

# Optimising Pandemic Response through Self-Sufficiency – A Review Paper

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**Abstract** Self-Sufficiency is an undermined subject that has not been given attention since the early days of Socialism and the beginning of Marxism. With the capital-based economy and the rise of globalisation, most countries reached their lowest self-sufficiency level ever with the majority having only 20% capacity to depend on their products. This paper explores why SF is important now during the pandemic and in the New Norma and how these current conditions brought more opportunities for the subject to make people and decision-makers release more from the pros and cons of globalisation. The paper explores how countries and communities could benefit from SF to re-build more independent communities through optimising concepts as the eco-villages and animal farming that would also encourage the making of sustainable cities. The challenges and the solutions of future food security SF projects establishment are presented as part of the contribution of this paper. Further studies in the area SF during lockdown are recommended to extract the best methodologies of maintaining livelihood while we are fighting for life.

**Keywords** COVID-19, Self-Sufficiency, Pandemic Response, Communities Security, Eco-Villages, Lockdown

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## 1. Introduction

COVID-19 made the issue of being self-reliant and self-sufficient (SF) be a priority for many countries and communities. In this paper, we shall review the definitions of SF and the types and elements of SF practices needed more than ever today, in the post-COVID-19 pandemic world.

The paper explores why SF is essential now during the pandemic and in the New Norma and how these current conditions brought more opportunities for the subject to release people from the constraints of the capital economy. Simple examples also are given about how countries could

benefit from SF to build more independent communities that could eliminate poverty. Lewiston-Nez (2020).

The paper calls for optimising the concept of eco-villages as self-supply communities, be it in agriculture or animal farming projects to ensure food security and then spreading step by step towards other SF projects, based on the challenges faced during the pandemic and its related livelihood consequences. Gilman (2008).

## 2. Literature Review

### 2.1. Definition of Self-Sufficient

Webster dictionary defines SF as being able to maintain oneself or itself, if it is an organisation, or a family, or a community, or a country; without outside aid. Hence, any of these entities are capable of providing or fulfilling their own

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needs they are considered to be self-sufficient. However, it seems that even dictionaries do not accurately differentiate between being self-sufficient, or other synonyms as being self-dependent and self-reliant.

Self-reliance is about not being dependent on external "flows" by relying on one's self, one own power, but not necessarily self-sufficient. Being self-sufficient is about obtaining, having, or producing the resources one needs. The word sufficient is about the optimising the utilisation of what owned or produced in quantities of what one might need both during normal situations, or during the crisis.

Hence, self-sufficiency (SF) is about being dedicated towards the goal of being self-sufficiency by effective management of the resources necessary for survival or development. Hence, SF would always be about obtaining or producing resources and the attitudes of the people towards these resources.

In today globally connected economies, it is highly challenging to be totally SF, but with lessons learned from the pandemic, we should try to inter-dependent, by focusing on specific policies, projects, practices that would reduce the risks through mitigation of both probabilities of occurrence of specific essential resources and the significances of the shortages of these resources in the survival or the management of the global or regional emergency situation. Lewiston-Nez (2020).

SF is also very dependent on specific variables as the dense of the population, or geographic location, or the type of emergency crisis, or the type of resource shortage. If the probability of the shortage is about energy, food, water, security, or sanitation, then this needs to be scored higher as a priority SF project. Nair (2020).

This long definition of SF sets only its borderlines as the topic is very large and can be tackled from different perspectives and disciplines. But, it is worth it to be.

## 2.2. What Type of SF Needed?

More studies are needed to decide what represents an SF type and priority, is it food, is it services, is it items, is it attitudes, etc. SF is so large, and the type is related to the conditions, the demographics, the capacity and the transformation plan. Most important, all these types are related in the end of the day to the type of the livelihood to be created or needed through SF projects.

Regardless of the type of the SF project, in all the cases, we need to work on the infrastructure development that would lead to the enhancement of the 'quality of life' of the different sector of the community starting with the most vulnerable and the producers, i.e. such as the farmers and fishermen. The food security projects could start with simple projects as land and irrigation developments. Nair (2020).

## 2.3. Elements for SF for Post-Virus World

The most important self-sufficiency's response to the COVID-19 pandemic can be summarised in three elements:

1 Bio-security, 2 Cyber-security, and 3 Food security.

These three security issues will also bring up the necessity of new regulations between countries and in global markets. Countries with strong agriculture and livestock infrastructure will be among the winners in this process. Lewiston-Nez (2020).

