



Long Term Finance – Needs and Perspectives

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*First Workshop on Long-Term finance
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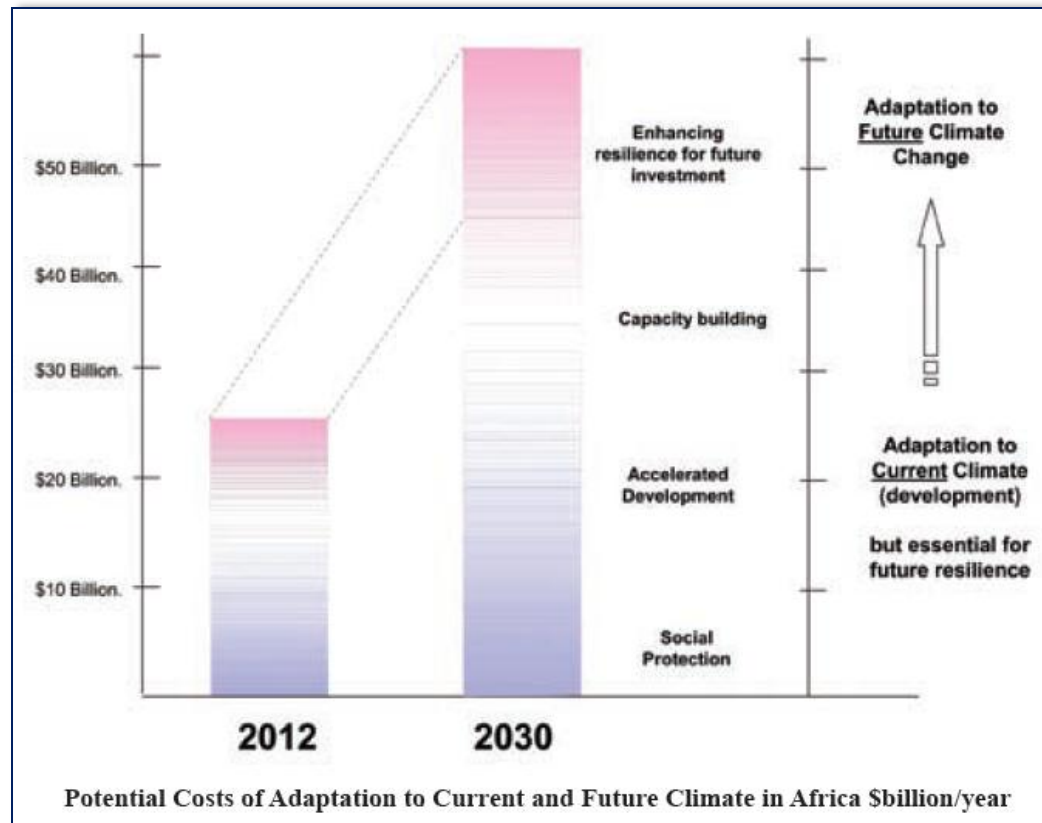
The Costs of Adaptation

| ADAPTATION | ANNUAL COST Geography Timeframe | Methodology |
|---|--|---|
| Stern Review (2006) | \$1.5 trillion globally | Integrated Assessment Model (IAM) |
| Parry, et al (2009) <i>Assessing the Costs of Adaptation to CC</i> | \$1.9 trillion globally 2030 | Used Stern's IAM, adjusting discount rate and meas. of vulnerability, plus added in costs of adaptive capacity. |
| World Bank (2010) | \$70-\$100 billion developing countries 2050 | Estimated the cost of climate proofing "climate-sensitive" investment flows. |
| UNFCCC (2007) <i>Investment flows report</i> | \$27-66 billion developing countries 2030 | |
| UNEP (2010) <i>ADAPTCost Report</i> | \$20-60 billion Africa 2030 | Applied two different IAMs to Africa. |



The Costs of Adaptation - Africa

While there is high uncertainty, the integrated assessment models indicate that the central economic costs of climate change for Africa could be equivalent to 1.5-3% of GDP each year by 2030.



The assessment of the costs of adaptation is still emerging and there are no agreed approaches. There are strong benefits in considering multiple lines of evidence: each of these brings insight into a complex area, where we presently have relatively little information.

Estimating the costs of adaptation involves a large number of methodological challenges, but perhaps the most important is the need to recognise uncertainty. There is a need to plan robust strategies to prepare for an uncertain future and not to use uncertainty as a reason for inaction.

