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Seminar Report

On

GREEN ENTREPRENEURSHIP – TRANSFORMATIONAL ROLE IN BUILDING A GREEN ECONOMY

Submitted to

Seminar Teachers

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CONTENT SHEET

I. Introduction

Environment is one of the major concerns nowadays with day by day degradation and misuse leading to calamities and disasters worldwide. Droughts, Floods, Earthquakes, Landslides, Water Crisis, Air pollution, Land pollution, Noise, pollution, Severe Weather Conditions, Global Warming has all been becoming quite intense and frequent these days. Every corner of our beloved planet is being affected by the Environmental problems and something needs to be done quickly to revert back the situation to normal.

India slips to rank 120 on 17 Sustainable Development Goals goals adopted as 2030 agenda: Report. India is now behind all south Asian nations except Pakistan, which stands at 129 and the south Asian countries ahead of India are Bhutan ranked 75, Sri Lanka 87, Nepal 96 and Bangladesh 109.

The Global Climate Risk Index 2021 based on the impact of extreme climate events like storms, floods and heat waves on a country and its economy ranked India as the 7th worst affected country, which was an improvement over its 5th position last year. Heavy rains caused loss of 1,800 lives, affected 11.8 million people and inflicted an estimated economic loss of $10 billion, as per the report by Germanwatch.

The World Air Quality Report 2020 released earlier this year ranked India as the 3rd most polluted country in the world after Bangladesh and Pakistan. Almost half of the world's 100 most polluted cities are in India. Despite sustained improvement over the last few years due to the National Clean Air Programme (NCAP), air pollution in India is still at a dangerous level.

LEED (Leadership in Energy and Environmental Design) is the most widely used green building rating system in the world. Available for virtually all building types, LEED provides a framework for healthy, highly efficient, and cost-saving green buildings. Green buildings India ranks third among top 10 countries in the LEED Green Building rankings. These rankings highlight countries outside of the US that are making significant strides in sustainable building design, construction and transformation.

World Bank Report, 'In India the past decade of rapid economic growth brought many benefits but the environment has also suffered exposing the population serious air and water pollution. the annual cost of environmental degradation in India amounts to about Rs. 3.75 trillion ($80 billion) equivalent to 5.7% of GDP".

A green economy refers to a low carbon and resource-efficient economy where growth is driven by investments that aim at decreasing carbon emissions and pollution, improve energy and resource efficiency, and prevent the loss of biodiversity. Green economy cannot be driven solely from top-down by the policy makers instead it needs to be implemented by green entrepreneurs that also benefit from policy incentives through green innovation and green technology. One of the key process in building a green economy is the green entrepreneurship.

Green entrepreneurship being important for recognizing new eco-friendly business opportunities, it has a critical role in transforming the existing business paradigm into a more sustainable direction so that the environmental and social perspectives are taken into account in addition to the pure economic gains. It is also needed from a development perspective, as global inequality, increasing unemployment numbers, destruction of wildlife and impacts of climate change are threatening society and natural ecosystems. By supporting the development of green enterprises and thus improving the resilience of economies and natural ecosystems.

As a responsible nation India has its own commitment of reducing the negative environmental impact which can only be achieved through the help of Green Entrepreneurship.

II. Objective

1. To understand the concept of Green Entrepreneurship.
2. To know about the schemes and support for promoting Green Entrepreneurship.
3. To review the related research studies.

III. Concept of Green Entrepreneurship

The concept for the “green entrepreneurship” springs from the blend of the key appearances of the term ‘entrepreneurship” and ‘green’. Entrepreneurship: Passion, Motivation, Risk, Innovation and competitive advantage. Green: Sustainable, Ecological and Social “Green Entrepreneurship” is one of the three most important components of the sustainable development and an intersection of traditional, social and sustainable entrepreneurship. Thus, the “green entrepreneurship” is a cost-effective activity whose

products, services, methods of production or organization have positive upshot on the environment.

Green entrepreneurship has been defining first time in the year 1990 the definition of term green entrepreneur was introduced the term "green entrepreneurship" was first used in Gustav Berle's book "The Green Entrepreneur: Business Opportunities That Can Save the Earth and Make You Money" (1991).

According to Berle, "**Green Entrepreneurship** is taking responsibility to create the world we dream"

"***Green entrepreneur*** is someone who starts and runs an entrepreneurial venture that is designed to be green in its products and processes from the very moment it is set up."

According to OECD 2011, "Green entrepreneurship could be defined in terms of the technology used for production in any sector of the economy, or in terms of the sectors firms are active in, in which case our attention is restricted to parts of the economy producing specific types of output. The former is sometimes referred to as a process approach in defining green business, while the latter as an output approach."

Need for Green Entrepreneurship

Green Entrepreneurship is an emerging commerce which is equally profitable and nature oriented and might possibly solve ecological problems through business activity.

In recent days, green entrepreneurs play a very important role in the economic development of the country and also treated as the driving force towards the change of consumer behaviour and also esteemed for launching, innovating, implementing and emerging new thoughts and for their rapid response to these changes. Indeed, there is a crucial variance between the way of looking at green entrepreneurship in developed countries and developing countries. Developed countries and international organizations like the World Bank, UNCTAD, OECD, UNIDO, WTO and FAO – incline to put maximum prominence on market opportunities and on the term 'green', while developing countries tend to emphasis more on market needs and on the term 'entrepreneurship'.

From a development perspective "Green entrepreneurship" is a progressively appropriate phenomenon, which is still largely under-researched. While global inequality and

growing unemployment pose major challenges to policymakers, the emerging effects of climate change and the rapid loss of biodiversity together with the widespread destruction of wildlife and natural habitats, composite the susceptibility of already burdened social groups and ecosystems. Green entrepreneurship also plays a significant role in job creation. Moreover, technological advancement and variation are extensively influenced by the nature of innovation and its determinants. The recent advance of the globalization of economic procedures has drastically altered the outdated approaches used by enterprises to innovate. Though remarkable advances have been made with environmental accounting and reporting as well as with technological research and implementation, the gap towards sustainability is still significant.

The statements clearly indicates about the important role of businesses in tackling with the environmental challenges. It is only the green practices/green entrepreneurship which could provide a remedy in this dire situation.

In the last 20 to 30 years green entrepreneurship has gained a lot of popularity and momentum with the rising level of environmental concerns. It has become a separate niche which also builds up the brand value due to its nature and purpose.

A separate consumer base has been created which prefers eco-friendly and organic products and services as well as holding high reputation of the enterprises going green in any way. More and more startups have also come up with green business plans and even existing businesses are moving towards greener practices owing to the increase in demand and creation of goodwill. Moreover State policies also favors green business owing to the welfare and environmental benefits derived from it. It can therefore be rightly said- *'green entrepreneurship is the need of time'.*

"Business is the only mechanism powerful enough to produce the changes necessary to reverse global environment and social degradation". - Paul Hawken

“GE - potential - mastering the pressing environmental problems - by introduction of new, environmentally friendly products" - Schaper, 2005

"Through catalyzing an overall shift of business strategies towards more sustainable products and processes" - York and Venkataraman, 2010

"The business sector is often viewed as one of the largest contributors to environmental degradation" - Cohen and Winn, 2007

Green Entrepreneur as a Change Agent

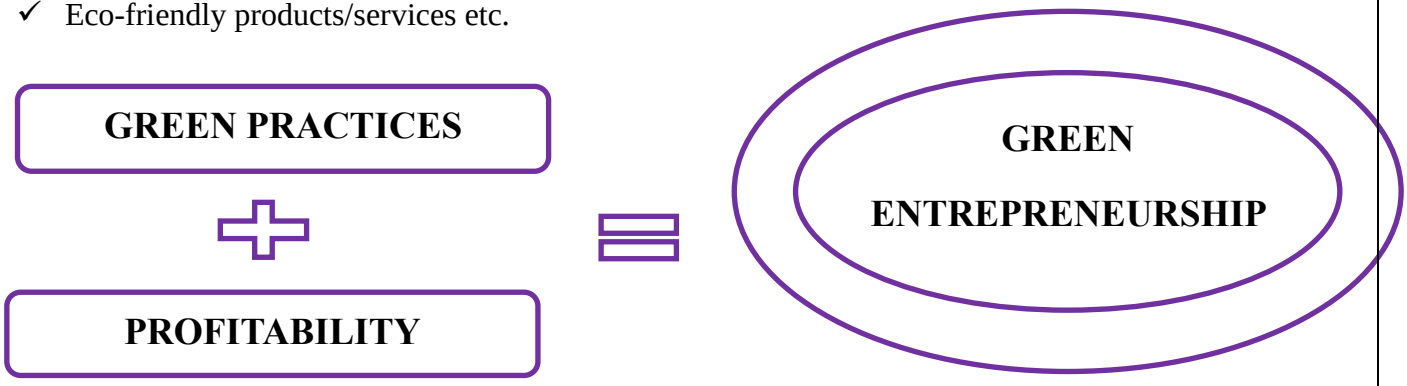
Initiating mainly from a level of technical innovation such as pollution reduction, clean production processes and resource efficiency, green entrepreneurship goes beyond the narrow technology-based aspects of doing business. It can nurture a culture of lifecycle-based thinking and stimulate green innovation at the societal level. In doing so, green entrepreneurs create a shift in peoples' mindsets towards greener thinking and increased demand for green products and services, boosting the dual effect of employment and environmental gains. Initiating mainly from a level of technical innovation such as pollution reduction, clean production processes and resource efficiency, green entrepreneurship goes beyond the narrow technology-based aspects of doing business. It can nurture a culture of lifecycle-based thinking and stimulate green innovation at the societal level. In doing so, green entrepreneurs create a shift in peoples' mindsets towards greener thinking and increased demand for green products and services, boosting the dual effect of employment and environmental gains. Green-entrepreneurs as agents of change socially and sustainably minded entrepreneurs (or social-/eco-entrepreneurs) solve environmental problems through the market, identifying environmental challenges and reinterpreting them as market gaps. They subsequently aim to turn those gaps into business opportunities and reduce or eliminate negative impacts on the environment through market mechanisms by offering their products and services. They do not only strive to solve environmental problems but are vital agents of change. In a resource-constrained and market-based world, they are pioneers and leaders of sustainability as they provide the business community with a role model using green business practices. They are driving (tye drivers - Global Warming Saving Critical Natural Resources Sustainable Enterprise Creation Creating a Better World For Future Generations) the mainstream adoption of environmental practices and help to implement and fix change in society. They are long-term problem-solvers, since they usually aim to be self-sustaining while transforming environmental externalities into revenue generating business models. Their success does not depend on continued external funding but is self-perpetuating.