Specifically, food security and related practices will be a hot topic in the coming decades, especially with the rise of the impact of experienced lockdowns, down of globalisation and development of nationalisation and regionalisation. Also, food security has great importance in many countries where climate change started to have a clear impact on their capacity to produce and grow from natural farms. Nair (2020).

## 2.4. 'Self-Sufficiency' Means Concept/Practice/Status/Type

Self Sufficiency helps to establish a better resilient economy practice that leads to communities' development by ensuring sustainability and continuity, Buheji (2018). Here, the SF would be used as a tool for the empowerment of communities' through the development of more independent models and business models.

SF should focus on the diversification of products and nutritional values. Thus, an effective global SF program should focus on doing a first situational assessment of the level of self-sufficiency of the different countries and regions of the world. This should help us to predict the type of coming global and regional SF crisis and how to direct specific production efforts or work on selective productivity to enhance the capacity of SF in specific regions.

Integration of SF resources should help to drive the communities' models to be more independent, where the food supply chain (from earth to mouth) can be improved. These SF projects and efforts should focus more on poverty areas; however, one has to confirm that effective storage and distribution is highly needed even in developed countries. Thus, again regional and global assessment of the SF preparedness should be a priority.

## 3. Methodology

More 40 international multidiscipline scientists and scholars came together on a zoom conference meeting during the second week of May 2020, i.e. after eight weeks since the declaration of global emergency due to COVID-19 pandemic. The discussion focused on the importance of the SF and its role in creating more independence of communities during pandemics.

To optimise the opportunities that the pandemic brings on giving SF projects the priority, the discussion group focused on the different perspectives that would ensure food security that through the eco-villages and the animals farming. These discussions are considered a review for the capacity for responding to future pandemics.

## 4. Why Self-Sufficiency is of Importance During Pandemics?

### 4.1. The Importance of 'Self-Sufficiency' During COVID-19 and the New Normal

Self-Sufficiency (SF) has an important psychological role during COVID-19, as per Dr Buheji, since SF ensures people safety and acceptance of lockdowns. With SF we can ensure food security for undernourished people. Today the amount of undernourished people in Africa alone is more than 200 million, which is an increase in 21 million people in hunger compared to 2019. SF also would address the health and wellness, where still one in every seven children, can't have a healthy life due to food shortage. The need to create an inter-dependence system is not only in the developing countries, but even the developed countries such as the USA where more than 40% of children depends on school free-meals. Nair (2020), Kiernan (2020), Taylor (2013).

Applying the SF brings in opportunities for environmental and climate essential demands, besides it helps to re-establish continuity of essential services. This a daily fact in sub-Saharan Africa and many refugees areas as the Rohingya in Myanmar. This would help to spread the practices of resilience economy where SF would be a great means for socio-economic development. Buheji (2018).

### 4.2. Benefits of Self-Sufficiency

Dr Buheji is the founder of Inspiration Economy, which is a concept focus on solving socio-economic problems through minimal resources. Dr Bihej believes that vulnerability of any type of food-related items or vulnerability in the systems could increase the impact of the viruses. Self-sufficiency, as Buheji enables a country to be economically interdependent; thus, the socio-economy can regain its strengths and resilience. "With the self-sufficiency, we can bring the community or the country together to appreciate the available natural resources (hence build abundance thinking), we improve the livelihood standards of capital and the rural areas and thus ensure equality in economic affairs", says Dr Buheji. Thus, one can ensure stable international relations.

Self-sufficiency addresses exactly the needs for the (new normal), where people are empowered or developed to be more independent in their business models, to become autonomous, self-reliant and persistent; however, as Dr Buheji emphasis they should be still collaborative and tolerant. The best examples for self-sufficient communities, Buheji recalls, could be found in the Asian Tigers countries, namely Hong Kong, Indonesia, Malaysia, Singapore, South Korea, and Thailand. However, almost all of those successes came based on problem-solving and not projects, where the communities change the problems into opportunities. Figure (1) shows the importance of having a mindset that tackles communities problems through seeing the hidden opportunities that they carry within them. Dr Buheji sees that this exploration of problem opportunities helps to bring in

the intrinsic opportunities inside the problem and thus shift the focus from the expected results to the positive outcomes. This creates as per Dr Buheji that positive difference, called the "Inspiration Currency", where opportunities exploited. Buheji and Ahmed (2020).

