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A systematic literature review on sustainable fresh food cold supply chain: state-of-the-art and future direction

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ABSTRACT

The fresh food cold supply chain industry needs to balance environmental, social, and economic aspects to maintain the market existence. Sustainable fresh food cold supply chain is one of the recent beneficial fields that can balance environmental, social, and economic aspects. To better understand the sustainable fresh food cold supply chain, it is necessary to conduct comprehensive review research. The primary purpose of this research is to explore different insights from the existed literature that can help better achieve sustainable development of the fresh food cold supply chain. To examine various insights and gaps in sustainable fresh food cold supply chain, 142 papers are selected from the SCOPUS database (January 2001 to August 2021). The selected papers are categorized on the basis of year, authors, organizations, journals, citations, status of the country. The categorization of selected papers helps to explore various gaps. Such as SFFCSC has been studied more in developed countries and less studied in developing countries during the time between 2001 and 2017, while from 2018 till August 2021, the studies of SFFCSC in developing countries are more than in developed countries. The selection of papers in this study is limited to English publications and the SCOPUS database, which are the limitations of this study.

KEYWORDS: Literature review; Sustainable fresh food cold supply chain; Sustainability; Descriptive analysis

1 INTRODUCTION

Climate change has become a global issue and is of common concern to the international community. It is also the most serious global environmental problem facing mankind (Zani, 2013). Global scientific research shows that climate change mainly depends on human activities and large-scale use of energy, resulting in excessive emissions of greenhouse gases such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) into the atmosphere (Ma et al., 2010). In many developed and developing countries, the food industry is the largest manufacturing sector (Egilmez et al., 2014). As the population grows, the global population is expected to exceed 9 billion in the next 30 years (Pullman & Wu, 2012). Thus, the demand for food will increase as the population expands. Simultaneously, the demand for fresh food will also continue to rise, and many natural resources will need to be consumed. However, due to the non-farming and inherent related needs of human beings-water to drink, fuel to drive, land to live on, etc., the resources available for growing and producing fresh food will be declined (Krishnan et al, 2020). At the same time, post-harvest losses in the fresh food products supply chain vary from 13% in Europe to 30%-40% in developing countries (Wakeford et al, 2015). Hence, the sustainable development of fresh food has become even more crucial to meet the future demand for fresh food as the population increases.

Compared with the conventional fresh food supply chain with a high loss rate of fresh food, the cold supply chain is a refrigerated supply chain that can maintain the low temperature required for processing, storing, distributing, and selling fresh food products. On the one hand, in the fresh food supply chain system, the cold supply chain has the potential to maintain food security and reduce food waste, which will help improve human well-being (Hu et al, 2019). But on the other hand, this requires the use of refrigerated warehouses and trucks that consume a lot of energy for refrigeration, and also there will be refrigerant gas leakage. Therefore, higher energy consumption is related to high carbon dioxide emissions in power generation equipment. In other words, the cold supply chain can be seen as a transformative technology that shifts the carbon investment from fresh food production to refrigeration, thereby reducing fresh food loss and increasing energy use. According to some research results show that in the food industry, the energy consumption of cold equipment accounts for about 50% of the total energy consumption (James & James, 2010), nearly 30% of the energy emissions in the world are caused by the cold supply chains (Kayfeci et al, 2013). With people are increasingly aware of environmentally conscious of the future, consumers will consider ecological and ethical standards when choosing fresh food products. As reported by (de Boer,2003), consumers in rich countries need high-quality, secure fresh food produced with minimal environmental effects. As a result, this increased awareness of the impact of fresh food on the environment, and consumers and policy-makers have begun to request information on the quality, safety, sustainability, source, resource consumption, and shelf life of fresh food, which affect the fresh food supply chain (FFSC) decisions directly (Beske et al., 2014).

Based on the above background, it is obvious to expand the cold supply chain of fresh food in a sustainable way, and it poses challenges that should be addressed. SFFCSC has notable advantages in improving the triple bottom line performances, which has aroused the interest of practitioners and scholars worldwide to explore more insights in recent years. As per the existing review articles on SFFCSC, only one review article published in 2018 explored the insights of sustainable perishable food products cold supply chain. Most of the existing review articles on the fresh food cold supply chain focused on other specific topics, such as time-temperature management, vehicle routing in food cold supply chain, and cold supply chain food packaging surface, and so on. In other words, the existing review articles lack the analysis of the content of the recorded literature of SFFCSC. Since the aim of a “systematic

literature review” is to provide a unbiased, comprehensive research to identify all relevant studies (Aromataris, E., & Pearson, A. 2014). Therefore, it is critical to conduct a systematic literature review on SFFCSC to explore its insights. This study aims to explore insights from the selected literature in the time span from January 2001 to August 2021. According to the selected articles categorized by year, authors, organizations, journals, citation, the status of the country to understand the status of current research and explore future research opportunities on SFFCSC. As per each categorization, this study recorded the frequency of articles with percentage contributions to present findings. A comprehensive set of 142 articles for content analysis shows the current research status in this field is relatively more minor. Also, it demonstrated various future research directions, which must be adopted urgently for good practices for reducing the negative impacts on the environment from each stage of the cold supply chain operation to achieve the sustainable development of the fresh food cold supply chain.

The remainder of the article consists of multiple sections as follows: Section 2 describes the adopted methodology of the study. The classification of the selected articles with tabular and graphical representation is described in section 3. Section 4 discusses the findings and presents the future research direction. In the end, an overall conclusion of this study is presented in section 5.

2 METHODOLOGY

In this study, we proposed a categorization-based systematic literature review to achieve the goal of exploring the various insights of SFFCSC. To do so, we adopted the review process that is in line with the approach proposed by (Tranfield et al. 2003) . They chose a structured review to reduce the bias in the results of literature reviews through manual filtering for transparency and replicability. Also, they considered that literature review is necessary for any research plan, especially for generating a knowledge base by evaluating selected papers in the research area. It is evident that collects data from various relevant sources and then divides them into different categories to explore more insights in the research area is the most commonly used method in the existing literature (e.g. (Shashi et al, 2018) (Awad, 2020) (Ndraha, 2018)). This study analyzed the selected papers by categorization to find out the research gaps in the available literature. The analysis of these identified gaps can provide opportunities for the future, which can help to understand the research area better.

2.1 Literature Selection Criteria

The literature selection criteria adopted for a five-step methodology for this study are as below:

1. We chose the SCOPUS database to retrieve publications with a set of keywords in Title, Abstract, and Keywords. The keywords were identified by reviewing the existing review article and inquiring to experts who specialize in the sustainable cold supply chain for fresh foods. The set of keywords is represented in Table 1. In the initial stage, it came out with 481 articles.
2. We chose to consider only journal articles to improve the reliability of the data because journal articles go through a formal double-blind peer-review process. In this regard, book chapters, conference papers, review, conference review, book, editorial, short survey were not taken into account. This study considers the time span from 2001 to August 2021. These two criteria refinements resulted in 279.
3. The inclusion of subject areas like Environmental science, agricultural and biological sciences, engineering, energy, business, management and accounting, earth and planetary

sciences, social sciences, decision sciences economics, economics and finance, mathematics, multidisciplinary, materials science resulted in 247 articles.

4. We considered only English language articles because of the predominance of that language in academic research. Simultaneously, we excluded the articles that did not include the sustainability issues through title reading. This step resulted in 233 articles.
5. The last refinement criterion was abstract reading and analysis. In abstract analysis, it narrowed the scope to articles whose abstracts focus on the presence of management or technology issues in the articles. A review study also emphasized this point, stating the lack of study on management attitudes for sustainable practices (Hahn & Kühnen, 2013). The meaning of management issues are issues that are associated with inappropriate decision-making, management attitudes, strategic misalignment, low operational efficiency, and the lack of adoption of advanced technologies with sustainable practices. We not only considered the management issues but also other sustainability issues for the selection of the final articles.
6. After the above five steps, we get 142 articles, which were categorized on the basis of year, authors, organizations, journals, citation, the status of the country (Table 2).
7. The contribution of this research is highlighted in three different sub-categories, as summarized below:
 - offer an analytical overview of the available articles in the field of SFFCSC.
 - identify research gaps in the recorded literature and analyze them for providing insights into this research.
 - offer some future research directions, which need to be explored in future research to better achieve the sustainable development of FFCSC.

Table1 Proposed a Four-level Keyword

Keywords assembly structure level	Context-specific	Keywords
Level 1	Cold Chain	"Cold chain" OR "cold supply chain" OR "cold supply chain logistics" OR "cold chain logistics" AND
Level 2	Sustainability	sustainable"OR"sustainability" OR "sustainable development" OR "green" OR "environmental impact" OR "low carbon" OR "emissions" OR "social impact" OR "socioeconomic" OR "economic impact" AND
Level 3	Perishability	"food" OR "perishable " OR "fresh product" OR "agriculture products" AND NOT
Level 4	Out of Scope	"non-perishable" OR "nonperishable"

2.2 Selection of Categories

The cold supply chain development status of developed and developing countries is totally different. For example, in China, food losses and waste are partly caused by incomplete cold supply chain equipment (Zhao, 2018). In contrast, the developed countries have been trying to adopt more optimal operating strategies and technologies at all stages of the entire fresh food cold supply chain network to attain sustainable development of their FFCSC. Even developed countries recognize the value of cold supply chains in promoting sustainable development. However, most of these studies discussed the relationship between the introduction of the cold supply chain and the change of greenhouse gas emissions and concluded the positive impact of the cold supply chain on reducing total greenhouse gas emissions in general. That is not enough when considering the complexity of obtaining a

complete sustainability profile consisting of advanced environmental and socially sustainable development practices. It is vital to measure the level of adoption in developing and developed countries to map the consciousness of sustainable practices globally. The mapping of consciousness can reveal the state and differences of adopting sustainable practices both in developing and developed countries (Malviya & Kant, 2015).

Table 2 Categories Considered in the Study

Categories of Study	Description
Year	Evaluating the development of the SFFCSC area through the trend line presentation of papers from January 2001 to August 2021.
Author	Identification of most contributed authors in publishing SFFCSC research.
Organization	Identification of most active organization in SFFCSC research.
Journal	Identification of well-known journals that publish and promote SFFCSC research.
Citation	Identification of the most referred or cited articles in the SFFCSC field.
Status of the Country	Assessing the percentage sustainable practices adoption of SFFCSC in developing and developed countries.

It is essential to consider the articles from the relevant authors and journals, which actively publish the papers of SFFCSC through the peer review procedure, in order to lay the foundation for research. The citation of the paper judges the quality of the study because it shows the most cited research work around the world. This study has highlighted the most referred papers so that other researchers can refer to the particular relevant work. We have also classified the selected literature papers on the basis of authors, journals in the domain of sustainable practices. We adopted these categories from the existing review papers (e.g. (Ansari & Kant, 2017) (Vrat et al, 2018)).

On the basis of the above discussion, we have finalized to categorized the selected papers on the basis of year, authors, organizations, journals, citation, the status of the country. To better understand the analytic categories of this study, Table 2 is summarized with a brief description.

3 DESCRIPTIVE ANALYSIS

This section provides the descriptive analysis of the selected papers by classifying them in various dimensions and representing them in tables, charts, and figures for better graphical representation.

3.1 Categorization on the basis of the year of publication

This categorization includes the frequency analysis of 142 papers on the basis of the publication year (Fig.1). It is apparent that in the earlier span, the lack of attention was observed as only 1.41 % of papers were recorded between the year 2001-2007. In 2008-2017, this field observed initial growth as 29.58 % (42 out of 142) of papers were recorded during this time span. SFFCSC gained a steep growth in the research during the year 2018 to 2021 (98 papers), contributing to 69.01 % of the total recorded literature. This is because, on the one hand, as the population grows, the demand for fresh food continues to increase accordingly. On the other hand, the cold supply chain's growing environmental, social, and economic concerns have created pressure to seek sustainable solutions. Over the past few years, these increased studies of SFFCSC show that academicians and practitioners have recognized the importance of initiating sustainable practices to keep up the better future.

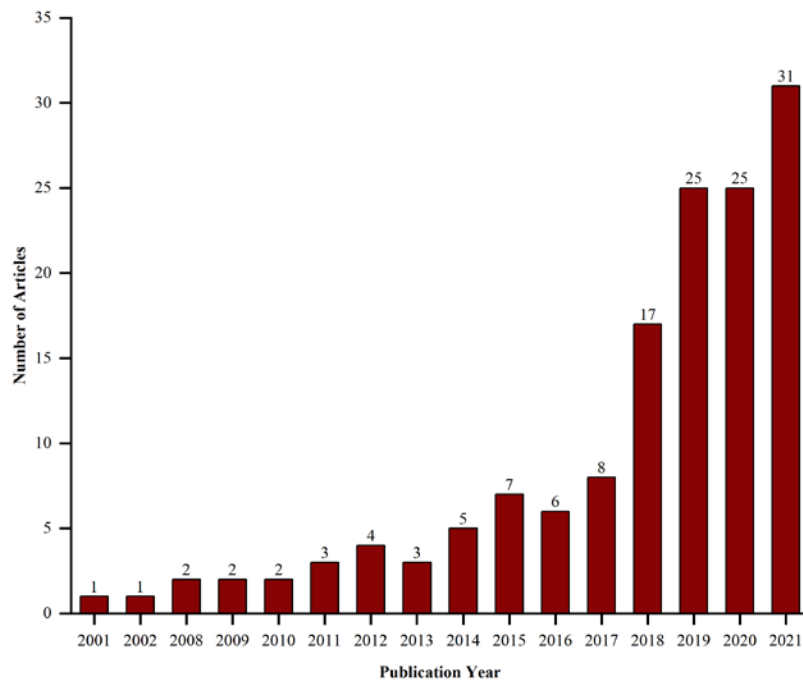


Figure 1: Categorization on the basis of year of publication.

3.2 Categorization on the basis of authors

A total of 518 authors contributed to the 142 sample papers on SFFCSC. That is, on average, each paper has 3 authors. Table 3 lists the main authors (two or more two papers each) who published research papers on SFFCSC. Meneghetti, A. seems to be the most prolific author in the field of SFFCSC with 7 papers published across different journals, followed by Miller, S.A. and Zanoni, S. publish 4 papers for each. Verboten, P., Defraeye, T., Behdani, B. Hoang, H.M., Liu, Z, Mangla, S.K., and Wu, W., contributes the research topic with 3 papers for each. While Brown, T., Fan, Y., Accorsi, R., Gallo, A., Gontard, N., Guillard, V., Guo, H., Huang, B., and Messineo, A. publish 2 papers each. Obviously, the 19 top key authors have written 38.03 % (54 papers out of 142) of all papers in academic journals. This result indicates that most of the authors have contributed to just one article in a group of journals comprising our search data. For researchers who actively and regularly publish papers in the topical field, the SFFCSC area seems relatively narrow for them in terms of applicability.

Table 3: Categorization on the basis of authors

Author	No. of articles	Percentage
Meneghetti, A.	7	4.93
Miller, S.A.	4	2.82
Zanoni, S.	4	2.82
Verboven, P.	3	2.11
Defraeye, T.	3	2.11
Behdani, B.	3	2.11
Hoang, H.M.	3	2.11
Liu, Z.	3	2.11
Mangla, S.K.	3	2.11
Wu, W.	3	2.11
Brown, T.	2	1.41
Fan, Y	2	1.41
Accorsi, R.	2	1.41
Gallo, A.	2	1.41
Gontard, N.	2	1.41
Guillard, V.	2	1.41
Guo, H.	2	1.41
Huang, B.	2	1.41
Messineo, A.	2	1.41

3.3 Categorization on the basis of organizations

A total of 251 academic universities/institutions has affiliated authors who published on SFFCSC from 2001 to 2021, while over six seventh (87.25%) contributed a single paper, indicating that SFFCSC has become a field of expertise in a few key Universities/institutions. Table 4 identifies Some of the most active universities/institutions with their frequencies in the area of SFFCSC research. The content analysis also unveils that the University of Udine in Italy leads the list with the highest publication of 7 papers. Stellenbosch University, Università Degli Studi di Brescia, and the University of Michigan ranked second in this list with 4 papers published. The list is followed by Empa-Swiss Federal Laboratories for Materials Science and Technology, ETH Zurich, Harvard University, Imperial College London, KU Leuven, Univ Montpellier, University of Bologna, University of Plymouth, and the London South Bank University, which contribute the research area with 3 papers. There are 19 universities/institutions with 2 publications. The universities/institutions with less than 2 papers (219 universities/institutions) are not included in the table due to space constraints.

Table 4: Categorization on the basis of Organizations

Affiliation	No. of articles
Università degli Studi di Udine	7
University of Michigan	4
Wageningen University & Research	4
Università degli Studi di Brescia	4
Stellenbosch University	4
Harvard University	3
Université de Montpellier	3
Empa - Swiss Federal Laboratories for Materials Science and Technology	3
ETH Zürich	3
KU Leuven	3
University of Plymouth	3
University of Bologna	3
Imperial College London	3
London South Bank University	3
Beijing Normal University	2
Dalian University of Technology	2
Ghent University	2
International Livestock Research Institute (ILRI)	2
Irstea	2
King Saud University	2
Nanjing Agricultural University	2
Nanyang Technological University	2
Peking University	2
Sokoine University of Agriculture	2
South China University of Technology	2
Veermata Jijabai Technological Institute (VJTI)	2
Tianjin University of Science and Technology	2
Transform Rural India Foundation (TRIF)	2
University of Palermo	2
Wageningen University	2
Institute of Food Science, Technology and Nutrition (ICTAN-CSIC)	2
Wageningen University & Research	2

3.4 Categorization on the basis of journals

The selected 142 papers on SFFCSC have been published across 97 different journals, as shown in Table 5. Journal of Cleaner Production is the most popular journal with 11 (7.75%) published papers. Sustainability is second on the list, with publications of 8 (5.63%) papers. The list is followed by Energies 4(2.82%), Innovative Food Science and Emerging Technologies 4(2.82%), International Journal of Production Economics 4 (2.82%). Food and Bioprocess Technology and the International Journal of Energy Research have 3 (2.11%) papers. There are 15 journals having publications of 2 papers. It can be observed that these 22 (22.68%) journals represent 47.18% of selected papers. Therefore, these journals can be regarded as the core journals on SFFCSC as the proportion of papers published in these

journals in the study area is high. It was also found that more than three quarters (77.32%) (75 papers) of journals have published only one paper on the topic. However, the 75 journals with only one publication which are not included in the table due to space constraints.

Table 5 Categorization on the basis of journals

Journal	No. of articles	Percentage
Journal of Cleaner Production	11	7.75
Sustainability (Switzerland)	8	5.63
Energies	4	2.82
Innovative Food Science and Emerging Technologies	4	2.82
International Journal of Production Economics	4	2.82
Food and Bioprocess Technology	3	2.11
International Journal of Energy Research	3	2.11
PLoS ONE	2	1.41
Acta Horticulturae	2	1.41
Annals of Operations Research	2	1.41
Energy	2	1.41
Environment, Development and Sustainability	2	1.41
Food Control	2	1.41
Food Packaging and Shelf Life	2	1.41
Fresenius Environmental Bulletin	2	1.41
International Journal of Food Microbiology	2	1.41
International Journal of Life Cycle Assessment	2	1.41
International Journal of Production Research	2	1.41
Journal of Food Process Engineering	2	1.41
Journal of Food Processing and Preservation	2	1.41
Journal of Intelligent and Fuzzy Systems	2	1.41
Transportation Research Part D: Transport and Environment	2	1.41

3.5 Categorization on the basis of citations of articles

The citation of the paper is generally regarded to be the quality of the paper, which the authors across the world validate by citing their research. The purpose of this categorization is to highlight the most referenced papers in SFFCSC and try to look into the possible reasons for their high quotation. The nine most cited articles have quotes of more than 60 are shown in Table 6. The paper entitled "Two echelons multiple-vehicle location-routing problem with time windows for optimization of sustainable supply chain network of perishable food" has the maximum citation of 359. The reason being proposed a novel multi-objective hybrid method called MHPV to explore how to integrate sustainability in decision-making which is missing in the previous literature. They also indicated that the hybrid approach is better than others (i.e., MOGA, NPGA, and NSGA-II) (Govindan, 2014). The second most cited paper entitled "Chilled or frozen? Decision strategies for sustainable food supply chains" has the quotation of 123. They explored the relationship between the relevant parameters affecting the problem (i.e., Fast vs. slower transportation, low vs. higher energy contribution, short vs. longer product lives, and storage times) to solve a possible method to chain optimization. The proposed modeling can also support decisions and improve the sustainability of the adopted solution (Zanoni & Zavanella, 2012).

Table 6 Categorization on the basis of citations of articles

Authors	Title	Year	Source title	Cited by
Govindan, K., Jafarian, A., Khodaverdi, R., Devika, K.	Two-echelon multiple-vehicle location-routing problem with time windows for optimization of sustainable supply chain network of perishable food	2014	International Journal of Production Economics	359
Zanoni, S., Zavanella, L.	Chilled or frozen? Decision strategies for sustainable food supply chains	2012	International Journal of Production Economics	123
Molins R.A., Motarjemi Y., Käferstein F.K.	Irradiation: A critical control point in ensuring the microbiological safety of raw foods	2001	Food Control	93
Jacxsens L., Devlieghere F., Debevere J.	Predictive modeling for packaging design: Equilibrium modified atmosphere packages of fresh-cut vegetables subjected to a simulated distribution chain	2002	International Journal of Food Microbiology	91
Hospido A., Milà I Canals L., McLaren S., Truninger M., Edwards-Jones G., Clift R.	The role of seasonality in lettuce consumption: A case study of environmental and social aspects	2009	International Journal of Life Cycle Assessment	77
He, X., Qiao, Y., Liu, Y., (...), Yin, C., Martin, F.	Environmental impact assessment of organic and conventional tomato production in urban greenhouses of Beijing city, China	2016	Journal of Cleaner Production	74
Franz E., Tromp S.O., Rijgersberg H., Van Der Fels-Klerx H.J.	Quantitative microbial risk assessment for Escherichia coli O157:H7, Salmonella, and Listeria monocytogenes in leafy green vegetables consumed at salad bars	2010	Journal of Food Protection	64
Büsser S., Jungbluth N.	The role of flexible packaging in the life cycle of coffee and butter	2009	International Journal of Life Cycle Assessment	63
Meneghetti, A., Monti, L.	Greening the food supply chain: An optimization model for sustainable design of refrigerated automated warehouses	2015	International Journal of Production Research	62

3.6 Categorization on the basis of the status of the country

Table 7 shows the contribution percentage of each country and the country category (developing and developed). It is done on the basis of the country represented by the authors of the selected papers. A total of 35 countries are featured in the 142 publications, and 51.43% (18 countries) of these countries published just one paper. China leads the list with 40 (28.17 %) papers. The second country on the list is Italy, with 19 (13.38%) papers. Other countries having evidence of SFFCSC research after China and Italy are: USA 11 (7.75%), Uk 8 (5.63%), India 8 (5.63%), France 6 (4.23%), and Netherlands 5 (3.52%) papers. On the basis of the published report (Indexes, 2011), the list of countries was divided into two groups, i.e., developing countries and developed countries. This categorization shows that 48.59% of publications have been recorded in developing countries and 51.41% in developed countries (Figure 2).

