Attracting private investment through NAMAs: the role of risk, return and policy design

Part1: Why and how private investment matters

UNFCCC Asia Pacific and Eastern Europe Regional Workshop on Nationally Appropriate Mitigation Actions

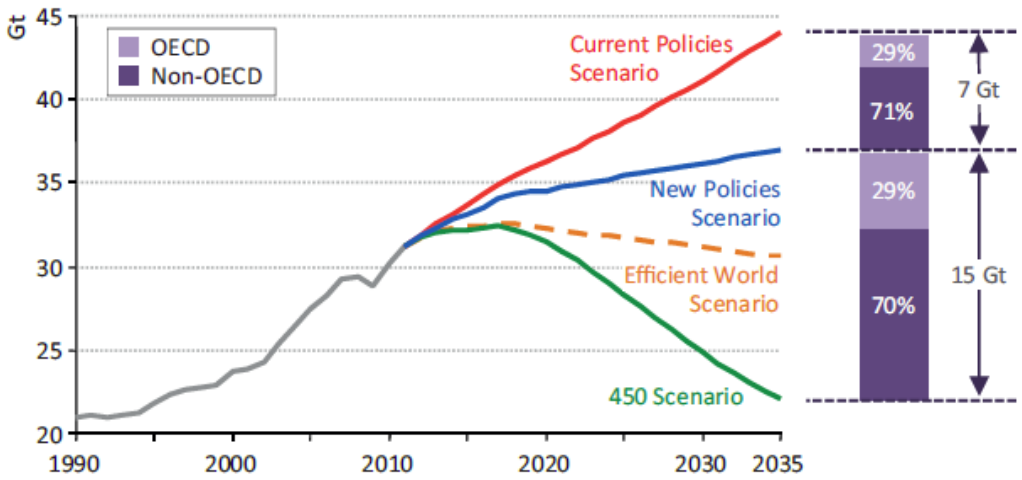
Bonn/Germany June 13, 2015

Speaker: Prof. Dr. Tobias Schmidt, Energy Politics Group, ETH Zurich

Agenda

1. The role of finance in low carbon development
2. Sources of finance
3. Basics of private investor investment decisions
4. Policy measures to tap private funds
5. Summary

Low carbon development necessitates tapping additional, and redirecting existing, investment flows



USD37tn by 2035 in energy infrastructure

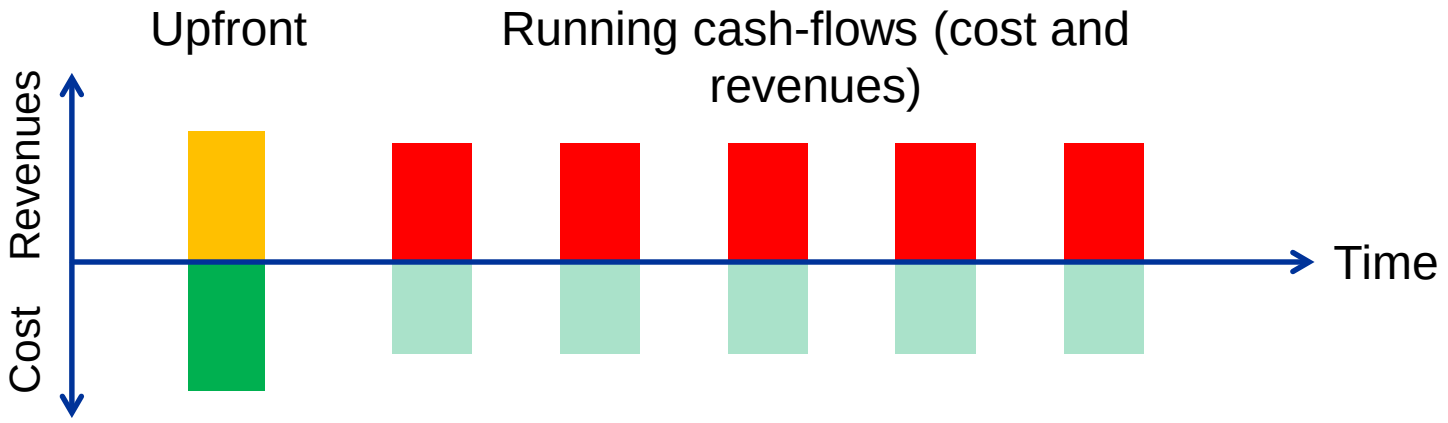
additional **USD17tn** to reach 450ppm scenario

- Higher emission reduction potentials compared to baseline are in non-OECD countries
- Most investments in non-OECD countries
- Not only additional finance needed, but **re-direction** of existing and planned capital flows from traditional high-carbon to low-emission, climate-resilient investments
- Additional investment does not mean additional cost! (often these investments can save costs)