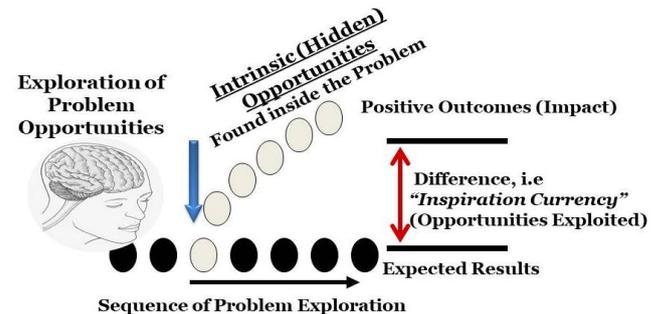


Figure (1). Exploitation of Intrinsic Hidden Opportunities During Self-Sufficiency Projects

### 4.3. Opportunities that COVID-19 Pandemic and the New Normal

Post-COVID-19 opens up opportunities for networking and local progress. It will be necessary to activate all the potentials for a sustainable future and ensure safe management of the transformation toward the new normal. It will be necessary to think holistically, differently and also to work differently, if we want to avoid the situation before COVID-19 and the miss that happened to many livelihoods during the pandemic so far. Buheji and Ahmed (2020).

Another Slovenian practitioner Alenka Zapušek presents her experience in building another self-sufficient farm called Vrhivšek from Frankolovo in the Savinja region. This village is 800 m above sea level and located among the mixed forest, and all the food items are grown without pesticides.

Alenka realised it is better for her family health is to live and grow in nature and grow organic food. The farm started with potatoes and onion, soon later the farm is growing all vegetables and the family became self-sufficient. Alenka reports that even her family quality of life and health of her children improved and now they experience the taste of food never like before. The farm grows spelt and hemp without pesticide use, and these two vegetable are considered important for self-sufficiency since from them the community can make 50.000 products out of them. Hemp is also good for soil improvement, takes more CO<sub>2</sub> from the atmosphere than a forest in a few months and especially because the whole plant can be used without competition among food and technical usage. The 0,5 ha hemp brings in production of food and cosmetic products. The farm is also used for educational courses for kindergarten, schools and interested adults about positive effects of daily use of hemp.

Herbs are one of the three pillars of the farm, besides the hemp and the cereals. The herbs are used for distillation in order to produce essential oils and hydrosols. The herbs are also used for home-made cosmetics, and for practical workshops for how to use the herbs in lifestyle and healthcare.

Alenka says "despite the fact that that our first impulse in starting the farming was to provide our family healthy food and produce cosmetics, today we can offer people the products grown in a sustainable way and without negative impacts on the environment. Through these years, we've got knowledge and skills to advise which product to use for which purpose. These facts are brought with authenticity because we use these products ourselves every day, so we know them perfectly. Step forward is also educational courses and workshops where we promote healthy nutrition, healthy working places for enterprises, and how to use of home-made cosmetics for productive families, entrepreneurs projects or family business".

#### **4.4. Why Countries need to Self-Sufficient in the New Normal?**

It is too early to say who will be the real winners and losers of this period marked by COVID-19. It is not possible to make predictions with mathematical precision on this subject. The big actors might lose big, and the smaller ones accordingly. Countries, regional alliances and international institutions and organisations will have to act in light of this fact in the aftermath of the pandemic.

In this process, national and domestic self-sufficiency and global cooperation will have to progress hand in hand, incoordination. The pandemic has revealed the importance of the national capacities of individual countries. Self-Sufficient countries with a strong infrastructure, and supply chain; proven to have a strong national capacity to take prompt actions and put up a more effective fight against the crisis.

But we cannot afford to ignore the importance of international cooperation, either. No country is expected to deal with such crises alone. Regional and international cooperation is much more important now than ever. A global order based on equality and fair sharing will be to the benefit of everybody. After COVID -19, national self -sufficiency and global cooperation will increase in importance simultaneously.