Table 7 Categorization on the basis of the status of the country

Country	No. of Articles	Percentage	Category
China	40	28.17	Developing
Italy	19	13.38	Developed
USA	11	7.75	Developed
UK	8	5.63	Developed
India	8	5.63	Developing
France	6	4.23	Developed
Netherlands	5	3.52	Developed
South Africa	4	2.82	Developing
Switzerland	4	2.82	Developed
Spain	4	2.82	Developed
Belgium	3	2.11	Developed
Australia	2	1.41	Developed
Germany	2	1.41	Developed
Iran	2	1.41	Developing
Poland	2	1.41	Developing
Pakistan	2	1.41	Developing
Denmark	2	1.41	Developed
Turkey	1	0.7	Developed
Israel	1	0.7	Developed
Argentina	1	0.7	Developing
Chile	1	0.7	Developing
Canada	1	0.7	Developed
Brazil	1	0.7	Developing
Egypt	1	0.7	Developing
Finland	1	0.7	Developed
Indonesia	1	0.7	Developing
Jordan	1	0.7	Developing
Latvia	1	0.7	Developing
Malaysia	1	0.7	Developing
Philippines	1	0.7	Developing
Tanzania	1	0.7	Developing
South Korea	1	0.7	Developing
Singapore	1	0.7	Developed
Saudi Arabia	1	0.7	Developed
Russian Federation	1	0.7	Developed

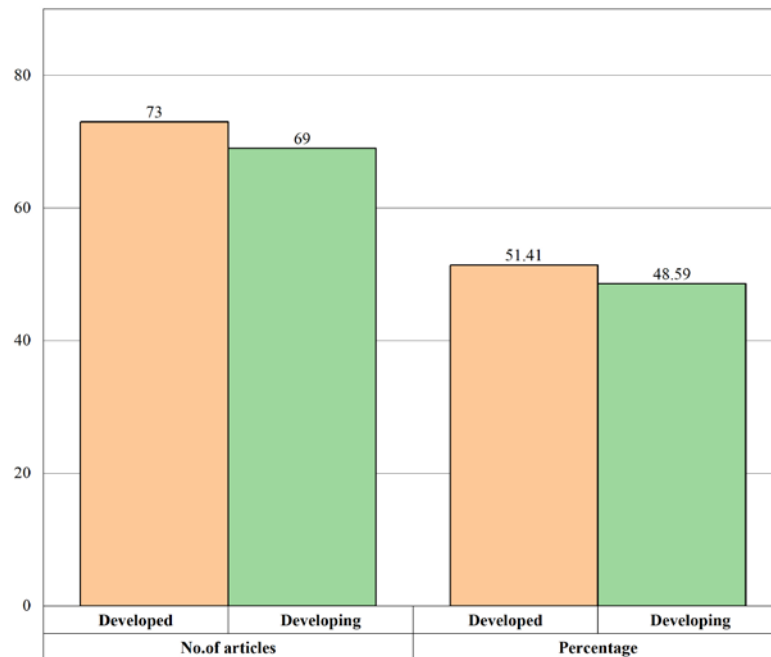


Figure 2: Articles on the basis of the status of the country.

4 OUTCOMES

The contribution of this research is presented through significant findings and discussion as well as future research directions.

4.1 Significant findings and discussion

This section is going to present various significant findings based on the descriptive analysis of the selected papers. It will also provide a discussion of the various reasons for the determined results. This section will also discuss various gaps and future opportunities that need to be solved to understand SFFCSC better. Significant findings and discussion of these findings have been emphasized in this section are as below:

The categorization of selected papers on the basis of the publication year (Figure 1) exposes that a number of publications over the past three years (2018-2020) and till August-2021 have been demonstrating an upward trend. Especially in 2021, even if we only collect the literature published before September, that is, two-thirds of this year, the number of publications has increased sharply compared with last year, demonstrating the growing interest of scholars and practitioners towards SFFCSC adoption. One of the main reasons for the increased interest can be that strict environmental regulations and government legislations constrain the fresh food cold supply chain industries to adopt the traditional supply chain mode. At the same time, another main reason for the increased interest can be that the demand for fresh food continues to increase because of the population growth. The consciousness of sustainable practices has found that more adoption of the cold supply chain in the fresh food supply chain will have positive impacts on society, economy, and environment, for example, reducing energy consumption ((Hu et al, 2019), reducing land losses (Liu et al, 2013), Improving customer satisfaction (Hsu, 2019), reducing food price fluctuation (La Scalia et al, 2019),

reducing transportation and operating cost (Chen et al, 2019), and raising rural income (Wu & Huang, 2018).

Journal of Cleaner Production is the most popular journal with 11 published papers followed by Sustainability 8, Energies 4, Innovative Food Science and Emerging Technologies 4, International Journal of Production Economics 4. Food and Bioprocess Technology 3, International Journal of Energy Research 3, PLoS ONE having publications 3, and 14 journals having publications of 2 papers. The contribution of the above 22 journals is 47.24% which demonstrates their interest in considering and promoting SFFCSC as one of the most important study fields to improve sustainable performance. The main reason for the highest publication of 11 papers in the Journal of Cleaner Production is that the journal is an interdisciplinary publication outlet. The journal is directly related to environmental and environmentally sustainable development issues, such as corporate social responsibility, sustainable consumption/development, and sustainable services, which are integral to SFFCSC. The content analysis also exposes that the publication of SFFCSC study work is not limited to specific sustainable development-related journals. Many journals that are not dedicated to sustainable development issues have also published papers on SFFCSC.

The current investigation analysis on the selected literature exposes that SFFCSC has been studied more in developed countries and less studied in developing countries during the time between 2001-2017. The reasons behind this difference may be due to the availability of funds for SFCSC projects, supportive government regulations, advanced technologies, etc., in the developed countries. While since 2018 till August 2021, the studies of SFFCSC in developing countries are more than in developed countries (Figure 3). One of the main reasons for this surprising difference may be the rapid awareness of the benefits of developing refrigerated fresh food supply chains in developing countries (Kitinoja, 2013). Another main reason for this surprising difference may be that the research topic focuses on the fresh food industry.

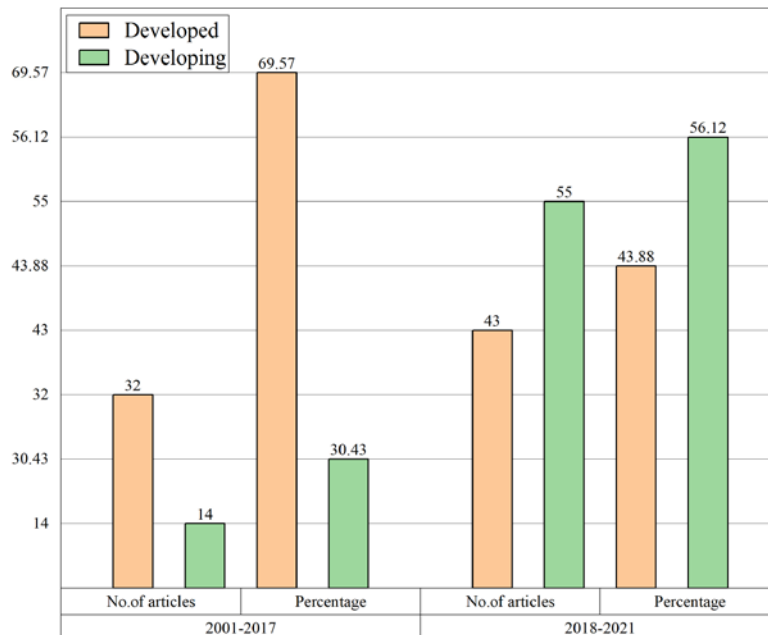


Figure 3: Articles on the basis of the status of the countries in different time span.

4.2 Future research directions

Based on the findings and discussion of this research, the future research directions have been determined in this section are as follows:

- In recent years, consumers and policy-makers in developing countries have begun to have higher requirements on the quality of fresh food and environmental protection. Since 2018, compared with developed countries, developing countries have conducted more research on SFFCSC. However, few studies have considered the comparison of the good practices of SFFCSC in developed and developing countries. Based on the contextual difference between developed and developing countries, this is an opportunity for developing countries to achieve the sustainable development of the cold supply chain industry by learning from the good practices of developed countries.
- As few studies have stated that the adoption of advanced information technologies (e.g., the IoT, big data, cloud computing, blockchain, etc.) have good benefits for the development of the FFCSC industry, for example, providing a major data platform for fresh food cold supply chain actors such as business, government, and consumers to control, trace, and optimize the business process in real-time (Verdouw et al, 2016). It is necessary to conduct more research on assessing the benefit of advanced information technologies adoption in facilitating the sustainable development of FFCSC.

4.3 Limitations of this research

- This study is limited to the SCOPUS database for the search of the papers for review. Though the SCOPUS is an extensive database that consists of huge publications, many related papers on SFFCSC outside the SCOPUS database may not have been included in this study.
- As only English publications were incorporated in this research, other papers related to SFFCSC in other languages were not considered. In this case, considering papers in other languages may lead to changes in the findings and conclusions of this research.

5 CONCLUSION

The strict government legislations and environmental regulations have restricted the fresh food cold supply chain industry from utilizing operations that negatively impact the environment. It is necessary to carry out more efficient operations to combine governmental legislations of environment protection with economic benefits. This research provides a categorical analysis to describe the level of effort that has been made by scholars, engineers, and practitioners in developing sustainable cold supply chain ways to distribute fresh food products. This research conducted comprehensive descriptive research by a systematic literature review of 142 selected papers (January 2001 to August 2021), emphasizing how SFFCSC research has grown over the past few years. The selected papers were classified on the basis of year, authors, organizations, journals, citation, the status of the country. The selected papers were presented in each category in different figures and tables. The analysis

of these figures and tables helps to identify the various insights and unresolved aspects of sustainability from the selected literature.

When we look at the number of papers published on SFFCSC, it indicates that there is a lot of work has been reported in the SFFCSC literature. However, there are still various opportunists (section of future research directions) that need to be urgently considered in future research. The significant future research opportunities are: more studies should be conducted to consider the comparison of the good practices of SFFCSC in developed and developing countries, more research should be initiated to explore the differences and reasons that exist in the type of best practices adopted in developed countries and developing countries, and more research should be carried out to find the means and ways to attain a balance between environment, economy, society to adopt SFFCSC effectively, and more research should be conducted to assess the benefit of advanced information technologies adoption in facilitating the sustainable development of FFCSC. This research attempts to deepen the knowledge and understanding of SFFCSC by evaluative research. We believe that the discussions provided in this research will help policy-makers, the scientific community, and practitioners to better understand the issues of SFFCSC. The discussed findings, the proposed future directions, and the limitations of this research may offer scholars and practitioners various opportunities to further expose the various unrecognized aspects of SFFCSC.

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Advancing Paulinian Core Values As SPUP's Response To Climate Change

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ABSTRACT

With the adverse effects of Climate Change in the environment, it is necessary to critically examine attitudes and behaviors relevant to environmental values. Highlighting the incorporation of the Paulinian Core Values, St. Paul University Philippines (SPUP) fostered environmental programs, projects, activities, and partnerships towards the realization of the Sustainable Development Goal (SDG) on Climate Change. Utilizing the descriptive research design, this study examined the extent of integration of the Paulinian Core Values, namely: Christ-centeredness, Commission, Charity, Charism, and Community in the implementation of SPUP's Climate Change initiatives. With participants composed of teachers, students, alumni, and members of partner-communities, the results showed that the degree of integration of the Paulinian Core Values in the realization of the University's Climate Change-related endeavors is gauged to a "Very Great Extent". Moreover, the findings also demonstrated the ability of SPUP to foster relevant and responsive environmental advocacy in engaging its academic and partner-communities towards the advancement of its Climate Change undertakings. This is reflected in the paradigm on SPUP Environmental Core Values, where the principles of ecological spirituality, environmental integrity, environmental justice, environmental engagement, and environmental stewardship are advanced vis-à-vis the Paulinian Core Values.

KEYWORDS: St. Paul University Philippines, Climate Change initiatives, Paulinian Core Values, Environmental advocacy, SPUP Environmental Core Values

INTRODUCTION

Climate Change has caused immense challenges to the environment and to humanity. Its adverse effects have become global concerns. It has drastically altered human lifestyle, engagements, experiences, and opportunities (Devine-Wright, 2013; Heimann & Mallick, 2016; Nicolosi & Corbett, 2018). With the projected population of the world at nine billion by 2050 (UNFPA, 2020), issues related to Climate Change, like environmental sustainability and resources sharing and utilization are inevitable (Swim, Clayton & Howard, 2011). As a result, the United Nations 2030 Agenda for Sustainable Development has set a goal to address environmental trepidations along Climate Change. It is encompassed in objective 13: *“To take urgent action to combat Climate Change and its impacts”* (UN, 2015). Additionally, it has been emphasized that Climate Change has caused high incidence of mortality due to its effects like pollution, excessive heat, malnutrition, and dreadful diseases (WHO, 2020).

With the challenges brought about by Climate Change in the environment, it is necessary to foster attitudes and behaviors that promote environmental concern and efforts to mitigate its impacts (Poortinga et al., 2019). With human beings as prime contributors of this phenomenon, it is also vital to assess human values as characteristics to guide them in their actions towards the promotion of pro-environmental behaviors in the context of Climate Change (Corner, Markowitz, & Pidgeon, 2014).

Although according to Steg and Vlek (2009), values are implicitly related to pro-environmental behavior, they are vital in determining the beliefs and concerns of human beings on Climate Change (Prati, Pietrantonio & Albanesi, 2018). Moreover, other studies suggest that Climate Change messaging is framed to reflect human values, such as social justice, community, frugality, personal integrity, health, and beliefs in self-efficacy (Howell & Allen, 2016; Bostrom et al., 2013). These imply that just as values influence people’s actions and choices, there is a possibility to foster changes in their environmental values emanating from their understanding on Climate Change.

As the risk of climate disruption is continuously growing, St. Paul University Philippines (SPUP) is cognizant to its responsibility in equipping its members with knowledge, values, and skills to actively engage in solving real problems and to create and maintain a sustainable environment (Ang & Lappay, 2020). With the University working towards the realization of the United Nations’ Sustainable Development Goals through its global education, it has implemented programs projects, and activities along the 17 SDGs. In particular, SPUP’s endeavors pertinent to Climate Change is grounded on educational approaches and solutions promotive of environmental care and stewardship as *“there is an urgency in addressing the issue on climatic change”* (Pope Francis, 2015).

With its unwavering commitment through its environmental advocacy program, SPUP leads by engaging its academic and partner-communities in leveraging environmental values and care for creation as response to the climate crisis (Lappay, 2019). This advocacy is rooted in SPUP’s mission towards human development and social transformation (Ang & Lappay, 2020) embodied in its Paulinian Core Values, namely: Christ-centeredness, Charity, Commission, Community, and Charism. As an institution of learning, SPUP advances its core values towards holistic and sustainable endeavors responding to the environmental challenges due to Climate Change (Morales, 2016).

As SPUP has been awarded the “Most Eco-Friendly and Sustainable School” in the Cagayan Valley Region by the Environmental Management Bureau of the Republic of the Philippines, its environmental initiatives, particularly on Climate Change, have been recognized to consider *“a living, dynamic, and participatory reality, which cannot be excluded in rethinking the relationship between human beings and the environment”* (Pope Francis, 2015). Thus, this study is undertaken to assess the integration of the Paulinian Core Values in the implementation of SPUP’s Climate Change initiatives and to determine a paradigm in describing their relation.

CONCEPTUAL FRAMEWORK

Valuing the environment also includes responsible actions leading to justice, integrity, involvement, altruism, and spirituality (Howell & Allen, 2016). With Climate Change as a primary environmental concern, SPUP advocates for environmentally responsible actions, ingrained in its Paulinian Core Values, to undertake efforts to mitigate its effects.

The Paulinian Core Values are qualities that as an institution, SPUP forms Paulinian learners and directs its efforts through education. The SPUP Student Handbook (2017) enumerated the Paulinian Core Values as follows: a) Christ-centeredness, wherein Christ is the center of Paulinian life; b) Commission, where Paulinians exude a life purpose to spread the Good News and make the world a better place to live in; c) Charism where Paulinians develop talents and gifts for the service of the community, striving to grow and improve daily, always seeking the better and finer things and the Final Good; d) Community where Paulinians are responsible family members and citizens, concerned with building communities, promotion of peoples, justice and peace, and the protection of the environment; and e) Charity where Paulinians are urged by the love of Christ to be warm, loving, hospitable and “all to all”.

Climate Change-related attitudes and beliefs continue to proliferate affecting environmental principles, policies, and plans to mitigate this global phenomenon. The United Nations Framework Convention on Climate Change (2020) reveals that Climate Change is the result of human activity. Occurrences, such as floods, droughts, and pollution are manifestations that people are experiencing Climate Change. Furthermore, the unpredictability of the effects of Climate Change patterns increases environmental risks (Wang & Kim, 2018) while public health services and goods which are essential for human life become vulnerable (IPCC, 2020). Therefore, it is important to imbibe adaptive values and actions that stimulate human capacity towards a collective action in advancing environmental causes to assuage the effects of Climate Change (Marshall et. al, 2019).

PURPOSE OF THE STUDY

This study examined the Paulinian Core Values relevant to SPUP’s Climate Change initiatives. Specifically, it is aimed to:

1. determine the extent of the integration of the Paulinian Core Values in the implementation of SPUP’s Climate Change initiatives; and,
2. design a paradigm on the relation of the Paulinian Core Values and SPUP’s Climate Change-related undertakings.

METHODOLOGY

The research utilized the descriptive design, particularly the descriptive survey method. A researcher-made survey questionnaire was used to gather the data on the extent of the integration of the Paulinian Core Values in the implementation of SPUP's Climate Change initiatives. The instrument covers indicators that correspond to each Paulinian Core Value. A total of 304 participants were randomly selected from the following sectors of SPUP: teachers, students, alumni, and members of partner-communities.

Table 1. Distribution of the Group of Participants

Group	Frequency	Percentage
Teachers	32	10.53
Students	163	53.62
Alumni	64	21.05
Members of Partner Communities	45	14.80
TOTAL	304	100.00

In the data interpretation, critical analysis was employed to ascertain the relation of SPUP's Climate Change initiatives and the Paulinian Core Values. On the other hand, weighted mean was used to determine the extent of the integration of the Paulinian Core Values in the implementation of SPUP's Climate Change initiatives.

Table 2. Scale Range and Descriptive Interpretation

Mean (M)	Descriptive Interpretation (DI)
3.25 – 4.00	Very Great Extent (VGE)
2.50 – 3.24	Great Extent (GE)
1.75 – 2.49	Moderate Extent (ME)
1.00 – 1.74	Little Extent (LE)

RESULTS AND DISCUSSION

The Integration of Paulinian Core Values in SPUP's Climate Change Initiatives

As environmental values are important indicators of Climate Change-related attitude and behavior (Poortinga et al., 2019), the Paulinian Core Values demonstrate the quality of SPUP-led initiatives along Climate Change issues. Moreover, the integration of the Paulinian Core Values in the implementation of Climate Change-related endeavors manifests the capacity and determination of the University in advancing its educational commitment to institute measures that are environmentally sustainable and adaptable (Hornsey et al., 2016).

Table 3. Integration of the Value of Christ-centeredness in SPUP's Climate Change Initiatives

Indicators	Teachers		Students		Alumni		Partners	
	Mean	DI	Mean	DI	Mean	DI	Mean	DI
SPUP exhibits strong commitment to mitigate Climate Change as a moral obligation to care for creation.	3.75	VGE	3.22	VGE	3.42	VGE	3.76	VGE
SPUP includes discussions and actions on Climate Change as part of its faith-formation activities.	3.75	VGE	3.48	VGE	3.14	GE	3.02	GE
SPUP teaches Climate Change	3.84	VGE	3.39	VGE	3.19	GE	3.51	VGE

mitigation as a facet of God’s calling to care for the environment.								
SPUP fosters ethical solutions to Climate Change problems.	3.56	VGE	3.37	VGE	3.50	VGE	3.53	VGE
SPUP advances the relationship of God, man, and creation through its Climate Change initiatives.	3.81	VGE	3.36	VGE	3.14	GE	3.47	VGE
Category Mean	3.74	VGE	3.36	VGE	3.28	VGE	3.46	VGE

As shown in Table 3, the participants assessed the extent of the integration of the Paulinian Core Value of Christ-centeredness in SPUP’s Climate Change initiatives to a “Very Great Extent”. This demonstrates the capacity of SPUP to anchor its Climate Change initiatives relevant to its character as a Catholic University. As an institution of learning, SPUP develops behavior and attitudes needed to cultivate ecological spirituality. This is evident in the manner the University demonstrates moral obligation to care for creation, commitment, fosters ethical solutions, and advances the relationship of God, man, and creation through its Climate Change-related undertakings. This is based on the recognition of the foundational value that care for creation is an important aspect of human value systems and a fundamental responsibility that underpins human prosperity (Sachs, 2015). Moreover, the inclusion of environmental actions, like Climate Change mitigation, as part of faith-formation activities also leads to a sustainable development of human life, thereby contributing to the well-being of the society or the community (Fatubarin, 2014).

Table 4. Integration of the Core Value of Commission in SPUP’s Climate Change Initiatives

Indicators	Teachers		Students		Alumni		Partners	
	Mean	DI	Mean	DI	Mean	DI	Mean	DI
SPUP integrates concepts and proactive strategies on Climate Change mitigation in its learning design.	3.53	VGE	3.09	GE	3.16	GE	3.31	VGE
SPUP highlights Climate Change mitigation as a mission for the environment.	3.59	VGE	3.15	GE	3.03	GE	3.67	VGE
SPUP conducts service-learning activities for the mitigation of Climate Change.	3.06	GE	3.09	GE	3.16	GE	3.64	VGE
SPUP institutes Climate Change-related endeavors in its school operations and community environmental programs.	3.88	VGE	3.23	GE	3.41	VGE	3.78	VGE
SPUP initiates programs, projects, and activities for the mitigation of Climate Change.	3.13	GE	3.10	GE	3.23	GE	3.67	VGE
Category Mean	3.44	VGE	3.13	GE	3.20	GE	3.61	VGE

In Table 4, the extent of the integration of the Paulinian Core Value of Commission in SPUP’s Climate Change initiatives is assessed by teachers, alumni, and members of partner-communities to a “Very Great Extent” while, to a “Great Extent” by students. The incorporation of environmental values in its learning design, inclusion of environmental service-learning, and institution of environmental programs to mitigate Climate Change reflect the University’s commitment towards environmental integrity. Furthermore, considering the mitigation of Climate Change as a mission requires an ethics of care and relational values for a livable environment (Adams, 2016). This justifies the presence of proactive approaches in the University’s environmental undertakings. SPUP’s commitment to

environmental integrity is demonstrated through its initiatives and policies that highlight values integration and technology application towards the conservation of humanity’s natural habitat (O’Neill, 2017).

Table 5. Integration of the Core Value of Community in SPUP’s Climate Change Initiatives

Indicators	Teachers		Students		Alumni		Partners	
	Mean	DI	Mean	DI	Mean	DI	Mean	DI
SPUP engages with its partner communities on climate mitigation programs, projects, and activities.	3.78	VGE	3.47	GE	3.08	GE	3.80	VGE
SPUP promotes resolutions to Climate Change as communal effort.	3.50	VGE	3.37	VGE	3.45	VGE	3.60	VGE
SPUP participates in the concerted efforts of the community to curb Climate Change.	3.53	VGE	3.18	GE	3.72	VGE	3.47	VGE
SPUP inspires members and community to work for Climate Change mitigation.	3.50	VGE	3.26	VGE	3.14	GE	3.82	VGE
SPUP works for Climate Change mitigation as a social responsibility.	3.75	VGE	2.96	VGE	3.38	VGE	3.53	VGE
Category Mean	3.61	VGE	3.25	VGE	3.35	VGE	3.64	VGE

Table 5 reveals the participants’ assessment on the extent of the integration of the Paulinian Core Value of Community in SPUP’s Climate Change initiatives to a “Very Great Extent”. As it promotes environmental engagement, SPUP is working for community-based sustainability by involving the active participation of its members and partners. As a value, environmental engagement consists of leading, participating, working, and motivating members of the community towards innovative resolutions to mitigate Climate Change (Wiseman, Williamson & Fritze, 2010). Moreover, with the importance of environmental engagement is essential to achieving sustainable and responsible development, values and principles are also needed to guide community engagement strategies to avert the effects of Climate Change (Schaefer, Williams & Blundel, 2020). In SPUP, environmental engagement is based on greater participation of people in decision-making, accountability, transparency, and environmental protection as a communal effort (Corner & Clarke, 2017).

