

Impact of COVID-19 on Sustainable Economy

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Abstract— The continuous debate of economy vs climate prioritisation overlaps into one concept from the Brundtland report by the UN in 1987. The conflict highlights the link between economic development and climate change while incorporating social development. This paper explores the concept of sustainable development and the effect of the pandemic on it by further portraying a data analysis on the impact of COVID-19 on household sustainability's. In this paper I argue sustainability's importance in today's world and underpinning the dramatic impact of COVID-19 on the same. "Given the increased focus in recent years on the need for synergies between economic, social, and environmental progress (in addition to the studies mentioned earlier in this section, see e.g. Stiglitz et al., 2009, 2018), we hypothesize that synergies between these three spheres of progress will occupy a larger portion in our projections of the interlinkages until 2030 than trade-offs (Kroll, C., Warchold, A., & Pradhan, P, 2019)", this hypothesis completely supports argument as I draw focus on the impact of sustainability on our future and its necessity to be implemented and prioritised.

Index Terms— COVID-19 on Sustainable Economy.

I. INTRODUCTION

A sustainable economy is overall development in the country's social, environmental, and economic sustainability. The United Nations defined sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs". A total of 193 countries in the world today have adopted Sustainable development Goals. The 17 goals placed by the UN include-No poverty, Zero hunger, Good health and Wellbeing, Quality Education, Gender Equality, Clean Water and Sanitation, Affordable and clean energy, Decent work and economic growth, Industry, innovation and infrastructure, Reduced Inequalities, Sustainable cities and communities, Responsible consumption and production, climate action, life below water, Life on Land, Peace, Justice and Strong institution, and lastly, Partnerships for the goals. Using this SDG as a measure, several theories have been made towards the impact of the sustainable economy after COVID-19. The Pandemic slowed down the economy, uprooted millions of jobs, doubled poverty levels, produced tonnes of bio-medical wastes. These externalities have shifted its focus from sustainable development to the health care system, allowing the government to aid millions of people. However, the concept of having a fair and equal social community, sustainable businesses that use clean energy, and reduce climate change has never been easy to achieve. The priorities,

goals, necessities, fiscal deficits, population, living standards, literacy rate of so many countries differ. Hence, working towards sustainability is an extended and community involvement process. This paper explores the three pillars of sustainable development and how could you accomplish them, India's goals, the Impact of COVID-19 on India's goals and the world. Data analysis in this paper highlights the impact on household sustainability and how society can affect a sustainable economy.

II. LITERATURE REVIEW

An article from the process.st [5] that consists of citations from numerous research papers has interpreted the definition of Economic sustainability. "Economic sustainability refers to the practices that support steady growth in total national GDP of a minimum of about 2% per year, without negatively impacting social, environmental, and cultural aspects of the community." This definition explores the concept of having a continuous economic growth of at least 2% to allow the country to have a future sustainable economy. This steady economic growth without harming social and environmental aspects will let the economy flourish and achieve a higher quality of life for the citizens of that country. The importance of having this steady growth over a long period is to give future generations a chance to live a secure and safe life without dependence on scarce resources.

Furthermore, this stability in growth will allow the countries to adapt to the fast-changing world with new ideas and innovations. The concept of positive economic growth is relatively easy to achieve in comparison to sustainable economic growth. Sustainable economic growth requires businesses, communities, households to thrive with minimum wastage of resources. According to weforum.org, one of the 'eight steps towards a sustainable economic recovery is to expand the usage of clean energy. Only when firms start to approach an eco-friendlier and socially aware method will they lead the country in a sustainable direction without compromising its productivity and growth.

