

# Incentivizing green entrepreneurship: A proposed policy prescription (a study of entrepreneurial insights from an emerging economy perspective)

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## ABSTRACT

This study undertakes an in-depth analysis of green and traditional entrepreneurs' experiences using a multiple case study research methodology along with triangulation and coding techniques, identifying the specific drivers of ecopreneurship given the constraints and challenges faced by them. This study maps this analysis to Resource Based View's (RBV) theoretical construct and argues that ecopreneurs navigate and negotiate their enterprise development constraints through combinations of personal attributes and innovative mechanisms rendering tangible and intangible economic, environmental and social gains. It further proposes a policy framework to incentivise, assist and accelerate ecopreneurs' efforts in achieving scalability in an uncertain external ecosystem. This proposed framework would also address the conflict between monetisation of innovations and environmental concerns.

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## 1. Introduction

Green entrepreneurship (GE), ecopreneurship, or sustainability related entrepreneurship is an emerging field of interest in a world grappling with achieving economic growth, making frugal use of natural resources and controlling/preventing pollution simultaneously (Koe and Majid, 2014) as this green form of entrepreneurship is about combining profit orientation with technological innovations that can help alleviate human impact on the environment, addressing global environment issues such as land degradation (Maroušek et al., 2019a), climate change and loss of biodiversity (Criscuolo and Menon, 2015), also catering to the current economic demand for creating rather than soliciting employment (Ghissetti and Quatraro, 2013). Although pursuing business growth along with salvaging the environment has been a no-win proposition for business owners and entrepreneurs over many years (Walley, N., & Whitehead, 1994), some businessmen, over time, came to realise that elements of environmental concern in business operations led to win-win situations for them in terms

of energy conservation, reuse of materials (Maroušek et al., 2019b), and reduction of lifecycle costs (Berchicci, 2008). Apart from this personal motivation which is negligible, certain market incentives and policy plans have pushed the advancement of green intent of businesses for the past two decades (Petkova et al., 2014), which partially explains the recent increase in number of environment friendly green firms across many countries (Harini Varala, 2012). So, on one hand, studies advocate a positive role of government in furthering the environmental orientation of entrepreneurs by instituting regulatory pressure and awarding contracts (Hörisch et al., 2017). On the other hand, the command and control approach, such as through compliance with laws, has not yielded much positive return in the field of GE or green growth (Guo et al., 2017). Furthermore, specifically in the context of transition economies, we feel that, there are crucial issues even if there are entrepreneurial policies in place – Firstly, like in India, there are 124 government schemes/policies for all kinds of start-ups including Sustainable Finance Scheme particularly for clean green energy projects, but lacunas and lack of co-ordination in the system cause hindered enforcement of policies (Agarwal, 2017). Secondly, the policy structure in India lacks frameworks for GE (Satar, 2016), so policies that promote traditional entrepreneurs constrict the space for green entrepreneurs (GEs) and challenge green ethics,

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and can be subject to frequent changes (O'Neill and Gibbs, 2016). Gallagher (2012) quotes a part of an interview with an ecopreneur, who declares "You must have the standard entrepreneurship aspect down before you can add the eco aspect!"

Apart from the complex policy matters, businesses in the green sector do not necessarily warrant venture capital (Mrkajic et al., 2019) thus limiting the availability of green venture capital for the GEs who form a small portion of all the entrepreneurs (Demirel et al., 2019) as they are constrained with limited or no collateral to offer to funders (Ning et al., 2015). Additionally, the perception of high political and technological risk, low scalability and long pay back periods associated with GEs further discourages finance providers (Migendt et al., 2017). Contrarily, a study (O'Rourke, 2010) predicts a better sustainable approach and perception of environmental issues by VCs, which can improve access to market capital for GEs in the long run.

In spite of barriers, at times, GEs are motivated by personal values and passion for green products or services (Font et al., 2016; Kearins and Collins, 2012). Other times, they are driven by a mix of green, social and ethical motives along with economic motives, rather than being solely green (Taylor and Walley, 2005). Motivations play a key role for GEs, but when the degree of competitiveness arises, competencies become key issues (Santini, 2017). According to Gandhi et al. (2018), some other significant drivers of green manufacturing are future legislation and a green brand image, which may earn them an expected competitive advantage (Kirkwood and Walton, 2010). Environmental concerns and consumers' intention to buy environmentally friendly and green products, rising health consciousness and slowly changing willingness to pay more for eco-friendly products and services has a significant effect on the emergence of green markets, which further positively enables GE by increasing market opportunities (Lotfi et al., 2018).

Due to few or many of the driving factors mentioned above, India witnessed the growth of renewable energy sector in recent years. Additionally, while agriculture and food processing have been identified as high potential sectors for GE, other important sectors include waste recycling, handicrafts, textiles, manufacturing, housing and construction (Mathur and Tandon, 2016). A few recent statistical figures from India, like the renewable energy making up of only 15.2% of all energy used, only 2.2% of waste water is recycled<sup>1</sup> and out of the 1311.1 million population in 2017, 304 million still live without electricity in various parts of India (Mishra, 2018) reflect that the specific requirements for intensification of GE are insufficient, indicating at the same time the sufficiency of green business opportunities in India. According to the Confederation of Indian Industries, the market potential for green products would be worth 300 billion dollars by 2025 (Mathur and Tandon, 2016). The scenario, in terms of demand for green businesses is tentatively similar across mainly transition economies and some developed economies (Streimikiene and Mikalauskiene, 2016).