Table 6. Integration of the Core Value of Charism in SPUP’s Climate Change Initiatives

Indicators	Teachers		Students		Alumni		Partners	
	Mean	DI	Mean	DI	Mean	DI	Mean	DI
SPUP engages learners to actively participate in Climate Change-related advocacies.	3.28	VGE	3.36	VGE	3.13	GE	3.49	VGE
SPUP institutes enabling research-based projects to cope with Climate Change.	3.06	GE	3.21	GE	3.19	GE	3.49	VGE
SPUP contributes to resolving Climate Change issues to enable human safety and development.	3.25	VGE	3.27	VGE	3.25	VGE	3.44	VGE
SPUP empowers its members to initiate and participate in activities on Climate Change mitigation.	3.41	VGE	3.16	GE	3.64	VGE	3.58	VGE
SPUP spearheads service-learning	3.53	VGE	3.39	VGE	3.28	VGE	3.58	VGE

activities to raise awareness on Climate Change.								
Category Mean	3.31	VGE	3.28	VGE	3.30	VGE	3.52	VGE

As presented in Table 6, the participants assessed the extent of the integration of the Paulinian Core Value of Charism in SPUP’s Climate Change initiatives to a “Very Great Extent”. In SPUP, this is practiced through the various service-learning activities, research-based projects, and advocacies relevant to environmental care, specifically on Climate Change mitigation. These are key aspects towards understanding the value of environmental stewardship as they enable human welfare and development (Hansen & Cramer, 2015). Accordingly, SPUP’s environmental stewardship principle is rooted in its vision for the growth of persons and improvement of the quality of life. As it is also related to human values, it is also directed towards responsible management of human activity to ensure the conservation and preservation of natural resources for the sake of human and other life on the planet (Nicolosi & Corbett, 2018).

Table 7. Integration of the Core Value of Charity in SPUP’s Climate Change Initiatives

Indicators	Teachers		Students		Alumni		Partners	
	Mean	DI	Mean	DI	Mean	DI	Mean	DI
SPUP sustains programs promotive of environmental values to abate the effects of Climate Change.	3.47	VGE	3.21	GE	3.64	VGE	3.11	GE
SPUP instills environmental care as a discipline to prevent the consequences of Climate Change.	2.91	VGE	3.35	VGE	3.80	GE	3.44	VGE
SPUP advocates for environmental care and justice to ameliorate Climate Change.	3.63	VGE	3.34	VGE	3.67	GE	3.24	GE
SPUP creates opportunities for members to undertake concrete actions to lessen the impact of Climate Change.	3.72	VGE	3.14	GE	3.61	VGE	3.53	VGE
SPUP teaches that active participation in resolving Climate Change issues manifests love for God, creation, and others.	3.47	VGE	3.25	VGE	3.53	GE	3.53	VGE
Category Mean	3.44	VGE	3.26	VGE	3.65	VGE	3.37	VGE

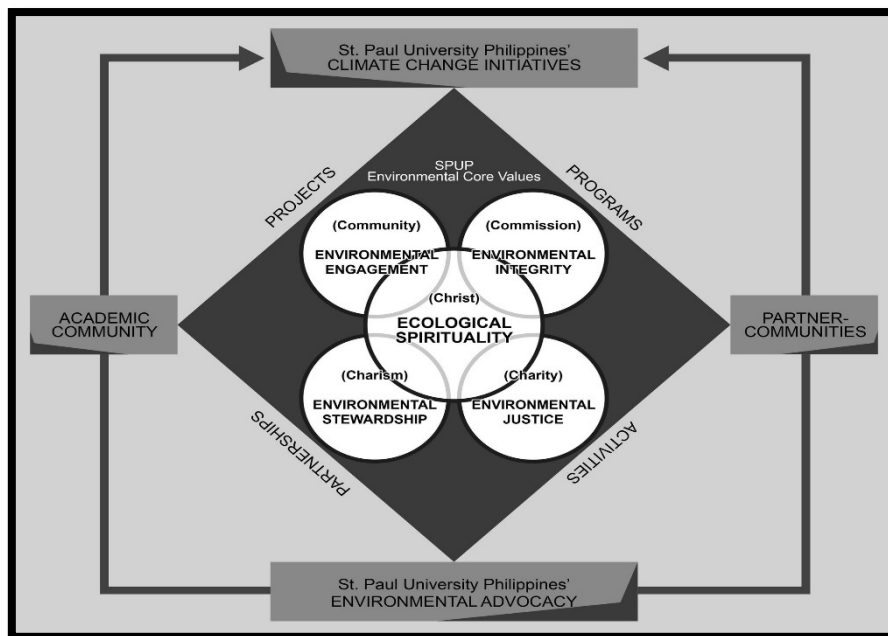
The extent of the integration of the Paulinian Core Value of Charity in SPUP’s Climate Change initiatives as indicated in Table 7 is assessed by the participants to a “Very Great Extent”. As the University promotes care for creation, it also advocates for environmental justice. This is expressed in the collective action of the University to curtail the impact of Climate Change. Moreover, this is evident as SPUP continuously sustains its educational programs, projects, and activities, instills discipline and values, and creates learning opportunities and experiences as demonstration of love for the environment (Temper, et al., 2018). Recognizing the principle of environmental justice implies the promotion of inclusive and efficient strategies to ensure a sustainable development (Agyeman et al., 2016). It also exhibits the University’s capacity to elicit the values of participation, consensus building, equity, respect, transparency, efficiency, and accountability (Schlosberg, 2013) from the members of its academic and partner-communities.

The Relation of the Paulinian Core Values and SPUP’s Climate Change Initiatives

Imbibing ecological values is critical for Climate Change awareness and for changing behavior towards mitigation efforts. (Gatersleben et al., 2010). Furthermore, the relation of environmental values to Climate Change-related endeavors are linked with strategic adaptations (Wynveen & Sutton, 2017) that promote mitigation behaviors (Chen, 2015).

Figure 1 is a Paradigm for *SPUP Environmental Core Values*. It illustrates the relation of the Paulinian Core Values to the University’s Climate Change initiatives. It reflects the ability of SPUP to foster relevant and responsive *environmental advocacy* through its *programs, projects, partnerships, and activities* by engaging its *academic community* and *partner-communities* to address Climate Change. While the principles of environmental engagement, environmental justice, environmental stewardship, environmental integrity, and ecological spirituality are embodiment of the Paulinian Core Values, they also exemplify the various initiatives of SPUP along environmental advocacy, particularly on Climate Change.

Figure 1. SPUP Environmental Core Values



Christ-centeredness signifies the value of *Ecological Spirituality*. It encapsulates the relationship between God and creation and represents the foundation and convergence of the values of ecological justice, integrity, engagement, stewardship, and equilibrium (Suganthi, 2019). Through this value, SPUP is cognizant on the importance of spiritual transformation to cultivate ecological principles. Since the University is continuously advancing in its educational mission, SPUP highlights its teaching-learning process, faith-formation activities, and community services as proclamation of the mercy of God, and thanksgiving for creation and salvation (Ang & Lappay, 2020). Along with ecological spirituality, SPUP’s well-crafted landscape of its gardens and parks and the robust trees and ornamental plants growing on campus bequeath venues for spiritual reflection and integration. This develops a sense of appreciation to the diversity of life and commitment to care for creation. Furthermore, through its environmental service-learning activities, SPUP consistently affirms the role of everyone in the community in conserving the environment and protecting natural resources to prevent environmental degradation that endangers human well-being. This “enables the

development of new convictions, attitudes and forms of life as manifested in a great spiritual, cultural and educational challenge on the path of renewal” (Pope Francis, 2015).

Commission reflects the value of maintaining *Environmental Integrity*. This involves recognition of the impact of human activities on the environment (Cordonnier-Segger et. al., (2004). In SPUP, preserving environmental integrity involves innovations and emerging technologies for a sustainable environment (Ang & Lappay, 2020). For its Climate Change-related undertakings, the University spearheaded the Clean and Green Charcoal project in Baggao, Cagayan. This venture with the Embassy of Japan to the Philippines endeavors the utilization of Corn Cub as an alternative charcoal material instead of wood-based charcoal. This minimizes the cutting of trees which causes environmental degradation in the locality. Moreover, SPUP, as an educational institution, also pioneered the use of solar energy as a source of renewable energy in schools. The solar panels were installed by Buskowitz group of company. SPUP also instituted an E-waste management system which includes proper collection of e-waste and safe disposal by suitable techniques. The approach has also been taught to the partner-communities as an appropriate action to care for the environment. Subsequently, the University has also instituted programs along biodiversity, energy, and water conservation. In stressing environmental integrity, SPUP is guided by *“moral imperative of assessing the impact of every human action and personal decision”* (Pope Francis) affecting the ecology.

Community emphasizes the value of fostering *Environmental Engagement*. This is intended to heighten awareness about environmental problems, build knowledge through education about the impact of human behaviors on nature, and transform human behaviors towards ecological sustainability (Fanli & Tobias, 2019). In SPUP, environmental engagement gears towards social transformation through education for sustainable development that *“takes place within the context of people and institution and demands for constant and active involvement”* (Pope Francis, 2015). Because of this, SPUP fosters opportunities and experiences between its academic community and partner-communities to meet the needs of the present and future generations along environmental protection through service-learning activities (Ang & Lappay, 2020). As offshoots of its agenda to curb Climate Change, SPUP has involved both members of its academic and partner-communities in activities like Tree growing project for deciduous trees and fruit-bearing plants in Enrile, Cagayan, ecological mountain reforestation in Solana, Cagayan, tilling and forest action in Amulung, Cagayan, reduction of marine pollution, particularly from land-based activities, including marine dries and nutrient pollution, Tuguegarao City Green Agenda, Barangay Clean-Up Drive in Baggao, Cagayan, Coastal Clean Up in Sanchez Mira, Cagayan, and Mangrove tree growing project in Sta. Teresita, Cagayan.

Charism indicates the value of continuing *Environmental Stewardship*. It stems from a sense of personal and organizational responsibility and serious moral commitment to redressing environmental problems (Bennett, Whitty & Finkbeiner, 2018). In SPUP, this is expressed in the manner the University continuously promotes the values of responsibility, accountability, and stewardship (Ang & Lappay, 2020) which involves *“living the vocation to be protectors of God’s handiwork”* (Pope Francis, 2015). As proactive actions to prevent the consequences of Climate Change, SPUP has integrated Disaster Risk, Reduction and Resilience Education and Climate Change Mitigation into its academic designs. Moreover, the University undergoes regular facility and building inspection and conducts safety exercises and drills, trainings, and symposia along disaster preparedness. SPUP has also established a strong partnership with agencies along environmental protection, such as the Environmental

Management Bureau and the Department of Environment and Natural Resources, and disaster and safety management, like the Office of Civil Defense, the City Bureau of Fire Protection, and the Tuguegarao City Police Station. With the institutionalization of environmental stewardship as an advocacy, SPUP's partner-communities are also led to participate in the efforts of the University towards a viable ecology. This is done through the efforts of student and employee organizations which aligned their projects and activities along SPUP's environmental advocacy program.

Charity manifests the value of practicing *Environmental Justice*. It entails action and participation of all people with respect to environmental concerns (Syed, 2018). In SPUP, this is demonstrated in the manner the University advances knowledge, skills, and values by raising awareness and providing conditions for informed decision-making and responsible behavior towards environmental protection (Ang & Lappay, 2020). To mitigate the effects of Climate Change, SPUP highlighted the implementation of the following policies: Solid Waste Management, Clean As You Go (CLAYGO), 5S (Sort, Systematize, Sweep, Sanitize, and Self-Discipline) of Good House Keeping, 4Rs (Reduce, Reuse, Recycle, and Respect), and Plastic-Free and Styrofoam-Free drives. SPUP also ventured into "Trash to Patterns" project, where construction waste materials are remodeled into handcrafts, woodworks, and arts. These practices are being imparted in partner-communities as part of the environmental service-learning activities of the University. Moreover, with the risks brought about by Climate Change, SPUP strengthened its safety and security system through its Disaster Preparedness and Emergency Response program on campus and established the Family-Based Disaster Risk Reduction Management Program in partner-communities in the provinces of Cagayan and Apayao. In SPUP, environmental justice works towards a sustainable environment that exhibits "*a living, dynamic and participatory reality, which cannot exclude the relationship between human beings and the environment*" (Pope Francis, 2015).

CONCLUSION

It could be concluded that the integration of the Paulinian Core Values in SPUP's Climate Change initiatives expresses the ability of the University to foster environmental values, attitudes, and actions relevant to its character as a Catholic University. The identification of the Environmental Core Values along the Paulinian Core Values provides the context in which SPUP contributes to the realization of the Sustainable Development Goal on Climate Change through its teaching-learning process, faith-formation activities, and community services. Moreover, the embodiment of the Paulinian Core Values in SPUP's Climate Changes initiatives demonstrates the University's capability to endeavor its educational mission in advancing environmental advocacy and environmental consciousness among its academic and partner-communities. This allows them to actively engage in projects, programs, partnerships, and activities that address Climate Change concerns through holistic, transformative, and value based Paulinian education.

RECOMMENDATION/S

It is recommended that with the assessment on the extent of the integration of the Paulinian Core Values in SPUP's Climate Change initiatives, a study on the impact of the University's Climate Change-related endeavors may be conducted. Moreover, the SPUP Environmental Core Values may be emphasized in the University teaching-learning process, faith-formation activities, and community services. Finally, the relevance of the paradigm on Environmental

Core Values may be examined vis-à-vis SPUP's environmental advocacy programs, projects, activities, and partnership.

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Experiences and Lessons Learned from Stakeholder Engagement in Transitioning to Use of Community Energy Business Entity - In the Case of Remote Islands, Nagasaki -

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Abstract

Five years have passed since the liberalization of retail electricity sales in Japan. Consumers are now free to choose their own power company and can make a contract with power companies that better suit their lifestyles. As a result of this liberalization, many electric power companies have come up with their own plans. In this trend, emerging community energy business entities that aim for "local production for local consumption" have recently begun to increase. This paper attempts to identify the strategies and challenges from the experience of stakeholder engagement in community energy initiatives. Stakeholder engagement in this context is a form of community engagement used to develop a viable agenda and implementation plan in line with the interests and needs of key stakeholders and constituencies. It is important to seek strategies to involve more stakeholders in decision-making when building new energy systems within a community, especially for in the development of remote island areas with rapidly declining populations. This paper focuses the case study of Nagasaki Prefecture, which has the largest number of remote island municipalities in Japan. Based on semi-structured interviews and document analysis, this research identifies the scope and engagement strategy of the community energy initiatives, and discuss lessons learned and challenges from the experience of energy stakeholder engagement. In the context of remote islands, a geographically isolated and resource-constrained area, both theoretical and practical issues are presented. This paper also presents options and outreach issues to encourage the broader range of stakeholder participation than just energy projects.

Keywords: Community Energy Business Entities, Stakeholder Engagement, Community Engagement, Community Energy, Remote Islands, Nagasaki

1. Introduction

Fossil fuel-based energy infrastructure is one of the most important issues for humanity in the 21st century. On the one hand, most developed economies rely heavily on the consistency and reliability of energy provided by fossil fuels for power and transportation. On the other hand, environmental, regional, and policy efforts are underway around the world to transition from dependence on fossil fuels to renewable energy sources and technologies. It is important to recognize that the current energy infrastructure, both physical and structural, can be operated in a variety of ways. This reality inevitably creates real and perceived challenges to options that would change the status quo. The global energy system is undergoing rapid changes due to technological and institutional changes, depletion of fossil fuel resources, and climate change. At the local level, the increase in decentralized energy resources has necessitated a reorganization of the centralized energy system.

This paper examines community energy business entities (CEBEs) as a form of community energy initiatives (CE Initiatives) to integrate decentralized energy resources and reorganize the local energy system by involving the local community. Community-based energy businesses, such as CEBEs, not only

guarantee self-supply of energy in remote areas such as remote islands where the population is declining, but also have a derivative effect in solving various local issues. Although the objectives, business models, and stakeholder composition differ for each project, CEBE can be an effective means of achieving sustainability in depopulated communities, and if properly supported by the engagement of various stakeholders, including local governments, communities, and energy suppliers, it will be an important part of the future energy system.

The expansion of the use of renewable energy sources depends largely on their social, economic, and environmental context. These changes can occur not only between countries, but even between regions within the same country. For example, the renewable resources in one region of a country may be different from those in another region, or those resources may be located in one region, but the energy may be needed primarily in another part of the country. In such a case, who should bear the costs of construction and operation, in economic and social terms? How should the common good be achieved in the community while avoiding burdening only certain sectors? In a society that has been dependent on fossil fuels, some supporters of renewable energy cannot understand the opposition to "green energy." On the other hand, historically affected communities may oppose such projects, arguing for social justice. Environmentalists may also be concerned about the impact on the surrounding sensitive ecosystems. In addition, there is the question of how existing infrastructures, processes, and strategies should be handled. Who will bear the costs associated with such legacy systems, and how will such costs be handled?

As many stakeholders as possible need to be involved in these discussions. It is very important to look for ways to involve more sectors in the policy discussions that are taking place in the face of the challenge of increasing the use of renewable energy. In some cases, intergenerational perspectives should be incorporated into decision-making on these issues. To do this, decisions need to be made with long-term goals in mind, not just to solve immediate problems. With this mindset, people can avoid many (but not all) of the unintended consequences and stranded costs that may occur with the transition to renewable energy.

2. Methodology

In response to commitments and efforts to reduce greenhouse gas emissions, as well as growing concerns about energy security, Japan's energy system is shifting toward a greater share of clean energy generation and reduced energy use through the implementation of energy efficiency measures. In Japan, on June 12, 2021, Prime Minister Suga officially announced his intention to realize the government's goal of zero greenhouse gas emissions by 2050, citing the importance of future-oriented social change in the post-corona era. In Japan, the transition to a decarbonized energy system has so far been led by large corporations, but small and medium-sized enterprises, citizens, and local communities are increasingly playing an active role in realizing clean energy investments. The transition to a decentralized energy system and the gradual liberalization of energy markets are making room for energy users to play an active role, turning them into "prosumers" or co-providers of energy services for local consumption (Izui 2019). While consumer participation in the energy transition is of increasing interest to policymakers (IEA-RETD 2014; ILO 2013), community energy (CE) and shared ownership approaches to energy sector investment are developing globally (ILO 2013; Van Der Schoor and Scholtens 2015). They allow citizens to co-develop and manage energy projects and present a different ownership model than traditional business organizations (Bauwens 2016; IRENA 2020).

The literature on CE approaches often defines CE as social grassroots innovation (Seyfang et al. 2014), and social norms, environmental concerns, trust, community identity and other non-market resources are key determinants and drivers behind the emergence and composition of CE (Kalkbrenner and Roosen 2016). It is considered to be a suitable option to provide access to energy services and investments for a significant portion of the potential end-users of distributed generation and energy efficiency measures, especially those who do not have sufficient capital or suitable areas to develop projects (DECC 2014). Several literatures emphasize that the benefits and revenues from energy investments can be distributed to citizens (Bauwens 2016; Holstenkamp and Kahla 2016). Case studies from the UK and Denmark also emphasize that CE can facilitate local acceptance of renewable energy

(McLaren Loring 2007).

CE initiatives are not a new phenomenon and have existed in several European countries, such as Germany and Italy, since the end of the 19th and beginning of the 20th century. It has been first associated with the production of renewable energy, such as the rise of wind cooperatives in Denmark in the late 1970s and the new wave of citizen initiatives (especially in Germany and Belgium) after the Chernobyl nuclear accident in 1986 (REN21 2016). In Japan, after the Fukushima Daiichi Nuclear Power Plant accident triggered by the Great East Japan Earthquake in 2011, interest in liberalizing energy systems and transitioning to more decentralized energy has been growing rapidly, and in recent years, new community-based electricity businesses such as "Community Energy Business Entities (CEBEs)" and "Community Power" have been increasing. This paper focuses on community energy, especially in the remote island areas of Nagasaki, where access from mainland Japan is limited. Aside from recent studies describing the role of citizen participation in energy transition (Iida and ISEP 2014; Morotomi 2017), there is very limited academic literature on CE initiatives in Japan, especially none that is limited to remote island areas. To fill this gap, this paper uses a qualitative and descriptive approach to identify trends in CE initiatives originating from remote islands, and to present the roles of stakeholders, their engagement and challenges.

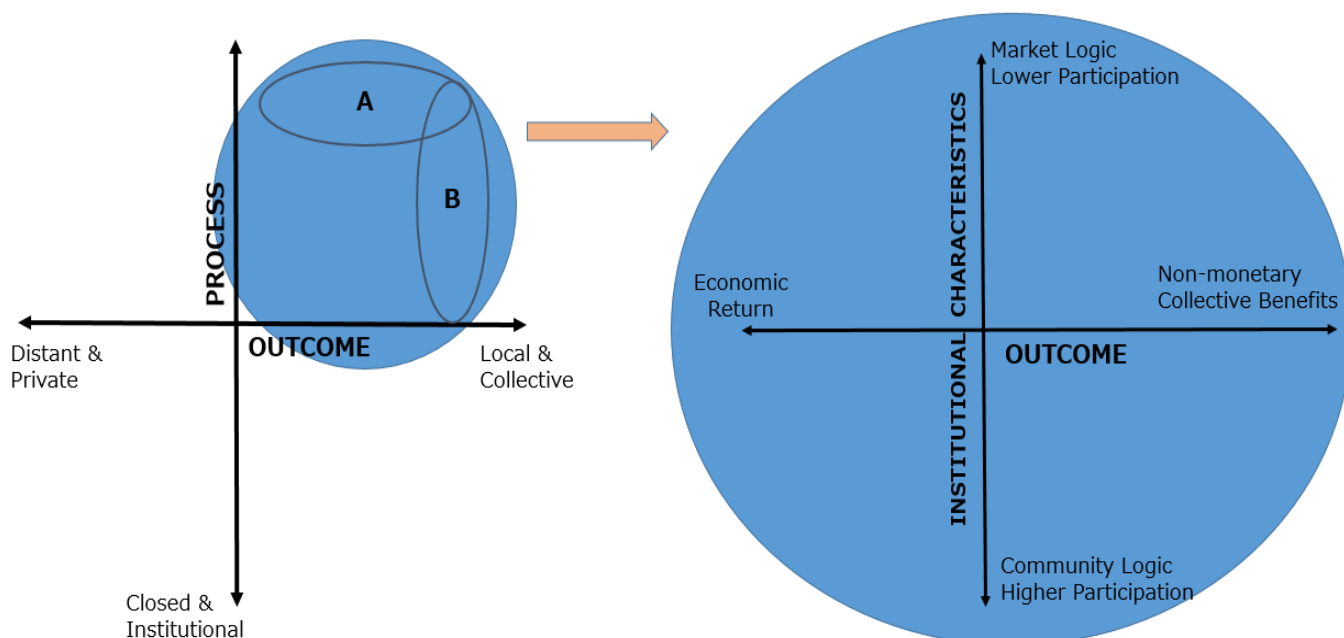
The first objective of this study is to present empirical evidence on CE initiatives in remote islands and to analyze their characteristics. Secondly, it analyzes the impact of such institutional characteristics on the outcomes provided and on citizen engagement. The paper focuses on how the heterogeneity of the characteristics of CE initiatives in remote islands reduces the level and form of citizen engagement and the outcomes provided to citizens. Indeed, in addition to providing a picture and understanding of CE initiatives, this study seeks to provide initial evidence of their implications for citizens and local communities. This paper asks: How participatory was the process? How many citizens (stakeholders) participated, and in what ways? What are the financial and non-financial benefits derived from the initiative, and how do they affect citizen participation? As a comprehensive database of Japanese community energy initiatives in remote islands is not existent, they have been identified through web based searches and grey literature, and contacting relevant organizations and stakeholders. After the initiatives were identified, data collection was qualitative, through on-location, semi-structured interviews with one or two representatives of each CE project. In some cases, further communication with the representatives was required (either in person or via email) to fine-tune and better understand the information and data collected. In particular, we collected evidence on the process and outcome aspects of the project.

