

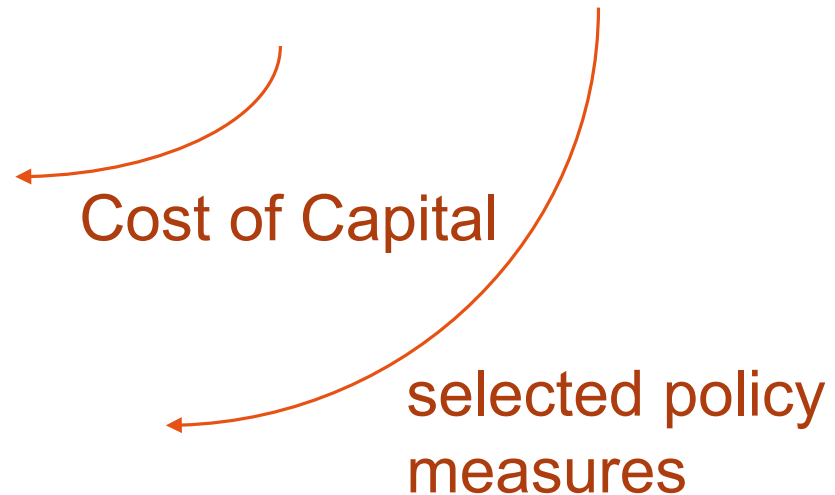
Towards clean, secure and affordable energy systems in Southeast Europe

Vienna, 16 November 2018

Frauke Roeser

- » Majority of investments in renewable energy will need to be from **private sector**
- » **Cost of capital is critical** for renewable energy projects
- » Cost of capital driven by **barriers and risks**
- » How can public instruments reduce the cost of capital?
- » What is the impact of different instruments on the financing of renewable energy projects?

- » Analysis of the most cost-effective public de-risking measures that address investment barriers to promote private sector investment in renewable energy
- » Comparing alternative RE policy frameworks
- » Quantification of risks and counter measures via interviews
- » Calculation of LCOE
 - pre derisking
 - post derisking
- » Calculation of Public Cost



Example - Tunisia

- » Tunisian solar plan: 30% renewable electricity production by 2030
- » Characteristics of power sector:
 - Rising demand
 - Dominance of gas powered generation (imported)
 - Dominant role of state owned energy company (STEG) for production and distribution
 - No private investment in utility scale wind or solar PV
- » Analysis aimed to examine the selection and cost-effectiveness of public de-risking measures to meet the 2030 investment targets



