase power from IPPs may expose power utilities to serious financial risk (e.g. when retail sales fell behind forecast levels)	<ul style="list-style-type: none"> • Threaten GECOL financial position • Increase reliance on state financing capabilities
	Generate stakeholders resentment	High rates of return compensating for poor investment environments create the risk of contract breakdown (unaffordable payments) and may generate resentment among power consumers or other parties	<ul style="list-style-type: none"> • Increase financial pressure on customers • Endanger commercial performance

Source: Strategy& analysis

Moreover, a number of country-level factors are required to effectively attract private investment...

IPPs success factors







	Success factor	Success factor's components	Libyan context: <i>Details</i>
<div style="background-color: black; color: white; padding: 10px; text-align: center; width: 100px; margin-bottom: 10px;">Country level</div> <div style="background-color: #cccccc; padding: 10px; text-align: center; width: 100px;">Project level</div>	Stable country context	Stable political/macro-economic environment	 e.g. low inflation, sound taxation policies, access to FX, fiscal prudence
		Developed legal infrastructure	 e.g. possibility to enforce contracts, uphold laws, arbitration, legal protection of property rights of investors, freedom to import goods, fuel, and services
		Good country rating	 e.g. good repayment record and investment-grade rating, and previous experience with private investment
	Developed electricity sector	Advanced reform stage	 e.g. cost-covering tariffs, transparent and predictable licensing and tariff framework, access to the transmission network on transparent and equitable terms
		Competitive bidding practices	 e.g. planning linked to timely initiation of competitive tenders/auctions; resourced, fair, and transparent competitive procurement
		Coherent sector planning	 e.g. clear allocation of planning roles and functions; skilled, resourced, and empowered planning function
	Advanced regulatory framework	Clear policy framework	 e.g. framework enshrined in legislation, and clearly specifying market structure, roles, and terms for private and public sector investment, legislated rights to entry and exit from the power market by private suppliers
		Transparent, consistent and fair regulation	 e.g. competitive procurement of new generation capacity required by regulator; fair allocation of new build opportunities between utility and IPPs; prevention of anti-competitive practices by dominant power suppliers

Source: WBG, Strategy& analysis

N/A Not Applicable
 ✔ Satisfied
 ✘ Not satisfied

...accompanied by a further set of project-level factors essentially contributing to IPPs investment success

IPPs success factors

	Success factor	Success factor's components	Libyan context: <i>Details</i>
Country level	Favorable financing	Favorable equity partners	 e.g. local capital/partner contribution (if possible); fair / reasonable ROE; experience with developing country project risk; development-minded firm with risk appetite for project; involvement of a DFI partner / government
		Favorable debt arrangements	 e.g. competitive financing, local capital/markets that mitigate FX risk; risk premium demand by financiers (or capped by off-taker) matching country/project risk; flexibility in terms and conditions (possible refinancing)
Project level	Creditworthy off-taker	Solid commercial performance	 e.g. commercially sound metering, billing, collection
		Adequate managerial capacity	 e.g. efficient operational practices, low technical losses, sound customer service
	Secure / adequate revenue stream	Robust PPA	 e.g. stipulating capacity and payment, dispatch, fuel metering, interconnection, insurance, force majeure, transfer, termination, change-of-law provisions, refinancing arrangements, dispute resolution
		Security arrangements (where necessary)	 e.g. escrow accounts, letters of credit, standby debt facilities, hedging/derivative instruments, committed public budget or taxes/levies, targeted subsidies and output-based aid, hard currency contracts, indexation

Source: WBG, Strategy& analysis

 Not Applicable  Satisfied  Not satisfied

Finally, investment risk and prospective rates of return in Libya (key IPP focus) are not yet mature

Focus on IPPs

Rationale

- Yielding net welfare benefits to power consumers and society
- Improving sector performance with limited capital availability (e.g. attract private sector resources to increase power generation capacity and meet demand needs)

Business case

- Private investment depends upon the balance between investment risk and prospective rates of return
- A wide set of different risks apply:
 - 1 Dev. and construction phase risks
 - 2 Operational phase risks
 - 3 Other risks

Key challenges for the state

- Attract investors and successfully compete for international capital by offering competitive (but affordable) returns for investment risks
- Keep country and sector profile attractive (investors seek predictability and control of risk)

1 Development and construction phase risks	Pre-construction	<ul style="list-style-type: none"> • Land procurement • Failure to commence 	2 Operational phase risks	Market	<ul style="list-style-type: none"> • Offtake obligations • Curtailment
	Construction	<ul style="list-style-type: none"> • Abandonment • Delays in achieving CDO • Deemed completion • Construction cost escalation 		Performance	<ul style="list-style-type: none"> • Minimum requirements • Dispatch
	Site accessibility and availability	<ul style="list-style-type: none"> • Right to occupy • Site suitability • Site-related infrastructure 		Fuel and other feedstock supply	<ul style="list-style-type: none"> • Tolling arrangements • Fuel supply agreements • Fuel transportation agreements
	Interconnection infrastructure	<ul style="list-style-type: none"> • Transmission interconnection • Delivery point 		Transmission	<ul style="list-style-type: none"> • Transmission company creditworthiness
	Testing and commissioning	<ul style="list-style-type: none"> • Testing and commissioning • Failure to meet contract capacity • Output/heat rate risk 		Foreign exchange	<ul style="list-style-type: none"> • FX rate fluctuations • Convertibility and remittance
			3 Other risks	Political / sovereign risk and expropriation	
				Compliance with law and change in law	
				Change in tax, change in control	

Source: US department of commerce, Strategy& analysis