This paper is organized as follows. The next section identifies the characteristics of the CE sector in Japan. Next, the institutional features of CE and their impact in terms of citizen participation are further investigated and discussed. Then, a case study of a remote island region in Nagasaki Prefecture is discussed in more detail. Finally, the results and potential policy implications are discussed.

3. Defining Community Energy and Stakeholder Engagement

Civil society's involvement in energy markets can take several forms (DECC 2014; ILO 2013), and the concept of CE has been interpreted in different ways in the academic literature. Some broad definitions refer to sustainable energy initiatives led by non-profit organizations that are neither for-profit nor government-led (Walker and Devine-Wright 2008; Hall and Bolton 2016), while others emphasize the grassroots innovation nature of CE others (Seyfang et al. 2014). In general, citizen and local stakeholder participation is considered a key feature of CE, but green associations, joint purchasing of energy services, community and local government-led schemes for renewable energy deployment, community programs for energy poverty alleviation, etc. It encompasses a wide range of initiatives. Such diversity implies different levels and forms of citizen participation and co-determination in energy service provision (Seyfang et al. 2014). This paper takes a particular perspective in interpreting citizen participation in energy service provision, focusing on CE initiatives: (1) which imply a form of citizens ownership or financing of an energy project, and control over the initiatives (along the process dimension), and (2) where citizens directly benefit from the outcomes of the initiative (along the outcome dimension).

Heterogeneity in the CE sector is represented by a wide diversity of actors, objectives, and organizational forms and has been discussed in several previous studies (Bauwens 2016; Seyfang et al. 2014). Walker and Devine-Wright (2008) argue that to characterize CE, and they propose an analytical framework for characterizing CE and identify two important dimensions. First, the process dimension is interpreted as "by whom the project is developed and managed. Second, the outcome dimension is interpreted as "who the project is for and the economic and social benefits it brings. According to their analytical framework, CE initiatives move back and forth between two extreme situations, as shown in Figure 1.



[Figure 1] Evolution of Analytical Framework to Characterize CE Initiatives

Source: Walker and Devine-Wright (2008)

In the lower left quadrant are cases where the project is developed by an agency outside the community, with minimal or no citizen involvement, and benefits only the agency and its diffuse shareholders. An example would be a wind farm developed by a major power company. Citizen participation projects, on the other hand, benefit the local community and are in the upper right quadrant of Figure 1 (left) Walker and Devine-Wright (2008) emphasize the participatory nature of the process while recognizing that there are several possible combinations of process and outcome dimensions. They identify two different types of projects: those that emphasize the participatory nature of the process (Perspective A) and those that emphasize the redistribution of project benefits among citizens (Perspective B). Before addressing the specific case study, we will describe it, paying attention to following perspectives from (a) to (e).

- a. The dynamics of creation, including information on when CE was established, who proposed it, and the approach adopted to develop the initiative. In particular, a bottom-up approach is defined as a case where citizens or other grassroots organizations drive the initiation and development of a project. On the other hand, in a top-down approach, other institutions (e.g., local government, private sector, etc.) lead the process, define the structural features of the project, and facilitate project development and citizen participation.
- b. The main activity (energy production, energy consumption, energy services, or a combination thereof), the characteristics of the project implemented, the investment costs of the project, and the geographical scope of the initiative (in particular, whether the citizens involved are geographically close to the project (local)) type of activity and economy, including information on
- c. Organizational structure, including the legal form of the project (cooperative, limited company, or other

form), the means provided to citizens (equity or debt), the degree of ownership and citizen involvement, and the structure of financing.

d. Financial benefits, return on investment provided (including potential savings on electricity bills).

e. Other services or benefits to be derived from the project (e.g., provision of other energy or community services).

4. Remote Islands Context and Stakeholder Engagement in Nagasaki Prefecture

This section outlines the characteristics of power systems in remote islands of Japan. Japan is an island nation consisting of 6,852 islands, of which 6,847 islands are defined as remote islands, excluding Honshu, Hokkaido, Kyushu, Shikoku, and Okinawa Islands. According to the "Status of Remote Islands" report published in October 2014 by the Remote Islands Promotion Division of the National Land Policy Bureau of the Ministry of Land, Infrastructure, Transport and Tourism, 418 islands are inhabited, with a total of 387,000 people living there.

Nagasaki Prefecture, located at the western end of the Japanese mainland, has the largest number of islands among the 47 prefectures, with a population of about 1,305,000 as of March 2021. In addition to its many islands, the prefecture has a large number of rias coastlines, making it the second or first longest coastline among the 47 prefectures. There are 971 uninhabited islands and 73 inhabited islands. According to Mr. Atsufumi Kikumori, President of Think Nagasaki, the share of renewable energy in Nagasaki Prefecture's total power supply is still low at present, with solar power accounting for most of it at 72%. Wind power accounts for 14%, and while onshore wind power is the majority, offshore wind power is expected to grow rapidly and become the mainstream in the future, partly due to national policies. In addition, Nagasaki Prefecture has many remote islands and peninsulas with strong winds, which are suitable for offshore wind power generation. Currently, the first floating offshore wind power plant in Japan exists in Goto City, and there are plans to build 10 power plant plants off the coast of Goto City. In addition to this, the area off Enoshima in Saikai City has been designated as the district, and specific offshore wind farm construction is being considered in the future (Kikumori 2021).

In the remote islands of Nagasaki, where there are potential energy resources such as offshore wind power, the question should be how to change and transition existing energy infrastructure and practices to maximize the potential of renewable energy and its return to the local economy. One problems in the public policy cycle is the limited participation of scientists and engineers, usually in the form of reports to policymakers. The shortcomings of this approach are many, and energy experts need to be more actively involved in the decision-making process. Therefore, it is considered crucial to establish a participatory governance structure that can involve more stakeholders in the transition to more sustainable energy solutions. In March 2018, the "Act on Promoting the Utilization of Sea Areas for the Development of Marine Renewable Energy Power Generation Facilities" was enacted. In the remote island areas of Nagasaki Prefecture, where the potential for renewable energy resources such as offshore wind is considered to be high, the question is not how to integrate renewable resources into the existing energy infrastructure, but how to change existing energy infrastructure and practices to maximize the potential of renewable energy. The question should be how to change existing energy infrastructure and practices to maximize the potential of renewable energy. In order to move forward to a more sustainable future, all stakeholders and citizens involved in energy need to be involved in the generation, evaluation, and implementation of long-term strategies (O'Neill-Carrillo et al. 2010). Particularly in Japan's remote island areas, where the population is declining rapidly, all sectors would need to assume their respective responsibilities in order to realize a sustainable energy future.

Energy-related stakeholders must have a credible mechanism to constructively discuss their concerns and views in order to address the challenge of expanding the use of renewable energy resources. An example would be a forum where groups can come to a common understanding in order to devise concrete actions to expand the use of renewable energy. In this forum, the issues of uncertainty and regional differences mentioned earlier must be addressed. Occasionally, it may also have to deal with trust issues that may exist between groups that have previously been at odds with each other (O'Neill-Carrillo et al. 2010). Any stakeholder engagement mechanism needs to have a common and transparent way to provide timely information to all sectors before policy decisions are made. This is especially true given

that many energy-related decisions are based on a hierarchical, top-down approach. As will be discussed later in this paper, one of the reasons for the lack of increased public understanding and awareness of CE is that the participation of stakeholders and citizens in the policy-making process is limited and usually delayed. Today is the time to rethink the existing paradigm and standardize the arena so that all stakeholders in the region can benefit from it without favoring any particular group or sector if we are to take advantage of the economies of scale across the region to attract participants. A transparent communication system can be used as a tool for all stakeholders to express their concerns and suggestions about energy. Transparency is not something to be feared, but rather something to be embraced for its accountability. The following sections presents a review of community power that seek to encourage inclusive stakeholder participation and local contributions in the discussion of the transition to local production and local consumption of energy in a remote island community in Nagasaki.

5. Results of the Review on the CE Sector

5.1 Process: Creative Drivers and Organizational Structure

In Nagasaki Prefecture, which has many remote islands, most CE initiatives have taken a top-down approach, except for bottom-up projects initiated by civic groups. Sustena Energy Nagasaki (SEN) in Nagasaki City, the most populous municipality in Nagasaki Prefecture with a population of 400,000, and Nishi Kyushu Sasebo Powers (NSP) in Sasebo City with a population of 250,000, have taken a government-led approach, with Sasebo City's CE initiative with 90% of the investment led by the government¹. In the cases of Sasebo and Nagasaki, local governments have been strong drivers in promoting and coordinating projects or providing funding to deploy electricity to public facilities, or in the regulatory and financing frameworks to make these possible. This reinforces the view in the recent literature that it can be an important part of driving the energy transition and influencing changes in the local energy system (Rutherford and Jaglin, 2015).

However, the level of stakeholder participation and co-determination is determined not only by the legal form adopted (and relative internal governance as defined by national laws and regulations), but also by the level of citizen ownership and their broader involvement and influence in the development and management of the project). For example, the Hokkaido Green Fund (HGF), one of the pioneers of community power in Japan, has taken the form of a non-profit organization. HGF has also developed a "citizen's investment" program to collect small amounts of money from citizens across the country by calling for citizen participation in the construction of wind turbines, and built Japan's first citizen wind turbine (990kw output) in Hamatonbetsu, Hokkaido in 2001. Since then, HGF has been involved in supporting the launch of citizen-led CEs in Aomori, Akita and other prefectures (Omuro 2009).

However, the degree of stakeholder involvement and joint decision-making is determined not only by the form adopted (relative internal governance as defined by national laws and regulations), but also by the level of stakeholder and citizen ownership and their broader involvement in and influence on the development and management of CE projects. For example, the *Goto Shimin Denryoku* (Goto Citizen Power: GCP), which operates community power projects including wind power in Goto City, allows local businesses and citizens to participate through equity participation. As of the end of July 2021, 52 individuals or organizations based on the island have invested in the project². On the other hand, in the case of municipal-led new regional power companies (municipal new power companies) such as Nishi Kyushu Sasebo Powers (NSP) based in Sasebo City, which the authors previously interviewed, more than 90% of the investment is made by the Sasebo City³. The NSP was developed with a strong top-down approach by the local government; in contrast, the GCP is more private-sector driven. However, in the case of the NSP, major companies outside the city are also deeply involved in the operation of the project. Thus, top-down initiatives proposed by local governments and corporations result in an organizational structure with low citizen involvement and low citizens' right to make collaborative decisions. In Japan,

¹ See Nishi-Kyushu Sasebo Powers Home Page: <https://nishi-kyushu.de-power.co.jp/> (Accessed 2021/10/12)

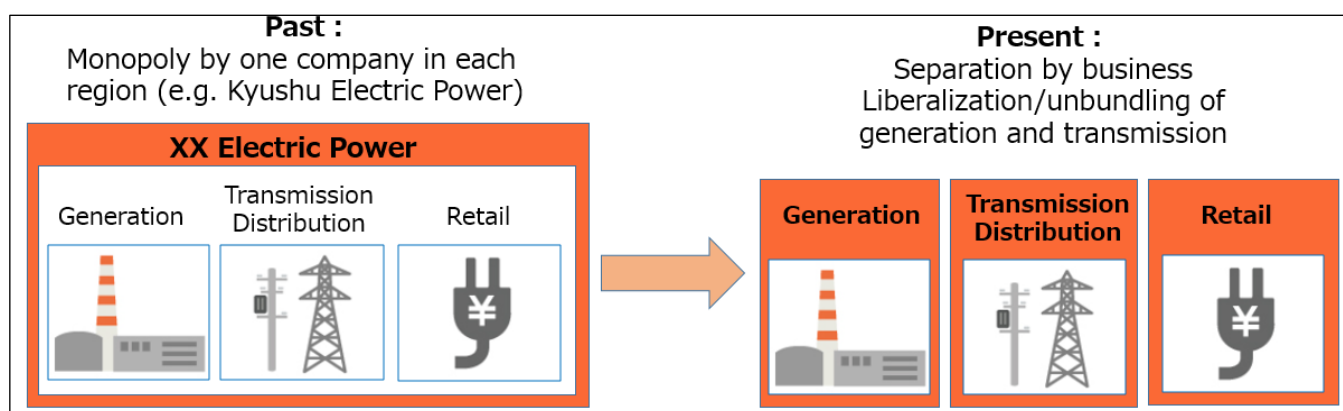
² See <https://510power.com/company> (Accessed 2021/10/08)

³ Based on Interview Survey with staffs of Sasebo City and Pacific Power (2021/04/21)

because of the rapid increase in the establishment of CEBEs over the past five years or so, both CE projects proposed by some private companies and CE projects led by local governments are funded by some form of project finance in the initial stage, and then citizens and other stakeholders are funded in the next stage (Japan Research Institute 2021a). Candelise and Ruggieri (2017), who conducted a case study of Italy, where community power is more industrialized and unionized than in Japan, noted, among other things, that initiatives driven by commercial actors and inspired by market logic tend to have lower levels of participation and citizen co-decision making than initiatives based on stronger community logics.

5.2 Process: Types and Timing of CE Projects in Remote Islands

In Japan, CE projects have been introduced especially after 2016, when the "total liberalization of retail electricity" was implemented by the government policy. This coincides with the implementation of the Feed-in-Tariff (FIT) scheme, which led to an increase in the installation of distributed renewable energy capacity in the country. Until then, electricity sales had been monopolized by traditional major power companies such as Tokyo Electric Power Company and Kyushu Electric Power Company. However, with the deregulation of electricity, people from various industries have entered the market, and competition has begun to emerge. As a result, prices are becoming cheaper and a variety of services are becoming available. The deregulation of electricity retailing itself started in 2000, but it was only for buildings and large factories, and did not fully spread to general households. However, after the accident at the Fukushima Daiichi Nuclear Power Plant caused by the Great East Japan Earthquake in 2011, a national committee pointed out that the system monopolized by the major power companies "may have problems in terms of crisis management," and retail liberalization was quickly accelerated. In addition, there were widespread concerns and doubts about nuclear power generation, and the government began to focus on promoting the use of renewable energy sources such as solar and wind power. The following figure shows the background to the recent expansion of CE initiatives in Japan. Briefly, the conventional monopoly of power generation, transmission and distribution, and retail business by major power companies in each area is shifting to a form in which each business is operated separately according to the characteristics of each region.



[Figure 2] Background to the Expansion of the CE Initiative

Source: Authors

In the remote island areas, in addition to the aforementioned GCP case, there are other efforts to promote smart communities in the islands, such as the Island Smart Community Project in Miyakojima City, Okinawa Prefecture, and the Oki Hybrid Project in the Oki Islands, Shimane Prefecture⁴. These situations are driving the development of the CE sector in Japan's remote islands, opening a window of opportunity for development in remote island regions that typically do not have the capacity to handle

⁴ The case introduced here was selected as part of the "Storage Battery Verification Project to Promote the Introduction of Renewable Energies in Remote Islands" conducted by the Ministry of the Environment in 2014, and the Oki Hybrid Project involves the Chugoku Electric Power Company, a wide-area electric power company. See <https://www.energia.co.jp/nw/safety/facility/okihybrid/project/>, and <https://www.nedo.go.jp/content/100788812.pdf>

large, complex, and risky project development in the energy sector.

5.3 Outcomes: Monetary and Non-Monetary Benefits

In the case of the GCP, the return on investment provided to citizens is a 10% discount on electricity rates compared to Kyushu Electric Power. as of the end of March 2020, 52 companies, organizations, and individuals have invested in the GCP, and nine sales outlets (agency stores) are selling "*Goto no Denki*", mainly in Goto City. Some of the GCPs provide community contribution services and non-monetary benefits in addition to the return on electricity bills. One of the community contribution projects is the "Goto Camellia Revival Support Project". There are about 9 million camellia trees on the island, and the island boasts the largest production of camellia oil in Japan. Many of them were planted as windbreaks and tide-break forests for fields, and harvesting camellias in autumn was one of the off-farm jobs. However, with the depopulation and aging of farmers, more and more land is being abandoned, and the fields that used to be beautifully tended like a park are now covered with weeds up to waist height, making it difficult to get close to the camellia trees. It takes about 5 years for a camellia tree to bear fruit, and more than 10 years for full-scale harvesting. In addition, the production of camellia oil requires manual labor in every step of the process, including weeding, harvesting, and drying, and the amount of work required is not commensurate with the income, which directly leads to a shortage of successors. Against this backdrop, GCP has been working on a project to return a portion of its profits to "protect and nurture the camellia forests of Goto"⁵.

Furthermore, GCP has recently been active in the SDGs initiative, as part of which it has been distributing original eco-bags to new customers who apply for the service. In July 2020, Japan started charging for plastic bags as a measure to address environmental issues, including the problem of marine plastic waste, and this In July 2020, Japan have started charging for plastic bags as a measure to address environmental issues, including marine plastic waste, and this community contribution service was started with the idea of contributing to the reduction of plastic bags, even if only a little⁶. As another way of returning small monetary benefits to the community, GCP supports 1,000 yen per person round trip for elementary, junior high and high school students from remote islands to travel from Goto City to outside of the city for sports and cultural activities (Applicable period: October 1, 2020 to March 31, 2022).

GCP is redistributing the income from its investments in renewable energy projects to a wider range of activities. Thus, the CE sector, which has been growing in Japan in recent years, has the potential to facilitate community empowerment to collectively change energy, social, and economic conditions, enable citizen participation and cooperation among diverse stakeholders, and achieve a broad energy transition (Hentschel 2020). It can be seen that CE projects even in remote island areas not only promote the installation of renewable energy power plants, but also provide citizens with a wide range of energy and community services. In some literatures, it is also found that CE projects in remote island communities provide a wide range of energy and community services to the citizens, for example, energy efficiency audits and consultations in households, joint purchasing of energy services (a wide range of services such as photovoltaic systems, energy storage devices, electric bicycles and electric vehicles, etc.), and even community development schemes (such as information campaigns and collaborative activities with schools), etc..(Candelise and Ruggieri 2017; Japan Research Institute 2021b: Takeyama 2020).

The review so far has shown that the CE sector in remote island regions is very unique due to its local characteristics. Using the aforementioned analytical framework, CE initiatives in remote islands can be located in a two-dimensional space shaped by their institutional characteristics and the range of (expected) outcomes they provide. In the lower left quadrant of the diagram on the right-hand side of Figure 1, market-based CE initiatives driven by commercial actors provide high economic benefits to citizens, but with low participation rates. In the upper right quadrant, CE initiatives formed on the basis of a stronger community logic have higher participation rates but lower economic returns to citizens and a

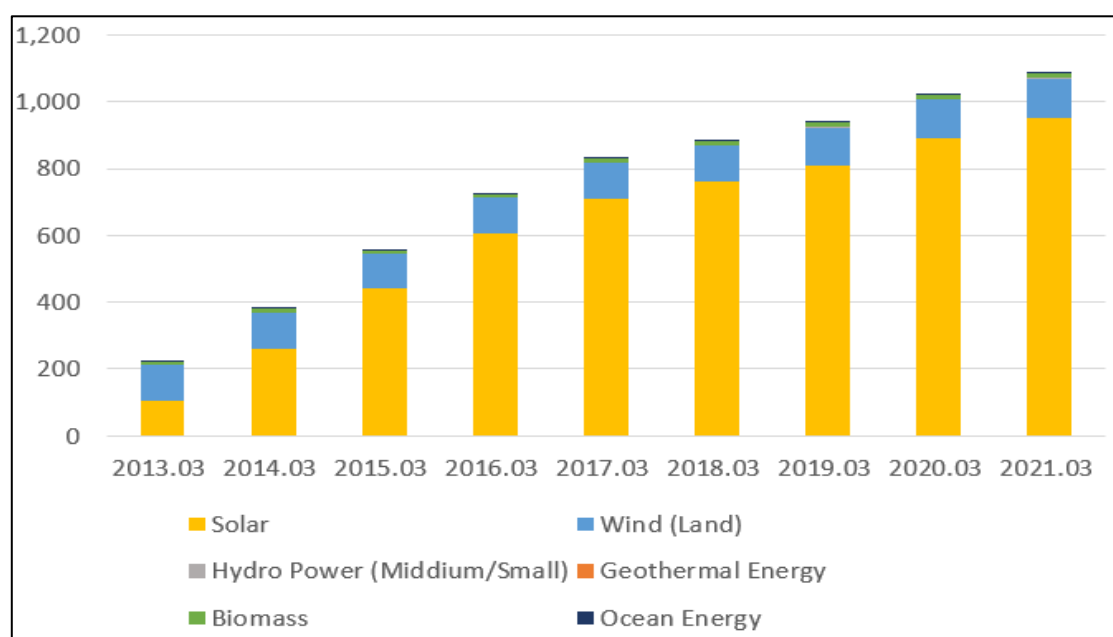
⁵ GCP (2020). Goto Camellia Regeneration Support Project: FY2019 Implementation Report. See <https://510power.com/assets/pdf/report.pdf> (Accessed 2021/10/10)

⁶ See Goto City Renewable Energy Information: <https://www.city.goto.nagasaki.jp/energy/010/030/010/150/20200507131819.html> (Accessed 2021/10/10)

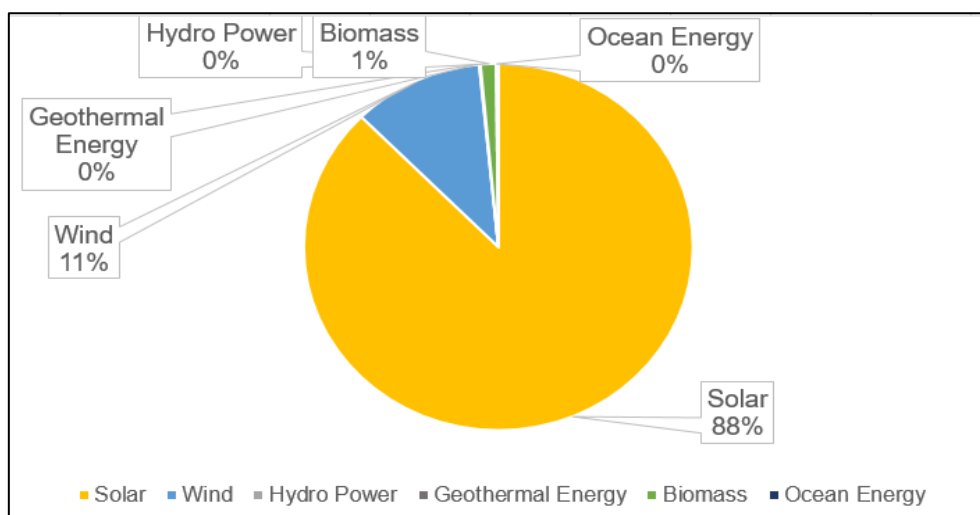
series of additional community benefits. In the lower right quadrant, there are two initiatives conceived on the basis of a community logic, providing both financial and non-financial benefits to citizens: in the case of the GCP, these are community services such as the protection of the camellia forest, succession planning and transport subsidies for school students.