The coronavirus pandemic emphasises the importance of local food production, but are such food systems able to fulfil global demand? Food production and consumption have revolutionised in recent decades, driven by globalisation. As a result, today, most of the world's populations reside in countries dependent on, at least in part, imported food. These often lengthy supply chains have attracted significant attention of late, as the current coronavirus pandemic causes disruptions from farm to fork. Nair (2020).

#### **4.5. Importance of Self-Sufficiency to Build More Independent Communities**

Bartola Mavric, a Croatian researcher interest in eco-tourism and bringing in solution to poverty communities. Bartola sees that today more than ever, we should consider self-sufficiency as a part of our daily life. She defines self-sufficiency as going towards a better sort of life, a life

that brings challenges and solutions, a life in which we will all accept the full responsibility for what we do, or not do. Moreover, the success of self-sufficiency is to feel the joy of our productivity (Seymour, 2003).

In the last hundred years, there has been a unique shift: away from self-reliance towards organisations. Therefore, as a result, people became more dependent than ever before in history. Although new generations are high educated, the truth is, that majority of people today cannot do things for themselves. People today depend on vastly complex organisations, machinery, and a large amount of income. The questions that arise are; what happens to all of us if there is a global emergency such as pandemic COVID-19? Would we be able to get basic things, such as food? Would all those organisations that we depend on help us to get through? Perhaps some people will receive the necessary help; however, the help supplied by organisations and states will not be accessible to everyone. People who will not receive any help in times of need often will be questioned why they cannot help themselves? Simply, they would not know how to. They have never before done it, and they do not know where to start. Kiernan (2020).

#### **4.6. Self-Sufficiency to Eliminate Poverty**

Bartola Mavric sees that self-sufficiency can be an appropriate tool for reducing poverty in underdeveloped countries and communities. Although it is more than clear that self-sufficiency is the future of better life globally, it is important to note that the self-sufficiency development plan of the particular community might not have the same outcome in all communities. To that degree, each community should approach self-sufficiency development according to its own social, political, and economic position. Milanovic (2020).

Poverty has significant socio-economic impacts on the community. According to various researches, family income impacts children's development in various ways; this can result in the continuation of poverty. Moreover, instability in a family can have a huge impact on children's educational achievements, physical and emotional welfare. People living in poverty are more likely to live in disadvantaged neighbours, overcrowded housing, and difficult reachable rural areas, often depending on low paid income, daily wages, or assistance from various organisations. For instance, various impoverished communities in underdeveloped countries have been living in poverty for decades, not knowing they possess resources that are the key to reducing poverty.

Self-sufficiency is a tool for reducing poverty if it is done correctly as per Bartola. Researching through literature, it is concluded that self-sufficiency is the state of mind that should be applied globally. However, there is no much education available on self-sufficiency, especially in underdeveloped communities, which is unusual, knowing that vulnerable communities will benefit the most.

The first step towards sustainable self-sufficiency in most

vulnerable communities, is education. To address this shortage in education, a high number of those communities depend on organisations and help from others. "Having said that", says Batrola "there is a question that should be addressed: how to apply the importance of self-sufficiency into a community that has been depending on someone since ever?"

Education and training programs that focus on developing skills, including a focus on industries and sector available jobs, represent the opportunity for underprivileged individuals and community to achieve sustainable self-sufficiency. We know that self-sufficiency is the future for sustainable development; however, the journey towards sustainability will be challenging for developing countries that are struggling with access to basic things such as healthcare, education, and social development opportunities, Milanovic (2020). Batrola gives an illustration of a rural village in northern Nigeria. The village named Kontagora which is home to a small community that lacks basic access to food, education, and healthcare. The community depends on daily wages as well as donations from different organisations. Paradoxically, the community is located in a state which has some of the most fertile lands for agriculture. Due to lack of knowledge, this particular community destroyed more than a hundred years old resources which could have been their source of self-sufficiency. Therefore, it is clear that the right education is necessary for sustainable self-sufficiency development.

## 5. Optimising Food Safety

### 5.1. Optimising the Concept of Eco-Villages and Sustainable Cities as Self-Supply Communities

SF was first established based on the development of the livelihood of the local farmers. Dr Buheji emphasis that such projects are still spread all over the world, including in a small island as Bahrain where the local farmers' market, not only helped the country to be more SF, but gone to increase the income of the farmers by 20% to 69% depending on the kind of livelihood. Such projects if expanded and supported by creative solutions, can also help in the reduction of poverty, migration and malnutrition, especially during the socio-economic crisis as happened during the COVID-19 lockdown.

