Africa and the Role of Long-Term Climate Finance

Mafalda Duarte
Chief Climate Change Specialist
Energy, Environment and Climate Change Department
African Development Bank

2nd UNFCCC Workshop Long-Term Climate Finance
Cape Town, October

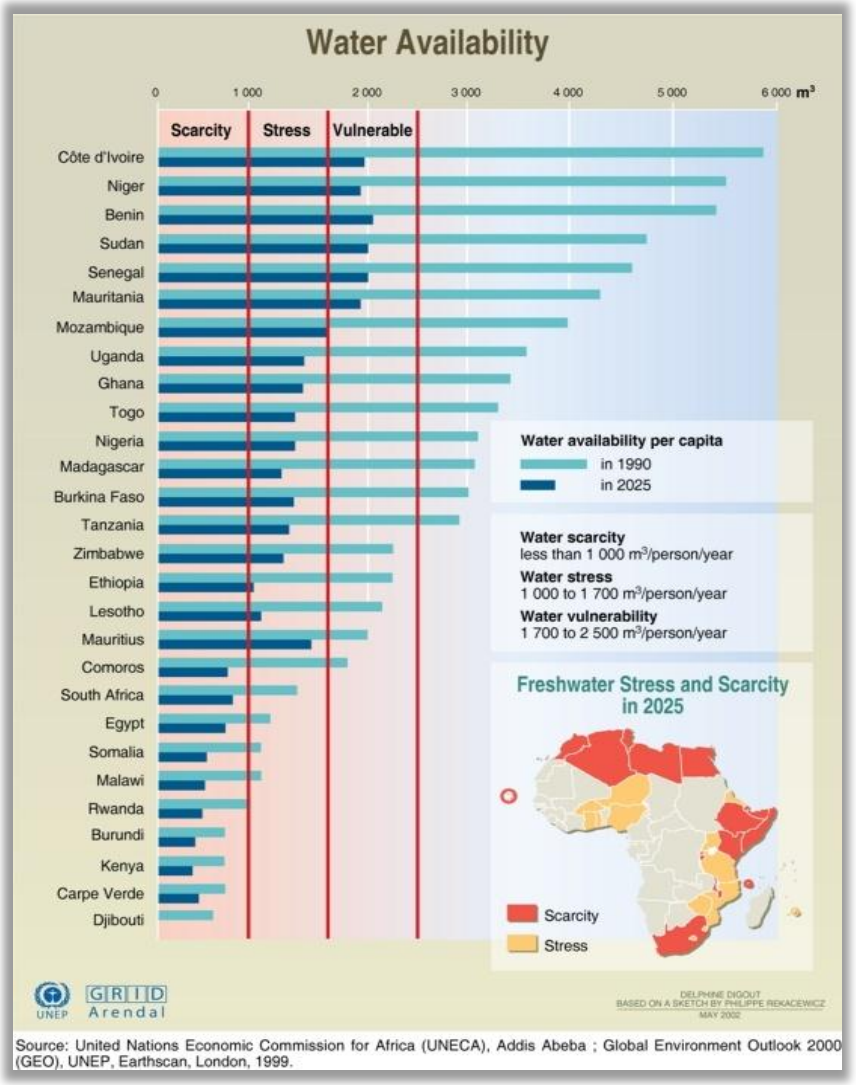
Picture: AfDB

Why is Climate Change Important to Africa?

Pictures: AfDB

Impacts on water resources

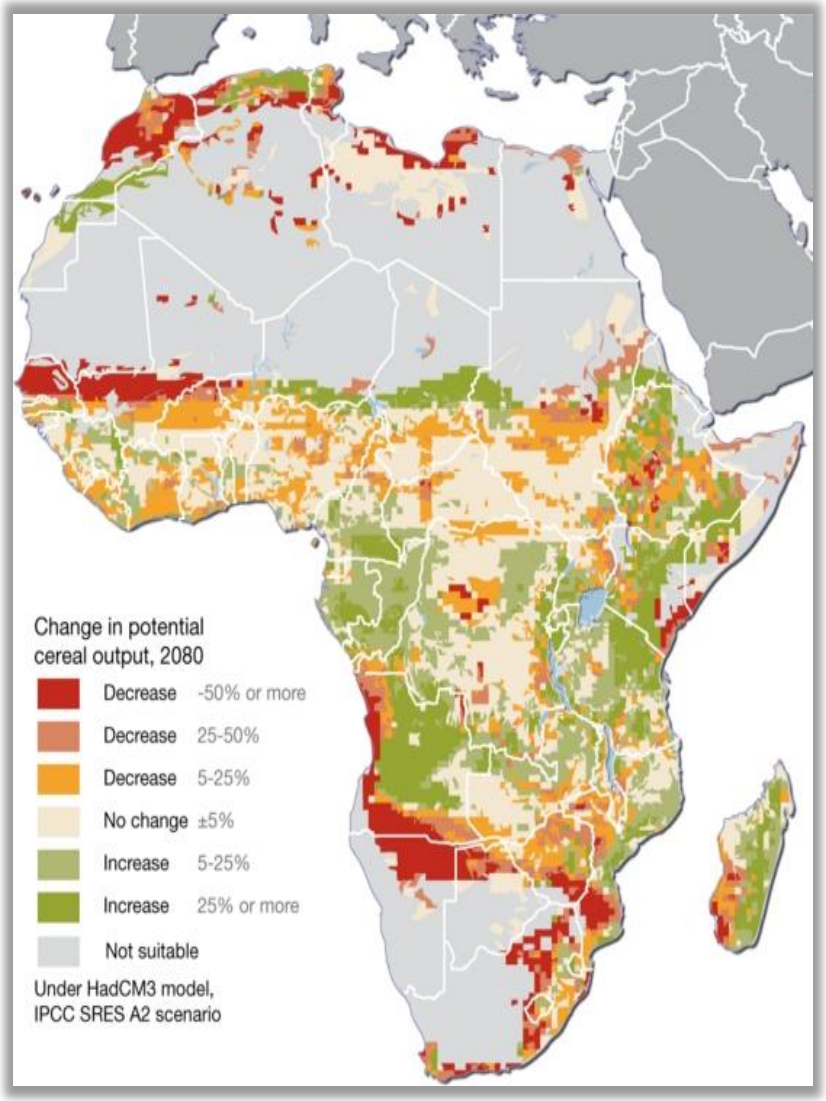
- Warming expected to increase up to **1.4 ° C** by **2020; 5.1 ° C** by **2080**
- Increase in temperature = greater evapostranspiration; e.g. **1° C** warming results 10% reduction in surface runoff (Morocco)
- Changes in variability - more **severe**, **intense**, **prolonged** droughts and floods
- Changes in groundwater recharge
- By 2020, up to **250 million people** in Africa are projected to be exposed to increased water stress



Source: United Nations Economic Commission for Africa (UNECA), Addis Abeba ; Global Environment Outlook 2000 (GEO), UNEP, Earthscan, London, 1999.