Sources: IEA, 2012; UNDP, 2011/2013

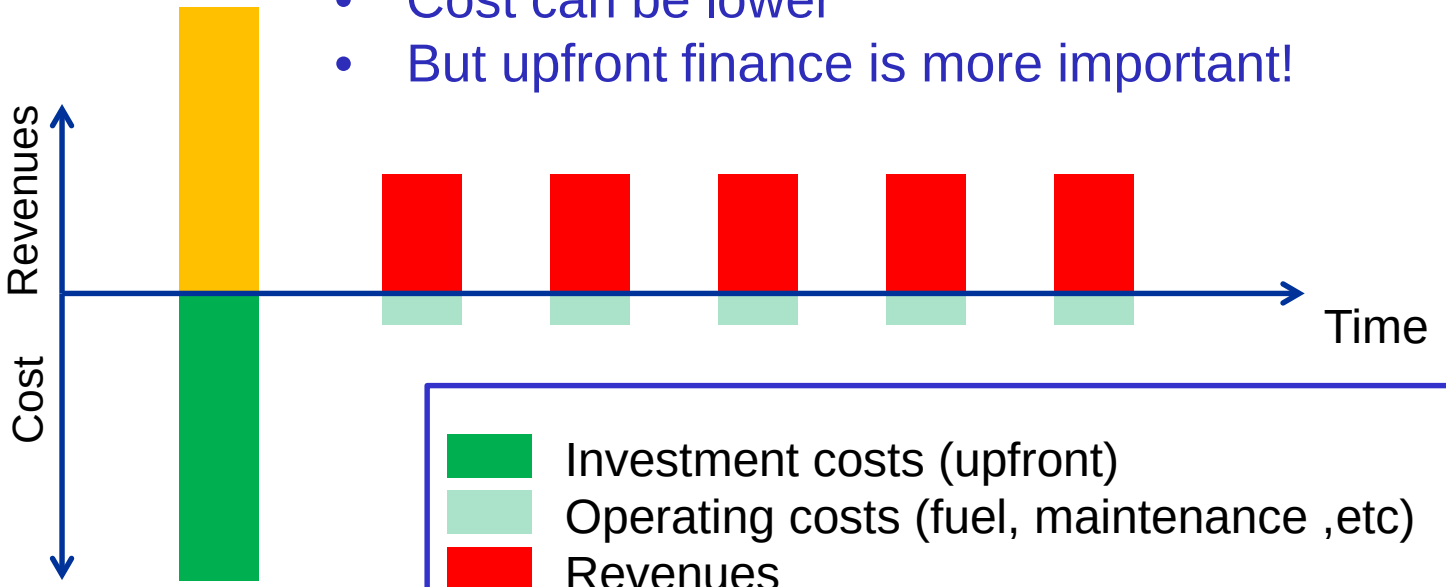
Upfront finance is more important in low carbon investments than in high-carbon investments

Typical **high-carbon** cost-revenue structure



- Cost can be lower
- But upfront finance is more important!

Typical **low-carbon** cost-revenue structure



Investment costs (upfront)
Operating costs (fuel, maintenance ,etc)
Revenues
Finance (upfront)

Source: EPG/ETH Zurich, UNDP

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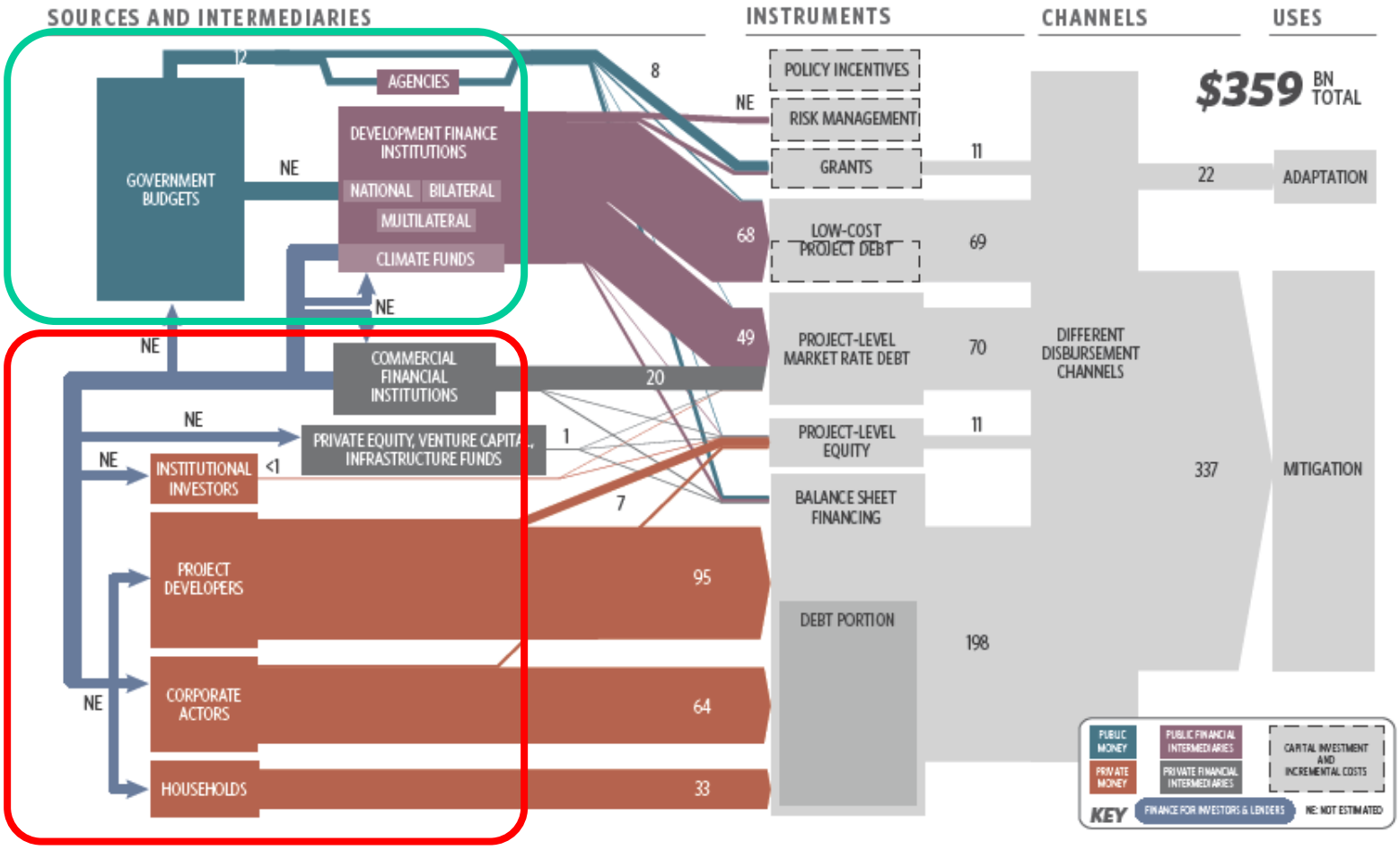
Already today most climate finance is provided by the private sector