IV. Green Practices

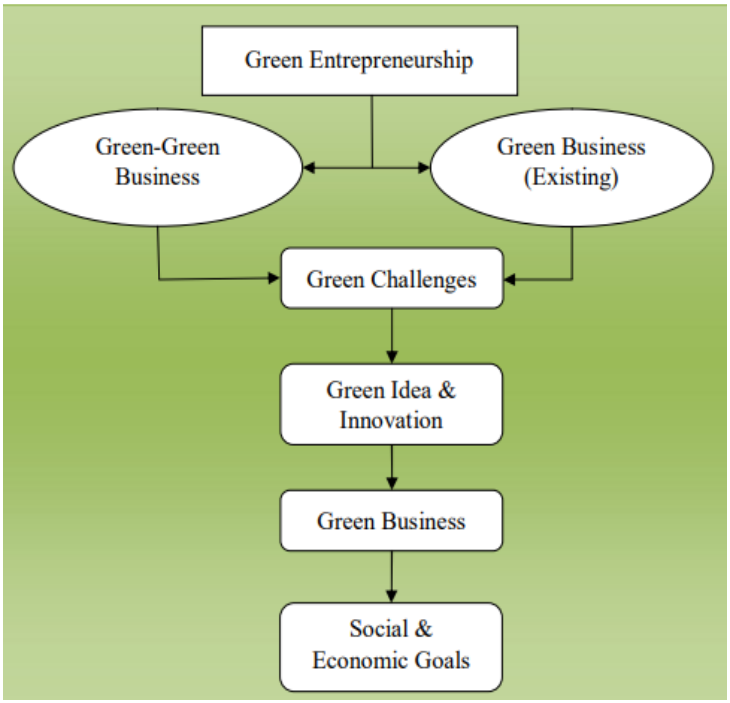
Green practices can be performed by anybody in respect of benefitting the environment be it individual, enterprise, government/government body etc. However, for the purpose of this

study green practices here refers to 'green entrepreneurial practices' undertaken by existing and startup businesses for the gross benefit of the environment. Green Practices are eco-friendly practices involved in production of a product, service or process which is beneficial to the environment in one way or other. Those businesses performing these activities with a dedication towards safeguarding the environment and maintaining profitability of the enterprise may be called as practicing green entrepreneurship. Green practices along with financial sustainability thus forms the basis for green entrepreneurship. These practices may include:

- ✓ Energy conservation and Enhanced Energy efficiency
- ✓ Recycling and reuse of resources
- ✓ Optimum utilization of resources
- ✓ Waste and ecosystem management
- ✓ Lower emission
- ✓ Eco-friendly production process and
- ✓ Eco-friendly products/services etc.



V. Process of Green Entrepreneurship



The process of green entrepreneurship involves tackling with the environmental challenges utilizing innovative ideas and fulfilling social and economic obligations. It includes the activity to be performed in green entrepreneurship by the green entrepreneur or the green business.

Sharma and Kushwaha (2015) has proposed in their study that green entrepreneurs are related to four components which has been validated through a conceptual model. These four components are:

- **Green challenges:** The environmental problems faced by the business which is to be sorted out. This may include problems related to pollution, global warming and climate change, natural resource scarcity, energy consumption, waste, and other hazardous disturbances in the environment.

- **Green idea and innovation:** The green idea and innovation involves having unique sustainable solution to the green challenges. This may include solutions like green product/service and green design, green production, green practices, green supply-chain etc.

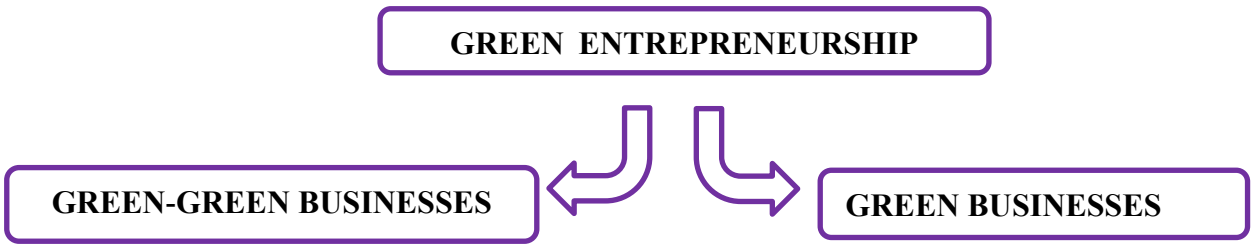
- **Green Business:** The green business constitutes an enterprise fulfilling the environmental obligations which includes either reduction of ecological degradation or enhancing the positive impacts on environment. This includes greening (making eco-friendly) the product,

service, process or practice of the enterprise. Green business here refers to both 'green' as well as 'green-green' businesses.

- **Social and Economic goals:** The social and economic obligations to be achieved by the business. This includes profit to be earned, revenue generation, societal obligations like housing, schooling, environmental conservation, health etc.

These four components also form the basis of the process of green entrepreneurship as it includes the activity that is performed or practice that is adopted, by the green entrepreneur/green business. The point which is to be noticed in this approach is that the components attributed to green entrepreneurs/green entrepreneurship are not isolated elements but are inter-related and inter-dependent forming a complete process. This process is a step-by-step arrangement of the above said components. The green challenges are to be sorted through green ideas and innovations establishing a green enterprise/business performing green practices, which helps in the fulfillment of social and economic goals set by it. This whole process is a complete chain of activities performed by both 'green' as well as 'green-green businesses' and is termed as 'green entrepreneurship process/practice'.

VI. Categories of Business under Green Entrepreneurship



As such, there are two categories of businesses typically practicing green entrepreneurship/green activities. They are:

1. Green Businesses (existing firm moving towards environmental responsibility)**:** This type includes those businesses which does not startup in that way but later on adopt the *'greening'* or environmental ways either completely or partially. Green ways may include eco-friendly products/services, green processes and green practices.

2. Green-Green Businesses (firm which is green in its design of product and process from the very beginning as a start-up)**:** This type includes those businesses which are designed to be green or environmental in its processes, practices and products/services from the very beginning of the startup. These businesses are intended towards applying sustainable solution to the challenges faced and fulfill various sustainable goals. 'Greening' is the core business process of these type of ventures. The businesses in this category are generally classified under Micro, Small and Medium Enterprises (MSME) sector due to obvious reasons of being a startup business.

VII. Green Initiatives

Green initiatives includes reducing down or negating the environmental degradation caused by the human activities and industrial production. It works by either reducing the negative environmental impact or increasing the positive effect on environment or both. Here we are briefly discussing some of the major green initiatives undertaken by businesses and entrepreneurs around the world aimed towards making it a better place to live. Some of the Green Initiatives under Green Business and Green-Green Business has been discussed below:

Green (Existing) businesses:

1. McDonald's: It is one of the largest food chain in the world and is going green by working towards reducing energy consumption, using energy-efficient appliances, and saving about 25% of energy wastage. Among other green initiatives it has also set up 'Green Parking Lots' with permeable concrete and ability to recharge hybrid eco-friendly vehicles and cleaning ground water. Moreover, efforts are being made to obtain animal products without destroying their natural habitats.

2. Bank of America: Being one of the largest American financial service company, Bank of America, promotes sustainable environment through its green initiatives including cutting down the paper requirements by 32% and running an internal paper recycle programme, recycling about 30,000 tons of paper which saves almost 200,000 trees. Moreover, it also provides $3000 cash-back reward to employees using hybrid cars, indirectly reducing air and noise pollution.

3. Honda Motors: Being one of the largest automobile company around the world, Honda Auto has invested a lot on green initiatives through producing fuel-efficient vehicles and

working towards developing a hydrogen fueled cell powered vehicle. For this it has also been ranked as the most fuel-efficient automobile producer in United States. Moreover, it is also committed towards reducing carbon dioxide emissions and is researching on hydrogen fueled carsas against gasoline ones.16

4. Google: Google is one of the largest technology company in the world which is particularly committed towards going green. It has constructed world's most efficient data centers with huge energy conservation facilities. It is also working towards the utilization of renewable energy as well as clean energy products. Moreover, It has also pledged huge sums towards buying and installing solar panels and windmills.17

5. Tesco: Tesco is a British multinational groceries and general merchandise retailer which holds the 3rd rank in retailing in the world. It has been moving towards green ways by adopting the following green initiatives: a) Offering discounts and savings to shoppers returning shopping bags, b) Utilizing wind energy to power its stores, c) Heavy investments in recycling, d) Use of biodiesel trucks for delivery purpose, and e) Estimating its carbon footprint on each item sold.

6. Oil and Natural Gas Company (ONGC): ONGC, India's largest oil company has come up with the idea of innovative green crematoriums (Mokshada), which serve as a replacement of traditional funeral pyres cutting down the smoke emission rate, wood consumption (60-70%), oxygen usage and even urning time to $1/4^{th}$.

7. IndusInd Bank: It is one of the first banks in India to come up with no usage of paper for counterfoils and sending electronic messages, which has saved lot of unnecessary usage of paper, reducing deforestation. It has also pioneered country's first solar-powered ATM.

8. ITC: Indian Tobacco Company (ITC) has adopted the 'Low Carbon Growth Plan' and 'Cleaner Environment Approach'. It has also introduced 'Ozone treated elemental chlorine free' bleaching technology that has improved the lives of millions in India. The result of this is an entire new range of ecofriendly products and solutions including multi-purpose paper.

9. LG: It has joined the green movement through innovative green products and gadgets which are eco-friendly in nature, such as LED monitors (E60 and E90 series) which consume 40% less energy than conventional monitors. Even the production of such monitors hardy use any hazardous material like halogen or mercury reducing the damage to environment.1

10. HCL: It has also innovated green products like HCL ME 40 Notebooks which do not use harmful chemicals and materials namely polyvinyl chloride (PVC) and is energy efficient. Bureau of Energy Efficiency (BEE) has also rated it 5 star. It has also called for a Restriction on Hazardous Substances (RoHS) legislation in India, thereby bringing an eco-revolution in the IT sector.

11. Haier: Green Initiatives of Haier includes Eco-branding through Eco Life series Products like semi-automatic and automatic washing machines and refrigerators, split and window ACs and many more.

12. Samsung: Samsung India has a range of eco-friendly products like LED TVs, backlights etc. which use 40% less energy and are made with no harmful chemicals like mercury and lead.

13. Tata Consultancy Services: Tata Consultancy Services (TCS) has been globally recognized for its sustainable green practices and secured 11th spot in the Newsweek's 'Top World's Greenest Company' title. It has also scored 80.4% on 'Global Green Score' for creating technologies for agriculture and community benefits.

14. Wipro: Wipro has created technologies that helps in waste reduction and energy saving. It also proudly flaunts its headquarter campus in Pune, Maharashtra, which is the most eco-friendly building in this sector, all over India. It has also been ranked number 1 in the 18th edition of the 'Greenpeace's guide to Greener Electronics' scoring high as 7.1 for: a) reducing greenhouse gas emissions, and b) increasing its use of renewable energy. Moreover, it also has an effective recycling and waste reduction program.

15. MRF Tyres: MRF has innovated the ZSLK series which is all about creating eco-friendly tubeless Tyres made from unique silica-based rubber, which also helps to enhance the fuel efficiency of vehicles using it.