Impact on Agriculture

- Changes in pests, diseases, growing seasons, land-use
- Temperature-induced crop yield losses of up to **16%** per **1° C**
- Overall reductions of up to **22%** across **5** crops
- By 2020, yields from rain-fed agriculture could be **50%** less in some countries, affecting food security and exacerbating malnutrition



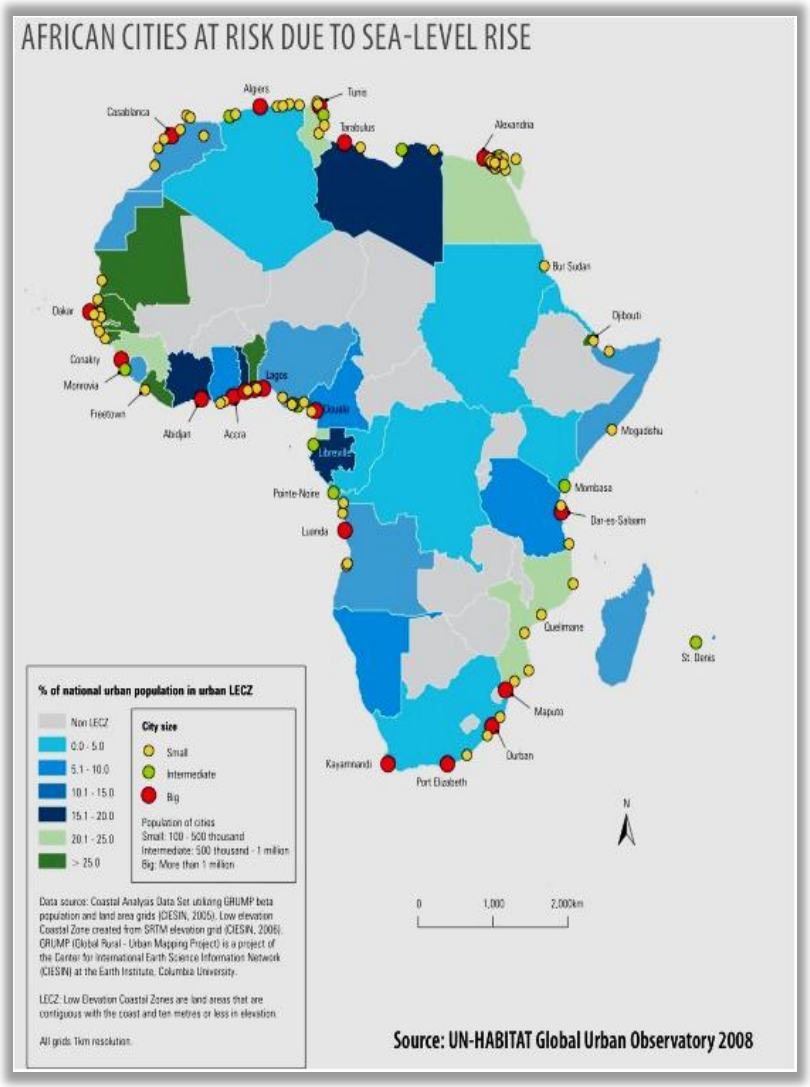
Impact on Coastal Zone and Marine

African Cities at Risk

- 19 big cities (1 million +) in **LECZ***
- **Mombasa**: 17% city below 0.3m
- **Banjul**: most below 1m
- **Egypt**: 2 million people below 0.5m
- **Abidjan**, **Lagos** at high risk

Marine Resources at Risk

- **22** of 33 coastal countries "**highly vulnerable**" to CC impacts on fisheries are in Africa



Why is Africa so vulnerable to Climate Change?

Picture: BBC

Why is Africa so vulnerable?

Biophysical vulnerability: function of the frequency and severity (or probability of occurrence) of a given type of hazard

Socio-economic vulnerability:

- high dependence on rain-fed agriculture (30% GDP; 70% employment)
- rapid pace of urbanization (>50% population cities by 2020)
- high population growth
- ***poor developed infrastructure***

Fewer than one in five people have access to electricity

Barely 1/3 of Africans in the rural areas live near an all-season road

Freight cost is two to three times higher

Only 60% of the population have access to clean water

Only 7% agriculture is irrigated

What does it take to close the Infrastructure Gap?

Picture: AfDB

Promoting Trans-boundary River Management: Songwe River Development Programme – Malawi & Tanzania

- **Context:** Malawi and Tanzania are both experiencing increased water stress due to climate change. The two countries share a precious source of water, the Songwe River. Proper co-management of the shared resources is called for, for a balanced use and management of the resources and equal share of its benefits between the populations of both countries.

- **Financing:** AWF €3,5 million, NEPAD-IFF €1,2 million.

- **Objectives:** to foster regional cooperation and assist the two countries in creating a long-term strategic framework, investment plans, and an enabling environment for basin-wide development based on joint management of the shared waters. The project is expected to benefit the entire population of both countries, representing about 60 million people.

- **Results**
  - A long-term shared vision and of the 10-year Songwe River Basin Development Program.
  - Detailed designs and the preparation of infrastructure projects in the field of hydropower, irrigation, water supply and sanitation, amounting about € 400 million.

