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CHAIRPERSON'S MESSAGE

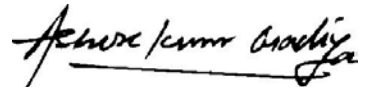
I heartily congratulate the editorial team for bringing out another issue of the Journal of Indian Research. As Chairperson of the University and the Chairman of the Editorial Board, it is personally satisfying to me, since creating a new journal issue is like tapas. The current issue has several papers on Covid management.

The pandemic is not over. We are still uncertain about the new waves. In past, flu pandemics have come in dozens of waves for years altogether. The speed with which the vaccines have been developed and vaccination drives for billions of people are taking place will surely help to deter the criticality of the next wave.

The research community has worked very hard to develop the epidemiological models and predicting the intensity of the pandemic. Then, there have been public health managers who have helped the governments in achieving the target.

In the past, such pandemic would have consumed crores of death. But, thanks to the modern knowledge that the global fatality is below five million.

I hope that with easing of the lockdown measures, even the minds would be de-stressed and the academic community can contribute immensely for the welfare of the mankind. It will be our endeavour to seek more contributions and engage large number of peer reviewers so that the quality of the journal is maintained.



Dr. Ashok Kumar Gadiya
Chairperson, Mewar University

We are publishing the combined first two issues of the ninth volume of the Journal of Indian Research. The pandemic has caused deep impact over academic output world over. The prolonged lockdown of the academic institutions and the intermittent halting of long distance transportation has caused decline in research based upon fieldwork. Though, there have been spurt in organizing the webinars, the digital meets cannot be the perfect substitute for physical meetings, interviews and social interaction.

Digital access can be seen as a top up to the physical connectivities. The major world powers heavily rely on building new transportation routes. In recent years, China has been on infrastructure-building spree. The Belt and Road Initiative is a humongous challenge. But, once it is accomplished, it has the potential to revitalize the core of Eurasia. During early 1990s, A.G. Frank termed Central Asia as a sort of ‘Black Hole’ in the middle of the world. The region would soon see bullet trains traversing across the steppes.

Recently, the 435-km long Nyingchi-Lhasa railway line has been opened for public in Tibet. There are plans for expanding the connectivity in South Asia. China plans to build railway line from Lhasa to Kathamandu and further down to Lumbini, just at the Indian border with Nepal. The Gyirong-Kathmandu stretch is likely to be completed by the end of the next year. Similar projects are being pursued in Bangladesh. Bangladesh like many of the South Asian nations is wedged between two powerful Asian nations. The geopolitical balancing requires deft handling. We have received a long essay on options for Bangladesh under such circumstances from Dr. Sujit Kumar Datta of Chittagong University, Bangladesh. Datta argues that India has nothing to worry about China’s relations with Bangladesh as the Bangladesh-China relationship is a commercial one. Bangladesh will continue to maintain good relations with its giant neighbour while also wanting to benefit from the new strength of the global economy by maintaining relations with China. Datta opines that India will desperately try to keep Bangladesh intact. For this, India will always want a friendly government to be in power in Bangladesh. India has gained experience from the elections in Nepal, Maldives, and Sri Lanka. It is in that experience that India will decide the policy on Bangladesh. In future, Bangladesh could be another area of China-India proxy war. Bangladesh will have to deal with the pressure from both sides. However, it remains to be seen how Bangladesh balances relations with India by maintaining relations with China.

Another round of political interventions in another South Asian country may spell doom for the new springing tiger of Asia, Bangladesh.

It is the duty of academic researchers to suggest ways to achieve an outcome with two pillars of peace and prosperity. Academics cannot be decoupled from the ethics and ontological anxieties. Researchers also indulge in sadhana of wisdom. Their responsibility in the uncertain times increase manifold.

Niraj Kumar
Honorary Editor-in-chief

I am grateful to the Journal of Indian Research (JIR) team for giving me this editorial responsibility to reshape the journal. JIR provides a forum for new advances in the field of Indian and international researches with multidisciplinary research topics. My basic duty is to regulate the flow of JIR with quality and timely publication which is important for its continuing growth.

JIR would help to serve as the platform for researchers and professionals. Our main objective is to strengthen the boundaries of the journal, the reviewer database, and to motivate potential authors. I expect from authors to provide quality research with zero tolerance towards plagiarism. We have taken an initiative in the direction to reshape JIR as per the international standard. The education and research sectors are now shifting online. This technological change has opened up new scope for researchers and academicians across the world.

We invite the authors to submit quality manuscripts, which are fit to the aim and scope of the journal. Finally, I would like to thank our Chairperson Dr Ashok Kumar Gadiya for their vision and guidance. I am also thanking our colleagues for maintaining the quality of JIR.

Dr. Ahsan Z. Rizvi

Editor

CHINA-BANGLADESH-INDIA TRIANGULAR COOPERATION: OPTIONS FOR BANGLADESH

*Dr. Sujit Kumar Datta**

ABSTRACT

This research aims to explain a vision of strategic triangle cooperation among Bangladesh, China, and India from the Bangladeshi perspective. The purpose of this study is to propose a new paradigm of cooperation among the three participating countries, which would lead to mutual benefits and a win-win situation as opposed to the widely-held belief of geopolitical balance of power or rivalry between two major Asian powers- China and India. A “triangular relationship” may be understood as a sort of transactional game among three variable players. Geographically, Bangladesh is surrounded by India on three sides and also has a short land boundary with Myanmar. Thus, Bangladesh is one of the most influential triangle variable players in South Asian in geopolitics. It is quite appreciable that the Government of Bangladesh has already adopted a balanced foreign policy. In its constitutional principle, it has adopted the ‘friendship to all, malice to none.’ Bangladesh is applying that policy on national interest and contributing to maintaining the balance of power in South Asia. This paper will determine the options and implications for Bangladesh in this triangular cooperation and the main institutional factors for implementing strategic partnership in China-India relations.

Keywords: Alliance, Balanced Policy, Cooperation, Regional Security, Rivalry, Triangle.

INTRODUCTION

A strategic triangle relationship is seen as a kind of transactional political game among the three countries (Dittmer, 1981). Bangladesh has emerged as one of the strongest players in the India-Bangladesh-China strategic triangle relationship among the South Asian states. Bangladesh is trying to maintain its two most vital security interests. One of these two security interests is territorial integrity, and the other is political independence. Bangladesh formulates a balanced foreign policy with all the world countries, which is a commendable initiative. Following this, the Constitution of Bangladesh has effectively implemented the principle of

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friendship with all, and hatred for none. Bangladesh has met its legitimate and equitable national interests in the current international political context and is trying to balance regional and continental powers properly. Bangladesh's internal political independence has been threatened several times due to good relations between the two main political parties in Bangladesh and countries like India, China and Pakistan.

India has cultural, social, and economic ties with Bangladesh. Both countries have similarities in history, culture, language as well as traditional values and norms. In the year 1971, during the liberation war in Bangladesh, both countries worked as close allies. It was followed by enhancing mutual trust and confidence in India-Bangladesh relations marked by the signing of the 25-year Friendship Treaty on 19 March 1972 (Chowdhury, 2020). The Bangladesh-India partnership has mainly been aligned with bilateral relations, including trade, culture, military, and people-to-people contacts, which later became deeply involved with the international trust. Confidence plays an essential role in the international relations that prevail in Bangladesh-India relations. Despite India playing a significant role in the Great War of Independence, Bangladesh is at odds with India over river water sharing, National Civil Registration (NRC), Citizenship Amendment Act (CAA), and border killings (Sufian, 2020). All problems have been solved peacefully by the government of India and Bangladesh except water sharing, NRC, and CAA issues. India wants to keep a close alliance with Bangladesh, especially for the following reasons.

- The geopolitical importance of Bangladesh;
- Tackling China's dominance in Bangladesh;
- Decreasing number of India's allies in South Asia; and
- Protecting the political and economic investment that India already has made there.

On the other hand, Bangladesh has no visible dispute with China. In a complex geopolitical competition in South Asia, China stood up against Bangladesh during Bangladesh's War of Independence, 1971. Nevertheless, China established diplomatic relations with Bangladesh in 1975; now, China is a crucial partner in Bangladesh's development (Datta, 2008). Bangladesh-China relations can grow without any constraint. However, the reality is different from the Bangladesh side. Bangladesh is a part of the larger Ganga-Brahmaputra basin in the north-eastern part of India and southwest China. Bangladesh needs Chinese friendship for its economic and security-related issues. Besides, China needs an alternate access route to the Indian Ocean through the Bay of Bengal for trade and energy supply purposes from the Middle East and Africa. China needs a lot of labor support from Bangladesh too. China also wants to collect labor-intensive manufacturing of its private institutions to countries with cheaper labor. All these make a case for a genuine alliance between Bangladesh and China. China has an enduring vision for South Asia, and Bangladesh is perfectly into it.

India-China relationship has suffered severe deterioration in the months after the clashes in Ladakh in May-June 2020 (Pathak, 2021). Nepal has already passed a new map of the three lands claimed by India. China is trying to draw closer attention to India's close ally Bangladesh in such a delicate situation. China and India are some of the largest countries in

the world in terms of size, population, economy. India is far behind China but has gained the status of emerging powers. Both have ambitions. Again, the neighbors of the two countries are 'Lilliput' compared to them. These Lilliputs are very important to Gullivers again. South Asian countries are getting to know the matter very well (Doroshko & But, 2020). They are sometimes getting help from both the two regional superpowers and getting random in the contest. The recent developments in Sri Lanka, Maldives, Nepal, Bhutan, Myanmar, in particular, have led to significant changes. Bangladesh's security interests are closely related to the regional security environment in South Asia, which is primarily dependent on China-India relations. One of the objectives of this study is to find out how India-China hostile relations can be exploited to meet its economic and security interests in Bangladesh.

STATEMENT OF THE PROBLEM

Asia's two strongest rivals and Bangladesh's two regional neighbors, China and India, have a history of widespread animosity (Snedden, 2016). Chinese strategist Sun Tzu and Indian strategist Kautilya have almost identical ideas for identifying friends and foes (Deshingkar, 1996). India has had conflicts with China at various times since independence from the British in 1947. It was followed by a major war in 1962 over the Indo-China land border. The same conflict led to minor clashes with both countries at the local level in the years 1967 and 1987. The current state of Indo-China relations in the context of 21st-century international politics is a stream of neo-economic interdependence where border disputes remain unresolved. Dominance over the South Asian region and the Indian Ocean has given rise to a new form of conflict between India and China in 21st-century international politics. This rivalry between the two countries is well felt in all the small countries of South Asia, including Bangladesh. In the regional political context, India is dominating South Asia because of its geographical location. However, China is trying to increase its influence with smaller countries in South Asia. Since the Sino-Indian War of 1962, China has sought and succeeded in establishing good relations with its neighbors in South Asia (Stafi, 2018). That is why India has always been skeptical of China's relations with the small countries of the South Asian region. Therefore, the future trends in India-China relations have been politically and militarily critical for Bangladesh.

India's unwavering support to Bangladesh in the Great War of Liberation, 1971 and India's role in Bangladesh has been much appreciated and acknowledged. As a result, bilateral relations between the two countries began in 1971. On the other hand, China did not recognize Bangladesh until 1975 and did not formally establish bilateral relations with Bangladesh. It is to be noted here that in the Great War of Liberation against Pakistan in 1971, China stood with Pakistan and not for Bangladesh. However, China's position is related to the regional politics of the time. When Bangladesh applied for the membership of the UN in 1972, China used the Security Council's veto to block Bangladesh from entering the UN (Rahman & Uddin, 2011). As a result, the tension between China and Bangladesh continued to grow. The primary basis of Bangladesh's relationship with China is mutual trust and economic interests. However, China is acting as one of the economic partners of Bangladesh in the current international political context.

In the international political context of the 21st century, the Sino-Indian strategic rivalry in South Asia is intensifying day by day. As a result, both countries are doubling their vision

to bring Bangladesh into its orbit due to its geostrategic importance. In the political context of world trade, its imports from Bangladesh could significantly increase, and this increase in imports could create opportunities for North America and Europe to export their goods to new destinations. On the other hand, India-China domination could further enhance diplomatic and cultural relations with Bangladesh (Paul, T. V. 2019).

In the struggle for supremacy in the Bay of Bengal, India and China will do everything in their power to keep Bangladesh on their side. Nevertheless, on the other hand, Bangladesh needs to be more conscious of India and China's competitive relationships. Bangladesh is an instrument in India-China geopolitical rivalry in the Indian Ocean and the Bay of Bengal (Bhattacharjee, 2017). Both countries are trying to use Bangladesh to strengthen their operations in the Bay of Bengal and the Indian Ocean. In order to overcome this competitive situation, Bangladesh should learn from both countries how to develop the economic, political, and cultural life of Bangladesh without directly supporting any party. Bangladesh's economic and infrastructural development is a tremendous advantage for Bangladesh while maintaining good relations with India and China. To successfully implement this policy, Bangladesh should formulate a balanced foreign policy to maintain good relations with India and China (Anu Anwar, 2019).

Bangladesh can be benefited from both sides. This opportunity has been accomplished by completing administrative, political, and structural construction to bring low-tech Chinese factories to Bangladesh, making Chinese investment in industrial-energy and infrastructure development, taking full advantage of the ocean-going blue economy. Bangladesh's Bay of Bengal and Chittagong port are entering into this important economic area. This way, China's Yunnan, Xinjiang, and other northeastern Indian states of India, Myanmar, Nepal, and Bhutan get access to the Bay of Bengal, and products produced in these places will enter the world market, and the outside products can get into those regions. Suppose the Bangladesh-China-India-Myanmar Economic Corridor (BCIM-EC) and the Bay of Bengal-centric cooperation process are implemented in the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC). In that case, its facilities will be available to all South and Southeast Asian countries. If a deep seaport can be built in Bangladesh, then Chittagong will have access to this huge trade route. Bangladesh may take advantage of the rivalry of the two Asian giants, namely China and India. It is essential to overcome this situation to come out with Bangladesh's national interest without hurting anyone. It requires skill, vision, and wisdom in diplomacy.

BANGLADESH-INDIA RELATIONS

Bangladesh's foreign policy has always been shaped by a few key elements, one of which appears to be the significant 'India factor.' India is, without a doubt, Bangladesh's largest and most important neighbor. Both countries have a large land border, and academics and policymakers in both countries believe that Bangladesh's relationship with India is crucial physically, politically, economically, and strategically. Bangladesh is geo-strategically ringed and barred on three sides by India and the southern side by the Bay of Bengal (Hossain & Islam, 2019). Bangladesh-India relations have frequently been contentious, complicated, tense, and crisis-ridden, with allegations and counter-accusations abounding. However, for the

prosperity of both countries, a strong, brave, and healthy relationship is required. If a lasting solution to the water-sharing issue is found, the recent visit of India's Foreign Secretary and a Bangladeshi delegation to India could be a watershed moment.

India wants to undermine China's influence and change its foreign policy in South Asia. India should avoid interfering in neighboring countries. Not only the government but also the public opinion of neighboring countries has to be given importance. Some interests can be ensured by keeping the friendly government in power for a few days. However, this will not lead to a long-standing solution. India's loneliness in South Asia will continue to grow unless a long-term solution is found. Bangladesh is now India's closest ally in South Asia. Bangladesh is closely associated with India at the moment, but China is improving its relationship. The two countries are working together to increase investment and explore various areas of cooperation. The Rohingya agreement signed recently between the Bangladesh government and Myanmar is alleged to have been mediated by China (Mehzabin & Shuvo, 2021). Something like this was needed to take China's projects forward in the region. If there is an agreement with Bangladesh, Myanmar can avoid western pressure to some extent. The Bangladesh government had aimed to enter into a multilateral agreement in this regard. However, from there, the country withdrew under the influence of China. It is apparent that there is a psychological difference between India and Bangladesh that must be bridged before the two countries can become economically, technologically, and commercially better linked for a variety of reasons (Chowdhury, 2013). It is costly for both countries to remain adversarial in the face of globalization and regionalism, but good ties are also a significant possibility. In the information technology (IT) sector, infrastructure building and sharing, education, and various industrial and technological areas, there are several prospects for collaboration between the two countries, all of which should benefit both countries (Alam, 2019).

BANGLADESH-CHINA RELATIONS

Despite China being a mighty country in naval and land power since ancient times, China has not colonized any other country in its entire history, nor has it occupied any other country. Instead, it has shown deep respect for the independence and sovereignty of all countries. Diplomatic relations between Bangladesh and China began in 1975 (Quiyum & Jahirul, 2021). It was started by Zia-ur Rahman, whose vision was to face east. Since the beginning of diplomatic relations between the two countries, it has always been excellent, gradually deepening, and this relationship has passed the test of time. Despite different political ideals and differences in social and cultural systems, the excellent diplomatic relations between the two countries are recognized as role models. China has also cooperated in Bangladesh's economic development, building economic infrastructure, trade, agriculture, industry, and defense.

Bangladesh's geopolitical, geostrategic, and geo-economic position is such that it has become an essential country in the regional strategic field (Avia, 2017). Even in global strategic terms, Bangladesh's position is significant. Bangladesh is considered to be the south Asian bridge with Southeast Asia. Bangladesh is located between the two largest countries in Asia, with a rising India. The other is China, which has already been ranked as the second-largest economy in the world. Bangladesh's geostrategic significance has risen dramatically due to

its placement on the Bay of Bengal's coast. The Bay of Bengal serves as a link between the eastern Indian Ocean and the countries that lie above it. The Bay of Bengal provides trade connectivity from China to West Asia and Africa in the west. Furthermore, all water routes in this region run through the Bay of Bengal; the strategically significant Malacca strait and Taiwan have been linked to the strait and now stretch to the South China Sea, East China Sea, and Pacific Ocean (Karim, 2017).

The geopolitical importance of Bangladesh has been noticed by major powers. The most important of Bangladesh's geopolitical assets or important positions is Bangladesh's location around the Indian Ocean. It is also important to China because of the geographical location of Bangladesh, especially the position of India as the most powerful country in South Asia. China even wants to consider Bangladesh as its substantial economic and strategic partner to build a strong position in the region against its other arch-rivals, the United States and India. Economically, China is one of the major trading partners of Bangladesh. Trade between the two countries has increased by 37 percent. For decades, China has chosen Bangladesh as its import-dominated state (Kabir, 2017). China has even provided quota-free access to various products in Bangladesh. Moreover, China's relations with Bangladesh are not far behind in military terms.

CHINA-INDIA RELATIONS

It is one of the most complicated relationships globally, but it is also one of the most important for peace and collaboration throughout Asia. India and China are rapidly preparing to become the political and economic superpowers of the twenty-first century. There are certain major irritants that include, the border dispute, the Dalai Lama's presence in India, military build-up along the border, and history of tense relations. These are obstacles to the healthy expansion of bilateral ties, "in the realm of economy", China and India's relations are both competitive and complementary (Rehman, 2017). The two countries are the world's two most significant marketplaces and two of the world's fastest-expanding economies. As a result, they compete for Foreign Direct Investment (FDI) and export promotion as job-creation tools.

