



Sustainability/Green Growth: Snapshots of India's Experiences and Lessons Learnt

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Presentation Layout – 5 Point Agenda

1. What is Green/Sustainability?
2. What is the Scope?
3. What is the Enabler?
4. What is the Experience?
5. What are the Lessons?

What is Sustainability for India?

1. A significantly large response will have to target the energy sector which accounts for a large %age of resource utilization in particular of land and water.
2. The sector also accounted for 1100.06 million tonnes of carbon dioxide equivalent (MTCO₂e) emissions in 2007 – out of a total of 1904.73 MTCO₂e. Nearly 60% of total emissions came from the sector (and within the sector, electricity generation accounted for 719.31 MTCO₂e).
3. *“...in order to deliver a sustained growth of above 8% during next two decades, India would at least need to grow its primary energy supply by three to four times, whereas the electricity supply needs to grow at the rate of five to seven times the present consumption”*. - UNFCCC (where is this going to come from?)

Scope for Sustainability: India's Energy Mix

- Coal and large hydro together account for more than 75% of the total installed capacity
- NAPCC target of increasing the share of RE to 15% of the total energy supply mix
- NAPCC also recommended pegging the minimum share of RE generation in the national grid at the 2009-10 level of 5% and increasing this by 1% each year.

Fuel Type	MW (Installed Capacity)	Per cent of Total
Oil	1,199.75	0.59
Nuclear	4,780	2.37
Gas	18,381.05	9.11
Other Renewable(s)	24,503.45	12.15
Large Hydro	38,990	19.33
Coal	1,13,782.4	56.42

Scope for Sustainability: Energy Efficiency

- About 30% of power transmitted is lost due to aggregate technical and commercial losses
- In the industrial sector approximately 50% of the energy use is accounted for by cross-cutting technologies resulting in estimated energy savings potential for a large number of plants of the order of 5-15% (NAPCC)
- Energy conservation potential as a whole has been estimated at 23% (MoEF)

BEE Estimates for Energy Savings Potential:

Sector	Potential
Industry	10-25%
Lighting	30-35%
Commercial Buildings	50%
Agriculture	40-45%

Enabling Sustainability: 3 Essential Facts

- Both clean energy generation and energy efficiency are key drivers to enable the transition to a sustainable growth trajectory
- **The primary role of capital markets is to efficiently allocate the available capital to its most productive use**
- Capital markets also send signals to other stakeholders

Enabling Sustainability – Where is the Money?

- The total investments required to tackle climate change are estimated to be more than USD 1 trillion per annum from now until 2050
- The United Nations Environment Programme (UNEP) Finance Initiative expects 86% of this investment to come from **the private sector**.
- Currently less than 2% of the required investments in developing country climate solutions are being met.

India's Market Experience: RE

- During the period 2004 – 2010, India's growth in renewable energy investment has been 19%.
- In 2011, predictably, the wind sector saw the largest targeted investments at USD 5.9 billion, followed by USD 4.7 billion for the solar sector.
- Both wind and solar investments are largely policy driven

	Asset Finance*	Public Markets	Venture Capital/ Private Equity	Total
Wind	5.5	0.2	0.2	5.9
Solar	4.6	-	0.1	4.7
Biomass and Waste-to-Energy	0.9	-	0.03	0.93
Small Hydro	0.5	-	0.03	0.53
Marine	0.01	-	-	0.01
Bio-fuels	0.001	-	-	0.001

* Asset finance volume adjusted for re-invested equity.

India's Market Experience: Energy Efficiency

- Investments to the tune of INR 74,000 crore in energy efficiency could potentially save around 15% of total energy consumed in the country (BEE)
- The PAT scheme is a market based mechanism
- The national target is set at energy savings of 6.686 million TOE at the end of the first PAT cycle by 2014-15 (1EScert = 1 TOE= approx 10,000 INR)

Industry	Minimum Energy Consumption for DC (TOE)	No. of Identified DCs
Aluminum	7500	10
Cement	30000	85
Chlor-Alkali	12000	22
Fertilizer	30000	29
Pulp & Paper	30000	31
Thermal Power	30000	144
Iron & Steel	30000	67
Textile	3000	90

Consolidating the Lessons – Private Sector

- HSBC estimates that the energy efficiency market in India will be five times as large in 2020 as it was in 2009.
- The Organisation for Economic Corporation and Development (OECD) has stated that USD 500 billion is needed for investment in India's power sector between 2010 and 2020.
- However, the overall number of current deals in private equity or venture capital is very low - less than 100 in India compared with 504 in the UK or 1,042 in the US.