What does it take: Small Dams Project Zambia

- **Context:** energy required for pumping is typically costly and polluting.
- **Financing:** AWF €1,991,880, Gov. €173,800.
- **Objectives:** Promote and pilot the use of solar and wind energy for water pumping in rural areas of Ethiopia; Initiate development of a long term investment in these technologies under the Universal Access Programme (UAP)
- **Results**
  - Increased demand for solar/wind technologies from end-users and other stakeholders with 130,000 people directly benefiting from access to water under the pilot schemes
  - Water sector specialists systematically including solar and wind technological options among those to be considered
  - Local private sector supporting the supply and after sales service of solar and wind pumping equipment, including supply of spare parts and maintenance

What does it take:
Promoting Solar and Wind Energy for RWS Ethiopia

- **Climate Context:** increased hydro-climatic variability due to climate change has intensified water stress, particularly in the drought-prone areas of the Eastern, Central and Southern provinces of Zambia. Water storage infrastructure is critically needed.

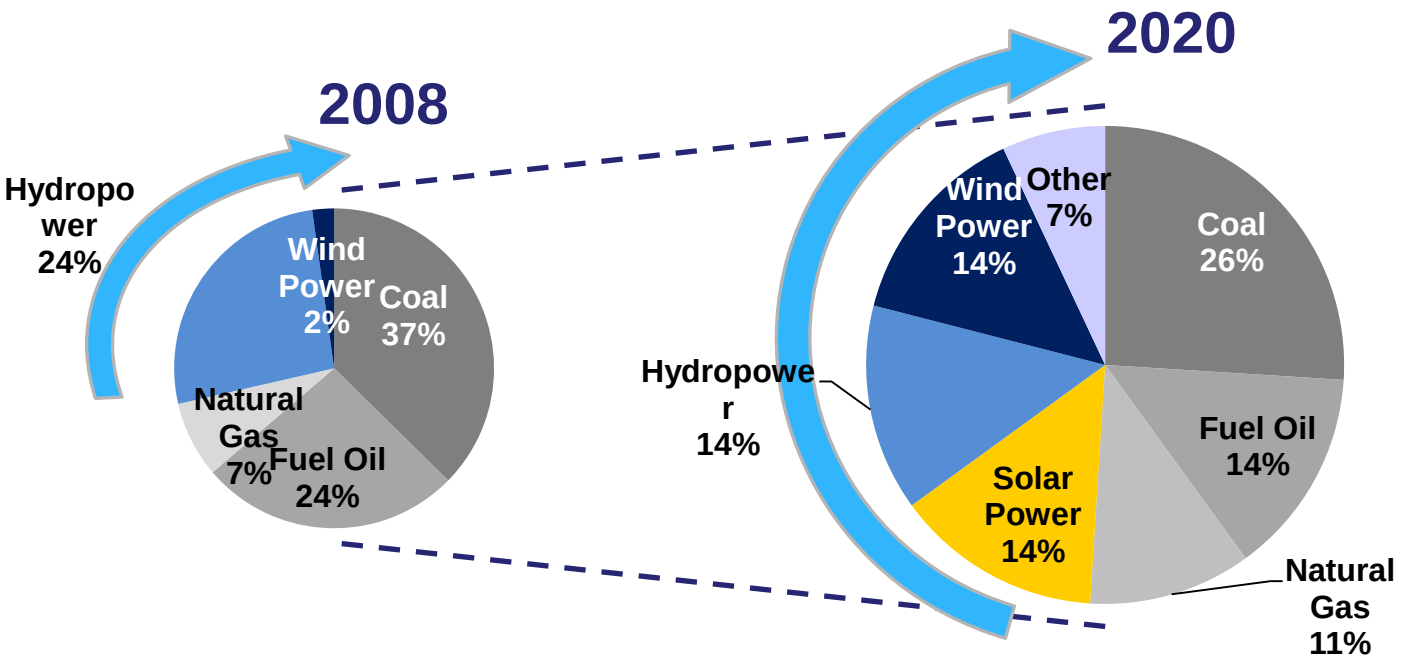
- **Financing:** AWF €950,000; Government of Zambia €150,000

- **Objectives:** Fine tuning guiding tools for multi-purpose dams, updating water resources master plan and 6 pilot interventions to expedite investments for enhanced water security and food security.

- **Results**

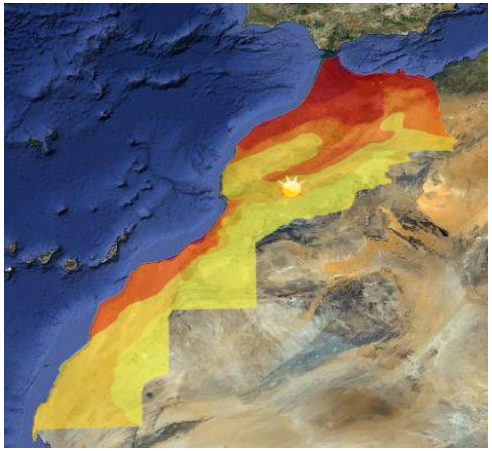
  - Access to water for: domestic use; for agriculture, with the aim of increasing the agriculture yields of smallholder farming; for fish farming; for livestock; and for various water-dependent activities such as mini hydropower systems, brick-making, tree growing, and food processing

