


“Exploratory results of green production, sale, willing to pay and financing: case of Bangladesh”

AUTHORS	Anisul M. Islam Muhammad Mahboob Ali Anita Medhekar
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Anisul M. Islam (USA), Muhammad Mahboob Ali (Bangladesh), Anita Medhekar (Australia)

Exploratory results of green production, sale, willing to pay and financing: case of Bangladesh

Abstract

Green production, sale, willing to pay and financing are related to green business. Bangladesh, a developing country in South Asia, is the most fertile delta region and identified as one of the front-line countries to suffer from the adverse consequences of climate change. Research question of the study is limited to examining several relationships related to green business production, sale, and willingness to pay. Primary data were utilized to test the hypothesized relationships. Based on the literature review, several conceptual relationships are presented and empirically tested. Findings conclude that production and sale of green products were related to the plan to produce and sell green products in Bangladesh. Consumers who are environmentally sensitive are willing to pay premium prices for green products and purchase these products frequently. Paper recommends that government, civil society organizations and the financial institutions should take a more active role in promoting and encouraging businesses to produce and market green products. Authors suggest that the government should provide incentives to set up community banking in the rural areas including informal sector, micro savings, and investment through green financing, for green production, green transportation and green consumption.

Keywords: Bangladesh, community banking, environment, green business, green consumer, green producer, green financing.

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Introduction

“Green” is associated with environment friendly initiatives in production, distribution and consumption of goods. Green business relates to an initiative as a sign of the green economy, leading to the sustainable development and growth of a country. The UNEP’s green economy definition includes improved human well-being and social equity while significantly reducing environmental risks and ecological scarcities (UNEP, 2012, 2015). That means the pathways of green economy are a complete process for making a foundation for sustainable development, socio-economic and environmental sustainability of a country by encouraging policy makers to support inclusive green investment initiatives for poverty eradication (UNEA, 2012). The Bangladesh Bank (2011) launched the TK.2 billion green banking refinance scheme in August 2009 to help set up solar panels, biogas plants and industrial Effluent Treatment Plants (ETPs) to reduce industrial pollution and increase the green power supply. Bangladesh, in South Asia, is identified as one of the victim countries, which is considered to be in the frontline to suffer from the

adverse consequences of the climate change. Environmental Performance Index (EPI) of Bangladesh in 2016 was 41.77, while in 2006, the value was 25.43 (EPI, 2016). The Appellate Division on 9th April warned that action would be taken against the government of Bangladesh in the event of the Dhaleshwari River getting polluted by effluents from the tannery park at Savar (New Age Bangladesh, 2017).

Global warming is at least partly due to human activity on Earth, it is happening, and it is causing significant climate change and affecting the lives of island economies, coastal communities and countries with low continental shelf like Bangladesh. Historically, the main contributors to the global warming/climate change have been attributed to carbon emissions in the rich industrialized countries such as the U.S., Western Europe, Canada, Japan, and Australia. In recent decades, Brazil, Russia, India, China, and South Africa and few other emerging developing countries are also identified to be major contributors to this phenomenon. Bangladesh is also trying to gradually introduce green concepts in consumption and production, though in a slower pace. The Central Bank of Bangladesh’s Banking Regulation & Policy Department wide circular no.02, dated February 27, 2011 introduced detailed policy guidelines for Green banking to be implemented in three phases by December 31, 2013 (Bangladesh Bank, 2011). Hahnel (2011) described that a big part of a successful response to climate change will take the form of investment planning administered through a public controlled sector.

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Anisul M. Islam, Professor of Economics, University of Houston-Downtown, USA.

Muhammad Mahboob Ali, Professor of Economics, Dhaka School of Economics, Bangladesh.

Anita Medhekar, Senior Lecturer in Economics, Central Queensland University, Australia.