ADAPTCost Project:
Analysis of the Economic
Costs of Climate Change
Adaptation in Africa



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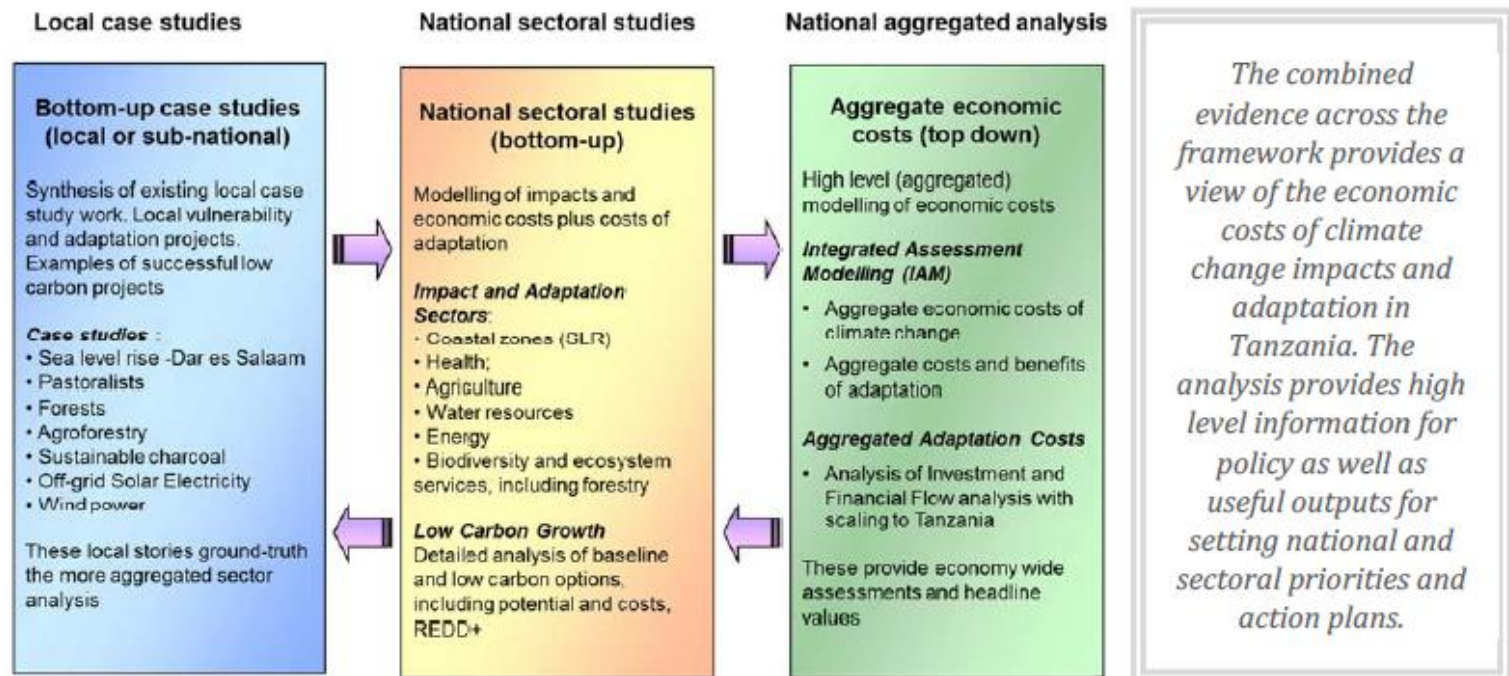
Methodological Issues with Adaptation Costing

- Adaptation costing still new, few agreed approaches.
- Evidence base founded on aggregated studies with high uncertainty and omitting certain costs.
- Aggregation doesn't give insight into vulnerability.
- Some argue that social cost-benefit analysis is an inappropriate tool for climate change policy.
- But most just believe in the need to shift towards national costing approaches.

Costing at the National Level

Some Examples:

- South Africa – water sector study by ERC/Univ. of Cape Town
 - estimating damages of CC vs quantifying the benefits of adaptation
- Tanzania – study by Global Climate Action Partnership





Additional Costs of Mitigation

IEA 450 Scenario (WEO2011)