Public sources 38%

Private sources 62%

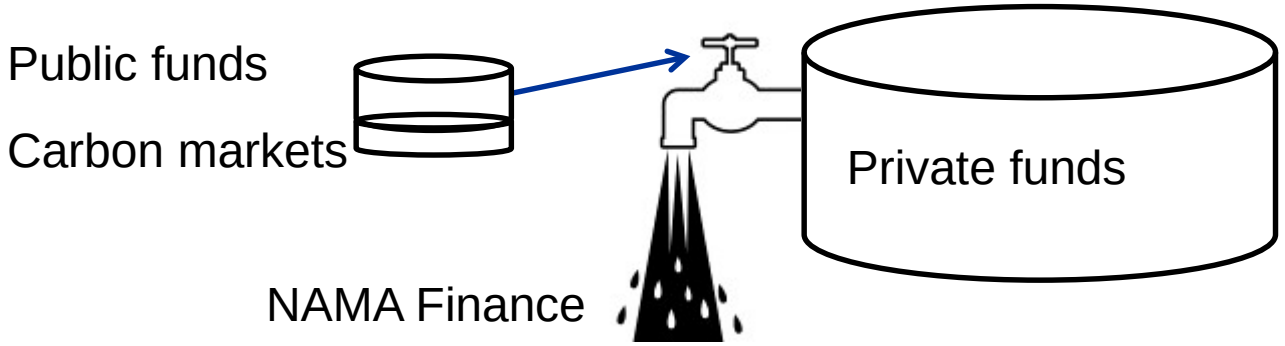


Source: Climate Policy Initiative, 2013

Private funds represent by far the largest source of Climate/NAMA finance

	Domestic	International
Public funds	mostly limited	limited
Carbon markets	limited	limited
Private funds	varying	large

Challenge: How to ***leverage*** private funds using public funds/carbon markets?



Source: EPG/ETH Zurich

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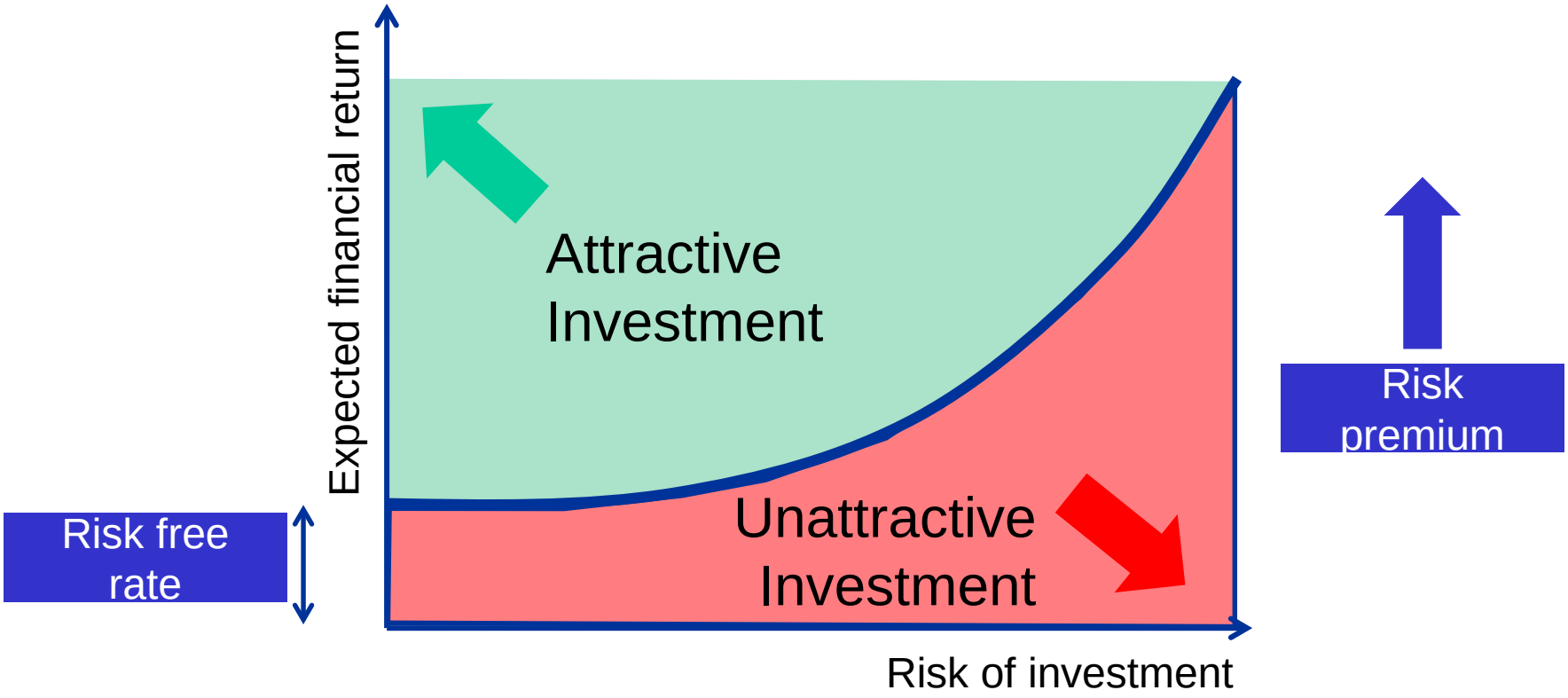
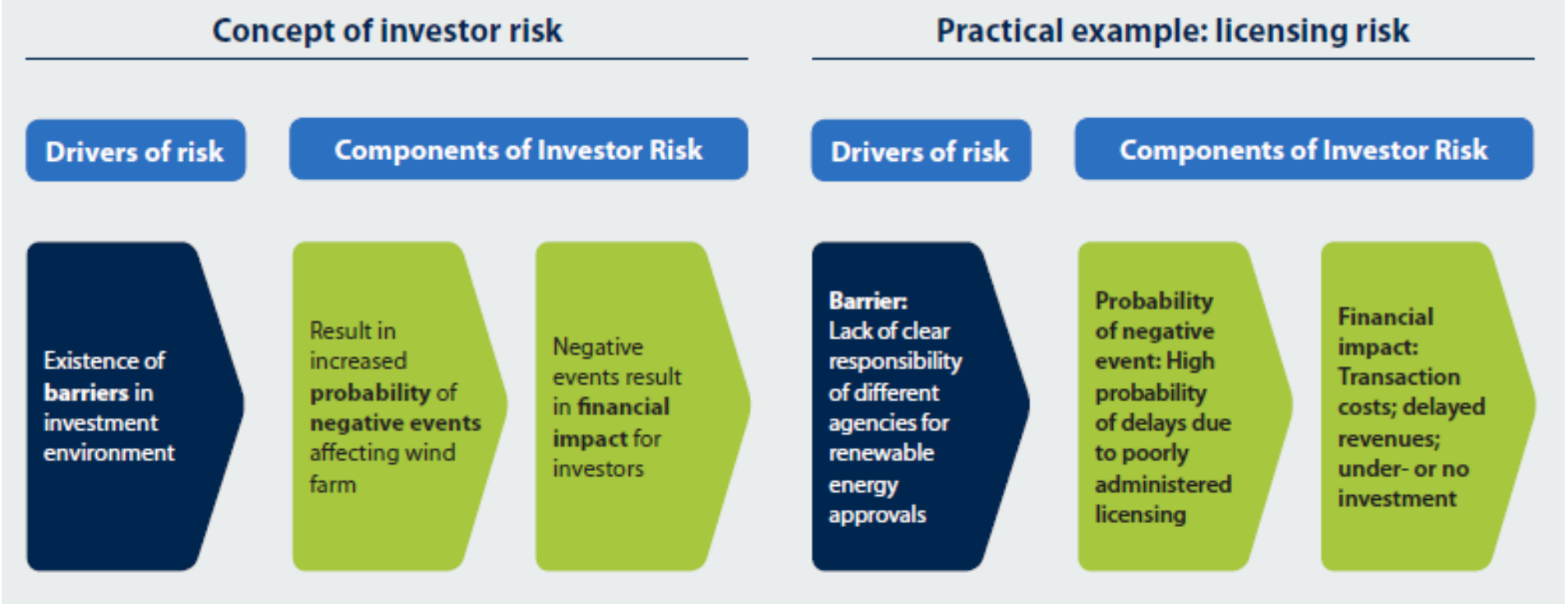
Private investors' decisions are mainly guided by the risk-return profile of an investment opportunity



