Investing in Climate Resilience in Emerging Economies

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European Bank
for Reconstruction and Development

Why do emerging economies matter?

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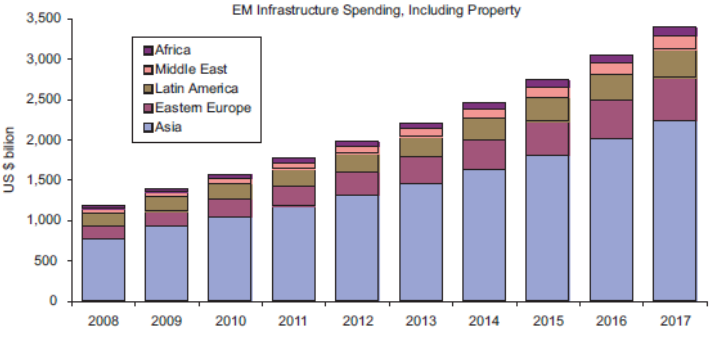
EM INFRASTRUCTURE SPENDING: 2008-17E



Source: Morgan Stanley Research, World Bank, Global Insight E = Morgan Stanley Research estimates

Case study: hydropower in Tajikistan

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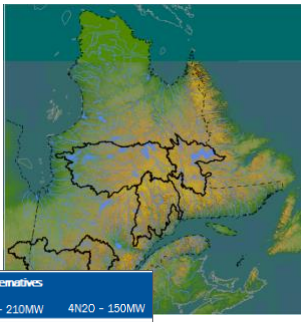

HydroScenario		Alternatives		
		6N – 170MW	7N – 210MW	4N2O – 150MW
Regression Model REG	central	177	143	177
	hot-dry	171	137	171
	warm-wet	171	137	171
Snow melt Runoff Model SRM	central	170	136	169
	hot-dry	163	129	165
	warm-wet	168	134	168
Watershed Bal. Model WBM	central	157	122	161
	hot-dry	83	48	93
	warm-wet	212	183	199

Net Present Value calculated under range of climate change scenarios

Twinning with Hydro Quebec on climate risk management techniques

Case study: ports in Morocco

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	Low-end CC scenario		High-end CC scenario	
Years	Berth Down Time	Damage	Berth Down Time	Damage
1-5	€281,250	€225,000	€422,000	€340,000
6-10	€565,000	€450,000	€845,000	€675,000
11-15	€985,000	€590,000	€1,475,000	€885,000
16-20	€1,450,000	€845,000	€2,320,000	€1,270,000
21-52	€2,000,000	€1,265,000	€3,000,000	€1,900,000

Adaptation Measure	Cost
Increase in height of quay edge	€2.0 million
Relocation of mooring infrastructure	€1.7 million
Relocation of fenders	€1.4 million
Berth down time during construction	€1.0 million
Total capital cost	**€6.1 million**

Scenario	Internal Rate of Return
Low end climate change prediction	2.14%
High end climate change prediction	5.07%

PIANC
The World Association
for Waterborne Transport Infrastructure

PIANC Working Group 178 on Climate Change Adaptation for Ports and Navigation Infrastructure

Moroccan port authorities will be supported to benefit from emerging PIANC guidance

Case study: industrial water use in Turkey

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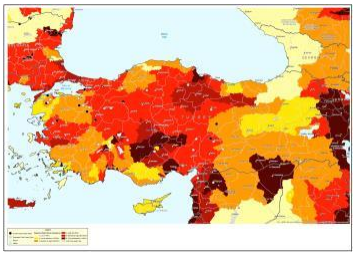

New Water Law in Turkey (2016) will introduce **cost reflective** water tariffs

EBRD **shadow water price methodology** helps understand full costs associated with water use

In this example, applying the shadow price would increase annual water use costs by **EUR 1.5 million**

Significant implications for capital investment appraisal of **water reuse & recycling technologies**

Location	Turkey, Marmara
Type	Industrial
Project	Water & energy efficiency investments for a tissue paper mill
Main source	Energy and Water Efficiency Audit
Tariff (2013) EUR/m^3	0.69 (not including wastewater; no charge for 20% of water pumped from wells)
Shadow price EUR/m^3	**2.60**