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Bangladesh has included more sectors under its green banking refinance scheme taken up four years ago in the wake of growing demand for renewable energy and environmental friendly activities in the country. For example, plants for solar mini grids, a solar irrigation pump system, hydropower, producing organic fertilizer via vermi-composting, PET (polyethylene terephthalate) bottle reprocessing, solar battery reprocessing, LED bulb and Hybrid Hoffman Kilns in brick kilns for reducing carbon emergence. The fund is named as the “solar energy, biogas and effluent treatment plant sector refinance scheme” (Dhaka Tribune, July 2, 2013). A recent report shows that the banks and non-bank financial institutions have so far lent 580 billion Taka for green financing of various development initiatives and projects in Bangladesh (Financial Express, 2017). According to International Labor Organization (ILO, 2015), green businesses help to reduce, prevent and enhance capacities to cope with climate change risks. Unfortunately, most business organizations in the U.S. and other countries have generally lagged behind, and, in many cases, have taken active roles in opposing such initiatives. One glaring example is Exxon Mobile Inc. in the U.S., which has funded and actively supported climate change denial studies, as well as suppressed its own climate change findings (Banerjee, Song, & Hasemyer, 2015).

Fortunately, some economists, policy makers and even some prominent management gurus have challenged negative business views in recent years. In case of Australia, New South Wales (NSW) regional development strategy has been to develop a green economic growth by encouraging green business projects. The definition adopted by the NSW Government on green business is about focusing on “Green businesses incorporate a wide range of technologies, products and services that create environmental benefits, reduce environmental risks and impacts, minimize pollution, energy and resources use, and provides sustainable alternative to current impact practices” (NSW Government, 2012, p. 3).

On the basis of the above discussion, research question of this study is to examine several relationships related to green business production, sale, willingness to pay and financing.

1. Literature review

Practice of environmentally friendly (“green”) policies represents a form of socially responsible behavior by business firms (Jones, 1996). Kirchoff’s (2000) model is about a monopolist’s voluntary over compliance with legal environmental standards under asymmetric information. Zsolnai

(2002) asserts that the green business paradigm is not sufficient for achieving ecological sustainability, but the community economy might be able to meet the requirements of ecological sustainability. Chowdhury (2006) described that the environmental marketing and management integrate all the three areas of business-society-environment relationships, which is the triple bottom line economy-society-environment. Adams (2009) argued that green development focuses on the right of the individual to choose and control his or her own course for change, rather than having it imposed.

Environmental management systems (EMS) and green strategies have been adopted by businesses to reduce market failure and show the relationships between adoption of green strategies and various motivational factors in various developed countries, such as competitiveness, ethical and rational reasons, ecologically responsible initiatives, social responsibility, and empirical studies have been undertaken in various European and South-American countries (Bansal & Roth, 2002; Potoski & Prakash, 2005; Prajogo et al., 2012). Empirical studies also show that by adopting EMS and green strategies, firms and businesses get the benefit of reduced operational costs and increase productivity, sale and innovative green products and technology to minimize negative environmental impact (Demirel & Kesidou, 2011; DeOliveria, Serra, & Salgado, 2010; Khanna, Deltas, & Harrington, 2009; Rehfeld, Rennings, & Ziegler, 2007).

Research has focused on developing alternative energy sources, automotive technologies or waste disposal techniques, however, we often ignore the fact that the ability to optimize (existing) operations to reduce their emissions impact is fundamental to this exercise (Ghose, Hoesch-Klohe, Hinsche, & Le, 2010). Business process management (BPM) technology, with its focus on understanding, modelling and improving/optimizing business processes, is a key starting point. As business continues to do more with less, green business opportunities are here to stay (Kabiraj, Topkar, & Walke, 2010). Smith and Perks (2010) found that the functions least impacted by green business practices are general management/human resources, purchasing/supply chain management and finance/information technology. Companies that ultimately succeed in growing green will be distinguished by their commitment to corporate wide sustainability, as well as the performance of their green products (Unruh & Ettenson, 2010).