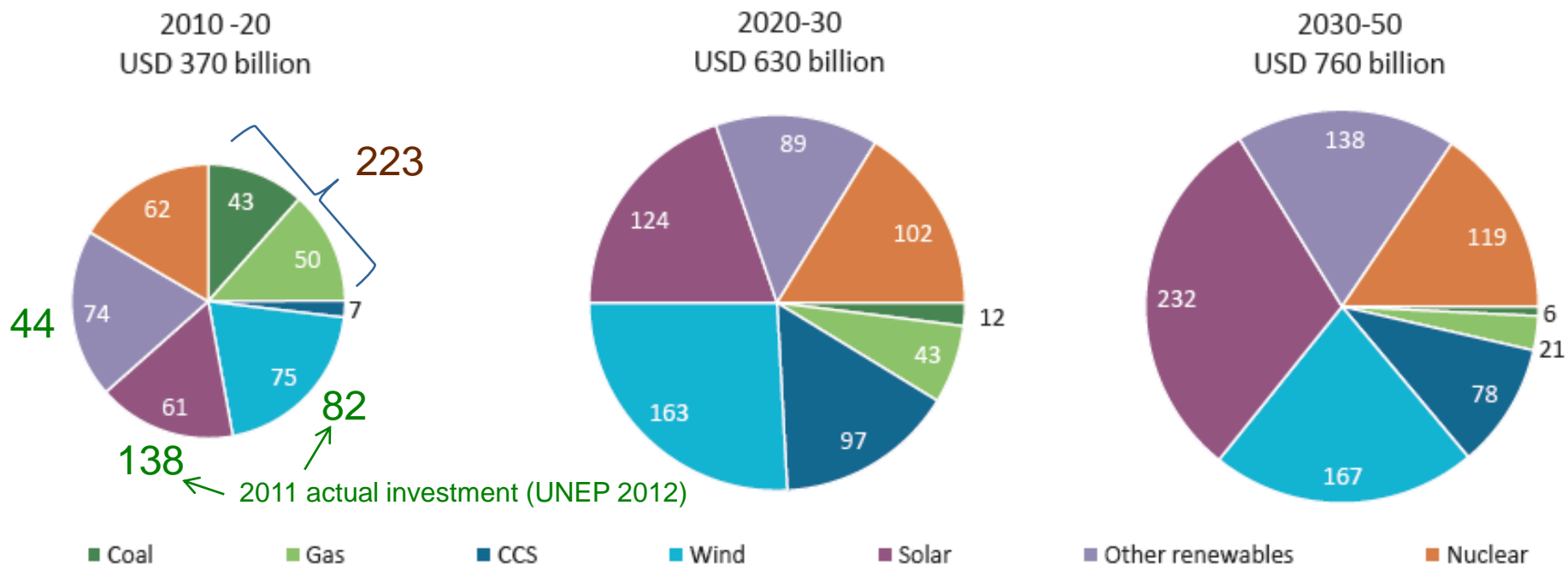
\$15.2 trillion of additional cost over New Policies Scenario, growing from \$160bn today to \$1.1tn in 2035

- 40% of additional costs in transport;
- 27% in buildings;
- 20% in power generation.

Other spending in 450 Scenario:

- Fuel costs
 - Global fuel cost decreases \$690 billion
 - Middle East sees \$2.5 trillion increase
 - China/India see \$1.4 trillion decrease
- Subsidies
 - Fossil fuel subsidies down \$4.1 trillion to \$6.3 trillion
 - Renewable energy subsidies up \$550 billion

Power generation: annual investments 2 Degree Scenario



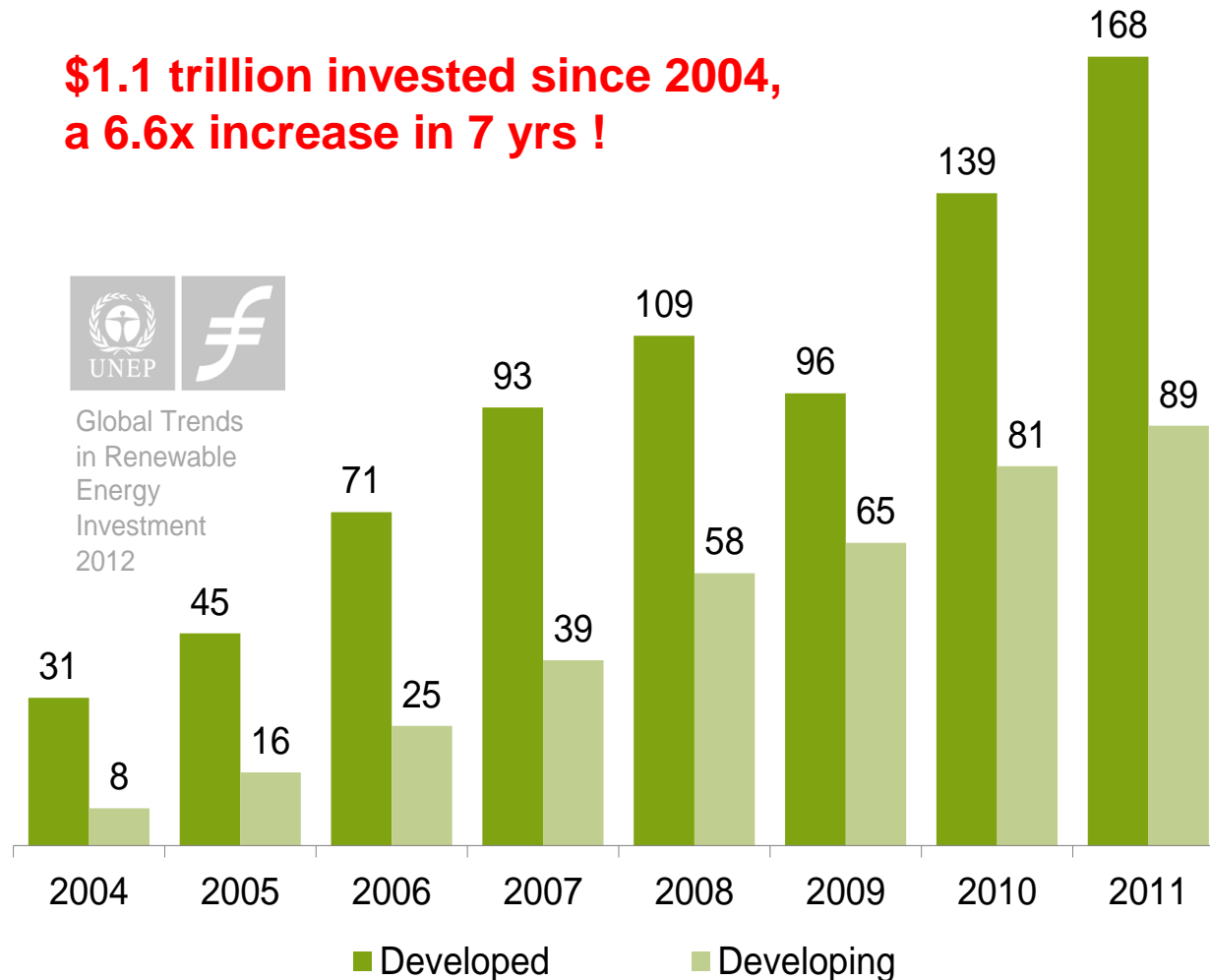
Renewables investment today is outpacing its expected role in climate mitigation scenarios