On the other hand, China is well ahead of India in terms of Foreign Direct Investment (FDI), exports, and other economic metrics. Our relations with China have steadily improved. Both countries see their relationship as one of global and strategic importance, which will last a long time and contribute to global stability. Mutual trust and confidence are growing among our personnel. India aims to engage closely with China in politics, commerce and economics, infrastructure, culture, and other spheres to raise the bilateral strategic partnership to a new level. Both countries have set a goal of having the highest bilateral trade. As a result, besides the well-trained bilateral ties between China and India, which are mainly based on their border disputes, these new challenges arising from their recent economic progress stimulate and perpetuate strategic competition between them. The Indian side claims that China's economic and security interests have resulted in a more fabulous Chinese presence in the Indian Ocean region, much to India's dismay, and that China has developed economic ties with the Bay's littoral countries through infrastructure projects such as port development, power plant construction, and railway and road construction. Chinese dominance in these Indian Ocean

outposts, Indian strategic planners fear, might turn them into military sites, allowing China to “encircle” India (Singh, 2019).

SINO-INDIAN INFLUENCE IN BANGLADESH

India’s mutual trust with other neighbors has reached such a low that now Bangladesh might declare that our relations with China are only commercial. Recently, the Prime Minister of Bangladesh said that India has nothing to worry about in China’s relations with Bangladesh. The Prime Minister described the Bangladesh-China relationship as a commercial one. Bangladesh will continue to maintain good relations with its giant neighbor while also wanting to benefit from the new strength of the global economy by maintaining relations with China which are expected (Hossain & Islam, 2021). However, Bangladesh’s trade and military relations with China are increasing. It could be a cause of concern for India. It has to be acknowledged that India’s connectivity with Bangladesh is hot now. India will never want to miss this opportunity. There is no doubt that India will desperately try to keep Bangladesh intact. For this, India will always want a friendly government to be in power in Bangladesh. India has gained experience from the elections in Nepal, Maldives, and Sri Lanka. It is in that experience that India will decide the policy on Bangladesh. In future, Bangladesh could be another area of China-India proxy war. Bangladesh will have to deal with the pressure from both sides. However, it remains to be seen how Bangladesh balances relations with India by maintaining relations with China. The following Tables and charts reveal how Chinese influence in Bangladesh is more substantial than India in the context of the economy (UN com database, 2021).

Table 1: Bangladesh’s Export and Import from China

Year	Import from China (USD)	Export to China (USD)
2016	14,300,635,412	869,397,551
2017	15,169,021,003	875,144,719
2018	17,759,539,782	985,405,469
2019	17,335,124,034	1,036,436,112
2020	15,060,011,401	799,614,401

Table 2: Bangladesh’s Export and Import from India

Year	Import from India (USD)	Export to India (USD)
2016	5,668,792,841	677,098,050
2017	7,210,099,516	591,575,732
2018	8,744,786,911	894,225,398
2019	8,242,923,366	1,036,436,112
2020	7,912,820,545	1,024,443,825

Source: <https://comtrade.un.org/data>



Figure 1: Bangladesh's Export and Import trends from China and India (USD)

The relationship between one state and another depends mainly on their history, geographical position, economy, politics, and the appearance of the international system (Josselin & Wallace, 2001). There are many interpretations of world politics. Realists believe that the polarization of the earth's power drives the largest power states. Strong countries maintain stability by building a balance of power. According to those who believe in the idea of a change of power, the period of dominance of one world power ends with the rise of another power, and the quiet and sustainability of world politics depend on the primacy of power, not on balance. The condition of today's world is complex. American power has weakened a bit, but military considerations show the world a polarity. China's growing rise, on the other hand, is particularly affecting Asian politics. India's foreign policy is mainly dependent on the evolution and interaction of these two forces. India's rise as one of the most extensive powers on the Asian continent has been built by acknowledging this major world politics trend. Whichever party is in power, there is no scope for a major change in foreign policy direction. The foreign policy followed by Narendra Modi shows four trends for now (Kumar, 2021). These are:

1. To further expand and strengthen the progress that has taken place in India-US relations in the last decade and a half. Despite differences between the two major democratic powers of the world over the desirable character and rules of trade and international order, the cooperation between the two countries in security, security, and liberal global economy has multiplied.
2. Despite differences on various issues, the top leadership of both countries has accepted that it is imperative to improve the relationship by maintaining dialogue between the two countries.
3. Enhancing the importance of Southeast Asia and Pacific countries in India's foreign policy.

4. Improving India's relations with neighboring countries within South Asia.

There has been a policy change in India's foreign policy. India is quick to increase its power in world politics. In this context, Modi is keen to re-evaluate relations with different countries. While power and multilateralism are two goals of India's foreign policy, Modi wants to implement a realistic foreign policy, prioritizing the economy's demands and military interests. China is the biggest challenge to India's foreign policy. During Narendra Modi's visit to China, a tug of war between the two Asian countries was noticed. Modi has worked with China for a long time; his image is positive, though it is unlikely to heal old wounds between the two countries. Modi has sought to increase the connectivity of the ordinary person of the two countries by announcing the e-visa plan, though there were doubts about the plan by Indian security agencies. India has opened up bilateral issues to China for discussion. India is even looking for a way to cooperate with China in nuclear and space research. How interested China will be in discussing and cooperating on these issues will significantly determine the dynamics of India-China relations. India's diplomatic influence in South Asia is dwindling. Taking advantage of this, China has extended its influence in the region far.

India and China are bound by economic obligations and military and political rivalries. Enmity or friendship is not an accurate description of this complex relationship. Recognizing the complex and deep multidimensionality of the relationship, India and China are pioneers in a friendly, risky coexistence, where the role of conflict of interest and cooperation is equal. It would be wrong to think of the relationship between these two countries as merely a bilateral relationship. The bilateral relations between the powerful states are formed in the same way that power distribution in the world system builds. Today's world is built on the framework of the dominance of US military power, but that power is not absolute. US foreign policy is burdened with hyperactivity. Even if the US economy comes out of a prolonged slowdown, it is impossible to revive its old dominance. Events in West Asia and North Africa prove that US military dominance may not work. On the other hand, China is quick to increase its military prestige by focusing on economic prosperity. To this end, conflicts with other countries no longer make Beijing defensive.

OPTIONS FOR BANGLADESH

This paper has explored Bangladesh's economic and security options in Bangladesh's competition between China and India. Bangladesh-China relations should not be conceived of as a counterpoise or as a traditional balance of power arrangement in search of equilibrium against any other power. On the contrary, if the cooperation between China and India ensures or even, they continue their strategic competition, Bangladesh would like to be a conduit or a vibrating bridge connecting China to India and beyond. China's investment in Bangladesh's deep seaport, other mega projects, might strengthen the strategic relationship between China and Bangladesh for security cooperation. However, forging a more robust and comprehensive relationship with China, Bangladesh must address the caveats in the triangular relationship between China-Bangladesh-India. Bangladesh has to follow an independent and balanced foreign policy to pursue its national interests exclusively. In cases of taking decisions on different issues, Bangladeshi policymakers can involve civil society and decision-making.

As a booming economy, Bangladesh has moved beyond its image of textile production and is exploring new avenues in electronics, artificial intelligence apart from revolutionized agro-industries. Bangladesh can also use its energetic, skilled IT freelancers and make it a Service sector hub in the South Asian zone. It can also take lead roles in the Asian Development Bank and other multilateral financial platforms. Both China and India view it as an investment destination and arch-rivals in giving lines of credit. China being one of the top trading partners of Bangladesh has made India uncomfortable time and again, to which it announced a 5 billion dollar credit in 2017 (Chung, 2018). It can explore markets in India's northern and eastern states due to India's Act East policy. Analyzing these patterns, one can decipher that the economic preferences of Bangladesh are also dependent on its geopolitical situation where it is surrounded by India in three sides apart from the Chinese Belt and Road initiative, which has obligated Bangladesh with stringent conditions time and again. Therefore, it needs to maintain parity and treat India as its natural partner due to the civilizational ties that can leverage its international bargain. Bangladesh, Bhutan, India, Nepal (BBIN) needs to be cultivated by Bangladesh to maintain its phoenix-like posture. However, India can be reminded that China has a large export base of arms sales in Bangladesh. Therefore, India needs to assure Bangladeshi cooperation in its indigenous military modernization schemes to maintain the security balance in the zone.

Bangladesh shares a long border with India. So, security is the main factor between Bangladesh and India. Bangladesh has a good trade relationship with India. Therefore, river or water-related issues are also important here. Bangladesh also has good relations with China. The leading sector, in this case, is trade. China helps in many infrastructural sectors in Bangladesh. There is growing amount of investment with India and China. Water bodies are vital for fishing, transportation, preventing natural calamities, improvement of Subregional markets and infrastructure. Bangladesh's geostrategic position in South Asia and beyond is pivotal. India is Bangladesh's neighbor, and both countries have colonial legacies and sociocultural similarities. In terms of security, Bangladesh should maintain cordial relations with India and China. Bangladesh has endorsed economic trade with India and China. No country can remain isolated in a globalized world from collaboration with neighboring countries and industrialized countries such as China, India, Japan, and Germany. As a result, it is a severe concern that the inflow of Rohingya refugees has posed a substantial security threat in this region.

The ongoing pressure on Bangladesh has gained momentum recently. The United States and India are trying to draw Bangladesh closer to join the Quadrilateral Security Dialogue (QUAD). Various diplomatic efforts are underway. On the contrary, China has threatened to withdraw from development cooperation, including deteriorating bilateral relations, if it joins the US-led QUAD (*Dhaka Tribune*, 2021). Moreover, diplomacy analysts call this situation a 'dilemma' or "double crisis" for Bangladesh. They claim that China has no option to keep Bangladesh's growing development in motion and solve the Rohingya crisis. Furthermore, Bangladesh has no way to side with the United States and neighboring India in world politics.

In such a situation, even though there is some difference of opinion among diplomacy analysts, they say that balancing will be the most important thing. In fact, without getting stuck, and the strategic advantage of geopolitical positions that Bangladesh has to be funded, the bargaining tool has to be made. The QUAD dialogue between the United States, Japan, Australia, and India began in 2007 to find ways to keep navigation in Indian and the Pacific ocean 'free and free' and China's claim to connect roads, naval, and rail with 70 countries in Asia, Africa, and Europe by implementing One Belt One Road (OBOR) is just the opposite. They say that even if the QUAD claims to be involved in economic work, it is not valid. The QUAD is a military alliance and is mainly done to oppose China.

China has made a veiled threat. China has said that QUAD will be hurdle bilateral relationship. It is natural because QUAD is an organization to handle China. However, it has not yet become a formal institution. On May 10, the Chinese Ambassador to Dhaka, Li Jiming said, "It would not be good for Bangladesh to join this four-member club because it will severely damage bilateral relations with China." Dhaka reacted strongly to the statement; two days later, on May 12, China reversed its tone by claiming that the threat was misconstrued due to poor English language. Ambassador Li Jiming, however, did not withdraw his statement. The threat from the Chinese envoy to Dhaka has not gone unnoticed, with the country's foreign ministry saying on May 12 that it is monitoring the situation. "We have earned about the comments from the Chinese Ambassador to Dhaka. We want to say that we respect the sovereignty of Bangladesh. We also respect Bangladesh's right to decide foreign policy," spokesman Ned Price said at a regular briefing by the country's foreign ministry (*The Diplomat*, 2021).

In development projects, it is clear that Bangladesh cannot avoid China in the current political and economic reality. China is assertive. If one looks at development projects, one sees China's stake, which is influential in our economy. Even in stock market, there is economic dependence on China for development projects. During Chinese President Xi Jinping's visit to Dhaka in 2016, OBOR was included in various agreements. At that time, Bangladesh was promised total loan assistance of USD 40 billion, of which USD 26 billion was allocated to build the infrastructure associated with OBOR (Ruma and Ben, 2016). Some of them are the Padma Railway Bridge and the Pigeon Sea Port along the Bay of Bengal. So, Bangladesh thinks about the future, and after the next 10 or 20 years, Bangladesh is not in a position to ignore China as an option. On the other side, similarly, India is closest neighbor and geo-strategically more critical. So, it is not possible to ignore neither China nor India. It is a dilemma for Bangladesh. It is noticeable that no one can replace Chinese cooperation in Bangladeshi development projects.

Sino-Indian rivalry in Bangladesh is a crisis for Bangladesh than at any time. In this case, if professionalism is given much importance, freedom is given to the Ministry of External Affairs, it will be easier for them to decide to balance it. Therefore, the state or the government needs to understand this situation. Bangladesh should be in a balanced position in this regard, and Bangladesh should have to go very carefully. A narrative has to be maintained. Bangladesh wants to stay away from the potential military component, the security component, because it cannot directly antagonize China. The QUAD cannot even solve the problem Bangladesh has

if it antagonizes China (Malik, 2016). Bangladesh should remember that foreign policy has to go the middle of the way, which has to stick to policy questions. Bangladesh need not join any alliance against any country. Bangladesh should consider its strengths, which have some strategic advantages. The kind of partnership it builds for India and the United States is for China as well. Bangladesh should use it as a bargaining tool now to create a balanced foreign policy. It would be wiser to follow a middle path than to give unilateral support or formally join somewhere.

Bangladesh is India's most dependable ally. India played a significant role in Bangladesh's liberation war, but unresolved concerns such as Teesta water sharing, border killings, and trade inequity have contributed to growing anti-Indian sentiment in Bangladesh. Due to the current BJP regime, one can see surge in communal activities in India. Also, controversial NRC law has outraged Indian public sentiment too. A Muslim majority country Bangladesh reacted to current regime's communal activities and NRC law. These are why anti-India sentiment is growing in the context of Bangladesh - India relations. It has mainly to do with the refugee problem and the water issue! The probable reason is that the relationship between the two countries is not always kept on an equal footing. However, perhaps it is more accurate to characterize this 'anti-Indian' sentiment as anti-BJP feeling in Bangladesh.

CONCLUDING REMARKS

At present, China and India both have turn out to be the two vital factors to promote the international multi-polarization practice and to drive the monetary growth of South Asia. They are the two largest developing countries and emerging markets in the East with a vast number of populations as well as both have the most prominent ancient civilizations too. The influence of conflict, competition, and cooperation of the China-India relationship will continue to produce somewhat unbalanced power dynamics in Bangladesh. The outright conflict may be unlikely as both countries want peace and tranquility for economic prosperity, but friction between the two powers will remain until the primary causes of conflict are removed. The current Chinese and Indian headship must learn the shared collaboration. Bangladesh needs to implement a balanced and neutral foreign policy towards China and India to ensure its national interest. The geographic location of Bangladesh and being a member of SAARC and BIMSTEC on the one hand and part of the economic complex with China, both the powers will try to woo Bangladesh closer. Besides, Bangladesh has to steer clear of BRI's debt trap and maintain a robust middle power status. It has emerged as a leading economic power of the region too. China may open many investment options in Bangladesh to enhance business relationships. It can be said that Bangladesh can gain some benefits from the Sino-Indian clash. Thus, Bangladesh should make a balanced relation with these two countries. Both India and China seek to expand their influence in Bangladesh, so Bangladesh has the benefit of choosing the best card offered to it economically and politically. Bangladesh cannot simply maintain its sweet spot between India and China, as it is not in the long-term interest of Dhaka to act opportunistically. Inevitably, Dhaka has to take sides in developing its relations with either New Delhi or Beijing.

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FARMER PRODUCER ORGANIZATION (FPO): A BOON FOR AGRO-INDUSTRY

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ABSTRACT

The agriculture sector has gained prominent position from the government in the past decade. Farmer Producer Organization (FPO) has emerged as prominent institution in the recent past for variety of reasons. FPOs enable to identify their specific opportunities, set achievable business targets and develop skill to achieve these objectives. FPOs are able to enhance the income of farmer community and their living standard. Farmers get opportunity to produce high quality product and enhance their supply chain to make a better position in the current market. FPOs ensure that POs can enable the agricultural sector to improve productivity, build capacity, and enhance rural livelihoods.

Keywords: Agri-business, cooperative, FPO, Farmer Producer company, NABARD, Profit.

INTRODUCTION

The agriculture sector has gained significant focus from the government in the past decade. Farmer Producer Organizations (FPOs) have emerged as the most preferred institutional mechanism for farmer prosperity by policy makers and development agencies. The government's push towards promoting 10,000 FPOs, and a slew of other measures supporting FPOs, including 5-year tax breaks, in the Budget 2018 has made FPOs the lynchpin strategy for doubling farmer's income.

FPO numbers have acquired impressive growth in many States. In the last decade, it is estimated that 5600 FPCs have been registered and another 10,000-15,000 FPOs will be organized in the coming five years. Despite an impressive growth in the number of FPOs across the country, these are facing many challenges ranging from management of business, irregular supply and lack of timely financial assistance. In addition, only few FPOs have been able to truly access the resources required to become robust entities with stateless support and facilitating promoting institutions. The ability to influence this value chain in a significant

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manner remains for many of FPOs. With credit being the most important aspect of any business activity the lack of it cause a major hurdle in progress of FPOs.

FARMER PRODUCER ORGANIZATION (FPOs): A BRIEF BACKGROUND

Farmer Producer Organization (FPOs) as a concept was introduced and recommended by Y.K. Alagh committee in the year 2002, with the unique elements of a cooperative and accommodated in a framework similar to that of companies. Existing cooperative were allowed to convert into producer companies. FPOs can have as members only those whose main source of income is agriculture, horticulture, animal husbandry, floriculture, fisheries, forestry, forest produce, bee keeping, plantation product, handloom, handicrafts and some other related industries.

Farmer Producer Organization is a group of individuals consisting of only practicing farmers who are producers of a specified commodity. These organizations are developed at the cluster, block, district or state level depending on the needs of the producers considering the demand potential to adopt value chain approach to enhance farmer's economic and social benefits. Farmer Producer Company (FPC) is the company registered under the Companies Act, 2013, which has the objective of production, harvesting, procurement, grading, pooling, handling, marketing, selling and export of primary produce of the members or import of goods or services for their benefit. "Producer Company" means a body corporate having objects or activities specified in section 581B and registered as Producer Company under the Company Act 2013.

The basic purpose envisioned for the FPOs is to collectivize small farmers for backward linkage for inputs like seeds, fertilizers, credit, insurance, knowledge and extension services and forward linkages such as collective marketing, processing and market-led agriculture production (Mondal, 2010).

GOVERNMENT INITIATIVES TO SUPPORT FPO/FPC

The Government of India established Small Farmers' Agri-business Consortium (SFAC) as a society in the year 1994 to facilitate agri-business ventures by catalyzing private investment through Venture Capital Assistance (VCA) scheme in close association with financial institutions. The mandate of SFAC has further expanded to help in formation and growth of Farmer Producer Organizations (FPO)/Farmer Producer Company (FPCs) and improving availability of working capital and development of business activities of FPOs/FPCs through equity grant and credit guarantee fund scheme. Besides, SFAC is also responsible for implementation of National Agricultural Market (e-NAM) throughout the country.

Under the Equity Grant and Credit Guarantee Fund Scheme for Farmer Producer Companies (FPCs), following are the major components:

- (a) Grant of up to Rs. 10.00 lakh to each registered FPC is given to match the member equity raised by the institution. This enhances the equity base of the FPC and enables it to approach financial institutions for raising working capital. SFAC has sanctioned equity grant to 127 FPC amounting to Rs. 7.04 crore to enable them to leverage working capital from financial institutions.