16. Idea Cellular: Idea has strengthened the green movement through, 'Use mobile, Save Paper' campaign. It has also organized 'Green Pledge Campaigns'where thousands pledged their support to the green movement. The company has also set up bus shelters with potted plants and tendril climbers to convey its green message.

17. Tamil Nadu Newsprint and Papers Ltd. (TNPL): TNPL was adjudged the best performer in 2009-10 Green Business Survey and was awarded, Green Business Leadership

Award in the pulp and paper sector. Its major green initiatives includes two clean development mechanism projects and a wind farm project that generated 2,30,323 Carbon Emission Reductions earning Rs. 17.40 Crores.

18. Tata Metaliks Ltd. (TML): TML considers everyday as 'environment day' and this is evident through its green initiatives such as: a) green workhouse practices, b) ample green cover around plant (approx. 33.46% of 197-acre plot), c) use of electric bikes within campus, d) solar-heated canteens, and e) use of green technology and practices.

19. ICICI Bank Ltd.: The green initiatives of ICICI Bank includes: a) Instabanking through internet, IVR and i-Mobile banking, b) green vehicle financing through waiver of a percentage of processing fee, c) green home financing through reduced processing fee for homes in 'Leadership in Energy and Environmental Design' (LEED) certified buildings, and d) green communication based on 'paperless' and 'commute-free' processes.

Green-Green (Start-up) business:

1. Digital Green: A non-profit organization which utilizes technology and social organization to improve agriculture, health and nutrition. It builds a platform which help the rural communities to create and shares videos for extensive adoption of locally relevant practices. It also partners with local, public, private and civil societies to share knowledge on improved agricultural practices, livelihoods, health, and nutrition using locally produced videos.16

2. Waste Ventures: This is a Delhi based start-up, established in 2011 which diverts wastes from dumpsites producing nutrient-rich organic compost. It signs multi-year contract with the local municipalities and employ waste pickers at their processing units to split up the waste. More than 44 projects have been lined up in the year 2016 only, 2 of which has been started in the Andhra Pradesh villages.

3. EnCashea: This is a Bengaluru based start-up which collects scrap waste for cash in select areas of the city. It pays for segregating recyclable scrap properly, lowering the environmental impact. It also has an android app for easy pickup on user request. The rate list for scrap has been listed on the website. Books can go for Rs. 6/kg and e-waste for up to Rs. 10/kg.

4. Fourth Partner Energy: Fourth Partner Energy (4PEL) has been founded in 2010 by Vivek Subramanian, Saif Dhorajiwala and Vikas Saluguti. It focuses on financing and building rooftop solar projects for commercial, industrial and residential clients.

5. Banyan Nation: It collects industrial plastic wastes and recycles it for further use in the industry only. Even performance enhancers are also added to recycled plastic to have a greater lifecycle. A new recycling unit has been inaugurated in Hyderabad. The company recycles more than 300 tons of plastic per month.20

6. SayTrees: It is a group of professionals determined to protect the environment through sensitizing others about environmental conservation and making them to participate in tree plantation campaigns. The group members are generally corporate employees who show their love for trees in weekends.Though started as a weekend pursuit in 2007, now it does more than 50 tree plantation drives in 4 months during monsoon.

7. Priti International: This startup was founded by Hritesh Lohiya and it recycles industrial and consumer wastes into useful products. It has become a $10 million firm which designs and manufactures handmade products out of waste materials like handbags from old gunny bags, cast off military tents and denim pants. It also produces furniture from waste tins, drums, old military jeeps, tractor parts, waste machine parts and lamps from old scooter and bike lights.

8. HelpUsGreen: This unique Kanpur based startup makes 'flowercycled' natural and certified organic products from waste flowers. Flower wastes are collected from places of worship and even the Ganges river and repurposed into vermicompost, luxury incense and bathing bars through proprietary methods.

9. D&D Ecotech Services: This startup has helped households and organizations to adopt rainwater harvesting. It also designs its own rainwater harvesting recharge structure based on the needs and specifications of the clients.

10. Feeding India: This social enterprise tackles two interrelated problems in India in one go. The problems are of food wastage and hunger. This is done by helping the needy get the excess cooked food from restaurants and caterers.

11. The Living Greens: This Jaipur based startup was founded by Prateek Tiwari and it helps to set up rooftop farms and kitchen gardens. The aim is to grow organic vegetables on

every rooftop and to convert every building into a living green building, generating largest number of urban carbon credits in the world.

12. Green Ventures: It creates green technologies and innovative business models to create sustainable energy solutions which includes large-scale renewable energy generation projects, improved energy efficiency schemes, and rural social energy initiatives.

13. Graviky Labs: It is the only startup in India to work in the field of carbon capturing. It creates paint and ink from pollution itself which is captured in the form of raw carbon and soot through the unique contraption that gets connected to the exhaust on the tail pipes of vehicles, chimneys, boats etc. Thereafter, this raw carbon is taken to the purification process which converts the air pollution into printing ink.

14. Sustain Earth: This startup provides clean and affordable cooking gas to rural households in India using innovative biogas technology (Gau Gas systems) and enterprise model. The biogas system is more easy to install, reliable and requires minimum maintenance. The performance of the system can be tracked through mobile and internet connectivity.

15. Green Nerds: Established in 2010, this green startup has developed a range of technological products to control littering, segregate, manage and recycle commercial, residential, household and municipal solid wastes in scientific manner. It offers complete range of solutions and products for waste management and other environmental issues which includes development and erection of plant, equipment and technology for different types of waste management and industrial dedusting systems.

16. Bakeys: This startup was established in 2010 in Hyderabad and worked on the idea of completely removing harmful plastic cutlery and replacing it with edible ones which is made from flour of less irrigation demanding crops like jowar (sorghum). The edible spoons come in variety of flavors and a set of 100 spoons cost only Rs. 300.

17. EcoFemme: This social woman-led enterprise was set up in 2010, Tamil Nadu, producing and selling washable cloth pads, providing menstrual health education to adolescents, and open dialogue on menstruation all along the way. The aim is to create radical socio-environmental change throughrevitalizing healthy menstrual practices that are eco-sustainable.

18. Aura Herbal: It was founded by Arun Baid and Sonal Baid, and is developing its own process of manufacturing natural dyes and textiles, sourcing herbs and other raw materials through made-to-order contracts with farmers in Madhya Pradesh and South India. The first showroom was opened in Ahmadabad with the launch of 'Aura' brand under which it designs t-shirts, shirts, scarves, yoga apparels, eco bags, fabrics, undergarments and SPA products by using herbal dyeing process which is completely chemical dye free and organic in nature.

19. ONergy: This social enterprise was established in 2009, Kolkata and provides decentralized energy solutions to underserved households and institutions. It provides complete energy solutions with an entire range of solar products. It claims to have impacted 2,50,000 lives by providing solar lanterns, solar water heating systems, solar inverters, solar street lights, cook stoves, KW installation for households and institutions etc. Apart from this, it has also launched innovative products like solar TV, solar computer, solar micro grids and solar irrigation systems. It operates through a network of trained rural entrepreneurs, NGOs, SHGs and MFIs and is current present across WestBengal, Odisha and Jharkhand.

20. Sarga: This startup founded by Sunil Mande has been basically involved in creating eco-friendly fabrics and furnishings. It uses completely organic and naturally available fibers like organic cotton, bamboo, lyocell, modal, flax and jute. Accessories like prints, dyes, threads etc. involved in the process are ensured to be completely eco-friendly. It is also exploring and investing into new segments.

21. HonECOre: It was established in 2007, Bengaluru by a team of five men coming from engineering and management backgrounds with a vision of a'Greener World'. It is into providing eco-friendly packaging solutions and various other eco-products that are consumed in the construction of green buildings. The USP is complete replacement of wood from packaging of its clients. Today, it saves almost 1 ton of wood per day and truckloads of plastics in the form of bubble wrap as well as EPS, more properly known as thermocole.

22. The Green Gift-Nurturing Green: Nurturing Green promotes a unique idea of gifting a potted plant to loved ones. For this, the plants are crafted specially in a handcrafted jute pot increasing the intrinsic ecological appeal. Every plant that is gifted also contributes towards the welfare of rural women who make this pot.

23. Smart Air Filters: Based in Delhi this startup was launched in 2013 when air pollution reached alarming levels in the capital. It is a clean-tech startup that promotes affordable air

purifiers at a lower cost to tackle with indoor particulate matter air pollution. The company offers DIY (Do-It-Yourself) air purifiers for as low as Rs. 3,959 suitable for a 150 sqft. Room.

24. Log 9 Materials: This start-up was founded by IITian Akshay Singhal. It is working on products which have a positive environmental impact. The areas focused are water purification, air purification, and efficient energy storage and display. The company is collaborating with Indian Institute of Sciences (IISc) and has a R&D centre in Bengaluru. It is also developing (jointly with IIT Roorkee) PPuF - a plug on filter for cigarettes that removes the toxins from smoke without affecting the flavor.

25. Pastiwala: This startup was founded in 2010 and is based in Vadodara, Gujarat. It organizes collectors and recyclers of waste paper, most of which is collected from industrial units and households. The waste is then recycled and brought back into use. Online and phone bookings are accepted, after which a collection vehicle is sent to collect paper waste. It claims to have helped in saving 3,40,000 trees per year.

26. Green Path Organic State-Hasiru Thota: Green Path Foundation has established 'Organic State–Hasiru Thota', India's largest organic food retail store in Bengaluru. There is a diverse range of products displayed at the store: sustainably grown spices, herbs, condiments, organic certified pulses, cereals, honey, jaggery, papads, multi-grain flour, a plethora of millets, amla candies, pickles, you name the food item, we could find the organic version of it. Apart from food, the store displayed a range of eco-friendly fashion accessories, organic cotton clothes, bags, etc.

Apart from the above mentioned green startups there are a number of such business which are efficiently working for the benefit of environment.