What does it take: Morocco CSP



- Strategic intent, scale and prospect of effective implementation

What does it take: Morocco Qarzazate



* Site Development

Plan for site development

Studies

Request authorizations

Construction

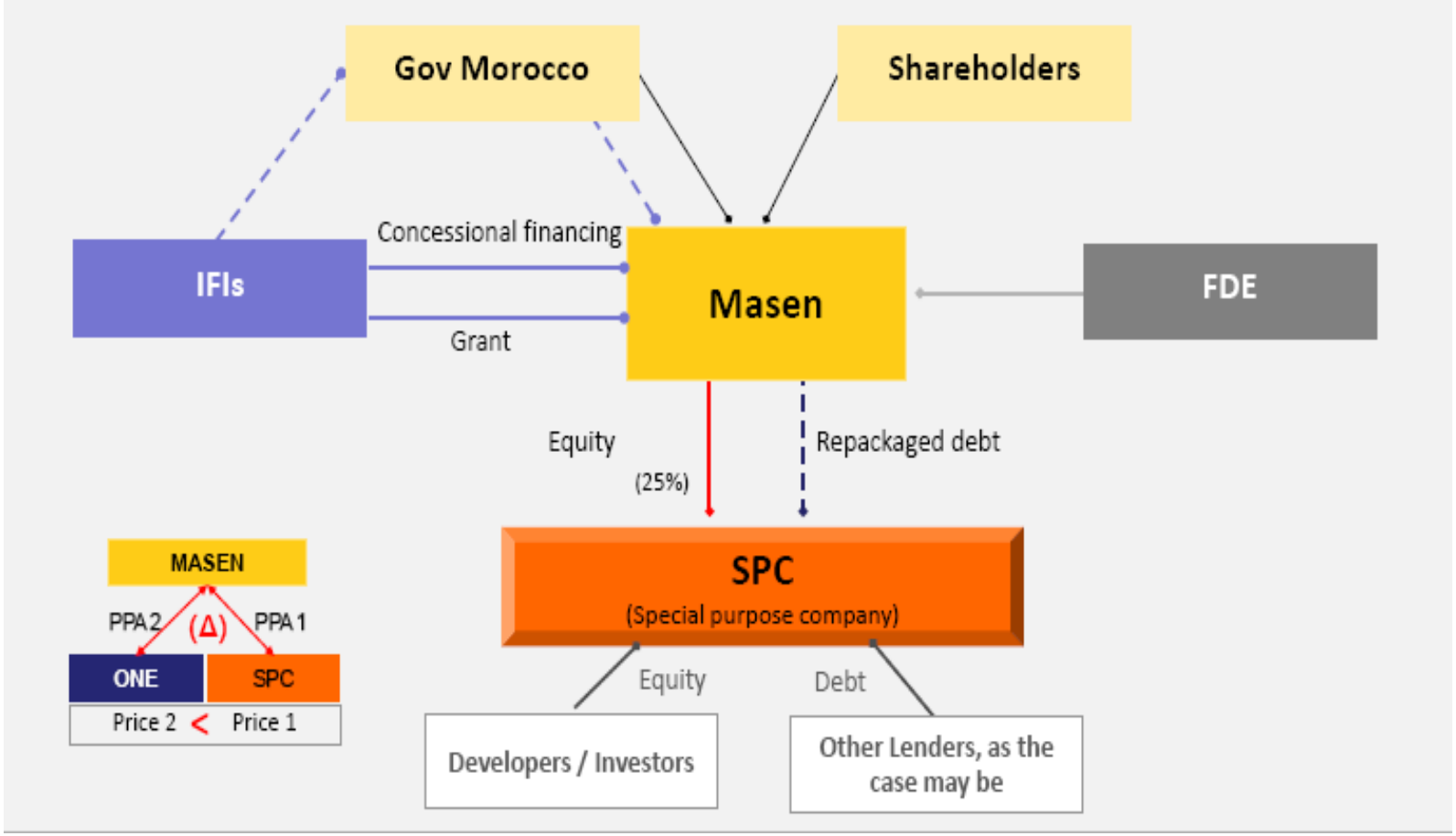
* Each Power Plant

Detailed technical configuration (Studies: topography, sismique, geotechnical, hydraulic, E&S, solar radiation, wind, other climatic conditions, waste management)