GLOBAL NEW INVESTMENT IN RENEWABLE ENERGY: DEVELOPED VS. DEVELOPING, 2004 – 11(\$BN)



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**\$1.1 trillion invested since 2004,
a 6.6x increase in 7 yrs !**



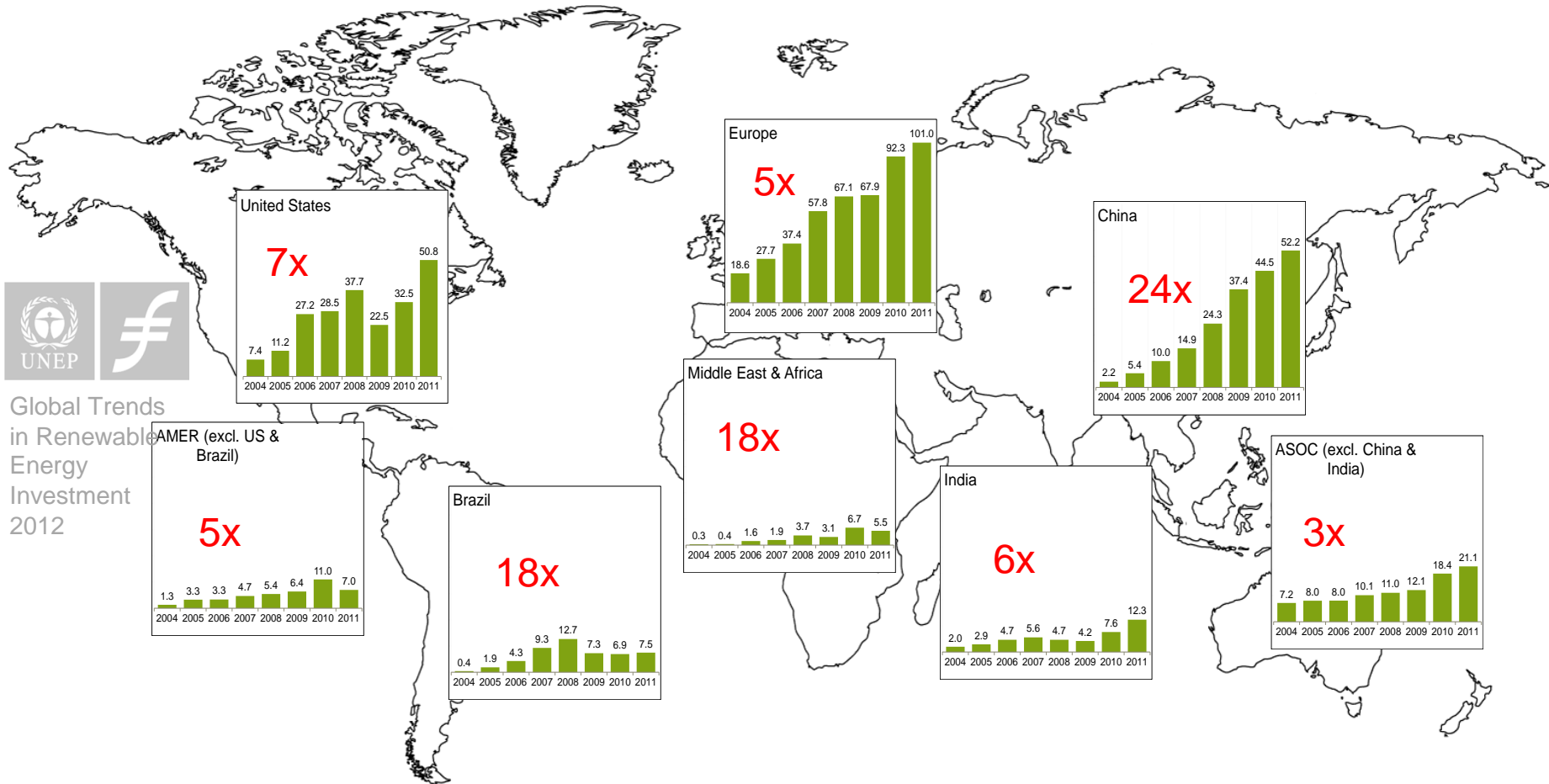
Note: New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals. Developed volumes are based on OECD countries excluding Mexico, Chile, and Turkey.

