



# Role of Renewable Energy in tackling Climate Change : The way forward

by

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23<sup>rd</sup> August, 2015



# Introduction



- Important aspect in development of renewable energy is the replacement of fossil fuels as an energy source .
- Burning of one ton of fossil fuel on an average generates 3.2 tons of CO<sub>2</sub> . Fossil Fuels pollute the atmosphere by emitting other gases like NO<sub>x</sub>. SO<sub>x</sub>, SPM etc.
- The Renewable energy technologies are:
  - Small hydro
  - Wind
  - Solar photovoltaics/ solar thermal
  - Biomass



# Introduction



- As a result of climate change new investment opportunities exist for the development of technologies and installation of new power plants using renewable energy.
- There is a significant benefit from renewable energy in terms of reducing Green House Gas (GHG) emissions and is extremely important for mitigating the impacts of climate change .
- Government of India estimates indicate that the annual CO2 emissions could rise to about 5 billion tonnes by 2031-32 depending on the mix of technologies used and adoption of energy efficiency measures where ever possible.
- 100,000 MW from solar energy by 2022 as per the Mahatma Gandhi National Solar Mission will lead to saving of over 150 million tons of CO2 annually.



# India and Renewable Energy



- The Government of India plans to provide access to electricity to all households in the next 1000 days.
- Renewable energy based DDGs can help mitigate climate change and also provide solution for rural electrification and sustainable livelihoods
- UNDP is implementing a Biomass Energy Project with MNRE. This is significant as about 30 % of India's energy needs are met from Biomass.
- Energy consumption by the domestic sector in India is 42% of which over 70% is accounted by inefficient burning of biomass in rural areas.

# India and Rural Energy

- In most households, the energy efficiency of traditional cooking stoves using biomass fuels such as cow dung cakes and firewood is as low as 8-9%.
- The continued use of firewood for cooking also results in significant pressures on forest resources.
- Estimates indicate that around 50% of the country's forests are impacted by firewood collection and other human activities .
- Over 30% of households in rural India continue to use kerosene based lamps for lighting. This needs to be substituted by solar lanterns .
- Therefore, promoting efficient use of biomass can help transform the rural energy scenario and reduce GHG emissions.

# UNDP- strategies and activities

- Access to clean energy
  - Develop framework for scaling up interventions for enhanced access & delivery of clean energy services
  - Inputs to develop a national strategy for “Accelerated clean energy access”
  - Capacity development of stakeholders for energy planning, implementation and replications
- Concentrated Solar Technologies for Heat Applications in Industries with MNRE.
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- GEF-SGP Program implemented in India by UNDP
  - So far supported over 300 projects
  - with about 150 NGOs all over the country



# UNDP Interventions



Access to clean energy

## Energy efficiency and replication

- Industries (SMEs – brick, steel re-rolling , motors)
- Transport (urban, railways);
- Residential (electrical appliances)
- Commercial (Green buildings) sector

It is estimated that annual energy efficiency will continue to increase at 1.5% per annum and overall resource use efficiency at 3% per annum, and even if the economy grows at an expected 8-9% over the next two decades, the energy intensity of GDP will continue to decline.



# UNDP Interventions

Access to clean energy

## Knowledge management, awareness and capacity building

- Strengthening information base;
- UN Solution Exchange COP;
- Parliamentary and Legislative Forums

# Constraints

- Excessive centralized control leads to lack of buy-in by the community. Lack of ownership by the local community can make DDG units non-operational
- Participation of citizens is minimal
- Experience shows that many times projects became non-operational due to lack of O&M, management and technical support systems
- Often plants are sized for lighting needs of the rural people with no focus on additional demand of electricity for sustainable livelihoods.
- Low capacity utilization (20-25 %) and suboptimal design of plant leads to high generation costs.
- Grid-interactive DDG units required to address the issue of economic viability



## Other Renewable Energy Initiatives



- Successful renewable energy models have led to employment generation through micro-level enterprises. For Example the West Bengal Renewable Energy Development Agency (WBREDA) project in the Sunderbans that involve solar photovoltaics, biomass gasifiers and wind farms
- Despite number of programs and interventions, DDG has not been successful .



## UN Solution Exchange-Climate Change Community

- Facilitated by UNDP as Energy accounts for over 60 % of GHG emissions globally and climate change is taking centre stage in the global environment agenda.
- Objective is to utilize existing knowledge ( both expert knowledge and tacit knowledge) about use of renewable energy and the constraints in its implementation for meeting development objectives of India.
- Renewable energy and DDGs are closely linked and needs to be promoted on a war footing.

# Conclusions

- It is clear that renewable energy is one of the major thrust areas for mitigating climate change.
- UNDP is working very closely with the Government of India in promoting and implementing projects on renewable energy.
- Solution Exchange- Climate Change Community, facilitated by UNDP is being effectively utilized to learn from the tacit knowledge of practitioners and identify the constraints being faced in the field.
- For inclusive growth to be a reality in the near future there is a need to recognize renewable energy and environment as key developmental issues rather than technical or sectoral issues.



**Thank You**