Sphera.com [6] describes environmental sustainability as "the responsibility to conserve natural resources and protect global ecosystems to support health and wellbeing, now and in the future". Despite having solutions to live an eco-friendlier life, global environmental development has proved to be extremely difficult. The UN environmental programme's emission gap result from December 2020 highlights the temperature increase of 2°C, which has surpassed the climate change goals of 197 countries. The United Nations Framework Convention on Climate Change (UNFCCC) reiterates this by underpinning the Paris

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Agreement goal to limit the rise to 1.5°C, hence re-emphasising putting the climate a priority. Phil Harding, a British field archaeologist, once said, "Without environmental sustainability, economic stability and social cohesion cannot be achieved". Thus, the responsibility lies within the community to start living a more sustainable life. The World Wildlife (WWF) [21] and wessex water.co.uk[24] navigate living more sustainable at home

by reducing consumption of meat, conscious decision to avoid plastic, saving energy at home, and saving water at home. The concept of Reuse, Reduce and Recycle is the most common application that should be practised to improve environmental sustainability one at a time. In correlation to the climate change movements, environmental sustainability has shed light on the possibility of exhausting limited

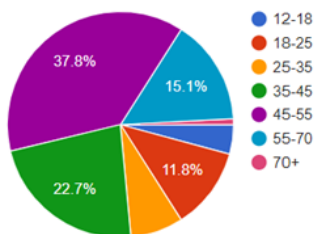


Figure 1- Participant's age-group

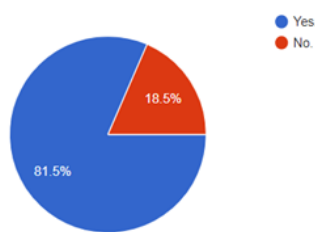


Figure 2 – Q.1 Do you tend to make long term investments?

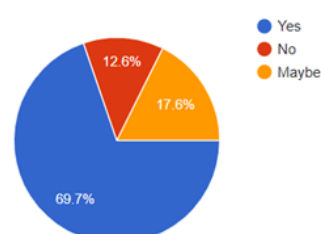


Figure 3 – Q.2 Have you been conscious about your spending during COVID-19?

resources. The Brundtland report proposes that crucial environmental problems in the world today is a consequence of extreme poverty. Therefore, to continue to achieve this sustainable economy, social sustainability is also proved to be vital.

Social sustainability is "resilient societies where citizens have voice and government listen and respond. Such societies support growth and poverty reduction today and into the future", according to worldbank.org [18]. The website diversity.social [4] states, "The four dimensions of social sustainability are, Quality of life, Equality and diversity, Social cohesion, Democracy and governance". To build these societies with open-minded communities and a cumulative goal towards resolving social dilemmas, such as racism, discrimination, gender inequality. A well-developed social development allows a parallel growth in healthcare, job satisfaction, a rise in happiness quotient, and interlinked productive communities that share knowledge, ideas, and opinions. The government and the people must be very involved in this process to gain successful social sustainability.

India has come a long way in its sustainable economy has is continuing to show ongoing development. The sustainable development goals by the UN, along with the National Institution for Transforming India (NITI Aayog) [16], had shed light on India's sustainable goals in 2017. The country proposed a 3-year plan that ran through 2017-2020. Moreover, the government had an eye on a 15-year plan that already consisted of a 7-year strategy. The government of India focused upon goals 1, 2, 3, 5, 9, 14 and 17 from the SDG agenda. The goals focused upon:

- Goal 1: End poverty in all its forms everywhere.
- Goal 2: End hunger, achieve food security and improved nutrition and promote agriculture.

- Goal 3: Ensure healthy lives and promote wellbeing for all at all ages.
- Goal 5: Achieve gender equality and empower all women and girls.
- Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation.
- Goal 14: Conserve and sustainably use the oceans, seas, and marine resources.
- Goal 17: Revitalise the global partnership for sustainable development.

To implement these goals, the government of India took several initiatives and founded numerous drives, movements and allocated its resources towards their agenda. By the 2020 High-Level Political Forum on Sustainable Development (HLPF) report to review the 2030 agenda, India shows massive growth in its goals. The country started Sashakt Bharat- Sabal Bharat, which allowed India to lift more than 271 million people out of poverty. It improved its education, sanitation, nutrition, electricity, child health, housing and drinking water that positively impacted the people. Furthermore, Swachh Bharat- Swasth Bharat, a campaign that accomplished 100% rural sanitation and a noticeable reduction in child and maternal mortality rates. Moreover, India's Satat Bharat- Sanatan Bharat has electrified all its villages and has seen a tremendous decrease of 38 million tonnes of carbon dioxide emission annually.

