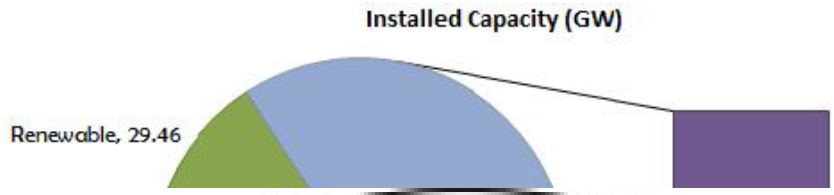
avenues in the country. Micro-grid enterprises in villages can transform hitherto stagnant, socially inactive and unproductive villages into small hubs of cottage industry and make these villages economically developed, productive and prosperous.



4. Judicious Mix of Engineering and Entrepreneurial Skills for Successful Entrepreneurship

The Engineering entrepreneur amalgamates technological skills with acumen for entrepreneurship thus nurturing traits and skills related to business. The prospective individual

must acquire the knack and ability to gage environment and identify what is in the best interests of the enterprise keeping the business environment in mind. Entrepreneurship involves risk taking, innovation and applying knowledge and skills to set up new ventures or diversify from the existing ones. Entrepreneurship adds significant value to the economy by creating wealth and generating employment. India has a rich tradition of Entrepreneurship and the more it is nurtured in the younger generation, the more developed the economy of the country will be. The younger generation has shown more interest in entrepreneurship in recent years which must be encouraged at all costs for our national economy to grow.

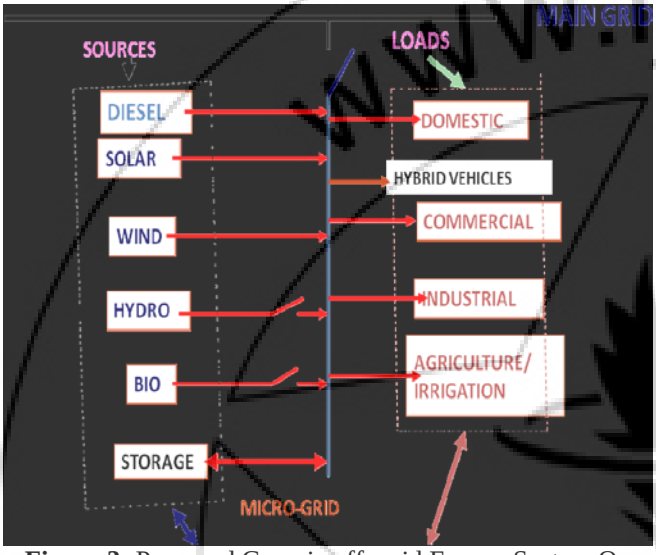


Figure 3: Proposed Generic off- grid Energy System On Micro Grid Operation

5. Two in One

As is already said, the Engineering Entrepreneur is more than just the engineer. In addition to the skills of engineering, one must be resourceful enough to cater to the public needs and create wealth in the process. The entrepreneurial skill keeps one alert to sense the environment and encash from ideas wherever possible. By definition, the Entrepreneur is an individual who efficiently and effectively combines the four factors of production namely, the land (natural resources), labor (human input into production using available resources), capital (any type of equipment used in production i.e. machinery) and Enterprise (intelligence, knowledge, and creativity). Entrepreneurship is often difficult and tricky, as many of the new ventures fail for want of clear perception of the opportunities by the organization. However, given the self discipline and the determination and willingness to learn these attributes one can always be imbibed to make oneself successful as entrepreneur.

6. Facilitators and Support Organizations - The Essentials to identify and nurture a budding entrepreneur

At the very initial stage the prospective engineer entrepreneur may need guidance relating to the project report preparation, deciding location and layout of plant, making selection of men and machinery, sensing competition level and exploring marketing and other aspects relating to the enterprise. One must also be fully aware of the various types of finance facilities including Government assistance and subsidies. The entrepreneur should be able to consider financial aspects and comparative advantages of various Government subsidies and assistance especially when establishing enterprise in backward areas and the disadvantages related to the marketing activities and transport cost and problems of raw-materials and other issues.

Young engineers and managers constitute the most deserving target group for this support under the umbrella of MSME (Ministry of Small and Micro Enterprises of the Government of India) due to their technological education, background and skills. For the purpose of facilitation, the MSME classifies industries as below:

Classification	*Manufacturing Enterprise*	*Service Enterprise*
Micro	upto Rs. 25 lakh	upto Rs. 10 lakh
Small	above Rs. 25 lakh and up to Rs. 5 crore	above Rs. 10 lakh and up to Rs. 2 crore
Medium	above Rs. 5 crore upto Rs. 10 crore	above Rs. 2 crore upto Rs. 5 crore

However, MSME is not the only facilitator for helping people to set up a new enterprise. The prospective entrepreneur should initially focus and identify various Departments and support agencies for the proposed enterprise and make a studied decision on the idea conceived. There are many other Ministries in the Government which directly or indirectly help prospective entrepreneurs to translate their ideas to materialize for the promotion of economy and public good. For instance, the Ministry of Non Renewable Energy resource (MNRE) of the Government of India is one such organization to support electricity ventures. The support functions required for small industries may inter-alia include finance, preliminary training in entrepreneurship or some specialized aspects needed to establish and operate an enterprise. For example, SIDBI (www.smallb.in) and NABARD (www.nabard.org) act as facilitators in finance matters. Other organizations like NSIC (www.nsic.co.in), NIESBUD (www.niesbud.nic.in) provide skill training and entrepreneurship training in some specific areas. There are other support organizations like SIDO (www.mssewb.org) and SISI (www.dcmsme.gov.in) providing specialized assistance to the entrepreneurs. The exact menu of the support required shall vary from case to case and individual to individual and no single prescription can help each and every entrepreneur. The author would therefore advise a careful study of by the prospective entrepreneur about what is required to be achieved and what is available in the menu and strike a fair balance between the two by taking a studied and judicious decision as it is only the entrepreneur who will bear the brunt as outcome of the decisions ultimately.