Information system ties together the various elements to provide a complete solution to attain environmental sustainability (Watson, Boudreau, &

Chen, 2010). Environmental concerns have an important place in the sustainable development strategies (Karagülle, 2012). Competitiveness levels of private companies may be affected by various barriers and green policies because of regulations regarding environmental concerns, resulting in market failure where the market for goods and services does not deliver the most optimal outcome (OECD, 2011). McPeak and Guo (2014) described an external pressure on automotive companies; “go green” initiatives attracted attention of the market to these automakers and encouraged them to take more responsibility for social sustainability, like reducing CO₂ emission and fuel consumption. Nair and Paulose (2014) opined that business models often function at the intersection of various industries, with global views, and the resulting systems have distinct social, political, environmental, economic, technological, and business dimensions under holistic approach. The willingness of users to pay extra cost for proper management of e-waste provided that there is proper cost sharing between consumers and producers (Kwatra, Pandey, & Sharma, 2014).

Dai, Kesternich, Loschel, and Ziegler (2015) argued that perceived experiences with extreme weather events alone are strongly correlated with climate change beliefs and those physical or financial damages due to these events, lead to even stronger relationships. Gevrek (2015) found that Turkish people prefer a carbon tax with a progressive cost distribution rather than one with a regressive cost distribution. The private cost has a negative effect on the probability of choosing the tax. Information about taking action in carbon reduction needs to be disseminated to the public regarding how to live an environmentally friendly lifestyle (Hsu & Lin, 2015). Various studies show that motivations to adopt comprehensive environmental management system (EMS) practices to reduce negative environmental impact of business operations is positively influenced by relational motivations as firms consider their image, compliance and prevention of environmental incidents as significant drivers to implement EMS practices (Singh, Jain, & Sharma, 2015; Banerjee et al., 2015; Sangle, 2010; Banerjee, Iyer & Kashyap, 2003; Projogo, Tang, & Lai, 2012; Bansal & Roth, 2000; Dasgupta, Hetrige, & Wheeler, 2000).

Chen and Wu (2014) observed that different types of enterprises exhibit significant differences in the strength of the impact of perceived benefits, risks, and control of green business on their intention to implement green business, which tends to be influenced by the perceived benefits, while the

manufacturing is more affected by the perceived risk and perceived control. There are parallels to formal private sector engagement advocated in relation to the green economy (Brown & McGranahan, 2016). Eusuf and Shahan (2016) commented that RMG sector in Bangladesh can promote green growth without relying on any external support; succeeded in raising awareness about the necessity of green growth. Banks can ensure sustainability for itself and greener world for communities by taking care of its infrastructure development and accelerating its existing green movements (Masukujjaman & Akhtar, 2013). Bocken, Short, Rana, and Evans (2014) argued that Sustainable Business Models (SBM) incorporate a triple bottom line approach and consider a wide range of stakeholder interests, including environment and society. Čekanavičius, Bazytė, Dičmonaitė (2014) argued that the shift of a business to the green trend should be regarded as the outcome of the interaction of three main agents of the process: consumers, governments, and the business itself, the first two contributing to the formation of “green request” to business and the latter implementing green practices. President Trump announced recently that the United States would withdraw from the Paris climate accord, weakening efforts to combat global warming and embracing isolationist voices in his White House who argued that the agreement was a pernicious threat to the economy and American sovereignty (Shear, 2017). National policies of the country and institutions need to be adjusted/redesigned/developed, as appropriate, to empower the people to participate effectively in economic, social, political, and environmental processes and benefit equitably therefore (Ahmad, 2016).

2. Research methodology and data analysis

The research question is to examine whether and to what extent such strategies can be replicated particularly in low group of middle-income countries like Bangladesh which is a victim of climate change. Research gap was identified that all the empirical primary sources of studies were done by developed nations. However, in Bangladesh, there are few studies and such in-depth study based on survey-based primary data collection were not undertaken earlier. From the literature review, we observed that green business, green products and green financing are vital for environmental protection and for inclusive economic development and growth of the country, as well as the bottom line for green business enterprises.

2.1. Sample and data. Primary data were utilized to empirically test the proposed conceptual hypothesized relationships. Based on the literature review, a questionnaire was designed with was four parts

requiring responses from 3 groups of participants. The first part measures demography of the respondents. The second part measures responses of the consumers. The third part measures responses of the producers. The fourth part includes banks and non-bank financial institutions. A total of 200 questionnaires were posted to respondents and out of which 121 questionnaires were returned. Six (6) questionnaires were incomplete, so they were excluded from the study and the remaining 115 were retained for data analysis. This constituted a 57.5% response rate which is acceptable. The survey was conducted in two major metropolitan areas of the country: (i) Dhaka Metropolitan area, and (ii) Comilla Metropolitan area of Bangladesh.