Anticipating opportunities that emerge from environmental solutions (Patzelt and Shepherd, 2011) and taking into account the inevitable requirement of GE, it is very important for academicians, industrialists, entrepreneurs and other businesses to understand how the green element can be integrated, saved and fostered, in light of the prevailing green business opportunities across the globe. As compared to developed nations, there is a small but growing body of research in the field of GE with respect to transition economies, covering the broader perceptions of the drivers, hindrances and policy implications (A. Pastakia, 2016). However, a

clear and comprehensive dynamics of conception, formation and stabilisation of green ventures; and the specific characteristics, attributes and strategies of GEs in the given socio-economic and cultural conditions are yet under explored in transition economies, which may be the case with other economies as well.

This study aims to fill this gap by recording and analysing the experiences of 21 GEs/entrepreneurs, academicians at the top technological institute of India and resident housewives on the institute's campus using a case research framework as defined by extant literature. Our study identified new ground realities providing significant challenges in this domain. Further analysis has revealed that ecopreneurs with niche ideas and innovative strategies had to devise specific trailer mechanisms to help them in successfully monetizing the economic, environmental and social benefits. While contributing to ecopreneurial pedagogy, this thematic clustering, by offering a pragmatic view of the pressures and political affairs at play, may also help researchers to build on extant literature and advance the research field. Specifically, our study supports and supplements the resource-based view (RBV) theory (Barney, 1991) which theorizes that a firm's sustained competitive advantage is achieved through the use of firm's resources or competencies that includes all the assets, processes, knowledge and capabilities that reside in the firm (Amit and Schoemaker, 1993). Further studies on 'capabilities' (Coates and McDermott, 2002) emphasize the significance of the way in which human capabilities are used as unique resources in achieving and sustaining the competitive advantage or growth of an enterprise in the market. Adding on to the human capabilities as a resource-based perspective, our study attempts to add to RBV theory by illustrating that the success of a new green enterprise is a function of the combination of individual attributes of GEs, their ideas and specially tailored strategies in various combinations at different stages of the enterprise's growth trajectory. Such combinations provide an entry barrier making it difficult for competitors to breach the same. The insights born out of our study seek to assist policy makers across the globe and provide valuable insights to upcoming ecopreneurs in achieving scalability under uncertain situations and serve as a pointer for funding institutions to strategize their investments particularly with ecopreneurs. Furthermore, the later part of the paper also provides specific insights for modifying existing government policies or formulation of new policies, which in turn would enable optimising the benefits ecopreneurs may derive, in addition to gently propelling new businesses towards a cleaner environment.

### 1.1. *Research gap* –

Extant research nearly exclusively addresses either GE in developed nations or the common challenges, drivers and policy formulations in transition economies. On-the-ground aspects of GE in transition economies have not been studied in depth which includes the intensity, characteristics, perspectives on problems and the way they are dealt with, the drivers behind GE, the legal requirements, strategies of acquiring funds, employee retention approach and marketing methods. Studying this multifaceted dynamics is of particular importance because from practice review it can be seen that sustainability benefits can be achieved only through combining several approaches (Bocken et al., 2014). Thus, in the following study, the authors adopt a multi-case study research methodology to answer the following questions –

1. Are there enough institutional drivers for establishing new green business in India?
2. Do GEs face constraints and particularly funding constraints in formative stages?

<sup>1</sup> India ranks 75th in environmental impact survey: Report. (2017, June).

3. Are there any regulatory challenges for them?
4. Are these challenges addressable?
5. Is employee retention an issue?
6. Is there a need to target customer segments?
7. Are there any tangible/intangible positive environmental and social impacts?
8. Are there policy changes/modifications required to encourage and motivate ecopreneurs?

Based on the findings above, our study supports and enhances the RBV theory. Further on, the study formulates relevant policy pillars to propagate GE in an uncertain and challenging ecosystem as that of transition economies, but which may be applicable to developed economies as well.

## 2. Methodology

Our study begins with a review of the available literature on GE, followed by an account of what our study will contribute to the extant literature. Thereafter, case study research that includes qualitative data collection and case study research analysis forms the main body of our paper unveiling diverse viewpoints of Indian GEs which are collated and categorised for future GEs, academicians, funders and policy makers to formulate plans for maximum benefits. Such qualitative components when derived from our study will be more persuasive for SME owners/managers than theoretical discussions (Levy and Powell, 2005) as these components can be used as basis to suggest actions to owner/managers and to inform policy (Merriam, 2009; Rozyn, 2007). Although there are no ideal number of cases suggested for such studies, there are different schools of thought, suggesting number of cases ranging from four to ten (Eisenhardt, 1989), six to eight samples (Crabtree, F. B., & Miller, 1992), fewer than ten for small business research (Curran and Blackburn, 2001) or 15–30 interviews for case studies (Marshall et al., 2013). Prior works state that large sample sizes do not permit deep, case-oriented analysis (Sandelowski, 1995) and the associated large volumes of data are complex to manage and analyse, whereas multiple cases are more compelling and the overall study is more robust (Robert K Yin, 2009), providing a better basis for understanding (Levy and Powell, 2005). Considering these studies, we interviewed ecopreneurs/entrepreneurs in two stages: the first stage consisting of 5 GEs (formed the core of our analysis) on the basis that these businesses have some measure of success by generating revenue, that had heterogeneity across products/services, would have survived the market for at least 3 years, would share sufficient information and also would give us a window into the GEs' community. This sample set was meant for an in-depth analysis to generate a high level of understanding and to build theory. We purposely selected GEs whose businesses intended to reduce waste. These entrepreneurs were effective and exhibited considerable progress towards meeting the dual (economic and environment) and in some cases the triple (economic, environment and social) bottom lines of development. We contemplated the owner/manager as the unit of analysis and access to at least one of them was an important consideration in the case selection (Ponelis, 2015). The second stage consists of 16 entrepreneurs (nine traditional and seven GEs) who are in the initial stages of business, with only 1–2 years of operations and are yet to earn profits. They belong to different product categories having market presence across national and international level. They are incubated at one of the top technological institutes of India which has 58 incubatees, but we were able to reach out to only 16 of them. We interviewed this other group of 16 entrepreneurs to know if the nascent GEs who have been in existence for only a year or so had new challenges pertaining to their establishment and if traditional entrepreneurs

knew the benefits of going green or if they incorporated green practices in their system. A sample size of 21 is ideal for our study and would not reduce the robustness of analysis in providing a generic solution framework.