VIII. Green Initiatives by Key Business Entities in India

Company	Area	Green Initiatives
State Bank of India	Green IT	10,000 ATMs were constituted by using eco & power friendly equipments, Green Channel Counters, paper less banking, ATM Cards
Kansai Nerolac	Social Responsibility	Lead free Products, Health, education, community development and environment preservation.
Wipro	Green IT	Reduction of carbon foot prints, environmental measures.
Wipro Infotech	Green Machines	Wipro Green ware desktops and laptops which reduce e-waste.
Tata Motors	Econ Friendly Showroom	Natural building, energy efficient lights.
Taj Hotel	Eco Rooms	Energy efficient mini bars, organic bed linen and napkins made from recycled paper.
Indian Railways	Digital Ticket	E-Tickets on their laptop and mobiles
HCL Info Systems	Green IT	ISO 14001 Standards, Go green participation, RoHS Laptops
LG India	Eco-friendly Products	Eco-chic including platinum coated two door refrigerator and washing machine with steam technology, 40 % less energy consumption, minimum usage of halogen or mercury.
Samsung Electronics	Eco-friendly features	LED backlight without mercury or lead, 40% less energy consumption, split ACs saving 60 % energy.
Voltas	Green Product	Air Conditioners with Energy star ratings
Panasonic India	Energy Conservation	Home appliances using sensor and control technologies
MRF Tyres	Eco friendly Product	Tubeless Tyres made from unique silica based rubber compounds for fuel efficiency
ACC Ltd	Conserve Natural Resources	‘Concrete plus’ manufactured out of fly ash (industrial waste)
Grassroot	Environmental friendly brand	Eco friendly & Organic fabrics
Vivanta by Taj	Earth Friendly	Follows United Nations Earth Summit endorsed by 200 countries Monitored by Green Globe
Yes Bank	Climatic Change	First Indian signatory to the carbon Disclosure Project by documenting its Carbon Footprint.
HCL	Eco-friendly Notebook	Poly Vinyl Chloride (PVC) and other harmful chemical free

IX. Eco-friendly Business Players in Karnataka

Alternative Energy	Art & Craft
Urja Solutions, Brihat Energy, Anu Solar Power, Tata Power Solar Systems Ltd, Arraytech Technologies Pvt Ltd, Chirantana Green Technology Centre, Sustaiability Gift Shoppe, Go Green Bov, Eagle Technologies, EMMVEE Solar Systems Pvt Ltd, Kotak Solar, Selco Solar	Aa Totes Eco Friendly Bags, Aa Toes Eco Friendly Designer Bags, Eco Save, PoKo Pets, Craftizen Foundation, Kala Arts & Crafts Trust, Vasu Agarbathies, Shumeen Manjari-Handmade Jewellery & Handbags, BG Handmade Speciality Papers
Beauty & Personal Care	Green Architecture
Amouve- Organic Bedding, Bubblenut WashNatural Cleansing Products, Strategi-Herbal Home Care Products, Schevaran Hill Green Herbals Pvt Ltd, Ecobiased	Green Leaf Arecawood Agro Enterprises, Thermoshield India, Bamboooz: Innovative Bamboo Furniture, Products & Structures, Esthete FAB Homes, Natura India Pvt Ltd.,Centre for Green Building Material & Technology, En3
Eco Fashion	Eco friendly Packages
Fessence, Sarga Eco Textiles	Indigenous Innovations- Eco friendly bags, Hone Core
Eco Tourism	Green Funding
Chukki Mane Nature Resorts	Arghyam
Green Innovations	Green Product
Mahindra Reva Electric Vehicle Pvt Ltd, Nualgi Nano Biotech, Aruna Green Ventures Pvt Ltd., Solarity, Pradin Technologies, HonECOre	Green Path Organic State- Hasiru Thota, Rajamane Telectric Products Save Globe, Eco Essentials Areca Palm Plates, AAF International, Inovex Enterprises Pvt Ltd., Green Sense-Bio degradable Food Plates, Shop for a Cause, Handcrafted Soaps by SanGi, Eco Palm Leaf Plate Exporters, Bhosale Bio Neem
Organic Agriculture	Training & Development
Centre for Agricultural Media (CAM), Sanjivini Organic Manure & Minerals, ICCOA, Annadana Soil and Seed Savers, The Organic Life, Agro Extracts Ltd., Barrix Agro Sciences, Green Tech Life	SayTrees, Institute for Cultural Research and Action (ICRA), Soil & Soul, Agabtya International Foundation, Nispana Innovative Platforms Pvt Ltd., BiBox, Ecole Solutions
Waste Management	Organic Food & Drinks

ReNewIT, Binbag, Green Nerds Solutions, I Got Garbage, Encashea, E-Parisaraa Pvt. Ltd., Pro Waste Concepts Pvt Ltd., SWMRT Solid Waste Management round Table, Hasirudala, Saahas	Nature's Fresh, Vegifresh Agro Exports, Happy Jars Natural Peanut Butter, Kaulige Foods, My Goat Goat Milk-Yashodavana Goat Farm, Miracle Water, Lowkal, PURE Products, Yogabar, Akshayakalpa Organic Milk, Back2basics- Organic Vegetables & Food Products, Nectar Fresh, Herbal India Products, Malnadkart.com, Honeyday-Food & Beverage Service & Distributor, Vriksh-The Organic Store, Green Theory-Vegetarian & Vegan Restaurant Cafe
Water Conservation	Rural Development
Refurb-India Rainwater Harvesting, Amazon Envirotech, Refurb-India, Farmland Rainwater Harvesting System (Rainy)	BAIF Institute for Rural Development (BIRDK), Neralu, Eco-Agri Research Fo
Green Media	
Jhatkaa	

X. Green initiatives in Agriculture

In this prospect Organic Agriculture plays a major role and many initiatives which are related to Organic Agriculture are as follows:

1. **Centre for Agricultural Media (CAM):** The Centre for Agricultural Media (CAM) aims to strengthen agricultural journalism in Karnataka and build network for similar initiatives. The Centre was established in Dharwad, Karnataka in 2000 and in 2007, it was registered as a Trust. This venture was initiated by like-minded development journalists in Kannada who drew influence from pioneering farm journal Adike Patrike. CAM has been organizing programmes regularly to establish link between media and sustainable development.

2. Sanjivini Organic Manure & Minerals: Sanjivini organic manure and Minerals a Registered Partnership firm since 1980's is primarily a organic manures manufacturing industry, it has built a very good customer base with finest quality Neem powder, Organic mixtures, Vermi compost, Bio compost , Cattle feed and Wheat products . We in our industry use raw materials such as bio degradable wastes from wheat roller flour mills, rice mills & animal husbandry (poultry and cattle wastes) these products are waste / byproducts from above industries and cause problems such as environmental issues, dumping, land filling & space usage in industries.We utilize these waste and convert them to high quality bio compost /manure which will be chemical free, dust free, pathogens free & free from harmful micro

flora such as viruses, bacteria. They have well furnished laboratory measuring 1221 sqft maintained by highly educated, experienced doctorates and good storage facility, manufacturing facility measuring 20000 sqft with fully automated machines with well skilled technicians.

Mission: To Offer Customers best price products with superior Quality.

Objectives: To supply all agriculture requirements to farmers. To supply feed materials to cattle and poultry feed industries. To procure bio degradable wastes from industries and convert into bio compost. To supply best quality wheat and wheat products.

3. **ICCOA-International Competence Centre For Organic Agriculture:** It aims to be the Knowledge and Learning Centre for all facets of organic agriculture. ICCOA's mission is to be the truly representative organization for organic movement in India. It will help build competence of individuals and organizations of the South Asian region in organic agriculture thereby contribute to building ecologically, economically and socially sustainable agriculture and organic business. In June 2008, ICCOA signed an MoU with Nuremberg Messe for bringing the BioFach - World Organic Trade Fair to India.

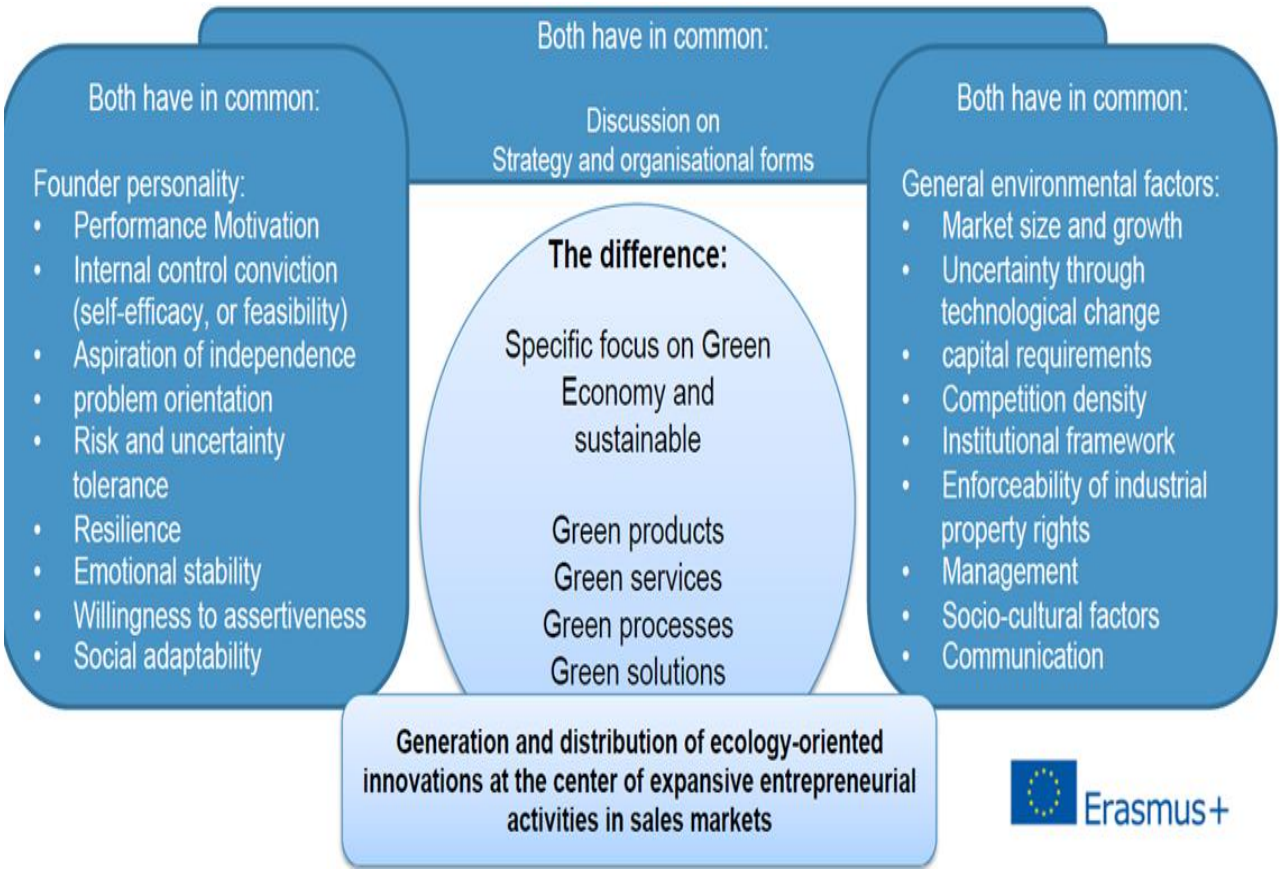
4. **Agro Extracts Ltd:** They manufacture and sell eco-friendly and 100% Organic neem fertilizers. Agro Extracts Limited was promoted by Pradeep and Praveen Jaipuria in 1973 and has more than 70,000 sq ft of built-up area on a campus of 2.2 hectares. It has an annual turnover of USD 2,500,000. Agro Extracts processes over 6000 tonnes of Neem Fruits and Seeds and produces 150 MT of Neem Oil and 5000 MT of Neem Cake annually.