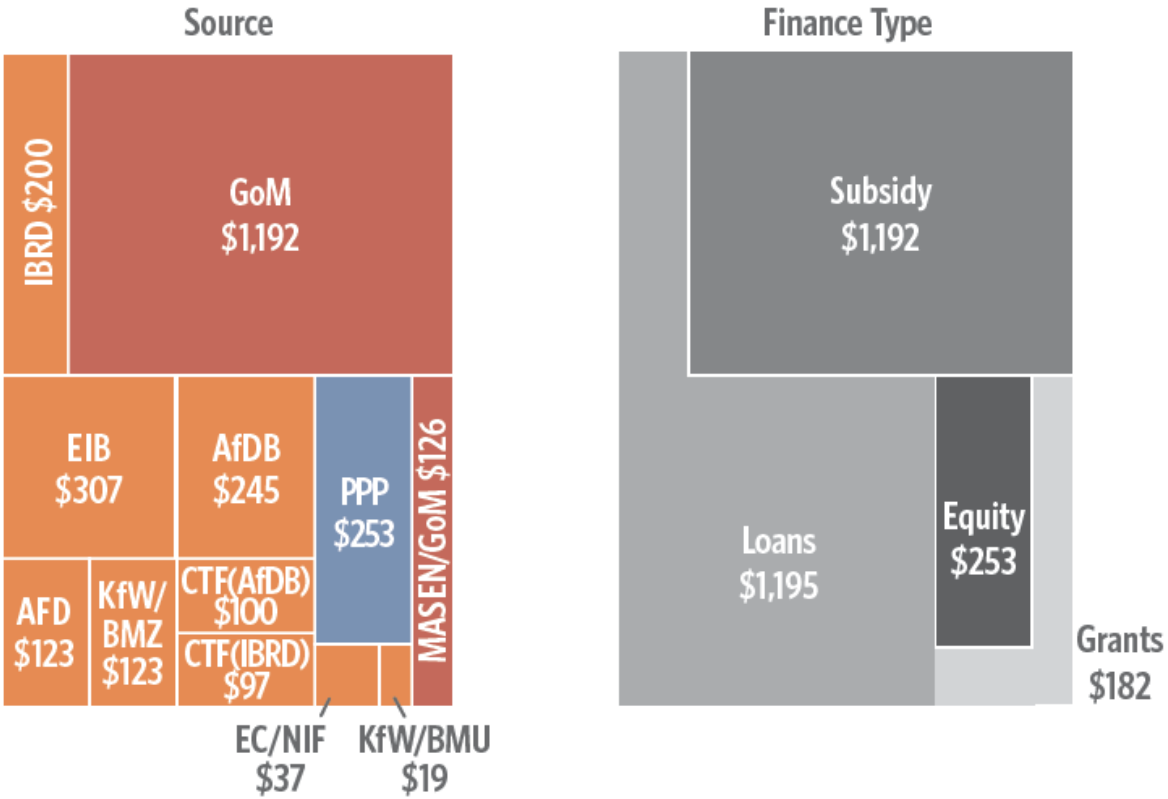
Institutional and financial structuring

Selection of developer

What does it take: Morocco Qarzazate CSP

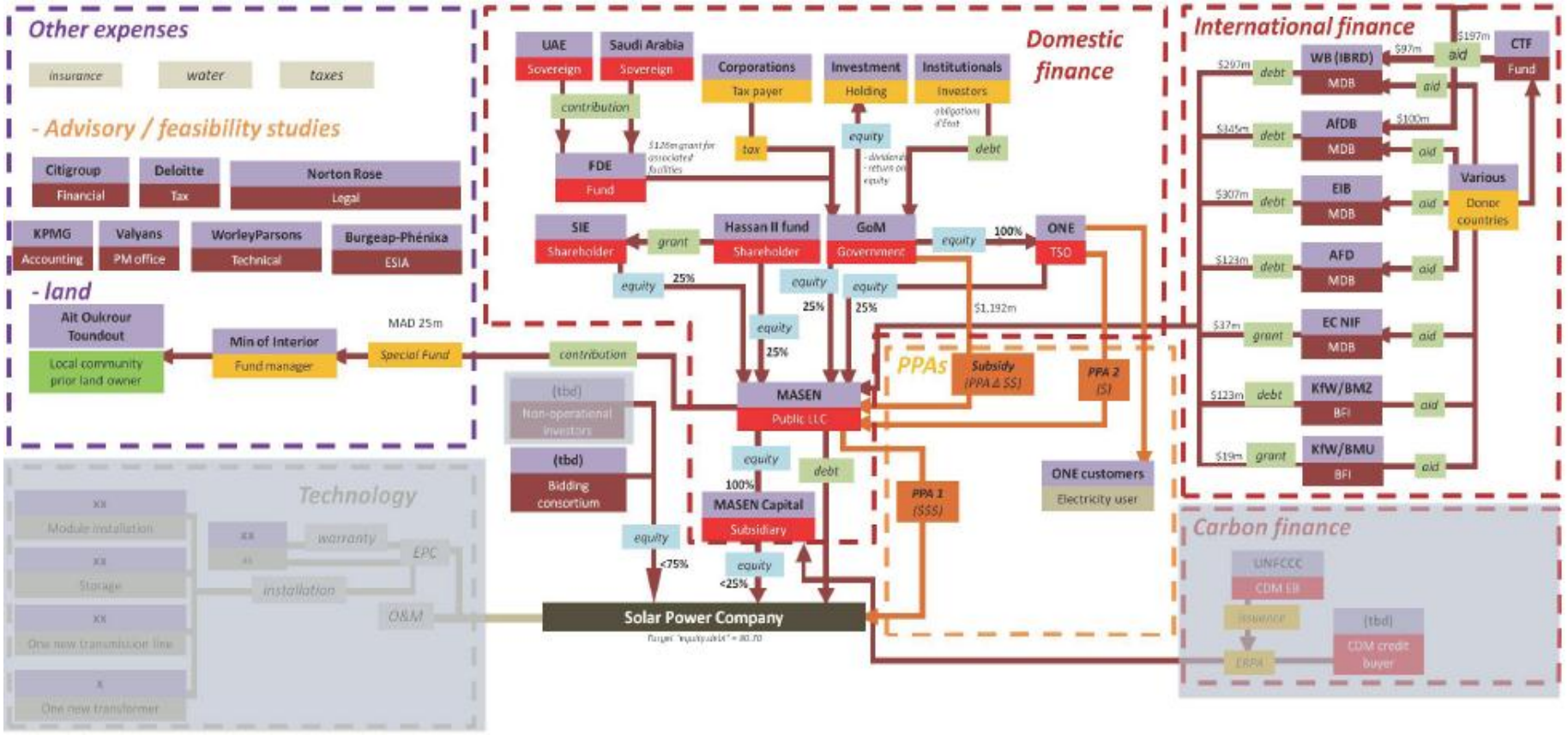


What does it take: Morocco Qarzazate CSP



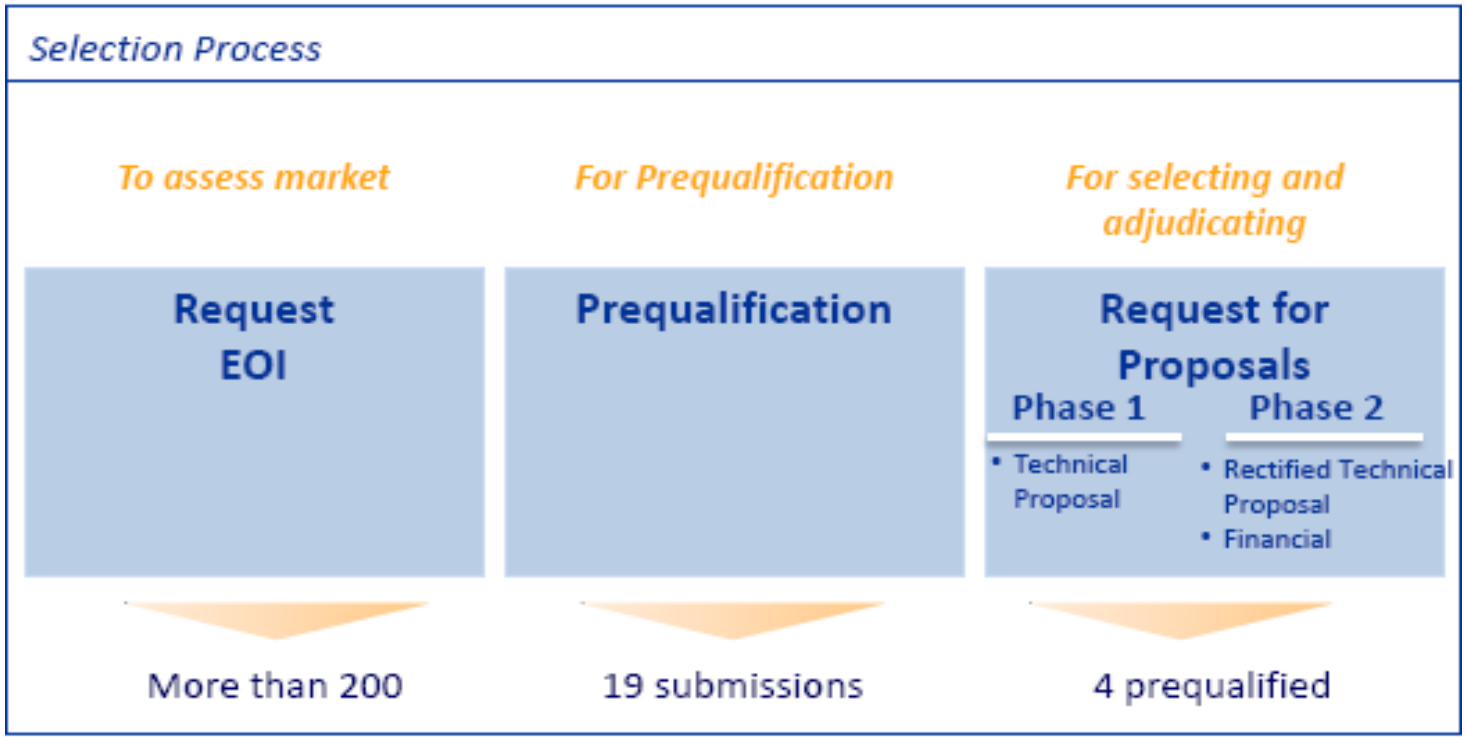
Source: CPI, 2012

What does it take: Morocco Qarzazate CSP



Source: CPI, 2012

What does it take: Morocco Qarzazate CSP



To achieve what: Morocco Qarzazate CSP

Transformation/Additionality Climate Finance

- Test and demonstrate storage technology, trigger cost reductions and fosters economic benefits with development local manufacturing industries.
- Test business model to attract private sector, enhance availability of capital and know how.
- Climate finance critical reduce heavy CAPEX and bring KWh tariff down. MASEN with net financial deficit 25 year operational period.
- Without climate finance burden fiscal side or prices to consumers.

Development indicators and wider benefits