Þ **Investment Risk** is an essential part of private sector's investment considerations

Source: EPG/ETH Zurich, UNDP

Downside investment risk is defined by the combination of the probability of a negative event and its potential financial impact



Source: UNDP

Different risk levels result in different cost of capital

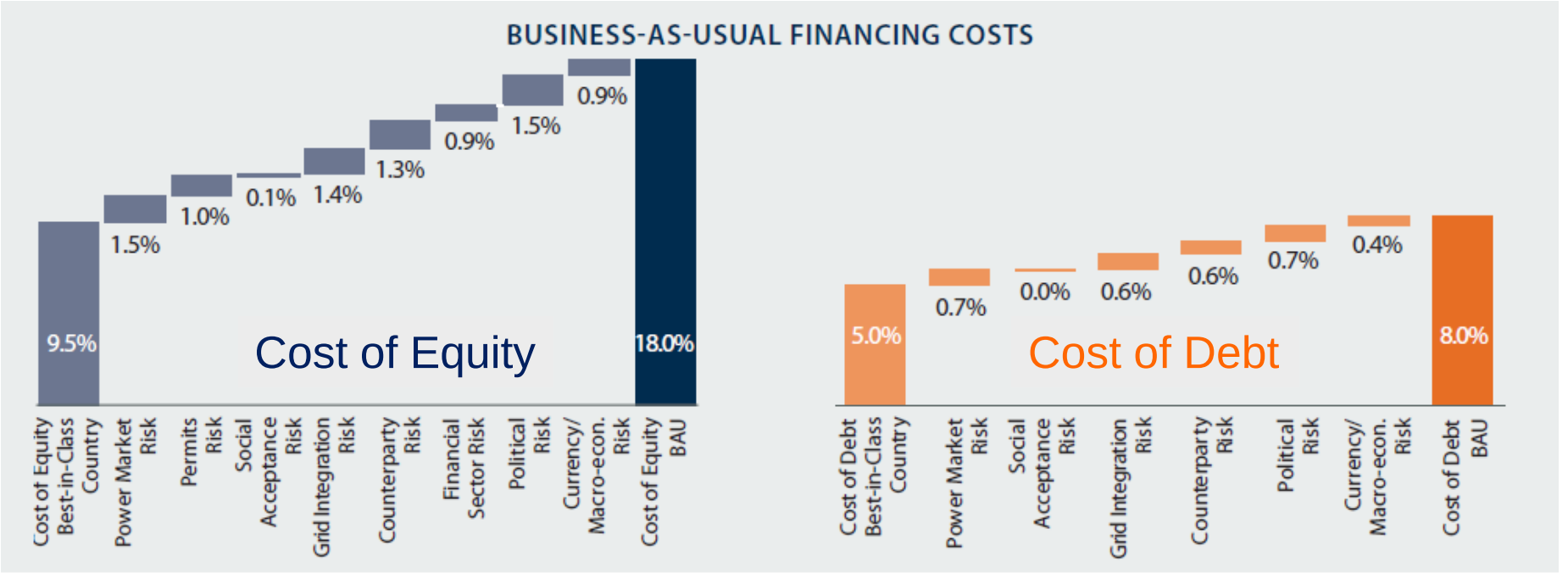
- The cost of capital reflects the risk involved in an investment
- The cost of debt represents a bank loan's interest rate
- The cost of equity represents the hurdle rate for equity investors
- Due to seniority, debt has lower cost than equity

