

Green Start-ups in India:Paving the Path to Sustainable Development

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Abstract: Any business organization basically work for three pillars of sustainable development: the economy, the environment and society. The increasing awareness and concern about environmental issues has led to incorporate principles of sustainability into operational business practices. Due to environmental and health awareness, the green start-ups are enlarging day by day and consumers also demand to consume organic stuff over conventional offerings. This paper provides a comprehensive view of green business practices within the context of sustainable development, shedding light on the various aspects of environmental impact. The study undergo the sustainable entrepreneurship by examining its integration with various initiatives offered by Green start-ups in India. The paper also depicted about the opportunities and challenges faced by Indian start-ups for fostering a supportive ecosystem for sustainable development.

Keywords: *Sustainable Business, Green Start-ups, Sustainable Development, Business Sustainability, green practice.*

Introduction: The importance of eco-conscious business practices have enhanced over the past few decades due to increasing awareness of environmental issues among people. The *Eco-conscious* business run on various core principles to minimise the harmful impact on environment- included sustainability, circular economy, carbon neutrality and ethical sourcing and environment stewardship. Green consumption is also called sustainable consumption, here included practice of buying and consuming products or offering services that are eco- friendly and sustainable in nature. This concept of green consumption emphasis at decreasing the negative impact of production and consumption on the environment. The scope of Green consumption covered-eco-friendly products made from sustainable materials included recycling and reusing, reducing overall consumption by using less energy consuming products and services. Purchasing of locally produced goods is also come under the concept of Green consumption.

The term “*Eco-friendly*” means “no harmful” or contributes to such practices which prevents the contribution of air pollution, water pollution and land pollution. A business firm who manufacture standard Eco-friendly products keeps in mind the things concerned with human safety and environment safety. These sustainable products are also called green products, natural or organic products. The manufacturing and marketing of green products are being control during complete production and marketing process. Everything is designed and controlled from environment point of view. Eco-products may be household goods, Machines office furniture, electric appliances and vehicles. The concept of Eco-products in broad view includes- Eco-materials used in production, Eco-components, Eco-services rendered by business, *Eco-finished products* with environment friendly packing. *Eco-materials* here may be in the form of metal, foam, glasses or any other form which has no harmful ingredients or contents involved and possess such features which can be recycled, free from hazardous substances, energy and resource saving and having no damaging impact on the environment and human being.

The ‘*Indian start-up ecosystem*’ enormous growth and transformation, making it one of the most dynamic and vigorous in the world. Start-ups ecosystem is possible due to several grounds in India including governmental initiatives, increased access to finance, increasing the pool of talented and skilled entrepreneurs and a favourable regulatory environment. The concept of ‘*start-up*’- is defined as a newly established business with the aims to commercialize innovative products and service to the market. Under start-up India initiative, this is defined on the basis of age criteria (incorporated not more than 10 years), turnover limit (not exceeded INR 100 crore in any financial year), innovation or scalability (established

for something novel or contemporary) and nature of business (not be formed by splitting up or reconstruction of existing venture).

History of Green Start-ups in India: The Beginnings of these start-ups is the era of pre 2000s, in this time period, sustainability in India was primarily promoted by government initiatives, Non Govt. Organisations and environmentally conscious business enterprises. The green business ecosystem was underdeveloped at this stage because very few start-ups were in operation in the domain of sustainability at this phase and their major emphasis was on organic farming and other relevant practices related with the sustainable use of resources but the concept of “green start-up” was very immature that time after this, there were rise of environmental awareness due to increasing global movements for climate change, several environmental laws and regulations came into existence like the environmental protection act of 1986 and National Action Plan on Climate Change (NAPCC) 2008 laid the groundwork for sustainable operations. After 2010 the Growth of the Green start-ups ecosystem were noticeable by the rapid growth of the renewable energy start-ups and Jawaharlal Nehru National Solar Mission 2010 line up to increase solar energy production, management of waste and recycling of the same. The increasing urbanization in India results to increase the waste generation in Indian cities and this also created opportunities for start-ups going towards the practices of waste management and recycling. The current decade has pick up the pace in the growth of green start-ups, driven by both govt. policy support and increasing consumer demand for sustainable products. In recent, the fashion products also seen the rise of green start-ups with focus on ethical fashion and the use of organic sustainable materials and green financing. Impact of global trends because of increasing global concerns over climate change (Paris Climate Accord) have had intense impact on India’s green start-up ecosystem. Indian start-ups are increasingly looking for worldwide partnerships by adopting best practices of sustainable development.