India had a mixed development in the social suitability sector during the Pandemic. With a total of 29 510 410 COVID-19 cases, India has seen an incredible health care system that has a SAARC COVID-19 emergency fund with 10 million US \$

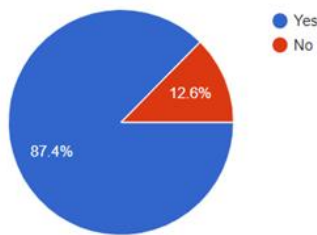


Figure 4 Q.3 has your digital transaction increased due to the COVID-19 Pandemic?

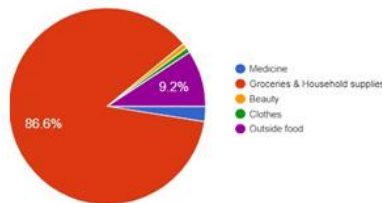


Figure 5 – Q.4 spending pattern - What did you spend most of your money on during COVID-19?

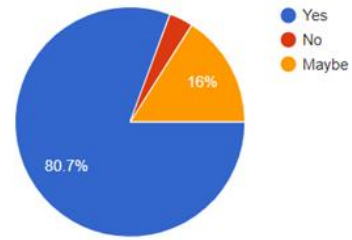


Figure 6 – Q.5 Education is becoming more and more expensive nowadays. Are you willing to invest in it for the future generation?

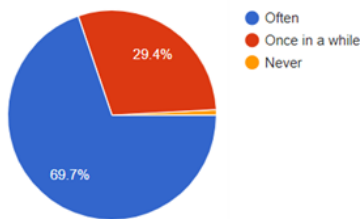


Figure 7 - Q.6 how often do you reuse?

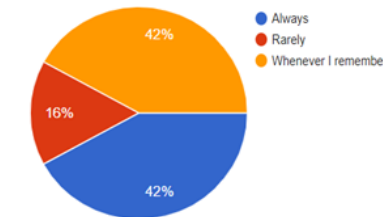


Figure 8 – Q.7 Despite knowing about recycling, how often do you implement it?

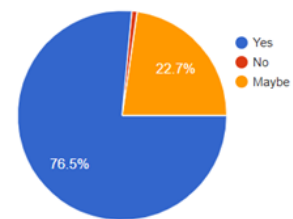


Figure 9 – Q.8 Are you open to living more sustainably (for example, avoiding plastic, use bamboo brushes, cloth bags, cardboard containers, eco-friendly cleaning soaps etc.)?

that allowed India to reach out with medical assistance to other countries. Additionally, 25.5 billion US \$ was used for domestic response and the best health plan for its medical staff. However, despite the success of Sashakt Bharat- Sabal Bharat in 2016, institutmontaigne.org [10] underpins the statistics of COVID-19 on poverty. One hundred twenty-one million people had found themselves unemployed, most daily wage workers and at least 4 million below 30. The United Nations Development Programme (UNDP) has estimated that 260 million people will be back to living in poverty. In August 2020, Monika Chaudhary, P. R. Sodani and Shankar Das [33] published research papers that highlight the plunge in the economy of India due to COVID-

19. The report focuses on "assessing the impact on affected sectors, such as aviation, tourism, retail, capital markets, Ministry of Micro, Small and Medium Enterprises (MSME), and oil". Unfortunately, COVID-19 has also staggered India's progress in environmental sustainability. A Hindustan Times article [8] portrays the Central Pollution Control Board (CPCB) of 45,308 tonnes of only COVID-29 biomedical waste. Plastic face masks and PPE kits are common uses among households throughout and not just hospitals producing biomedical wastes. Non-essentials such as home deliveries ranging from food services to clothing and cosmetics worsen the plastic generation in India.

Not only has India been affected, but also the world. The Frederick S. Pardee Center for International Futures and the Josef Korbel School of International Studies at the University of Denver [32] researched assessing the impact of COVID- 19 on sustainable development goals. The paper underpins the effect on mortality, GDP costs, recoveries, the impact of SDG push and many more. In addition, the

article shows the extreme poverty increase from 861 million people to 905million people in COVID-19. The 17 sustainable development goals for the 2030 agenda may see slower progress due to COVID-19 and financial, economic, and global challenges; however, it is still a priority for the world.

