Turning challenges into investment opportunities: Unlock sustainable energy financing for LLDCs

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Turning interrelated energy challenges to investment opportunities in LLDCs

- Energy poverty and affordability
- Energy security and reliability
- Climate change mitigation and resilience

LLDCs constitute a market with around 480 million potential energy consumers!

Energy is a crucial driver to increase the productivity, competitiveness and the ability of LLDCs to participate in global trade!
Energy challenges/investment opportunities in LLDCs

Access to modern, affordable and reliable energy services

✓ Progress over the last 30 years particularly in Central and East Asia and LAC;
✓ Today still 2,4 billion people without access to modern energy services;
✓ In BAU scenarios 1,4 billion without access in 2030 (mainly in Africa, South Asia);
✓ DCs representing 80% of the global population consume 30% of the energy;
✓ Globally around 90% with access to electricity in urban and 60% in rural areas;
✓ In Sub Sahara Africa 51% with access in urban and 8% in rural areas; in LLDCs around 50% with access;
✓ Migration to urban centers challenges the electricity systems (e.g. slums);
✓ Reliance on traditional biomass for cooking and heating in some LLDCs;
✓ The poor spend more income for poor-quality energy services than the better-off;
✓ High vulnerability of the poor to fuel price fluctuations (e.g. cost of transport);
✓ Low private sector interest to invest in low-return markets (e.g. slums, rural);
✓ The lack of access to modern, affordable and reliable energy services is interrelated with a variety of economic, social, environmental and political problems (e.g. indoor-pollution, social unrest, low productivity of industry, poor public services)
Energy challenges/investment opportunities in LLDCs

- Energy security trends
  - It is projected that by 2030 cities will consume 73% of the global energy;
  - 80% of the global energy supply by fossil fuels (coal, oil, gas);
  - Gap between rising urban energy demand, lack of generation capacity and investment capital;
  - High technical and commercial transmission losses in some DCs (up to 40%);
  - High vulnerability of DCs due to dependence on imported petroleum products;
  - Some DCs spend up to 40% of their GDP on fossil fuel import;
  - Limited oil and gas reserves to satisfy the global demand;
  - No functioning regional electricity and gas markets in most DC regions;
  - Situation in some DCs seriously hampers the social and economic development;
  - Very high electricity tariffs and generation costs in some LLDCs;
  - Urban population and private sector suffer from load shedding and power cuts (e.g. high costs of back-up diesel generators);
  - Low interest of investors due to high risk and market entry costs;
Energy challenges/investment opportunities in LLDCs

- Climate Change mitigation/adaptation and other negative externalities

  ✓ In BAU scenarios a **doubling of pre-industrial levels of GHG emissions** is very likely and would lead to a **rise of global temperatures between 2°C to 6°C**;
  ✓ **Some LLDCs would suffer from negative climate change impacts at most** (e.g. sea level rise, droughts, extreme weather events);
  ✓ **66% of the global GHG emissions are caused by the energy sector**;
  ✓ **DCs representing 80% of the population account for 53.6% of the global GHG**;
  ✓ **Up to 75% of the projected increase in GHG emissions by DCs**;
  ✓ **It is estimated that cities would emit 76% of the global GHG in 2030**;
  ✓ **To stabilize the global temperature at 2°C levels** the emissions would have to peak at latest in 2020 and to be reduced by 30% to 70% until 2050;
  ✓ **Energy efficiency improvements and 30 to 50% renewable energy share** of global primary energy by 2050;
  ✓ **Needed energy investments between 1,7 and 2,2 trillion USD per year**; LLDCs are a market of around 480 million energy consumers;
  ✓ **New investments determine GHG emissions for the next 20 - 30 years (or longer)**;
LLDCs have an important role to play!

Figure 20: 450 ppm reduction scenario of energy related CO2 by fuel & region from 1980 to 2030 (IEA, 2009)

Figure SPM-2. Development of global CO2 emissions from energy and industrial sources to limit temperature change to below 2°C (with a success probability of >50%). Shown is that the emissions need to peak by around 2020 (or earlier) and decline toward zero during the following four to five decades. The later the peak occurs, the steeper the decline needs to be and higher the net “negative” emissions. The latter can be achieved through in the energy system through carbon dioxide capture and storage in conjunction with the use of sustainable biomass. Source: Chapter 17. For further details of the GEA pathways see the interactive web based GEA scenario database hosted by IIASA. www.iiasa.ac.at/web/home/env/geo/lla.
GOAL 7: Ensure access to affordable, reliable, sustainable and modern energy for all  

By 2030:
- Substantially increase the share of renewable energy in the energy mix.
- Double the global rate of improvement in energy efficiency.
- Expand infrastructure and deploy technology for supplying modern and sustainable energy services for all in developing countries.

GOAL 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

By 2030:
- Reduce by half the number of people affected by extreme poverty.