The Government of India has already declared its avowed objective to accomplish Energy for all. This can only be accomplished if young engineers come up for establishing new off grid solar enterprises with adequate KWh capacity

to meet energy needs of the rural population. The Government policy focuses on eradicating energy poverty and energy crisis through public private partnership of which the small entrepreneur forms an integral part. Harnessing solar and other renewable energy resources shall bring the country nearer to its goal and create new job avenues for the local population.

A microgrid is an emerging area with very few players that suits a microenterprise and befits to be created and run by the young engineer. Micro-grid interventions present a potential opportunity to address the rural electrification needs through an Infrastructure standard solution. The Government of India has allocated funds for development of such enterprises through individual enterprises and social entrepreneurship under RVEP (Remote Village Electrification Programme), VESP (Village Energy Security Programme) and DDG (Decentralized Distributed Generation) Schemes. The focus of RVEP is limited to meet electricity lighting requirements for un-electrified as also electrified villages where supply is available for less than six (6) hours. Its implementation is through the State Nodal agency and for funding purpose it requires verification by Rural Electrification Corporation for approval of MNRE support. For social entrepreneurs micro-grids, The entrepreneurs are supposed to be on contract; build, operate, maintain and transfer basis for an initial term of 5 years; the term can be extended for another term or awarded to another party. The RVEP provides 90% capital subsidy and is linked to JNNSM (Jawahar Lal Nehru National Solar Mission) in the budget. The Scheme implemented through RVEP is an off-grid Project linked to JNNSM but has an ambitious target to make available 200 MW by 2013 and 2000 MW by 2022 through renewable sources. This scheme covers Off-grid small utility scale power plants in the rural areas and providing solar lanterns to households. Another Off grid energy scheme of MNRE is the VESP (Village Energy Security Programme) with focus on Total energy needs of rural communities which don't have access to grid connectivity. This programme is meant to answer domestic, commercial, agricultural, industrial and motive power needs of the rural community. The scheme provides Central Financial Assistance of CFA of Rs. 20000/- per household and is funded through coordination by the State Nodal agencies; – its developers are expected to be the NGOs and cooperatives implying that it needs social entrepreneurship to develop enterprises under this class. 90% capital subsidy is allowed to the entrepreneurs under the scheme. Another Scheme in vogue is from the Ministry of Power (MoP) under Off-grids by the name Decentralized Distributed Generation (DDG) for remote villages with population more than one hundred where grid connectivity is either not feasible or not cost effective. The entrepreneur must provide power for 6-8 hours per day for at least 25 days per month. The implementation of this Scheme is also through the State Nodal agency shortlist the prospective areas in consultation with State utility. 90% capital subsidy from central funds is available to the enterprises under this Scheme as well. The cost of spares for 5 years after commissioning (excluding cost of consumables and labour) is included as project cost for which capital subsidy and soft loans are provided to the entrepreneur.

7. Creating New Employment Opportunities

Development of solar enterprises has, apart from expanding energy availability has the potential to create new employment opportunities which shall be an additional contribution by the young engineer in making the nation prosperous. Some examples of the typical job profiles in the dispensation of solar enterprises are given here in the Table below:

Type of Job	*Organization*
Solar Energy Mechanic Energy Specialist Manufacturer & Marketer of Solar Lanterns and Solar Energy Based Systems	Center for Scientific Research (CSR), Auroville, India
Entrepreneurial Development & Funding	Indian Renewable Energy Development Agency (IREDA), Delhi, India
Manufacturer & Marketer (solar PV, biogas systems & accessories and wind turbines) Solar Energy Mechanic Energy Specialists Wind meteorologists Wind turbine engineers	Grameen Shakti (Wind & Solar), Bangladesh
Solar Energy Mechanic Energy Specialists (Solar Water Heating Systems) Mechanic	Renewable Energy Plan 2012: Government of India Initiative, India

8. Conclusion

The authors conclude by saying that like any other profession the entrepreneurship in energy is not without its perils and one must be careful enough to consider and fully verify every aspect (including contents of this paper) before choosing energy entrepreneurship as career. Entrepreneurship is not the cup of tea for those who seek a lucrative and comfortable career without hard work. However, it is asserted with surety that India's energy poverty provides a new opportunity to design new entrepreneurial strategy and design energy future for the people. Firstly the futuristic plans to create fossil fuel grid for the energy poor segment shall be leapfrogged to a clean and futuristic energy source by the introduction of standalone microgrid systems in remote villages. And secondly, it shall bring new employment opportunities in the economically backward region suffering energy poverty. This would also pave the way the world solves its twin problems of energy poverty and climate change in one stroke

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