I. Review of Literature: eco-friendly products are produced with less use of resources and keep the environment clean, protected and sustained. In case of Eco-services are concerned with repair, re- use and recycling services, out sourcing services, control of hazardous items while providing. Perceived benefit and quality of products have a positive important role in affecting consumers green behaviour, especially when consumers are prone to environmental issues and price of green products and their future expectation about green product also have positive impact on consumer behaviour. *Lopes, J. M. M., Gomes, S., & Trancosa, T. (2024).*

There are mainly four aspects which on the basis of which long term sustainability of the business firm depend these are: Green knowledge possession, green knowledge reservation or storing capacity of business, green knowledge use or application, and forming or putting together the green knowledge have directly impact ability to survive of business or doing operation for long time in market. *Widyanti, R., Rajiani, I., & Basuki, B. (2024).*

Governments play a major role in efficiently promoting the practices and functioning related to environment, social and governance scores with the help of promoting the consumption of renewable energies and by promoting them for investments in green assets or areas as well tracking the economies toward green evolution and growth to attain the Sustainable development goals. *Phan, T. C. (2024).*

Green marketing practices play a pivotal role for sustainable future of businesses and the environment. At present green initiatives are not merely a trend but a strategic imperative. Companies are beating competitors by adopting sustainability and it makes a competitive advantages for sustainable firms, however, challenges exist ranging from the articulation of novel environmental concepts to cost management but green marketing is necessary for innovation and growth of eco-friendly business. *Choudhury, N. P. (2024).*

The successful entrepreneurs adopt strategies to handle the challenges and emphasize on opportunities by studying on the theme on ‘role of start-ups in driving technological advancement in the Indian economy’ expressed the significant role played by entrepreneurship in driving innovation ,economic growth, and shaping the technological landscape with meeting the challenges of regulatory hurdles, lack of funding. *Kumar, D. & Yadav, A. K. (2024).*

Under sustainable development goal no. twelve that is related to the responsible consumption and development of product under which 91.5% of biomedical waste generated is further treated. 54.99% hazardous waste recycle or further utilized and when we talk about the composite score for India in context of sustainable development goal achievement that is improved a lot or go upward in positive way from 57 in 2018 to 66 in 2020-21 and this also increased further to 71 in 2023-24, as per *PIB report (2024).*

There are a lot of advantages for the start-ups who is working for boosting or promoting sustainability if it takes sustainable activities in priority in its operation i.e. from production point to final marketing of its offering to the target market, if a company adopt or incorporate sustainable practices not only reduce costs and improve efficiency but also contribute towards social and environmental obligations. *J. Dr. Geeta. (2023).*

India is a home of unicorns but the start-ups ecosystem is still immature due to numerous challenges overlooked included lack of govt. support, insufficient Investment obtainability, mentoring subjected to slow and steady growth of ecosystem

for sustainable development. For their growth, a balance among social, economic and environmental factors is crucial. *Chillakuri, Bharat & Mogili, Ramanjaneyulu & Vanka, Sita. (2020).*

The challenges associated with running a green business in developing country like India are more than developed nations that's why developing economies put up their fewer contribution the sustainable business practices as compared to developed countries. The green activities or practices performed by any business have a positive effect on the business profits and sales. The findings of study explored that in developing country, old age people are more environmental conscious than young population. Due to increasing industrialization, it is expected that the quantity of waste generation may increase more in the future and to avoid the dangerous outcome from it on us, we have to take suitable measures for its control at present. *Mendon, S et al. (2019).*

Constant innovation is very necessary for the success of any business unit, due to lack of evolution, any business not be able to sustain oneself for remote future. In today's changing market environment success comes from looking for new avenues or opportunities and mainly focus on innovations that is desired by the customers, it is essentially significant for the government, financial Institutions and educational institutions have to play their role in building the entrepreneurial climate by promoting start-ups. *Mathur, S., & Midha.*

Consumers are going to be more conscious toward eco-system and they are eager for buying sustainable products. This research was conducted for examining consumer perception and their purchase intention towards sustainable products in context of young consumers of India. As the findings expressed majority of consumer assumed green products are environment friendly products followed by energy saving products by nature. This study also expressed the results on the basis of gender in this, it was found that man are more aware about green products than women by behaviour and found that the consumers were environmentally be about and they were also ready to pay extra and for that the business need to be more exert themselves in the direction of conversion of this eco- concern into sustainable consumption. *Kumar, S., Garg, R., & Makkar, A. (2012).*

The business enterprise has to play a triple role in sustainable development included as contributor to economic growth, contributor to job creation or employment and also a contributor to environmental conservation. To meet goals and to play these role, an enterprise has to face the challenges wisely and search the opportunities existed in business environment. *Mamingi, N., & Barbados, W. I. (2011).*

In a survey conducted by *National Association of Software and Service Companies (NASSCOM)* to analyse the scenario of start-ups organisation in India due to impact of the epidemic period. It was found that almost ninety percent start-ups are facing drop in revenue and almost sixty percent of newly established start-ups are facing liquidation and closedown of operations.