Prior to data collection, a specific framework with step by step process has been devised (R. K. Yin, 2014) so that uniformity of approaches across cases would be maintained leading to identification and better understanding of the emergent properties and features (Healy and Perry, 2000). We have used a detailed interaction process capturing the essence of each enterprise in developing a sophisticated construct with high internal validity. The study also bolsters with materials from secondary sources including desk researched articles, research and media reports and the internet (Robert K Yin, 2003). This was used as an external validation mechanism to improve the robustness of our results.

The semi-structured interview questionnaire was designed keeping in mind the objective of unravelling the establishment and advancement narration of green business initiative and the associated success factors. This was further detailed through a series of interviews in person and through videos with these 21 sample enterprises and their promoters over a period of 10–12 months. The above led us to record and capture 4–5 h of conversation (in case of five GEs— Stage 1) and 2–2.5 h (in case of 16 incubatee entrepreneurs — Stage 2) with each entrepreneur to deep dive into the nuances of this ecosystem. These interactions have been recorded and then transcribed verbatim.<sup>2</sup> These transcripts combined with hand-written notes during interaction process were used to develop a case description template, filing a few versions of case analyses assisting us in tracing back the research process, used to arrive at the analysis and results during various stages (Carson et al., 2001). Triangulation of data to match, assess and contrast data sources and to sort out information from respondents (Stavros and Westberg, 2009) has also been undertaken. This was followed by coding of interview transcripts and documents to represent various identified themes and concepts within the narratives so captured. Within and cross case analysis was performed to identify patterns that resulted in filtering out the required essential information. This assisted us in identifying emerging variables which are used as building blocks to broaden existing findings and generating new theoretical insights in unexplored fields.

Our objective was to capture narratives of GEs, but in the process, we have also expanded this to capture the insights of teaching faculty at the technological institute and resident homemakers to ascertain and evaluate society's perception of GE and their inclination towards acceptance of green products and services, which in turn provides a subtle indicator of the success of GE.

The five GEs were<sup>3</sup> (the interview questions are listed in the first column of Table 1 below) —

- Case 1: Manufacturing daily use products out of floral waste.
- Case 2: Manufacturing eco-friendly disposable utensils.
- Case 3: Offering sustainable solutions to waste.
- Case 4: Collecting and recycling waste paper.
- Case 5: Manufacturing paper honeycomb for eco-friendly packaging, doors, etc.

The business descriptions of 16 GEs/traditional entrepreneurs and the questionnaire used for them is attached as Annexure 1 at the end of the paper.

<sup>2</sup> The recordings and transcripts will be made available to the journal on request.

<sup>3</sup> The names of the all the companies are being withheld for privacy reasons but will be made available to the journal on request.

