



Capacity Building in Indian Renewable Energy Sector

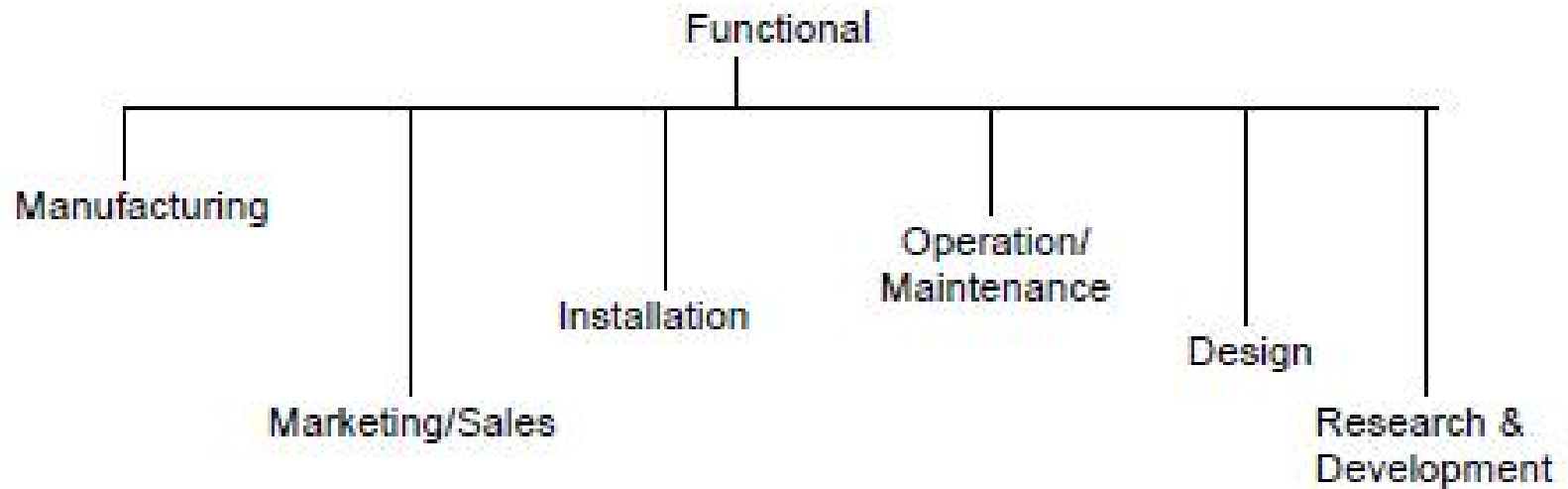
Addressing Education and Skills Gap



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Typical Functional Areas for Renewable Energy



Potential & Deployment

(Grid-interactive renewable power)

Source	Estimated Potential (in MWeq)	Achievements as on 30.9.09	Aim for 2017	Aim for 2022
Wind Power	48,500	10,528	35,000	45,000
Small Hydro Power (up to 25MW)	14,000	2,467	6,500	9,300
Biomass Power	16,700	797	1,500	2,500
Bagasse Cogeneration	5,000	1,165	3,400	4,100
Waste to Energy	3,800	63	600	1,100
Solar Energy	*	3	4,000	20,000
Total	88,000 (excl. Solar)	15,023	51,000	82,000

* ~ 6,00,000 MW



India's Skills Requirement in Renewables

➤ Wind sector

- 2GW installed capacity per year would create a total of **243,225** jobs by 2020
- 1GW installed per year would create a total of **145,725** jobs by 2020

➤ Solar sector

The Government of India plans to increase installed solar capacity from 100MW in 2008 to 20GW in 2022.

- Up to **234,350** jobs could be created by 2022 if the government targets are met.
- Up to **117,175** jobs could be created by 2022 if the government targets are only half met.

➤ Bio-fuels sector

The Government of India plans to raise 3 million biofuel hectares 'substantially on wastelands' in 200,000 villages and to raise a further 4 million hectares of plantation to cover 100,000 industries.

- Up to **5 million** jobs could be created as a result of village coverage.
- Up to **5 million** further jobs could result from industrial biofuels production.

Current skill gaps in the sector

- ❖ At present, there are very few students opting for RE subjects at the degree level as it is an elective.
- Off take of RE students into the industry through campus selections is minimal.
- University courses' curriculum is lagging content in cutting edge RE technologies. (Eg. Concentrated Solar Collectors, Solar Parabolic Trough System, Solar Concentrated Hybrid Thermo-Photovoltaic System).
- Inadequate skill-sets in module assembly like MG Silicon, poly silicon and wafer technology in solar sector.
- Chemists, Life Sciences, bio chemists & microbiology candidates are required for biomass R & D.
- Special training is required in about 15 agri related areas like seed quality, species of plants, soil conditions, etc., in bio-fuels sector

Addressing the Gaps

- ❖ Short term (3 months and 6 months) certificate courses in RE, with highly focused content on process and design aspects of a particular RE technology, should be offered by Universities.
- To enhance the knowledge base of Indian institutes and keep abreast of the latest technologies in the RE sector, it is strongly recommended to have university-university collaboration across countries.
- A Public Private Partnership (PPP) model needs to be formulated for skill development in renewable energy sector.
- Organize Green Job fairs at regular intervals to attract talent into the Industry
- Proactively create jobs through setting up of RE parks throughout the country on the lines of Green SEZs.

Addressing the Gaps...conti..

- ❖ Adoption of ITIs by RE industries and working jointly with the management to develop curriculum (Class room trainings + Field trainings).
- RE industry must sponsor courses, tailor made for their specific application and absorb trained candidates after the completion of the same.
- Encourage web-enabled RE education and Distance Education Programs in RE technologies.
- Form a national committee, under the leadership of MNRE to implement and monitor HRD activities in RE sector. This committee will involve stakeholders from Government, Private sectors and NGOs.

**How Australia can help in
addressing skills issue in Indian
renewable energy sector ??**

Thank you.