- Job creation: baseline of 0 to 800 jobs during construction and 50 during operational phase. Larger potential with industrial integration. Full program 11,000 full time jobs in construction, manufacturing and O&M.
- Local economic development: It is projected that 30% of the funds invested in the project will be used in procuring goods, supplies, works and services on the Moroccan market.
- Creation of US$ 4.6 billion of accumulated additional value in 2025
- GHG emissions savings: 240 000t/year
- Global and national technological development

Lessons: Morocco Qarzazate CSP

- Portfolio approach offers best prospects to deliver scale and long-term economic and social benefits. Need move away from piece-meal projects toward approach increasingly led by private investors.

- In early phases high levels of concessional finance are necessary drive down costs and attract private investors.

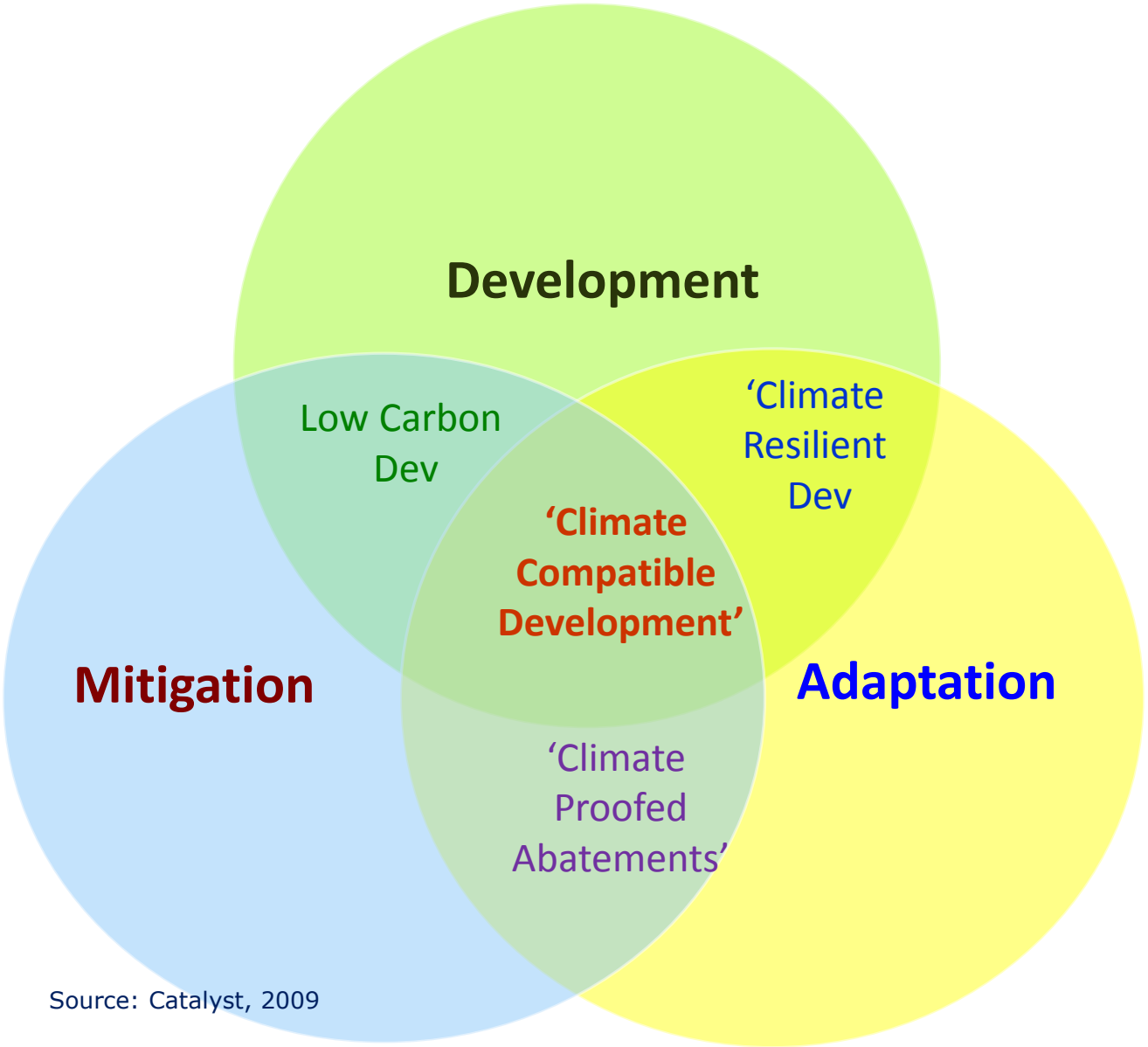
- Alignment between domestic policy objectives, private investors and international concessional financing through long-term vision, RE targets, dedicated institutional capacity.