**Table 1**  
Summary of interviews.

1. Green Entrepreneurs cases	Case 1	Case 2	Case 3	Case 4	Case 5
2. Year of Establishment	2014	2009	2011 (effectively started growing 2015 onwards)	2010	2007
3. Age of the owner (in 27 years) in the year of establishment		35	25	40	35
4. Main Business Area	Recyclers of floral waste from temples and mosques to patented fertilizer, incense sticks and other products.	Manufacturer of compostable wooden cutlery, biodegradable garbage bags and takeaway packaging.	Scientific on-site processing of organic waste, and recycling of all dry waste from households, small & medium enterprises, corporate and other urban waste.	Organized collectors and recyclers of waste paper from household and industry.	Manufacturers of eco-friendly paper honeycomb doors & panels and packaging material.
5. Employment before the green business	Automation Scientist in Symantec Corporation (since 2011).	Worked for Pfizer, a pharma company.	4 start-ups failed (all non-green).	Was exporting waste paper from Europe to India.	Radio jockey, education counsellor etc. but no full – time job. Always aspired to be an entrepreneur.
6. How was the green idea born	During conversation with a Czech friend while sitting on the banks of the Ganges.	Lifestyle at London and the fact that India was the 12th biggest plastic polluter.	Found tetrapack strewn carelessly all over ... became a collection partner with tetrapack as they had recycling policy in place.	After meeting with Sam Pitroda who encouraged Parikh to create jobs in India through waste business.	It was born out of a college project in 2005.
7. Profit anticipated or the merit of saving the environment or both while thinking of initiating the business	Unless there is money value attached to a business, the model is not sustainable.	When looking at something on a large scale for the masses, there has to be profit intent. A proper business model is mandatory to reach out to a billion people out there.	Sustaining the business and creating jobs was the topmost priority. Without profit no business can survive. He says he is more of a social entrepreneur.	Main aim was to create 1 million livelihoods in India – no enterprise can survive without a profit motive.	Profitability with positive environmental impact was the motive.
8. Start-up capital	Rs. 72,000/-	Rs. 3 crores	Rs. 10,000/-	Rs. 2.3 crores	Rs. 1 lakh
9. Source of start-up capital	Own savings.	Own savings.	Own savings because the founder was in US when he invested.	Own savings + loan.	Savings of 5 friends (Rs. 20,000 each).
10. Other sources of funds	IIT Kanpur competition – Upstart 2015, won B-Plan competitions at IIM Ahmedabad, IIM Calcutta, IIT Kharagpur, ISB Hyderabad, Wharton India Economic Forum etc.	No other source, though looking for a possibility with VCs, angel investors etc. (after 9 years).	Competitions and grants (Intel innovation digital India Challenge by Narendra Modi).	Private equity + banks.	State Bank of Mysore gave a collateral free loan.
11. Hassles faced during fund acquisition	No help from the government even after 3 years. Bureaucracy and corruption was a big hassle.	Didn't seek any help from the government.	No help from the government.	For banks, waste business is no business at all, it's a social stigma still – their conventional thinking dissuades people to take up unconventional businesses.	Didn't approach the government though they could have applied for multiple grants because processes with the government are very slow due to bureaucracy. It was not easy.
12. How difficult was it to for you to go through the regulatory procedure	It was not easy, but not difficult too.	Nothing out of the ordinary – husband helped.	Before the present Prime Minister, Mr. Narendra Modi came, there was bribery involved but now, things are much easier.	It was easy.	
13. Did networking/relationship with government agencies help in business all the way	Yes, networking helped in raising funds.	Networking helped in getting the first big client at Commonwealth games – this helped me get lot of visibility!	No, not much.	Not really.	Networking and having relations with influential people helped us to get the registration number for our company.
14. What other support you had while setting up business?	No support, not even family.	Will power and determination.	Experience from the past failures in business.	No support.	Biggest support was acceptability by family after some time.
15. How did you manage to convince your target audience/how did you place your green product/process in the market?	Never promoted sales – promotion only through media articles and word of mouth.	It takes a lot of time to educate schools, canteens, RWAs (Resident Welfare Associations) about what biodegradable/compostable is. When people genuinely understood what ecoware had to offer, they would happily choose that over a plastic one even though theirs was 40% more expensive than Styrofoam and 15–20% more	Targeted people who were environment conscious. Paid them higher for better segregation of waste. These people then passed on the message to other residents of their societies or to their friends'/relatives spreading the environment conscious message. Waste Ventures also approached big corporate houses like Amazon, flipkart, Infosys,	Had a business strategy in place to start with. A guy picks up waste from a house and then knocks at the other two houses and so on. This is how they propagate themselves. That's how a large customer base was built. Started with one or two apartments which happened to become one or two buildings and so on. So, it was the power of	Had a business strategy in place - tried and worked with larger companies as a lot of MNCs that operate in India know about Honecore's material. They have a range of paper honeycomb fittings that are not existent in India. For a win-win collaboration, invited customers to the factory to showcase the very high-quality produce

Table 1 (continued)

1. Green Entrepreneurs cases	Case 1	Case 2	Case 3	Case 4	Case 5
		expensive than good quality plastic. They did live demonstrations. No advertising due to limited budget. Trade shows and stall events is how they promoted themselves.	Google for mass waste pick-up.	multiplication. Patiently tried to instil trust and confidence in the pick-up drivers for right collection at the right time.	at the works of Honecore. The visitors would then recommend Honecore to their customers - that was one of the ways of working. Secondly, in the beginning Honecore gave away their product for free to customers and put their products through whatever tests the customers demanded - their satisfaction then lead to their buying it.
16. Do you have regular customers whom you think you've been able to transform to this environment friendly consumption ?	He feels that people can be converted only at the price point, the price has to be either less or comparable with the conventional product. For the top 2–3% of the population, price doesn't matter.	By educating, they have been able to transform some 5 star hotels, street food vendors, tea vendors and mid range quick service restaurants. Due to the cascading effect of their education, there are consumers going to them.	Yes, the big corporate houses and residents.	Since the market is huge, they didn't need to transform anybody. The idea was to introduce a new age waste collection system. Their business strategy rested on right calculations and then the planning of their activities to achieve those numbers.	They have been fairly successful in transforming a few customers like TVS motors, BMW, Godrej, Wipro etc. Have saved them annually by loading more per loader, thus providing solutions for packaging the economic way.
17. What do you think are your strengths ?	- Being the 1st in the market - Have not been stagnant, coming up with new products off and on.	- Determination - A very supportive team.	- Huge market size - The determination to go on.	- Right team - One has to be a fighter, laid back attitude doesn't work.	- Would give a lot of credit to the team in place - Willingness to learn.
18. Challenges and constraints faced	1) Fund from Government 2) Biggest constraint was getting a team, it is tough to convince someone to work in Kanpur.	1) Funding 2) Changing people's habits – have to work on it consistently.	1) Funding 2) Finding right group of customers.	Conventional mindset of banks as they were not ready to fund our company dealing in waste.	Overcoming the conventional mindset of customers – but have been able to overcome challenges.
19. Environmental impact	Have composted 4200 tonnes of waste flower, protecting more than 400 kgs of pesticides going into the Ganges.	1) Have improved livelihood – one of the super-stockist who sold plastic ware only, has come to selling ecoware exclusively. 2) Have minimised bio-waste by converting it into a consumer product.	Have averted 3000 kg of dry waste in the past 2 years. Have saved 5000 + trees by collecting and getting the paper recycled – have avoided almost 1 ton of paper.	- Are conserving 3,40,000 trees per year (1 tonne of paper production needs 17 trees) - Collection & recycle of 20,000 metric tonnes of paper and cardboard per year - 70% less energy consumption in recycling paper vis-a-vis making it from raw materials.	In the last 4 years, have saved about 4800 tonnes of wood and polystyrene thermocol.
20. Economic impact/ Scale of benefit	We had invested Rs. 72,000/-. Our evaluation of the company is 12 crores. We have grown 1200 times.	Have grown 4 times.	Revenue grew from 10000/month in 2015 to 45–46 lakhs/month in November 2017.	Had invested 2 crores and the company stands at 300 –400 crores.	Turnover of 8 crores for the past 3 years.
21. Social impact	Earlier we supported a self help group model of 128 women livelihood, now we have 43 women working full time. They are also able to support their families of at least 4–5 members each. All these women were manual scavengers earlier. About 19 children have started going to school. Women on permanent payroll have ESI, PF registration, insurances etc. facility.	Presently, 100 people are employed with us, we started with 15 in 2009. Indirectly, we benefitted vendors, transporters and canteen guys.	Team size has grown to 100 + from 15 to 20. We work with 1800 waste pickers and 300 scrap dealers. We have helped increase their income by 10 –15%	- Have added almost 500 unskilled workers as employees. - Payment of salary through bank accounts. - Improved wages, worker welfare & insurance. - Generating credibility through ID proof for the team.	Have a team of about 40 people. Have developed leaders in the company as a strategy to progress the company. Abhijeet is associated with the Rotary club of Bangalore, through which people in other businesses approach him for greener solutions. He has been able to transform business men using conventional packing material into ones using green packing stuff.
22. Lessons and recommendation for upcoming entrepreneurs	Business model is mandatory – should not spend a lot of money on customer acquisition.	One needs lot of drive – one has to be passionate about the business they are doing.	One has to not give up !	Stick to what you want and do it the honest way.	Stay focussed; believe in yourself and the product you are making – be committed!
23. Do you wish to extend the benefits	Are getting request from Nepal, Bangladesh and	Right now they are not thinking of spreading		No, India has tremendous opportunity.	Yes, we have plans.