Source: Bloomberg New Energy Finance; UNEP

GLOBAL NEW INVESTMENT IN RENEWABLE ENERGY BY REGION, 2004 - 2011 (\$BN)



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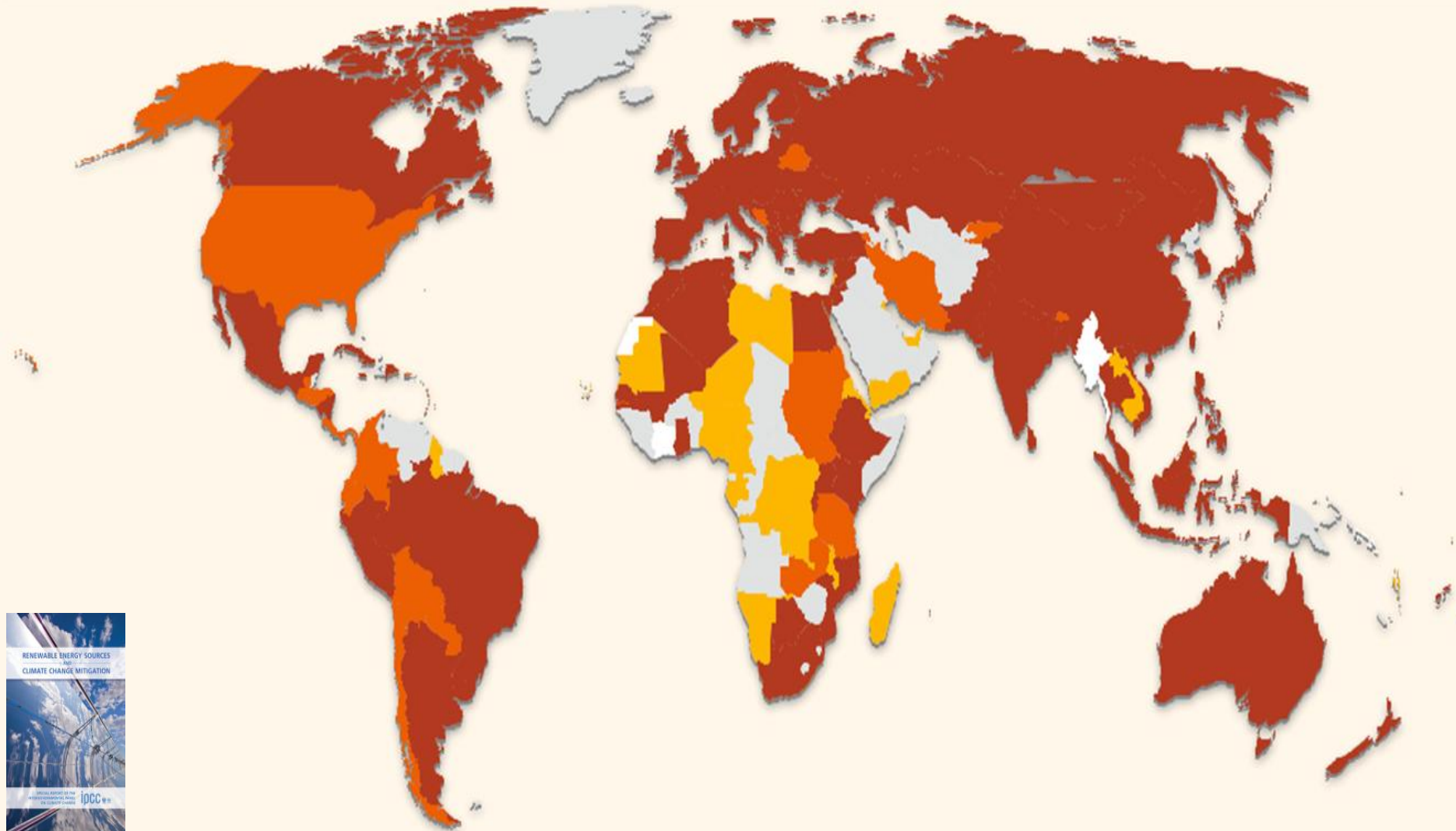
Global Trends
in Renewable
Energy
Investment
2012




Note: New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals.