Venture Capital	Private Equity	Infrastructure Funds	Pension Funds	Bank Mezza-nine Debt	Bank Senior Debt
Start ups, new technology, prototypes	Pre-IPO* companies, demonstrator technology	Proven technology, Private companies	Proven technology	Demonstrator/ proven technology, new companies	Proven technology, established companies
>50% Internal Rate of Return (IRR)	35% IRR	15% IRR	15% IRR	LIBOR* + 700 bps	LIBOR + 300 bps

Source: EPG/ETH Zurich, UNDP

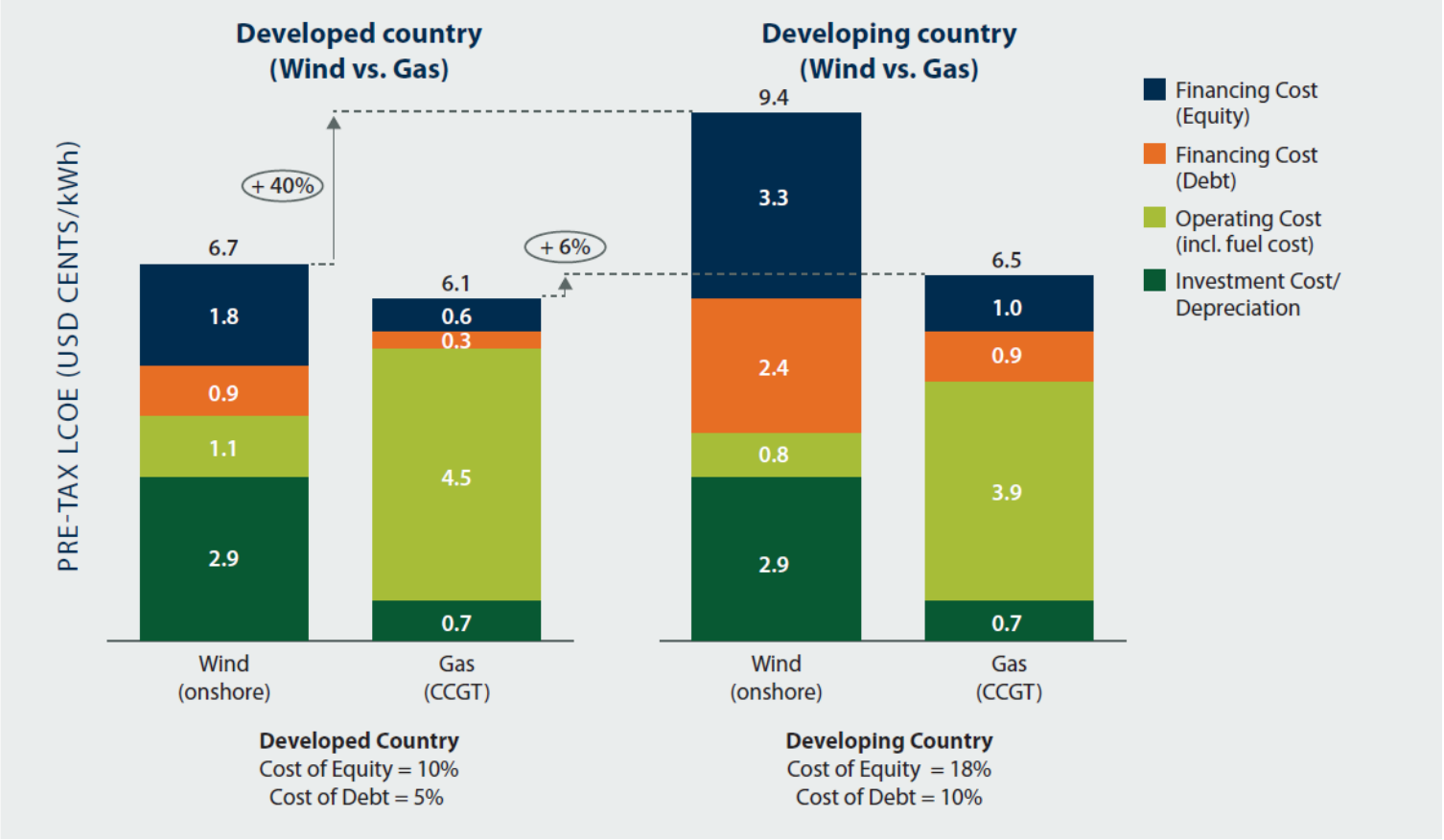
As investment risks in developing counties are typically higher financing costs are increased

- More barriers increase the risks perceived by investors
- The financing costs increase with perceived risks
- A project feasible in one country might be infeasible in another due to higher perceived risks



Source: UNDP

Financing costs heavily affect the competitiveness of renewables (more than of fossil fuel-based technologies)