6. Community Attitudes toward Renewable Energy

In Nagasaki Prefecture, various measures have been taken to promote the introduction of renewable energy through the Kyoto Protocol, which came into effect in February 2006. In addition, since the Great East Japan Earthquake of March 11, 2011, renewable energy has been attracting more attention and is being promoted. In this context, the prefectural government have been promoting the introduction of renewable energy. Against this backdrop, a feed-in tariff system for renewable energy was introduced in July 2012, creating a new system to encourage the introduction of renewable energy, and the best mix of energy will also continue to be promoted. According to the "Vision for the Introduction of Renewable Energy" prepared by Nagasaki Prefecture, the four pillars of the prefecture are "utilization of renewable energy," "introduction of energy-saving technologies," "promotion of environment-friendly industries," and "construction of social systems" (Nagasaki Prefecture 2012). The following bar chart [Table 1] shows the status of achieving the numerical targets to date in the Nagasaki Prefecture Vision for the Promotion of Renewable Energy Introduction. Next, the pie chart [Table 2] shows the types of renewable energy sources in Nagasaki Prefecture as of 2021.



[Table 1] The Numerical Targets to Date in for the Introduction of Renewable Energy in Nagasaki
Source: Nagasaki Prefecture



[Table 2] Types of Renewable Energy Sources in Nagasaki (2021)

Source: Nagasaki Prefecture

In the remote island regions of Nagasaki Prefecture, the development of renewable energies is flourishing in line with the recent changes in energy policy. For example, Goto City has a self-sufficiency rate of more than 50% for renewable energy sources such as wind and solar power, making it a leading location for the spread of renewable energy. On September 27, 2021, Gotō City launched "Renewable Energy 100 (RE100)," a program to cover the island's electricity needs with "electricity produced on the island. However, as indicated in the literature on social acceptance of renewable energy technologies, the implementation of renewable energy projects, especially wind energy projects, may encounter strong community opposition around the world (O'Neill-Carrillo et al. 2010). Given the financial, technical, environmental, and political complexities involved in siting renewable energy projects, and the large amount of money required for such projects, it is necessary for project developers to be aware of all relevant information necessary for the success of the project. So what factors are important for a renewable energy project to be accepted? How are renewable energy projects perceived by the local community? What strategies, processes, and initiatives are effective in bringing local communities and developers together in the development of renewable energy projects? Reflections on the social acceptability of renewable energy technologies can help answer these questions in the planning and design stages of renewable energy projects.

The main objective of this paper is to identify qualitative data on stakeholder engagement and attitudes towards energy transition through CEBE in a remote island community in Nagasaki. It also provides general recommendations for effective community and stakeholder engagement strategies in the remote islands of Nagasaki. According to a questionnaire (N=94) conducted by the Nagasaki Shimbun and the Nagasaki Economic Research Institute in January 2021 to major companies and organizations in the prefecture, about 10% of the companies were positive about "decarbonization = abolition of coal-fired power plants," and about 30% were at arm's length. On the other hand, more than 50% of the respondents were proponents of renewable energy. The Japanese government has set a goal of reducing carbon dioxide (CO₂) and other greenhouse gas emissions to virtually zero by 2050, and has a policy of phasing out inefficient coal-fired power plants with high emissions by FY30. Of these, 10 respondents said that coal-fired power plants should be actively phased out in line with the government policy. One of the respondents said, "Environmental protection is inevitable. A slightly higher cost is necessary for society" and "It is difficult to stop the global trend, and it is also difficult to operate nuclear power plants"⁷. 22 out of 94 respondents answered, "Restarting nuclear power plants should also be promoted". "Solar and wind power cannot be the main power source. Another respondent (a retailer) said, "Decarbonization of Japan is premised on the operation of nuclear power plants. On the other hand, the largest number of respondents, 64, chose "Existing renewable energy sources such as solar and wind power should be

⁷ Nagasaki Shimbun (2021/01/27) Retrieved from <https://nordot.app/726991432948350976> (Accessed 2021/10/08)

promoted further. In addition, 55 respondents chose "New marine energy sources such as offshore wind power and tidal power should be promoted. They expressed hope for the prefecture's measures to accumulate marine energy-related industries and for the offshore wind power generation project off Goto City. Overall, there was a positive attitude toward wind energy, with solar and wind power technologies perceived as the safest, most environmentally friendly, and viable of all alternative energy technologies.

As the world becomes more and more carbon neutral by 2050, moves are steadily being made to introduce a large amount of offshore wind power in the remote island areas of Nagasaki Prefecture. The International Energy Agency (IEA) predicts that the amount of wind power installed worldwide will exceed 150 GW by 2030 and reach approximately 350 GW by 2040. Europe and China have already been actively developing systems and investing in development, but Japan's efforts have fallen behind (Japan Research Institute 2021b). In December 2020, the Japanese government announced that offshore wind power would become the "mainstay of renewable energy" in order to achieve carbon neutrality by 2050. In December 2020, the government announced its goal of expanding offshore wind power generation to 10 million kW by 2030, and to 30-45 million kW by 2040, including floating power plants, in order to achieve carbon neutrality by 2050. 30 to 45 million kW is equivalent to 30 to 45 large thermal power plants (Agency for Natural Resources and Energy 2020). With the enactment of the "Act on Promoting the Utilization of Sea Areas for the Development of Marine Renewable Energy Power Generation Facilities," the environment for the formation of actual projects is gradually improving. Off the coast of Goto City in Nagasaki Prefecture, the period for accepting applications for developers ended in 2020, and the review of submitted plans for public use is underway.

In order for Community Energy developers and managers to promote citizen participation, they need to consider the opinions and needs of the community, not just commercial interests. With regard to the Community Energy projects proposed in remote island areas, including wind power generation, etc., what are the benefits to the remote island areas? Who are the developers? What is the status of stakeholder engagement? The success of a community energy project depends on how it addresses the issues that are prominent among remote island communities. Therefore, it is desirable that the issues to be addressed by Community Energy emanate from the perspective of the community, rather than being perceived by outsiders. This paper focuses on the socio-economic impacts of community energy projects, rather than on technical aspects such as the amount of power generated by offshore wind turbines or the condition of wind turbines. This study suggests that strategies that emphasize the early involvement of community stakeholders in the design and planning stages of planned CE projects on remote islands, and the enhancement of non-monetary services that contribute to community-based problem solving, may increase the prospects for successful project implementation.

7. Toward Further Community-Based CE Initiatives

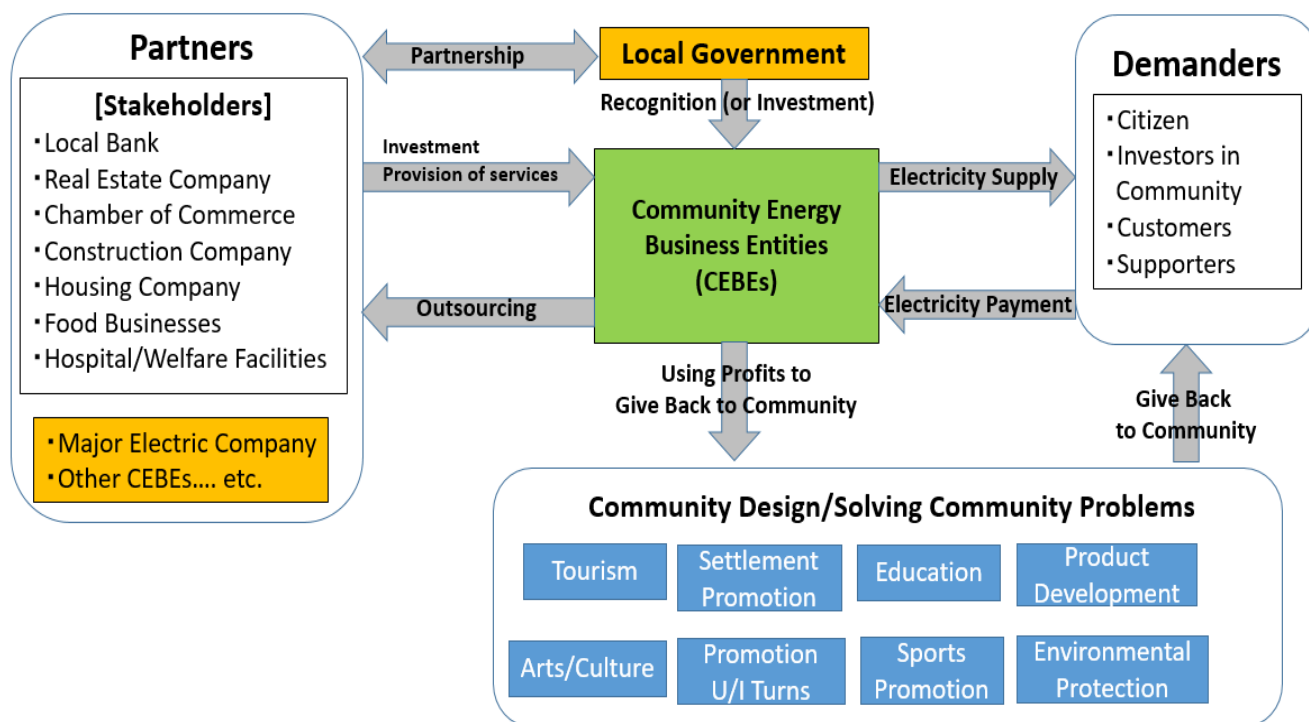
As of June 2021, the number of CEBEs funded by local governments has increased to more than 60, although there are various names in Japan for community energy as defined in this paper, such as Community Power and Community Energy Business Entities (CEBEs). As of June 2021, the number of municipal-funded CEBEs had increased to more than 60. Less than 10% of new power plants are CEBEs, and if we add CE initiatives that sell power in specific regions but are not funded by local governments, the total number reaches about 150 (Muratani 2021). Unfortunately, however, the sales volume of new regional power companies accounts for less than 10% of all new power companies. Many municipalities and emerging CEBEs are struggling to meet the growth curve (Muratani 2021).

The model for CE is shown in the figure, where a local company establishes a CEBE. In some cases, as in the case discussed in this paper, several companies invest in the project. Electricity is procured from other CEBEs at a stable price⁸. The electricity is then supplied to municipal facilities such as schools, private company facilities in the municipality, and residents of the municipality. In addition, the CEBE can obtain "foreign currency" from outside the region, as in the case of "hometown tax" (*urusato nōzei*)⁹,

⁸ According to Muratani (2021), since the market price of JEPX is expected to skyrocket in recent years, electricity is often procured at a fixed price to avoid 100% of the risk.

⁹ The hometown tax (*urusato nōzei*) is a system in Japan that allows taxpayers who live in urban areas to contribute to rural

and use the revenue to return business profits to the region in the form of solving local issues and revitalizing the economy. Whether or not such a cycle can be realized is important for the acquisition and sustainment of CEBE consumers.



[Figure 3] The Scheme of CE Initiatives in Japan

Source: Adapted from Muratani (2021)

First, it is crucial to ensure that the activities of CE Initiatives are properly understood by local residents, businesses, and stakeholders so that they are in a position to continue to be chosen by consumers. In some cases, CE initiatives may not be able to provide value beyond providing low-cost electricity, and may be switched out when new electricity providers with lower prices appear. Second, CE Initiatives has a core value of "returning profits to the community. For this reason, it is necessary to continue to secure sufficient revenue. Muratani (2021) points out that there have been numerous cases in which companies have engaged in inexpensive price competition, thereby cutting into profits and making it difficult for them to continue their business, exposing their fragile business foundations that can be blown away by even a small increase in market prices. Finally, the third factor is attachment to the power source. For example, if the electricity procured by CE Initiatives is 100% locally produced renewable energy, it will be a great way to promote "local production for local consumption". In addition, if a premium can be added to the purchase price, there is no complaint in terms of returning profits to local renewable energy businesses. For example, GCP in Goto City, introduced in this paper, aims to procure most of the electricity it supplies from local wind farms. In addition, in the hope of becoming a community-based electric power company familiar to local residents, GCP is promoting itself to the community by revitalizing local specialty products and supporting cultural and sports activities of students and others in the remote island region. In this way, the company is pursuing its original purpose as a CE and ensuring the continuity of its business.

8. Conclusion: Lessons Learned

One of the lessons learned from the CE Initiatives in remote island communities in Japan that could be applied in other countries and regions is the need for participatory structures that allow for local and

areas in return for a credit from income tax and residence tax.

regional collaboration to make the decisions necessary to promote sustainable energy projects. Another important lesson is that there is a need to go beyond the traditional cost-benefit analysis and include social factors in community energy, such as revitalizing the local economy and solving local problems. Especially in remote island areas with limited transportation access, infrastructure, and resources, it is necessary to think big picture and identify how decisions in the project are connected to other disciplines and sectors, and how they contribute to the community, rather than thinking within the framework of one's own discipline or sector. Furthermore, local expertise and workforce development would be necessary to address specific local problems. Education and outreach to the general public, as well as energy-related workforce development, must be done in a holistic, integrated, and participatory manner.

The threat of global warming and climate change calls for major changes in the energy system for the future. In the context of the transformation of municipal energy policies and the transition to community energy, the positive and effective outcome of the development and implementation relies heavily on the understanding and engagement of citizens and stakeholders. Based on a literature review, qualitative interviews, and several case studies, this paper attempts to present the experiences and lessons learned from the current stage of CE Initiatives in remote island areas in Japan. As a result, the following issues were identified: understanding by residents and stakeholders, return to the community using project revenues, and formation of attachment to the local power source (local production and local consumption of energy). The lessons learned and challenges presented are intended to increase stakeholder participation in the future development of CE Initiatives and to motivate citizens and stakeholders towards a more sustainable lifestyle. However, further systematic research is needed to verify whether these objectives are being fully met.

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Journey towards sustainable banking and financial inclusion in Bangladesh through innovation

Md. Touhidul Alam Khan

Introduction:

Bangladesh is experiencing a ‘double transition’ as the country which once used to be a Low Income Country (LIC) has been upgraded to the Lower Middle Income Country (LMIC) in 2015. According to the United Nations’ country classification, Bangladesh that holds the LDC status now will be upgraded to a Developing Country in 2026, being recommended by the UN Committee for Development Policy (CDP). Considering the economic impacts of the global pandemic, the CDP recommended that Bangladesh have until 2026 to get ready for its transition from a least developed country to a developing one. Finance is treated by the government as a powerful tool to accelerate growth and promote shared prosperity. The country has formulated development strategies that recognize the need for sustainable national development which depends on multifaceted financial services being available within the reach of the entire population. Bangladesh aims at building an enlightened, happy, and prosperous country without the ills of corruption, hunger, inequality, illiteracy, and poverty where the environment is healthy and the citizens have the complete ownership of the country. So, inclusive development requires people’s access to finance as an important prerequisite. Developing economies like Bangladesh’s experience a constantly emerging and changing nature of businesses and jobs due to natural disasters, technological evolution, and supra-normal situations like COVID-19 and necessitates new and innovative financial products. The current population includes an increasing number of educated and tech-savvy young people who make a growing pool of potential customers of upcoming financial services. The way of financial engagement is undergoing a positive change due to the adoption of ICT that introduces new opportunities of digital credit, e-commerce, and FinTech which foster financial development at different stages by means of more interactive and intuitive technologies like Artificial Intelligence (AI), Blockchain, Big Data Analytics, Internet of Things (IoT), Machine Learning (ML), etc.

Despite all these remarkable advances, financial exclusion is commonplace, and the three factors are responsible:

(i) difficult-to-access or remote localities which include sparsely populated and hilly areas; char, haor, and areas with rough and difficult terrain; and other relatively underdeveloped regions with poor infrastructure;

(ii) impediments induced by demands which include low daily or monthly incomes, social exclusion, lack of standard financial education, and some other common constraints that hinders economic opportunities; and

(iii) bottlenecks led by the supply system which includes bank branches located distantly, cumbersome requirements for procedures and documentation, inconvenient timings, unsuitable products and services, ineffective delivery mechanisms, and other common factors to lead to the financial exclusion of specific groups.

Over the last several decades, Bangladesh has managed to stabilize and strengthen the financial system, which is marked by the rapid growth of the country's financial resources. The financial system of the country has seen rapid yet positive changes, particularly in its response to the changing structure and ongoing transformation of the mainstream economy. The IMF published Financial Access Survey (FAS) in November 2020 which shows that Bangladesh, in spite of its recent developments, still has the ability to gain an average position on most indicators of financial inclusion among the South Asian countries which themselves are maintaining low numbers relative to the global standards. Financial inclusion in Bangladesh is conceived comprehensively with the following five dimensions:

- i) Easy access to an extensive range of reliable and quality financial products and services, including savings, insurance, credit, and payments;
- ii) Affordable products and services delivered conveniently to ensure complete protection of clients' interests and dignity;
- iii) Conscious consumers to contribute to well-informed and prudent financial management decisions;
- iv) Available financial products and services for all classes of people, and
- v) Need for a wide network of trusted providers, a well-constructed financial infrastructure, a standard regulatory framework, and uninterrupted delivery of quality

financial services that meet clients' demands through a competitive, diverse, and dynamic financial market

Objectives of NFIS

- i) Increase the scope of financial inclusion (ensuring that every individual has access to at least one authentic and regulated financial service) for all adult citizens to 100% by 2025, which needs to be measured by a nationally accepted evaluation framework as part of the advances towards a 'cash-lite society';
- ii) Ensure the accessibility and availability of a full range of products that can serve in various segments of the market with the right amount of utility to meet the variable demands of different enterprises and population groups;
- iii) Create an active and robust financial infrastructure based on digital means including DFS, Regtech, Fintech, etc. and powerful interfaces using advanced technology for financial services and products along with their delivery channels that are widely used by banks, financial institutions, MFIs, post offices, insurance companies, and different other institutions.
- iv) Transform the informal sectors to the formal ones bringing them under an all-out financial inclusion program.

Background

It has been over a decade that Bangladesh keeps achieving slightly more than 6.5% of real growth in GDP. In the FY 2018-19, the figure has touched the 8% landmark which shows the country's strong and rapid trends of growth in the upcoming years. This resilient economic foundation has made it possible for the country to achieve 5.24% GDP in FY 2019-20 despite a massive strike of the global pandemic called COVID-19 (SARS-CoV-2). Several initiatives toward inclusive financing with the implantation of those objectives into the mainstream financial sector is one of the principal drivers of the country's stable and consistent success in pursuing an inclusive development goal. At present, the Government has adopted certain policies which guide and regulate financial institutions that actively promote the initiatives to financial inclusion. These initiatives, which facilitate the flow of credit, finances, and other services to the vast majority of farmers and projects including small and marginal; CMSMEs or cottage, micro, small, and medium enterprises; and various other activities/ groups that remained financially excluded for so long, have helped with the enhancement of macro-financial stability and incremental outputs on the country's supply side while creating

additional employment opportunities and income on the demand side. The long-term goal of the country is to become a developed country in two decades (2041), which is included in the Perspective Plan of Bangladesh (2021-2041). For the plan, some explicit medium-term objectives/ goals have already been stated under the Government's Vision 2021. There are other strategic plans which include the Perspective Plan (2010-2021), and the 7th (2016-2020) and 8th (July 2020-June 2025) Five-Year Plan. The country has also eyes on achieving the Sustainable Development Goals (SDGs) by 2030.

Financial Inclusion- Bangladesh Perspectives

Bangladesh has established its position as a pioneering country to have made significant strides towards financial inclusion and its vision 'Digital Bangladesh'. The country's recent development in its financial sector, varied heritage in credit and microfinance, widespread adoption of digital finance and mobile financial services (MFS) are recognized at a global level. The government's effort to consider financial services as drivers of shared prosperity and inclusive growth. Access to financial services and their usage have significantly positive impacts on the socioeconomic outcomes that are perceived by businesses and households. Moreover, this access and usage are considered as essential factors to poverty eradication. On the other hand, financial exclusion being persistent has negatively affected inclusive growth, shared prosperity, social cohesion, financial stability, and income equality. Bangladesh's development strategies suggest that national development be undermined without the availability of financial services in an expanded manner among the population. As the country has the aim to build an enlightened, happy, and prosperous Bangladesh where people will not suffer from corruption, hunger, illiteracy, inequality, and poverty, and they will have complete rights to their country, easy access to financial products/ services is a prerequisite to inclusive development. The aim of the 7th (2016-2020) and 8th (2021-2025) Five Year Plan is to plan and continue actions of reform across the policies, infrastructure, supervision, and regulations of the financial sector to allow the underserved sections of the population within the informal sectors that include household and micro enterprises to receive financial services and deepen the markets by introducing relevant products/ services. Since the development agenda of the country need to be realized properly, harnessing the transformative power that derives from financial inclusion of the underserved and unserved enterprises and groups including the CMSMEs is essential. Financial inclusion can bring the excluded sections into the mainstream and formal financial sector by allowing them easy access to different

products/ services. Therefore, it is considered an essential pillar of the financial policy to ensure equitable and sustainable growth of Bangladesh.

Financial Inclusion-Where Bangladesh Stands

The rapid growth of Bangladesh's economy is one of its powerful drivers to facilitate financial inclusion. With an annual GDP growth of more than 6% over the last decade, Bangladesh has seen a wider distribution of gains where agricultural modernization and migration have contributed to growth in a relatively even pattern along with persistent income inequality represented by the Gini Index or Coefficient which was marginally rising in the 2000s. New employment opportunities in the export industries like RMGs and foreign remittances from Bangladeshi immigrants and migrants have fostered development which has helped reduce the size of the population below the national and extreme poverty line, causing the proportion to decline from 49% (2000) to about 21% (2018).

In Bangladesh, occupational relationships keep changing which create demands for financial products that are new. According to the Labor Force Surveys (2006 - 2017), a remarkable increase has been noticed in the available employment opportunities in different sectors including the industrial sector (rising from 15% to 20%) and the service sector (from 37% to 39%) where the agricultural sector is an exception to see a decline from 48% to 40% of employment. The proportion of salaried manufacturing jobs has grown enough to provide higher and more stable earnings which bring employees an incentive to look for formal financial products/ services to manage their cash flows. Among 24 million paid adult employees in 2017, 57% received salaries in monthly installments, and 34% received daily payments. Of all paid laborers in the agricultural sector, 61% got paid on a daily basis. In addition, a large portion of this labor force is still self-employed, and they carry out work without payments. The size of this particular group keeps declining relative to paid labor, but their financial needs are evolving, particularly the self-employed individuals and small business owners. This population will surely increase the need for new financial services in the coming years.

An important customer base for innovative financial products comprises mostly the educated young population. Bangladesh has more than half of its population aged under 35 which also coincides with higher levels of education, demonstrated by the increasing size of the mainstream labor force to have attained tertiary education, or higher secondary, to say the least. So, the country has hope or optimism as to the potential cohort of conscious financial

consumers. However, this inclusion rests mostly on the ability of the education system to instill among the population the fundamental and essential financial skills.