Since the data were discontinuous in nature, non-parametric statistical analysis was more appropriate. As such, cross-tabulation of data by variables and the associated non-parametric Chi-square tests and some other non-parametric tests were conducted for hypothesis testing.

2.2. Hypotheses testing. This section proposes two hypotheses regarding green business in Bangladesh. The first hypothesis is to understand if actual production and sale of green products by businesses is related to the business plan to produce green products. This hypothesized relationship is depicted in Fig. 1 below.

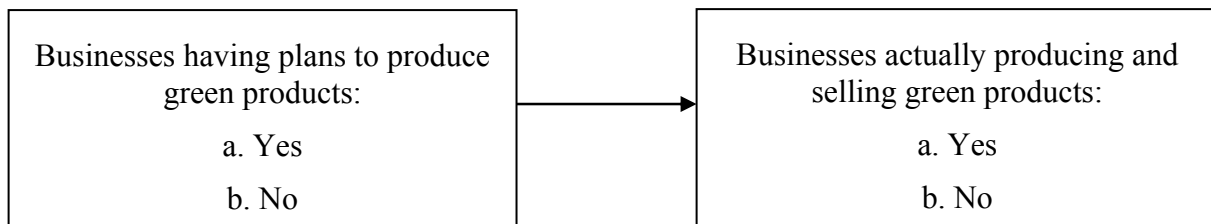


Fig. 1. Relationship of business plan to actual production of green products

The second hypothesis is to understand if there is a relationship between purchase type (occasional versus

frequently purchased) to respondent's willingness to pay higher price for green products as shown in Fig. 2.

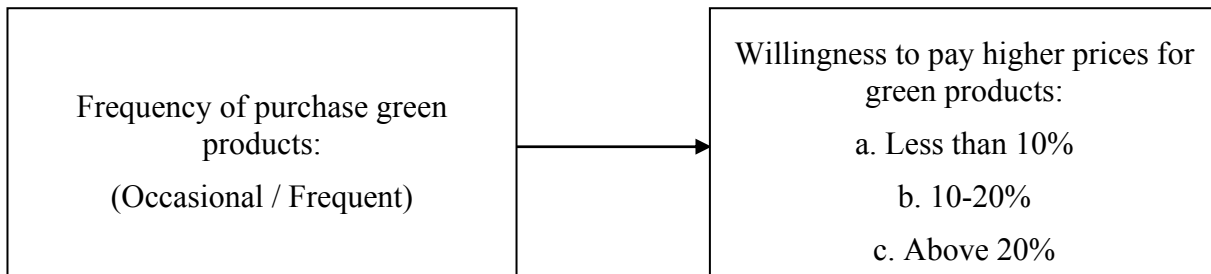


Fig. 2. Relations of purchase type to willingness to pay higher prices for green products

The above mentioned two hypothesized relationships are formulated in testable format in terms of null and alternative hypotheses shown in Table 1 for non-parametric testing.

Table 1. Null hypotheses

Hypotheses	Framing of null hypotheses.
Hypothesis 1	Ho: Production and sale of green products are not related to business' plan to produce and sell green products.
Hypothesis 2	Ho: There is no relationship between the purchase type of green products and the willingness to pay higher price for these products.

2.3. Estimated results. The cross tabulation of the data showing the frequencies and relative frequencies

of the two variables related to Hypothesis 1, i.e., the plan to produce green products and actual production and sale of green products are shown in Table 2. The last column of this table shows that 55 of the 115 sample firms (47.8%) has actual production and sale of green products, whereas the remaining 60 firms (52.3%) do not do so. The last row in the same table shows that of the 115 firms, 66 firms (57.4%) had plans to produce green products, whereas the remaining 49 firms (42.6%) did not have any such plans. The results in Table 2 are based on an analysis of the previous Table 1, Hypothesis 1, which appears to give some preliminary indication that the two variables would be related to each other.