(b) Credit Guarantee Fund (CGF) has been set up in SFAC with a corpus of Rs. 100.00 crore. The CGF offers a cover of 85% to loans extended by banks to Farmer Producer Companies.

The Union Government has constituted DFI (Double Farmers Income) committee to find out the various sectors which can be explored for the benefit of the farmers. In current agriculture scenario, the net sown area is 141 million hectares with major share of field crops i.e. 55 per cent of the area under cereals. However, agriculture has been diversified over the last decade. Horticulture now accounts for 16 per cent of net sown area. Livestock population counts more than 512 million. Economic growth shows the increase in farmers' income, while farmers remain in distress despite higher productivity and production. The demand for income growth from various farmer activities translated into demand for government to procure and provide sustainable return. Self-sustainable model empowered with developed market linkage is the basis for income growth of farmers.

An impressive growth in agriculture sector has been registered after independence and farmers have showed their grit to face challenges during the time. They serve and secure the demand of nation for food with their determination even under the vagaries of uncertainties of production environment and fluctuating incomes.

In this regard, the DFI Committee has built a strategy platform which concern the following:

- Sustainability of production;
- Monetization of farmers' produce;
- Re -strengthening of extension service;
- Reorganizing agriculture as an enterprise and enabling to operate as such, by addressing various structural weaknesses.

REGISTRATION OF PRODUCER COMPANY

Producer Company means a body corporate having objects or activities as specified under the Act. It consists of a group of people involved in the production of primary produce or having one or more objectives relating to primary produce. In a producer company, one can make farmers as members and accept deposits as equity and distribute loans to them and charge interest from them.

Advantages of Registration of FPO as Producer Company

Separate Legal Entity:

A producer company is a legal entity and a juristic person established under the Act. Therefore; a producer company has wide legal capacity and can own property and also incur debts. The members (Directors) of a producer company have no liability to the creditors of a producer company.

Uninterrupted Existence:

A producer company has perpetual succession that is continued or has uninterrupted existence until it is legally dissolved. A producer company being a separate legal entity, is unaffected by the death or other departure of any member.

Better credibility:

A producer company enjoys better credibility when compared to unregistered producer organizations, like FPOs, SHG, etc. Producer organization are on the other hand governed and monitored by the State Government.

Owning Property:

A producer company being a juristic entity, can acquire, own, enjoy and alienate property in its own name. No member can make any claim upon the property of the producer company as long as it is a going concern.

Easy Management:

The board of management of a producer company can be easily changed by filing simple forms with the Registrar of Companies (RoC). The board of management of a producer company controls the activities of the producer company.

Limited Liability:

Limited liability means the status of being legally responsible of the producer company. In a producer company, the members are not held personally responsible for the liabilities of the Producer Company.

Types of Business Entity:

Proprietorship: It can be registered and operated by one person.

Partnership: Under the Indian Partnership Act, 1932, the partners are personally liable for an unlimited amount of partnership liabilities. There can be 2 to 20 partners.

Limited Liability Partnership: Under LLP Act, 2008, the liability of a partner is limited to the amount of his capital contribution to LLP. Unlimited partners.

Private limited: Privately held small business entity. Shareholders limited to 50.

Public Limited: Here securities are traded on a stock exchange and can be bought and sold by anyone.

Government Undertaking: The Government must own 50% plus shares. A Government enterprise is purely owned by the Government.

Section 25 Company: Under the Companies Act 1956. Non-profit organization. No dividend is paid to its members. Minimum of three trustees, no upper limit.

Registered Society: Under the Society Registration Act, 1860, involved in education, health, employment etc. for charitable purpose.

Trust: An arrangement whereby a person (a trustee) holds property as its nominal owner for the good of one or more beneficiaries.

Important activities of a FPO

The primary producers have skill and expertise in producing. However, they generally need support for marketing of what they produce. The FPO will take over the responsibility

of any one or more activities in the value chain of the produce right from procurement of raw material to delivery of the final product at the ultimate consumers' doorstep. In brief, the FPO could undertake the following activities:

- a. Procurement of inputs;
- b. Disseminating market information;
- c. Dissemination of technology and innovations;
- d. Facilitating finance for inputs;
- e. Aggregation and storage of produce;
- f. Primary processing like drying, cleaning and grading;
- g. Brand building, Packaging, Labeling and Standardization;
- h. Quality control;
- i. Marketing to institutional buyers;
- j. Participation in commodity exchanges;
- k. Export.

ACTIVITIES TO BE TAKEN BY FPOS

The FPOs may provide and undertake following activities for their development as may be necessary:

- i. Supply quality production inputs like seed, fertilizer, pesticides and such other inputs at reasonable rates.
- ii. Make available need based production and post-production machinery and equipment like cultivator, tiller, sprinkler set, combine harvester and other machinery and equipment on custom hiring basis for members to reduce production cost.
- iii. Make available value addition like cleaning, assaying, sorting, grading, packing and also farm level processing facilities at user charge basis on reasonably cheaper rate. Storage and transportation facilities may also be made available.
- iv. Undertake higher income generating activities like seed production, bee keeping, mushroom cultivation etc.
- v. Undertake aggregation of smaller lots of farmer-members' produce; add value to make them more marketable.
- vi. Facilitate market information about the produce for judicious decision in production and marketing.
- vii. Facilitate logistics services such as storage, transportation, loading/un-loading etc. on shared cost basis.
- viii. Market the aggregated produce with better negotiation position to the buyers and in the marketing channels offering best prices.

Difference between Producer Companies and Cooperatives

Parameters	Cooperatives	Producer Company
Registration	Cooperative Societies Act	Indian Companies Act
Area of operation	Restricted Regionally	Entire Union of India
Nature of business	Primarily service and delivery agencies.	Primarily, agencies to provide marketing solutions to pooled produce
Membership	Based on ownership of land	Based on concept of shareholding
Share	Non-tradable	Build-Operate-Transfer(BOT) tradable but transferable, limited to members on par value
Profit sharing	Limited dividends on shares	Commensurate with volume of business
Voting rights	One member, one vote, but Government and Registrar of Cooperatives hold veto power	One member, one vote, members not having transactions with company cannot vote.
Governance	Federated into the District Central Cooperative Banks (DCCB). Business conducted is based on the policies of DCCB. Receive financial, technical and administrative support from the government	Stand-alone, self-reliant bodies with self-governing capabilities.
Reserves	Created if there are profits	Mandatory
Borrowing power	Restricted to loans granted and disbursed by the cooperative bank to which the PAC is linked.	More freedom and more alternatives available. FPOs are allowed to raise capital from external sources.
Relationship with other Business and non-profit entities	Transaction based	Producers and corporate/ non-profit entities can together float a producer company.

SUGGESTIONS

Success of any business enterprise relates to the capability of the enterprise to test markets, products and innovations. The ability to take risk depends on the capacity to suffer financial loss. There is need to reform the market system that can service connectivity and cost effectively and efficiently. It is imperative to promote Primary Retail Agri-Markets (PRAMs) which has adopted GraminAgri Markets (GrAMs) to function as aggregation and logistics connectivity hubs. These will serve as the first link in the marketing chain integrity thereafter

with reformed & competitive domestic wholesale market (APMCs/APLMCs) and further into export markets.

- (i) Effective agricultural marketing system plays a pivotal role in fostering and sustaining the tempo of rural development and it also triggers the process of agricultural development. An efficient and competitive agricultural marketing system is crucial not only to ensure an effective transfer of agricultural commodities from farmer to the consumers but also in achieving its broader objectives of providing market incentive and production signals to farmers, balancing the demand and supply of agricultural commodities and in ensuring efficient utilization of agricultural resources.
- (ii) Market Intelligence or the dissemination of information on market demand and availability is an important area which plays a significant role in farmers' decision making in respect of both production and marketing of agricultural commodities. As more marketed surpluses are generated, farmers need to know which market to transfer their produce, what price to expect, availability of marketing infrastructure and status of competing supply.

The **e-NAM (electronic National Agricultural Market)** is the latest initiative rolled out by government to provide a platform to unify the country's agricultural markets. Such enhanced integration should benefit the farmers by bringing better price realization through information connectivity and transparency.

The country produces multiple crops across many States and production is being increasingly developed in clusters so as to promote economy of scale at the farm-gate. This transformation is expected to grow as more Farmer Producer Organization (FPO) are created and through impetus from Cooperatives or other collaborative farming practices. There is a likelihood that entire villages will collaborate as farmer groups and operate farms collectively in the shape of Village Producer Organization (VPOs).

The consolidation and organization of the market linkages would result in the farmers being less reliant on traders or intermediaries to connect with the markets. The system is expected to bring efficiencies and improvement in market access, allowing for more productive use of the yield.

Manage price risk is developing a marketing network with the logistics ability to link the harvest with multiple markets. The opportunity from price variation that arises from demand-supply gaps can then be taken advantage of, provided the capability to deliver the harvest to markets is made possible, starting at village level. The advantage of agri-logistics is that it allows for more immediate value realization prospects and in turn also helps smoothen market fluctuations by directing produce to where demand remains unfulfilled.

The NABARD's 2019 study says that around 70-80 % of the FPO members are small and marginal farmers and that membership range from 100 to 1000. It is unrealistic to expect poor farmers to contribute large sums as share capital that would make FPO financially robust.

The Azim Premji University study points out that the average paid-up capital of FPOs ranges from a few thousand to several lakhs across states. Only 90 out of 6926 active FPOs have paid-up capital of Rs. 50 lakh or more, while 86% have less than Rs. 10 lakhs.

CONCLUSION

FPO can play major role for the development of agriculture economy as well as employment especially in rural area. This will also give the opportunity to the farmers to have maximum benefits of their production and have a chance to explore their business in Indian market as well as in exporting to the different countries. Through FPO, government is planning to double the farmers' income. This is also an initiative for the development of Indian economy. There are number of schemes which are also supporting the FPO to enhance their business.

We can conclude that FPOs are boon for agriculture industry. This has given the chance to farmers for enhancement of their income and living standard. FPOs can support the members in getting more income by undertaking many activities. FPOs can aggregate the produce of all members and market in bulk, thus fetching maximum price of their produce. These processes are involved for enhancing the income of farmers.

It is vital to enhance farmers' income and to make agriculture more viable and sustainable; there is a need to develop holistic post-production management to enable efficient market connectivity for perishable and semi-perishable produce. Such connectivity would entail cross-geographical flow of fresh foods and preferably involve multi-modal transport connectivity.

It is government initiative to strengthen the farmers at lower level through FPOs and doubling the farmer's income. To achieve this uphill task, government has given the responsibility to NABARD to encourage, enhance, cooperate, nurture and financial support to existing FPOs to achieve the target of government.

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BUDDHIST WORLD-VIEW DURING COVID-19 PANDEMIC

Dr. Tsetan Namgyal*

ABSTRACT

The COVID -19 pandemic set the world health emergency hastily, and has created a crisis of globalization that never happened in human history before, hence there is no hyperbole calling it the biggest health crisis in human history. It has already gained the ignominy as the world's fastest and longest disease outbreak that turned into a callous killer pandemic. Today, this world has become a living hell due to this COVID-19 pandemic. It's now more than a year running into the pandemic. Still, there is no sign of relief and respite in getting control over propping up new variants. The entire world is fighting together to eliminate the pandemic.

The paper delves upon political ideologies to economic growth and planning to extract natural resources in their entirety, global trade and polity have severely impacted human existence. In addition, some valuable Buddhist views and perspectives on the pandemic and how Buddhist countries handle the situation with more prudence and caution are also discussed. This paper will analyze and provide an overview of all the aspects mentioned above and arguments in the proper framework to understand this pandemic's consequences better while framing issues regarding some similar pre-historical pandemic occurrences. This article also considers India's alarming situation and concern in the wake of flaring up new cases, making India a country of global crisis.

Keywords: Buddhist views, COVID-19, Coronavirus, global pandemic, lockdown, quarantine, social distancing.

INTRODUCTION

The silent killer novel Coronavirus disease (COVID-19)¹ originated in bats. It has changed the notion of everything fundamentally, like what we do and what we don't in our social life. In a way, our customary and routine practice of activities has been abruptly brought to a standstill; thus, everyone is facing unprecedented challenges and difficulties, including fear, psychosis, anxiety, and panic. It has affected the normal course of human activity and behaviour. The positive side of this pandemic is that people have become cautious and guarded in improving their body immune systems and mental health activities with yoga to stay healthy and sound.

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At the end of 2019 and the beginning of 2020, various human cases of novel Coronavirus infection were reported from the Huanan Seafood Wholesale Market (South China Seafood City Food Market) in Wuhan, China. On 7 January, 2020, the virus was identified as a novel Coronavirus and officially named by the WHO as SARS-CoV-2.² As per the findings of the US Centre for Disease Control and Prevention (CDCP), the new corona virus that infects humans, originated in animals. The USA biological research suggests that COVID-19 and a high proportion of emerging and re-emerging infectious diseases are zoonotic derived from wildlife³. Similarly, there is enormous capable wildlife (animals) that can transmit the viral infection to humans; but bats are at the forefront. The reason is that bats, in many respects; represent the perfect reservoir for emerging zoonotic pathogens because they harbor more zoonotic viruses per species than any other animal such as rodents⁴. In other words, we, as human beings, should know how to handle animals and control our own destructive behavioral human actions. We should altogether avoid or limit, if possible, hunting wild animals for consumption, etc. This also cause destruction of biodiversity and ecology.

We are facing a crisis that humanity or humankind never faced at such a mega scale and rampage under any pandemics in history; thus, it's a testing time for everyone to contemplate and review. Humans made superfluous and redundant activities that have directly affected nature's fragile environment, where all living sentient beings coexist. However, on the other hand, this ongoing global pandemic is rapidly sprouting into a worldwide political and economic crisis. It has forced the breakdown of basic human activities, including political and economic mobilization; borders sealed in panic, and it is not less than a war in itself.

GENEALOGY OF CURRENT PANDEMIC

COVID-19 is unprecedented pandemic; hence, today, we hang in the balance between life and death situations. This unwanted consequence is the most significant human crisis ever happened when lockdown at such a scale has been resorted to in the entire human history. Initially, the lockdown was to justify identifying the hotspots, bringing up the medical infrastructure to facilitate the protocols to live with Corona. In contrast, the imposition of subsequent lockdowns was according to the flaring up situation. During this extended lockdown period, people have suffered like anything, particularly the poor who survive on day-to-day earnings. Unorganized sector laborers⁵ faced irreparable damage, and so has the economy. For that reason, the most extended period of lockdown is not the ultimate solution for flaring up or dipping down the corona cases after some length of the period. As of now, no credible answer to the virus except vaccination has been found.

After easing the lockdown, social distancing will be a very uphill task to follow and practice that too in a crowded country like India, a developing country with a dense population. And that may be witnessed soon after the lifting lockdown for various compulsion reasons, particularly the economy and other government business establishments, which are the lifeline of land and people that cannot be kept on hold for long. Hence, under all these circumstances, the only option left is to take self preventative measures while taking good hygienic food that develops the body's immunity system while following the government guidelines and measures. A healthy and sound environment is the best defence against such diseases. Even since the outbreak of this pandemic, there are over 47,000 scientific research papers dealing

with COVID-19 that have already appeared in various reputed international journals⁶.

In the past, there have been several pandemics, including plague, smallpox, cholera, dengue, Ebola, Spanish Flu of 1918, HIV&AIDS, SARS (Severe Acute Respiratory Syndrome), MERS 2015 (Middle East Respiratory Syndrome), tuberculosis, influenza, and West Nile disease. Now COVID-19 contagious diseases has threatened and disrupted human populations⁷. However, in the past, India has to deal with diseases such as smallpox, polio, and plague and not such pandemic like COVID-19. In principle, this problem is pandemic; hence such infectious disease has no alleviation unless the vaccine is distributed.

Coronavirus has surfaced at different intervals.⁸ The first case of Coronavirus was notified in the 1960s (229E), 1967(OC43) but never considered as a fatal disease. It was followed by the 'Severe Acute Respiratory Syndrome Coronavirus' (SARS -CoV) in 2002. This was first reported from Guangdong province in China followed by cases from Vietnam, Canada, and Hong Kong. Next to follow were SARS-CoV-1 in year 2003⁹, NL63 in year 2004 and HKU1 in 2005. Middle East Respiratory Syndrome Coronavirus' (MERS-CoV¹⁰) was first identified in 2012 and SARS-CoV-2 in 2020. The WHO declared 'state emergency' when the cases flared up excessively.

COVID-19 is similar to SARS, a new novel infectious disease and the most dangerous pandemic compared to the other epidemics. Many scientists and medical professionals worldwide worked dedicatedly on a vaccine but still unable to come with some tangible solutions. The SARS 2002-03 was caused by the excessive killing and eating of animals, particularly wild animals. The natural ecological balance was lost between sentient human beings and non-human beings or animals that provide fertile ground for such a scary disease. Hunan Seafood market is one of the world's largest markets where humans consume a large scale of wild animals and trade thousands of wild animals annually. Therefore, after COVID-19, the Chinese government has brought a law to ban hunting, transporting, trading, and eating wild animals. The Chinese government also banned import across the country to ensure public health and safety and avoid the transmission of novel severe infectious diseases¹¹.

Top medical scientists are unanimous in the view that vaccines alone are the safest and ultimate way forward to achieve herd immunity against the deadly virus. Hence, until and unless that happens, our only safest bet is to adopt the MHD prescription of social vaccines such as wearing a mask, hand wash and social distancing in our daily lives¹². It has already taken four million lives across the globe and has put the rest of the humans at stake. Tremendous sorrow and suffering grew as also psychological stigma and anxiety. Government and non-government establishments are in disarray, and everything brought to a halt.

The virus is transmitted from human to human via droplets coughed or exhaled by infected persons, touching droplet contaminated surfaces or objects, and touching the eyes, nose, or mouth (ECDP 2020). The most common symptoms reportedly found are fever, dry cough, dyspnoea, sore throat, headache, myalgia or arthralgia, and even diarrhea and vomiting.

BRAWL OF TWO GLOBAL POWERS

China and the US, the two major global powers, are playing the blame game instead of addressing the issue. Various conspiracy theories and political rumours scorn the media

globally, but it's still unknown how it developed and spread. However, primarily it was first identified in Wuhan, the capital of Hubei province, China, in December 2019 and was rapidly determined to be caused by a novel Coronavirus, namely Severe Acute Respiratory Syndrome Coronavirus -2 (SARS-CoV-2)¹³. The outbreak began to spread worldwide, covering more than 200 countries¹⁴ that have infected millions of people, and millions have already lost their lives to the disease.

What policymakers and analysts are questioning now is why China concealed information on Covid-19 from the international community despite knowing its intensity and fatality. When US President Trump spoke to the journalists, the crisis took a geopolitical turn. He called the Covid virus the "China Virus." US President Trump, calculatingly with full consciousness, claimed to shift every blame on China since America is the most affected country globally, both in fatality and infected cases. The United States had succumbed to this virus severely as its health care sector could not control the pandemic and became the worst affected country in the world. As a result, the economy slowed down because of the pandemic.