Tunisia: Derisking Renewable Energy Investment 2018

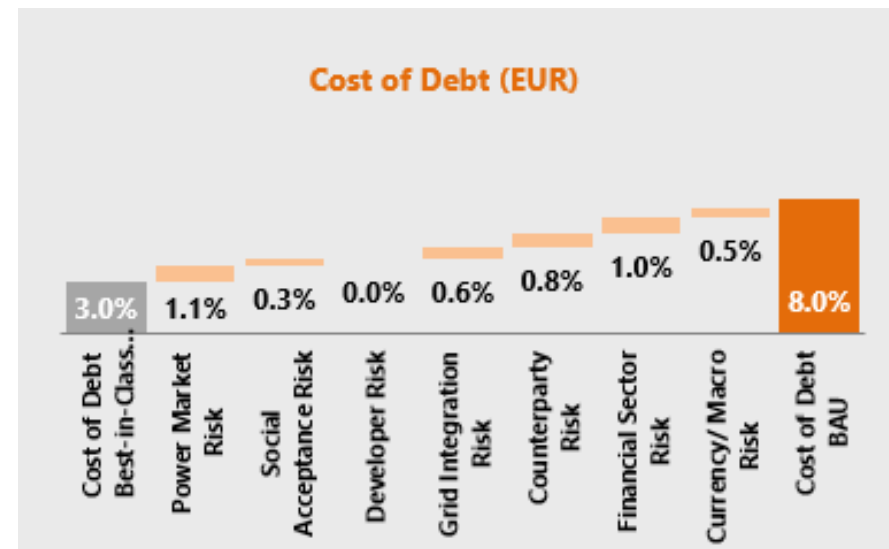
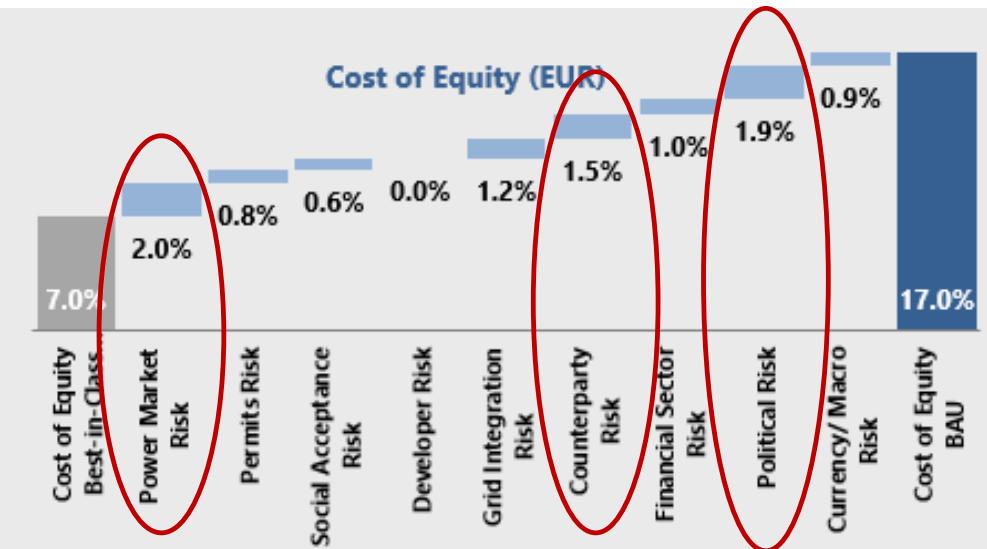
Selecting Public Instruments to Promote
Renewable Energy Investment for the Tunisia Solar Plan

FULL RESULTS

May, 2018

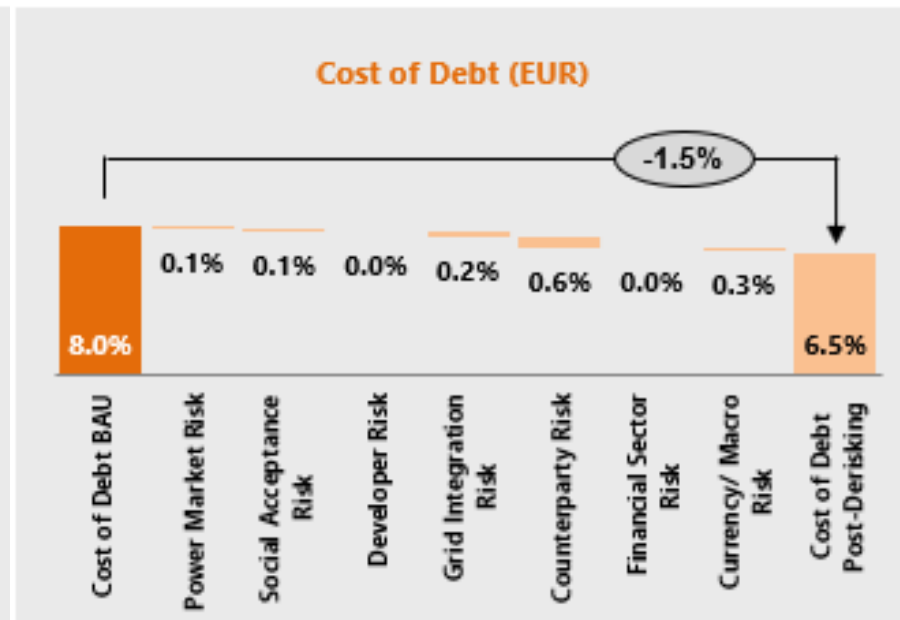
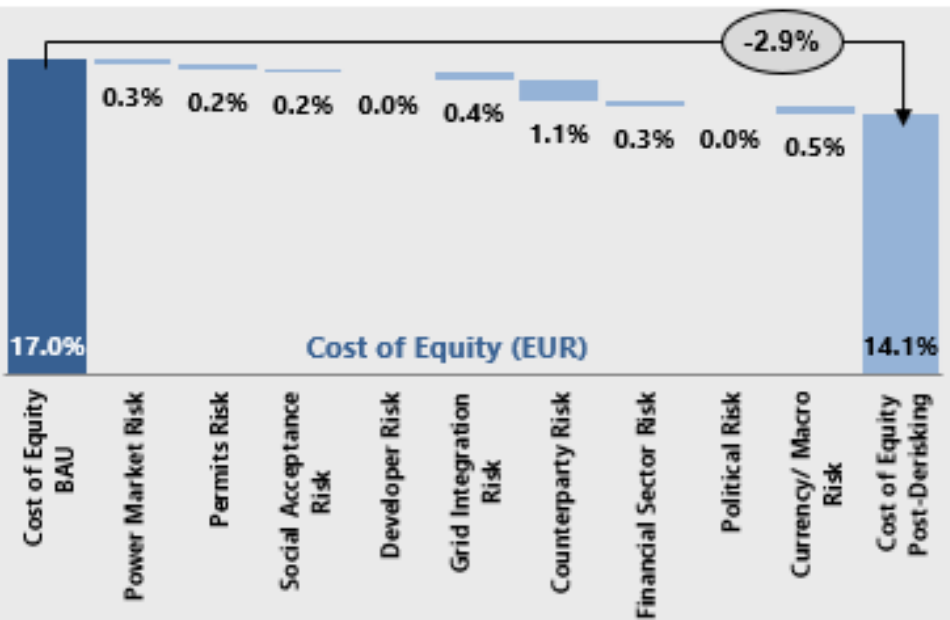
Quantification of risks

