Finance Mechanisms for Lowering the Cost of Renewable Energy in Rapidly Developing Countries

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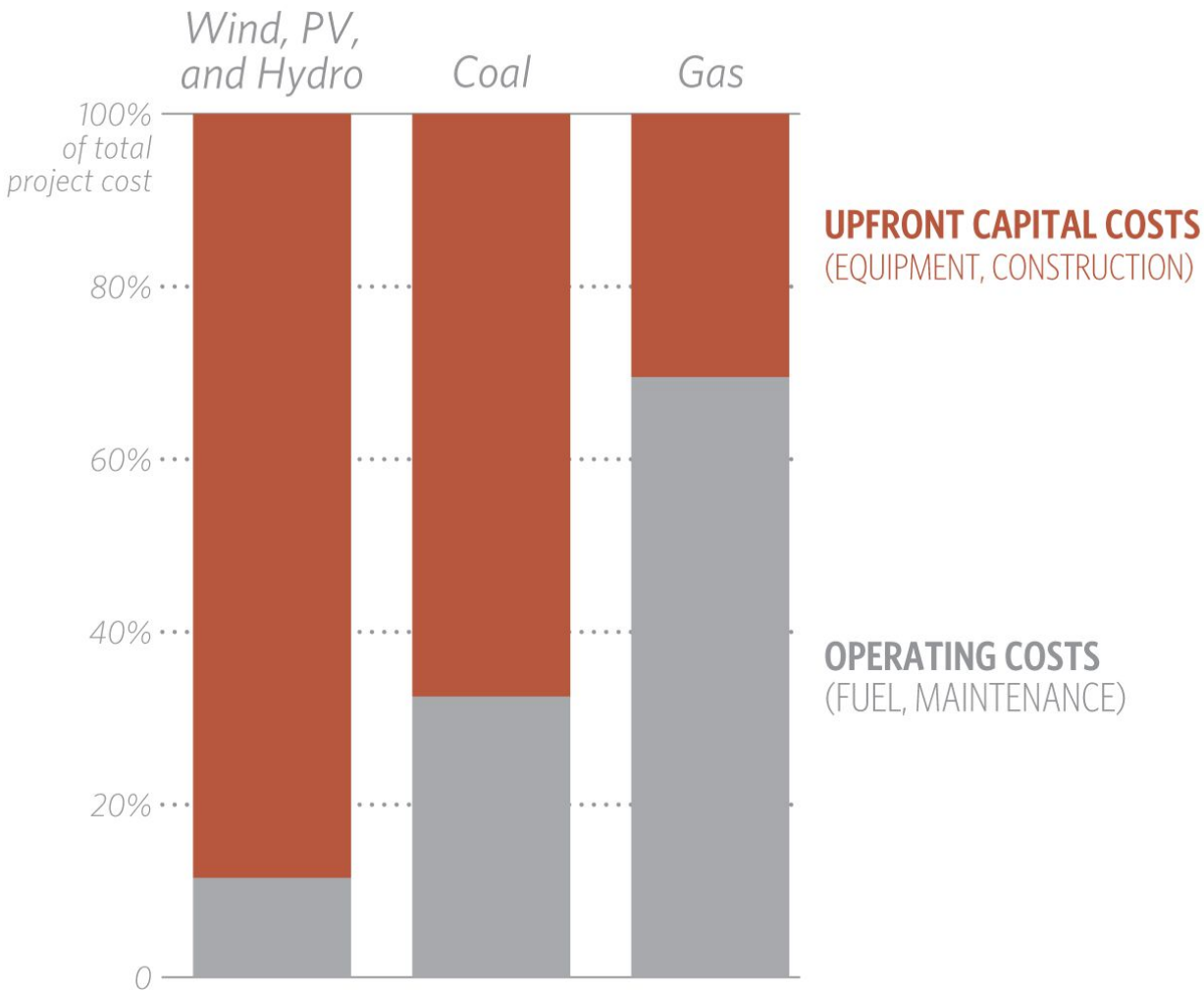
Agenda

Why are financing costs and debt so significant to the cost of renewable energy in rapidly developing countries?