A leading academician of the United States, Stephen Walt from Harvard University, has written an interesting piece of paper in *Foreign Policy* magazine titled "The Death of American Competence". He questions the US preparedness to combat the crisis. He emphasizes that "this epic policy failure will further tarnish the United States' reputation as a country that knows how to do things effectively."¹⁵

The COVID-19 pandemic has caused a catastrophic impact on the entire global community, and none of the countries seems to have dodged the virus. However, the menace can be overcome only through cooperation among all the states and following international norms. The China-US rivalry amid this global crisis has negatively affected the general response to the fight against COVID -19. However, with all anticipation, China and the US will learn lessons from India about addressing the pandemic crisis humanely rather than confront each other to reclaim geopolitical space. At the same time, China will also have to adopt a transparent policy, especially on its biological weapon program, generating many apprehensions in the global community.

The global pandemic infected cases and fatalities numbers from the affected states as per official records such as WHO, CDE, ECDP websites are mindboggling and highly daunting. However, keep in mind that the actual numbers are much higher than the official numbers; hence the present corona cases of infected and death numbers are contentious in almost all countries for different reasons.

On January 30, 2020, WHO officially declared COVID-19 as an epidemic of public health emergency of international concern (WHO, 2020). By March 11, 2020, the virus spread swiftly across other countries, and WHO instantaneously called it a pandemic.¹⁶ In this regard, the World Health Organization also stated on its websites that "*The COVID-19 pandemic represents an unprecedented disruption to the global economy and world trade, as production and consumption are scaled back across the globe*". As per the updated report, 39.93 lakh people have died from this fatal disease, with 18.45 crore confirmed cases worldwide till July 4, 2021.¹⁷

Expert sources put India as one of the most susceptible to Corona, and it may become like the USA, UK, Italy, Spain, Brazil in terms of fatalities rate. However, the infection rate has already reached the second spot just after the USA. For a country like India, the stringent laws and guidelines are not followed sensibly and systematically while considering India's dilapidated medical infrastructure and huge unorganized sectors with inadequate facilities. In that case, there might be another alarming and disquieting situation for a country like India. And above all, most importantly, the 1.38 billion population¹⁸ the world's second-largest populated country after China is a problematic scenario. On September 6, 2020, India overtook Brazil to become the world's second worst-hit country¹⁹. The confirmed Coronavirus infections in India have surpassed twenty million, the second-highest after the United States. Thus, the only impeccable solution for a densely populated country like India is to have the vaccination drive at the earliest, creating a safer environment to live in, without fear and panic. It will also help develop herd immunity with minimal loss of lives as current death rates are confirmed. Under these circumstances, India cannot go for inclusive testing as slums and villages where the basic guidelines such as social distancing and wearing a face mask are not manageable.

India's population is significantly higher after China. On the other side, the lack of accessibility to hygienic and clean water and food to every citizen and the overall poor socio-economic situation has posed a significant challenge for India's fight against COVID-19. Then recklessness, sluggish government, and individual citizens, who hid travel history to escape quarantine, participation in forbidden religious social gatherings etc,²⁰ helped spread the pandemic that made India the next COVID-19 hotspot. Hence, the WHO stated that the "future of the pandemic would depend on how India handles it."²¹

Prime Minister Narendra Modi held discussions with SAARC countries and took the initiative to participate in the virtual G-20 Summit. While addressing the Summit, Modi called upon member countries to "strengthen and reform intergovernmental organizations like WHO and work together to reduce economic adversity and difficulties resulting from COVID-19, particularly for the economically weaker countries".²² So also, despite facing the COVID-19 crisis, New Delhi assisted the neighbouring countries. The recent UNCTAD report also appreciated the Indian economy when it stated that "Even so, the world economy will go into recession this year with a predicted loss of global income in the trillions of dollars. It will spell serious trouble for developing countries, with the likely exception of China and the possible exception of India."²³

It shows India's ongoing fight against the COVID-19 pandemic humanely without hostility, which won tremendous applause from many world organizations, including the WHO. On the contrary, the inside story and situation are different; hence the cases are increasing faster than any other country today in both infection and mortalities. Unfortunately, most Indian media never discussed COVID-19 seriously nor held the government responsible for the present difficult circumstances.

BUDDHIST PERSPECTIVE AND APPROACH ON CORONAVIRUS

Let's look at the present ongoing Covid -19 pandemic. It's just an abysmal disease of cosmic flux that usually confronts or encounters once in a lifetime cycle. The Buddhist ethical

and governance system strictly inculcates freedom from destroying or non-injury to human lives, in fact, all living beings. All living beings, including plants and trees, are worthy because they live. Primarily, Buddhism and its philosophy are spiritual or metaphysical discourses. However, in a real sense, Buddha discovered a truth about life and the physical world's existence after so many years of his hard work-study and rigorous practices until he became enlightened. He determined the cause and effect of various problems of the materialistic world and to overcome these problems he showed the ways and means through some basic theoretical finding based on 'the enlightenment' or in literal term 'the Awakened one.'²⁴ His teachings Buddhism²⁵ has fundamental doctrinal formulas . 'Four Noble Truth'²⁶ that includes 'Noble Eightfold Path' 'Theory of Dependent Origination'²⁷ are some basic elementary fact in teaching and understanding of Buddhism and its philosophy that was propounded by Buddha more than 2500 years ago.

The Coronavirus pandemic reminds the true implications of dependent origination, a core principle of Buddhist psychology, philosophy and theology. The more we understand and realize the importance of giving health care and secure safety for people, the more we protect and remain safe. Similarly, more countries prioritize offering cooperation and compassionate policies for other's well-being; more will be their own well being and prosperity under any circumstances in this murkier world. We cannot exist without the earth, and we have to be mindful about how we treat this world because we can no longer live without it.²⁸

The term "samsara"²⁹ on the planet earth is an existential phenomenon that finds exposition in Buddhism as well as in the other Indian traditional schools of thought and system. All karmic actions have two side effects: positive or negative, based purely on one's deeds. According to this theory, the COVID-19 pandemic is also the cause-effect of karmic activity that caused and appeared as a novel and severe viral infectious disease. The karmic action identified as the cause of the epidemic is fourfold: globalization and subsequent increase in international travel; widespread urbanization of human society, environmental and ecological destruction which affect the bio-diversity and damage also following global change and climate change, and a neoliberal capitalist order driven by endless greed, desire, delusion in today's aggressive and competitive world. Thus, we need behavioural change and the materialistic or worldly change that cause climate change and spread virus diseases.

In traditional Buddhism, human actions can be divided into two categories based on the state of mind, body, and speech: wholesome action and unwholesome action. The unwholesome states of actions/activities are also called the ten Buddhist laws of non-precept/non-virtues.³⁰ These lead to grave sorrow and suffering, and it's performed under the force of the three evils or poisons, namely greed, hatred, and delusion. Therefore, the most significant discovery of Buddha's teaching is that the world is full of sorrow and suffering. Buddha proclaimed, "*Light arose in me about things not heard before.*"³¹

The actual cause and effect of the outbreak of COVID-19 arise from the damage to the planet earth caused by human misdeeds and mischievous activities out of ignorance through greed, hatred, and covetousness the three poisons in Buddhism. And it is the root cause of all sorrow and suffering of the mundane world. The existence of the planet is naturally based on natural mechanisms. If anything works against this natural process, it becomes a virus

that explodes in various epidemics and natural disasters. Human beings have gone extreme against nature with greed, lust, hatred, and nature cannot sustain such actions for a longer period. Here, the Buddhist concept of the 'Middle way' approach talks that about the middle path that accommodating both living and non-living beings as per their compatible survival endurance. Everything fits in the right place during such an outbreak as the sky appears out in its natural shape and colour. All the running water tributaries like streams, ponds, lakes and the ocean become clean. The level of carbon dioxide in the atmosphere has become the lowest in decades. And the wild animals in the jungles and oceans are less threatened and live a better, happier life. Hence the planet is healing itself when people are not indulging in unnatural activities such as going against nature. WHO, in its constitution, defines *health* as being «a state of complete physical, mental and social well being and not merely the absence of illness or any infirmity deficiency.»³²

The 'Four Noble Truth' of Buddhism represents a definite procedure as a system of thought which is equally followed even today in other branches of knowledge. These 'Four Noble Truth'³³ are nothing but four cardinal articles of medical science applied to the spiritual healing of human beings.³⁴ Hence, medical science is closely related to the 'Four Noble Truth.' In a way, Buddha, the Omniscient was a physician who knew the causes of disease and at the same time also understood how to cure the illness, including vicious disease. Like in medical science, suffering corresponds to the element of diagnosis of the diseases with stages of check-up, such as examining the causes of disease; the truth of the cessation of disease corresponds to the achievement of a cure and finally treatment or medicine for healing from the diseases is the path that corresponds to the course of treatment of a disease.³⁵ Buddha discovered the Noble Eightfold path that leads to the ending or extinction of sorrow and sufferings.³⁶ Everything in the world is conditioned under a law of all phenomenal human existence, which is in Buddhist term is called '*Pratitya-samutpada*'³⁷ (dependent origination). It shows life is nothing but a cycle of rebirths and death; hence death exists because of birth. Everything in the phenomenal world is interconnected and interdependent. No one can escape from this law once we are born in this world. In the present context of COVID-19, people are scared to die and seeing dead bodies become fearful, but living bodies are no less dangerous than dead bodies. Human existence, conditioned by suffering, ageing, sickness, and has death as an inevitable phenomenon. Buddhism is more scientific, practical, and logical with rational and scientific approaches and methods.

Some important Buddhist texts like *Bodhischaryavatra*, *Mahayana Sutralankara*, *Mahaprajnaparamita Sastra*, *Dhammapada*, *Lalitavistara Sutra*, *Saddarmapundarika Sutra*, *Vimalakirti Sutra* etc., ultimately explain the meaning of kindness and compassion that brings happiness to all sentient beings while liberating all human sentient beings from sorrow and suffering. In addition, even reciting sutras and mantras from the above-mentioned texts or just offering prayer for relief of grief and suffering from Covid-19 syndrome while reciting the famous and powerful Buddhist mantras "*Om Mani Padme hum*"³⁸ help one ameliorate the mental fear and suffering.

However, Buddhist activities such as prayer and meditation have not been able to end the pandemic entirely and instantaneously, but it has helped extensively at an individual and

community level. Nonetheless, its charitable and compassionate contributions extended by Buddhists worldwide have been a significant boon for Covid infected people. They have also helped mitigate anxieties and various other mental health problems that came along while confronting the Covid-19 crisis worldwide.

BUDDHIST WORLD AND PANDEMIC

Since the Covid-19 pandemic has changed many aspects of life and works over more than one year and the situation is still not under control; in fact, it is ravaging all over the world like a never-ending pandemic. In an effort to control the spread of the virus, Buddhist organizations all over the globe, particularly in respect of their countries, have been proactive in planning and executing their skill and experiences based on practical Buddhist teaching and preaching and its functional role during and after the epidemic. Countries like Taiwan, South Korea, Mongolia, Myanmar, Cambodia, Vietnam, Sri Lanka, Thailand, Bhutan etc, had taken preventive measures before and at the initial stage of the Covid-19 outbreak; hence, relatively meagre infection rates and few fatality rates occurred. These countries did not undergo widespread business establishment closures or put 'lockdowns' but only following simple and easy norms such as social distancing, wearing masks, and other virus protection guidelines issued by their respective countries. They called the Korean approach, Taiwanese approach, Mongolian approach, Bhutanese approach, etc. For this approach, they have earned commendations and applause from the World Health Organization (WHO) and many other agencies around the globe.

After the outbreak of Covid -19, people there were restricted from going out; thus, the situation is under control. Because of all these reasons, people in South East Asian countries have suffered considerably fewer damages in terms of human lives and income.

Buddhist Sanghas and organization have also actively participated and conducted various Buddhist social and spiritual welfare activities, such as online Buddhist education teachings in the form of virtual meeting on meditation classes,³⁹ mantra chanting, and many other forms of Buddhist teaching, including rituals practices worldwide to everyone but particularly for Covid-19 patients and those who remained in quarantine or social isolation. Such initiative has increased public interest in Buddhist sustainable holistic approach that has helped promote mental stability and physical health. Most lay Buddhist people have accredited to faith and belief that strongly tend towards loving compassion and brotherhood for other poor and needy people and social cooperation for other's happiness. Therefore, it's understandably pretty natural for these people to work collectively for mutual and maximum benefit for the welfare of others while sacrificing one's comfort and happiness.

In this way, the cultivation of positive emotions among the many suffering from anxiety, social isolation, and financial difficulties during the pandemic and lay supporters engaging their services through various social media platforms as a collective approach with loving-kindness and wishing well of others helped overcome such a difficult time. These are some different but unique reasons for the low spread of Covid-19 in Buddhist countries. It is worth noticing how they mitigated the crisis sufficiently while following their distinct but practical holistic approaches. And it's helped them in all possible ways to alleviate the widespread

mental and emotional suffering of people and stress from the long-lasting financial difficulties for individuals, families, and the state itself during the epidemic.

The countries, especially those Asian Buddhist majority countries⁴⁰ were quick in their prompt action like Vietnam, Taiwan, South Korea, Laos, Thailand, Cambodia, Sri-Lanka, Bhutan, Singapore, Mongolia, and many others Asian countries. Countries like Vietnam, Cambodia, Laos, Taiwan, South Korea, Mongolia, Japan, and even China have shown significant and remarkable action plan to curb and stop the deadly virus from spreading and affecting more people and lives. Today it is well under control because of their prompt and proactive measures and enforcement while keeping in mind the risk factor of transmission to the population, economic consequences, and many other menaces. The cultural aspects of wearing face mask even before the virus spread in many of these countries, is the reason behind fewer fatalities. Besides, they have also undertaken early public awareness through various education campaigns with a good task force team for public attention with proper guidelines and measures.

On the contrary, the USA and many other European countries failed miserably due to non-compliance with COVID-19 measures followed in the South-East Asian and Indo-Pacific countries.

Many experts have called it a Black Swan event for the global economy (Mahendra & Sengupta; 2020). Today the entire world is under unprecedented health and economic crisis because of the corona pandemic.

POST COVID-19 SCENARIO

The post-COVID-19 situation and complications will hit adversely though it seems the Coronavirus is never going away and may become endemic

The humanity is at present struggling with the COVID-19 virus for almost a year with enormous hazard to lives, which has brought normal human life to a halt. Moreover, economic crisis that all the countries face today is also affecting their socio-political stratum severely along with their mental health care systems.

CONCLUSION

Corona pandemic has taught us that the survival of the fittest is feasible only with nutrient rich food, positive vibrations, mindfulness of feelings, consciousness to gain freedom from all the sufferings. Coronavirus has emerged and stands like a shadow of death to everyone. The second wave reached a critical stage in some parts of Europe. France, Spain, Italy and UK have already put their country under the second comprehensive lockdown. With partial uplifting of closure, the sudden flaring up of corona cases occurred in India. Brazil, Mexico, and Russia are too flaring up very fast. Similar pattern has happened in Europe, the USA, and some parts of South and North American regions of Brazil, Colombia, Argentina, Peru and Mexico that largely because of relaxation restriction before taming the virus. A country may prevent the rapid number of infectious of fatality cases if it follows special measures taken in Buddhist majority countries like Taiwan, Korea, Japan, Cambodia, Vietnam, Sri Lanka, Bhutan, Laos, Thailand and Mongolia, including China the country where the COVID originated.

Looking at this persistent global crisis, one can ask these questions: who is responsible for getting this global mess? How is the international community responding to the catastrophe? Why China, the epicenter of the crisis failed to inform the international community early about the imminent virus? Last, to what extent does this virus contribute to the “geopolitical antagonism”, particularly between the two superpowers China and the US and its impact on the other countries. Such questions need to be discussed explicitly to get a clearer picture of the crisis at the earliest.

ABBREVIATIONS

COVID-19 = Coronavirus Disease 2019

SARS = Severe Acute Respiratory Syndrome

WHO = World Health Organization

JHU = Johns Hopkins University

MHD = Ministry of Home Department

BP = Blood Pressure

CDCP = Centre for Disease Control and Prevention

SAARC = South Asian Association for Regional Cooperation

UNCTAD = United Nations Conference on Trade and Development

OED = Oxford English Dictionary

ENDNOTES

1. This was provisionally called COVID-19, and first identified in China’s Wuhan province. Chinese sources said that some persons were exposed to seafood or the wet market; however, the virus/infection’s actual cause is still unknown. It’s a pandemic caused by a novel Coronavirus infection. Scientific research and study will determine the cause and effect of this infection on the human body and find a cure for the virus apart from the vaccine.
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5. The worst impacted section of human society during the lockdown is the daily wagers or labourers.

6. <https://epaper.hindustantimes.com/Home/ArticleView> 22, September 2020. See Editorial by Dr. NK Mehra, ICMRES(AIIMS) New Delhi.
7. See: <https://www.nejm.org/doi/pdf/10.1056/NEJMp2003539?articleTools=true>
8. As many as five Coronavirus pandemics happened before the present Covid-19.
9. The syndrome was designated ‘severe acute respiratory syndrome’ (SARS) in March 2003
10. <https://www.who.int/emergencies/mers-cov/en/>
11. “National Ban Wild Animals Trade ” Xinhua Net, February 24, 2020, March 20, 2020, see http://www.xinhuanet.com/politics/2020-02/24/c_1125619946.htm.
12. See: <https://epaper.hindustantimes.com/Home/ArticleView> September 22, 2020
13. See: [https://www.thelancet.com/pdfs/journals/laninf/PIIS1473-3099\(20\)30120-1.pdf](https://www.thelancet.com/pdfs/journals/laninf/PIIS1473-3099(20)30120-1.pdf)
14. See: <https://link.springer.com/content/pdf/10.1007/s12671-020-01412-8.pdf>
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23. <https://unctad.org/news/un-calls-25-trillion-coronavirus-crisis-package-developing-countries>
24. Someone who has overcome the darkness of existential ignorance and awakened from illusion or delusion is called awakened, referring to Buddha, the enlightened one.
25. Buddhism is diverse as a religious practice.
26. The ‘core one taste’ of the Buddha’s teaching is the liberation from sorrow and suffering. The Buddhist idea of sorrow and suffering refers to *Dukha* in simple meaning, which is more or less synonymous with the general word of ‘suffering/sorrow’. To understand the *Dukha* or suffering, it’s explained with cause and condition. After knowing its source of origin; one has to look at how to stop it. Third, after knowing the cessation process, one

has to look at which view or path can be instrumental in ceasing this suffering which, for Buddhism, the noble eightfold path. Examining the pandemic from such Buddhist concept will help erase such pandemic like ending Dukha.