- PPP financing and competitive bidding model can reallocate risks the private sector is unwilling to bear.

Lessons

Picture: AfDB

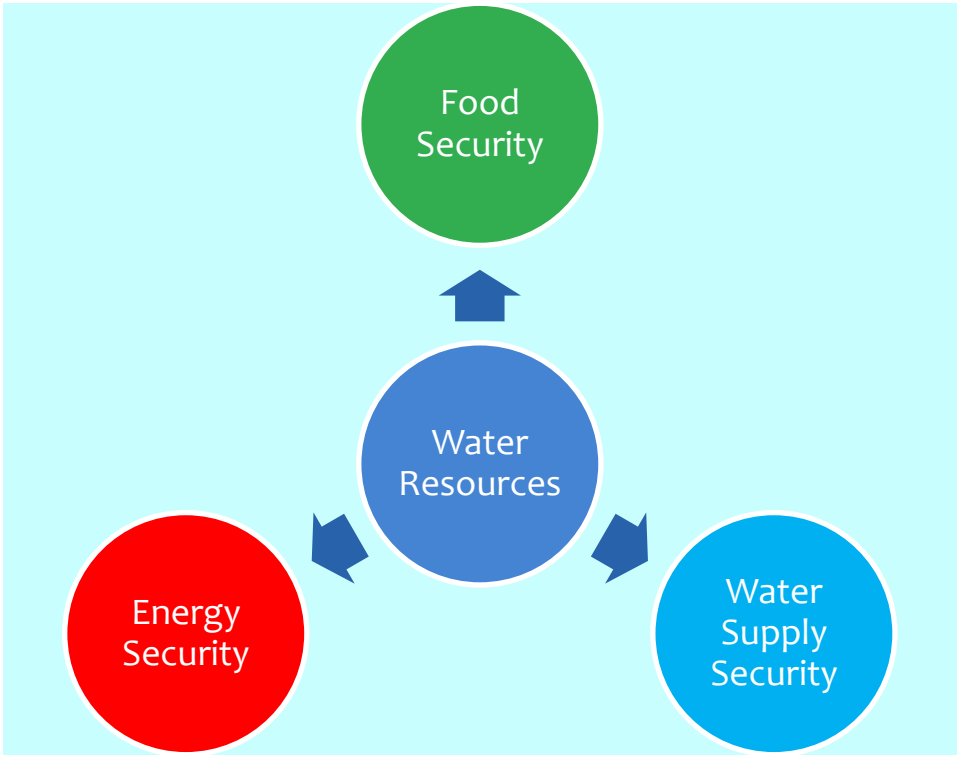
Climate Change interventions must be rooted in Development, aligned with mitigation & adaptation



Source: Catalyst, 2009

Think about Programatic Integration

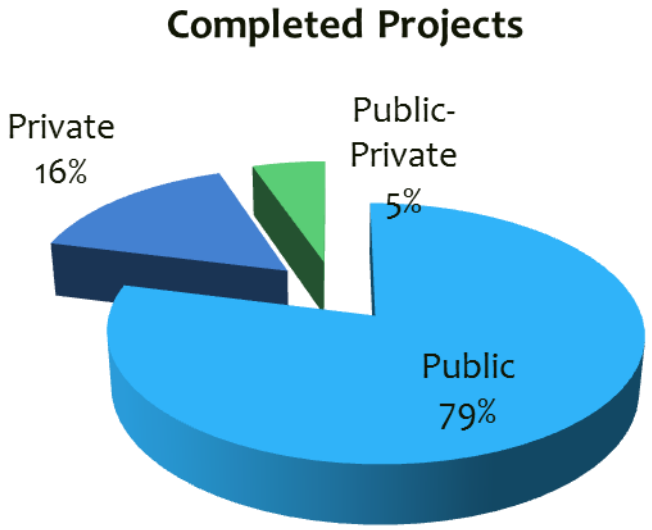
Preparing for a resource scarce future and meeting today's water, energy and food challenges requires solutions that take into account all three sides of the water, food and energy security nexus



Portfolio of Sources

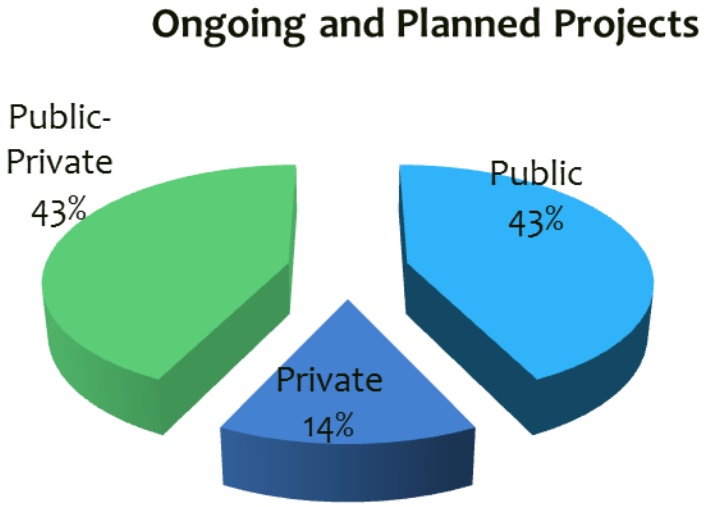
- Governments
- Official Development Assistance
- Multilateral Development Banks
- Climate finance dedicated funds
- Carbon finance mechanisms
- Private Sector