(continued on next page)



Table 1 (continued)

1. Green Entrepreneurs cases	Case 1	Case 2	Case 3	Case 4	Case 5
<i>to other parts of the country/world ?</i>	China. Nepal is a Hindu country so lot of flowers in temples, Bangladesh has a similar problem of Ganges.	worldwide as they have tremendous scope in India.	Yes, maybe in future because they are still unstable.		
24. <i>Do you think it is difficult to stay in a environment friendly business?</i>	No ..... for them it has been their Unique Selling Point.	No ..... it is a matter of only changing habits of people, green or non-green.	Yes ..... there are a lot of unethical players in this field who can progress their business at very low costs. But, the market size is huge, so they are/were able to cope up with the challenges at some point.	No ..... they have a recycling history, just that they have not been able to market and explain our business well.	No .... it's just about breaking the old habits.
25. <i>What changes in the scenario around you would have made things easier for you</i>	Support from the Govt. would have gone a long way – no tax benefits to us even when we were clearing waste.	A waste management system in place would have made things easier – that ways people would have known the basics of why they should keep away from plastics.	Segregation policy from the government for industries as well as residents would be very helpful.	To come to a favourable scenario, political will is very important. Waste should get paid for it to go for recycling, otherwise unpaid waste gets strewn all over.	Policy formulation with incentive on green materials will help.
26. <i>Have you been into a conventional business before this? Did that cushion your efforts in the green business ?</i>	No.	No.	Yes, I used my experience from failed businesses in the current business.	No, I exported waste from Europe to India. I brought a lot of experience to my present business.	No
27. <i>Do you think you would've faced less hassles if the business were conventional rather than green ? In what way?</i>	No, it is not so – its just about no one owning to take the responsibility. Any kind of entrepreneur is not entertained in this scenario, like it is in India.	No, challenges remain, whatever business you may be in.	No, challenges remain whatever business it may be.	Whatever business, it has more to do with your personal self, whether you believe in the business or not.	It depends more on the fact if people know about the product you are making. If they know, it is easy, if they don't it is tough to get them on to the new product.
28. <i>What role can education play in furthering the green production as well as consumption</i>	Plays a huge role ... schools/ universities have developed curriculums supporting sustainability. But the spirit gets killed in the race for opportunities in a country like India.	Very much ... when we have the unfriendly plastic strewn all over the market and which is cheaply priced, education can help divert customers to environment friendly consumption. Interaction with the customer is important. Advertising is only for visibility.	Education does play a role but that has to be supported by favourable policies that insist segregation of waste at source.	Average population in India is very much aware of the care for environment, only that we don't have a proper legislation that supports a well defined waste disposal system.	Education will have to be supported by policy formulation – this is necessary to change the mindset. The people have to be educated in such a way so that they forget that non-ecofriendly is an option.

### 3. Results and discussion

#### 3.1. Stage 1 -

Since we derived our core results from extensive interviews with these five established GEs, we formed a detailed interview transcript of these businesses in Table 1 and the tabular representation of results in Table 3. The case study analysis allowed us to capture the on-the-ground challenges and drivers for GE in the context of ambiguous and uncertain environment. Various commonalities were identified by us over the course of analysis. A few of these commonalities differ from the previous studies in the domain. The policy makers' concern regarding accelerated universal environmental degradation provided the impetus to adopt green lifestyles generating surfeit opportunities for upcoming entrepreneurs to conceive, commoditise and monetize a green business idea. Sometimes, it also happens that a mix of both the factors (opportunity and necessity) drives the ecopreneurial intent towards achieving livelihood sustenance. The narratives also indicate that improvement intent as a major factor is almost non-existent. Being identified as green enterprise also has an added advantage of posturing an 'international' image, widening the scope of their

market penetration as a green player.