Increasing adoption of the internet and mobile is changing how financial engagement occurs among the current generations, which also introduces new opportunities for mobile commerce as well as e-commerce. This accelerates financial development with the usage of more intuitive and user-friendly smart-phone applications. With the growth of internet penetration, most aspects of the conventional service provision are moving fast online to reduce the need for face-to-face interactions. Only the adoption of smartphones is not responsible. Ownership of personal computers is also a driver of demand for mobile or internet banking. All these factors quicken the widespread progress towards the international standard of online commerce and digital payments.

Technology with its role also raises valid concerns about digital division between men and women, which reflects considerable differences in the use of and access to digital technology. The increasing adoption of financial services through digital means causes this division to become an important aspect of financial inclusion. As supply chain systems are getting increasingly complex, demand for digital financing and different payments solutions is noticeable. The country's economy experiences a transition from its conventional trend to a more export-oriented and interconnected form that creates great opportunities for the financial sectors and the companies operating within it. For example, associated major exporters being part of different interconnected ancillary business entities with a long-held working relationship can promote the use of lending modes such as value chain and cluster financing, where many intermediary parties may provide finances to various groups within the supply chain system. Intermediation can also occur owing to financing in the supply chain where relevant parties can secure working capital at short notices along with different assets such as accounts receivable or inventory being used as the collaterals. Thus, companies meet a new source that provides them with liquidity. Because this relies on certain tools like contract security, companies are likely to reap benefits from new technologies in the financial sector like the block chain.

Included in this particular strategy paper is a detailed analysis of the present scenario of opportunities for and constraints to financial inclusion to identify measurable goals, the ways for Bangladesh to reach those goals, the schedule and measures to assess the achievement and progress of the implementation of the strategy. This paper presents an in-depth and analytical

assessment of the financial inclusion strategy and infrastructure, elucidating the current status and assistance to identify the existing constraints to suggesting priorities of policies and expanding the strategy of financial inclusion. These comprehensive diagnostics use information about both supply and demand relating to the use of and access to financial services and products.

In Bangladesh, behind financial inclusion are three major factors: (i) localities that are difficult to access: remotely located and sparsely populated hilly areas; char, haor, and similar other areas with tough terrain; and areas with underdeveloped infrastructure; (ii) impediments that are induced by demands: poor income, lack or unavailability of financial education and awareness, social segregation or exclusion along with other constraints that restrict economic opportunities; and (iii) bottlenecks that are led by the supply system: distantly positioned bank branches, inappropriate timings, time-consuming documentation, cumbersome requirements and prolonged procedures, inconvenient delivery methods, unsuitable products, unfriendly staff, etc. that exclude specific groups. There are other factors such as limited or no access to the ownership of land, limited financial capability, and collateral for the female population and persistent lack of formal identification.

Bangladesh has become a leader in MFIs across the globe alongside its private and state-owned commercial and specialized banks, non-bank financial institutions, and insurance companies. Banks can develop alternative banking and financial channels by including ATMs and multibank switches namely Q-Cash, Cash Link, and Omnibus. MFSs have presented a tangible opportunity to create an alternative banking channel to make the points of transaction more accessible and widely available. Banks have been trying to establish agent banking as a formidable alternative for remotely located consumers, particularly in rural areas where they can access different financial services. The networks of Agents can rapidly help to improve the breadth and scope of the entire financial system.

Over the past few decades, the financial sector of Bangladesh has gained rapid changes, in response to the ongoing economic transformation and the fast-changing structure of the economy. The landscape of financial inclusion keeps undergoing impressive improvements. Connectivity being improved and infrastructure being expanded rapidly are lowering the expenses of expanding financial institutions and conventional ‘brick-and-mortar’ banking branches along with their touch points which are being supported by strong digital networks. The country has seen a rapid expansion of its network of institutions, which is accelerated by

the expansion of both quasi-formal (e.g. cooperatives, MFIs, etc.) and formal (e.g. banks) institutions and through new ideas, technologies and experiences. The Global Findex data by the World Bank Group and the Financial Access Survey (FAS) by the IMF are widely accepted as standard and reliable data on the status of financial inclusion in different countries.

The latest edition of the Global Findex came into public in 2017. In order to contextualize the current status of Bangladesh's financial services, the following table contains key FAS indicators as published by the IMF in November, 2020, which show that Bangladesh has achieved significant progress, especially in terms of the numbers of depositors, ATMs, outlets of mobile money agents, registered mobile financial accounts, and transaction values from 2017 to 2019.

Table 1: Bangladesh's Progress of Key FAS Indicators

Key FAS Indicators	2018	2019
Number of ATMs per 100,000 adults	8.89	9.39
Number of commercial bank branches per 100,000 adults	8.94	9.00
Number of depositors with commercial banks per 1,000 adults	787.72	848.87
Number of borrowers from commercial banks per 1,000 adults	83.13	82.95
Outstanding deposits with commercial banks (% of GDP)	48.39	48.32
Outstanding loans from commercial banks (% of GDP)	42.79	41.86
Outstanding small and medium enterprise (SME) loans from commercial banks (% of GDP)	8.89	8.96
Number of registered mobile money agent outlets per 1,000 km ²	6,790.85	7,468.34
Number of registered mobile money accounts per 1,000	582.25	672.62

adults		
Value of mobile money transactions (during the reference year) (% of GDP)	16.85	17.10

Although the key FAS indicators above were published by the IMF in 2020, they contain data from 2019. Bangladesh Bank, the central bank, collects relevant data regularly from all financial service providers of the country where the total number of ATM machines, Bank Branches, MFS Accounts, Deposit accounts (with Special A/C), Agent and School Banking accounts are included.

Table 2: Financial Inclusion Statistics of Bangladesh

Key FAS Indicators	2018	2019
Number of ATMs per 100,000 adults	8.89	9.39
Number of commercial bank branches per 100,000 adults	8.94	9.00
Number of depositors with commercial banks per 1,000 adults	787.72	848.87
Number of borrowers from commercial banks per 1,000 adults	83.13	82.95
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Value of mobile money transactions (during the reference year) (% of GDP)	16.85	17.10
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Table 2 shows the gradual progress in the number of Agent Banking Accounts, Deposit A/C (with Special A/C), and MFS Accounts from 2017 to 2020. Considering the existing scenario indicated by the above tables, an opinion can be formed that Bangladesh has made progress in both its delivery of financial services and strategy for financial inclusion during the years 2017 to 2020.

The global pandemic known as COVID-19 with its consequent effects on most sectors of the country's economy has impacted this progress in ensuring access to financial services for low-income, unbanked groups. Disruption in all aspects of trade and lockdown have left many businesses within all sectors (formal and informal) highly vulnerable, which include rural and urban enterprises, and sectors like CMSMEs, agriculture, and firms operating within the service industry. The need for support through recovery packages is felt acutely now more than any past period in recent memories. In response to this, the Bangladesh government has already offered stimulus packages which will be distributed and delivered to small, medium, and large enterprises and manufacturers through different banks and financial institutions. Part of the government's effort also includes an inclusive coverage through 'social safety net programs' planned to support the population having extreme poverty. All these initiatives are being carried out with digital financial tools and services so that efficiency and transparency in delivery can be ensured.

Financial literacy is another important and required aspect of financial inclusion as per SDG 4, and lack of this literacy leads to a huge obstacle to progress of widespread access to financial services in the country. Due to financial literacy being not present among the people in rural areas, proper uses of the different financial services cannot be ensured as consumers are yet to be fully aware of their options and rights. The only way out is to increase financial literacy. Interventions can be made with the interests and age of different segments in mind, thereby encouraging them. Digital means to deliver financial services can make financial transactions easier and safer during a situation like the pandemic where social distancing is encouraged and physical visits are not. Thus, people can be encouraged to know about and use the different online modes of transactions.

The existing context therefore signifies how relevant NFIS can be as part of the country's comprehensive strategy to hasten and smoothen the recovery efforts. The act of retaining the positive outcome of advancing financial inclusion that has been achieved in the past few decades includes several challenges which coincide with the activities of macroeconomics recovery from the ongoing crisis. Under these circumstances, NFIS being successfully implemented can help the country overcome the unprecedented challenges of COVID-19 while allowing it to stabilize the national economy towards the broader goals that were set earlier.

National Financial Inclusion Strategy (NFIS) - An Overview

A national financial inclusion strategy (NFIS) is a comprehensive public document formulated at the national level to systematically accelerate the level of financial inclusion in a given country. An NFIS is developed through a broad consultative process involving public and private sector stakeholders, engaged in the development of the financial sector. Typically, an NFIS will include an analysis of the current status and constraints on financial inclusion, a measurable financial inclusion goal, how the country proposes to reach this goal and by when, and how it would assess the progress and achievements of the NFIS. It can be defined as roadmaps of actions, agreed and defined at the national or sub-national level, which stakeholders follow to achieve financial inclusion objectives. It provides an important opportunity to introduce an evidence-based, prioritized, better resourced, and more comprehensive approach to expanding access and usage of financial services. NFIS can harness the enabling foundations and drivers identified as critical to achieve Universal Financial Access, and also build on those measures to promote the uptake and use of a broad range of financial services.

The Rationale for NFIS

Financial inclusion cannot be undertaken by a single institution from the public or private sector, not even a regulatory authority. All initiatives and efforts need to be taken with required collaboration, cohesion, and coordination by all stakeholders to ensure sustainable inclusion towards an inclusive goal of socio-economic development. The leadership and commitment need to come from the decision-making level that must also spearhead all these efforts. This particular lesson is the foremost one learned from the country's journey to sustainable financial inclusion. Experiences obtained throughout the decades show that regulation, risk management, innovation, and technology need to be put in the right balance.

As much essential innovation is; regulation is equally required to balance the outcome of the innovations. Otherwise, the outcomes will not be perceived completely. Similarly, risk management has to be appropriately handled to supplement the overall usage and adoption of technology.

With the emergence of FinTech, companies that provide financial services, consumers that use them, and the regulators have recognized cyber security as the key concern. Lack of sufficient and powerful security measures will result in the consumers' confidence being decreased and consequently a serious threat to the financial system. A consumer empowerment framework needs to be formed with relevant legal shelter so that consumers' confidence can be increased and retained. An inevitable requirement of this context is financial literacy that not only makes consumers aware but also keeps them responsible as they use different financial services. More than a way to raise awareness, financial literacy is a sustainable process of imparting knowledge and instilling a sense of responsibility in businesses, individuals, and households as they use financial services.

To make sure that the initiatives to maintain inclusion in the current financial landscape, Bangladesh still has miles to go. Access to and usage of financial services need to be widened for both women and the young generations. Moving forward with these lessons, Bangladesh needs to find the right approach or model to make financial services accessible to all segments of the population as the path to sustainable financial inclusion significantly varies from community to community, country to country where any 'one size fits all' strategy or approach may ruin all the efforts and hard work quickly.

If Bangladesh needs this endogenous model, NFIS implementation will be its first challenging trajectory for which the following points need to be considered as key tasks:

- Preparation for a national coordinating platform for financial inclusion;
- Use of biometric ID in formal financial system and service to simplify the KYC;
- Formulation of relevant policies and tailored services/ products for financing for the youth and women;
- Incorporation of proper interoperability among and between banks and MFS accounts;
- Promotion of partnership among and between all banks, MFIs, and insurance companies to ensure the access to and usability of payment products, insurance, and other products;

- Enhancement of FinTech knowledge along with building capacity for data analytics across relevant regulatory bodies and government agencies;
- Promotion of the act of sharing common infrastructure with adequate security and safety by FSPs for the reduction of expense to different consumers;
- Formulation a framework that empowers consumers and promotes actions towards financial literacy;
- Fortification of corporate governance policies and practices by the private sector and FSPs;
- Reinforcement of the structure for risk management and related practices by FSPs;
- Conduction of self-assessment on the regulatory capacity along with the level of governance in regulatory bodies.

Promotion of Inclusive Finance:

Bangladesh Bank should consider the contribution of green financing and CMSME to employment generation, food security, environmental conservation, poverty alleviation, and agriculture, and take them as the priority sectors where financial inclusion can take place.

Here is a look at the actions taken by Bangladesh Bank in this regard.

Agricultural Finance:

- Formulation of a detailed annual policy for banks and other FIs to follow, covering 110+ crops;
- Arrangement for refinancing agricultural production facilities worth over BDT 10 billion including milk production, sharecroppers, jute production, and artificial insemination;
- Credit disbursement at 4% or a lower interest rate for crops like spices, pulses, maize, and oilseeds, through interest-based subsidy;
- Schemes for refinancing designed to support entrepreneurs and farmers working within the scope of the agriculture value chain, who were badly affected by the pandemic
- Priority for female farmers along with concessional rates to be announced for coastal and tribal farmers;
- Promotion of contract farming, area approach, and revolving of the crop credit limit.

CMSME Finance:

- Credit disbursement of different banks and other NBFIs needs to be one-fourth of the total disbursement by the year, 2021;
- CMSME credit to be disbursed among women entrepreneurs by at least 15% by 2021;
- Disbursement of refinance schemes to support CMSMEs that were affected by COVID-19;
- Delivery of advisory services by banks & other FIs;
- Arrangement for a help desk for women entrepreneurs in banks & FIs;
- Promotion of finance specific to areas and clusters;
- Specialized programs for building capacities;
- Refinance schemes worth upwards of BDT 10 billion for CMSME financing.

Sustainable Finance:

- A sustainable finance policy in place so that Green Financing schemes and other finances linked to sustainability (Sustainable agriculture, CMSMEs, and socially responsible finance) can be addressed properly;
- Banks along with other NBFIs to prepare a list of all 68 green projects/ products/ initiatives under all relevant categories that were specific to finance;
- Guidelines for product development to be followed by banks and other NBFIs to foster innovation and facilitate sustainable finance;
- Refinancing schemes oriented toward green finance through four different windows, in foreign and local currencies.

Innovative Products/ Services:

- Promoting credit and savings for the unbanked segments of population, the central bank has adopted proactive measures by providing funding support and policies for various innovative services and products:
- Encouraging different banks to allow all of the 12 unserved and unbanked population to open No-Frill or 10 taka bank accounts;
- Ensuring banking facilities or services for those who are physically challenged;
- Introduction to school banking;
- Ensuring banking services for street children and urchin;
- Refinancing scheme for all users of No-Frill accounts;

- Banking services to be made available for all residences located in every enclave of the country;
- Providing banking services and facilities for the Third Gender population;
- Ensuring that banks and other FIs carry out Corporate Social Responsibilities (CSRs) to contribute to financial inclusion.

Diversification of Service Delivery Channel:

Service delivery channels need to be diverse and used to serve the underserved, rural people through the initiatives below:

- Establishment of 50% of bank branches in rural areas;
- Initiation of agent banking in 2013;
- Adoption of internet/ online banking and app-based financial and banking services;
- Linkage of NGOs and MFIs to various banks for foreign remittance and loan disbursement.

FinTech and Digital Financial Services:

The clearing system for the payment systems in Bangladesh has been experiencing a serious transition from manual to fully automated since 2010. Commercial banks are now shifting from their manual payment methods to the automated solution through a core banking network, which indicates a gradual shift from paper money to ATM cards and various other methods. This resulted in the introduction to DFS, which is administered with the following initiatives:

- A full-fledged automated clearing system being used for bank drafts, checks, and pay orders by the Bangladesh Automated Clearing House;
- Electronic Fund Transfer in use for fund transfers including social security payments, pension/ retirement benefits, domestic and foreign remittances, company dividend, payroll, expense reimbursement, corporate and bill payments, person-to-person and tax payments;
- National Payment Switch being installed to facilitate interoperability across POS, ATMs, Internet Banking solutions, and other Fund Transfer systems;

- Introduction to Real Time Gross Settlement that covers nearly 70% of bank branches along with an aim to ensure 100% coverage by 2021;
- Operation of E-wallet service providers that establishes a landmark in the country's DFS history;
- FinTech systems including NFC or QR Code based transactions being introduced and operated by the central bank;
- P2G and G2P payments to be fully automated by 2021;
- Initiatives for the Interoperability of MFSs being taken;
- Establishment of the 'Regulatory FinTech Facilitation Office (RFFO)' in October, 2019;
- Introduction to Digital Credit being carried out by a bank in association with a MFS service provider in 2020.

Payment Systems during Covid-19 Pandemic:

To prevent the COVID-19 from spreading far and wide, the Government of Bangladesh (GoB) had to impose a lockdown and social distancing policy along with movement restriction all over the country for months when only some emergency services were available. Despite these efforts, the negative impacts on the country's socio-economic condition could not be averted. The countrywide lockdown and restrictions upon movement intruded the rapid spread of COVID-19 to some extent, but at the same time, it affected Bangladesh's supply chain system badly as small enterprises and marginal people had to face a grief condition with their livelihoods. Since people had to stay at home, payment activities became challenging for them. Under these circumstances, an automated mode of payment that costs low was crucial to the restoration of payment and other financial activities. The central bank took a good number of initiatives to ensure quick access and usability of safe and secure digital payment methods for all.

SMEs and other merchants were permitted to make and receive their business payments through different bank accounts and MFSs with the necessary adjustments of their respective payment ecosystems so that they can continue the supply of emergency medical services, food, and daily necessities. With reduced transaction fees (lowered from 1.85% to 0.8% for MFSs) and increased daily limits for contactless transactions, users of MFSs enjoyed several benefits. The GoB granted soft loans to most factory owners so that the export oriented sectors can be kept active and the livelihoods of their workers can be saved. Their salaries

were disbursed directly to their mobile wallets to make sure no third parties were involved and the money reached the intended recipients. MFSs were viewed as emergency services, and the working class was allowed to create new accounts. Consequently, among the 4.5 million industry workers most of whom are women, 3.8 million accounts were registered including 2.2 newly opened mobile accounts. Seeing that the majority of marginal people became jobless during the lockdown, the Honorable Prime Minister (PM) declared an incentive or cash assistance for 5 million marginal families. New mobile and bank accounts were created at short notices so that the cash assistance could be disbursed to the intended beneficiaries. The Automated Clearing House was allowed to continue its operation to clear interbank cheque and settle fund transfers through electronic channels for the daily payments of medical and other emergency services along with the Safety Net programs. Following the direction of the central bank, 'Business Continuity Plan' and 'Critical Service Management' were introduced and implemented by banks and other financial institutions. The goal was to ensure the delivery of critical services with sufficient cash flow at every Cash Point.

Policy support for various payment systems and collective supervision initiatives were taken during the lockdown to help save the marginal people from losing their livelihoods and the economy from getting tremendously affected by allowing the use of different payment transfer methods. As fund transfers through different digital platforms led by the Government took precedence, people found a way to keep faith in digital payment platforms, which resulted in a remarkable increase in the usage of internet, mobile payments, and e-commerce. Even, the newly experienced popularity of these payment systems is now compared to the same prior to the lockdown.

This popularity has already added a new dimension to the adoption and acceptance of more powerful and secured digital payment modes, which has opened a new window of possibilities for financial inclusion based on digital and automated systems. Organizations in the private sector are bringing new proposals for Fintech services and products tailored to the market demands. It indicates that Fintech services are in demand. So, digital financial services and the concerned sector see positive development even amid COVID-19. Growing trust and participation in digital financial services could not only make the economy resilient but also accelerate it.

In 2011, the central bank formulated a specific regulatory framework to ensure that the income from small value services, especially from IT enabled services (ITeS) be repatriated

smoothly. The framework allows Authorized Dealer banks to work with internationally reputable Online Payment Gateway Service Providers (OPGSPs), so the income generated by freelancers and other service providers can be repatriated. In 2019, payment repatriation was allowed through OPGSPs with each transaction not exceeding USD 10,000.

Freelancers can get inward remittances repatriated using international cards, and AD banks have the arrangements to accommodate all facilities to repatriate payments through cards with dual currency features. According to Exporters' Retention Quota (ERQ), there's a limit to the amount that is considered eligible which can be credited in foreign currency to make payments to authentic parties.

Now, freelancers can remit eligible bonafide payments using international cards, but the limit is only USD 300 per year. The ICT Division has issued certificates to recognize IT freelancers' role. That certificate has also helped them get a higher limit (up to USD 500) through OPGSPs.

At present, ITeS providers are allowed to have the ERQ facilities for up to 70% of the total repatriated export incomes. Freelancers can also get the same sort of ERQ facilities in foreign currency. The balance left in the ERQ accounts can be remitted to foreign countries to bear bonafide or legit expenses. It allows freelancers to have internationally accepted cards against their ERQ accounts. Businesses can route their bonafide payments from their ERQ accounts through OPGSPs. During the 2019-2020 fiscal year, the value of IT exports combining freelancers' through conventional banks was USD 265.22 million.

Conclusion:

The strength and stability of Bangladesh's economy comes from the rapid growth of deposit liabilities, loans, and other financial resources over the past decades. Despite the development of the country's financial structure starting in association with the public sector after its independence, the financial sector is being dominated by a whole new generation of private commercial banks. The lessons originating from the edge of such transformation have already been learned. Financial inclusion leads to an inclusive, stable, and sustainable system for managing finances which can go a long way in meeting the needs of the entire population including all segments and empowering them economically to sustain social stability. Bangladesh has not been this far without obstacles. Regulatory bodies as well as the government have always been and will be obligated to increase and retain consumers'

confidence in the sector of financial services. Besides involving finance or money, this sector has a lot to do with people's trust. So, the country's priority is and will always be to uplift the trust and confidence of general consumers in the financial sector as part of its journey towards financial inclusion.

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New Economies - An Essay on Possible Alternatives to a Collapsed System

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ABSTRACT

In a world with enough natural and human resources to feed, dress and house the entire population in a nondestructive way, it is not logical to see most people living in poverty, consuming in unsustainable proportions and destroying the basic systems that support life. Understanding the economy only through the lenses of the capitalism money has transformed society and shaped cities. How long will the multiplication of profits be the main objective? How far do we move away from our roots to meet an unsustainable economic model? Are we happy in this system? And, after all, are there alternatives? The aim of this research is to point out possibilities for a healthy economy and, consequently, a better quality of life.

From a wide review of the literature, this article addresses the social and economic transformations resulting from the popularisation of the Internet - emphasising the paradigm shifts that are transforming the logic of capitalism's unsustainable growth (scarcity vs. abundance; competition vs. collaboration, etc.). The improvement of the connection between people, projects and ideas drives much-needed social innovation, especially in times of crisis. In the context of the Covid-19 pandemic and the challenges related to climate change, this article explores three examples of so-called "new economies": Creative, Collaborative and Circular.

It was observed that economies based on the new paradigms and aligned with the post-industrial era are more fluid and capable of rescuing the sense of community, of regenerating ecosystems, of reconnecting individuals with their purposes and of the redesigning of cities, generating vibrant and resilient local economies.

KEYWORDS: Paradigm Shift; Transition; Regeneration; Social innovation; Resilience, Creative Economy; Collaborative Economy; Circular Economy

1 INTRODUCTION

We learn since we are children that the right way to conduct our personal economy is to "save", "to spare", accumulating capital/money and increasing our savings; that income-generating work does not have to be aligned with what we love to do as long as we have financial prosperity; and that to succeed is to be competitive, always better than the others. For many, economics is synonymous with money, which brings a sense of anguish, anxiety and fear - of missing, of not succeeding, of "failing".

Economics is a word that comes from Greek and it means "household management". We can interpret "household" as being our own body, our home, our neighborhood, country or planet. By definition, this is "a science that studies the phenomena of production, distribution and consumption of goods and services, in order to promote the well-being of the community"[1]. That is, economics is much more about the relationships of interdependence between people - also of people with ecosystems - than in fact about money or capitalism - this is just one of the ways to make those relationships happen, but not the only one.