Source: UNDP

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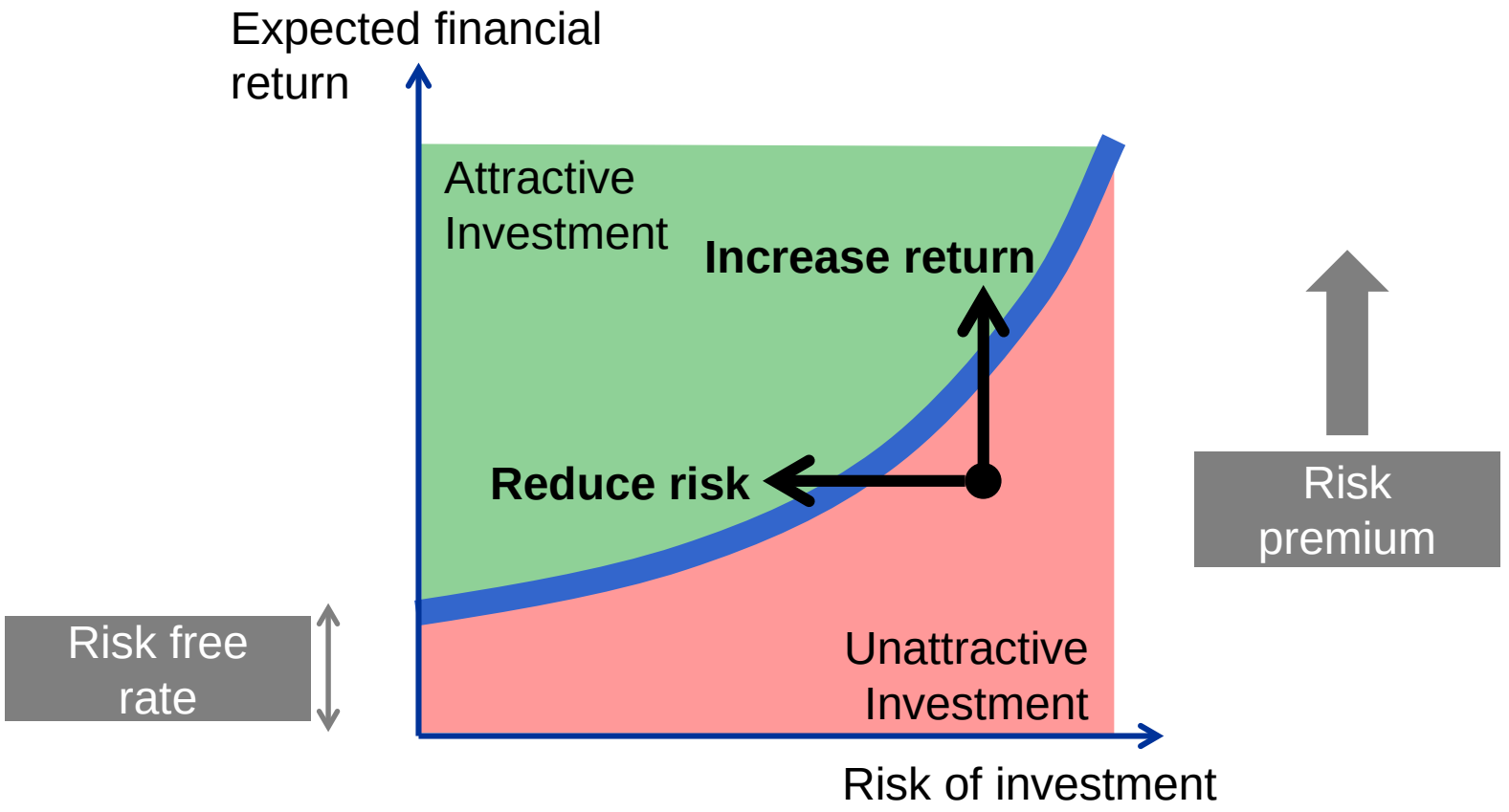
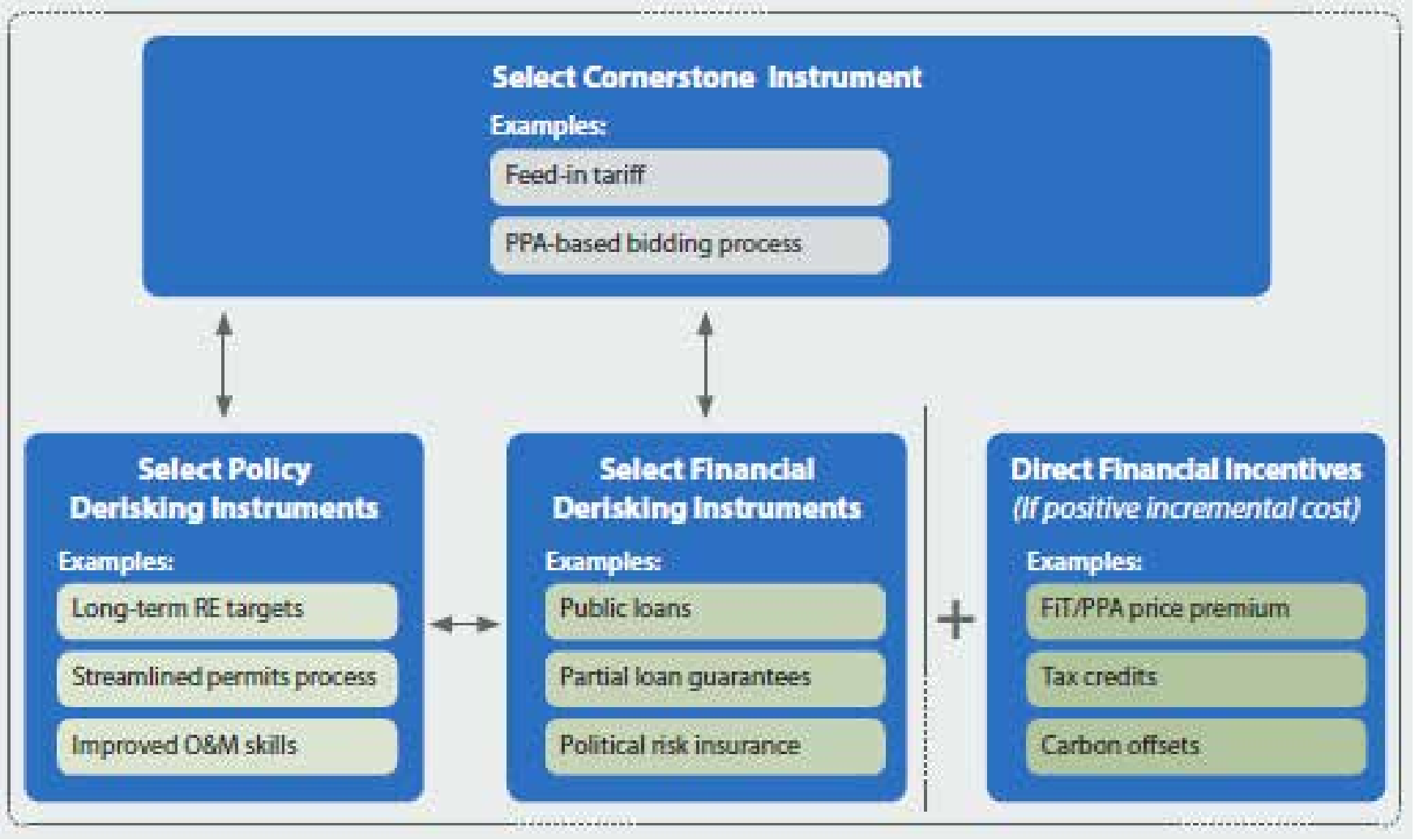
Policy makers need to create a favorable investment environment to attract low-carbon investors