Other than the above, our study, in accordance with the literature has also identified access to finances as one of the major obstacles. This is in spite of a mature ecosystem with both government policies and funding schemes and other private funding processes being in place. Also, literature and our study, both indicate that the initial funding of GEs has been drawn from family and/or friends and/or own savings, as raising funds through government schemes is time consuming. Entrepreneurs at this stage, and particularly GEs lack time and resources to follow up and generate funding from these sources. Given the focus of angel investors, venture capitalists and banks to either fund sectors with high growth and shortest exit period, the GEs figure as a last investment priority for these institutions. Bureaucratic interventions from local government in day-to-day functioning specially for ecopreneurs who collect waste from public places, is also a demotivator.

Our study indicates that the GEs who survived the initial phases of green businesses were more focussed on profit maximization as a priority whereas environmental impact was treated as secondary till the businesses stabilized. Once stabilized, these GEs then boosted their competitive advantage by projecting themselves in terms of providing environmental and social benefits. We believe

that this is but natural that survival becomes a priority in a non-conducive growth environment. The unconventional nature of green business idea and also uncertainty associated with the same is a deterrent for even immediate family members to support them. This is further compounded by high employee attrition rate faced by entrepreneurs. GE's have come up with innovative incentive mechanisms to offset this situation.

The literature indicates that lack of consumer awareness is a major constraint for positioning the products and services pertaining to GE's (Walley and Taylor, 2002) and thus is corroborated by our study. Given this, GE's employed new models and mechanisms to overcome this constraint. These models and mechanisms included but were not limited to awareness creation, free demonstrations and advertisements focussing on the products/businesses' environmental and social impacts. These endeavours addressed the consumer awareness deficit and to a large extent contributed to position their products/businesses successfully. We have also perceived that these strategies and models vary for retail versus corporate consumers. The corporate consumers, despite their awareness of the product, prioritise cost over environmentally safe products. From the development perspective it is observed that a green product which is an economical substitute with better efficiency gets faster acceptance, whereas in economies which promote higher awareness of environmental concerns, consumers are willing to pay premium for green products and services (Choi and Gray, 2008). We believe that acceptance of a product/service

based on only its positive environmental impact is hard but if coupled with economical pricing, particularly in transition economies accelerates its acceptance.

In spite of a common denominator consisting of low capital and negligible support along with non-responsive regulatory system, the GE success primarily depended on personal attributes and innovative mechanisms. These attributes and mechanisms assisted the ecopreneur to navigate and negotiate with institutional structures at every level and phase of the green business developmental path. Our study indicates that this is a very critical component making it difficult to imitate by other competitors, thus creating an effective entry barrier. Our results not only support the RBV theory but add to it. Table 2 below provides a bird's eye view of the combination of attributes/mechanisms which have been identified by us during our interaction with GE's –

In addition to the above, to a large extent, the GE's belief system, constant dedication and determination is contributory towards the successful launch of the GE's business. As indicated earlier, this created a means of differentiation not easily imitated by the competitors.

### 3.2. Stage 2 -

Apart from the findings above, interview analysis of the second set of 16 entrepreneurs too revealed some interesting facts, though we have not described the transcript in detail here to avoid


**Table 2**  
(see online version for colours)


Attributes	Helpusgreen	Ecoware	Waste Ventures	Pastiwala	Honecore
Idealism		✓			
Discontentment with previous employer / business	✓		✓		
Commitment towards the green business idea	✓	✓		✓	✓
Perseverance	✓	✓	✓	✓	✓
Awareness drive for consumers		✓	✓		✓
Free service for advertisement					✓
Environmental responsibility		✓			
Social responsibility				✓	

**Table 3**  
Overview of results\* (see online version for colours).

Questions	Factors	Helpusgreen	Ecoware	Waste Ventures	Pastiwala	Honecore
Q1 Drivers for establishing new green business in India	Opportunity driven					
	Necessity driven					
	Improvement driven					
Q2 Constraints and coping up with funding issues in formative stages	Funding from Government					
	Funding from banks / venture capitalists / angels					
	Funding from own savings, family and friends					
Q3 Addressing challenges of regulatory requirements & constraints	Faced constraints					
	Didn't face many constraints					
	Networking helped in management of constraints					
Q4 Retention of employees and target customer segments	Retained employees by providing personal benefits					
	Retained employees by properly delegating jobs					
	Attracted customers by educating about green product					
	Attracted customers by advertising green products					
Q5 Tangible and intangible positive environmental and social impacts	Attracted customers by lowering price of green product					
	Environmental impact					
	Social impact					
	Economic impact					

\*We haven't taken into account the input of 16 nascent entrepreneurs in this tabular representation of results because they are into very nascent stages of their start-up and their input is almost negligible in some contexts. They have been able to contribute mainly to Q2 and Q3 and to some extent to Q1. We have covered their input in the theoretical domain.

 Denotes applicability of a factor for the enterprise.

 Denotes non-applicability or applicability to a very less extent of a factor for the enterprise

redundancy. Our findings indicated that these 16 green and traditional entrepreneurs were unaware of the term “green entrepreneurship” *per se* or its synonyms, except that what the word ‘green’ could self-indicate. On the other hand, a distinguished understanding prevailed that businesses without negative externalities with respect to the environment fetched faster and better monetary gains and were better legally compliant. Considering this, irrespective of whether they were green or traditional entrepreneurs, these modern entrepreneurs preferred and employed green practices in their systems like reducing utility costs, recycling and reusing biodegradable plastics, recyclable paper, incorporating paperless/digital workflow, optimally using resources like water and electricity and buying green products and services for the company. The adoption of green practices helped the entrepreneurs to project themselves as ethically concerned and was also a strategy to enhance visibility and profit.