GOAL 13: Take urgent action to combat climate change and its impacts

Strengthen resilience and adaptive capacity to climate-related hazards and extreme weather in all countries.

Integrate climate change measures into national policies, strategies and planning.

Implement developed countries' commitments under the United Nations Framework Convention on Climate Change by 2020 and fully operationalize the Green Climate Fund.
More than USD 3 billion of investment in 2016 in renewable energy (incl. large hydro) / excl. energy efficiency
More than 60% of all generation capacity added in 2016 comes from renewable energy (incl. large hydro)!
LEVELISED COST OF ELECTRICITY FROM SELECTED RENEWABLE SOURCES, Q3 2009 TO H2 2016, $ / MWh
Low domestic financing, FDI, concessional and non-concessional finance for RE&EE in a number of LLDC regions – particularly in low-income areas!
Barriers and risks for RE&EE Investment in LLDCs

✓ General risks of investment climate in LLDCs
✓ Scarce domestic and external public/private resources and competing priorities
✓ Energy is not ICT and tend to require public involvement
✓ Reliable policy, regulatory and incentive frameworks (e.g. unbundling, targets, obligations, feed-in-tariffs, auctions, fiscal and non-fiscal incentives, EE&RE standards)
✓ Economic barriers (e.g. competitiveness of RE&EE, non-pricing of externalities, fossil fuel subsidies, non-cost recovery based tariffs, shadow-markets)
✓ Technical barriers (e.g. intermittency, availability of technology, metering, accessibility, limited storage, charging infrastructure)
✓ Lack of qualification, certification and accreditation frameworks (lack of capacities at all levels, low public and private R&D)
✓ Lack of knowledge, data and awareness (e.g. resource assessments, technologies)
✓ Lack of entrepreneurship, sustainable business models and local value creation (e.g. mini-grids and stand-alone systems, business model of utility)
Particular financial barriers for RE&EE

✓ Lack of national sustainable energy investment plans (uncoordinated activities)
✓ High upfront capital costs and low operation costs of RE&EE (e.g. hydro, principal agent problem)
✓ High and uncertain pre-investment costs, development/approval times (e.g. land use requirements, resource availability in the case of geothermal and hydro)
✓ Lack of affordable long-term, project and equity finance for on-grid and off-grid projects (high interest rates, low equity capacity of promoters)
✓ Small size of RE&EE projects vs. high transaction costs of IFIs (minimum capital costs between USD 10 and 20 million)
✓ Non-cost recovery tariffs and low willingness and ability to pay (clients and utility) are a major obstacle for private investments
✓ Unreliable and bureaucratic Carbon Financing instruments
✓ Lack of capacities to develop bankable projects and appraise them
✓ Lack of matching between project promoters, investors and financiers
Public financial instruments

✓ **Address parts of the financial risks** but rely on progress in other areas (e.g. policy, regulatory and incentive frameworks, feed-in tariffs, auctions); example Zambia

✓ Efficient instruments **focus on high leverage of private sector capital**

✓ **Grants** provide risk capital for pre-investment or investment phase (easy to operate, help projects to break-even, tend to distort markets/oversubsize, costly) - Chad, Guinea Bissau

✓ **Venture capital equity** provides long-term risk capital to make the investment more attractive for other lenders (shareholder, reflows, high risks); example Cape Verde

✓ **Senior debt** provides long-term lending through concessionary funds to be blended with commercial funding – example Bhutan (Dagachhu, Basochhu)

✓ **Subordinated debt (mezzanine)** provides funding between equity and senior debt.

✓ **Guarantees and insurance** reduce risks for commercial financing by paying part of the costs in case of a specified event (e.g. liquidity guarantee, political risk insurance) – example of wind in Cape Verde, geothermal in East Africa, hydro in Lao

✓ **Others**: revolving fund, micro-credits, revolving funds, incubation – example Burkina Faso
Some recommendations:

✓ No blue prints – need to adapt to the individual circumstances of LLDCs;

✓ Leadership of the Government to set effective and reliable targets, frameworks and investment plans is key to attract FDI and concessional financing;

✓ Urgent need to develop financing instruments/mechanisms for small scale projects below an investment volume of USD 10 to 20 million in partnership with local banks;

✓ Capacity building for utilities to consider new business models including RE&EE;

✓ Need to address barriers and risks for RE&EE investments holistically and in an integrated way – finance alone cannot solve the problem;

✓ Need for cooperation and coordination between various international partners with different financial instruments and comparative advantages;

✓ Ensure that LLDCs benefit from climate financing instruments (e.g. GCF, GEF, CDM)

✓ Stronger regional cooperation through the respective regional organizations, power pools and regional renewable energy and energy efficiency centers;

✓ Establish a sound base of domestic RE&EE entrepreneurs and companies;
Thank you!