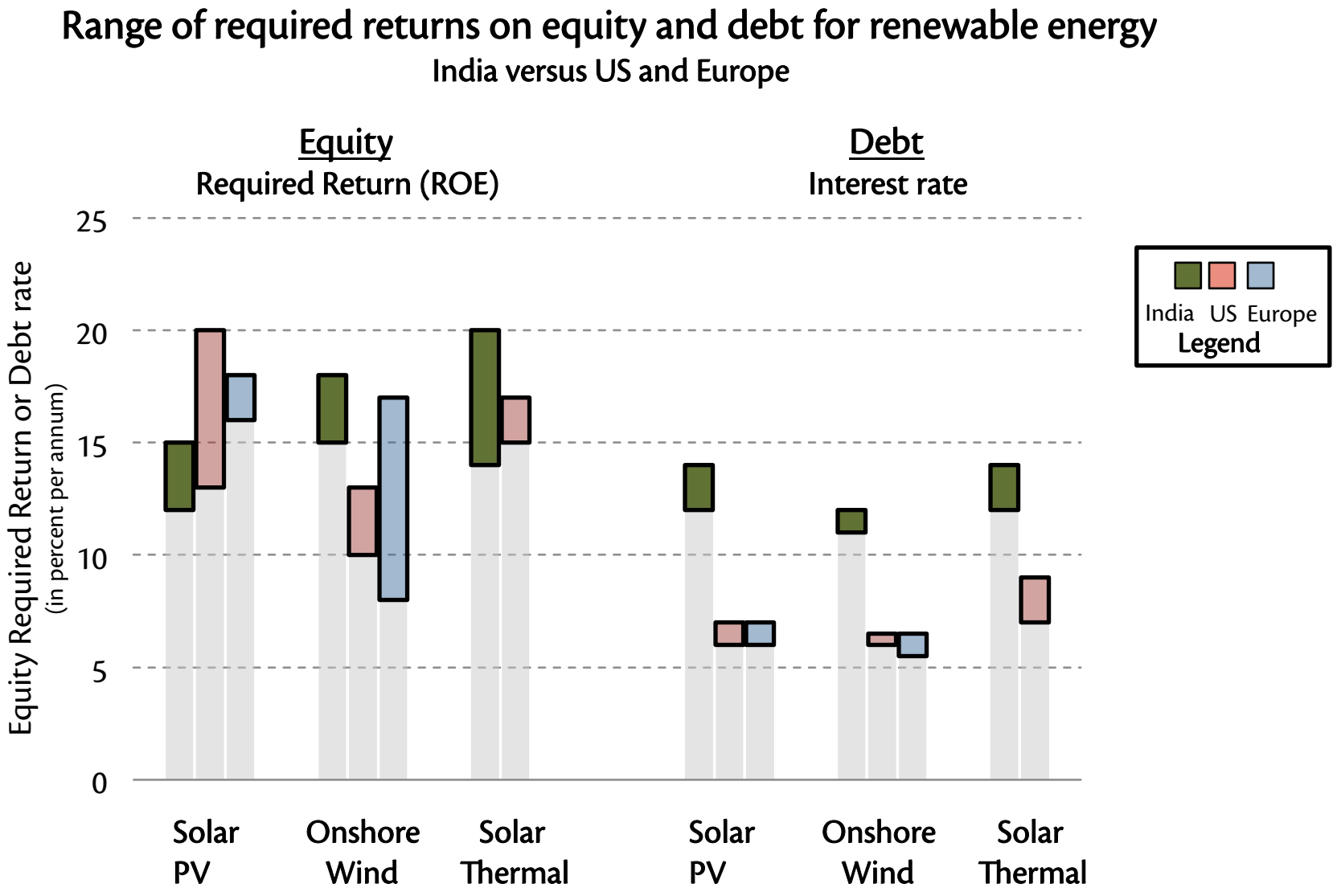
What financing mechanisms can be used to reduce the cost of renewable energy in those countries?

- Using debt sourced from the developed world
- Using domestic debt to support renewable energy programs and policy

Initial investment costs are more significant for renewable energy than conventional alternative



Which makes the higher cost of finance in developing countries particularly important for renewable energy

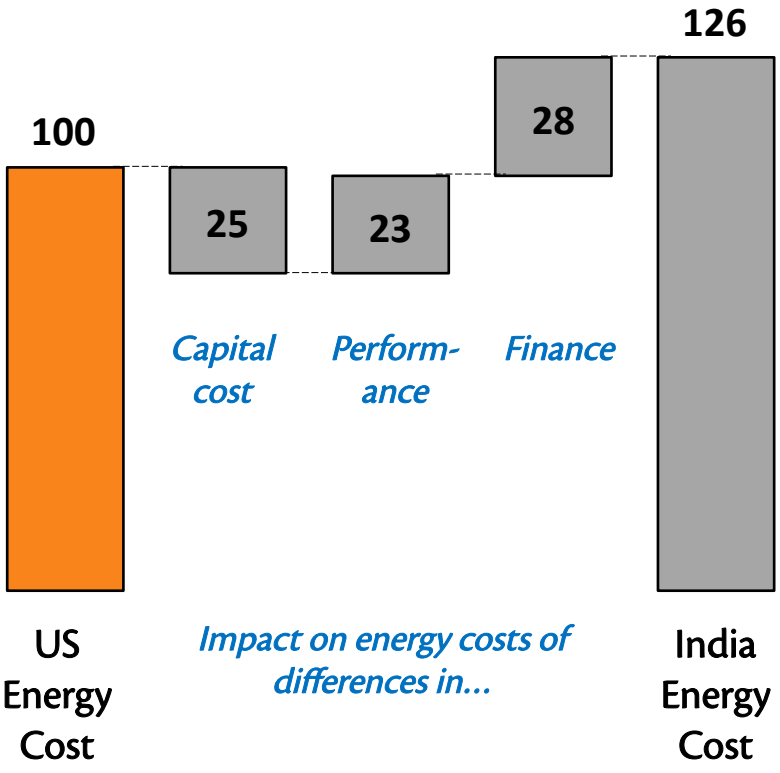


Higher financing costs can offset other natural advantages that developing world countries may have