Our study helped surface a significant issue about the Start-up India policy launched in January 2016 aimed at improving the entrepreneurial ecosystem in India. The implementation of this significant policy is rusty because government agencies possess insufficient knowledge of policy features and so are unable to provide appropriate guidance, most of the times. On the other hand, registration process has eased post-Start-up policy, making the entrepreneurs hopeful to look forward to more favourable changes. For example, they anticipate a ‘functional’ single window system for government licensing and permission processes to expedite legal formalities. At present, this feature exists with the Start-up India policy, but is not yet implemented.<sup>4</sup>

The existence of varied regulatory standards across different states of a country is an impediment to the survival or growth of GE. In the event of an ecopreneur trying to expand across cities/states, they will have to comply with a longer list of rules also bearing financial brunt sometimes. Furthermore, short-lived state or central government environmental regulations incapacitate upcoming GEs, as such regulatory instabilities hamper green idea generation and its translation into a viable business. One of the GEs provided an example – *The intermittent ban on use of plastic bags across many cities in India hampers operations of ecopreneurs trying to launch biodegradable options. Just about the same time that they install a plant, if the plastic ban is lifted, causing movement of plastic bags once again, it leads to huge financial losses to the ecopreneur with the biodegradable replacement option because the change in rules makes it hard to find a buyer. It is understood that for the success of these compostable substitutes, a ban on plastic bags must be strictly and permanently implemented.*

From the interaction analysis, we could infer that to expedite initial grants meant for prototype/pilot project development, dynamic policies must be instituted along with operational and proactive expert committees to check the viability of and to endorse any new green technology, thus leading to an accelerated process of acceptance of new green technology/product/process.

Our analysis of the interaction with faculty at the top technological institute and resident homemakers was interesting as well. Many teaching faculty at the institute were not aware of the term ‘green entrepreneurship’ except for the literal message that the trendy word ‘green’ entails. But, due to the ever-growing scientific suggestion that global warming is real and problematic, they anticipate a future of environment friendly technologies. Consequently, any new development of technology from them is an endeavour to be benign towards the environment and aims to find renewable alternatives to non-renewable resources. The not-so-environmentally conscious teaching faculty too employ

environment friendly elements in their new processes/technology/service to have an edge over non-green competitors. The faculty at the institute’s Environmental Sciences department look for and implement environmentally friendly processes to propagate a greener lifestyle across campus. Apart from advocating for green buildings aimed at reduced energy utilisation, they carry out regular compost drives. The students are not allowed motorised two-wheelers or four-wheelers on campus.

In the residential facility of campus, the homemakers had virtually no idea about GE, while almost all of them seemed to be environmentally aware. They look for ways to segregate, compost, reuse and recycle through individual efforts like composting the biodegradable house and lawn waste in backyard pits or pots, organising workshops for making cloth bags out of old clothes to encourage the use of cloth bags instead of plastic ones which is a collective activity carried out by women’s cell, conducting tree plantation activities every year just before monsoon season and participating in outside campus city cleaning drives off and on. In their own individual or collective ways, they encourage ban on littering and segregation of waste for it to become a regular practice across community.

Prior studies state that areas with social norms of environmentally responsible traditions have higher levels of entrepreneurial company founding in support of environmentally safe practices (Meek et al., 2010). Deriving from inclination of the institute’s society towards saving the environment, we can assess that such a community would be more receptive towards GE endeavours as their mindsets change through communal green actions, which motivates them to choose eco-friendly products over conventional ones. However, we cannot extrapolate such predictions for the overall Indian society and so the societal perceptions above can be limited to educated or environmentally aware communities.

### 3.2.1. Suggested policy framework

The above study pertaining to the analysis of our interaction with green and traditional entrepreneurs provides a rationale for the articulation of policy instruments, national and local, public and private, to promote environmental sustainability by way of GE in emerging economies. In view of the prediction of a report<sup>5</sup> that emerging economies will grow in the next 40 years and that China and India are fast-rising in terms of their contribution to green technologies,<sup>6</sup> these policy instruments should be able to make inclusive economic development mainstream in ways that incorporate, create and sustain environmental and social goals. Based on the results, we suggest policy pillars in Table 4, that, if woven into the policy structure, will help foster GE. The green boxes show relevance of a formulated policy point for a particular question/issue derived out of the study -

## 4. Conclusion and recommendations

Literature has identified GE as a potential solution for addressing the conflict between monetisation of innovations and environmental concerns. The current study offers new insights on specific drivers and constraints of a GE’s growth trajectory. Our study augments the existing RBV theoretical construct by identifying the capabilities of GEs to navigate and negotiate their enterprise’s development and growth paths through combinations of personal attributes and innovative mechanisms, as a critical success factor. This in turn creates an intangible entry barrier providing the

<sup>5</sup> Green Growth and Developing Countries: A Summary for Policy Makers. (2012).

<sup>6</sup> Green growth indicators. (2017).

<sup>4</sup> Start-up India Status Report. (2018).



**Table 4**

Policy framework (see online version for colours).

