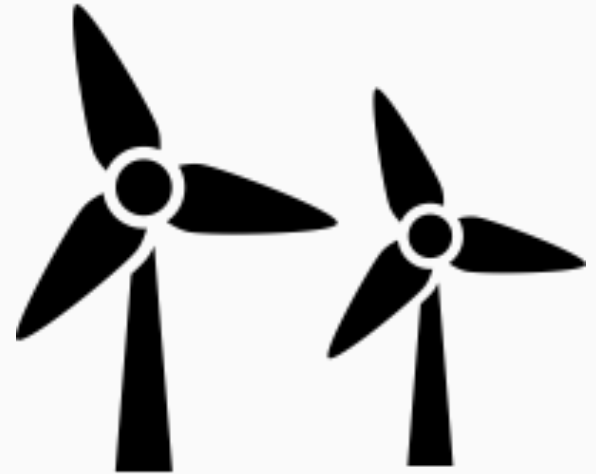


Feasibility Assessment of Modular Bio-Based Wind Turbines in the Indian Market

By Dwie Steffyanti (20773)

November 9th, 2018

- Background
- Research Statement
- Methodology of Assessment
- Current limitations
- References

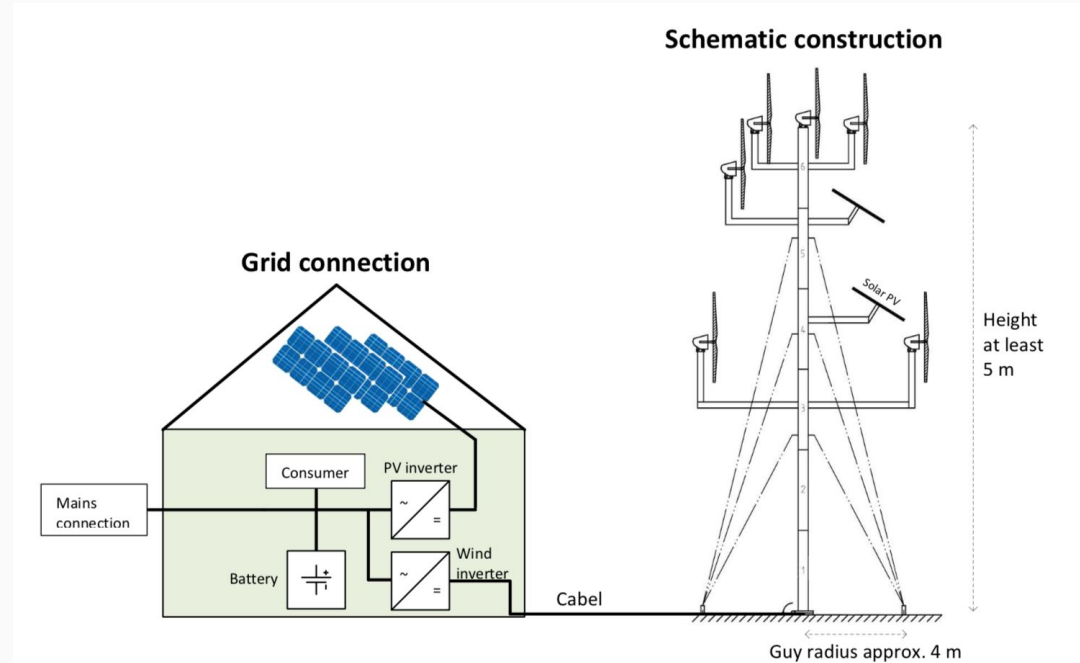


- Development of a modular micro wind energy system with bio-based materials
- Project consortium:
 - Hochschule für Wirtschaft und Recht Berlin
 - MoWEA UG Berlin (MoWEA)
 - NOVO-TECH GmbH & Co. KG Aschersleben (NOVO)
 - **MicroEnergy International GmbH Berlin (MEI)**
 - Technical University Berlin (TUB)
 - Bioenergiehof Böhme GmbH Obercarsdorf (BEH)