Impact of risk categories on financing costs for renewable energy investments in Tunisia, business-as-usual scenario



Quantification of policy package

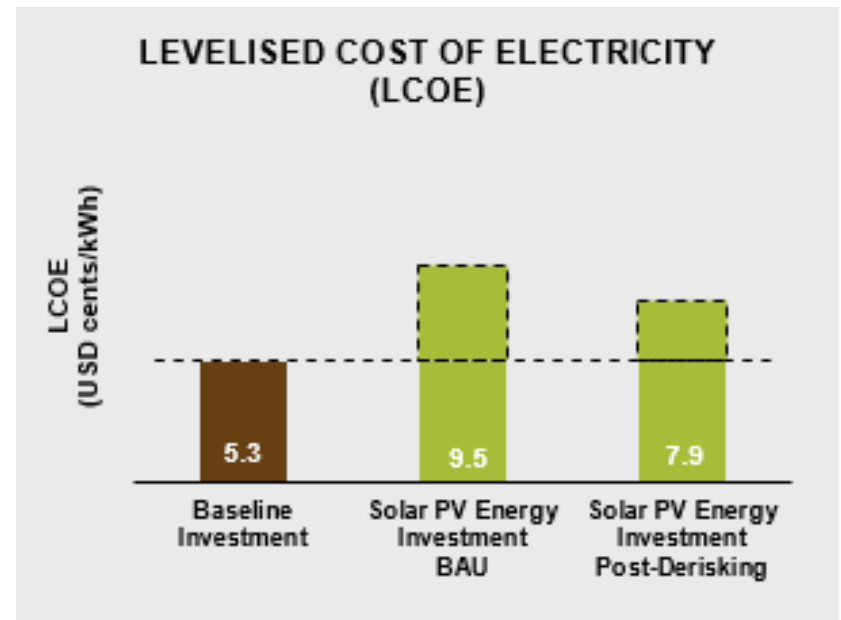
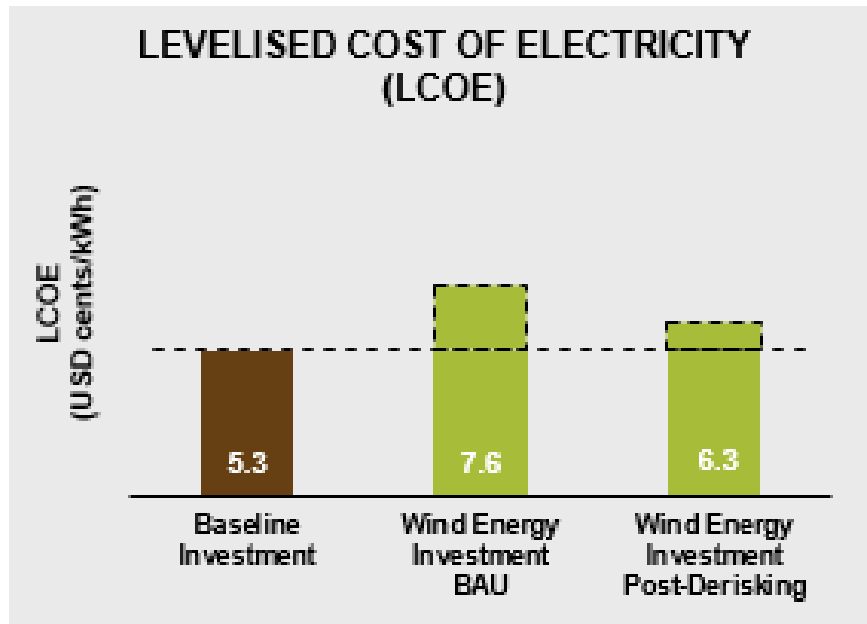
Impact of risk categories on financing costs for wind and solar PV investments in Tunisia, post-derisking scenario