Evolution of Project Sponsorship (e.g. Wind Markets)



- Sponsorship dominated by governments
- Support from development agencies

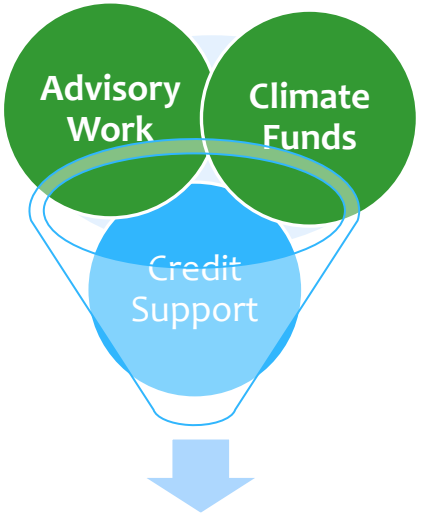
- Increased participation of private sector through PPP and IPP
- Catalytic role by the public sector
- Fully privately sponsored projects on the increase



Portfolio of Instruments

Africa Development Bank

* Grants
* Concessional loans
* Equity
* Debt
* Syndication
* Guarantees
* Climate Change Trust Funds



Integration of Instruments

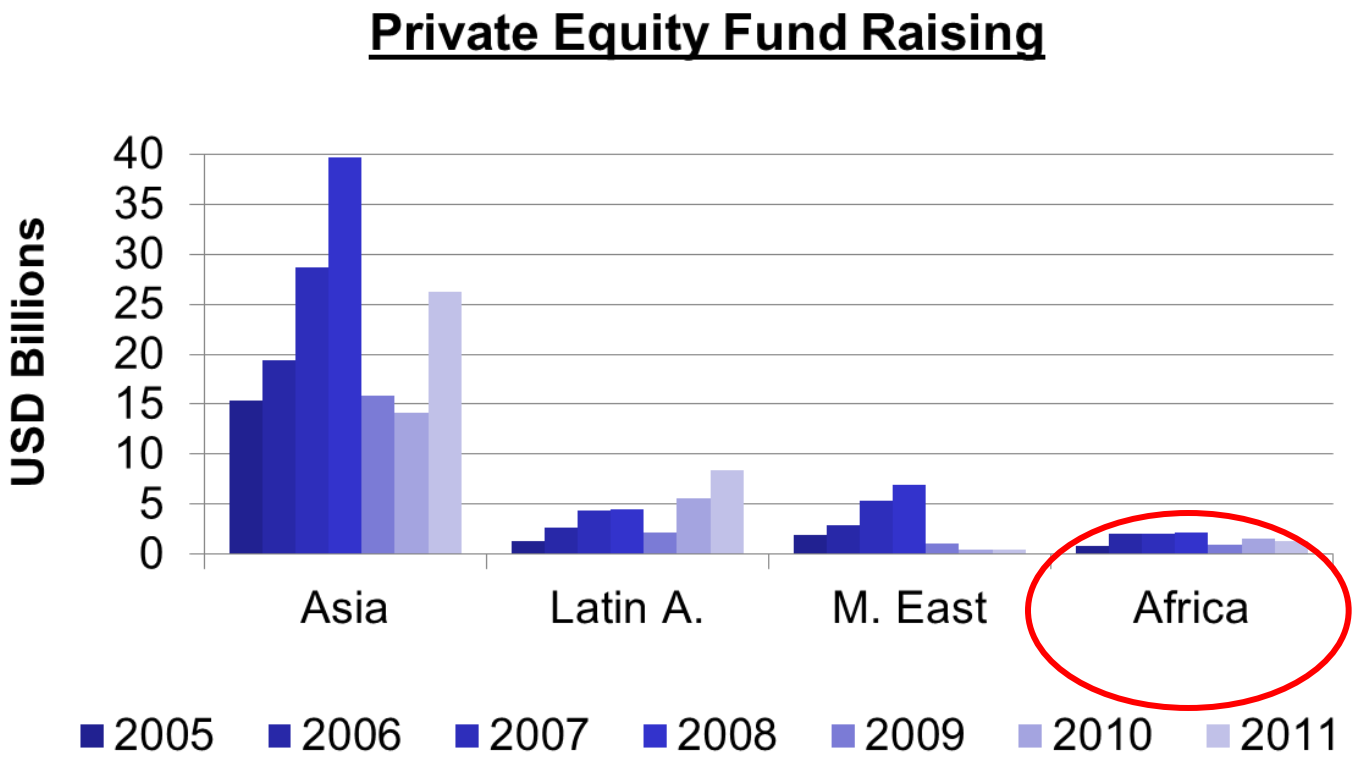
AfDB Public Sector window

- Finance technical assistance and capacity building
- Funding project preparatory studies
- Provide concessionary debt, concessionary funding for government equity contribution and the vital commercial unviable links and resource mobilization
- Advice to Governments on sector restructuring and project prioritization
- Facilitate dialogue between governments for national and regional projects

AfDB Private Sector window

- Assist and counsel governments for project structuring
- Provide equity, sub-debt or loans to the project sponsor
- Provide risk management products to the project sponsor
- Facilitate dialogue between governments and private company for national and regional projects

Don't underestimate the role of equity



Source: EMPEA

Key: Policies

Country	Feed-in tariff (FiT)	Capital subsidies, grants, rebates	Investment or other tax credits	Sales tax, energy tax, excise tax or VAT reduction	Public investment, loans or financing	Public competitive bidding
Algeria	X		X	X		
Egypt				X		X
Ethiopia				X		
Ghana		X		X	X	
Kenya	X		X			
Mauritius		X				
Morocco			X	X		
Rwanda	X				X	
South Africa	X	X		X	X	X
Tunisia		X		X	X	
Uganda	X	X		X	X	
Zambia				X		

Source: REN 21 and IEA/OECD 2010 Renewable Database

Final Note

- National Readiness
- Emerging economies *versus* low-income countries
- Adaptation *versus* mitigation
- Loans *versus* grants

For more information:
www.afdb.org

Mafalda Duarte
m.duarte@afdb.org