27. Nothing exists independently in this human world. Everything is interrelated and interconnected. It exists in a multifaceted, complicated wave of life that is continually changing, which is full of suffering and nothing else from birth to death. According to Buddhism, it's found depicted on the canvas as 'Bhavacakra' called the 'wheel of samsaric existence' with twelve symbolic pictures of human circles.
28. Lee N and Chen, C(2020). "The Vulnerable and Buddhist Inspired Activism, published in Social issues in San Francisco: Perspectives from Global Buddhism," pp.49-59 <https://repository.usfca.edu/cgi/viewcontent.cgi?article=1003&context=thrs#page=49>
29. 'Samsara' (the wheel of rebirth) a Sanskrit term, which in Buddhism represents the cosmic existence of the human world under the wave of universal flux. It talks about the life and death of all sentient beings under the cycle of beginningless birth and death in the mundane world because of past, present, and future accumulated deeds. In proper Buddhist terms, karmic activities or 'Law of Karma' result from wilful intention or reaction. This is explained under the Buddhist theory of twelve chained cyclic dependent origination. This Buddhist Samsara doctrine asserts the endless cycles of birth and death through the transmigratory soul from one life to another because of past positive (right action) and negative (bad action) karmic activities. These countless births and deaths is called 'Samsara'.
30. The ten Buddhist unwholesome actions are done from three parts of our way of conducting actions. Killing, stealing, adultery are done through body; false, slanderous, harsh, idle are done through words, while covetousness, ill will, and wrong views are done mentally. These are rooted in three poisonous evil of greed, hatred, and delusion.
31. The sorrow and suffering represented through the four noble truths are the fundamental teachings of Buddhism. Buddha proclaimed that the origin of the world or to understand the reality of the suffering of this murkier world, the arising of suffering, cessation of suffering, and the path leading to the end of the suffering.
32. WHO,2006,1
33. And these truths to know the suffering, cause of suffering, end of suffering and finally the path eliminating the suffering; Enlightenment according to Buddhism.
34. Barua, DK(2007). "Applied Buddhism: Studies in the Gospel of Buddha from a Modern Perspective", International Buddhist brotherhood Association of India, Indosen Nipponji, Bodhgaya, pp.3-4
35. Santina, PD(1997). *The Tree of Enlightenment*, Chico Dharma Study Foundation, p.29
36. Satina, PT (1984). *Fundamentals of Buddhism*, The corporate of the Buddha Educational Foundation, Taipei, Taiwan, ROC Singapore, pp. 29-30
37. This is also called twelve links representing the process of mental condition shown

through the twelve elements of origin, which is dependent on one another. That's the critical doctrinal philosophy of Buddhism. These are ignorance, formation, consciousness, form, six sense faculties, contact, sensation, craving, grasping, becoming, rebirth and old age, and death. Ignorance is the absence of knowledge that causes suffering. Ignorance is the fundamental cause of all sorrow and grief, and because of ignorance, we all human beings would thrive for all worldly pleasure. Hence, the right understanding and right thought to give direction and orientation help eliminate the ignorance, greed, and anger.

38. This is called Buddhist meditative chanting, which is easy to recite yet quite powerful because it contains the essence of the entire teaching of Buddhism. These six syllables, "Om Mani Pad Me Hum", denote the practice of a path which is an inseparable merging force of method and wisdom. One can transform one's impure body, speech, and mind into the pure, noble body, speech, and mind of a Buddha. It also generates positive energies within the body, mind and speech through mystical vibrations and frequencies when chanted repeatedly and silently.
39. Meditation and its related power are well known in Buddhism as it helps promote physical health and calm down mental anxiety and stresses for resilience and well-being, etc. Hence, many Buddhist meditation centres provide resources, virtual and physically while following and maintaining the proper social distancing guidelines during this pandemic.
40. See: <https://coronavirus.jhu.edu/map.html> sources Johns Hopkins University USA.

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WORKING TO ILLNESS AND DEATH: WHO CARES?

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ABSTRACT

Occupational safety and health have been ignored as a non-negotiable labour right in India even as workplace accidents have been on the rise with an alarming frequency. This paper describes the narrow Indian context in light of the broader context of widespread irresponsible capitalism, and suggests the need for preventive labour and social policy as the only way out of the unending mess and misery.

Keywords: Capitalism, Globalisation, Liberalisation, Occupational Health and Safety, Preventive Social Policy, Social Democratic Capitalism.

INTRODUCTION

Capitalism, which is euphemistically known as the ‘market economy’, is the predominant economic system prevalent in the world in which a country’s trade, industry and profits are controlled by private companies, rather than by the people whose time and labouring powers those companies appropriate. It takes the position that ‘greed is good’ and is a huge driver of social and economic inequality. It dehumanizes work whereby human workers are reduced to a sub-class at a par with animals and machinery subject to a steep increase in job stress and working hours (Kelly, 2020; *Weekly Bolshevik*, 2013).

The employers in this system go to the extremes to evade the costs of safe and healthy workplaces. The working class is hit with the choice: unsafe job, or poverty, or slave labour with both. Wolff (2020) has brilliantly summarised the continuing story of capitalism since its genesis thus:

“Capitalism has always struggled to minimise outlays on workplace safety and health. Workers have protested this wherever capitalism became the prevailing economic

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system over the last three centuries...The profit-driven logic of capitalist enterprises incentivizes *not* spending capital on workplace safety and health conditions unless and until they deteriorate to the point of threatening profits. Capitalists and mainstream economics textbooks repeat endlessly that profit is every enterprise's "bottom line."

Wolff further argues:

"Profitability measures each firm's economic performance. Profits reward employers; losses punish them. Employers use capital to yield profits; that is their chief goal and priority. As objectives, workplace safety and health are secondary, tertiary or worse: obstacles to maximizing profits. Capitalism has always sacrificed the safety and health of the majority employees to boost profits of its minority employers. That minority makes all the key enterprise decisions and excludes the majority employees from that decision-making. No wonder employers figure disproportionately among society's rich, safe, and healthy, while employees figure disproportionately among the poor, unsafe, and unhealthy... In some times and places, capitalism's iron fist wears velvet gloves. When profits are high and/or critics of capitalism ally strongly with its victims, employers may spend more on making workplaces less unsafe and less unhealthy. Otherwise, employers do spend less. If and when they fail to prevent government regulations mandating minimum health and safety standards, employers campaign to evade, weaken, and eventually repeal them. Employers usually repeat the same old arguments to block or undo regulations mandating safety and health standards. Such regulations, they insist, divert capital from productive uses (hiring workers) to "unproductive" uses (improving workers' health and safety). Thus fewer workers will be hired, hurting the employee class. With such arguments employers have often succeeded and undermined workplace safety and health. Capitalism's long record of maintaining nearly constant unemployment—its "reserve army"—not only got workers to accept lower wages for fear of being replaced by more desperate unemployed. Rising unemployment also can make employed workers to accept unsafe, unhealthy workplaces. Unemployment is a kind of torture by one class of another. It helps maintain lower wages and unsafe and unhealthy worksites."

It is therefore not at all surprising that a similar reality is reproduced in our country as well.

INDIAN CONTEXT

The forces of globalisation and liberalisation have aggravated the already existing serious problems of occupational health and safety in the Indian capitalist context. With the advent of globalization, labour-intensive, hazardous and environmentally destructive manufacturing operations have been shifted from the developed to developing countries, particularly in Asia. Less developed countries such as India have thereby become pollution havens for dirty industries. Energy, chemicals, transport, metallurgy and food processing are classified as the "red" or most polluting industries. The largest inflows of foreign direct investment in India have been into the dirty industries, especially chemicals.

With the advent of liberalization, many activities reserved for the public sector have been de-licensed and private and foreign firms have been allowed into these activities including polluting industries such as mining, power generation, chemicals, etc. The impact of this shift

has been devastating for the environment and the workers in those industries. The case of Hindustan Lever's mercury thermometer factory in Kodaikanal is a relevant example in this regard. Mercury poisoning went almost 250 times above the permissible limits and adversely affected the environment of the Kodaikanal region. Hindustan Lever opened this factory here after closing down its unit in the USA. Therefore, actually the environmental and the human costs of the mercury thermometer production were transferred from the USA to India. Moreover, India's 7500 km long coastline has been converted into a destination for waste disposal of the entire world. Lead ash, battery scrap, zinc ash, waste oil and old ships laden with asbestos have been increasingly reaching this coastline. India has been importing huge amounts of zinc waste and lead waste at its 7 major and 100 minor ports. Huge amounts of plastics and metal waste have been coming into India from Australia, Canada, UK and USA apparently for recycling. The Indian company Futura Industries of Tamil Nadu has imported 10,000 metric tonnes of plastic wastes since 1992 up to 2010. Indian coasts are now emerging as world's largest ship breaking yards. Ship breaking is a very dangerous work.

Alongwith globalization, a competitive model of export-oriented growth based on foreign investments has been promoted. The developing countries have been compelled to compete with one another for more and more export orders and for more and more share of foreign investments. This competition has actually become a war against own working people in each country, in terms of slashing subsidies from public welfare and extending huge monetary incentives like tax exemptions to investors, uprooting the indigenous communities and granting easy access of natural resources to investors, etc. The working class has been denied any labour rights as human rights and treated as unlimited supplies of cheap labour to ensure super profits for the investors. Whatever labour enforcement machinery was set up initially in the country became almost completely paralyzed in the name of abolition of 'inspector raj'. This has progressively led to rampant violation of safety laws and aggravation of health and safety related problems at workplaces. According to ILO's conservative estimates, more than 1,000 workers every day or 46 workers every hour die due to occupational health and safety problems.

The legislative framework of occupational health and safety (OHS) in India is poor. It is not comprehensive, covering all workers in all economic sectors. OHS legislation exists only for four sectors--manufacturing, mining, ports, and construction. But even in these sectors there are serious shortcoming by way of coverage, quality and effectiveness of various provisions. Much of legislation is just paper-work show-off.

The International Labour Organisation has so far adopted 182 conventions including 13 conventions on occupational health and safety and working environment, but it is strange that India has ratified only a total of 39 conventions and only 2 conventions on occupational health and safety namely Radiation Protection Convention (No.115), 1960 and Benzene Convention (No.136), 1971.

About 97 percent of the enterprises in India employ less than ten workers and most of these employ less than five workers, and therefore these enterprises are out of the coverage of the Factories Act. About 66 percent of total workers employed in all enterprises are engaged in the enterprises employing less than 10 workers. In all the major economic sectors, informalisation

is predominant. Even in manufacturing, the unorganized sector represents more than 80 percent in terms of labour input. The informal sector has become a source of generating super profits with the dispersal of the assembly lines in low wage locations stretching up to home based work. In the process, there are double benefits to capital--a huge reserve army of labour always puts downward pressure on wages in the formal sector; and there is unlimited opportunity to exploit highly vulnerable cheap labour without incurring any overhead costs. Therefore, it is evident that majority of enterprises which are not covered under the Factories Act, are actually doing work for the larger enterprises. Moreover, many of these enterprises are actually employing less than ten workers. It is a general trend that to save on the costs, factories try to escape from the coverage of the Factories Act, and even when they employ many more workers, they show only less than 10 workers on record. Many of these small enterprises are engaged in manufacturing, waste handling, using hazardous chemicals or carrying on operations dangerous to the health and safety of workers. It is well known that the working conditions are highly hazardous in the informal sector enterprises, but without any justification they are put out of the coverage of the Factories Act.

The growing informalisation of workforce in the formal sector has resulted in worsening of the problems of occupational health and safety in the formal sector as well. Informal workers are generally denied any formal contract or salary slips, and so in the absence of any proof of employment they are unable to claim the legal benefits even when they are supposedly covered by the Factories Act or some other legislation. Informalisation of workforce also makes it almost impossible to form trade unions and without trade unions it is a daunting task to compel the employers to respect and implement the provisions of health and safety and provide the legal benefits to the workers. Informalisation of workforce has accelerated with the advent of globalization and liberalisation and there is no exaggeration in mentioning the fact that formal workers are becoming a minority. In majority of factories in some sectors like garments, the informalisation of workforce has reached almost 100 percent. It is also interesting to note that the increase in total employment in the Indian economy has overwhelmingly been of informal nature.

About 94 per cent of Micro, Small and Medium Enterprises (MSMEs) in India are not registered, simply because registration is legally not mandatory. These enterprises are variously defined by level of investment in plant and machinery. There is no limit on the number of workers they can engage, and as such many of these enterprises are employing more than 10 or 20 workers. They ought to be covered under the Factories Act, but as they are mostly unregistered, they easily escape from the coverage of various labour laws including the Factories Act. The MSMEs are involved in the manufacturing of more than 6,000 products, including food products, textiles and readymade garments, basic metals, chemical and chemical products, metal products, machinery and equipments, transport equipments, rubber and plastic products, furniture, paper and paper products, and leather and leather products, etc. As most of them are in the unorganized/informal sector, they are out of the coverage of the Factories Act, and therefore actually out of the coverage of any occupational health and safety law. We will only have to imagine the intensity of the OHS problems the workers are facing in these enterprises without any elbowroom to make any complaint against the daily injustice.

The advent of globalization and liberalization has been associated with a legislative drive to making a huge number of factories virtually immune to the Factories Act and also various other labour laws and OHS legislations.

Moreover, there have been recommendations and proposals to introduce the provision of self-certification of labour laws, without inspection, in various industries. The policies are already in place in different states of India and the facility of self-certification is being liberally extended to IT and IT enabled services, biotechnology, export-oriented units and Special Economic Zones all over India. Even if the Labour Department is free of corruption and also allowed to do inspections of factories, it is beyond its capacity to do so. The Labour Department is actually completely paralyzed by way of downsizing its staff. The state's weak attitude towards occupational health and safety in industries is also reflected in its meagre or negligible budgetary allocations.

It is impossible to construct a comprehensive picture of the state of affairs with respect to OHS in various industries in India because there is no systematic and comprehensive data available. The data on OHS is always under-reported and also there are great discrepancies in data reported by various departments of the government.

For many industries, all aspects of OHS data are altogether absent and never reported. Only for the factory sector, some data is available, and that is also not systematic, and not all aspects are covered and many a time the data from various sources are contradictory as already mentioned.

There is no OHS data available for agriculture. Accidents and pesticide poisoning and the like are frequently reported in the newspapers but the victims never get the benefits of the Insecticide Act or Dangerous Machinery Act. The increase in beedi-making workforce is correlated with the decrease of family income in their primary occupations, i.e., agriculture and handlooms. This increase in beedi-making workforce is largely in terms of more women and children entering this occupation. Respiratory diseases and posture-related health problems are most commonly reported among beedi workers, but as most of them are unregistered, they are not covered under the Beedi and Cigar Workers (Conditions of Employment) Act and therefore do not get any benefit of treatment or compensation. Only a minority of plantation workers are covered under the Plantation Labour Act, because the Act covers only plantations of the size 5 hectares and above; there is a large number of small plantations not registered; and there is engagement of more and more informal workers in them, i.e. workers without any formal contract. In plantation work, the working conditions are so bad and the wages are so low that a study in North East India revealed that, "Due to malnutrition people started falling sick, in the last five years more than 200 people have died on this (tea) estate alone". "They do not have any rice, they are hungry and they have to work on empty stomach--so they fall ill and die. All of them died due to hunger and malnutrition. This is how my husband died, he worked without enough food and he died because the tea garden was shut down." Another study exposes that in May 2010, workers assigned to pesticide spraying at Powai Tea Estate, collapsed and died on the job. The spray workers were not provided with any personal protective equipment, mask, respirator, chemical-resistant gloves, and spraying coat or boots. A protest followed after

the death of the workers but instead of fulfilling the desperate demands of the workers, a repression was unleashed by the state with two workers dead and 15 getting seriously injured in the police firing. This kind of response from the state machinery is too common to be ignored and condoned. Construction Industry in India is the second largest employer next to agriculture. Safety problems are most serious here. Construction is rated eight times riskier than manufacturing sector. However, it is not reflected in the data provided by the Ministry of Labour. The number of fatal accidents due to fall of persons is underreported. Almost the entire construction workforce is employed through contractors and subcontractors, without there being any formal contract and any benefits to the workers. The absence of effective trade unions in this sector makes any positive change in the deplorable situation impossible.

Total number of working mines in India has increased and output of coal has increased. And alongside, the number of fatal accidents has increased but surprisingly the data on accidents and number of workers killed indicates a declining trend over two decades! This data generally reflects the conditions of larger mines and not the smaller ones. There is large number of unregistered/ illegal mines and the conditions there go unnoticed. Moreover, the enforcement machinery of the Mines Act is so understaffed that it can never inspect all the mines.

All trade and services related establishments are generally covered under the Shops and Establishments Act of various states. However, only sales tax laws are properly enforced and laws related to wages and working conditions are never enforced under such an Act. There is also absolutely no data on OHS in shops and establishments covered under the Act. Note that these units have massive workforce in activities like electrical and mechanical repair work, small garages, air conditioners/refrigerators repair shops, small jobbing workshops, coffee grinding shops, flour grinding shops, and new service activities like software development, etc.

Manufacturing industry is said to be more organized with better OHS standards, but most manufacturing units are in the informal sector and most workers are informal workers and therefore they face the worst kind of OHS problems. The paralysis of the labour law enforcement machinery has aggravated the problems to such an extent that actually workers and working conditions in the factories are at the mercy, and whims and fancies of the employers.

These realities (as portrayed in Pratap, 2012) and the growing incidence of industrial injuries, which are well-supported by newspaper reports, are not going to change for the better with the recent drafting of the Occupational Safety, Health and Working Conditions Code, 2019 under the current National Democratic Alliance government. The fundamental problems as mentioned above are not at all addressed. As labour relations experts such as Shyam Sundar (2020) have emphasized, the Code suffers from several serious shortcomings in terms of narrow coverage, poor drafting with conceptual as also operational deficiencies and so on and so forth. This drawback along with disappearing enforcement system on the pretext of enabling ease of doing business along with the rise of regional 'hire and fire' labour reforms challenging the relevance of national lawmaking, does not augur well for workers confronting the reality of increasing incidence of industrial injuries.

CONCLUSION

Labour and social policy in India has not evolved in tune with the Directive Principles of the State Policy or the labour standards envisioned by the International Labour Organisation (Shyam Sundar, 2020). It may be noted that the Directive Principles of the State Policy direct the State, *inter alia*, to devise policies and/or laws to enable both men and women to have the right to livelihood, ensure health and strength of workers (Article 39), provide public assistance in cases of unemployment, old age, sickness and disablement, and in other cases of undeserved want (Article 41), secure just and humane conditions of work (Article 42), earn living wage and extend conditions of work enabling a decent standard of life and full enjoyment of leisure and social and cultural opportunities (Article 43). This means that a secure workplace in all economic activities needs to be guaranteed so that all kinds of workers are able to enjoy uninterrupted employment, and in the event of an interruption, they should be suitably compensated. The International Labour Organization has adopted numerous international labour standards, conventions and recommendations concerning occupational safety and health (OSH) and for implementation of labour laws via labour administration and inspection system. But as already pointed out, India has ratified only a handful of conventions on OHS (C 032, C 115, C 136, C 174) and not the main one, C 155, Occupational Safety and Health Convention, 1981 (No 155).

As NCEUS (2006) had suggested, we need to make visible the nameless, faceless labour force that includes itinerant or migrant workers. We need ground level action towards the registration of the overwhelming majority of unorganised workers and unorganised units in the production chains of all the industries.

We need a preventive labour and social policy on the lines of the Scandinavian welfare states (Jochem, 2011). These Nordic countries offer comprehensive protection against social risks and invest positively in lifelong learning by means of integration in the labour market of as many people as possible and provisioning of highly organised and high quality services to the working people.

Policy makers in India need to learn new things as to how the Nordic countries have designed preventive social policies by embedding them in a tax and fiscal policy regime in which extensive redistribution is combined with principles of robust public budget management so much so that economic growth is not at all compromised. This is well explained in Komlos(2019) who points out that there is substantial real-world evidence from the European countries that high taxes coupled with social spending fosters, rather than inhibits, economic growth and welfare.