The findings of the study on 'a new step towards sustainable entrepreneurship- green start ups' depicted that although green entrepreneurship have various positive facet in economy while in various medium, these entrepreneurs facing the issue of adequate funding or in some aspect, there is lack of appropriate societal cooperation. The cooperation at part of government and society is imperative for escalation of sustainable start-ups ecosystem in economy. *Sengupta, S. (2020).* The continuum between environmental, economic and social aspects in promoting of green enterprises which contribute to attain the goal of sustainable development. *Halder, S et al (2017).*

The rise of green shift of a business should be regarded as result of the linkage of three main aspects of the process, these included consumers, governments institutions, and the business entrepreneurs, the first two play their role in to the formation of "green request" to business firms and the latter one is responsible for the implementation green strategies in practice or function. Sustainable goals of country is attained when these three work together with a linkage, cooperative and proper interactive way. *Cekanavicius, L., Bazyte, R., & Dicmonaitė, A. (2014).*

II. Objectives

In this research paper, we will examine about green business practices which Indian start-ups have been adopted to run business for sustainable development. We will also discuss about sustainable development in context of current Indian scenario of Start-ups and to provide valuable insights that will help entrepreneurs to succeed in sustainable market. It will try to explain the link between green entrepreneurship and sustainable development.

III. Research Methodology

This research work is based on in-depth qualitative analysis of accessible secondary data. The data collected from published research paper in journals, newspapers, company official websites, published proceedings of conference with the main focus on latest research conducted in context of green entrepreneurial contribution in promoting sustainability and how they are performing their green practices.

IV. Indian Start-up's contribution for Sustainable Development

Many corporates have initiated to transform their products to respond to this changing dimension of demand, and new start-ups are emerging with environment-friendly products. Many of these environmental start-ups are becoming unicorns and big businesses within last few years in various sectors. Several start-ups are actively promoting their sustainable product offering. Here, are some notable examples:

Banyan Nation: It is Pioneer in waste management and bottle to bottle recycling industry that collects plastic wastes from industries and recycles them for further use. Banyan Nation deal with FMCG companies to supply its recycled plastic which is then used for shampoo and lotion bottles. In 2021, the start-up has been recognised as a Technology Pioneer by World Economic Forum. This company is working with the philosophy of stay curious and stay inspired to lead the way for plastic recycling and to insure supreme product quality within a sustainable eco-system ecosystem.

Zomato: Online Food delivery platform 'Zomato' is going to be a more sustainable enterprise by taken steps on sustainable-development goals with focus on environment, zero hunger, sustainable livelihoods, and diversity covering the requirement for sustainable development and growth that is for the good sake of all stakeholders and working for the achievement of its sustainable goals for the year 2030, aiming to build a "waste-free world" and bring up "inclusive growth".

Phool: Phool.co' is a biomaterials start-up founded in 2017 for the purpose to assemble the temple flowers waste dumped or disposed of in river water and this company is known for the further use of the dumped or discarded flowers from temples across country and produce the useful products such as rose incense cone fragrance products i.e. aroma stick products and Phool vermicomposting. "Phool.Co" is contributing towards a vision of clean or natural sterile rivers and functioning for efficient floral waste management.

Mitticool: It is known for manufactures and sells a variety of earthenware products includes: cookware, tableware, pots, incense sticks. The most innovative product is an earthenware cooling "refrigerator" that requires no electricity. The vision of this company is to bring the best wares or articles of earth material or clay in front of the entire globe. The Mitticool is working to provide health benefits of using clay products to the society as a whole.

PI Green Innovations: The enterprise is a clean-tech, founded in 2016 with the mission to increase access to clean air. The company is playing key role in reducing air pollution. The company attaining this mission by giving air filtration systems for vehicles, government buildings, commercial house, manufacturing plants and other similar buildings. The products manufactured by the company include Carbon Cutter Machines, RepAir, incinerators, and industrial boilers.

Beco: This green Start-ups is known to develop sustainable and bio-degradable products produced with Bamboo founded in 2017. The purpose of this company is to reduce the use of plastic and offers alternatives to single usage products like cotton tissues, cotton balls, Bamboo facial products and many more. This company offers a wide range of products included home & kitchen, personal care, saver packs and make sure to use only recycled wrappers for packaging. This company is known for chemical free, recycled plastics, safe for pets and made from Bamboo products.

