IDENTIFYING POLICY INTER-LINKAGES FOR THE ULTRA-LOW-HEAD MICRO HYDROPOWER SECTOR DEVELOPMENT FOR LOW CARBON ENERGY TECHNOLOGY DEPLOYMENT IN INDIA

Kashinath Vajpai, National Project Coordinator
Kentaro Aoki, Project Manager
Renewable and Rural Energy Unit (RRE)
Energy and Climate Change Branch (ECC)
Global Focus On Addressing Energy Security

1. Reliable, affordable and sustainable forms of energy,

2. Shift energy production and consumption towards cleaner, efficient and greener patterns
India’s Contribution in Carbon Emission

- Energy-induced CO2 emissions increase by 57% during 2005–30: India accounts for 14%
- 0.4 billion Indian population (45% rural) do not have access to electricity
- 90% rural, 33% urban households do not use clean cooking fuels
Need: Low Carbon Economy Promotion

• Adopting low carbon economy by adopting low-carbon low-emission technologies (LCETs), India

• Need to deploy low-carbon electricity generation and energy efficient technologies

• Focus on sustainable industrial development actions by reducing the dependency on the use of fossil fuels
Solution: Low-Carbon Low-Emission Technologies

- Focus on enhancing technological innovation in RE investments
- Help in economic opportunities & social development, negligible environment threats
- Focus on sustainable industrial development actions by reducing the dependency on use of fossil fuels
Piloting: Low Carbon Emitting Technology in India

- First kind of LCET technology transfer started in 2013 as pilot with 10 kW g
- Focus inclusive and sustainable industrial development
- To Enhance productivity, creating new job opportunities, boosting the use of clean and affordable energy,
- Providing training to the local communities through knowledge management and business model creation.
Federal Ministry on Renewable Energy Promotions

- MNRE promotes renewable energy initiatives to supplement energy needs for household and industrial applications,

- Provides financial incentives for SHP & MHP

- Strategic plan (2012-2017) targets: Out of total installed grid interactive power generation capacity, 2% should come from small & micro hydropower

- Supports development of MHP through Central Financial Assistance (Rs. 1,25,000 per kW)
Ministry for Environment, Forests & Climate Change (MoEFCC)

• Focus upon appropriate climate adaptation and mitigation measures through deployment of energy efficient low carbon technologies
Facility for Low Carbon Technology Deployment

- Technology Development Board (TDB), Department of Science & Technology, Govt of India initiated the Facility for Low Carbon Technology Deployment (FLCTD),

- Aims to promote and adopt increasing use of new technologies which shall require lower consumption of Energy to Industrial applications (TDB-2014).
## Various Policies and Acts: Towards Green Energy

<table>
<thead>
<tr>
<th>Name</th>
<th>Year</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Conservation Act</td>
<td>2001</td>
<td>On various energy efficiency measures</td>
</tr>
<tr>
<td>National Electricity Act</td>
<td>2003</td>
<td>Promotion of development of renewable energy (RE) and rural electrification through non-conventional sources</td>
</tr>
<tr>
<td>National Electricity Policy</td>
<td>2005</td>
<td>Lower Income Groups through the provision of subsidy</td>
</tr>
<tr>
<td>National Rural Electrification Policy</td>
<td>2006</td>
<td>Focuses upon improved accessibility, availability, reliability and quality of electricity</td>
</tr>
<tr>
<td>National Tariff Policy</td>
<td>2006</td>
<td>State Electricity Regulatory Commissions (SERCs) to fix a minimum % of Renewable Purchase Obligation (RPO) from RE</td>
</tr>
<tr>
<td>National Action Plan on Climate Change</td>
<td>2008</td>
<td>Share of RE total energy mix should be up to 15% by 2020.</td>
</tr>
<tr>
<td>Hydro Policy</td>
<td>2008</td>
<td>Tapping of hydroelectric potential at a faster rate, promoting small &amp; mini hydroelectric projects</td>
</tr>
</tbody>
</table>
Evolution of Key Energy and Climate Change Policies and Policy Instruments

- National Electricity Policy (2005)
- National Tariff Policy (2006)
- Hydro Policy (2008)
- National Clean Energy Fund (2011)
- Central Financial Assistance for Small Hydro & Micro Hydro Power (2012)
- Energy Conservation Act (2001)
Conclusion
Focus of Country Governments: LCETs

- Deployment of innovative low carbon emission technologies
- To reduce greenhouse gas emission and help in climate change mitigation
- Linking sustainable energy with productive uses through development of small enterprises.
Identify and Review Current Policies-LCET

- Identify and review the current key policies related to the case of piloting a case of ‘Low Carbon Energy Technology (LCET)’

- Adopting Ultra- Low Head Based Micro Hydro Power technology (ULH-MHP) in the wake of available institutional and policy framework in India.
Inter-linkages of Policies in ULH-MHP Sector

• Policies could be inter-linked as prioritized policy framework
• Overarching multi thematic areas-development/livelihood, energy and climate change.
• Holistic understanding of ULH-MHP sector development activities could be provided.
• Close cooperation at federal and state level will be important
Further Contact

UNIDO Headquarter:
Dr. Kentaro Aoki, Project Manager (k.aoki@unido.org)
Rural and Renewable Energy Unit
Energy and Climate Change Branch

UNIDO Project Execution Unit:
Kashinath Vajpai, National Project Coordinator
(k.vajpai@unido.org)
Project Execution Unit, c/o UREDA, Energy Park Campus, Patel Nagar, Dehradun, Uttarakhand, India