In fact, there is no effective solution to the problem of working to illness and death in any part of the world without there being the universalization of the preventive Nordic social policies. In other words, we need to replace capitalism gone mad in terms of savage capitalism everywhere by social democratic capitalism everywhere.

The Directive Principles of the State Policy in India are the beacon of light that we Indians already have in order to design and implement such social democratic policies as found in the Nordic countries. Governance in India must respect and abide by the Preamble of the Constitution of India.

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DESIGN AND SIMULATION OF PROPOSED FIRE ACCIDENT DETECTION SYSTEM

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Gaurav Sharma**

ABSTRACT

We all know that the occurrence of natural disasters is unpredictable. This paper focuses on fire detection in forests, industries and houses anywhere and to reduce its severities. The fire-detection system plays a pivotal role in green buildings. By detecting a fire quickly and accurately and providing early warning notification, a fire-detection system can limit the emission of toxic products created by combustion, as well as global-warming gases produced by the fire itself and protects us from damage. This instrument is used to detect fire accidents which occur due to increase in temperature, decrease in humidity, release of hazardous gas like methane, butane, propane etc. We have used DHT11 sensor to detect temperature and humidity, MQ-2 sensor for the detection of gas leakage and GSM module is used as a mode of communication for this method.

Keywords: Arduino Uno, Gas Sensor, Humidity Sensor, MQ-2, Temperature.

INTRODUCTION

This system is designed to prevent fire accidents which may cause loss of property, human life and production of global warming gases. The proposed system measures and records the parameters like temperature, humidity, and gas levels using appropriate sensors like DHT11 and MQ2 without any human intervention. The data is collected by ARDUINO and displayed on the liquid crystal display continuously. We used ARDUINO UNO development board because of its simple programming, low cost, less power consumption, memory, on chip ADC, on chip PWM, In System Programming (ISP). The communication between Arduino and PC is done through serial communication using serial communication port of the computer. In this system. We have used GSM module for remote monitoring and sensing purpose due to which we can attain maximum automation of system. The MQ2 gas sensor is used for sensing the concentration of gases in the air such as LPG, propane, methane, hydrogen, alcohol, smoke and carbon monoxide.

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This sensor is popularly known due to its low cost and efficient performance. A cycle of temperature and gas variant values are observed in Real time by which we can send the alert depending upon those values. Usama(2014) proposed GSM based temperature and water level monitoring system to detect the water level and temperature in the industries using PIC microcontroller. This paper represents the temperature level of water in particular tank. The message of temperature level in water is sent to mobile phones using GSM modem. Madan(2015) proposed a system for remote monitoring and control based on GSM and Bluetooth technology and used efficiently to monitor and control the field parameters required for automatic irrigation. Gouda(2014) proposed a real time weather monitoring and controlling system. Pressure sensor and humidity sensor are used as main components to display the values and send the message using GSM module. LM 35 and DHT11 sensors are used to detect temperature and humidity. This is limited to small area and it is not an alerting system. We have developed an alerting system using GSM Module. LM35 which is unnecessary is removed as temperature and humidity can be measured using DHT11 and a gas sensor is included. All the data is collected by the microcontroller and displayed on LCD continuously and whenever there is change in pre-set values, alert message will be sent to the given mobile numbers in the codes. Whenever gas is detected. exhaust fan gets ON. Alert using GSM is implemented by maintaining certain mobile numbers using AT commands. This activates the network in between the GSM module and Prototype. Whenever the message is sent, it again checks for Fire Shutdown and sends safe message.

BLOCK DIAGRAM

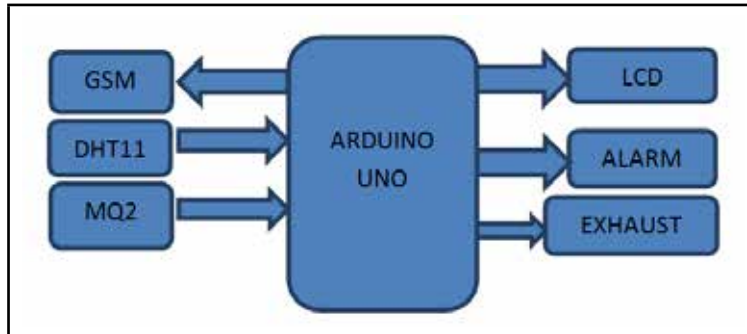


Fig.1: Block Diagram

DHT 11 SENSOR

It is used for sensing temperature and humidity. It consists of a thermistor and a capacitive humidity sensor which is used to measure the humidity of surrounding air.

FEATURES

- It is easily available in the market at low cost.
- It requires 3-5 Volts and I/O.
- It consumes maximum 2.5mA current.
- It is good at 20-80% Humidity with error of 5%.

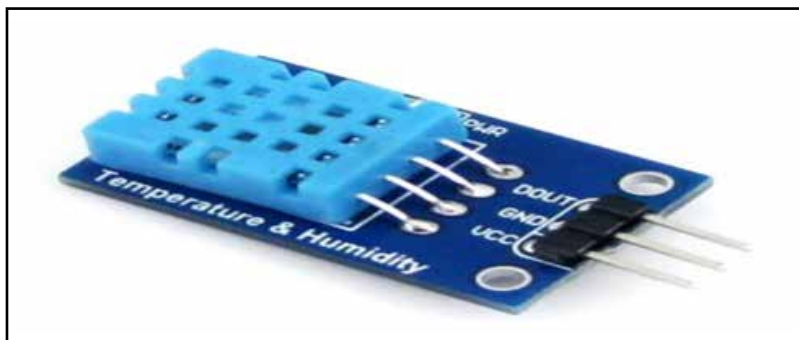


Fig.2: DHT11 Sensor

MQ-2 SENSORS

It consists of a small heater inside along with an electro-chemical sensor. It produces an analogue output signal. This sensor is widely used in home and industries for detecting the leakages of various gases like LPG, butane, propane, methane, alcohol, hydrogen and smoke with great accuracy.

ARDUINO UNO

The ARDUINO UNO board has a microcontroller ATMEGA 328 P-PU. This microcontroller has 14 digital I/O pins, out of which six pins can be used for PWM. It consists of 16 MHz crystal oscillator on-board. It uses serial communication. It can function with both USB cable and +12 V DC power supply. Arduino is reliable and low cost. ARDUINO IDE is open source software which can be used to program the microcontroller. It has On-Chip ADC. I2C Communication support built in RX and TX pins which are used for communication purpose. The word length of ATMEGA328 P microcontroller is 8-Bit which is used in Arduino for programming. ATMEGA328 P microcontroller has RISC Architecture which has 20 MIPS Throughput at 20 MHz Frequency. It consists of high end non-volatile Segmented Memory in System Flash Memory. It provides us programming lock for Software Security. It consists of two 8 bit Timer/Counter with separate pre-scalar compare mode and 16 bit Timer/counter with capture mode. It also consists of 6 and 8 channel temperature measurement unit. It consists of On-Chip Brown out Reset, Interrupts and Wake Up on Pin change. It has internal calibrated oscillator with six sleep modes like: Idle, Power Down, ADC Noise reduction, Power saver mode and both Standby mode and Extended Standby modes. It requires very less power as compared to 8051 and PIC Microcontroller of 1.8 to 5.5V which is nearly equal to 25 degrees centigrade.

SYSTEM SOFTWARE

We have used ARDUINO IDE for programming and PROTEUS professional 8.11 for simulating the proposed system. The PROTEUS 8.11 design suite is unique software which has the ability to simulate any kind of microcontrollers either high end or low end using the concept of mixed mode SPICE simulation. This is a virtual system which yields better design cycle of the designed system and helps in reducing the time to design and complex developing environment.

PROPOSED CIRCUIT SIMULATION

Circuit Diagram of Proposed Fire Accident Detection System is shown in Figure 3.

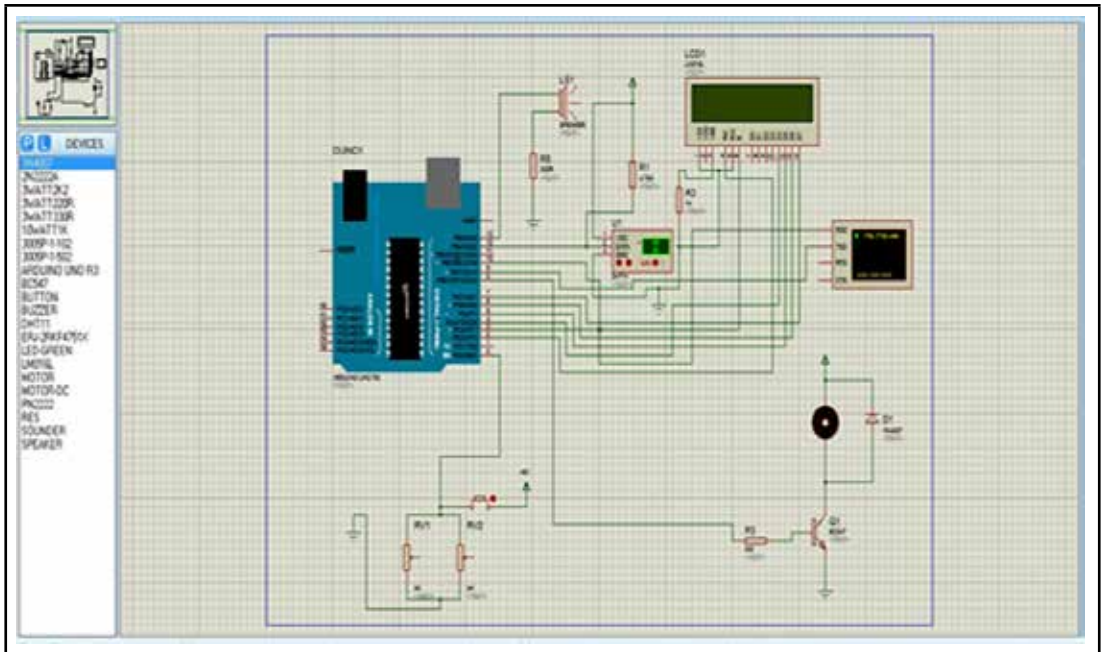


Fig.3: Circuit Design in Proteus

Proteus simulation checks for the temperature and gas leakage is shown in Figure 4.

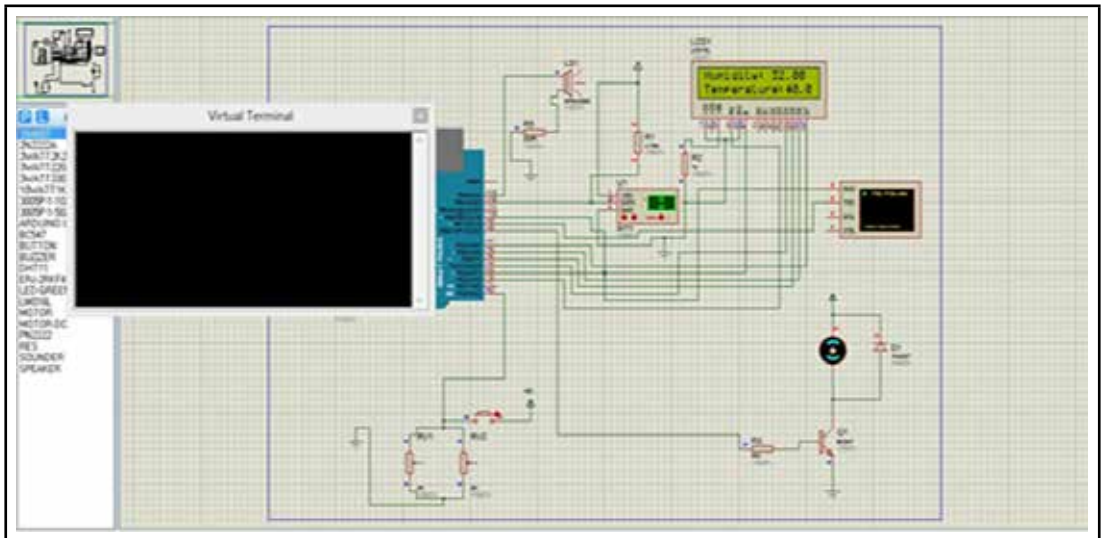


Fig.4: Before Fire Accident and Gas Leakage

Fire accident detection is observed and message is sent through virtual as shown in Figure 5.

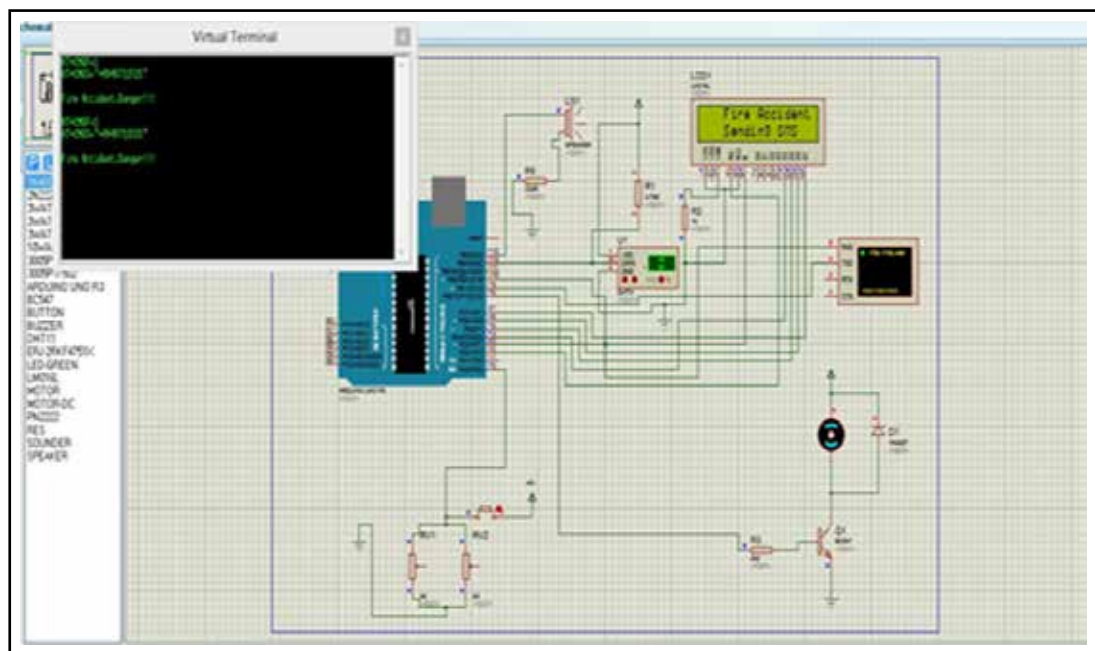


Fig.5: Fire Accident Detection with SMS

CONCLUSION

ARDUINO based fire accident detection system was designed implemented and tested. The system comprises of ARDUINO UNO board, temperature and humidity sensor, buzzer and GSM module. It is also cost effective and user friendly that enables monitoring and control of devices including sensors, automatic security notification and real time weather status display. The number of sensors is not limited and we can extend this application using more number of sensors with the help of serial communication protocols like I2C, CAN, etc. also, these values can be monitored from anywhere in the world using IOT technology by interfacing our system to the web.

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ESTIMATION OF BIOFILMS FROM SEWAGE TREATMENT PLANTS (STPS) OF MEWAR UNIVERSITY

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ABSTRACT

Wastewater consists of myriad of micro flora that has a beneficial effect on the treatment process. Wastewater treatment process is generally classified into three categories i.e. primary, secondary and tertiary. The role of bacteria in wastewater has been marked for many years. Biofilms, are usually defined as the communities of microbes residing together in a matrix of EPS. These biofilms act as an invader to the external environment and prevent the residing bacteria from damages, desiccation and attack from environment damages. The microbial cells residing within biofilm are capable of act like division of labour, i.e. each microbial cell contributes towards development of biofilm and thereby protects the cells. Stress conditions such as variation in salinity, pH and temperature are quite common in wastewater treatment plant. The phenomenon effect of biofilms can safeguard it and could be a possible mechanism for future use in biodegradation.

Keywords: *Bacillus subtilis*, Bacteria, Biofilm, *E. coli*, organic matter, salinity, stress, Wastewater.

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INTRODUCTION

Wastewater consists of myriads of bacteria, protozoa and virus. The main role of these bacteria involves degradation of organic matter (proteins, carbohydrates and fats). There are generally two types of processes that are associated with bacterial waste water degradation- aerobic and anaerobic (Bitton *et al.*, 2005).

Wastewater treatment is divided into three categories i.e. primary, secondary and tertiary. These treatments are independent of each other, the treatment processes starts with preliminary where the coarse particles are removed. The basic processes included in this are the operations of grit screening and removal of suspended larger particles. Processes include removal of organic and inorganic components. Further, the elimination of organic compounds (biodegradable) by utilizing treatment processes comes under secondary treatment process. During this process aerobic micro-organisms comes into action and metabolize the organic matter by using oxygen as a key ingredient. The secondary treatment controls the processes with three dimensions- activated sludge, trickling filter and rotating biological contractor. During the secondary treatment the role of microbes are more dominant as compared to the other processes. Tertiary treatment process is also known as advanced treatment process that involves removal of nitrogen, phosphorus and suspended solids (Droste *et al.*, 2018).

Biofilms, are often defined as microbial communities residing in a self-encapsulated structure or a matrix that has been adhered to a surface. In biofilms, the micro-organisms reside together in a scaffold of extrapolymeric matrices that is made up of carbohydrate, protein and polymers. This matrix protects the residing bacteria from external environment damages and stress.

There have been many reports on the treatment of wastewater with biofilms. The process includes biodegradation, biosorption and bioaccumulation (Welander *et al.*, 2004). The biofilms follows a process like- initiation, formation and development of biofilms. This process is intrinsic and involves changes in genotype, physiology and signalling. The residing bacteria within the biofilm form a consortium and follow a division of labour physiology. The bacterium assists one another and forms a protection to other bacteria in the shield (Mathur *et al.*, 2015). These may provide a suitable microenvironment and all together fight against the toxins and external factors (Gottenbos *et al.*, 1999).

EPS or Extrapolymeric substances are those that are involved in matrix formation in biofilms. The major components present in the EPS are polymers, polysaccharides and extracellular DNA. These help in the dessication and protection of antibiotics and also from metals (heavy) and other toxic components (Kavitha *et al.*, 2013).

The present study deals with the effect of different type of stress and its impact on bacteria isolated from wastewater and also its biofilm. The effect of biofilm has a protective role on the bacteria towards its stress. Thereby, this model can act as biodegradation model for the future where biofilms can be used as a defense against the toxic metals and stress.

MATERIALS AND METHOD

Characterization of wastewater

Wastewater was collected from Mewar University Sewage Treatment Plant (STP) in the sterile bottles. Collected water was analyzed for physical- chemical characterization. pH was estimated to be 7.0, conductance around 168 ± 0.8 mS and dissolved oxygen to be 5.9 mg/L.