Source: Bloomberg New Energy
Finance; UNEP



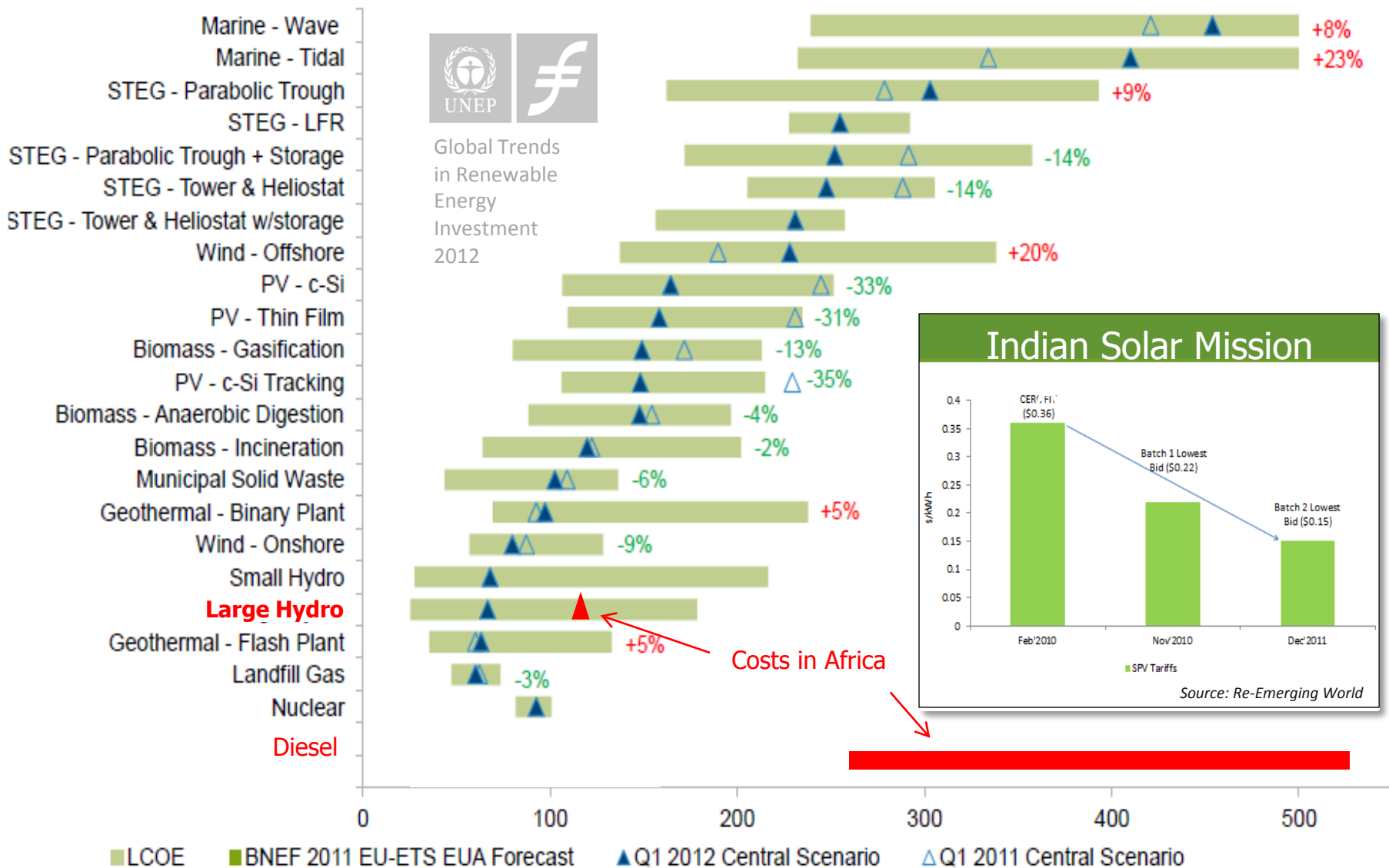
IPCC Special Report on Renewable Energy Sources



-  Countries with AT LEAST ONE National RE Policy and ONE RE Target
-  Countries with AT LEAST ONE National RE Policy
-  Countries with AT LEAST ONE National RE Target