- » Policy derisking measures: e.g. financial sector reform; permitting process
- » Financial derisking measures: e.g. government guarantee, indexing, take or pay clause in PPA

Results - LCOE

LCOEs for baseline and wind and solar PV investment in Tunisia



» For wind energy, 2030 investment target: 940 MW, the modelling identifies a set of public derisking measures with an estimated cost of EUR 110 million until 2030.

Benefits:

- Catalyse EUR 1.129 billion in private sector investment in wind investment
 - Lower wind generation costs due to derisking from EUR 7.6 cents to EUR 6.3 cents per kWh
 - Create economic savings related to derisking of wind of EUR 403 million over 20 years
 - Reduce carbon emissions by 21.6 million tonnes of CO₂ over 20 years, relative to the baseline
- » Investing in public de-risking cost effective to drive investments and meet policy target

- » Illustrate potential impact from renewable energy Cost Reduction Facility (CRF) and other public instruments on the financing costs of renewable energy in SEE
- » Exemplary case studies onshore wind in Greece and Serbia
 - Quantify incremental investment costs for wind compared to best in class EU country
 - Determine LCOE for baseline technology and onshore wind in a pre- and post-derisking environment
- » November 2018 – March 2019
- » Collaboration with Agora and network partners in Greece and Serbia



Thank you for your attention!

Contact details:

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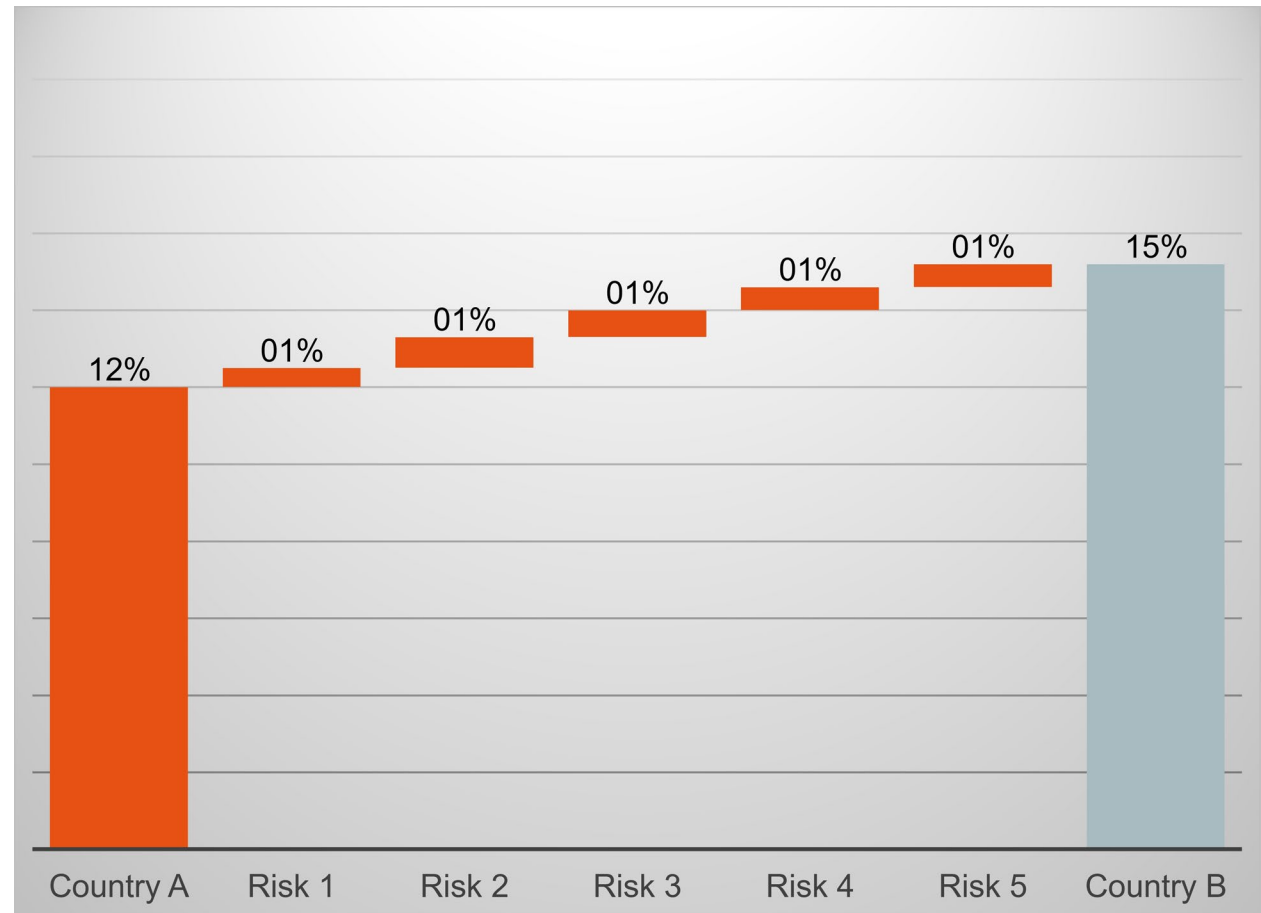
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Additional slides