Isolation of bacteria

The wastewater collected from Mewar University STP was utilized for the bacteria isolation. Collected wastewater was initially filtered and used for isolation. Standard isolation procedure was followed and subsequently serial dilution and primary isolation was performed (Yazdi *et al.*, 2001)

Estimation of Biomass

An aqueous solution of the bacterial cells was used for this method. For this the cells were grown in nutrient broth maintaining a temperature of 37°C. Bacterial cells were grown for a period of 24 hours and after that the cells were harvested by centrifugation at 4000 g for 10 minutes. Further, the sediment was washed twice with distilled water. Subsequently, the sample growth was checked periodically by taking the aliquot and analysing optical density with UV Visible Spectrophotometer. For the purpose of biomass measurements, dry weight and wet weight were calculated accordingly (Orduna *et al.*, 2010)

Static Biofilm formation

Bacterial cells (isolated) were grown on slides that were inserted in nutrient broth media. The cells were made to grow till mid-logarithm phase. Consecutively, the slides were removed and the biofilm grown were washed with sterile distilled water and kept for drying. Further, the dried slides were washed with 1% crystal violet and the extra dyes removed with 95% ethanol solution. The retained biofilm biomass was analyzed and absorbance was taken at 590 nm (Meritt *et al.*, 2006)

Effect of Salinity, pH on Biofilms

For analysing, the effects of salinity, a range of 0.5-5 $\mu\text{g/mL}$ of NaCl were prepared. These concentrations of NaCl were utilized. The extracted biofilms were treated with varying concentration of NaCl and absorbance was taken at 595 nm. A plot was prepared for the same (Sun *et al.*, 2010). To analyze the effect of pH, three different pH viz. 3, 7 and 9 were utilized for the experiment.

Statistical Significance

The results were done in duplicates and presented in $\pm\text{SE}$ form. A two way ANOVA test was performed utilizing Bonferroni Post tests

RESULTS AND DISCUSSION

Isolation of Bacteria

The isolated bacteria were characterized as pale, white colonies and further after microscopic, biochemical characterization were recognized as *Bacillus subtilis* and *E. coli*

species. Although these species were further, characterized on the basis of Gram staining, *Bacillus subtilis* possess Gram positive nature whereas *E. coli* possess Gram negative nature. The microscopic images are displayed in Figure 1.

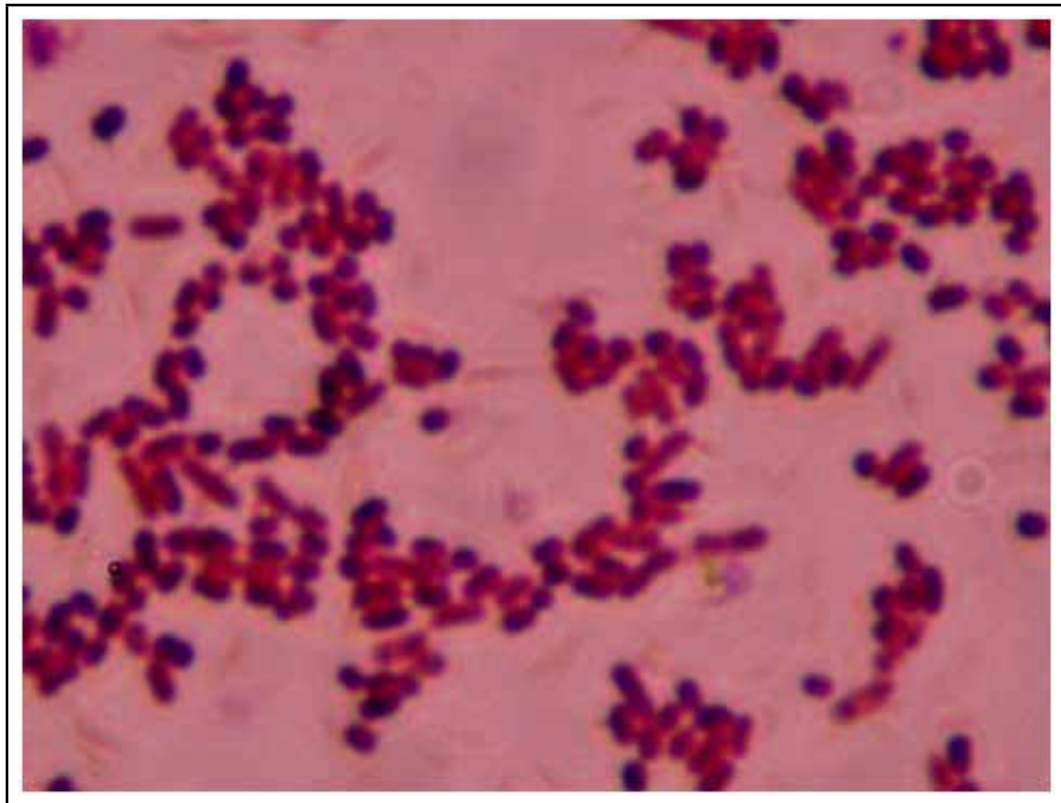


Figure1: Colonies of *Bacillus subtilis* and *E. coli*

Biomass Estimation

The biomass for the *Bacillus subtilis* was estimated to be around $50.1 \pm 0.01\%$ whereas the estimated biomass for *E coli* was determined to be $48.0 \pm 0.01\%$. This biomass was calculated with respect to the bacterial cells. For biomass estimation there have been reports demarking the weight (dry) of the pellet of bacterial cell. An average percentage in bacteria has been recorded from 10 to 29% whereas the content of water (intracellular) has been ranged from 33-92%. This depends on the type of bacteria, intracellular content (Orduna *et al.*, 2010).

Effect of Salinity and pH on the biofilms

The estimation of biofilms for the bacterial strain *Bacillus subtilis* and *E. coli* possess an increase in the biofilm formation with increase in the concentration of NaCl. At the initial concentration, of $0.5 \mu\text{g/mL}$ of NaCl the biofilm formation was 0.80 ± 0.01 and 0.75 ± 0.01 nm in *Bacillus subtilis* and *E. coli* respectively. At the highest concentration of NaCl i.e. $5 \mu\text{g/mL}$ the biofilm formation in *Bacillus subtilis* is 2.31 ± 0.01 and in *E. coli* is 0.84 ± 0.01 nm (Figure 2).

Biofilms may exhibit an exaggerated response towards NaCl. According to Xu *et al.* (2010), aggregation of the biofilm cells elevate with a concentration of 10% NaCl. In case of *S. aureus*, biofilms have increased with the concentration of NaCl (Kennedy and O Gara *et al.*, 2004). In wastewater biofilms, there is a common spectacular feature of association towards metabolic pathway in terms of carbohydrate, amino acids (Wang *et al.*, 2009). The coverage rate of biofilm decreases with the increase in NaCl and simultaneously higher NaCl concentration has attributed towards more compact biofilm morphologies.

There has been a remarkable and noticeable change in the biofilm formation with respect to the concentration. The difference in biofilm formation between both the isolates was found to be significant with respect to the control ($p < 0.0001$).

With respect to the other parameter, i.e. pH, the biofilms grown were significantly higher, i.e. at an acidic pH (3) the biofilms grown were higher in *Bacillus subtilis*. A similar kind of trend was observed with increase in pH, i.e. *Bacillus subtilis* showed more biofilm formation as compared to the other isolate. An alteration in pH affects the growth of biofilm, the mechanistic approach involves the excretion of extrapolymeric substances i.e. changes in polymeric content especially carbohydrate and protein content (Sehar *et al.*, 2016).

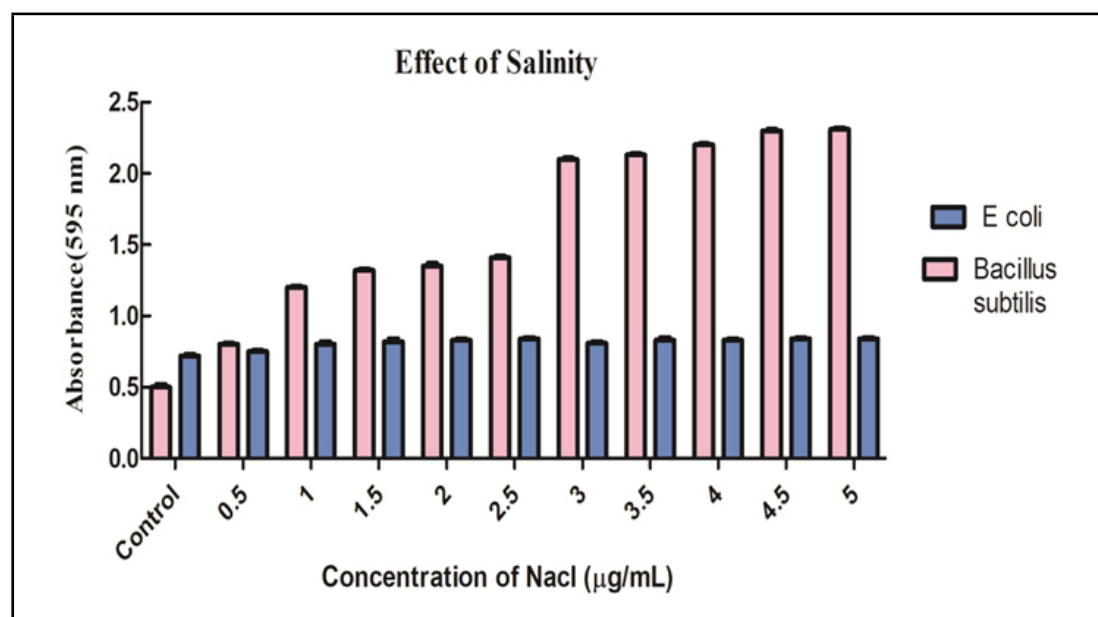


Figure 2: Effect of salinity on *E. coli* and *Bacillus subtilis* biofilms

Table 1: Biofilm formation of *Bacillus subtilis* and *E. coli* at varying pH

Organism	pH 3	pH 7	pH 9
<i>E. coli</i>	0.23±0.01	0.50±0.02	0.80±0.001
<i>Bacillus subtilis</i>	0.31±0.01	0.56±0.01	0.93±0.002

CONCLUSION

Wastewater bacteria are capable of tolerating a particular amount of stress in the form of concentration of NaCl and variations in pH. These might be the result of the biofilm developed over time. These biofilms serves as a barrier and are useful for degradation of organic matter present in the waste water. These could serve as defender and would be an ideal model in future to combat degradation of pollution by materials (nano), heavy metal toxicity etc.

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AUTHOR(S) CONTRIBUTION

Designing: AM

Experimentation: MG, UY, IA,SA

Analysis of Data:AKV,AM

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AN OVERVIEW OF HEALTH ECONOMICS AND HEALTH POLICIES IN INDIA

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ABSTRACT

Health is an essential part of human development. Health is a state of happiness of an individual as well as community. It encompasses a state of complete mental, physical and social well being. Healthy society is critical for raising productivity and economic growth rate in developing countries like India. India is on the path of achieving the goal of “Health for All” as proposed by the World Health Organization. HFA implies the removal of obstacles to health, interalia, elimination of malnutrition, disease, provision of protected drinking water and hygienic housing. It depends on constant development in medicine and public health. Health economics and health care are important in determining how to improve health outcomes and lifestyle outlines through interfaces between individuals, healthcare benefactors and clinical settings. In broad terms, health economists study the functioning of healthcare schemes and health-affecting behaviors such as Epidemic, Usage of pharmaceutical equipments on economic cost, pandemic, smoking, diabetes, and obesity etc. This paper provides an overview of health economics and health policies in India.

Keywords: Health economics, National Health Policy, Pandemic.

INTRODUCTION

Health is one of the prime concerns of any nation. Health is an important entitlement that enhances capabilities of the masses. Healthy people refer to those who are physically, mentally and intellectually healthy. A healthy mind and proper intellectual development help develop proper manpower that is suitable for economic development. On the other hand, with greater economic development better health facilities are needed. The need is further accentuated because of the environmental implications of development as well as the opportunities created for attaining health through better facilities. Health determines and is determined by the socio-economic factors like education, nutrition, population growth, income and environment.

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In recent years, the meaning of development has shifted from economic improvement to improvement in human resources. Health should be considered as a fundamental human right and therefore the attainment of the highest level of health should be the most important goal. The Directive Principles of the State policy of the Indian Constitution mentions that it is the duty of the State to raise the level of nutrition and the standard of living of people and improvement of community health (Article 47 of the Indian Constitution). The Constitution of the WHO says, "Enjoyment of the highest standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic and social condition."

Welfare economics has branched off into many applied discipline and important among them with significant social relevance is "*Economics of Health*". Awareness of the economic manifestation of health and diseases and the limited resources allocated to health care services has brought to the focus, a new discipline of health economics. The ultimate aim of all human activity is social well-being. Maximization of welfare is the keynote of modern planning. In the human resources development process, health occupies major position. Health care is an important aim of normative economics. Improvement in the health status of the population is a priority and suitable political, economic and social action is called for, apart from the growth of the science of health care as such. Man is the primary factor of production. Basic standards of health and improvements thereof provide an entry point to change agents.

"*Health Economics*" is becoming an emerging branch of Economics. Health Economics includes the medical industry as an entire field and spread to such issues as the economic analysis of the cost of diseases, benefits of health programmes, revenues from investment in medical education training and research. Health Economics is the discipline that controls the price and the quantity of limited financial and non-financial resources dedicated to the care of the sick and elevation of health.

Health Economics is difficult to define in a few words because it encompasses such a broad range of concepts, theories, and topics. The Mosby Medical Encyclopedia (1992, p. 361) defines Health Economics as follows:

Health economics studies the supply and demand of health care resources and the impact of health care resources on a population.

Concept of Health Care

Health is influenced by a number of influences such as adequate food, housing, sanitation, healthy lifestyles, protection against environmental hazardous and communicable diseases. Thus "health care" is not synonymous with "medical care". 'Health Care' covers a broader spectrum of personal health services ranging from health education and information through prevention of disease, early diagnosis and treatment and rehabilitation. The term, 'health services', implies organization, delivery, staffing, regulation and quality control. The term, medical care, refers to the personal services that are provided directly by physicians.'

Modern Methods of Health Care Analysis

Models are used in economics to simplify a very complex world and it can be stated in descriptive, graphical or mathematic form.

Positive and Normative Analysis

Positive analysis uses economic theory and empirical analysis to make statements or predictions concerning economic behavior. Positive economics deals with objective explanations and the testing and rejection of theories. For example; a fall in incomes will lead to a rise in demand for own-label supermarket foods. And, if the government raises the tax on beer, this will lead to a fall in profits of the brewers.

Normative analysis deals with the desirability of an economic outcome or policy. It seeks to answer the question, '*What ought to be*' or '*which is better?*' Normative statements are subjective statements – i.e. they carry value judgments. For example; 'Pollution is the most serious economic problem'; 'Unemployment is more harmful than inflation'; 'the government is right to introduce a ban on smoking in public places.'

Cost-Benefit Analysis

Economists treat people as rational decision makers. Rationality means people know how to rank their preferences from high to low or best to worst, people will make choices based on their own self-interests and choose those activities, they expect, will provide them with the best net satisfaction.

Utility Analysis

Why an individual desires health?

The stock of health generates a flow of services as other durable goods do. The services yield satisfaction or what economists call 'utility'. As a good, health is desired for consumption and investment purposes. From a consumption perspective, an individual desires to remain healthy because he or she receives utility from an overall improvement in the quality of life. The investment component worries the relation between health and time these models would help to resolve several health care problems faced by the individuals, organizations and society at large.

Health for All

In 1978 AD, it was decided, in the Health Assembly of the World Health Organization, to launch the movement known as "Health for all" by the year 2000 AD. In 1978 AD, the Alma Ata Conference reaffirmed 'Health for All' as the major social goal of Governments. In 1981 AD, the global strategy for 'Health for All' was adopted by the World Health Organization, which was later endorsed by the United Nations General Assembly.

'Health for All' has been defined as attainment of:

"A level of health that will enable every individual to lead a socially and economically productive life".

The Declaration of Alma Ata stated that the best way to achieve the goal of 'Health for All' is by providing primary health care, especially to the vast majority of under-served rural people and urban poor. But it is left to each Government to decide how it should be made available in a manner appropriate to the people's need.

To achieve the goal of health for all, a number of intermediate goals have been planned in between as below.

1. Providing adequate basic sanitation for all.
2. Providing adequate supply of drinking water for all.
3. Immunization of children against five common diseases viz., Measles, Whooping Cough, Tetanus, Polio and Tuberculosis.

National Strategy for Health in India

In the context of achieving the goal of 'Health for All', the Ministry of Health and Family Welfare, Government of India, had convened a National Conference in February 1980 to discuss about national strategies and action plans. In July 1980, the Planning Commission, appointed a Working Group on 'Health for All' to evolve national strategies for implementation of health care programmes, to move towards the goal of 'Health for All' and to suggest suitable indicators to monitor the progress achieved from time to time.

The concept of 'Health for All' implies a substantial change in basic health policies and its approaches to health care. The changes may entail a complete restructuring and revamping the health and social security systems. The Working Group, appointed by the Planning Commission, felt that the existing health care system in the country should be restructured to provide universal primary health care to all sections of the society with special attention to the needs of those living in tribal, hilly and remote rural areas.

National Health Policy

Health has been a major problem in India during the British regime. The colonial administration did not pay serious attention to improve the health standards of the people. Realizing the gravity of the situation, the Constitution Framers have made a specific mention that the 'State shall regard the raising of the level of nutrition and the standard of living of its people and the improvement of public as among its primary duties. But unfortunately, till 1983, National Health Policy was not formulated. It was carried on as merely a part of the National Five Year Plan Programme.

In successive Five Year Plans (FYP), several measures have been taken to provide health facilities to all people. In the first two Five Year Plans, it was aimed at putting the foundation of basic health services including creation of primary health Centers and district/block level hospitals. Significantly, the Third Plan gave birth to the Countrywide Extension Approach to Family Planning (FP). The next two Plans contemplated on integration of health and family planning services with focus on communicable diseases. India, being signatory to the Alma Ata Declaration, 1978, a landmark declaration towards health care, was committed for achieving the goal of 'Health For All' by 2000 A.D. through Primary Health Care Approach. This had led to the formulation of comprehensive National Health Policy (NHP), in 1983. It was adopted in the Sixth Plan and implemented during the Sixth and Seventh Five Year Plans.

The basic objective of National Health Policy was promotion of health as integral part of the human resource development. The Eighth Five Year Plan emphasized upon the

improvement in the efficiency and effectiveness of both the programmes and services. Besides, special programmes for mothers, children and the disabled were launched along with hospital-based interventions and referral care at all levels. A rapid expansion of health care services, infrastructure and strengthening of personnel has been visible during the nineties. The Ninth Five Year Plan Perspective on Health is not much different from earlier goals. It provides a gloomy picture of the existing health care services and reveals that health care system is functioning sub-optimally.

Health Related Issues in India

The health problems of India could be conveniently grouped under the following heads:

Communicable Disease Problems

Communicable diseases continue to be a major problem in India. Diseases considered to be of great importance today are Malaria, Tuberculosis, Leprosy and Venereal diseases, Diarrhea, Dysentery, Skin Diseases, Fever and Viral Hepatitis.

Nutritional Problems

Surveys indicate that the major bottleneck in Indian diet is shortage of calories. Against the recommended allowance of 2,400 calories for an average male adult engaged in secondary occupation in rural areas, the typical Indian diet hardly supplies 2,000 calories. The specific nutrition problems in the country are: (1) Protein malnutrition, (2) Anemia and (3) Vitamin deficiencies.