A research paper is written by Longyu Shi, Linwei Han, Fengmei Yang, Lijie Gao from the University of Chinese Academy of Sciences [31], called "The Evolution of Sustainable Development Theory: Types, Goals, and Research Prospects", explores the idea of misinterpretation to the theory of sustainability. It explores problems between the "strong and weak sustainable paths". It argues with "the theory of string sustainability should be accepted concept of the SD. Culture, good governance, and life support systems are important factors in promoting SD". However, while the Sustainable development theory may have controversies, the goals made are the first step towards the future.

I.METHODOLOGY

The survey was held to research about the sustainability in households throughout countries. It explored the environmental awareness, social fairness, and economic contribution of the households across middle class families.

A questionnaire consisted of 3 parts, with a total of 30 questions. Part one was basic details such as email ID, age, and location. Part two held questions of sustainable development's environmental and economic aspects, and part three was off the social aspect. The survey was given

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to 115 people from 26 cities, six countries spanning the age groups from 12-70. The survey was conducted through an online platform, google forms. There were 19 multiple

choice questions, four short text answer questions, four questions that contained a number line, three dropdown questions.

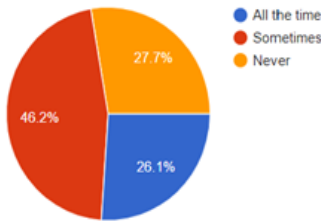


Figure 10 – Q.9 Did you use public transport often or practice carpooling pre-pandemic?

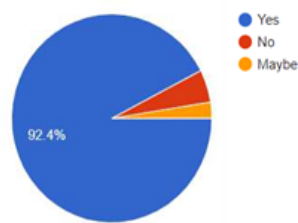


Figure 11 – Q.12 Do you make a conscious effort to save electricity when not being used?

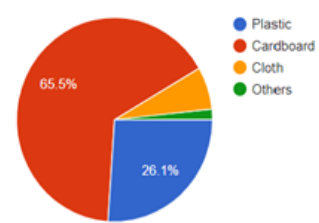


Figure 12- Q.15 Most of your shopping packaging arrives in which material?



Figure 13 – Q.16 Does your community make a conscious effort in waste management? (Waste segregation, compost, etc.)

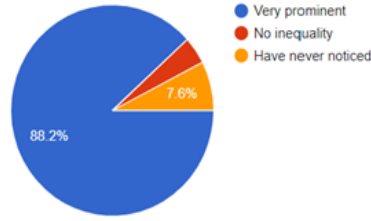


Figure 14 – Q.18 How prominent is income inequality in your country?

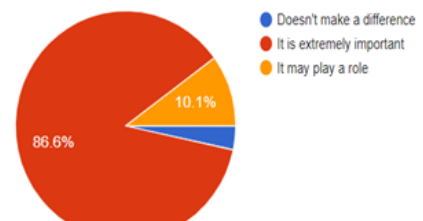


Figure 15 – Q.19 How big of a role does the public play in living sustainably?

These questions were targeted to achieve subjective answers that allowed a perspective from the users. Thus, the survey highlighted the understanding of sustainability that the users understood and their progress towards it.

Hypothesis:

The importance of a sustainable economy and how COVID- 19 staggered its progress.

Null Hypothesis:

COVID-19 has not affected sustainable living in communities.

Alternative Hypothesis:

COVID-19 has affected sustainable living in communities.

I. DATA ANALYSIS

This data analysis is the cohesive analysis through 30 questions that provided data in the sustainable development progress. As shown in Fig.1, most of the answers filled in and completed consisted of the age bracket 45-55, and the proceeding is 35-45 with 22.7%, all age groups from 12-70+ were represented in this survey.

As depicted in Fig.2, 81.5% of the 119 submissions of the survey chose yes for long-term investments; however, 18.5% of the answer that filled no, suggesting that they prefer not to invest money and resources for the future. Eighty-three people have agreed to the notion that they have been vigilant about their spending, while 12.6% and 17.6% of the people disagree and have filled out no and maybe – as shown by Fig.3

As evident from Fig.4, a majority of 87.4% have increased their digital transactions, while 12.6% still prefer to use physical means, such as cash. A considerable majority of the people in the survey, 103, have spent most of their money on household supplies and groceries. The next majority show outside the food category, hence suggesting the importance of food as implied by Fig.5.