Eco-villages also have been available for humans from hundreds of yours, but they received international recognition in 1995, by an international festival run in Scotland and became considered to the first global eco-villages meeting and where Global Ecovillage Network (GEN) was founded. The GEN network has a strong influence on thousands of projects worldwide. Robert Gilman (2008) considers the concept of eco-villages communities as harmless human settlements that integrate with nature in a way that is supportive of healthy human development and can be successfully continued into the

indefinite future.

The development of eco-villages is based on one basic principle: concern for people and the environment. They encourage a way of life characterised by solidarity and ecology, where members of a community help each other to create more ethical, fairer and more egalitarian societies. Gilman (2008).

If the concept of eco-villages along with self-sustainable cities spread in the world, we would reduce the hassle for food and life material shortages security during any lockdown (or during the pandemics). Thus, then we would have a local production that would be ready to take the shortages in global production. The other hidden benefit of eco-villages concept is that it would be a natural supply for the bioactive materials which boosts the immunity that is highly needed in times of virus.

Sustainable cities also complement eco-villages; where the city is designed to take care of the 'quadruple bottom line' with consideration for health social, economic, environmental impact. Balancing between these four lines build a resilient economy, without compromising the ability of future generations rights. These cities are inhabited by people who are dedicated to efficiently optimising rather than just minimising inputs of energy, water, food, waste, the output of heat. Hence, minimum air pollution, CO<sub>2</sub>, methane, and water pollution would be emitted from such cities. Buheji (2018), Register (1987).

Both Richard Register (1987) and Paul Downton envisioned the sustainable city are architect Paul F, who later founded the company Ecopolis Pty Ltd, as well as authors Timothy Beatley and Steffen Lehmann, who has written extensively on the subject. The field of industrial ecology is sometimes used in planning these cities.

### 5.2. Self-Sufficiency in Animal Farming Projects

Professor Sajeda Eidan, an Iraqi self-sufficiency expert, focused on the development of animal farming after Covid-19. She sees the term self-sufficiency is a big term that cannot be covered by either seminar, or lectures. Self-sufficiency, as per Professor Sajeda needs strategic plans that are cover five to fifty years. This is especially longer in regions that are not used to this concept. The question would be always how to achieve self-sufficiency suitable to the different regions and still be part of globalisation that might continue after the Covid-19 pandemic. Here Professor Sajeda says "Yes, we need to know the experiences of the leading countries experiences on how they achieved more self-sufficiency that led to their strong economic policies. In order to achieve self-sufficiency for the region in which we are located, it must be originated from our internal experiences and based on the collaboration with the local facilities of the universities and the research centres that support realised self-sufficiency in areas as agriculture and its extension services, besides the stakeholders as the owners.

In order to start properly, Professor Sajeda suggests we

must do survey studies about what are the ingredients that can be a base for launching agricultural self-sufficiency projects, with a focus on both animal and plant branches. Then, Sajeda questions whether these strong alternative constituents will withstand after Covid-19, especially with the great climate changes that the world will witness in the coming years, i.e. with the lack of rain, high temperatures, scarcity of strategic feed in animal husbandry and other matters. Professor Sajeda calls upon performing experiments to find solutions for future conditions that would face the world and be synchronised with the efforts to achieve self-sufficiency.

### 5.3. Food Security SF Projects the Challenges and Solutions

Professor Talal Abdulkareem from Iraq sees that food self-efficiency importance has moved higher in the national policy agenda in many countries following COVID-19 pandemic, since the outbreak was accompanied by food shortages and increase in price. Countries as diverse as Senegal, India, Philippines, Bolivia and Russia have all expressed interest in improving their levels of food self-sufficiency during this period. Nowadays, nations worldwide tried to become self-sufficient in producing the food supplies that their populations need most. Professor Talal emphasis that part of the motivation towards self-sufficiency is to avoid being dependent on vulnerable relations of the neighbouring countries. Therefore, Professor Talal recommends the focus on livestock animals which are one of the main cornerstones towards achieving self-sufficiency for many countries. Nair (2020), Panda (2020).