- bio-based polymers or bioplastics
- monomers predominantly produced from renewable raw materials, as well as biocomposites, e.g. natural fiber reinforced plastics and wood plastic composites (WPC)
- The primary customer benefit is the power supply in off-grid areas

MOWEA Champ - Modular Wind Turbine

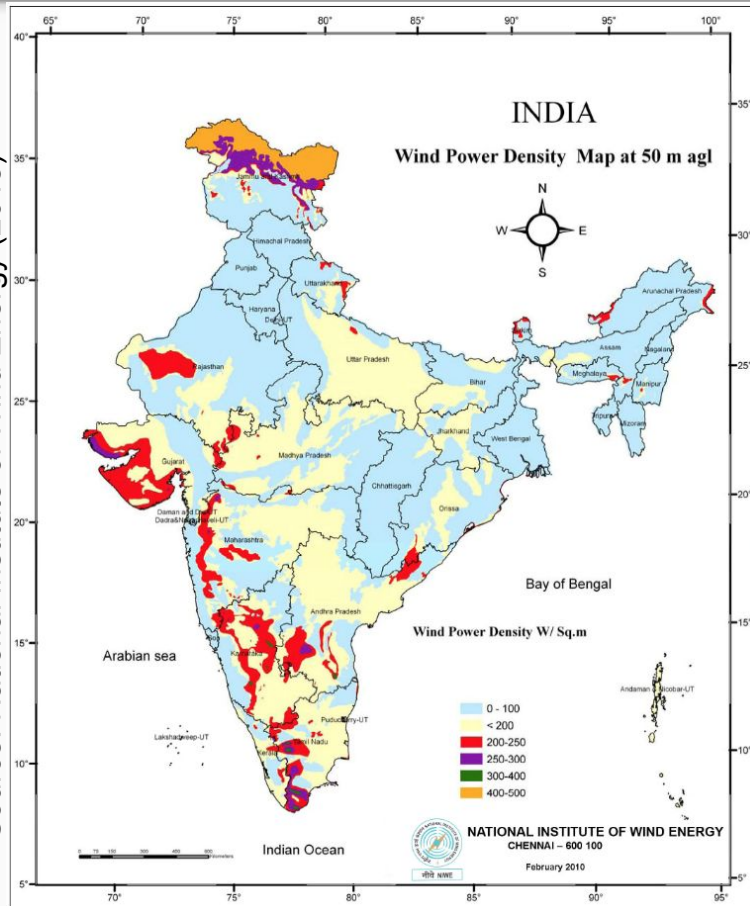
- Ideal for decentralized energy production
- Easy scale up → solar-wind hybrid possible
- Current model has peak power of 400 W
- The standard configuration is 3 turbines on a pole with 10 m height and 2 side arms.



Source: MOWEA UG (2017)

Market Potential - Wind Power

Source: National Institute of Wind Energy (2018)



- The Indian wind energy sector has an installed capacity of 32.4 GW, as of March 31, 2017 (INWEA, 2018)
- The 4th largest installed wind power capacity in the world (Global Wind Energy Council, 2018)

The electrification rate in the country reached 82% in 2016 (IEA, 2017).

However....

50% of electrified rural households in Uttar Pradesh, Bihar, Madhya Pradesh, Jharkhand, Odisha and West Bengal don't even get 12 hours of supply in a day, due to unreliable grid connection (Lighting Global, 2018)

Is BioWEA suitable for the Indian market?

- Demand Assessment: current energy needs of households in India (consumptive & productive use)
- Technical capabilities of BioWEA to enhance current energy landscape in India
- Sustainability indicators
 - Environmental
 - Economical
 - Social
- Possible business cases for the Indian market

References

- International Energy Agency. (2017). *Energy Access Outlook*.
- Lighting Global. (2018). *The 2018 Global Off-Grid Solar Market Trends Report*
- Indian Wind Energy Association. <http://www.inwea.org/>, accessed 08.11.18
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Thank you