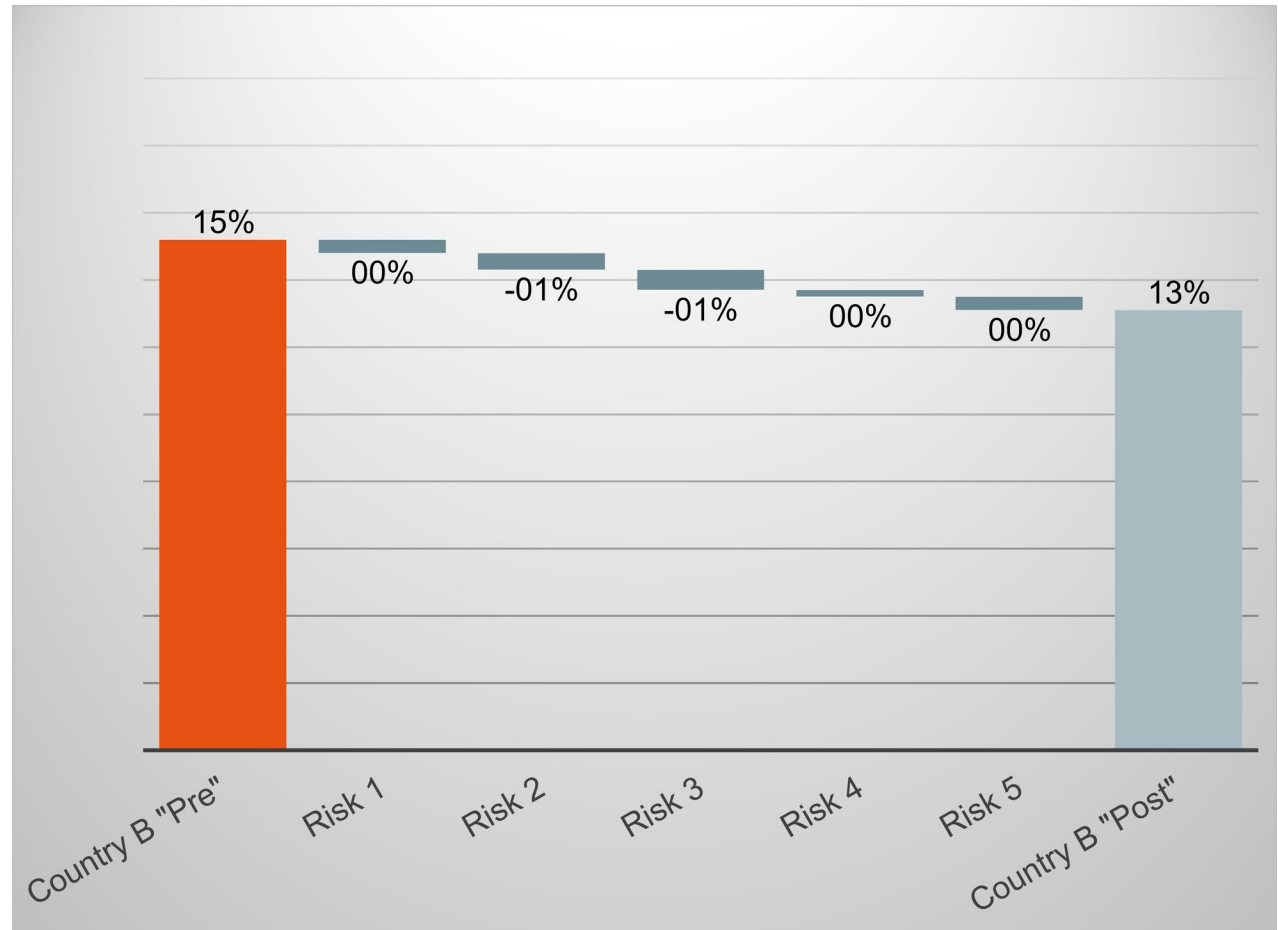
Quantification of risks - illustration

- » Power Market Risk
- » Permits Risk
- » Social Acceptance Risk
- » Grid/
- » Transmission Risk
- » Counterparty Risk
- » Financing Risk
- » Political Risk
- » Currency/Macro. Risk
- » ...



Quantification of impacts - illustration

- » Targets and policies
- » Regulatory instruments
- » Market reforms
- » Insurances
- » Financial instruments
- ...



Selected policy package (Tunisia)

Risk Category	Policy Derisking Instruments	Financial Derisking Instruments
Power Market Risk	<ul style="list-style-type: none"> Legislative reform to put in place effective policies/ revise them PPA tender Independent regulator 	NA
Permits Risk	<ul style="list-style-type: none"> Streamlined process for permitting Enforcement and recourse mechanism 	NA
Social Acceptance Risk	<ul style="list-style-type: none"> Awareness-raising campaigns Promote/ pilot community-based approaches 	NA
Developer Risk	<ul style="list-style-type: none"> Resource assessment (only for wind energy) Research and development into technology standards (Support to pilot projects on solar PV in desert environments) Technology support and O&M assistance 	NA
Grid/Transmission Risk	<ul style="list-style-type: none"> Transparent, up-to-date grid code Grid management/ planning (develop and update long-term national transmission/ grid plan to include intermittent RE) Capacity building for the supervision center to organize/ control dispatching 	<ul style="list-style-type: none"> Take-or-pay clause¹ in PPA
Counterparty Risk	<ul style="list-style-type: none"> Strengthen the utility's management Implementing sustainable cost recovery policies 	<ul style="list-style-type: none"> Government (sovereign) guarantee
Financing Risk	<ul style="list-style-type: none"> Domestic financial sector reform 	NA
Political Risk	NA	NA
Currency/ Macroecon. Risk	NA	<ul style="list-style-type: none"> Partial indexing

Calculation of Public Cost (Tunisia)

» Independent Regulator

- » 30 FTE's: 16,000€ annual salary
- » 5 large consultancy contracts: 300,000 € each