5. Barrix Agro Sciences: Barrix Agro Sciences Pvt Ltd. is a revolutionary corporate which develops eco-friendly pest control products and solutions for agriculture and farming. With a team of seasoned professionals, thought leaders, strategic marketers and research scientists, Barrix looks at enhancing value add to each of its stakeholders. Committed towards undoing the distorted ecological balance and make this planet a healthier place to live, Barrix uses path breaking technologies and provides eco-friendly products which act as effective alternatives to traditional practices of pest control.
Backed by Omnivore partners and CIIE the company has helped lakhs of farmers improve their yield, quality of produce and standard of living.

Omnivore Partners is a venture fund investing in early stage agricultural technology (agtech) companies in India. CIIE is an incubator supporting social enterprises creating innovative solutions towards some of the toughest problems the world faces.

XI. Conventional Entrepreneurship versus Green Entrepreneurship

The main difference between conventional entrepreneurship and green entrepreneurship is the value creation logic. Conventional entrepreneurship contributes to economic growth and regional development and can develop local economies. Green entrepreneurship refers to businesses that have the target to minimize the business' impact on the natural environment, i.e. take into account the ecological dimension of sustainability. In conventional entrepreneurship the main and often sole driver is on the economic value creation, while in green entrepreneurship the economic aspect is considered as a means to achieving also other values on the environmental and social. In addition to the economic perspectives, conventional entrepreneurs are also more and more answering to the sustainability requirements coming from environmental legislation as well as consumer demand for more green products. However, the factors that make an entrepreneur green, in addition to the financial performance, is the environmental dimension in the core business strategy and that business opportunities are seized in order to eliminate the harm done to the natural environment.



XII. Advantages of Green Entrepreneurship

For several years, there was a myth that what is good for environment is not good for business, however this is fading out fast with the emergence of green entrepreneurship as it includes a balanced mix of both 'green practices' and 'financial sustainability' as its core value. The net result is always the positive effect on environment without compromising the economic aspirations of the enterprise. Moving towards greener ways or creation of a green business startup has several advantages apart from having the positive environmental effect. It constitutes both direct and indirect benefits to the environment. On one hand, green businesses provide environmental benefits and on the other it maintains its financial viability while enhancing its market image. It also creates an awareness among the customers about the environmental concerns and acts as guardian and pioneers for safeguarding of environment. Small and large enterprises contribute towards the benefit of the environment and both have equivalently important role in delivery of such benefits.

Some of the important advantages of Green Entrepreneurship are:

1. Reduced Utility Costs: Both Large and small enterprises reap the utility cost benefit by being more energy efficient and less wasteful. This results in lower utility bills, better

management of resources and saving surplus on maintenance expense. Measures reducing utility cost includes:

- ✓ Using star-rated energy efficient electronic devices like ACs, lightings, machines and equipments, computing machines, innovative virtualization techniques etc.
- ✓ Water conservation and recycling.
- ✓ Waste management leading to lesser land pollution and lower cost of garbage dumping.

2. Lower Negative Impact on Environment: As noted by various authors, business sector is considered as the largest contributors to environmental degradation and therefore it is the responsibility of businesses to take initiatives to minimize the negative impacts on the environment. In this respect, by moving towards greener ways a chain of improvements is instigated in the routine business process which ultimately benefits the overall environment. Environment-friendly practices includes:

- ✓ Energy Conservation and Efficient utilization.
- ✓ Water Conservation and Efficient utilization as well as recycling and reuse.
- ✓ Efficient Waste management.
- ✓ Recycling and reuse of materials.
- ✓ Use of Renewable energy.
- ✓ Lower emission rates.
- ✓ Green/Eco-friendly products, services and process etc.

3. Enhanced Public Image: In the recent time, Green Entrepreneurship has gained lot of fame and popularity with rising awareness of environmental challenges. More and more people are joining the green movement resulting in a higher demand for green products and services. Moreover the green initiatives taken by the businesses are seen with a lot of respect; building up the brand image of the enterprise. Right marketing and promotion of green entrepreneurship activities directly leads to building up of brand equity. To build up brand image through green entrepreneurship, businesses can:

- ✓ Organize Green events to generate positive public opinion.
- ✓ Promote Green initiatives of the enterprise through media and press release.
- ✓ Packaging, advertising and marketing materials can also be used as a promotion tool to appeal customers preferring green products/services.

- ✓ Public disclosure in case of core green business/ green startups, promoting the uniqueness and benefit derived to build up reputation and customer base.

4. Tax Benefits and Rebates: Green Businesses also have an additional support from the Government and local bodies in the form of incentives, assistances, rebates and other tax benefits. These benefits are provided to support the 'GREEN' cause and welfare of the general public. These benefits can be provided in several forms:

- ✓ Tax credits and deductions.
- ✓ Purchase-price rebates.
- ✓ Direct monetary assistance.
- ✓ Incentives for fulfillment of certain norms.
- ✓ Bill reduction and exemptions.
- ✓ Free utilities etc.

5. Increased Business Opportunities: Green Businesses have increased opportunities of business as some enterprises, government bodies and nonprofit organizations only contract with Green enterprises meeting certain green standards and norms. They purchase and use only green products/services or products/services following certain green standards. The guidelines and standards for companies formally going green to avail these benefits, are provided by Environmental Protection Agency (EPA) and not all standards are government mandated. Businesses following voluntary green standards are preferred over those following government mandated standards. As such, there are lot of advantages of green entrepreneurship be it a startup business or existing enterprise. However, all these advantages bear fruit in the long run and most enterprises following green ways find it quite challenging in the initial stages. From sustainability point of view green entrepreneurship provides for a dynamically successful venture in the later stages.

Other advantages include:

Increased preparedness for future legislations and cost Improved recruitment and and retension of quality employees.

Disadvantages of Green Entrepreneurship

Apart from having so many advantages, there are also a few disadvantages present in practicing Green Entrepreneurship:

1. Increased Capital Expenditure: Green initiatives require proper investments and this could result in decreased budget for other important expenditures leading to lower performance. Since these investments have a typical risk factor involved, therefore the earnings are also affected in the initial stages. Overall, green entrepreneurship is a burdensome venture in short run.

2. Decreased Productivity: The overall productivity of the organization is affected especially in the case where a conventional enterprise moves towards green ways. This is because some extra activities are to be performed apart from routine activities. For example recycling itself involves a lot of activities which are to be performed at the initial stages of routine production. Similarly, purchasing materials of green standard requires a lot more verification and check time which instead affects the productivity of workers.

3. Greenwashing: 'Greenwashing' is a deception to green entrepreneurship practices. It is actually a form of deceptive green marketing where the perception of enterprise having a green offering is promoted whereas actually the net environmental benefit is minimum. It is being widely practiced by corporations from a long time to evade mandatory norms and standards set up by the government or to falsely build up the brand image in public. This is mostly achieved through:

- ✓ False propaganda.
- ✓ Manipulative corporate disclosure.
- ✓ Corrupt practices.
- ✓ Deceptive 'Green PR' etc.

One thing is very clear by analyzing these advantages and disadvantages that a strong green mindset and environmental consciousness is very necessary to utilize green entrepreneurship as a mean to fulfill environmental goals. Moreover, the green entrepreneurship venture is more successful in the long run and is very beneficial to the environment as well as for the enterprise from sustainability point of view.

Greenwashing is generally a result of corrupted practices, lax enforcement of rules and standards and dubious state policies. Organizations generally find a loophole and utilize it for their own benefit; hiding under green entrepreneurship veil. Some of the negative impacts of greenwashing are:

- ✓ Degradation of environment under the veil of its own upgradation practice.

- ✓ Abuse of public health and safety (greenwashing of hazardous products).
- ✓ Demeans the green movement to safeguard the environment.
- ✓ Promotes corruption and monetary tradeoffs.
- ✓ Problem of false branding and labels.

Thus, we can conclude that greenwashing is very detrimental to the green entrepreneurship practice and there should be proper understanding and check on what is actually 'GREEN' and what is just 'GREENWASHED'. Efficient catering to the environmental concerns requires an honest green entrepreneurship initiative, so that net benefit for the environment is derived.

4. Solar power plant incinarating birds: Billions of birds die annually from collisions with windows, communication towers, wind turbines, and other human-made objects. Scientists estimate between 37,800 and 1,38,600 birds die in the U.S. from all forms of solar energy production annually, compared with the 14.5 million avian deaths attributed to fossil fuel power plants. To combat the problem, the Department of Energy (DOE) has awarded Argonne National Laboratory $1.3 million to develop a system that can automatically monitor bird activity.

XIII. Strength, Weakness, Opportunities and Challenges (SWOC) in running a Green Business in India.

1. Strength

- ✓ Environmentally friendly.
- ✓ Better brand image.
- ✓ Increasing awareness among consumers.
- ✓ Producers are benefitted.

2. Weakness

- ✓ Lack of awareness.
- ✓ High investment.
- ✓ Small players cannot promote their product.

- ✓ Lack of regulations and guidance.

3. Opportunities

- ✓ Reduce reuse recycle – reduces cost.
- ✓ By creating awareness of the product existence company can gain more profits.
- ✓ Provision of better prospects and subsidy by government in order to improve the customer base.
- ✓ The business can go internationally through producing environmental friendly products by recycling methods.

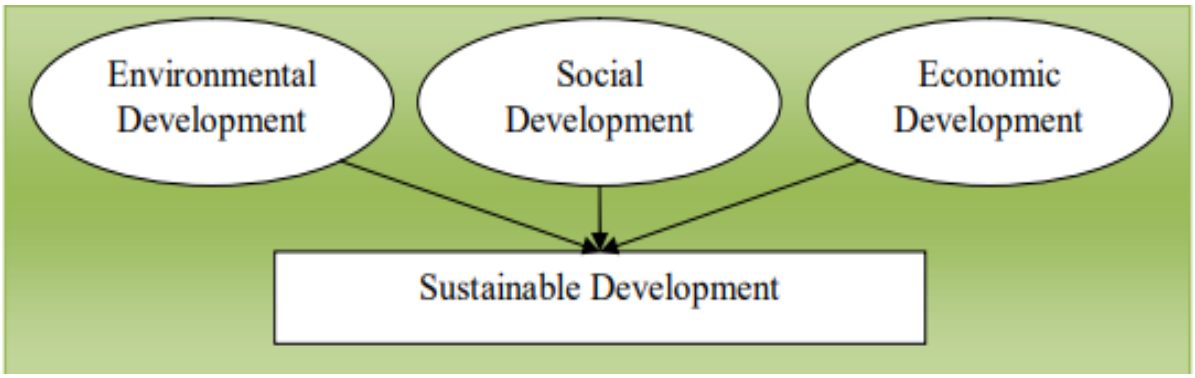
4. Challenges

- ✓ Facing stiff competition from the worldwide.
- ✓ Company need to wait for long term benefits from the government.
- ✓ It need more time and effort to make the green concept to reach the masses.
- ✓ Majority of the people in India are not much concerned about environmental issues.
- ✓ Challenge of market creation.
- ✓ Financial barrier.