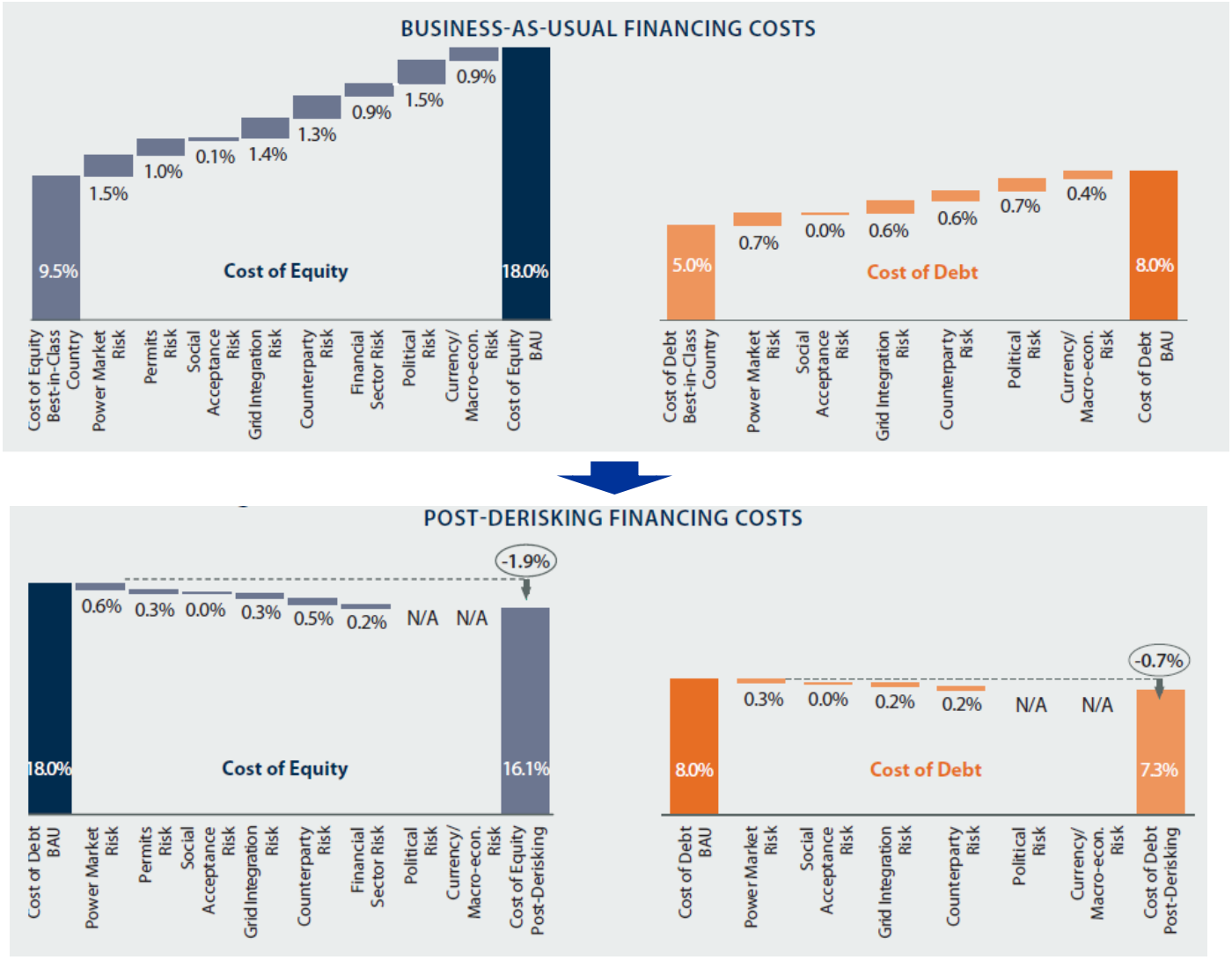
Source: EPG/ETH Zurich, UNDP

The policy mix should address both the risk and the return aspect



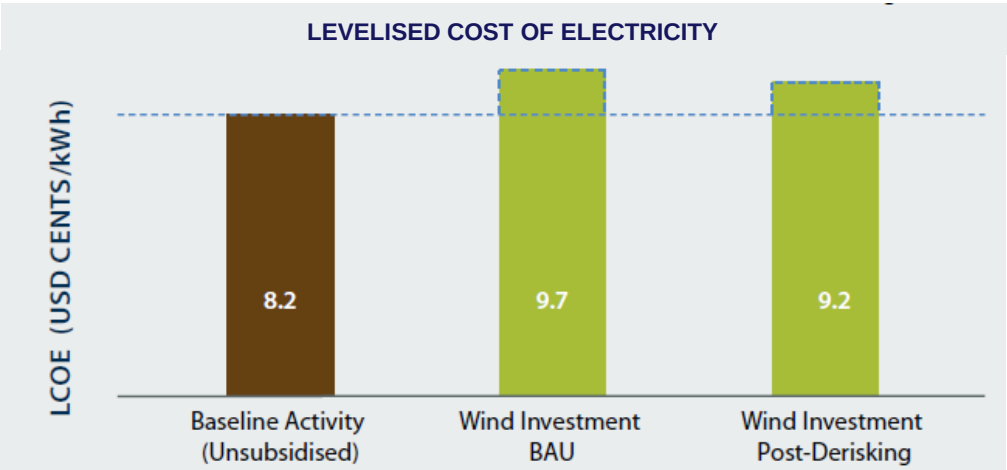
Source: UNDP

Addressing risks can therefore strongly reduce financing costs

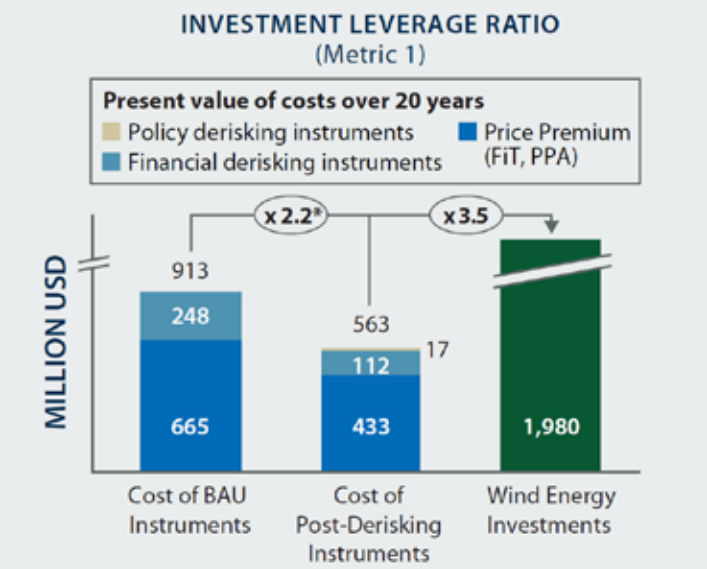


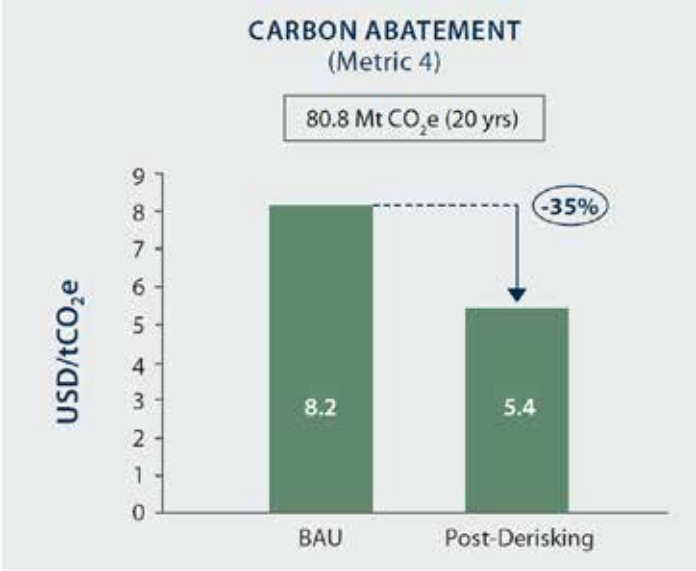
Source: UNDP, *Derisking Renewable Energy Investment (2013).* Data obtained from interviews with wind investors and developers. See Annex A of the report for full assumptions. The post-derisking cost of debt and equity show the average impacts over a 20 year modelling period, assuming linear timing effects.

Reduced capital costs can strongly decrease the costs of electricity generation and thereby the NAMA costs



Compare the NAMA exercise





Source: UNDP, *Derisking Renewable Energy Investment (2013).* See Chapter 3 and Annex A of the report for full assumptions.

Current practical applications (full DREI)
Utility-scale renewable energy

	Tunisia	Nigeria
		
TARGET SECTOR	Utility-scale solar PV & wind	Utility-scale solar PV and wind