	Issues / Questions → Suggested policies ↓	Drivers for establishing new green business in India	Constraints and coping up with funding issues in formative stages	Addressing challenges of regulatory requirements & constraints	Retention of employees and target customer segments	Tangible and intangible positive environmental and social impacts
1.	Existing entrepreneurship policies should be revived, implemented and monitored within the ambit of GE. New policies should be stipulated.					
2.	The negative environmental externalities of any business should be highly priced and incentives enhanced for efficient use of natural resources.					
3.	Research and development support and investment bias should be towards incumbent green technologies.					
4.	More eco-industrial parks should be set up across regions.					
5.	Barriers for cross-border trade and investment should be reduced for easy international technology transfer. Protection and enforcement of intellectual property rights should be provided to facilitate foreign direct investment and licensing.					
6.	Co-investment funds should be mobilised to address problems like access to finance.					
7.	Supply of information to public should be improved; statistical details of waste generated, natural resource degradation and pollution should be shared periodically. This will help spread base of GEs, serve as a guide to existing GEs, be a stepping stone for aspiring GEs and increase awareness among consumers.					
8.	Subsidies and loan guarantees should be instituted for new green network projects.					
9.	Traditional entrepreneurs should be linked with green knowledge networks.					
10.	The green skills of all entrepreneurs should be enhanced through training.					
11.	Based on certain stipulated parameters, a 'five leaves green rating' for both incumbent and entrepreneurial businesses should be instituted along the same lines as the global five-star hotel rating system. The number of leaves allocated will denote the greenness of a business.					
12.	Awareness and attitude building should advance to encourage the purchase of green products.					

GE with a first mover advantage difficult to imitate and implement by competitors. In the process, the GEs also render tangible and intangible economic, environmental and social gains.

We believe that this study's conclusions are very useful to policy makers to not only address the existing gaps but develop innovative policy mechanisms in accelerating a GE's growth trajectory. In addition to policy makers, these will also enable funding institutions (primarily government) to target & strategize portfolio investments potentially reducing the variance in returns and minimising the failure rates. We hope that the results of this study will open new areas of research and bring a structure to GE education frameworks making this the superset of the existing general entrepreneurship education frameworks. Our study indicates and reinforces the need for inclusion of 'green' factor in entrepreneurship education, combining both environmental and entrepreneurial education throughout a child's primary education to college. It is our firm belief that the policy pillars derived from our study, if included in mainstream economic policies, can potentially boost GE not only in the context of transition economies but also developed economies.

## 5. Limitations and directions for future research

1. The small number of cases (five GEs) in spite of the depth of interaction imposes a natural limitation to generalise our results but we believe, and the literature also supports that in such studies large number of cases can lead to highly diffusive analysis diluting the same.
2. The breadth of the study is limited to an educated population in one economy only; further exploration though may not contradict these results but would make it more comprehensive and applicable across different economies.
3. The dimensions and specific motivations for GE may vary across countries due to economic, socio-cultural and legal disparities in addition to ecological norms (Koe and Majid, 2014; Vatansever and Arun, 2016), individual attributes such as demographic factors, psychological factors and motivational aspects (Hwee Nga and Shamuganathan, 2010) and other contextual and institutional dynamics (Hamdouch and Depret, 2013).

4. This provides an opportunity for future research problems spanning other countries, while testing the conclusions presented here on a larger scale. A broader in-depth analysis of individual cases across economies can also help in uncovering the complexities in developing and implementing green policies. These different elements would contribute to the understanding of GE with a better perspective.

## Author contribution

**Seema Potluri:** Equal contribution.

**B.V. Phani:** Equal contribution.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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## Annexure 1

- GE<sup>7</sup>1: Development of agro-climatic zone specific custom made bio-pesticides and bio-fertilizer.
- GE2: Promoting organic farming through an association with a FPO and retail customers.
- GE3: Environmental Consulting Services and manufacture of air quality measuring, monitoring and analyzer instruments
- GE4: Solar-powered 24-h electricity to small shop owners for cleaner energy.

<sup>7</sup> Green entrepreneurs (GE).

- GE5: Provide end to end, innovative, tailor made solutions for water and wastewater treatment industry and also focus on development and commercialization of algae based CO<sub>2</sub> sequestration systems.
- GE6: Converting waste chicken feathers into degradable bioplastic products.
- GE7: Developing herbal cosmetic products.
- TE<sup>8</sup>: Low-cost hand-held brain hemorrhage detection device.
- TE9: Building next generation drones for future transportation
- TE10: Mobile/Fixed Water ATM with inbuilt purification, chilling and dispensing facility for evolving Road Side Smart Public Drinking System which will be extended to other beverages in due course.
- TE11: Manufacturer of advanced & easy to use reagent strips for detection of adulteration in milk.
- TE12: Catheter Reprocessing System (CRS) is a revolutionary machine which reprocess angiography/angioplasty catheters and helps in reducing cost of catheters by 99%.
- TE13: Affordable solutions in electro-chemical instrumentation, potentiostat, electrochemical accessories.
- TE14: 3D Visualization (in the form of image/video) for various industries, simulation & animated program for educational & research purpose.
- TE15: DESKIT – School bag convertible into study table and news paper carry bag making machine in the process of developing products to impact the society.
- TE16: SandFix – separates sand & grit particles upto nano particles size distribution with high efficiency.

## Interview questions to 16 green entrepreneurs/traditional entrepreneurs –

1. Could you please let us know about your business ?
2. How old is your company ?
3. Do you know what green entrepreneurship means ?
4. How far do you think you have been able to incorporate the green element in your business ?
5. Do you use this as your selling point at some point in your value chain?
6. What other advantages do you see in having a green business?
7. How can one foster the green element in business?
8. What are the main hindrances in the development of green entrepreneurship?
9. Do you know of any green entrepreneur around you ? Please share his/her experience, if any ?

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<sup>8</sup> Traditional entrepreneurs (TE).

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