Capitalism is the predominant economic system in the world and its main feature is the growth of profit. This growth guarantees the increase in production, consequently of profit and also of the dividend¹ among shareholders, - which are increasingly concentrating the world's riches and occupying the top of the pyramid of this System. Growing economically is the capitalist creed and it is from this metric that today we measure progress and "social well-being" (through gross domestic product - GDP). The higher the growth of profits in a given geographic space, the greater the false political feeling of happiness, success and progress [2].

This system has transformed society. People began to live to meet market demand and disconnected from their purposes, their culture, community and family. The ease to purchase goods generated a consumer society disconnected from the ecosystem around it and globalised towns and cities that had their small businesses closed down by the lack of competitiveness. The search for profit at any cost destroyed forests, polluted rivers and seas, generated a multitude of synthetic and toxic waste, increased the amount of CO₂ in the atmosphere, caused the misery of those who cannot enter the system and deepened inequalities.

How long will the multiplication of profit be the main objective for our society? How far do we move away from our roots to meet an unsustainable economic model? Are we happy in this system? And, after all, are there alternatives? Throughout this article we will point out possibilities for a healthy global economy and, consequently, a better quality of life.

2 PARADIGM SHIFTS

We live in a phase of paradigm transition, as Scharmer [3], Capra [4], Hopkins [5], Eisenstein [6] and so many others say.

This transition was driven by the popularisation of the Internet, which enabled the connection between people, projects and ideas. The new networks facilitated by technology have been causing exponential advances in different areas of human life. In his 1964 book "On Distributed Communications", Paul Baran [7] illustrates three types of network: centralised, decentralised (collective) and distributed (systemic), as shown in Figure 1. Such an image – which has the dots located in the same position, but different connections between them – is widely known as the Baran Diagram.

¹ Profit sharing among shareholders (in addition to salary).

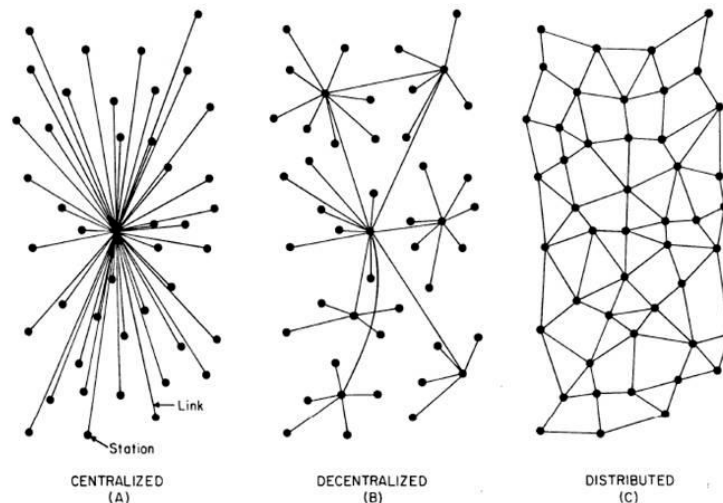


Figure 1: Baran diagram. [7]

Diagram "A" is the drawing of maximum centralisation, an authoritarian, imperial model. The "C" is the opposite, because it privileges the distribution (the figure does not show the maximum number of connections to facilitate clarity in the visualisation). The most common social organisation today is decentralised (diagram B), an evolution of model A, but still limited, which presents predetermined patterns to be followed. Large corporations, for example, restrict the development of their employees because they generally offer a predetermined career plan. Similarly, schools limit students' learning by determining what they should study. According to Franco [8] "our organisations were designed to obstruct, direct, imprison, discipline the interaction, not to let it flow".

Gradually, the Internet has been breaking the social pattern of decentralised networking, contributing to the transition to a distributed, networked society. New technologies bring citizens closer to the opportunity to follow a freer path, connected to their values, purposes and dreams. In the distributed network, people connect according to common interests and interact horizontally, without hierarchies. As we distribute ourselves in a network, we also distribute information, knowledge. There are several means of producing and distributing content nowadays - YouTube, Twitter, Instagram and so many others to come.

Knowledge is an intangible resource, abundant and infinite. For centuries, "society, economy and politics have organised themselves around material resources, such as land, gold or oil, which, because they are tangible, are consumed and are finite." [9]. The focus given to finite resources generated the logic of accumulation, in which the whole society works to save and spare - money, land, real estate [10]. This finitude, however, creates the so-called economy of scarcity, a consequence of competition models. Intangible resources (culture, knowledge, experience), on the other hand, are infinite and renewable, and can represent an economy of abundance, based on models of collaboration.

Networked society and new technologies make the abundance and diversity of human skills and talents visible and accessible, which means a potential to transform the outdated industrial economic logic. We are talking about the shift from "mass" production - based on the economy of global scale - to "diverse" production, characterised by a local, decentralised economy. Let's use the example of a big clothing store. How can products be so cheap? What's behind the low costs? How are the logistics handled?

Probably, the parts will have been manufactured in some country with cheap labour and precarious labour relations. Then, these products are distributed to several countries

around the world, requiring complex and polluting travel logistics - with high levels of CO2 emissions, the main gas that causes climate change.

Now let's imagine the same type of product being made locally. But think of the most local production possible, on a neighborhood scale, with local raw materials and workers being paid fairly. In this scenario, production is on a smaller scale, but if replicated in several neighborhoods of several cities, it can serve a large number of people - and with the potential for greater diversity of style, material and cultural references. In addition, it makes money circulate locally, strengthening neighborhood's economy and stimulating new business. In addition, it would also bring a vital benefit to the current context in which we live: less impact on the environment. Of course, not everything can be produced locally. Resources are not available in all countries. However, it is important to understand what is essential and what is not, what can be produced locally and what cannot (in the food industry, for example) and what are the alternatives. It is not, of course, a question of condemning globalisation - so important in many aspects - but of understanding the urgency of prioritising local trade when possible in order to minimise environmental impacts.

When we look “behind the scenes” of mass production, we see that the 20th century was marked by the unprecedented growth in per capita consumption levels and the use of energy from fossil fuels, especially oil. With an economic model that needs to be constantly growing, we end up producing far beyond our real need. This, of course, has a direct and decisive relationship with climate change. The entire production chain generates CO2 emissions: raw material extraction, transport to factories, manufacturing, routes to distribution centres, transport to markets and stores and finally reaching the consumer. Then disposal generates a new polluting cycle. Thus, in an economy that essentially has the maximisation of profits, "it is worth" going through huge distances to go after the cheapest resources, no matter where they are. But what are, after all, the consequences of this logic? One of them, no doubt, is the increase in emissions of gases into the atmosphere and the exploitation of natural and human resources irresponsibly.

Industrial capitalism and mass production brought positive changes to society, such as the reduction of the price of goods. On the other hand, as we said, it generated serious environmental and social problems. Otto Scharmer [11], author of Theory U, says that we are breaking with patterns of the past that have led us to a state of "organised irresponsibility" – and that we are emerging from a sick system. According to the author, this rupture consists in changing from the mentality of the ego-system, which cares about the well-being of oneself, to the mentality of the eco-system, which cares about the well-being of all (apart from humanity, including all living things), including oneself. It is time, according to the author, to move from the internal place from which we operate – the "myself" above all – to manifest itself through the "we", of the collaborative.

The table below summarises the paradigm changes mentioned here. It is important to note that "the transition does not necessarily imply rupture with previous paradigms, but rather expansion." [12].

Tabela 1: Changes of Paradigmas [13]

	Ancient Paradigm	New Paradigm
Resource availability	Scarcity	Abundance
Development	Industry-based	Knowledge-based
Resources	Tangible	Intangible
Organization / Systems	Hierarchy	Network
Team building	Leader / Competitiveness	Collaboration / Co-creation
Vision	Ego-system	Eco-system
Values	Profit above all	Purpose
Economy	Global	Local

3 EXAMPLE OF NEW ECONOMIES

Several "new economies" are born from this transition: the Creative Economy, the Collaborative Economy, the Circular, Solidarity, Exchange, Gift, Regenerative, Multi-currency, etc. It is a movement that points to a process of transformation.

The capitalist economic model is based on the aforementioned paradigms of scarcity, competition, hierarchy, profit above everything and the false idea of meritocracy. With new technologies, with society increasingly networked and with knowledge-based development, the economy is beginning to break the traditional model. Aligned with the new paradigms, the so-called "new economies" carry in their essence the value of care. The idea is to establish win-win relationships, in which the entire ecosystem benefits.

3.1 Collaborative Economy

The Collaborative² (also known as Sharing Economy by some authors) Economy is based on sharing, donating or exchanging goods and services and has been enhanced by online platforms.

The concept opposes rampant consumption and its consequences for the planet. In recent years, several companies have emerged that operate, for example, connecting people who want to borrow a product to those that can lend; those who need help to those who can help; and those who can't afford something they need to those that can give. This type of savings generates extra income, offers cheaper options (since it circulates second-hand products), rescues the sense of community, reduces the environmental impact (as it requires less of the production chain) and stimulates conscious and sustainable consumption.

The Collaborative Economy is already a reality in many parts of the world, although it is not yet exploited in the best way. Two examples are the apps Uber and Airbnb, that despite stimulating sharing (car and real estate, respectively), concentrate profit on a few people and feed fragile and unfair labor relationships - aligned with the logic of the industry. Good examples, on the other hand, are platforms that facilitate sharing products between neighbors (stimulating collaboration, sense of community and trust), as well as crowdfunding, which connect supporters and project directors.

The global annual revenue of this market is estimated to be \$15 billion per year, with an estimated \$335 billion in 2025 [15].

Collaborative Economy example project: "Tem Açúcar?"

The "Tem Açúcar?"³ ("Do You Have Sugar?" in English) platform was created in 2014 with the aim of facilitating the sharing of consumer needs and stimulating collaboration between people. The project rescues the habit of knocking on the neighbor's door to order a cup of sugar, only online. When making an order or offer in the app it is necessary to indicate the distance radius to define the contemplated region. Users in this region receive a notification and can reply to it through chat. It's as if the person who asks or offers is ringing multiple bells at the same time.

All kinds of help can be requested in this social network - from object loans to sharing information about the neighborhood or the search for company to practice exercises, for example. When it comes to borrowing an object from a neighbor, the idea is to avoid unnecessary consumption by acting sustainably, saving money and also creating ties with the neighborhood.

² On Collaborative Economy, see [14]

³ More details about the "Tem Açúcar?" platform at <http://www.temacucar.com/>.

With the outbreak of Covid-19, the app has become a useful tool to maintain communication between residents and coordinate the division of tasks, such as shopping in markets and pharmacies for those who are part of the risk group and should not leave home. With the remote work system deployed by the companies, there have also been many apps and loans of items to set up a home office. For the quarantine period, the app has created posters that can be printed to indicate buildings and streets participating in the online help network as well as material with health instructions needed to prevent Covid-19 contagion, encouraging help among neighbors safely. Today the Brazilian startup has more than ten thousand neighborhoods using the network in all states of Brazil. After the pandemic, the uptime in the app has more than doubled [16].

3.2 Creative Economy

The Creative Economy⁴ does not have a universal definition, but can be understood as the economic activity of the creative and innovation sector - which generates value both economically, socially and culturally. One of the great scholars of the Creative Economy, the Englishman John Howkins, states that "every human being is creative". When stimulated in an appropriate way, creativity has the potential to innovate in job creation and income generation, while promoting social inclusion, cultural diversity and sustainable development.

The United Nations Trade and Development Arm (UNCTAD) divides the creative economy into four major groups [18]:

1. heritage (crafts, festivals, celebrations, museums, libraries, exhibitions)
2. arts (paintings, sculptures, photography, music, theater, dance)
3. media (books, press, publications, movies, television, radio)
4. functional creations (design, new media and so-called "creative services")

The creative sector, therefore, already existed, but has never been so valued. In the post-industrial era, which is already a reality in some developed countries, the economy that produces intangible resources, such as intellectual and cultural capital, is more valued than the manufacturing economy, based on tangible resources. In this context, "selling experiences", as Howkins says [17], is now one of the main mottos of the creative economy, something "very different from selling products". If oil was the main fuel of the economy of the twentieth century, creativity is the engine of the 21st century.

The creative economy market was terribly shaken by Covid-19. This sector employs more than 30 million people worldwide, mostly young people. Estimates say that by 2020 the cancellation of public presentations alone cost authors about 30% of global royalties, while the global film industry lost \$7 billion in revenue. On the other hand, lockdown led people to do manual work, read more books, watch more series and movies, connect with virtual concerts, and shop online, otherwise helping to sustain the creative economy [19].

After a year of pandemic-induced lockdowns in November 2020, the UN adopted resolution A/RES/74/198, declaring 2021 the "International Year of the Creative Economy for Sustainable Development". The resolution recognises that the creative economy has the potential to support developing countries and countries with economies in transition of production diversification, and provides sustainable development in an innovative, inclusive and equitable manner, supporting entrepreneurship and contributing to cultural diversity [20].

Creative Economy example project: OLIO Made

⁴About Creative Economy, see [17]

OLIO Made⁵ is a marketplace facility that allow locals to sell handcrafted designs to their neighbouring community, not only bringing local regions together but providing another means for homeowners to become more sustainable. Launched in October 2021, the commission-free business model allow independent makers and artisans to offer their products at affordable and comparable prices whilst helping to support their own needs in this challenging and difficult time. While most online marketplaces encourage the selling of goods to a global audience, OLIO has specifically created this new offering to generate more transactions between neighbours, in a bid to reduce the need for international logistics and to encourage more cohesive and connected local societies.

OLIO Made is a section of OLIO, a food-sharing digital platform created in 2015, in London, to connect neighbours with each other and with local businesses so surplus food can be shared, not thrown away. During the COVID-19 pandemic the app has had a significant shift and a surge in its users, with listings growing by as much in the first five months of lockdown as they had in the first five years of business. Now, with over 2.3 million users in 54 countries where it has been used, the app has improved and grown, encouraging households to become more resourceful and breeding the mindsets of buying less and buying local.

According to the co-founder Tessa Clarke, “The COVID-19 pandemic confirmed for us the need to launch the MADE section on the platform” [21]. At OLIO Made users are free to create any products they choose for their communities. When using the app it is possible to find edibles such as jams, chutneys and cakes alongside handcrafted items such as soaps, candles, art and jewellery.

3.3 Circular Economy

The production process of the industrial era is linear and obeys the logic of extracting, consuming and discarding. The planet, on the other hand, regulates itself in cyclical processes, where everything that dies becomes nutrient for new lives. Linear logic unbalances ecosystem cycles because, in addition to generating waste, it exhausts the amount of raw materials available. Based on the intelligence of nature, the Circular Economy proposes to rethink and redesign products and their components for the non-generation of waste⁶.

For bio-based products such as food and fabrics, design must preserve the purity of materials so that they can return to the ecological cycle through composting or anaerobic digestion processes. For so-called technical products - such as metals, polymers and valuable alloys - the idea is to keep them in use for longer. It is possible to generate economic value for these materials or products by repairing (not disposing), reusing (finding a new function), remanufacturing (using the same part, with the same function, for a new product), or recycling (reprocessing and producing new materials). It is essential to understand that recycling should be the last option because little of the value of the material is preserved and much of the energy and capital used in its manufacture ends up being lost, in addition to again demanding the consumption of finite resources such as water, energy and raw materials for the production of a new product.

The British institution Ellen MacArthur Foundation, which promotes the Circular Economy, argues that the transition to this model is not limited to adjustments to reduce the negative impacts of the linear economy, but represents a systemic change that builds long-term resilience, generates economic and business opportunities, and provides environmental

⁵ More details about the OLIO Made platform at <https://olioex.com/made/>.

⁶ On Circular Economy, see [22]

and social benefits. The Circular Economy instigates the creativity and innovation of the entire productive sector aiming at a regenerative economy.

In the European Union, the calculation is that the Circular Economy could represent up to €600 billion cost reduction per year by 2030 [23].

Circular Economy example project: The Restart Project

The Restart Project is a charity that organises⁷ events where people teach each other how to repair their broken and slow devices – from tablets to toasters, from iPhones to headphones. They run regular events called Restart Parties, which is a free community event where volunteers help people fix their own broken devices and small appliances, to save them from waste and change our relationship with electronics. Over sixty groups in twelve countries have already organised Restart Parties.

The project helps bringing awareness about the pace of our consumption and the electronic waste and the environmental costs by giving people a hands-on way of making a difference, encouraging them to buy for longevity. The Restart Project use the data and stories they collect to help demand better and more sustainable electronics for all.

During the Covid-19 pandemic, a campaign was placed in the UK for laptop donation. The need to stay connected remotely increased during the lockdown but not everyone has an adequate device to access the internet. Old laptops, computers and other electronic items have been fixed and upgraded to distribute to locals in need.

There is a huge diversity of projects from new economies around the world. The examples mentioned here were chosen according to the personal experience of the authors, who sought to bring projects that contemplated, at the same time, the care for the environment, with the strengthening of the local economy and with the reconstruction of the sense of community - considered important elements in the reconstruction of resilience (theme discussed below).

Many of the initiatives of new economies - especially smaller ones, originated from the needs and creativity of people and communities - are still on a scale of good initiatives and innovative practices. Often there is a lack of investment because projects of this nature are not properly valued. Many ideas with transformative potential, which point to solutions to important urban issues, such as innovative services and products, could be implemented by people and social organizations in partnership with other sectors of society, thus contributing to local sustainable development. However, such ideas fail to gain traction and end up, in many cases, encountering difficulties that undermine their survival, such as competition with multinational companies or lack of proper regulation. Some ideas even manage to develop and get off the back of the paper thanks to crowdfunding tools or incubating environments, but most, without support, can't achieve financial self-sustainability and get in the way. These smaller initiatives would often have the potential to be replicated in other cities or neighborhoods and could gain scale at a national and even international level.

4 NEW ECONOMIES AND CAPITALISM

It is important to note that the new economies are not a proposal to replace capitalism. They are complementary to this system considered unique and that almost always aims at the growth of profits at any cost - human and environmental.

⁷ More details about the Restart Project at www.therestartproject.org/about/ .

The problem of capitalism is not in profiting, but in maximizing profit to increase the dividend among investors, who enrich the costs of precarious labor relations and polluting production and distribution processes. In order to the dividend to be as large as possible, companies reduce production costs as much as possible - and already in this account we see social and environmental problems evident today in the world.

For a healthy capitalist economic system, Mohamed Yunnus [24] suggests Social Business, in which "100% of the profit must be reinvested in the company (including employees) to expand operations and increase social impact, rather than distributed as a dividend." Social Business is a capitalist economic example within the new paradigms because they are companies that are born with the purpose of generating positive social impact, carrying in its essence the aforementioned win-win relationship amongst all involved, including the environment.

5 THE NEW ECONOMIES AND RESILIENCE TO CRISIS MOMENTS

The global-scale economy based on the mass production of homogeneous products exacerbates climate change and weakens society.

As already mentioned, enormous distances are covered for the processes of production, distribution and disposal to take place, increasing the amount of CO₂ in the atmosphere and intensifying environmental and social crises. In this process, people and the environment are exploited irresponsibly so that the final cost of products is the lowest possible, intensifying not only the environmental crisis, but also the social one.

Today, cities and even entire countries rely on this polluting and exploratory logistics for survival. As a society we lose self-sufficiency in the production of life-essential products. We also lose the need for bonding between people, generating, on the other hand, an apparent social self-sufficiency. The changes that occurred in society made individuals live increasingly focused on personal satisfaction, which destroys the relevance of common, social and collective values (social capital), capable of developing mechanisms of reciprocity and solidarity, considered the basis of neighborhood life [25].

In the context of the Covid-19 pandemic, for example, the shelves of many London supermarkets, where the main author of this article writes from, were left empty. Fearing the shortage, people panicked and decided to stock up on products and food, without worrying about their neighbours needs. There were fears that exports would decline. Brexit, the UK's withdrawal from the European Union, contributed even more to that fear. This climate has only settled in the country because here in London, as in many places, food distribution is centralized in large companies.

Crises in general have highlighted the fragility of our society. We're vulnerable. What would give us more security, returning to the point already mentioned in this article, would be the strengthening of local production with economies based on the new paradigms. We would thus be more resilient, that is, better able to adapt to times of crisis.

According to Ballas [26], happiness and well-being are related, among other factors, to local initiatives that reinforce social trust and community networks. When we live in community, inserted in economies that value exchange, sharing, co-creation of solutions to local issues by involved and creative citizens (social innovation), feelings of belonging and identity are stimulated, making people feel happier and in harmony with the place where they live. We are happier when we feel useful in serving the community with what we have to offer, work that can move money or not, but without a doubt the Economy.

In a society where the number of cases of depression, anxiety and other mental health issues only increase, moments of crisis, although obviously undesirable, may end up rescuing

a sense of community, to regenerate ecosystems, redesign cities and reconnect individuals with their purposes by strengthening new economies.

In the participatory art project Inside Out⁸, created by French artist JR and exhibited in the City of London from June to September 2021, the population was invited to share their portraits and their stories, transforming messages of personal identity into public works of art. On an outdoor display on the outskirts of Wembley Stadium⁹, workers and local residents gave their testimonies about life during the Covid-19 pandemic. The vast majority of reports highlights the importance of the community to outlive this challenging time. Below are some testimonials¹⁰:

- “The pandemic has taught me that your community is your extended family and that the kindness, care and love we extend to each other has a profound and lasting impact.” Lamees A.
- “The pandemic has foregrounded the enduring need to be compassionate, cooperative and considerate in our communities. The only way to overcome any obstacle is together!” Tommy E.
- “The virus has had a huge effect on a lot of people and I have noticed it has caused the community to become a very close-knit group. We have checked on one another and helped out with things like shopping, the community spirit has never been greater.” Yvonne L.

6 CONCLUSION

As we have seen, technological development and internet access have been causing a paradigm shift that is transforming the economy, making it more fluid and resilient. Such changes converge in the same direction, consolidating the so-called post-industrial era (or the era of knowledge). Like every transition, however, it also encounters resistance, especially political and corporate.

The concept of new economies presented in this text is anchored in the win-win ratio and in the value of care. Talking about a new economy is, therefore, also talking about a local economy, in which network collaboration, a sense of community and identity, purpose-made work, ecosystem regeneration and happiness become determining principles. It is important to be aware of projects that appropriate the new economies to reproduce capitalist patterns that are not aligned with the new paradigms.

The irresponsible human and environmental exploitation of the last century puts us before the greatest challenges in history. Covid-19 pandemic has made it even more evident how much social self-sufficiency and lack of self-sufficiency in the production of essential products makes us vulnerable. The lockdown forced us to adopt a more local life - with the potential to bring diverse benefits to the environment and contribute, in many places, to the rescue of the sense of community.

We call challenging moments "crisis" because we can't imagine the future without relying on old patterns. There is no point in seeking solutions to the challenges of today in tried and applied formulas in other times. It takes creativity, innovation, collaboration, and, the main thing, a cultural change (individual and collective) that brings to intangible

⁸ More details about the Inside Out at <https://www.insideoutproject.net/en/explore/group-action/iop-london-2021#section-more-actions>

⁹ More details about the Inside Out London in Wembley at <https://wembleypark.com/wembley-park-art-trail/inside-out-london-jr/>

¹⁰ Collected by the main author during a visit to the exhibition in Wembley on 21/08/2021.

resources a look of abundance. Networking today offers a variety of paths to sustainable development. Instead of continuing to update the applications and software we're used to, we need to create a new economic, governmental, and social operating system.