Fig.6 depicts, 80.7%, the 96 people of 119 believe in the necessity of education, while 23 people remain sceptical about it. This data as represented by Fig.7 shows that for the majority, the primary option to reuse is ‘often and once in a while’. This consciousness data is also supported by Fig.8, suggesting whenever they remember they tend to recycle.

99.2% of the respondents have said yes, or maybe to the idea of living more sustainable as charted in Fig.9. This represents a collective thought of being open to the future sustainable living. A mixed and generally well-distributed answer as shown in Fig.10, consisting of a sufficient number of participants used public transport or carpool before the pandemic.

Water conservation consciousness was seen at 75.6% amongst the survey participants as shown in Table I. Further finer observation suggested that the younger age group was not as concerned compared to the rest. A reliable conclusion can be drawn based on Fig.11 that the majority of the respondents try to save electricity, with 92.4% of the people choosing yes.

As suggested by Fig.12, most of the shopping packaging

material is obtained in cardboard followed by plastic.

Table I. Q.11 Do you consciously save as much of water as you possibly can?

Country	Options		
	Very prominent	No inequality	Have never noticed
India	91	6	3
USA, Chile, Australia, Dubai, Sweden	13	2	3

Table II Income inequality as observed by participants

Age Group	Majority choice
18-25	Yes (8/14)
25-35	Yes (7/9)
35-45	Yes (23/27)
45-55	Yes (34/44)
55-66	Yes (17/18)
70+	Yes

Table III- Q.20 Are all genders accepted in your country?

Age group	Value, Percentage of Age group	
	Yes	No
18-25	3, 21%	11, 79%
25-35	8, 88%	1, 11%
35-45	23, 85%	4, 15%
45-55	34, 79%	9, 21%
55-65	14, 77%	4, 23%
70+	0, 0%	1, 100%

It may be noted that, even though overall packaging is in cardboard, the contents are still wrapped in plastic for most of the items. Based on Fig.13, most people have answered yes, agreeing to waste management in their community; however, 45 people, have no waste management in their society, and the same are not aware of the procedure in their building. While the majority say yes, the next highest option chosen is no, showing a mixed response by the community.

As shown by Fig.14 and Table II with a unanimous result,

105 people believe income inequality persists in their country. Most of the survey participants as displayed in Fig.15, 86.6% being 103 of the total; agree that people play a significant role, however the remaining 13.4%, 16 people are unsure and don't believe the society play a role in living sustainable.

Table III suggests that 73.1% say yes, while 26.9% of the people say no about the gender acceptance in their country.

I. RESULTS AND DISCUSSION

The survey provided a vast range of values that contained results for each age group and country. The first section of the survey was the economic and environmental sector that highlights the decisions of households and the impact of COVID-19 on them.

The first question results portray the tendency of 81.5% of 119 people to make long-term investments. After analysing each response, data highlights 50% of the younger age group of 18-25 do make long term investments, while 7 out of 9 people in the 25-35 age bracket tend to make long term investments. Secondary data states that the highest job loss was in the age group of 15-24, then proceeding the 11% of 41% unemployment of the 25-35 age group. Naturally, it can be inferred that anxiety and fear for weak job security will decrease expenditure from this age group, resulting in only purchases of essential goods. Moreover, India's inflation rate jumped from 4.76% in 2019 to 6.2% in 2020; the United States of America is currently experiencing high inflation rates of 5% from a 2.3% inflation rate in 2019. Thus, one can conclude, with high inflation rates, fear for job security, and an average of Rs 38,822 medical bills per household in June 2020, this age group will have minimum disposable income to invest in the future. Furthermore, to support this argument, question 2 and 4 highlights the conscious spending of money on essentials during COVID-19. The age group of 18-25 supports this statement as 9/14 states have been aware of their spending and 7/14 have spent on groceries and household items, and 6 /14 have spent money on food. This spending on essentials may not benefit the economy, as other will industries struggle. Despite this negative impact on economic sustainability, questions 5 and 8 highlight the positive scope. 80.7% of the people who attempted the survey believe in investing in the future. This particular investment highlights how in the long run, when the literacy rate increases, quality of life will increase, social awareness will increase, hopefully allowing sustainable goals to flourish. To re-emphasise the possibility of sustainable living as an option, the survey underpins that 76.5% are open to the idea of living sustainably, and 22.7% are sceptical about adapting to the new lifestyle. Hence, while COVID-19 has impacted some factors of the economic sustainability, positive opinions and open-mindedness of the people suggest that while economic sustainability has been affected, the future may not be compromised.