A comparison of sample US and India Renewable Energy Costs

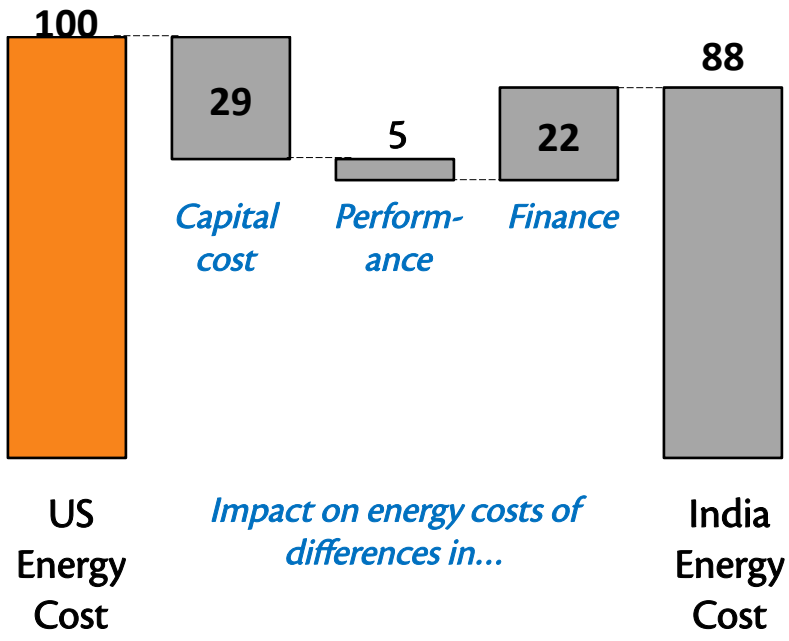
Solar PV

US LCOE* – 0.19 USD/kWh



Onshore Wind

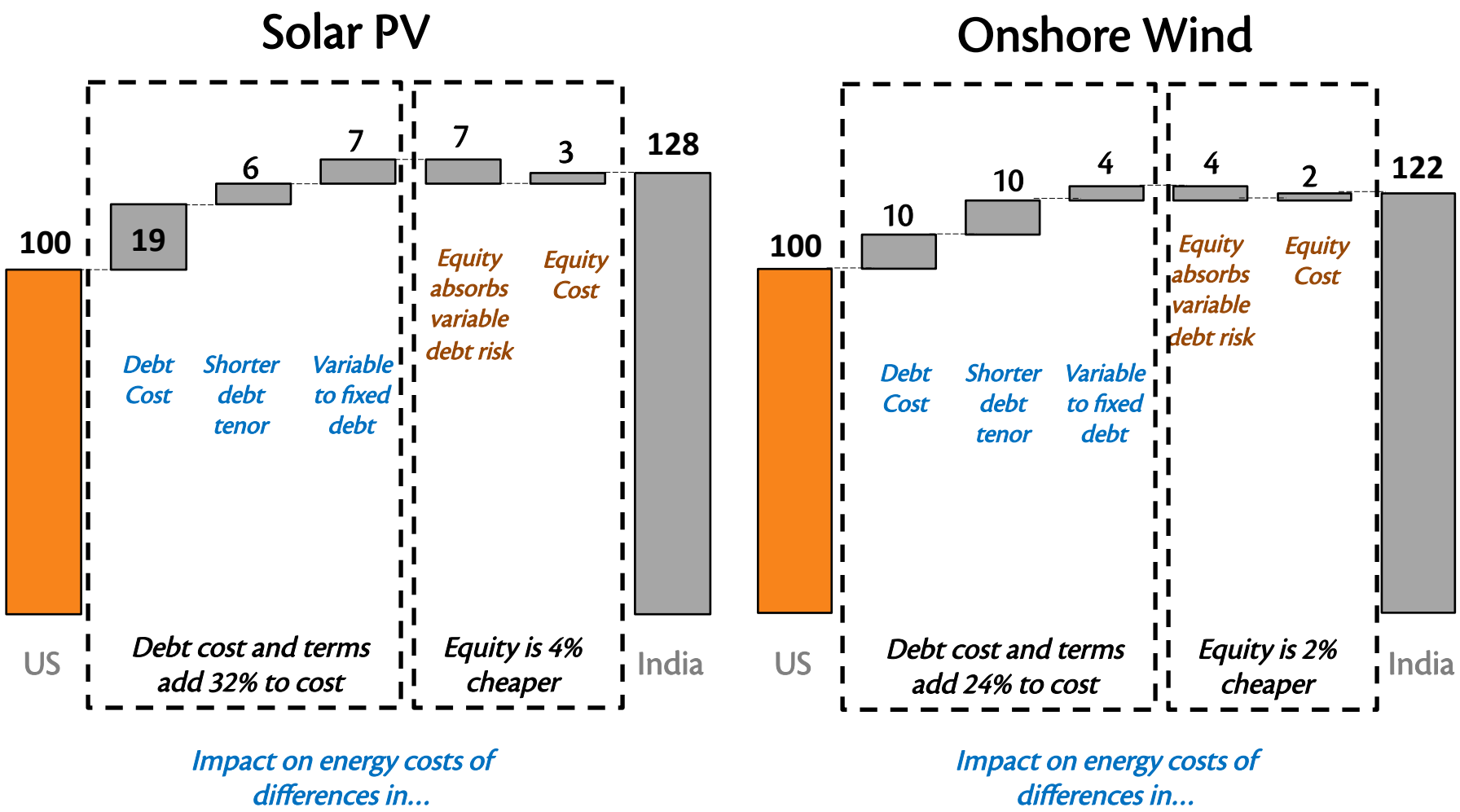
US LCOE* – 0.9 USD/kWh



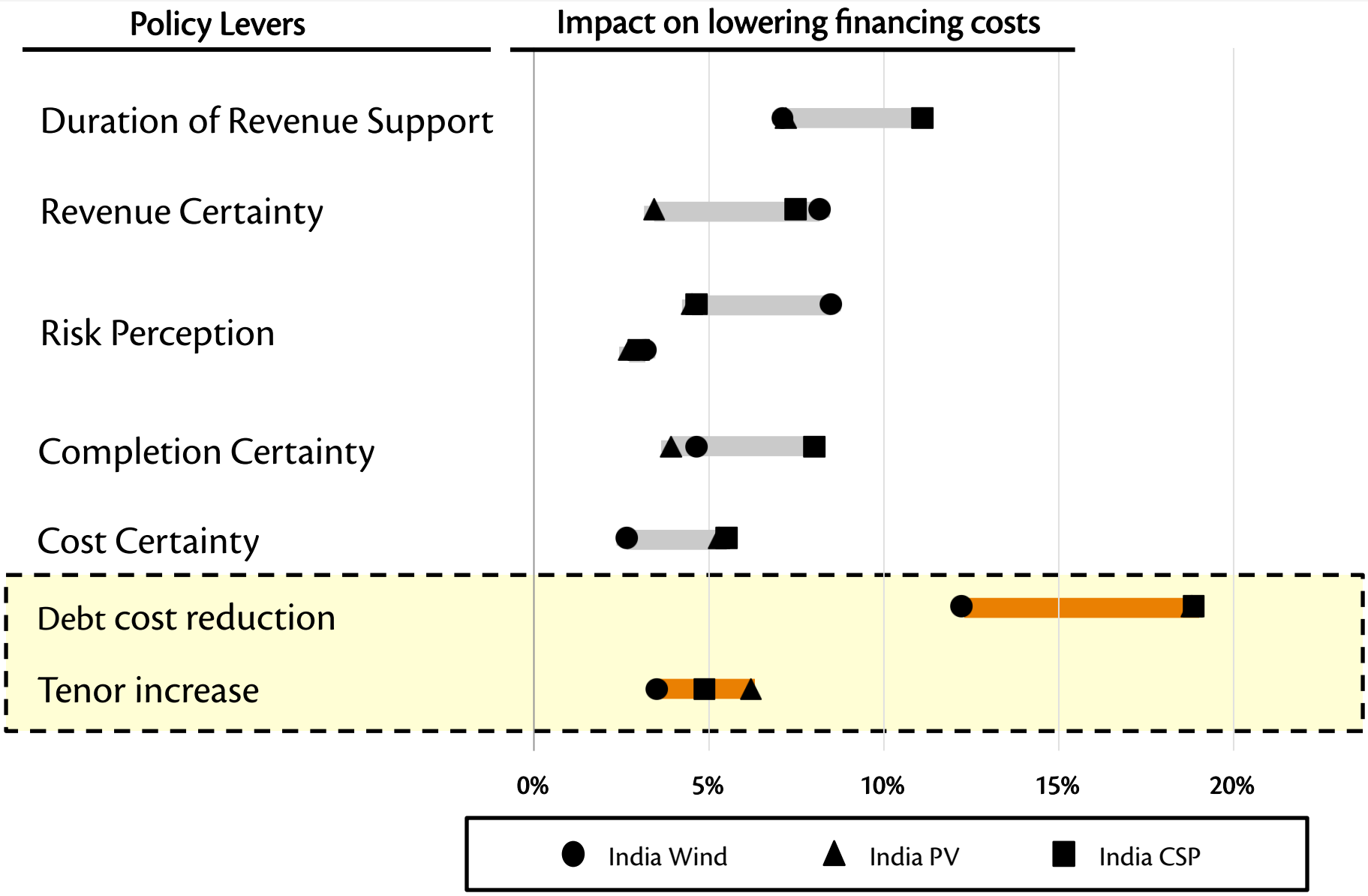
* LCOE – Levelized Cost of Electricity

Debt cost and terms are the main driver of higher finance costs

Comparison of US and Indian Financing costs for renewables



And the high cost of debt overwhelms other policy mechanisms



Two financing mechanisms could provide solutions that lower the cost of renewable energy

Using debt sourced from the developed world

Index renewable energy tariffs to foreign currency, in so doing eliminate currency hedging costs that are responsible for most of the difference between developed world and developing world debt costs

Using domestic debt to support renewable energy programs and policy

Deliver subsidies through concessional debt, which our research shows could provide attractive equity returns to renewable energy developers at a lower cost to government and consumers