For cities to strengthen and build resilience for the future, it is important to involve people from every sector of society in co-creating innovative solutions. There are many vested interests in maintaining the status quo of the economy, so - in general - governments and businesses take a long time to understand and act according to the needs of the new era. Society, however, does not need to wait for change to come from above, but it can and should start acting locally. The innovation of this force that comes from below flourishes when different perspectives, disciplines and skills meet. In this context, collaborative spaces in which people from different areas can co-create innovative solutions to today's challenges can be very important in promoting a local economy, helping to build, recreate and motivate urban communities in their activities, leading to a joint increase in social well-being and creating a better and happier society. It is also up to the public authorities to provide these workspaces and possible models of collaborative governance to expand the possibilities of local prosperity.

It is time to change our systems' roots and, in this context, find new ways to measure progress. It is necessary to consider environmental regeneration, collective and individual happiness, urban quality of life, the ability to adapt to extreme climatic events, the size of profits reinvested in socio-environmental causes, the reduction of inequalities, among others.

Capitalist economic growth that seeks profit above everything else has proved unsustainable. It is urgent to achieve a collective consciousness of transition and reinvent systems that are aligned with the post-industrial and regeneration era of the 21st century.

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Sustainable Design through Up-Cycling Crafts in the Mainstream Fashion Industry of India

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ABSTRACT

Fashion is considered to be the most destructive industry, second only to the oil rigging industry, which has a greater impact on the environment. While fashion today, banks upon fast fashion to generate higher turnover of designs and patterns in apparel and relate accessories, crafts push us towards a more slow and thoughtful approach with culturally identifiably unique work and slow community centred production. Despite this strong link between indigenous crafts and sustainability, it has not been extensively researched and explored upon. In the forthcoming years, the fashion industry will have to re-invent itself to move towards a more holistic and sustainable circular model to balance the harm already caused. And closed loops of the circular economy will help the integration of indigenous craft knowledge which is regenerative. Though sustainability and crafts of a region go hand-in-hand, craft still have to find its standing in the mainstream fashion world; craft practices have a strong local congruence and knowledge that has been passed down generation-to-generation through oration or written materials. This paper aims to explore ways a circular economy can be created by amalgamating fashion and craft while creating a sustainable business model and how this is slowly being created today through brands

KEYWORDS: Circular Economy, Fashion, India, Indigenous Crafts, Slow Fashion, Sustainability, Up-cycling

1 INTRODUCTION

The textile and clothing industry is the second largest industry after oil rigging and one of the most natural-resource consuming one at that. During the last few decades, the awareness of fashion trends has increased manifolds leading to the emergence of the culture of 'Fast fashion'. The clothing manufacturers have embraced this new 'buy-and-throw-away' culture such that people are now heavily underutilizing the clothing that they own while continuing to splurge on new fashionable clothing. According to a report by Ellen McArthur Foundation, the average number of times a garment is worn has decreased by at least 36% in the last 15 years. To this end, there is a need to have increased usage of each piece, recycle textiles, create a non-linear system of production, and adopt steps to minimize the environmental footprint of the industry.

As per a 2020 report by Vogue Business, the concept of a circular and regenerative fashion industry is fast gaining traction among the end users which in turn has added impetus to the efforts being made by brands to become accountable towards the environment leading to the slow fashion movement

Some Indian brands have taken up the mantle of easing the tensions between climate crisis (to which the fashion industry contributes) and consumerism (which is a by-product of 'Fast Fashion'). In addition to being sustainable and creating ecologically conscious clothing, brands have embraced the age-old tradition of upcycling from India, carrying a part of the tradition and making garments and accessories that are chic and in-trend.

2 DISCUSSION

2.1 Fast Fashion and Slow Fashion

The terms "Fast" and "Slow" till a few decades ago were unlikely to be paired with the term "Fashion", though today, they denote practices which are utterly varying in their practices. Fast Fashion focuses on producing large volumes of homogeneously styled clothing at unbeatable prices using cheap off-shore labour, lower quality material and above all short lead times to appeal to the consumers' ever-increasing need for novelty. For the consumer who is looking to expand their wardrobe to project a certain level of social standing, high street brands that have embraced the concept of fast fashion have proved to be a beacon of hope that the consumer will get latest trendy designs along with the brand name without burning a huge hole in their pocket. But while this is the shiny side of things, there is an ugly side of the business too. The higher turnover rate has led to higher consumption of raw materials, leading to more mechanization and factory workers losing their job. Since the lead times need to be short, a few brands have resorted to creating automated factories where bots work 24/7 to keep up with the pace of production required. Another dreadful side effect of huge quantities of fabric processing is the contaminants being released into the water bodies. Slow Fashion is at the other end of the spectrum where production of each piece is carefully thought out and planned, designed, curated and produced to have the best quality output. Slow fashion involves small-scale production in a limited space and within a stipulated time. Simply put, slow fashion is a quality and sustainability focused mode of production as opposed to the wonton production pattern the world has experienced during the fast fashion era. Slow fashion garments are made keeping in mind the ideal average life cycle of any garment. That is garment should be of a quality that would last longer than an average garment. The slow fashion movement launched in the early 2000s was a movement to counter the fast fashion movement and focuses on quality as opposed to the time-based production runs

propagated by the fast fashion movement. Slow fashion as a term was coined by Kate Fletcher where she talked about the critical nature of balance. Slow schedules for production, preferably zero waste; small batch collections and steps towards reducing textile waste are the signs of striving slow fashion brand.

2.2 Slow Fashion, Consumer Awareness and Sentiment

The pandemic has led to an increase in the customer engagement with regards to awareness, social responsibility and environmental impact of actions. According to a research survey carried out by McKinsey consumers have begun switching to eco friendly options, putting in additional efforts to recycle, upcycle and into purchasing environmental packaged products. The world-wide crisis has also paved the way for a slower fashion movement, supported by the millennials and gen-Z who have admitted to buying from local and sustainable brands. The survey also indicates that the fashion cycle does not affect the buying cycle of the consumer and that consumers consider newness as one of the least important factors while purchasing clothing.

Another industry report published by textile value chain reports that 74.5% of the respondents were aware of the concept of recycling and upcycling as opposed to 12.7% of the people knew about the concept but do not understand it. It also sheds light on the contribution of social media to disseminate the knowledge of this concept on a world platform.

61% of respondents have not bought sustainable clothing but for 48% respondents it is on their wish list and 47% would prefer to buy recycled clothing over a new set of clothes. The balance respondents feel that there are drawbacks to buying upcycled clothing such as – clothing being second hand, they may be out of style, the clothing may lack durability and quality, they are also concerned about the hygiene and cleanliness of the clothing in addition to paying a premium to buy recycled clothes.

2.3 India, Crafts and Slow Fashion

Crafts are scattered across the fabric of the country and are an important part of the culture and lineage of any geographical region practicing it. India has been home to various empires - the rulers and the ruled have had complicated relationships each assimilating influences from the other. Distinct cultural, traditional influences can be observed in each state. As these cottage industries are re-energized we observe the divide between the “creatives” and “skilled” artisans, the creatives being more open to ideas and experimentation in terms of design, process, and introduction of new materials or finishes while the skilled artisans prefer to stick to the traditional methods, designs and materials.

Irrespective, whether an artisan is a creative one or a skilled one, they both take equal pains and commitment to produce the end product which is labour-intensive, one-of-a-kind and time-consuming to produce (some handloom pieces may take up to 3-6 months to reach the finish product stage). Essentially making them slow fashion and almost always sustainable and eco-friendly because they use materials that are naturally available with little or no synthetic chemical processing involved.

More recently, with the awareness for sustainable fashion and eco-friendly garments increasing the handloom industry work and workers working conditions and good-will has come to the fore. Brands are making an effort to work closely with artisan group and co-operative to create commercially viable designs while keeping the traditional aesthetic alive.

2.4 Upcycling

The term upcycling was coined by the Belgian economist Gunter Pauli in his book “UpSizing The Road to Zero Emissions: More Jobs, More Income and No Pollution” in the scope of consumer-based modern day society. While, the term was officially coined in 1998, Indians and possibly people of various other descents had been practicing creative reuse for years and not realizing that this trend would be a huge fashion movement in the years to come.

Even today when the world is leaning towards upcycling and recycling in a big way to reduce the carbon footprint and move towards a greener, more sustainable future, it may not be surprising that a parent creating a garment out of some heirloom piece of clothing for their child is not aware that they’re contributing to the Sustainable Development Goals in their own way.

In India, most homes have a sewing machine and the inhabitants have a certain level of proficiency with needle and thread, for others, India is home to a plethora of small businesses who have taken up the mantle to make the world a better place one garment and one piece at a time, while also aligning themselves to the Sustainable Development Goals adopted by the United Nations

3 METHODOLOGY

The objective was to speak to Indian start-up brands and find out what drove them to pursue their journey towards sustainable fashion, to understand their motivation and alignment with the UN SDGs.

Brands were contacted through brand emails present on their websites or through their social media pages. Two telephonic interviews were also conducted where in the founders of the brand shared a few insights about the industry and covered a few more points that were not mentioned in their answers to the questionnaire.

An open-ended questionnaire was shared with each brand to enable qualitative exploratory research with purposive convenience sampling. The telephonic interviews covered all the questionnaire topics but were not limited to it.

Secondary exploratory research was also conducted by studying other brands and social media listening which also involved studying and observing production patterns, sourcing, timelines, designs and methods of production of brands belonging to the global fabric.

4 RESULTS

4.1 Upcycling Brands in India

As mentioned earlier, India has a plethora of small sustainable fashion businesses, while researching upcycling trends in India these brands were contacted and their background and brand offerings studied. A total of 15 brands were contacted and response from 9 of these brands were recorded, including Doodlage, Grandma would approve, I was a Sari, Kaizen, LataSita, Pero, Pomogrenade, Punah:.

4.2 Doodlage

Founded by Kriti Tula and Paras Arora in 2012, Doodlage is an eco-friendly fashion brand that champions the cause for zero waste. Inspired to reduce the fabric wastage in the fabric industry their raw material is sourced from manufacturing units and exporters around the national capital. All their raw material goes through various checks and processes before being sent to the production team where they are sewn together with a seam allowance of over 3 inches to facilitate alteration and thereby give more uses to the garment.

The waste produced after their production cycle is shredded and used in their accessory collection to add texture, cotton waste is decomposed to create their stationary collection. They are also working towards collecting their garments at the end of its life and reuse them in different ways.

As a brand, Doodlage has a small team in place and partner with artisan groups and non-profit organizations to outsource their production.



Figure 1 – Cloudwalker Appliqué Denim by Doodlage

4.3 Grandma Would Approve



Figure 2 - The Drip blazer has been constructed using a Vintage Ralph Lauren blazer and is reversible, the dual tone pants are made using 2 trousers by Grandma Would Approve

Grandma would approve was born during a conversation between 2 best friends - Anugrah Samuel Phillips and Priyanka Muniyappa in early 2018 enthusiastic to bring a change in ideology with regarding to production practices, circular design and slow fashion. Their philosophy is to

mend and fix every piece and help make these products last longer and to breathe

into them new life and longevity.

Their product offerings are divided in 3 categories – Vintage, Restored and Reconstructed. Vintage garments fall into the category based on design, print, construction, pattern, silhouette, material, buttons and embellishments. Restored garments are all garments that come damaged, worn out or stained. These are fixed, giving those new panels, inner lining, new zips, elastic, buttons etc. While Reconstructed garments fall in the High End Couture range they are more labour intensive garments, it takes a minimum of 6 days to create one

garment, the team take apart already existing vintage garments and stitch them back together, Reconstructed garments are made using a minimum of 5-10 garments, containing as many as 100 panels stitched together to create a print or design using fabric.

According to Priyanka, “For Reconstructed pieces we realised if we used the garments belonging to families and create custom pieces for them from that material that they have available with them, the value they have towards the product, the fact that the product is only unique to them and their aesthetics, is made from people they know and love and through this they will never discard that special piece made for them and we can take people back to the culture of cherishing.”

Their raw material is sourced from vendors that they have built a connection with over the past decade. They arrange a special preview of their warehouses and find the oldest stock aka dead stock sitting in the back of their warehouses and search through the piles of clothing to find the garments that can be restored. They also encourage families to donate their old apparel and textiles so that the life cycle increases and garments are kept circulating so they don't rot or decompose as those garments have already stood the test of time.

4.4 I was a Sari

I was a Sari is a social enterprise founded in 2013 by Stefano Funari that reinvests 100% of its profits into the development of the business and in other women empowerment projects. Since the most sustainable item is one that already



Figure 3 – I was a Sari at Lakme Fashion Week

exists, the brand chose to work with pre-loved or post-consumer waste saris, which helps reduce their carbon footprint and save gallons of water.

They source second-hand saris from Chor Bazaar in Mumbai, one of the largest thrift markets in India. The Wagri community, who barter clothes and go from door-to-door exchanging clothes with kitchenware. These clothes are sold every day at Chor Bazaar and we source the saris from there. These saris come in bundles and are in a mix of colours and prints. These Saris get transformed into bags, shoes, jewellery, accessories, and ready to wear. The saris get a second life; they again become a part of the wardrobe of someone and even walk the streets of Milan or Paris! The founder is mindful not to waste, and the left-over sari or chindi is donated to Goonj, a leading NGO that creates sanitary pads and toys out of it. It is a small team handling sourcing, pattern making, design & product development, marketing and logistics. They work in collaboration with two NGO's - Community Outreach Programme and Animedh Charitable Trust and work with over 170 local women.

As a brand they strongly believe that the only solution is to make all fashion, sustainable fashion. And with the rise of conscious consumer voices, the demand will come from the consumer side, leaving little choices for the brands but to re-imagine their processes and operations with green solutions.

4.5 Kaizen

Kaizen was founded by Namrata Gohain in 2016 with a goal of bridging gaps among craft communities & urban cultures. The inspiration was to avoid the pre and post consumer waste and unnecessary textile waste, Namrata mentions that “When I started my label, I was sure, without a question, that it would be a low-waste business”

The brand uses the fabric scraps created during their garment construction along with good quality handloom dead stock from the handloom organizations. First, the discarded textiles are sorted, according to size and shape. Then, they are checked further for flaws like holes, etc. Third, according to the scraps available, the products are designed. Currently, the last use of the scraps is to use it to tie garment tags, etc.

Namrata describes herself as a solopreneur, working with artisans, fair trade organizations & work in collaborations with local talented artists & creative professionals. She considers her collaborators as her team.

4.6 LataSita

LataSita is a pioneering zero-waste studio founded by Meghna Nayak in 2012 creating garments made using textile sourced from Indian women’s wardrobes - a local, untapped resource with great aesthetic and emotional value. The brand believes that there are millions of saris tucked away in wardrobes across the country, being worn less and less. Sometimes brand new saris lie unused in wardrobes for decades, or are worn only once or twice. This treasure trove of fabric could not be allowed to decompose unseen and unused even as more and more cloth was being created to satisfy booming demand.

The brand has two lines, prêt and custom. To break down the process a bit, Meghna is a collector of sustainable textile, specifically old textile, and with this, they create the prêt line. This is something Meghna is always working on, and constantly creating new designs and planning future collections. Their custom “Send Us Your Sari” campaign has been running for five years and asks women to send in their saris to rework into brand new pieces of clothing instead of buying new garments. The idea is to turn people on to a process where they are highly engaged rather than mindlessly shopping online, for instance

When asked about her team - . I supervise the cutting minutely and cut the initial paper pattern myself. I have a team of 3 tailors in-house and an offsite unit as a backup. I might have to hire



Figure 4 – Design by LataSita

assistant designers in the future, but this is the part of the job I enjoy the most so I'd like to continue making my patterns.

The project is an intimate process that allows an anthropological glimpse into a very personal space - the wardrobes of women over the years. These self-curated spaces are incredibly interesting and the sheer variety of heritage textiles exposed to is mind-boggling.

4.7 Pero

'Péro' creates simple clothing, utilizing indigenous skills and knowledge of ancient textile and clothing traditions of India and the world over. Péro means 'to wear' in Marwari which is the local language of Rajasthan. Most garments are inspired by the local dressing styles that one comes across in the remotest of areas. 'Péro' recreates and adapts these styles for the modern consumer who seeks a similar aesthetic, at the same time looking for ease, comfort, and pleasure in their clothes.



Figure 5 – Design by Pero

The inception of péro was in 2009, with the USP of making their own handcrafted textiles in different parts of India, with an aim to make a global product that connects with people, wherever in the world, it is placed. The brand's focus has always been on research and innovation of fabrics, using traditional Indian techniques and crafts. In the last 10 years, The brand has worked in close collaboration with more than 1000

weavers/craftspeople across various regions in the country to innovate hand-woven, dyed and printed textiles, with the skilled craftspeople of Gujarat, Rajasthan, West Bengal, Karnataka, Andhra Pradesh, Kerala, Orissa, Madhya Pradesh, Uttar Pradesh, Himachal Pradesh, Jammu, and Kashmir, etc.

The Indianness of 'péro rests in the textile process, where materials pass through the hands of one craftsperson to the other, belonging to different parts of India carrying forward the Indian tradition of the hand made, and creating pieces that are at once unique. The resulting garment evokes a sense of culture from which it originates, this culture communicates internationally in such a way that the wearer looks equally at ease in the streets of Paris or London, as she does here in India

4.8 Pomogrenade

With a view to create affordable ethical clothing that's equally fun and functional, Pomogrenade was founded by Aiswarya Kutty & Madhulikha Umapathy in 2015. While

planning the brand they wanted to ensure an ethical brand and researched different ways they could approach sustainability.

The sourcing takes place through various channels, a wonderful network of likeminded brands and businesses who are conscious of their production. Producers and suppliers with dead stock fabrics/trims to best utilize the stock. And they are also in constant contact with various artisan groups, other producers, and local suppliers to absorb their waste/scrap or dead stock.

Pomogrenade works on a collaborative model, constantly tying up with various organisations to source and produce various products. The brand creates more products with the post production waste. They become part of other products or smaller accessories like fabric buttons, brooch pins, embellishments on bags, etc. The waste generated by the production is next to nothing.

4.9 Punah:

A very nascent brand founded by Aashita Jain in 2019 aims to create a brand revolving around ideology of circularity, sustainability and fair trade. They want to use upcycling and zero waste as a tool to promote sustainability.



Figure 6 – Design by Punah:

during the process and turn them into trims for garments like buttons, tassels or small accessories. They also use scraps in packaging and make brooches, masks and pouches out of it.

According to Aashita, “We are nothing without our small army of seamstresses and local craftsmen. They help us turn our ideas into well-made pieces. We also try to collaborate with different artisans from different states of India. In the past, we’ve collaborated with block print artisans from Sanganer and dabu block print artists from Bagru. Last year we saved more than 150 kilograms of textile and by the end of this year, we aim to save 450 kilograms of textile waste. We make sure not just our outfits but even our packaging is eco friendly. Our plantable seed papers tags have all the garment details, including details of every person who

The idea of Punah: started while the founder was working as a buyer and merchandiser. She realized the amount of waste generated during the process of production and how most of it ends up in the landfill. She started upcycling her friends’ and colleagues’ old jeans and jackets so that they are refurbished to extend their life. Now Punah: happily provides 360° upcycling and utilizes all kinds of textile waste they find. Punah: sources their materials from factories and different production units across the country. Sourcing material is a difficult task as there is still not much awareness about sustainability and it is difficult to find vendors to even give their cut & sew waste. Instead of following conventional methods of working on the design first, the material is sourced first. At times there are piles of factory rejects and scraps and handpicked by the team. Once the sourced textile is received, they are cleaned, sorted

according to colour, size, type and usability.

Punah: reuses all the fabric scraps generated

has worked on that outfit. We also send a small repair kit made out of leftover fabric pieces that contains fabric swatches, a needle, threads, trims and spare buttons.”

5 CONCLUSION

Sustainable fashion has gained a lot of attention in the last few years but there is still a long way to go . It’s a growing niche compared to where the movement started, when terms like up-cycling, slow fashion, ethical fashion were lesser known.. Many consumers are now sensitive towards what impact we create and genuinely invest in smaller more ethical labels but a lot of the audience is still looking for chic dresses and purchases the product purely for its aesthetic and quality. A large part of the market is still stuck to the idea of fast fashion because of the affordability and variety available.

The responsibility as the generation of Now, for the waste we generate is the only action that matters, at this intersection in time, where we are clearly recognising climate change as a risk to all life every single part of the world is going to get exhausted and depleted if we continue acting like we are still functioning from an industrial revolution mindset where we are extracting more and more from the body of the earth. It’s time to slow down and to bring awareness within ourselves.

With a goal to making the world better and more sustainable the Sustainable Development Goals are the blueprint to achieving that future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice being the primary issues addressed by these measurable goals.

Each of the brands is working towards the same goal of creating a more nourished earth while also aligning themselves to various sustainable development goals like

Goal 1: No Poverty – To end extreme poverty in all forms by 2030, working towards this goals, the brands are doing their bit by working with self-help organizations. Providing a respectable occupation and employment to various artisans.

Goal 5: Gender Equality – Achieve gender equality and empower all women and girls, this is of prime importance in a patriarchy based social system prevalent in India. Home-grown fashion brands collaborate and enlist the support of the women thereby achieving the twin goals of creating gender equality and creating sustainable fashion.

Goal 8: Decent Work and Economic Growth - Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. An important part of economic growth is that people have jobs that pay enough to support themselves and their families, the brands have provided employment and a way to improve the economic standing of the employed families.

Goal 9: Industry, Innovation and Infrastructure - Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. This has been evident in the founding and working of each of the brands mentioned above which have been beacons of innovation and sustainable production of garments.

Goal 10: Reduced Inequalities – Reduce inequalities within and among countries, India and a few other countries in the sub-continent are a hub for garment production owing to the low labour cost and abundant availability of the raw material. Though a hub for production, the

labour is not adequately compensated, these Indian brands working with smaller artisan groups have been trying to reverse this practice.

Goal 12: Responsible Consumption and Production - Some people use a lot of stuff, and some people use very little—in fact, a big share of the world population is consuming too little to meet even their basic needs. Instead, we can have a world where everybody gets what they need to survive and thrive. And we can consume in a way that preserves our natural resources so that our children can enjoy them, and their children and their children after that.

These upcycling brands have been instrumental in reducing the carbon footprint for themselves and their consumers. They have also set the stage for new brands who would like to take up the mantle and promote similar causes.

And this where and how the thought matters, it is imperative to make empathetic choices towards our consumption in some way. It is about the ability to sustain a garment through its life- cycle is in consumer hands and need to pass it on to future generations responsibly.

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8 CONFLICT OF INTEREST

Author declares no conflict of interest.

Sustainable Impact of Organic Farming: A Social Constructivist Perspective

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Abstract

The bottom-line for businesses is to earn profit or maximize the wealth of its shareholders. It is a matter of great debate, who comes across that slogan. Sampran Riverside, however, has been a successful business model for Thailand, which has been known as the maximizer of its customers' wealth as well as health, by an extensive production of organic products through organic farming and food, subsequently spreading it through cultural and tourism activities. Present study is a qualitative case study that describes how the Sampran riverside grew into an environment- friendly model from a conventional business entity. The study revealed how the business transformed and reached success through the constructive learning process. A detailed study showed that organic farming helps society to grow healthy and also creates economic opportunities for the people. Site visits of the business and organic fields, as well visit of organic markets and interviews with the farmers, customers and the CEO of the Sampran Riverside, concluded that organic farming serves the society in a holistic way by providing social, environmental, economic and health benefits at one platform, eventually, contributing in community and societal development. The study also concluded that through this development, the Riverside contributes in meeting some of the Sustainable Development Goals (SDGs). Adopting this model may pave the way for sustainable development in the society which will help country in long run.

Key Words: Community development, constructive learning, organic farming, SDGs, societal benefits.

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