XIV. The Linkage between Green Entrepreneurship and Sustainable Development

"Sustainability development is responsible economic development without negatively impacting the viable resources for use of future generations". The linkage between green entrepreneurship and sustainable development/ sustainability has already been discussed in the introduction chapter, however, it will be discussed in a more broader sense here to help in the conceptualization of the green entrepreneurship model. It is an established fact that environmental upgradation leads to sustainability and 'Environment' is also considered as one the most important pillar of sustainable development. Other pillars being 'Society' and 'Economy'. These pillars are interrelated and inter-dependent in nature and benefit of one constitutes to the benefit of other two, directly or indirectly. Sustainable Development is the concept of responsible and controlled development where environmental, social and economic development is equally emphasized. Environmental development automatically

leads to social development which in turn results in economic development and vice-versa is also true. Each aspect is affected by the other and change in the overall sustainability is dependent on this.



When we talk about 'Green' the first thing which comes to our mind is sustainability as anything which is environmental/eco-friendly naturally posses the quality of being sustainable. Green entrepreneurship is all about being green i.e. being environmental or eco-friendly. It is comprised of the mindset to consciously deliver environmental and social benefits through business venture, while being economically viable.

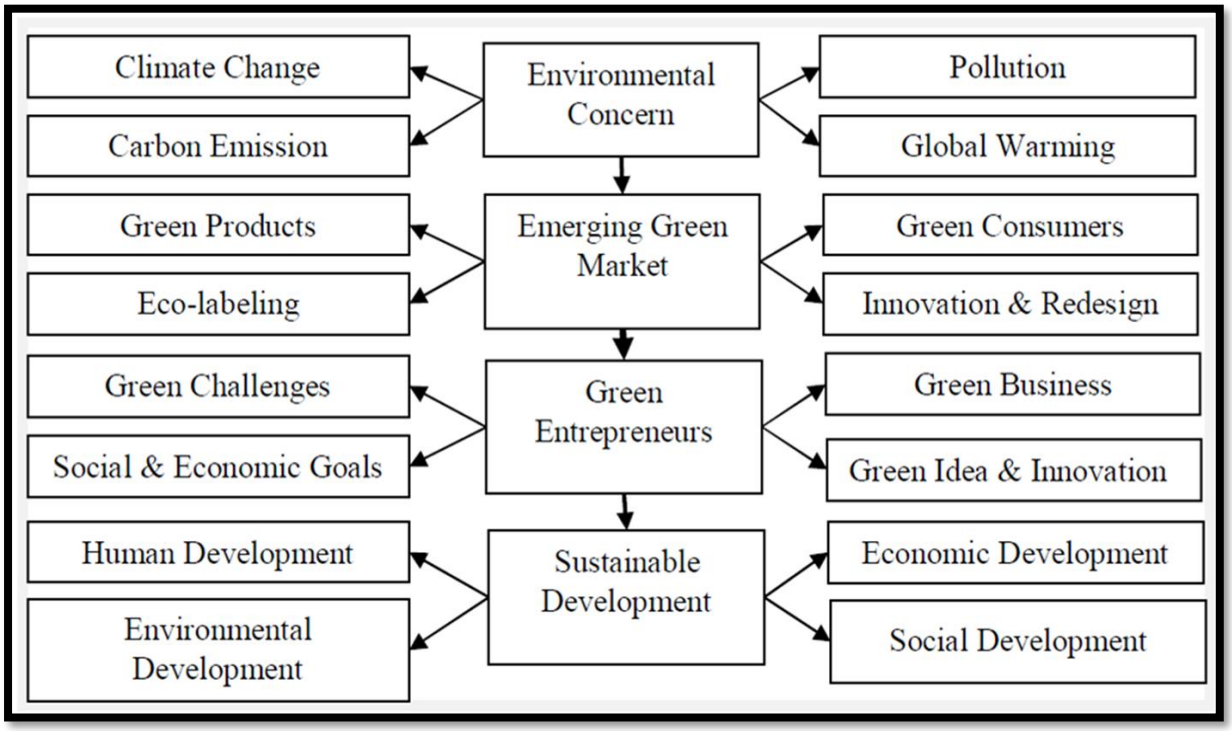


Figure 1: A Conceptual Model showing nexus among Environmental Issues, Emerging Green Market, Green Entrepreneurs and Sustainable Development by N. K. Sharma and G.S. Kushwaha, 2015

The conceptual model of green entrepreneurship shown below has been developed by Sharma and Kushwaha (2015) in their study- "Emerging Green Market as an Opportunity for Green Entrepreneurs and Sustainable Development in India" which says that The conceptual framework shows in Figure 1 that the concept of green entrepreneurs starts from the environmental concerns such as pollutions, global warming, climate change, scarcity of natural resources and other havoc caused by disturbance in the ecosystem. Due to increasing awareness may be with the help of environmental knowledge and education people are becoming more responsive towards the environment. These factors are also responsible for the changing consumer behavior towards green product or eco-friendly product. The perception towards green product gives a positive impact on the development of the green market. Green market is an emerging market, which brings ample of opportunities in every field such as greening supply chain, green production, green design and many more. The current market scenario has various opportunities for the entrepreneurs as well as for green entrepreneurs. These opportunities can be also helpful for bringing motivation and empowerment to the green entrepreneurs. The successful green entrepreneurs lead to the sustainable development in long term.

XV. Schemes and Supports for Green Entrepreneurship under MSME

1. Research, Design, Development, Demonstration (RDD&D) and Manufacture of New and Renewable Energy

The purpose of this scheme is to make the industry competitive and renewable, energy generation supply self-sustainable/ profitable. RDD&D activities would focus on research, design and development that would lead to eventual manufacturing of complete systems, even if those activities are required to be shared among different institutions. Thus, there would be a need for system integration broadly covering, inter-alia, the following areas:

i) Alternate Fuels (hydrogen, bio & synthetic);

ii) Green Initiative for Future Transport (GIFT);

iii) Green Initiative for Power Generation (GIPS);

iv) Development of various new and renewable energy systems including high efficiency solar cells and solar cells;

v) Stand alone products to provide costeffective energy for cooking, lighting, motive power, drinking water and drying;

vi) Distributed new and renewable energy systems to provide cost competitive energy supply options for cooking, lighting and motive power to offset load on the grid;

vii) Products for urban, industrial and commercial applications.

Nature of assistance: Financial assistance for RDD&D projects that involve partnership with industry/civil society organizations should normally be restricted to 50% of the project cost. However, for any proposal from Universities, Government Research Institutions, Private Educational Institutions, etc. Ministry may provide up to 100% funding, depending on project priority. In the case of Private Educational Institutions especially engineering colleges have to furnish a declaration that they do not levy and collect donations for admissions from students while applying for R & D grants.

Who can apply: Research and Development Institutions; Academic Institutions, Autonomous Institutions, Departments/Agencies/PSUs, States/UTs Government, Panchayats, Community based and organisations of civil societies How to apply Applications and proposals are invited through advertisements placed in newspapers and/or on the MNRE website.

2. Development/Upgradation of Watermills and setting up Micro Hydel Projects (up to 100 KW capacity)

The Watermills (WM) and Micro Hydel Projects (MHP) have the potential to meet the power requirements of remote areas in a decentralized manner. The scheme provides grant of Central Financial Assistance for development/ upgradation of WM and setting up of MHP. The scheme also envisages support for specialised studies/survey, strengthening of database, training and capacity building relating to WM and MHP.

Nature of assistance: Preference would be given to WM owned by women, women entrepreneurs or received from women NGOs to submit the proposals. The Ministry would also give financial support for training/ capacity building programmes. Incentive to SNA by CFA would be, an incentive of Rs.3,500 per watermill in mechanical mode, Rs.10,000 per WM in electrical/ electrical & mechanical mode, and 1% of the subsidy or a minimum of Rs.25,000 for each MHP will be provided as service charges, in case the SNAis not the

owner of the WM/ MHP. In case project is being implemented by NGO, the service charges will be shared between SNAand NGO in the ratio of 30:70.

Who can apply: The CFA for WM and MHP under the scheme is applicable for the projects to be implemented by the State Government Department/SNA/Local bodies/Cooperatives/NGOs, Entrepreneurs/ Individuals.

How to apply: Apply through the Ministry of New & Renewable Energy.

3. Wind Resource Assessment in Uncovered/ New Areas under NCEF Scheme

The Ministry has initiated a new scheme on implementation of Wind Resource Assessment in Uncovered/New Areas with an aim to assess the realistic potential at 100 m level in 500 new stations under the National Clean Energy Fund (NCEF) also to be implemented through C-WET. SNAs along with Private developers shall invest the entire project cost initially and carry out all necessary works to establish the Wind monitoring stations (WMS).

Nature of assistance: Under this scheme, 40% of the total project cost will be provided from NCEF as reimbursement through C-WET and balance 60% of the total project cost shall have to be borne together by the concerned State Nodal Agencies (SNA) of State Government and private developer(s). Related scheme Wind Resource Assessment in Uncovered/ New Areas underNCEFScheme 89 Ministry shall release 50% of the NCEF grants in accordance with the proposal of C-WET. The financial sanction for the sites to SNAs/private developers will be given by C-WET. The remaining 50% of the grant amount for that particular sanction order shall be released to CWET.

Who can apply: Only the Indian entities viz., Wind farm owners, IPPs, Wind Farm Developers and Wind Turbine Manufacturers are eligible for grant of subsidy in this scheme. All the private developers shall comply with the Directorate General of Civil Aviation (DGCA) guidelines. The developer should have in-house resources (e.g., engineering, operation) including experience with environmental permitting and siting issues.

How to apply: Private developers shall submit the detailed proposals on the prescribed format to respective SNA’s. The concerned SNA’s will ensure that the first lot of proposals for wind monitoring stations allotted to the state concerned shall be submitted to C-WET within 6 months from the date of issue of the scheme.

4. Green Business Scheme - National Scheduled Castes Finance and Development Corporation (NSCFDC)

To provide financial assistance for activities which can tackle the climate change along with income generation.

Eligibility Criteria: The eligibility criteria for coverage of beneficiaries under the Green Business Scheme shall be as follows:

(a) The applicants should be persons belonging to Scheduled Castes

(b) Their annual family income should be below Rs. 3.00 lakh for both rural & urban areas.

Indicative Schemes

- ✓ Battery electric vehicle (E-rickshaw)
- ✓ Compressed air vehicle
- ✓ Solar energy gadgets
- ✓ Poly houses

Unit Cost: The eligible candidates can avail financial assistance under this scheme for unit cost up to Rs. 30.00 lakh (Rupees thirty lakh only). NSFDC provides loan up to 90% of the unit cost.