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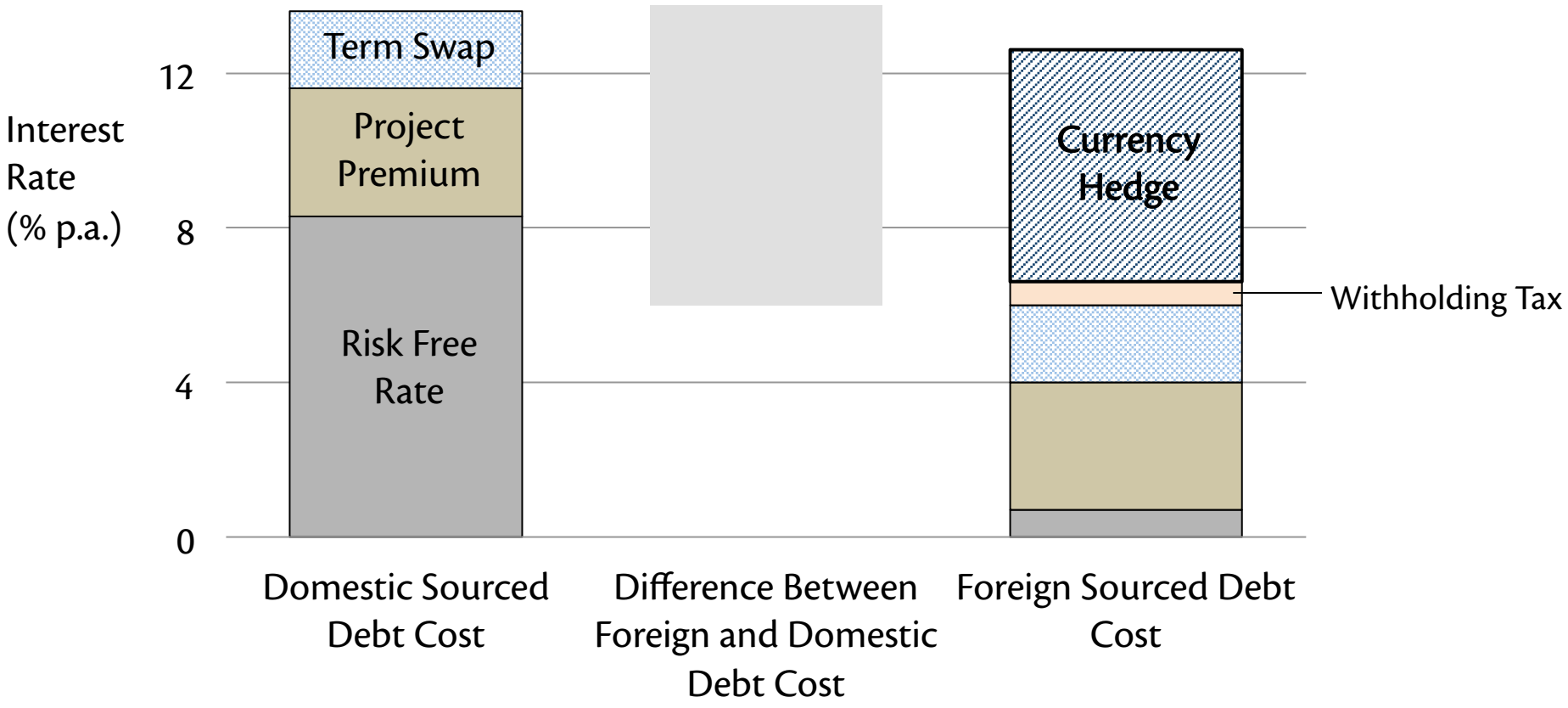
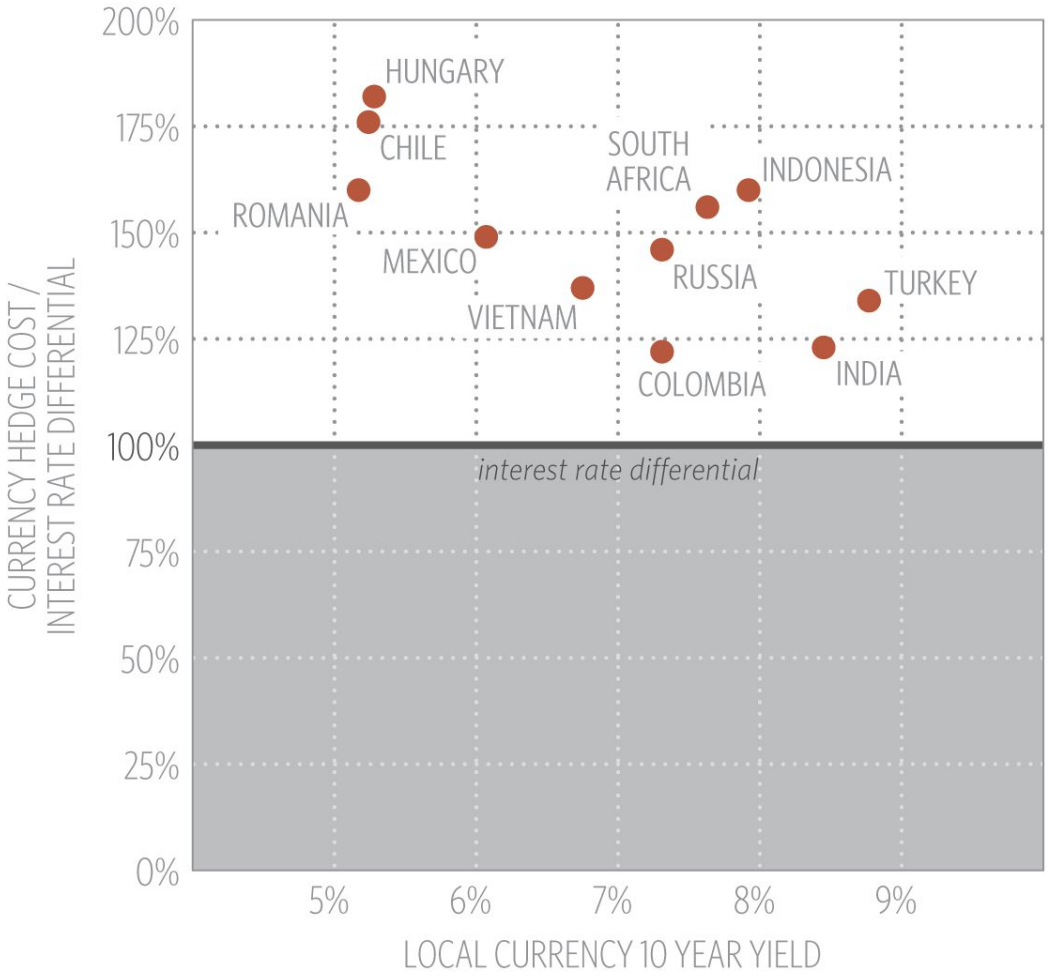
Currency hedging costs can eliminate all of the advantage of using foreign sourced debt

Relative cost of using Rupee versus Dollar denominated loans for Indian Renewables (2012)