Nexus Power: This start-up is refining the future if sustainable energy and recognised with the manufacturing of rechargeable, bio-organic and biodegradable batteries out of agricultural residue that are manufactured for power electric vehicles. This helps to minimise the reliance of lithium and preventing air pollution as unburnt leftover are one of the major sources of it. Its product are known for better performance, eco-friendly, sustainable, renewable, fast charging. The company is continuously working with the vision of inspiring future through innovation in sustaining energy.

Greensole: This Company redesign and up cycle, old or discarded shoes, cloths and make new affordable, comfortable and sustainable shoes, bag and mats by doing this, the company contributing to **environmental, social, and economic good. Greensole is continuously working for the attainment of sustainable development goals: climate action, responsible consumption and production, gender equality, decent work and economy for all, industry, innovation and infrastructure.**

There are many more start-ups in India who are performing for the betterment of environment and people lifestyle i.e. Ather energy(founded in 2013 and known for the production of electric vehicles with the aim to reduce air pollution and some other like Zunroof, Yulu, Boss Lady cosmetics, Just organic, Zypp Electric, Wakao foods and Gooddot etc.

Challenges & Opportunities and Govt. Support for Green Start-ups

Indian economy is one of the flourish and blooming economy in world because green start-ups are at the forefront of environmental transformation with a focus on increasing reliance on renewable energy solutions. The green entrepreneurship making significant contribution in sustainable development by the adoption of renewable technologies, sustainable agriculture and food system, e-waste management, organic waste management, sustainable mobility and electric vehicles, eco-friendly products: sustainable fashion, sustainable packaging, water conservation, clean tech and green

technology innovation: air quality solution and water purification. The contribution of business organisations towards sustainable development largely depend upon how they find opportunities in environment and how they deal with present and potential challenges including threats and constraints.

These Green business organisations are shifted towards sustainability with noble vision and playing pivotal role in combating environment protection, promoting resource efficiency and innovation. They are at the forefront of global movement for sustainable development due to growing demand of consumers for green products, opportunities in the circular economy, expansion of green market globally, technological advancement and innovation providing start-ups solutions to address the environment challenges of present time, despite continuous working for their objectives. These start-ups are also encounter numerous hurdles in the path of this sustainable journey. The biggest challenges faced by green start-ups are financial Constraints, regulatory framework & policy barriers, stiff competition from traditional business, unpredictable changes in technology, scarcity of resources, difficulty in scaling up and global expansion.

Government of India working with many programmes for green entrepreneurs: Ministry of New and Renewable energy- (it offers schemes and incentives for promoting renewable energy), FAME India Scheme (Faster Adoption and Manufacturing of Hybrid and Electric Vehicles), NITI Aayog's Atal Innovation Mission (provides incubation centres for mentorship and funding support), Swachh Bharat Mission and National Mission on Clean Ganga (to clean and revive the Ganga), Start-up India (to provide a nurturing eco-system to Indian Start-ups), Pradhan Mantri MUDRA Yojana (financial supports to start-ups), Stand-up India Scheme (promotes entrepreneurship among women and Scheduled Caste/ Scheduled Tribe start-ups), Make in India, Stand-Up India for Green Start-ups. India is a home of unicorns but the start-ups ecosystem is still immature due to a number of hurdles the newly established enterprises are facing lack of govt. support, problem in procurement of fund, competition with traditional products, lack of mentoring and training facilities subjected to steady growth of ecosystem for sustainable development, and for this a balance among social, economic and environmental factors is crucial.

V. Findings & Conclusion

At present green initiatives are not merely a trend but a strategic incumbent. As Indian economy continue its journey towards sustainable development, Green start-ups are emerging as powerful operator of betterment. The increasing focus on sustainability among Entrepreneurs has witnessed a significant wave of start-ups for sustainable development in recent years. These start-ups are addressing various aspects of sustainability i.e. clean energy, waste management, water conservation, agriculture innovation and circular economy models with a balanced approach of innovative technology, government support, consumer engagement have the potential to significantly put up to India's sustainable development goals (SDGs). By addressing challenges related to scalability or expansion, infrastructure and finance, these ventures potentially make keen contribution to India's sustainable future. There are plenty of growth opportunities existed for sustainable start-ups in Indian market. The study also depicted about some of top green start-ups: i.e. (phool, beco, nexus power, mitticool etc) accelerators and incubators which are working for green environment also provide guidance to the budding entrepreneurs. This work analyses the interface between green start-ups, marketing strategies and promoting environmental concern amongst entrepreneurs for the sustainable development of Indian economy. This paper give a glimpse about various going green start-ups in India and their adoption and development of green business practices are useful for customers, entrepreneurs, managers and government for making sustainable future

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