Quantum of Assistance: NSFDC would provide need based loans under the Scheme as permissible under NSFDC Term Loan Lending Policy, promoter contribution and after taking into consideration the margin money being provided by SCAs, subsidy provided by other Government agencies and subsidy provided to Below Poverty Line (BPL) beneficiaries under the Central-Sector Scheme of Special Central Assistance to the Special Component Plan to the extent of @ Rs.10,000/- or 50% of the unit cost, whichever is less.

Interest Rates

Scheme	Unit Cost	Maximum Loan Limit upt 90% of unit Cost	Interest per Annum	
			SCA/CA	Beneficiary
Green Business Scheme (GBS)	Upto Rs. 7.50 Lakh	Rs. 6.75 lakh	2%	4%
	Above Rs. 7.50 lakh & upto Rs. 15.00 lakh	Rs. 13.50 lakh	3%	6%
	Above Rs. 15.00 lakh & upto Rs. 30.00 lakh	Rs. 27.00 lakh	4%	7%

Repayment Period: The loan under the scheme shall be repaid in quarterly installments, within a maximum period of 10 years including moratorium period of 06 months. In addition, 120 days moratorium period is allowed to SCA for fund utilization.

5. Solar Panel Subsidy in India, 2020

System Capacity (kW)	Solar Subsidy (in %)
1kW to 3kW	40%
4kW to 10kW	20%
More than 10kW	No subsidy

6. Solar rooftop subsidy scheme/yojana

The central government pays a **30% subsidy for installation of rooftop solar plants to states in general categories**. For special states such as Himachal Pradesh, Uttarakhand,

Sikkim, Jammu & Kashmir and Lakshadweep, the central government gives subsidies of up to 70%.

XVI. Success story

1. Mitti Cool Fridge

Green Entrepreneurs : Mansukhlal Raghavjibhai Prajapati (48years)

Green contribution : In 2002, Prajapati launched Mitti Cool fridge, a clay refrigerator for the common man. It runs without electricity, keeps perishables fresh for seven days, water cold and milk and curd fresh for almost 24 hours. He is now working on the 'Mitti Cool House', a house that will keep itself cool without consuming any extra energy. At the top level of the Mitti Cool fridge is a storage chamber for 10 litres of water. The bottom compartments can hold 5-7 kg of vegetables, fruits and milk at 8-10Â°C below room temperature. Water poured into the chamber just beneath the top trickles down between its double-layered walls, extracting heat from within, and evaporates, leaving the chambers cool. With an annual turnover of more than Rs 30 lakh, Prajapati has sold over 7,500 refrigerators. On every fridge priced at Rs 3,340, he earns a profit of Rs 400. He has now ventured online too.

2. **MINC**

It was founded by Mini Varkey Shibu and Kochery C Shibu in 2007. Bengaluru-based fashion startup MINC, also known as Mini Couture, creates contemporary eco-friendly garments which are sustainable and present a contemporary Indian fusion style. The startup designs garments while only using natural fabrics, azo-free environment-friendly dyes, and closure made from natural materials like wood, coconut, etc. It also promotes khadi, and the team believes in promoting green living through eco-fashion. Mishan Design Point Pvt Ltd is a registered company at Bangalore engaged in the design, manufacture and retail of Khadi hand embroidered and eco friendly garments and accessories under the brand name MINC-ecofashion. The organic cotton for Khadi is sourced from SOFA (Sittilingi Organic Farmers Association) through an NGO by name Tribal Health initiative. The label

has been awarded the craftmark for it's Khadi (2017) and so also for Adde Ka Kaam for the extensive efforts in working with traditional embroideries in a modern context (2017).

3. **Eco Right**

The startup was founded by Udit Sood and Nikita Barmecha, both of whom pursued their MBA from IIM-Calcutta. Founded in 2017 in Ahmedabad, EcoRight has 18 product lines and 140 SKUs available in around 11 ecommerce websites. The startup says it makes products that are ethically, socially, legally, and environmentally audited as per the pillar standards of SEDEX 4. Its products, which include tote bags, work bags, backpacks, etc., are reusable, made with natural products, and are developed with innovative fabrics to make products better for the environment. Aimed at finding solutions to environmental problems such as plastic waste, the ecommerce startup claims that each bag it sells will, in turn, replace the use of 50-100 plastic bags. Each of the handbag designs features an eco-friendly message or a pun to spread awareness about the harmful effects of plastics. Organic Cotton, Recycled Cotton, Recycled Plastic and Jute are extremely sustainable, fun and versatile fabrics. Inks, dyes and packaging are all environmentally friendly. Till date sold close to 500,000 bags so far. Delivered bags to amazing people in 97 countries - all across the globe - Malta, Greenland, India, USA, Canada, Mexico, Denmark, Australia, New Zealand. over 150 products across, 34 product lines.

XVII. Research Studies

Study 1: A Study on Awareness and Perception among Students about Green Products with Special Reference to Dakshina Kannada

Thauseef *et al.* (2015)

Research Methodology

Sample Size: students who are pursuing under graduation and post graduation in selected colleges of Dakshina Kannada has been considered. 50 samples are selected randomly from Commerce (20), Arts (15) and science (15)

Result

Table 1: Preferred Purchase

Particulars	Frequency	Percentage
Green Products	33	66
Non Green Products	7	14
Can't say	10	20
Total	50	100

Table 1 shows that preference of respondents in related to their purchases. 66% of students responded that they will go with green product as far as their preference is considered. It is mainly because there is a belief among folk that green product is better than good. Only 14% of respondents responded that they go for non green product & remaining 20% students responded with the dilemmatic answer can't say.

Table 2: Mean of Awareness

Particulars	Frequency	Percentage
Television	12	24
Magazines	3	6
Social media	8	16
Friends & relatives	10	20
Lecturing	17	34
Total	50	100

Table 2 shows result about mean or mode to come to know about green products. Among the respondents 34% of students responded that they come to know about green product through the mean of lecturing, it is mainly because lot of workshop or seminar programs is going in and around. Television and social media also has an impact in creating awareness regarding green product.

Table 3: Green Products are Recyclable

Particulars	Frequency	Percentage
Yes	45	90
No	5	10
Total	50	100

Table 3 shows result about awareness among students that green products are recyclable. 90% of students responded with the response „yes" it is mainly because students have awareness that green product are recyclable. Remaining 10% students are unaware about the fact that green products are recyclable.

Table 4: Preferred Green Products

Particulars	Frequency	Percentage
Food articles	23	46
Stationary	18	36
Medicines	3	6
Any other	6	12
Total	50	100

Table 4 shows that 46% of respondents responded that they prefer food articles as far as purchase of green product is considered, it is because the people are more conscious about hygiene food and there is a belief that green products are better in quality and taste. 36% of students responded that they prefer stationary items, is mainly because high level stationary usage is in a need in their studies.

Table 5: Level of usage

Particulars	Frequency	Percentage
Daily basis	10	20
Sometimes	28	56
Very rarely	12	24
Total	50	100

Table 5 reveals result about level of usage of green products among students of Dakshina Kannada. 56% of students responded with the response of 'sometimes', and 24% of respondents responded with the response of 'very rarely' it is because green products are yet to grab the complete market and be a product of need basis.

Table 6: Preferred carry bag

Particulars	**Frequency**	**Percentage**
Plastic bags	23	46
Green bags	27	54
Total	50	100

Table 6 response of respondents‟ about their preferred carry bag when they carry some goods or articles.54% of students responded that they do prefer green bag ,as they are worried about environment and they are more conscious about nature. Remaining 46% of students preferred plastic carry bag as far as their convenience is considered.

Table 7: Willinglness to pay more just because Product is “Green”

Particulars	**Frequency**	**Percentage**
Yes	**23**	**46**
No	**27**	**54**
Total	**50**	**100**

Table 7.1: Reason that makes people to pay more

Particulars	**Frequency**	**Percentage**
Health & safety	8	34.78
Environment friendly	15	65.22
Potential increase of product value	0	0
Total	23	100

Table 7.2: Reason that makes them not to pay more

Particulars	Frequency	Percentage
Cannot visualize green product	2	8
Product price is too high	16	60
Product only clay actually not	2	8
It's a commercial gimmick	17	24
Total	27	100

Table 7 shows the response of students regarding willingness to pay for a product just because "it's green". 46% of students responded with "yes" and 54% of students with "no". Table 7.1 shows the reason that makes them to pay for "green" and 7.2 shows the reason that prompts the students not to pay for the product just because it's "green". From Table 7.1 it is clear that 66% of students out of 23 are ready to pay because they feel that it is environment friendly and remaining 34% of students responded with the concern of "health and safety". From 7.2 it is found that 60% of students out of 27 are not ready to purchase green product because of the price matter and 24% respondents believes that it is just a commercial gimmick.

Table 8: Green Products are in Headlines Now a Day

Particulars	Frequency	Percentage
Consumer's are being aware about green products	33	66
Companies are increasing competitive edge.	12	24
Companies attempt to address societies concern	5	10
Total	50	100

Table 8 revealed that 66% of students responded that 'consumers are being aware about green products ' is the reason that bought green product in headlines now a day. 24% of students responded that 'companies are increasing competitive edge", because now a days there a kind promotional activity among rivals to be a producer of green products.

Table 9: Marketing Elements Influence Buying Behavior

Particulars	Frequency	Percentage
Product	13	26
Promotion	3	6
Package	2	4
Distribution	2	4
All the elements	30	60
Total	50	100

Table 9 revealed about the response of students when they are asked about marketing elements strongly influence the buying behavior of green product. 60% of students responded that product, promotion, packaging and distribution will simultaneously influence the buying behavior. It shows that it is important for green product to blend the marketing mix in a systematic way.

Table 10: General Expectations

General expectations	Strongly agree		Agree		Disagree	
	f	%	f	%	f	%
Green products should be cheaper than non green products	10	20	33	66	7	14
Educate about green products	44	88	6	12	0	0
Green products should get more promotion	36	72	14	28	0	0
Application of green to all products	17	34	21	42	12	24
Company should extent their distribution network	9	18	38	76	3	6

Study 2: Green Entrepreneurship: A Perceptual Study on Motivation and barriers with special reference to Engineering and MBA Graduates

Paramashivaiah *et al*. (2013)

Research Methodology

Sample size: 230 respondents which constitutes 115 MBA and 115 Engineering graduates. MBA graduates from various colleges, engineering graduates from National Institute of Engineering (NIE), JCE, Mysore, and Malnad college of Engineering (MCE) Hassan.

Sampling technique: Purposive sampling and snowball sampling method is used by conducting personal interview with the students residing in the hostels.