Table 2. Cross tabulation: relation between plan to produce green products with actual production and sale of green products

Count		Plan to produce green products		Total
		1 (Yes)	2 (No)	
Produce and sale green products	1 (Yes)	25 (45.5)	30 (55.5)	55 (47.8)
	2 (No)	41(68.3)	19 (31.7)	60 (52.3)
Total		66 (57.4)	49 (42.6)	115 (100.0)

Source: authors’ estimation from survey data.

The non-parametric Chi-square test of independence is reported in Table 3 below showing a statistical significant relationship. The estimated Chi-square value of 6.142 with one degree of freedom clearly shows that the null hypothesis of “independence”, i.e., “no relation

between these two variables” is rejected at better than 1% level of significance, indicating acceptance of alternative hypothesis, i.e., the test result shows that “plan to produce green products” is strongly related to actual “production and sale of green products”.

Table 3. Chi-Square tests related the cross tabulation shown in Table 2

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	6.142 ^a	1	.013		
Continuity correction ^b	5.242	1	.022		
Likelihood ratio	6.191	1	.013		
Fisher’s exact test				.015	.011
Linear-by-linear association	6.089	1	.014		
No of valid cases	115				

Note: a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 23.43; b. Computed only for a 2x2 table; c. Percentages are reported in the parentheses.

Source: authors’ estimation from survey data.

Table. 4 reports the cross tabulation of the relationship between purchase type and willingness to pay higher price for green products (Hypothesis 2 in Table 1). Purchase type is categorized into two groups: whether

the green products are “occasionally purchased” or “frequently purchased”. The other variable, willingness to pay higher price, is categorized into three groups: “1-10%”, “10-20%” and “above 20%”.

Table 4. Cross tabulation: relation between purchase type and willingness to pay higher price for green products

		Purchase type		Total	Chi-square
		Occasionally purchased	Frequently purchased		
Willing to pay higher price	1 - 10%	4 (7.0)	53 (93.0)	57 (50.0)	19.61*** with df 2
	10 - 20%	15 (46.9)	17 (53.1)	32 (28.1)	
	More than 20%	5 (20.0)	20 (80.0)	25 (21.9)	
	Total	24 (21.1)	90 (78.9)	114 (100.0)	

Note: percentages are reported in the parentheses and *** indicates significance at 1% level.

Source: authors’ estimation from survey data.

Focusing on the last row of this table, 24 of the 114 respondents (21.1%) purchase green products only occasionally, whereas 90 of those respondents (78.9%) reported to purchase these products frequently. Looking at the second to last column of this table, it appears that of those 114 respondents, 50% are willing to pay a premium price of 1-10%, 28% are willing to pay price premium of 10-20%, and the remaining 22% are willing to pay a premium price above 20%.

The above discussion appears to give some indication that the two variables “purchase type”

and “willingness to pay higher price” are related to each other. This relationship is expressed in Hypothesis 2 in Table 1 above. The non-parametric Chi-square test of independence is carried out and reported in the last column of Table 4 to test statistically this hypothesized relationship. The estimated Chi-square value indicates that the alternative hypothesis is agreed, i.e. it seems that the respondents who buy green products frequently are more willing to pay higher price for these products, compared to those who tend to buy these products occasionally.

2.4. Sample adequacy and factor analysis. Further, in order to examine how suited the data are for factor analysis, Kaiser-Meyer-Olkin (KMO) test (Keiser, 1974) was undertaken.

Table 5. KMO and Bartlett’s tests

Kaiser-Meyer-Olkin (KMO)	Measure of sampling adequacy	0.428
Bartlett's test of sphericity	Approx. Chi-square	192.980
	Df.	15
	Sig.	.000

Source: authors’ estimation from data analysis.

The KMO test of sample adequacy for factor analysis is reported in Table 5. Since the KMO measure is greater than 0.4, the sample size is enough for factor analysis, whose results are shown in Table 6 and Table 7. Table 6 represents the proportion of total variation explained by the principal (or significant) components. The first three components appear to be very significant as these three explained cumulatively about 80% of the total variation.