The survey further conveyed the impact on environmental sustainability due to COVID-19. Question 3 weaves in the economy and environment by highlighting a new digital literacy that runs today's economy. Digitalisation conveys the lack of using cash, hence allowing us to prevent printing more paper notes. This will enable the country together to utilise the resources to the fullest while not compromising the economy. Question 6 conveys that reusing is relatively common in some households; however, question 7 shows a different result. Question 7 has a balanced response of recycling always and recycling whenever the participant remembers. The balance highlights a positive response as one can hypothesise that the growing importance of sustainable goals and increasing social awareness can always change the reactions to recycling. Question 10 and

11 primarily deal with the consumption of natural resources such as water, and an essential in all homes, electricity. Question 10 has received an overall positive response, with most of all age groups conveying they do save water as consciously as possible. This positive argument also can reflect and conclude the same for the preservation of electricity. However, some negative conclusions can be drawn from question 9 of the survey. At the same time, the maximum of the study highlights a 46.2% that public transport was sometimes used pre-covid, and a pre-existing value of 27.7% of people never using public transport before. With COVID-19 profoundly impacting the public transport sector, the Indian metro is losing 80 million INR every day by not functioning. This supports the trend that the safety of the educated class does matter to a certain extent; hence, maybe in the near future, the consumption of public transport

-for families that already have private vehicles- will probably decrease. On the other hand, an increase in public transportation will impact employment and impact the environment as more pollution will be generated.

Furthermore, a mixed set of conclusions can be drawn from question 15. This question underpins the material of packaging received; the table made in the data analysis (page 9) portrays how after cardboard, most of the packaging today still is obtained from plastic. However, the second most used material in packaging today is still plastic; these mixed results can change in the future but will take a longer time to achieve as COVID-19 has impacted revenue, food packaging and seen an increase in biomedical waste.

Part of the survey draws data in the social sector of sustainability that provides conclusions of society and its role in today's world. Questions 16, 19 are integrated questions of the environment and society's role in it. While 62.2% of the people do waste management, 27.7% of the people are not aware of their garbage procedure. A low number in waste management should be rectified by allowing buildings to take responsibility and explain the waste management system in their community. Moreover, society plays a highly pivotal role in awareness, and several practices such as waste management should be practised in each house and neighbourhood. To support this claim, 103 people agree that society has a significant role in the community to live sustainably, while the 10.1% are unsure. Knowing how important you play in the process towards sustainability is the first step before implementing social awareness in the community. Social awareness also interlinks with other aspects of the society, in which growth of the society into new ideas, fair means, and harbouring the right thoughts. Questions 18 explores the unfair practices that closed minds, leading to not allowing growth within the community. 88.2% of the people believe that income inequality is very prominent in their country today. This backward way of society that does not treat all with equality supports how growth is minimal in the 21st Century. Furthermore, question 20 also explores this stunted growth by highlighting how all genders are not accepted in several countries. 79% of the age group of 18-25 agree with this

claim, and string feels that gender acceptance worldwide is necessary to accept all.

II. CONCLUSION

This paper concludes that generally, the sustainability agenda has been affected due to COVID-19 and requires social outreach to help countries prioritise these goals. With the government having short term economic goals, the importance of living more sustainably will continue to increase as natural resources continue to decrease. The data analysis highlights the increasing awareness of the environment and our society, concluding that the use of this power can help drive the government, its people, and the country to a greener economy.

III. LIMITATIONS

The limitations of this paper include minimal participants from few foreign countries and require more survey answers in the age group of 70+. Hence no concrete evidence can be drawn on the impact of COVID-19 on household sustainability.

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