Results

Table 1: Factor analysis for barriers to Green Entrepreneur with varimax rotated component matrix

Barriers to Green Entrepreneur	**Component**		
	1	**2**	**3**
1. Creation of market is the highly challenging task for green entrepreneur	-.089	**.952**	.011
2. In my opinion, lack of environmental awareness is the primary reason for marketing problems in green products	-.076	.940	-.022
3. Consumer behavior is changing very slowly towards green products.	-.069	.926	.035
4. Consumers are not confronted with the immediate direct effects of their environmentally sustainable actions	-.104	.935	.019
5. Image of the green product will not be attractive	-.125	.910	.031
6. Catching up would be a problem for green products	-.145	.920	.053
7. In my opinion it is very difficult to obtain required funds from the investors	.935	-.113	.153
8. Investors search for trustable and promising ventures to invest in rather than green projects	.926	-.096	.126

9. It is difficult to familiarize with the investment community	.921	-.110	.149
10. Investors have the prejudice towards the ability and willingness of green entrepreneurs to act in the interest of investors	.924	-.100	.119
11. Green ventures are not attractive to venture capitalists	.901	-.120	.152
12. Investors define success of the venture in financial returns only and therefore may not show interest in financing green business	.903	-.150	.170
13. Time for product development and commercial viability of the product exceeds the targeted investment horizon of venture capital	**.945**	-.115	.154
14. In my opinion, it is very difficult to derive competitive advantage from green business	.550	.304	**.695**
15. Existence of green entrepreneurship is not ethically justifiable	-.014	.243	-.589
16. High ethical standard may have positive effects	.555	.286	.690
17. High ethical standard is complicated one and therefore attraction of capital may be troubled	.561	.317	.668
18. Organizations have obligation to become more socially responsible	.949	-.117	.129

Table 1 shows important factors loaded in respect of barriers. Three factors are extracted under principal component method Factor item no.1 in the category of marketing barriers, is highlighted with highest percentage (0.952). According to this, graduates who are willing to take up green business perceive that creation of market for green business is the critical problem and which cause negative impact on emerging entrepreneurs. Among the second category, financial problems as perceived by graduates, time for product development and commercial viability of the product exceeds the targeted investment horizon of the venture capital (0.945). Majority (0.695) of the respondents opine that it is very difficult to derive competitive advantage from green business.

Table 2: Factor Analysis of Motivation for Green Entrepreneurship (with varimax Rotation)

Motivation for Green Entrepreneurship	**Components**				
	1	**2**	**3**	**4**	**5**
19. Environmental marketing is an opportunity to achieve it	-.183	.030	**.755**	-.086	.255
20. I stay away from building businesses from the unsecured, scared & non renewable resources of Earth in order to remain self-sustained & independent	-.235	-.064	-.040	-.009	-.833
21. Every business must respect environment and socially responsible	-.112	-.184	-.156	.707	-.210
22. I believe the operational cost can be reduced in green entrepreneurship as compared to that of the non-green business	.704	-.310	-.117	.136	.122
23. Government subsidies and financial assistance will help overcome financial difficulties in green business	-.165	**.780**	.064	-.178	-.278
24. Loans may be available with better terms for sustainable business ventures	-.055	.702	.299	-.191	.208
25. Green business is an innovative method and that pays back for creativity	.690	.111	.298	.172	.136
26. Over the years, green businesses will be the need of the hour	.134	.760	-.272	.177	.144
27. I consider ecological awareness and environmental protection as business strategy	.469	-.233	.564	.185	.026
28. There will be better insurance terms that attract green investments	.709	.177	-.072	-.300	-.246
29. Environmental compliance will be	.720	.034	-.239	.091	.269

easier for green entrepreneurs than the other business enterprises					
30. I can utilize my technical expertise innovatively	.108	-.161	-.730	-.097	**.416**
31. Green enterprise will be more admired and respected for its best deeds	**.734**	-.082	-.048	-.113	.140
32. Social and environmental organizations will always support and recongise the green entrepreneurs	.120	.042	.212	**.760**	.201

Table 2 depicts extraction of five important factors, the total variance being 67.37 percent with the loss of only 33 percent of information of the loaded factors. Majority of the respondents (0.780) opine that government subsidy and required financial assistance might overcome financial troubles caused by low demand and low market for green products. Although majority of the respondents (0.755) opine that environmental marketing is an opportunity to achieve it, investors' reluctance to invest in green ventures might hinder the green entrepreneurs' journey in saving environment by taking up green business activities. In spite of their sense of future marketing and financial hurdles they believe that green enterprises would be admired and respected for their best practices and deeds (0.734). Further, existing socioecological organizations and environmentalists' support always motivates green entrepreneurs marching (0.760). Moreover, graduates are confident that they can make use of their technical knowledge and expertise in the green business activities (0.416).

XVIII. Conclusion

In order to increase the awareness of society that is related to green entrepreneurship, social responsibility projects can be prepared together with role models. Owing to collaboration between universities and industry, environmental technology should be improved and in addition green entrepreneur must gain this technology with low cost. The main driver for this transformation was the business environment, which is forced to continuously look for improvement measures to survive. These improvement measures relied always on discovering new opportunities, and thus, nowadays the scholars worldwide

consider the notion of opportunity to be the paramount element of entrepreneurship. It is an avowal that environmental sustainability is often achieved by discarding the orthodox approach to economic development that has abused the environment thus far and as such, a consensus is required on what constitutes green entrepreneurship. The the benefits of green entrepreneurship are tremendous, and therefore the inability of entrepreneurs to conduct their business within the purview of green entrepreneurship represents a failure to recognize opportunities in greening. The born-green firms stand a chance to profit more from external green strategies compare to their conventional entrepreneurs counterparts. More so, we argue that leveraging internal green strategies like green reputation are formidable assets in terms of competitive advantage. A conscious focus to adopt Green economy has to be fostered for the development of green enterprises which would enhance the resilience of economy and a natural bio system. Green entrepreneurship is the most sustainable solution to the rising imbalance of nature and rapid destruction of natural resources. They offer significant contribution, not only in providing employment and generating income but also serve as engines of change, harbingers of innovation, new ideas and act as catalyst to adapting new technologies with flexibility and sustainability.

XIX. Reference

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XX. Discussion

Q1. Is Green Entrepreneurship is the only way for employment generation?

Green entrepreneurship is not the only way for employment generation but it is an emerging commerce which is equally profitable and nature oriented and might possibly solve ecological problems through business activity along with eliminating unemployment there by it creates employment opportunities. Entrepreneurship is indispensable for the country's socioeconomic development. Green entrepreneurship can form an integral part in the fight against youth unemployment due to the low entry-level requirements for young people in many sectors and their generally strong interest in innovative business solutions and sustainability considerations. In addition, the creation of new firms allows equal access in terms of gender and is not limited to urban areas where traditionally larger employment opportunities exist. Green entrepreneurship can also provide new employment opportunities to workers who are set free during the restructuring towards a greener economic model.

Q2. Category of industries based on pollution index under which category Green Entrepreneurship belongs?

Pollution Index (PI) measures the level of 'emissions' that cause air pollution, 'effluents' that contaminate water, 'hazardous wastes' which includes dangerous chemicals and

‘consumption of resources’ which excessively use natural resources. Based on the pollution levels, a PI score is assigned. A higher level of pollution will reflect a higher score. The Index was derived after extensive consultation with various pollution control and monitoring bodies like CPCB, SPCB along with MoEFCC. Fighting pollution gets renewed thrust with government releasing new ‘colour’ codes for industries based on their pollution load factor. On 5 March 2016, Minister of State (Independent Charge) of Environment, Forest and Climate Change (MoEFCC), Prakash Javadekar released the **four** colour categorizations for industries as per the following Pollution Index (PI) score between 0 and 100:

- Industries with Pollution Index score of 60 and above: **Red** category
- Industries with Pollution Index score of 41 to 59: **Orange** category
- Industries with Pollution Index score of 21 to 40: **Green** category
- Industries with Pollution Index score including and upto 20: **White** category

Green Entrepreneurship falls under white category. Industries falling under ‘White’ category include LED and CFL bulb assembly, power generation using solar photovoltaic technology, wind power generating units, hydel units less than 25 MW, products made from rolled PVC sheets using automatic vacuum forming machines, cotton and woolen hosiers using dry processes etc.

Q3. What is Carbon trading and how it contributes to green economy?

Carbon trading is the process of buying and selling permits and credits that allow the permit holder to emit carbon dioxide. It has been a central pillar of the EU’s efforts to slow climate change. Carbon trading is a market-based system aimed at reducing greenhouse gases that contribute to global warming, particularly carbon dioxide emitted by burning fossil fuels. Due to its broad tax base, a carbon tax can raise significant amounts of tax revenue, which can be used to 1) lower other types of taxes; 2) reduce the federal deficit; 3) fund public investments; or 4) be returned to taxpayers in the form of lump-sum rebates. Carbon markets are a key tool in helping to drive emissions from the economy by effectively putting a price on pollution. They can take different forms: from mandatory trading of 'carbon permits', to voluntary projects which can help to cut emissions to earn 'carbon offsets'.

Q4. Is Green Entrepreneurship confined to business?

Green Entrepreneurship is defined as discovering diverse business possibilities while keeping the environment safe from the detrimental impacts of environmental contaminants in mind. Other primary goals include proper waste recycling, developing renewable energy sources, and concentrating on organic farming. Green entrepreneurs play an essential role in driving long-term growth and forming new enterprises via sustainable innovation and inventive ways to cleaner production. However, sustainable entrepreneurship identifies, creates, and exploits business possibilities that contribute to sustainability by creating socio-economic and environmental benefits for society. The aspect of green entrepreneurship is defined by its ecological mitigation, and its notion differs significantly from explorations of sustainable entrepreneurship, which tend to address mission-driven, rather than profit-driven entrepreneurial initiatives.

Q5. Is organic farming a green entrepreneurship?

Organic farming is widely considered to be a far more sustainable alternative when it comes to food production. The lack of pesticides and wider variety of plants enhances biodiversity and results in better soil quality and reduced pollution from fertilizer or pesticide run-off. rganic food is the heart of the green food business. This food has been produced through approved processes, using organic fertilizers and farming practices promoting qualities like recycling and biodiversity.

Certified organic food can be sold at a premium. The United States Department of Agriculture (USDA) provides a portal for all things organic. They designate local agencies as agents to administer the certification process. Here are the USDA's five steps to organic food certification:

1. **Develop an organic system plan.** Commit this plan to a document. This is like an organic food producer business plan. It lays out how the producer will conform to organic standards and includes all aspects of farming, food handling, history of the land being used, growing substances (fertilizer, etc.), monitoring processes, and so on.
2. **Implement your system plan.** Bring the inspecting agency in as early as possible into the process-starting with reading and approving the system plan. Once approved, begin implementing the plan.

3. **Receive an inspection.** Once the system is in place on the ground, it needs to be inspected. An inspector will need to conduct a top-to-bottom, detailed review of the entire system. This inspection will vary depending on which products or services you offer.
4. **Allow time for review.** The inspector then sends the inspection results to the certification agent for review and to compare to the system plan.
5. **Receive certification.** If you pass, you will receive your organic certification for whatever products pass the test. The process then becomes ongoing as you run the business, with inspections at least once a year.