Food security of livestock needs that animal raised for food to live in good conditions without suffering any stress. Therefore, Professor Talal sees that part of the SFN priorities is to help to create radical rethinking in animal farming as this would help to bring solutions for many global farming challenges during the critical periods as the COVID-19 pandemic. This issue is very important for self-sufficiency as, by 2050, livestock production will be twice what it was in 2000. Right now, more than 70 billion animals are farmed for food each year – two-thirds in conditions that mean they can't move freely or live naturally.

Self-sufficiency can improve food-security, if animal farming challenges are tackled, emphasised Professor Talal. For example, in Iraq and many other Asian countries, like Thailand, Philippines, Vietnam, Malaysia and Myanmar, most buffalo herds lived with their holders in marshlands and swamps, where they faced very bad conditions of feed shortage because of quarantine to avoid COVID-19 infection. They fed on low-quality fodder. Their milk production and quality were deteriorated. To solve this challenge, the farmers decided to be self-sufficient on themselves and fed their animals on naturally cultivated plants like reeds and papyrus, as well as on wheat and barley bran purchased with low price from farmers cultivated wheat and barley annually in their regions. The animal farmer women manufactured the

"cream" from milk manually, and then sell it to the market, as well as selling the crude milk. With this money, they buy wheat bran for fed their animals, and this is considered to be a type of (Integrated production).

Another example of raising the capacity of food security through self-sufficiency projects in Iraq was through training of the buffalo owners for agribusines procedure who had participated in maximising their self-sufficiency and reduced their dependence on the low governmental support. Therefore, Talal sees that the sheep owners in many Arab countries, like Syria, Jordan, Iraq, Oman, Morocco and Tunisia fed their animals during this critical period on cereal stubble from harvesting wastes of low-quality fodder due to its low prices. Their milk production and reproductive efficiency is very poor. To solve that, manufacturing of feed blocks from these harvesting wastes supplemented with urea as nitrogen source and vitamin AD3E had solved the feed shortage and improved of milk production and reproduction efficiency of these countries. Also, treatment of the wheat straw of low quality, with chemical agents, led to an increase in its nitrogen contents and feeding quality.

Professor Talal mentions two success stories as a good example of how self-sufficiency in developing countries can improve food security. The first success story from the United Arab Emirates (UAE) and Sudan where actual production of green fodder (20,000 tons per month) and reared 20,000 head of local Sudanese beef cattle that led UAE to have self-sufficient red meat which made it to exporter than importer to many countries, including Europe. The investment of 10,000 hectares helped more than 50,000 unemployed of Sudanese labour to be employed.

Another success story was from the Iraq Ministry of Agriculture, who gave five heads of ewes per each poorest family during the covid-19 outbreak period. The poor families fed them on their own home feed and used ewe's milk for producing dairy products and meat when slaughtered them or sell male lambs.

In Sudan, part of self-sufficient is the dependence of the household waste as an important source for feeding Khartoum's urban livestock, particularly goats, sheep, cattle and the equines that are used for transport. Livestock contributes economic benefits, especially to the urban poor, but they also contribute to a large proportion of affluent residents. Professor Talal emphasised the role of agricultural extension specialists in supporting the transfer towards food security self-sufficiency since they teach the owners with technical and education knowledge of how to use the low-prices fodders and treated low-quality fodders with chemical agents will increasing their trust to improve their productivity and maximise the self-sufficiency after the covid-19 outbreak.

## 6. Discussion and Conclusions

The entire world has been affected by the impact of the COVID-19 pandemic both in threatening of life and

livelihood. In certain areas, the impact of the second was more threatening than the first one. This is because the business models that such communities work on failed to build a safety net for self-sufficiency programs that compensate for sudden shut-downs, or be capable of local produce what is essential for life and livelihood.

The experience of the pandemic shows that the world could be witnessing a fundamental shift in its way in understanding the importance of SF and diversity of the types of services and products that would ensure that a community or a country would be self-sufficient. Hence, the implication of this paper is that it would fill a gap that is needed to address the future government plans and ensure that future crisis does not affect the 'supply vs demand' and in fact even raise the 'capacity vs demand'.

Emphasising the importance of SF by more many multidisciplinary experts and scholars in this study goes beyond the preparedness for future pandemics and global emergencies, but in fact establish for a new trend for the coming new normal where the mindset would be built around nature-friendly economies, where the supply chain would have a default system design that would prevent sudden holt of livelihood during any coming global emergencies.

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