Risks	Opportunities
<ul style="list-style-type: none"> • Quite vulnerable to climatic impacts such as monsoon variability, cessation of glacier fed rivers, migration of coastal communities and exposure to flood and drought risk • Corporate attention to climate change is low • Political - policy cycles 	<ul style="list-style-type: none"> • Already spending 2.6% of GDP on adaptation to climate vulnerability • Invested USD 2.3 billion in clean energy in 2009 • Leading in wind (11 GW) and hydropower and biomass (5 GW total for both) installed capacity • Estimated USD 150 billion investment to be made 2008-2017 in carbon intensity and demand management • Key investment incentives: feed in tariffs and preferential tax rates for renewable energy

Contd... Main Issues (Private Sector)

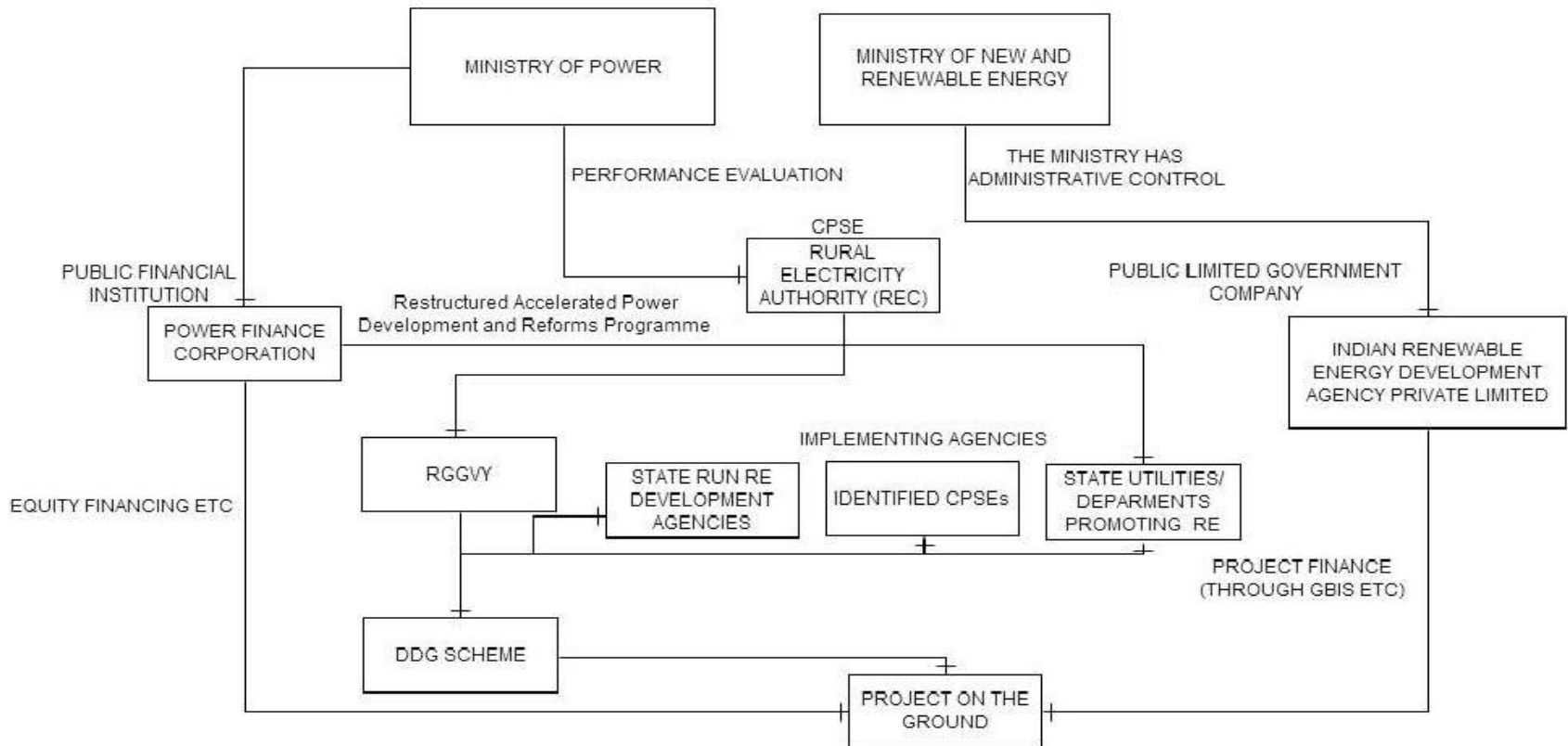
- Project economics and debt capacity (too many small scale projects that cannot attract large scale capital to lower the overall transaction costs)
- Unavailability of financing instruments and low cost domestic debt capital/domestic banks' risk appetite
- Lack of non-recourse financing
- Exposure to foreign exchange fluctuations
- Land and water access
- Grid-infrastructure

Consolidating the Lessons – Public Sector

- 10% of portfolio risk could be attributed to climate change between now and 2030 (Mercer, 2011)
- Currently the public sector debt in India is approximately 35% of the Gross Domestic Product (GDP) while private sector debt is 2% of the GDP (Goldman Sachs 2007).
- A significant amount of the risk in projects is held by banks and creating a private sector debt market would help to spread this risk more broadly. The Indian bond market is now USD 795 billion although only 11% of this is corporate bonds(HSBC 2011).
- India's saving rate (12% of GDP) is low compared to both advanced economies and other Asian countries (Goldman Sachs, 2007)
- UK pension fund assets equate to 89% of the GDP compared with 0.2% for India

Contd...Institutional Coordination Example

DDG Scheme, under the RGGVY is implemented through the REC which is overseen by the Ministry of Power. Simultaneously, IREDA is also responsible for facilitating financing through loans for projects including off-grid, and is under the MOP



Thank you!

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