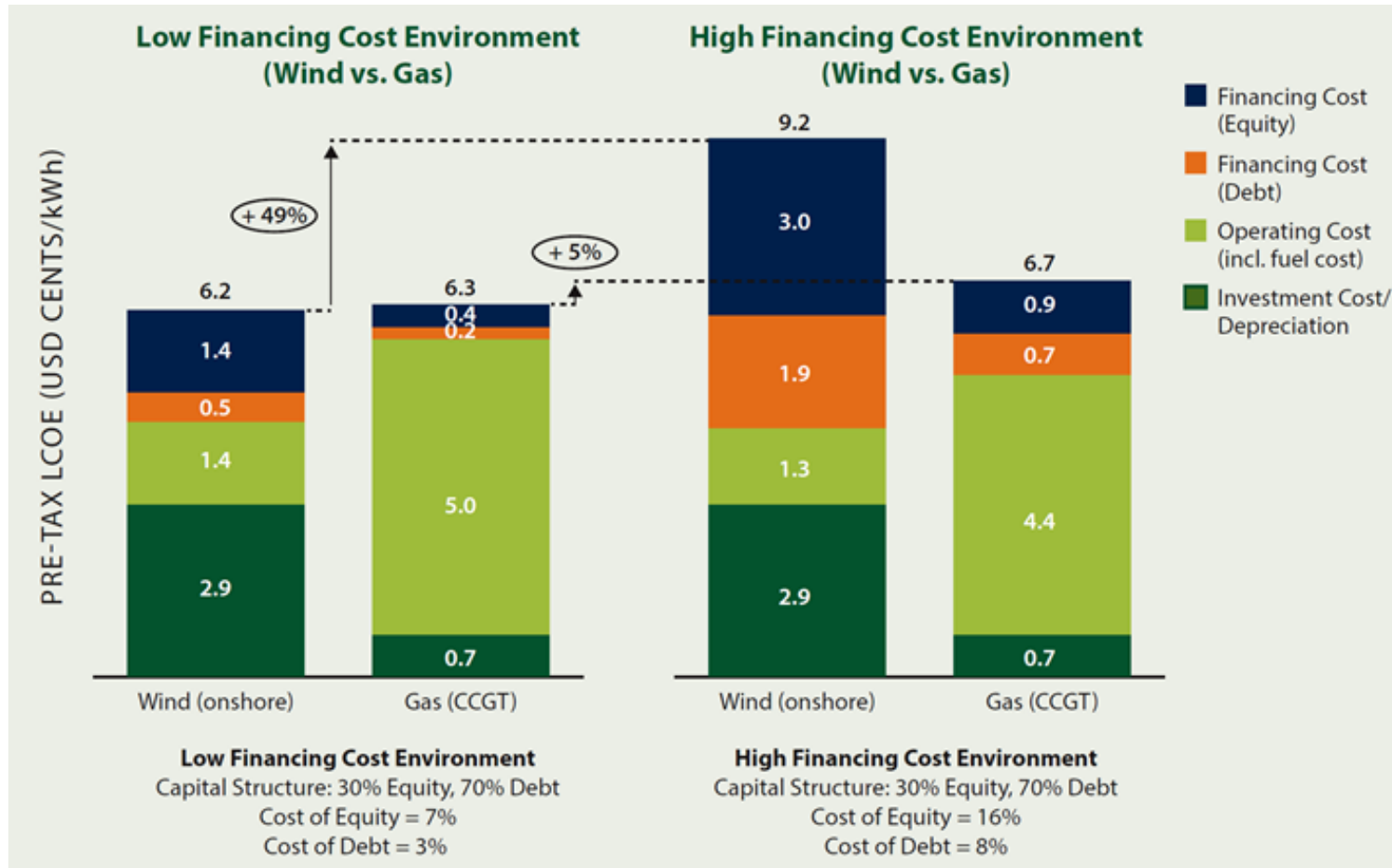
» Streamlined process for permitting (e.g. dedicated one-stop shop for RE permits)

- » 2 FTE's
- » 1 small consultancy contract every two years: 50,000€ each

» Concessional Public Loans

- » 30% of overall debt financed investment
- » 245 million € of public loans with 25% default rate
- » 61million € of costs

DREI - Concept



Source: UNDP, De-risking renewable energy (DREI) 2015