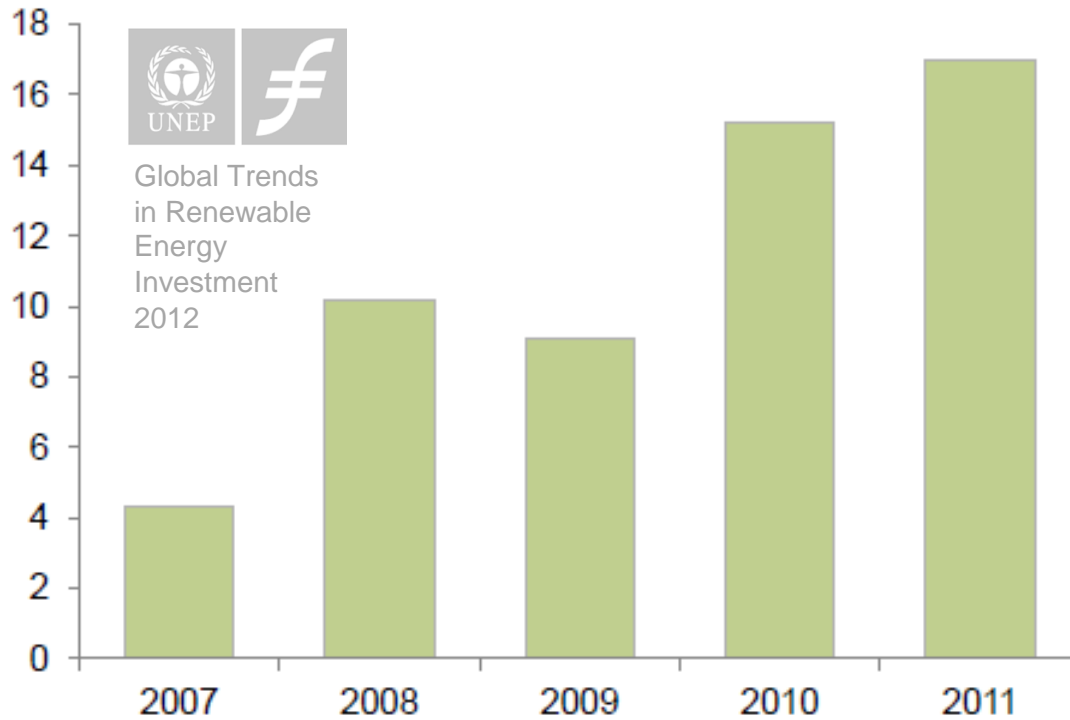
-  Countries without RE Policy Mechanisms and RE Targets
-  No Data

FIGURE 28: LEVELISED COST OF ELECTRICITY FOR DIFFERENT GENERATION TECHNOLOGIES, Q1 2012 V Q1 2011 \$ PER MWH



Source: Bloomberg New Energy Finance estimates

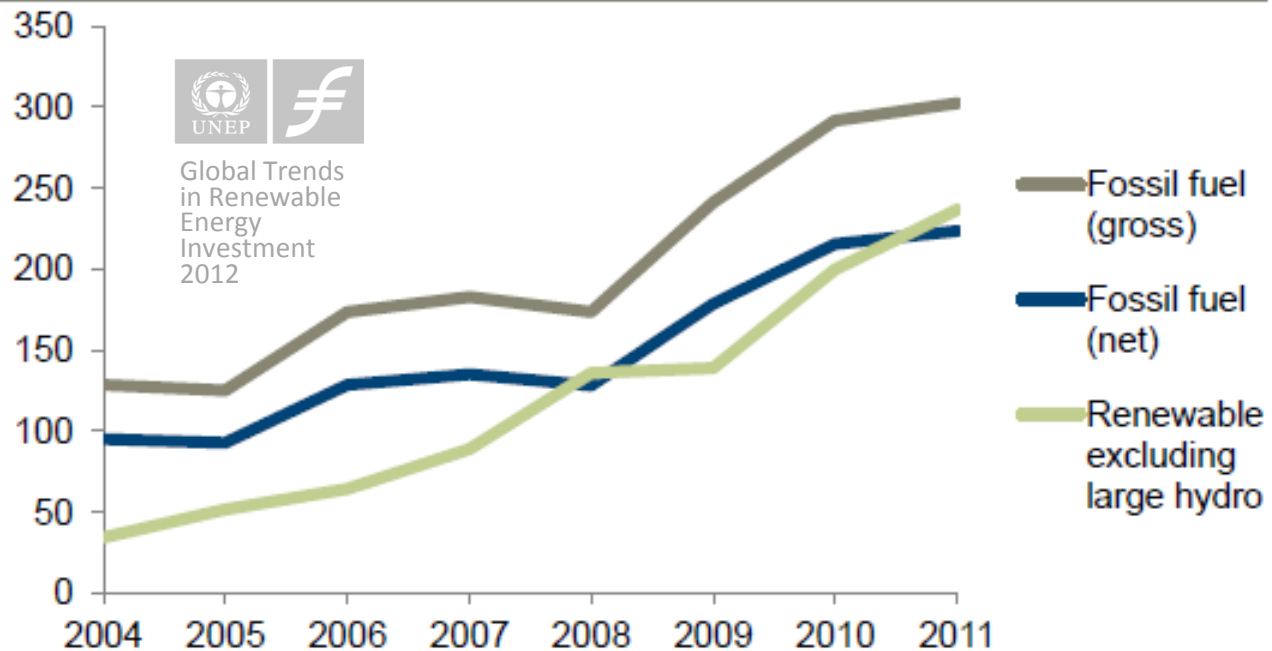
FIGURE 36: DEVELOPMENT BANKS: FINANCE FOR RENEWABLE ENERGY PROJECTS, 2007-2011, \$BN