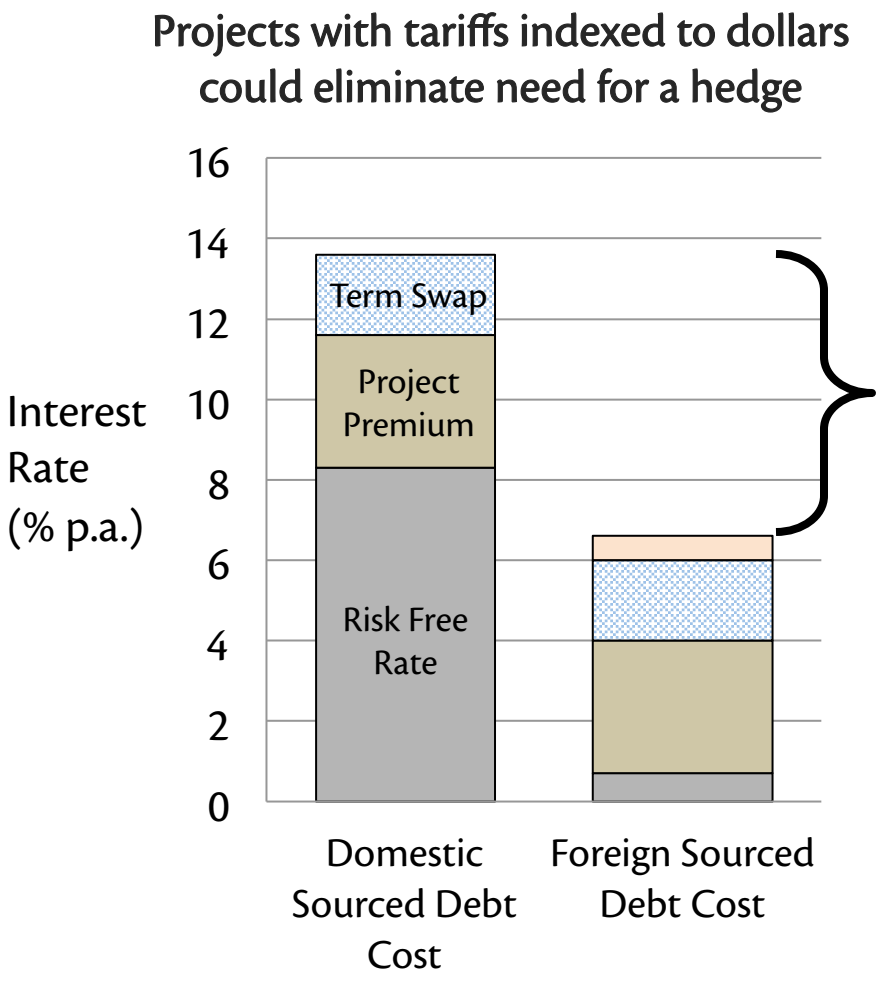


Many countries are in a similar situation

Currency Hedge Cost versus yield differential between local currency and dollar debt and for 10 year debt (Dec 2013)



Indexing tariffs to a foreign currency could eliminate the currency hedging cost and reduce energy cost by 30%



For a foreign investment:
If project cash flows are in dollars or euros, currency risk would be reduced, the need for a hedge eliminated and debt costs to developers would fall

For developers and policy makers:
Lower debt cost could reduce average lifetime energy cost by up to 30%

Developing countries need only index that portion of the tariff related to the foreign sourced debt

Fossil fuels are typically traded on world markets and priced in dollars and thus already benefit from access to lower cost foreign capital

But a country that indexes tariffs to the dollar or Euro takes on a set of currency related risks

Risks associated with indexing tariffs to foreign currency

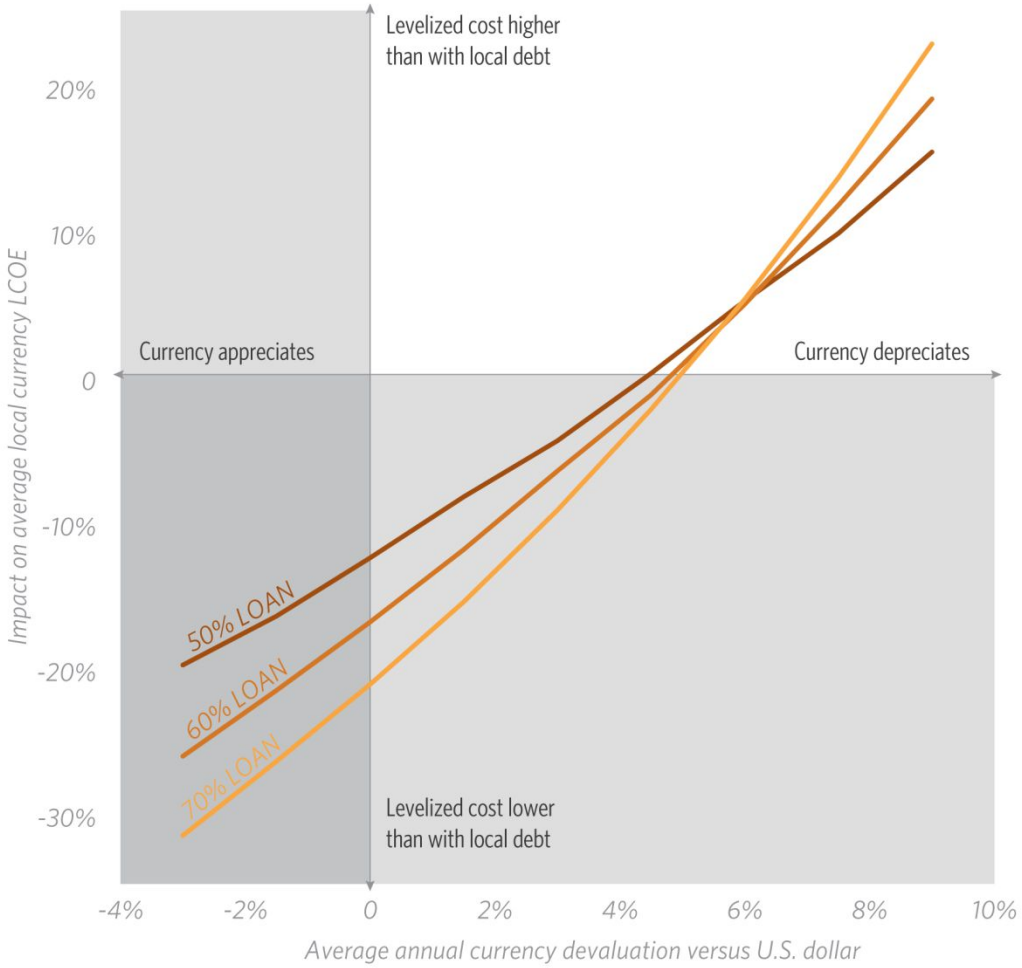
Inflation differential

Relative currency valuation

Macroeconomic Policy

Risk of currency fluctuation

Tradeoff between lower debt costs and the cost of currency devaluation



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For high debt cost countries, concessional debt may be a more cost effective way to make renewable energy projects attractive to developers

