RENEWABLE ENERGY
EMPLOYMENT OPPORTUNITIES

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Why is it important to discuss employment?

• India needs to create 8.1 mn jobs/year to maintain the employment rate [World Bank SAEF-Apr18].

• Employment-to-population ratio since 2005 from 55% to 46.5% in 2020.

• Effect of Covid-19

• India's Gross Domestic Product (GDP) is expected to contract by 9.6% in FY2020-21 [SAEF, fall 2020 report].
Renewables as potential job-creating sector

- the sector exhibited resilience and endurance during the Covid-19 disruption; and
- gained competitiveness in the energy market and
- as an alternative to polluting fuels to drive energy transition
Why creation of jobs is increasingly important in RE?

• **Share**: RE share to increase one-sixth today to nearly two-thirds in 2050 [“well below” 2C]

• **Investment**: Energy sector will require an investment of around US$900 billion annually, between 2015 and 2050.

• **Targets**: Many governments have RE target; Indian government target - 175 GW by 2022; 450 GW by 2030

• **Transformation**: Replacement of fossil-fuels and hence to absorb job losses

• **Sustainable, equitable and inclusive development**: Has to match the expectations
What is the current status?

• Future energy employments will be driven by renewables
• Growth trends in RE continues globally
• 3x FTE potential over fossil fuels (7.5/USD mn)
• Chronic shortage of skilled workers
• Gender-bias

Source: IRENA
Within RE where are the jobs?

**Global**

- Solar Photovoltaic: 3,755 jobs
- Liquid Biofuels: 2,475 jobs
- Hydropower: 1,957 jobs
- Wind Energy: 1,165 jobs
- Solar Heating/Cooling: 823 jobs
- Solid Biomass: 764 jobs
- Biogas: 342 jobs
- Geothermal Energy: 99 jobs
- Municipal and Industrial Waste: 39 jobs
- CSP: 30 jobs
- Tide, Wave and Ocean Energy: 11 jobs

**India**

- Solar PV: 204,000 jobs
- Wind energy: 63,000 jobs
- Liquid Biofuels: 35,000 jobs
- Hydropower: 367,000 jobs
- Solar heating/cooling: 23,800 jobs
- Solid biomass: 58,000 jobs

**Capacity vs Jobs in India**

- Hydro
- Wind
- Solar PV
- Biomass

- Percentage capacity
- Percent jobs
Is RE sector creating enough jobs?

2012-2019 Compounded Annual Growth Rate (CAGR)

- Renewable Energy Capacity: 8.4%
- RE Jobs: 6.7%
What are the issues with Indian RE employment?

- RE Growth stemming from large-scale installations
- Wind sector is currently facing head-winds and hence, affected manufacturing
- Solar sector is import dependent: India is outsourcing all the manufacturing jobs to China, while developing its own solar energy sector.
- Solar rooftop and mini-grids lack vigor
- Skilled labour
## Employment potential and gender-bias

<table>
<thead>
<tr>
<th>Employment Potential</th>
<th>Full-time jobs/MW</th>
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</thead>
<tbody>
<tr>
<td>Wind</td>
<td>1.27</td>
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<tr>
<td>Solar utility scale</td>
<td>3.45</td>
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<tr>
<td>Small-hydro</td>
<td>13.84</td>
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<tr>
<td>Biomass</td>
<td>16.24</td>
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<tr>
<td>Solar rooftop</td>
<td>24.72</td>
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<table>
<thead>
<tr>
<th>Women Employment in RE</th>
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<tbody>
<tr>
<td>Globally</td>
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<tr>
<td>India</td>
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<tr>
<td>Solar rooftop</td>
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<tr>
<td>Mini-grid</td>
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Collected from various sources
Questions

• How renewables can change the employment landscape in India?
• Will solar manufacturing in India bring jobs?
• Centralized vs de-centralized development
• Medium-term and long term policies
• Jobs in research and recycling

CSE Factsheet:
https://www.cseindia.org/factsheet-renewable-energy-10479