TIMELINE	2015-2019	2015-2019
BUDGET	GEF: $3.5 m Co-financing: $63.8m	GEF: $4.4m Co-financing: $167m
CORNERSTONE INSTRUMENT	FIT/PPA bidding process	FIT/PPA bidding process
DERISKING AREAS	• Power market risk • Permits risk • Resource/technology risk • Grid/transmission risk • Financial sector risk	• Power market risk • Permits risk • Resource/technology risk • Grid/transmission risk • Financial sector risk
FINANICIAL INCENTIVE	Yes	Yes

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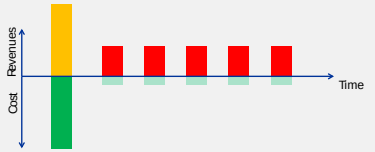
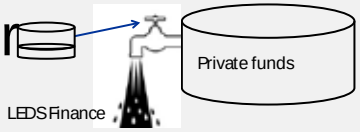
Summarizing the 4 key messages

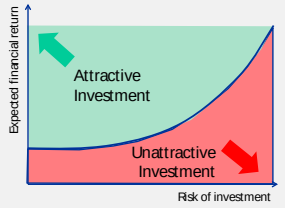
I Upfront finance is essential to enable low-emission development



II Important to use scarcer public funds in order to leverage private funds



III For private investors, the risk-return profile of an investment opportunity needs to be attractive



IV NAMAs & LEDS should provide a policy mix that provides **attractive returns** and **reduces risks**

Source: EPG/ETH Zurich, UNDP