Two reasons why concessional debt is more cost effective than direct subsidies:

1. **Low cost debt may reduce the total project support required to make a project viable**

2. **Governments have advantages that may enable them to provide dollar-equivalent debt subsidies more cheaply than price supports**

Low cost debt may reduce the total project support required to make a project viable

Factors reducing subsidy required when using debt

1. Lower cost, long term debt allows greater financial engineering that will reduce costs

2. If the low-cost loan support mechanism offers project validation or risk guarantee, projects may secure additional low cost debt from commercial lenders

3. Low cost debt will improve the effectiveness of existing renewable energy policies

INTEREST RATE CONCESSION	REDUCTION IN TOTAL SUPPORT	
	WIND	SOLAR
3%	-16%	-10%
5%	-27%	-18%
7%	-39%	-26%

Governments have advantages that may enable them to provide dollar-equivalent debt subsidies more cheaply than price supports

Factors reducing the cost of providing debt subsidies

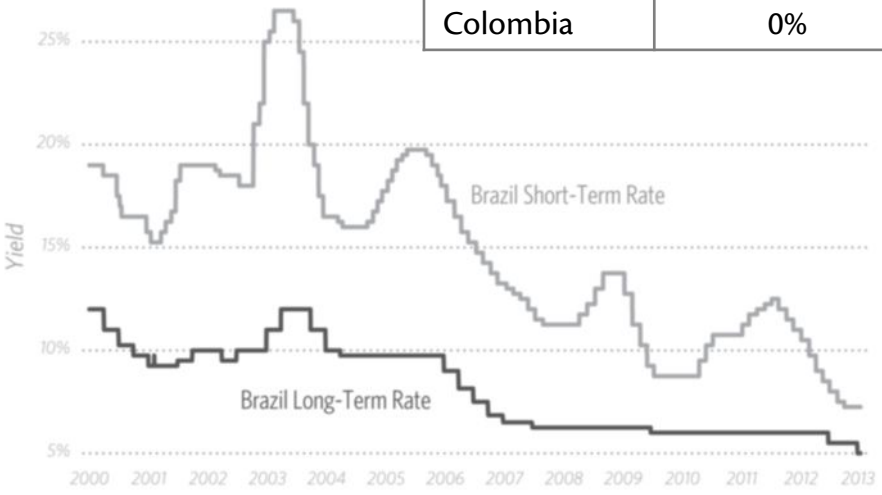
1. A national government can usually raise money at a lower cost than developers

2. A national government can provide a currency swap at a lower cost than developers

3. A country may not need (or want) to hedge all of its foreign currency borrowings

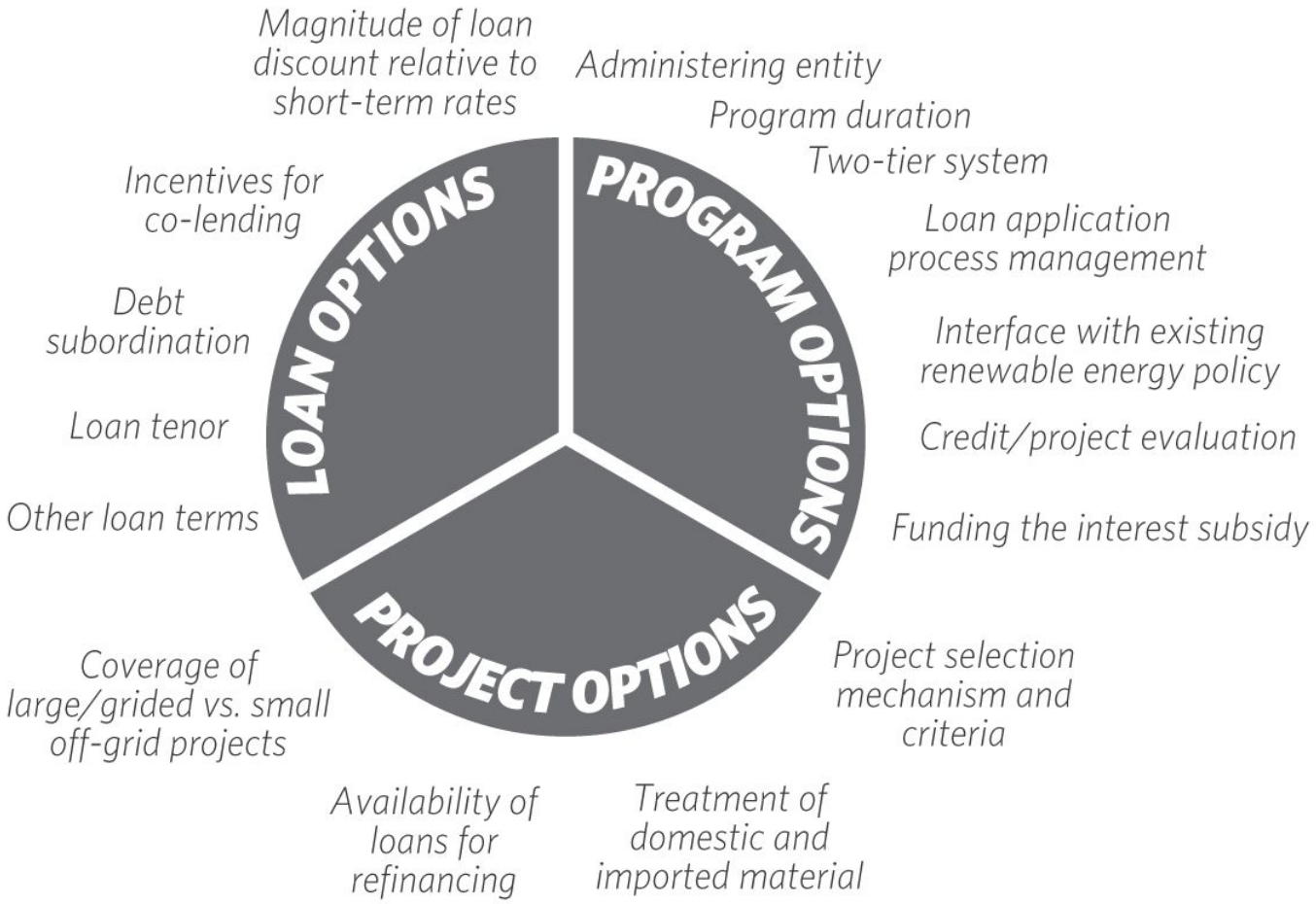
4. Lower long term interest rates better reflect the value of infrastructure investments