Table 6. Total variance explained

Components	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	2.043	34.054	34.054	2.043	34.054	34.054	1.762	29.366	29.366
2	1.514	25.225	59.279	1.514	25.225	59.279	1.590	26.505	55.871
3	1.195	19.912	79.191	1.195	19.912	79.191	1.399	23.320	79.191
4	0.702	11.692	90.884						
5	0.356	5.933	96.817						
6	0.191	3.183	100.000						

Source: authors’ estimation from data analysis.

As shown in the rotated component matrix (see Table 7 below), the first component is government involvement which is formed by a linear combination of “government encourages green business” with “government investigates and enforces the quality of green product labelling”.

Second component is consumer involvement, that is, a linear combination of “willingness to buy and pay higher price for green products” and “business produces and sells green products” and the third component is “government certification of green product labelling”.

Table 7. Rotated component matrix

	Components		
	1	2	3
Government involvement to encourage green business	0.929	-.049	0.176
Government Investigate and enforce the quality of green products	0.834	0.049	-.380
Consumer’s willing to buy green products	-.167	0.841	-.056
Business’ capability to produce green products	0.120	0.682	0.466
Consumer’s willing to pay higher price for green products	0.399	0.641	-.511
Government certify and label business’ claim of green products	-.048	0.030	0.862

Source: authors’ estimation from data analysis.

Based on the results reported above, we find that the production and sale of green products is significantly related to the plan to produce and sell green products. As such, production of more green products needs strong government involvement through subsidies, incentives and regulation to encourage businesses to adopt green production methods. To this end, making green financing more easily available could help businesses plan and produce more of these products.

Further, customers’ awareness by green marketing about the green products and their willingness to pay higher prices for these products could provide further incentives to producers to bring more of those products in the market. Results show that there is highly significant association between purchase types of green product and willing to pay higher for green products, businesses should feel more comfortable to produce these products – an encouraging sign indeed.

Table 8. Opinion of the stakeholders regarding government support to green product

Government is doing enough to:	NGO	Supplier	Consumer
1. investigate and enforce the accuracy and truthfulness of claims of green products by businesses	18.5%	44.3%	28.8%
2. encourage businesses to produce and sell green products in Bangladesh	13.0%	18.3%	41.5%
3. label and certify green products so that consumers can make informed decisions to buy green products	68.5%	37.4%	40.2%

Source: authors’ estimation from survey data.

Table 8 summarizes the survey responses by the NGO’s suppliers and consumers, related to government’s role in green products truthfulness of claims of the green product, production and labelling, certification and marketing of the green products. In relation to ensuring accuracy and truthfulness of the green claim by the producers, 44.3% of suppliers were most concerned that government should investigate regrading false claims, which could affect their credibility and sale of green products. Nearly 41.5% of consumers were concerned that government should enforce regulation to encourage production and sale of green products. 68.5% of NGO and 40.2% of consumers were concerned that government should enforce regulation for labelling and certifying green products so that consumers can make informed decision whilst purchasing green products.

Factor analysis found that the proportion of total variation was 80%, explained by the first three components, being significant in encouraging green business in Bangladesh. To give more emphasis on

production of green products, green financing should be increased by Bangladesh Banks as a mandatory requirement, for all businesses in the form of corporate social responsibility (Chowdhury, 2006; Eusuf & Shahan, 2016; Hsu & Lin, 2015).

For human prosperity and sustainability, greater emphasis should be given to green customers, green products and green financing. Adams (2009) rightly observed that development crisis and environmental crises exist together, and, hence, both of these crises need to be tackled simultaneously. In February 2017, Central Bank of Bangladesh updated its Environmental and Social Risk Management Policy (ESRM) guidelines and stressed that investing in high environmentally risky projects should be avoided, related to social and climate change risks and encourage green banking (Bangladesh Bank, 2017).

Based on our results, we have proposed a ‘model of inclusive green economy’ for coastal and island economies shown in Figure 3.