Source: Bloomberg New Energy Finance



FIGURE 27: INVESTMENT IN CLEAN ENERGY V CONVENTIONAL CAPACITY, 2004-2011, \$BN



Fossil fuel investment is calculated from EIA and IEA data. Renewable energy investment includes asset finance and small-scale projects, but excludes large hydro.

Sources: EIA, IEA, Bloomberg New Energy Finance



What Have We Learned About Scaling Up Renewables?

- Aligning public and private sectors challenging.
 - Institutional capacities and learning are key.
- Policies drive investment.
 - Intl public finance should reinforce policies rather than circumvent.
- It's been easier to mobilise investment into higher cost renewables than 'no-regrets' energy efficiency.
 - ???
- As a new global industry grows there are winners and losers, both companies and countries.



Key Issues on Public - Private Finance

- Public finance must target clear market failures.
 - Poorly targeted, public finance can crowd out the private sector.
- Who goes first ?
 - Where is public finance needed most along the investment cycle ?
- The many types of private finance are better understood than the many shades of public finance
- Private sector not ready to invest in all climate needs
 - In some cases public finance is needed to replace private finance, not to mobilise it.
 - In LDCs/SIDS special support needed to mobilise private sector.



The Understated Reality of Transaction Costs

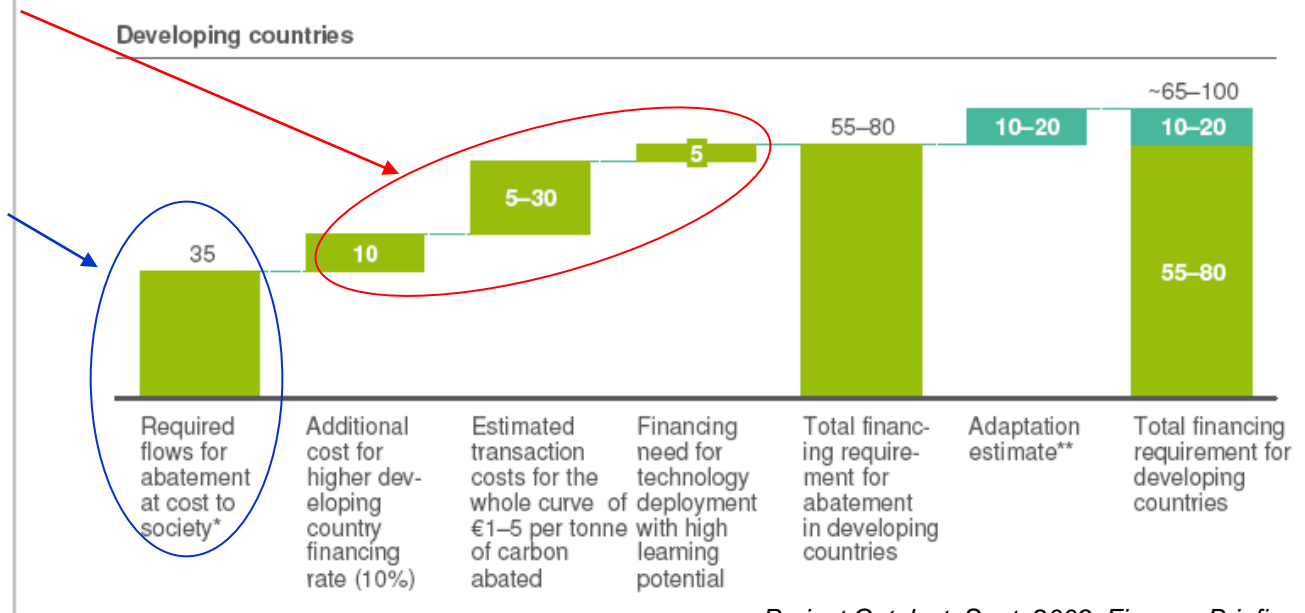
Exhibit 4 – Financing flows: €65–100 billion required in developing countries

€ billion on average p.a. 2010–20 (excluding self-financing)

■ Costs of 12 Gt of abatement in developing countries
■ Adaptation cost

When they should also be here

Most eyes are here



Project Catalyst: Sept. 2009, Finance Briefing Paper



1972-2012: Serving People and the Planet

Thank you !

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