COUNTRY	PERCENT OF ELECTRICITY GENERATED FROM AN IMPORTED FUEL SOURCE (2010)
Turkey	58%
Chile	40%
Hungary	32%
Mexico	18%
India	11%
Romania	9%
Vietnam	2%
South Africa	1%
Indonesia	1%
Colombia	0%



There is no universally right way to design a concessional debt program

Considerations for designing a concessional debt program



Summary

The high cost of debt can significantly increase the cost of renewable energy in rapidly developing countries

Two solutions can reduce these costs:

- Improve access to foreign debt at lower cost by indexing renewable energy tariffs to foreign currency
- Deliver support through subsidized debt rather than through direct subsidies or higher tariffs

Appropriate program design should allocate risks and costs to the stakeholders most suited to manage them

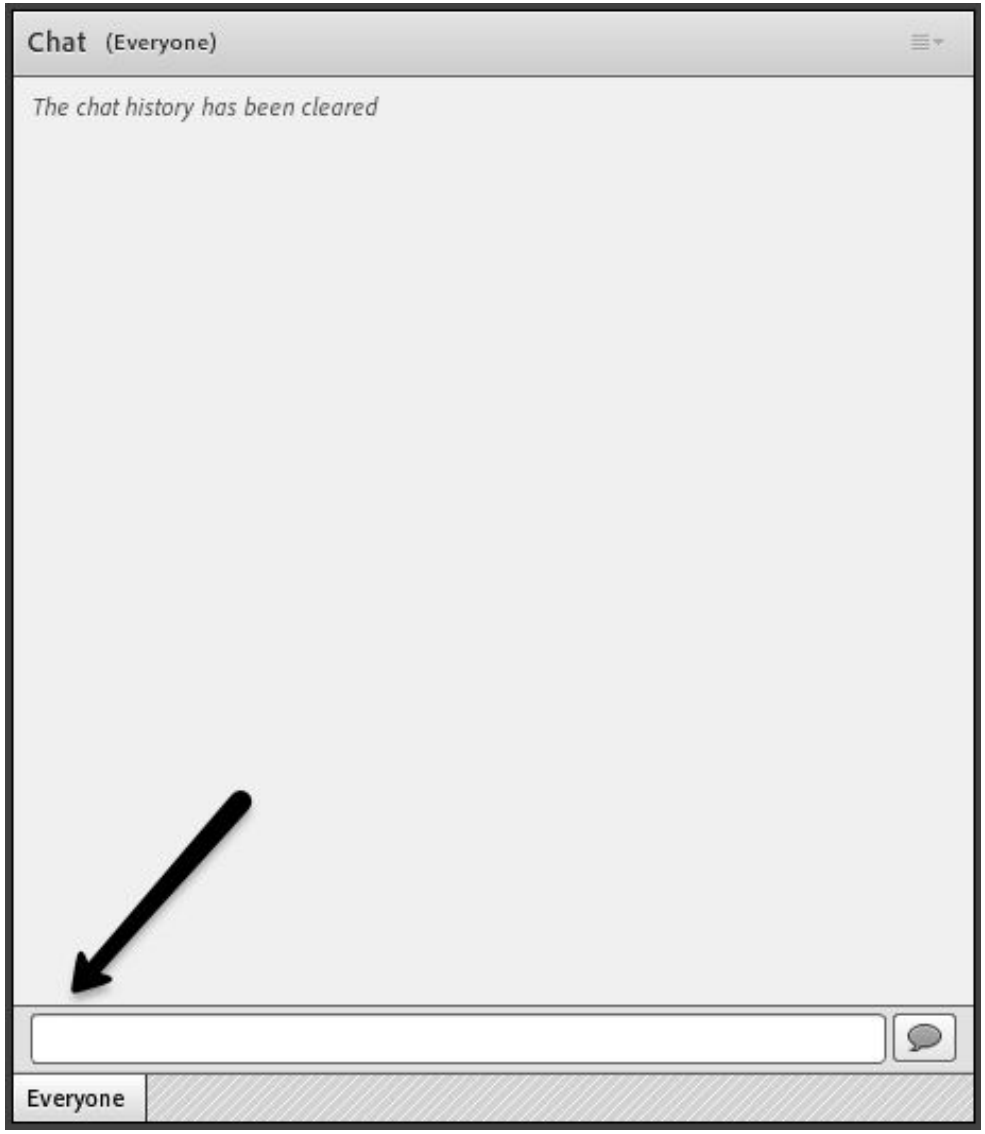
Next Steps

Work with governments and/or multilateral organizations in implementing these solutions

Estimate budgetary requirements for providing subsidized debt

Further research on the design of subsidized debt instruments

Questions?



Thank you

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