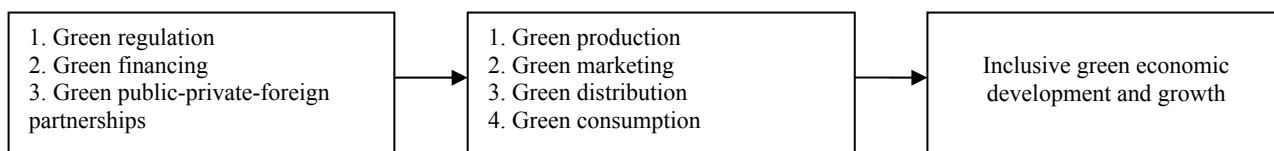


Fig. 3. Proposed model of inclusive green economy

Source: constructed and proposed by authors.

Figure 3 indicates that incentives and motivation for green production, sale, marketing, distribution and consumption of green goods and services will result in an inclusive green economic development and growth for the country, including coastal areas, hill tracts with the goal of innovative solutions for sustainable production, distribution and consumption and embracing a sharing all-inclusive green economy for common goal.

Conclusion and implications

Bangladesh is amongst the few countries, which are susceptible to natural disasters. Consumers and producers need to be aware of green concept. Perception of the people and cognizance behavior should be to minimize the adverse impact of environmental disaster, which may reduce the risk of vulnerability of the people, living in the low lying

coastal areas of the country, barely above the sea level. Horror strikes hills due to heavy rain caused by destruction of hills, trees caused the disaster in the hill tract of the country.

The empirical results of this study found that: i) consumers who buy green products frequently are willing to pay higher price, compared to the consumer who buy green product occasionally, ii) a good percentage of business firms have no plans to produce and sell green products. Therefore, government and financial institutions can take a more active role in providing encouragement and tangible incentives to the businesses to produce and sell green products in the country (iii) those who purchased frequently could be more sensitive to the climate change issues, and are willing to support the production and sale of green products even at the expense of paying higher prices. This could be

interpreted as a good sign in the sense that businesses should feel more confident to produce more green products, supported by government subsidies.

Bangladesh government in 2012 prepared a draft national environmental policy, which was published in the year 2013 due to bureaucratic red-taps remains in deep freeze. This draft policy did not effectively address various problems such as waterlogging, river management international rivers, climate refugees' rehabilitation process, grabbing and pollution of rivers by criminals, adverse impact on disaster on crop, livestock and fisheries, transformation from informal to formal economy and antagonistic influence, which may be offset by green economy, strategies to overcome climate change problems etc. No policy ever have any value unless environment protection law is enacted by the parliament and implemented effectively on time.

There is still a room for the government and the Bangladesh banking partnership to set up community banking in the rural areas, collect micro-savings, and invest through alternative banking system (Rural post office, Palli Sanchay Bank, Karmasangshatan Bank and Bangladesh NGO Foundation) in green production, transportation and consumption. Preservation of nature through strategic alliances with green public-private-foreign-partnership (green PPF) and foreign initiatives for promoting green business and environment should be a top priority and add value in both domestic and global green value supply chain (green VSC).

Top-down approach and bottom-up approach for creating social networking to reduce the risk of natural calamities and increasing adaption capability and green start-up nano, micro, small and medium

enterprises and green technology should be encouraged via green PPF. From this empirical study, we found that the respondents in Bangladesh are also quite supportive for green business development to protect the country and the economy from environmental disasters.

Future research may be undertaken to examine whether gradual transformation from informal economy to formal economy will have negative impact on green economy (Brown & McGranahan, 2016). A survey should be conducted in both rural and urban areas to identify the nature of green product, consumer awareness, cost benefit analysis and green VSC management. Moreover, an in-depth study could be undertaken so that coastal areas and island economy consumers and producers can be included in the future research on impact assessment of Green businesses, and adaptation capability of global warming.

Keeping green production and consumption as a goal, future green finance initiatives should be dynamic in nature to minimize carbon emission, familiarization with renewable energy sources, use of surface water, emphasis on tree plantation and afforestation, provision for green roof top to capture rainwater, drainage, solar panels and irrigation arrangements by the green PPF. People would be able to achieve better livelihood in a green sustainable environment. Green production, sale and willing to pay must act as a holistic approach on acceleration accompanied with multiplier effect on fast-tracking inclusive growth in a greener scenario for environmental sustainability.

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