Environmental Sanitation

The twin problems of environmental sanitation are: (a) lack of safe drinking water in many areas of the country, and (b) embryonic methods of excreta disposal especially in the rural areas where 70 per cent of the population live. The causes for the leading diseases in India are deep rooted in the environment. A major reduction in these diseases cannot be expected to occur without a basic change in the environment especially with regard to water supply, sewerage and waste disposal.

Pandemic Situation:

A pandemic is defined as the “worldwide spread of a new disease.” When a new disease first emerges, most of us lack the natural immunity to fight it off. This can cause a sudden, sometimes rapid, spread of the disease between people, across communities, and around the world. Without a natural immunity to fight off an illness, many people can become sick as it spreads.

How the spread of the disease fits into the following phase:

- **Phase 1.** At the point when another ailment initially rises, the majority of us come up short on the characteristic in susceptibility to fend it off. This can cause an abrupt, once in a while quick, spread of the illness between individuals, across networks, and around the globe. Without a characteristic resistance to fend off a sickness, numerous individuals can get wiped out as it spreads.

- **Phase 2.** Virus infection flowing among the animal populaces appears to transmit to individuals. This new infection is viewed as a danger and sign of the potential danger of a pandemic.
- **Phase 3.** This type of animal virus cause disease in a small cluster of human beings through animals to human transmission. However, human to human transmission is too low to cause community outbreaks. This means that the virus places humans at risk but is unlikely to cause a pandemic.
- **Phase 4.** There has been man-to-man transmission of the new virus in considerable enough numbers to lead to community outbreaks. This kind of transmission among humans signals a high risk of a pandemic developing.
- **Phase 5.** There is transmission of the new virus in at least one additional country within the WHO region. This is known as the pandemic phase and signals that a global pandemic is currently occurring.

Nowadays the whole world is facing a big pandemic situation i.e. COVID 19. The COVID-19 pandemic has led to lockdowns and many of us are staying at home and there is reduced social interactions and exercise. This can have a negative effect on one's physical and mental health.

Medical Care Problems

Medical care in India is mostly based on western medicine. With the advancement of technology, medical care has become complex and costly. Increased public awareness about the potentialities of medical care has increased its demand.

Problems of Rural Health

In low income countries, Government hospitals and clinics, which account for the major part of the modern medical care, are often insufficient, suffering from highly centralized decision making, wide fluctuations in budgetary allocations and poor motivation of managers and health care workers.

People, in general, in rural areas, are not knowledgeable about health matters, such as, the prevailing health problems in the community, methods to prevent and control them, the needs for the maintenance and promotion of health, the resources available and to utilize them etc. Socio-economic backwardness, ignorance, traditions and superstitions have been acting as blocks to progressive thinking including development of positive health.

Health Attainment

The National Human Development Report, 2001, has brought out the indicators on health attainment for the country and states for different periods. It is found to be relevant to analyze that health attainment made by the country and states, which will facilitate better understanding of the problem of health of the country, states and regions.

Death Rate

The death rates for three years viz., 2000, 2001 to 2020, combined for rural and urban

areas for the nation and the states, are presented in this diagram. As shown in the table, the death rate has declined from 8.304 to 7.309 between 2020 to 2000 for the country.

Table 1: India - Historical Death Rate Data

Year	Death Rate	Growth Rate
2020	7.309	0.49%
2019	7.273	0.50%
2018	7.237	-0.07%
2017	7.242	-0.07%
2016	7.247	-0.08%
2015	7.253	-0.07%
2014	7.258	-0.07%
2013	7.263	-1.48%
2012	7.372	-1.44%
2011	7.48	-1.44%
2010	7.589	-1.40%
2009	7.697	-1.40%
2008	7.806	-1.44%
2007	7.92	-1.42%
2006	8.034	-1.39%
2005	8.147	-1.38%
2004	8.261	-1.36%
2003	8.375	-1.68%
2002	8.518	-1.65%
2001	8.661	-1.62%
2000	8.804	-1.60%

Source: Macrotrends.net

Health Problems in Urban Areas

Generally, it is assumed that people in urban areas are well covered by health services saturated with large hospitals, innumerable dispensaries, nursing homes, specialists and general practitioners.

In spite of such concentration of health facilities in the cities compared to rural areas and relative proximity of hospital and other facilities, standards of health care seem to have fallen far below reasonable minimum levels for those who live in slums. There is a phenomenon of an “inverse care law”, whereby, those who are in greatest need of medical care have poorest access to it. While the principles of delivery of primary health care are equally applicable to

urban health system as to the rural health, the slum population remains ignored on this account to this date. There also exists a vast discrepancy between the qualities of health care delivered by the private sector within the different sections of urban population.

The health delivery system of an urban area, particularly that of large cities, consists of hospitals, dispensaries and maternal and child health and urban family welfare centers run by the Government, Municipal Corporation, Central Government Health Scheme and Employees State Insurance Scheme.

The presence of large number of hospitals and out-patient departments certainly cause a depressing effect upon the development of a more coherent health infrastructure in cities. Network of health centers and sub-centers such as those planned in rural areas do not exist in urban situations. In practice, many people in the city go to pharmacists for basic advice and visit hospitals only when there is an emergency. This practice inevitably leads to highly curative and irrational approach to health care. Emphasis on cure has been at the cost of preventive and public health measures. Health professional and workers are not properly motivated to serve the weaker sections of the community.

In order to gain deeper understanding of issues involved in urban health care including needs for family welfare services, various area specific studies were undertaken in the past.

The urban poor live with or die from their burdens of disease and despair. Urban health problems are both easier and more difficult to manage than in the rural settings: easier because of access, greater readiness for change, and more resources; more difficult because of social fragmentation, heavily contaminated environments, and political instability.

Health Care Programmes

Since India became free, several measures have been undertaken by the national government to improve the health of the people. Conspicuous among these measures are the National Health Programs, which have been propelled by the focal government for the control/annihilation of transmittable maladies, improvement of ecological sanitation, increasing the expectation of nourishment, control of populace and improving citizen's wellbeing. Various international agencies like the WHO (World Health Organization), UNICEF (United Nations Child Emergency Fund), World Bank, as also a number of foreign agencies like SIDA (Swedish International Development Agency), DANIDA (Danish International Development Agency), NORAD (Norwegian Agency for Development) and USAID (United States Agency for International Development) have been providing technical and material assistance in the implementation of the health care programmes.

Due to various programmes of eradication and control of several preventable communicable diseases, tangible progress in reduction of morbidity and mortality has been achieved. The availability of safe drinking water to the rural population considerably reduces the incidence of communicable diseases such as cholera, malaria, filariasis and Japanese Encephalitis.

A government sector that provides publicly financed and achieved healing and preventive health care services from primary to tertiary level, through the country and free of cost in many programmes to the consumer. The provision of health care by the public sector is a

responsibility shared by state, central and local government, although it is effectively a state responsibility in terms of service delivery, state and local governments incur about three-quarters and the center about one-quarter of public spending on health.

In the Eight Five Year Plan (1992-97), Indian Council of Medical Research (ICMR) attempted to consolidate significant leads in “priority” or “thrust” areas that were identified by various scientific expert groups. These areas included emerging health problems like HIV/AIDS, other important communicable diseases like tuberculosis, leprosy, diarrhea diseases, malaria, filariasis, Japanese encephalitis etc., non-communicable disease like cancer, cardiovascular diseases, metabolic disorders, etc., contraception, Maternal and Child Health (MCH) and nutrition.

Health education and promotion has been an integral component of all national health care programmes and family welfare programmes. The Information Education and Communication (IEC) approach uses a community based strategy. National health programmes are supported with health education and promotion strategies and activities specifically designed to suit programme needs. Such national programmes include leprosy eradication, tuberculosis control, malaria eradication, and HIV/AIDS control, as well as the national iodine deficiency disorder programme and the environmental health and sanitation programmes.

The availability of health and family welfare facilities to the people is directly or indirectly linked with the prevailing mortality and morbidity conditions. It is not surprising that the half of the world’s tuberculosis patients and one-third of the world’s leprosy patients are in India. Also water-borne diseases such as malaria, cholera, typhoid and gastroenteritis kill a sizeable number of our people every year. The need for health facilities for the growing population has been recognized and there has also been a significant infrastructural development in the health sector. However the high population growth rate has led to constraints and even contributed to the deterioration of the quality of health.

The Government of India takes concerted measures to combat communicable, non-communicable and other major diseases. For this purpose several national health programmes are launched and run by the Union Ministry of Health and Family Welfare which can have a bearing in the reduction of mortality and morbidity and also have a salutary effect on efforts to improve the quality of life of the common man. These programmes also reinforce the delivery of primary, secondary and tertiary health care throughout the country.

Some of these are as follow:

1. National Leprosy Eradication Programme(1955)
(The word ‘control’ was modified as ‘Eradication’. The new policy named as National Leprosy Eradication programme was introduced in 1983).
2. National Tuberculosis Control Programme(1962)
(Revised National Tuberculosis Control Programme (DOTS strategy) was implemented in 1997).
3. National Cancer Control Programme(1975)

4. National Programme for Control of Blindness(1976)
5. National Mental Health Programme(1982)
6. National Guinea-Worm Eradication Programme(1984).
7. National AIDS Control Programme(1987)
(It has been renamed as National AIDS prevention and control Policy and introduced in 2002).
8. National Diabetes Control Programme(1987).
9. National Iodine Deficiency Disorder Control Programme(1992)
10. Yaws Eradication Programme(1996-97).
11. Reproductive and Child Health Programme(1997)
12. National Nutritional Programme(1997)
(This programme includes Integrated Children Development Scheme (ICDS) (1975), The Balwadi Nutrition Programme (1990-91) and the National Nutritional Anemia Prophylaxis Programme (1990).
13. National Surveillance Programme for Communicable Diseases(1997-98)
14. National Programme for Control and Treatment of Occupational Diseases (1998-99).
15. Vector Borne Diseases Control Programme(2004)
16. The Global Fund supported Intensified Malaria Control Project (2010)
17. SBI COVID-19 Funding Scheme (2020)

The central Government plays a very important part in planning, guiding and co-coordinating all the national health programmes in the country. The programmes are implemented at the state level. These national programmes are not static. New programmes can be added and old programmes can be deleted from the list.

These National Health Programmes are administered and monitored by THE Union Ministry of Health and Family Welfare.

The benefits of the health care programmes are realized by the rural people through primary health care delivery centers as well as the hospitals situated at the district level. With the efforts of the government the morbidity and mortality due to various diseases have been reduced. But it is not sufficient. In many parts of rural areas, due to the lack of treatment and non-availability of medicines from government health centers and impoverishment of patients to meet costly private treatment and medicine expenses, various diseases have caused mortality and morbidity in India.

Care Programmes are not implemented in all the states of India. Selected programmes are implemented in the states of India on the basis of requirement of people and the burden of disease. Malaria fever, tuberculosis, leprosy, women and children mortality and morbidity, Iodine deficiency and blindness are the major diseases prevailing in India. The country has travelled a long distance in health care. But immense challenges still remain to be surmounted.

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CONTEMPORARY DIRECTIVES FOR CORPORATE SOCIAL RESPONSIBILITY AND STAKEHOLDER COMMUNICATIONS IN THE INDIAN PUBLIC SECTOR

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ABSTRACT

India is the first country in the world to make Corporate Social Responsibility (CSR) mandatory, following an amendment to the Company Act, 2013, thus moving from doing good voluntarily to meeting legally mandated CSR. This paper encompasses theoretical concepts of CSR, historical perspective of CSR legislature, contemporary directives and their implications for the Indian public sector. Further, the paper examines CSR reporting of major public sector companies in energy sector for brand building and mandatory disclosure. The response to Covid-19 pandemic through contemporary directives has established CSR's increasingly significant role in mitigating similar challenges that may arise in near future.

Keywords: Central Public Sector Enterprises, Companies Amendment Acts of 2019 & 2020, Corporate Social Responsibility, CSR communications, CSR theoretical concepts, Energy Sector, Indian Companies Act 2013, Stakeholder Communications.

INTRODUCTION

India is the first country in the world to make Corporate Social Responsibility (CSR) mandatory, following an amendment to The Company Act, 2013 brought into force with effect from the 1st April 2014. Businesses can invest their profits in areas such as education, health, poverty mitigation, gender equality, sustainability and many such other areas, thus moving from the traditional spirit of volunteerism to legally mandated CSR.

CSR is not a recent western concept emerging from western models of management but is embedded in the ancient Indian culture, ethos and literature. Ancient Indian literature has cited

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instances of ‘good deeds’ like helping the poor and disadvantaged. Mahatma Gandhi proposed a “trusteeship” model, wherein the wealthy must act as custodians of wealth for the benefit of society, and not as owners of wealth. The idea of “trusteeship” also inspired the philanthropy of the TATA group, encapsulated by Jamsetji Nusserwanji Tata, founder of Tata Group that “in a free enterprise, the community is not just another stakeholder in business but is in fact the very purpose of its existence.”

The modern identity of CSR was born during 1970s, however it was conceptualized in 1990s. In 1990s, the concept was well recognized, accepted and appreciated by a larger section of society. This can be corroborated by the fact that while in 1977, less than half of the Fortune 500 firms even mentioned CSR in their annual reports, by the end of 1990, approximately 90 percent Fortune 500 firms embraced CSR as an essential element in their organisational goals, and actively promoted their CSR activities in annual reports (Boli and Hartsuiker, 2001).

In countries such as India, where economic integration and social inclusion are imperative forces that drive the masses towards growth and development, CSR has become an integral and impactful part of corporate landscape (<http://www.investindia.gov.in>).

CSR has a key role in attainment of Sustainable Development Goals (SDGs) as many companies are aligning their CSR focus areas according to SDGs to meet their CSR mandate. Also, the unprecedented crisis of Covid-19 pandemic, a disruption and a humanitarian challenge unseen by this generation has brought to fore the critical role that CSR plays to mitigate the socio-economic disruption and enabling access to Covid care and relief in a country like India that has high unequal distribution and inaccessibility of resources for a huge part of the population that lives on the fringes of the society.

OVERVIEW OF CORPORATE SOCIAL RESPONSIBILITY

The World Business Council for Sustainable Development in its publication ‘*Making Good Business Sense*’ by Lord Holme and Richard Watts used the following definition:

“Corporate Social Responsibility is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large.”

(Holmes L Watts R., 2000)

Corporate Social Responsibility (CSR) is all about stakeholder accountability, transparency in all dealings and sustainability. All this creates a ‘responsible’ halo around the business and helps companies build trust. It provides a platform of moral uprightness and establishes a company’s reputation in the minds of customers and employees. And this is absolutely crucial for brands as it helps to attract and engage with customers on a continuous basis. There are many such companies all over the world whose experiences show that integrating branding and CSR can build a corporate culture around responsibility leading to business sustainability.

Corporate Social Responsibility is a concept of 21st century where the role and objective of the corporate is not just to earn the profits but also, giving back to the society in one way or the other. CSR is a company’s commitment to operate in an economically, socially and environmentally sustainable manner, while recognizing the interests of its stakeholders.

While there may be no single universally accepted definition of CSR, each definition that currently exists underpins the impact that businesses have on society at large and the societal expectations of them. Although the roots of CSR lie in philanthropic activities (such as donations, charity, relief work, and such others) of corporations, globally, the concept of CSR has evolved and now encompasses all related concepts such as triple bottom line, corporate citizenship, philanthropy, strategic philanthropy, shared value, corporate sustainability and business responsibility.

CSR THEORETICAL CONCEPTS

The “Shareholder Theory,” by economist Milton Friedman and the ‘Stakeholder Theory’ by Dr. F. Edward Freeman puts forth that business is an instrument for the sole purpose of making money for stakeholders and anything contrary to that constitutes an illegal tax on business and stakeholders. Friedman quoted that *‘The Business of Business is to do Business’*

John Elkington, one of the founders of the global sustainability movement, whose book *‘Cannibals with Forks’* in 1997 popularized his ‘Triple Bottom Line’ (TBL) concept (People, Planet, Profit) and laid the foundations for sustainable business strategy.

The “People” approach is to ensure fair and beneficial practices toward labour and community and region in which the company conducts its business. “Planet” entails sustainable environmental practices. A company that follows the TBL approach endeavors to maintain and sustain the natural environment and strives to do mitigate environmental impact of their operations. The “Profit” pertains to the economic value created by the organization after deducting the cost of all inputs, including the cost of capital tied up.

As per the TBL concept, the company’s responsibility is towards stakeholders i.e. all those who are influenced, either directly or indirectly, by the actions of the company, rather than shareholders.

In January 2002, C.K. Prahalad and Stuart Hart, Professors at the University of Michigan and North Carolina, respectively, urged leaders to imagine the world’s 4 billion poorest people as potential consumers — and described precisely how they could engage them profitably.

Prahalad proposed that businesses, governments and donor agencies stop thinking of the poor as victims and instead start seeing them as resilient and creative entrepreneurs as well as value-demanding consumers. After all, the poor of today are the middle class of tomorrow. There are also poverty-reducing benefits if multi-nationals work with civil society organizations and local governments to create new local business models.

Michael E. Porter, leading expert on competitiveness strategy introduced the concept of ‘Creating Shared Value (CSV) in his Harvard Business Review article, *‘Strategy & Society: The Link between Competitive Advantage and Corporate Social Responsibility’*. The central premise behind creating shared value is that competitiveness of a company and health of communities around it are mutually dependent.

While philanthropy and CSR efforts focus on “giving back” or minimizing the harm caused by businesses on the environment or society at large, the shared value concept focuses on maximizing the competitive value of solving social problems in new customers and markets,

cost savings, talent retention, etc. CSV involves corporate policies and practices that enhance the competitive advantage and profitability of the company while simultaneously advancing social and economic conditions in the communities in which it sells and operates.

PROVISION FOR CSR IN INDIAN COMPANIES ACT 2013

The Companies Act, 2013 incorporates a provision of CSR under Section 135 which states that every company having net worth Rs. 500 crore or more, or a turnover of Rs. 1000 crore or more or a net profit of rupees five crore or more during any financial year, shall constitute a CSR Committee of the Board consisting of three or more Directors, including at least one Independent Director, to recommend activities for discharging corporate social responsibilities in such a manner that the company would spend at least 2 per cent of its average net profits of the previous three years on specified CSR activities. (mca.gov.in)

According to Tarun Khanna, Jorge Paulo Lemann Professor at Harvard Business School and Director of Harvard University's South Asia Institute, Indian state-run companies are much better placed to implement meaningful programmes of corporate social responsibility (CSR) than their private sector counterparts, owing to the large scale on which they operate and their accessibility to the government. (Datta, 2014)

Enactment of Companies Act, 2013 by the Ministry of Corporate Affairs (MCA), Government of India was one of the world's largest experiments of introducing the CSR as a mandatory provision by imposing statutory obligation on Companies to take up CSR projects towards social welfare activities. This has made India the only country which has regulated and mandated CSR for some select categories of companies registered under the Act. This CSR initiative will push the nation towards achievement of sustainable development goals and public-private partnership in transforming India (www.csr.gov.in/).

The CSR concept in India is governed by Section 135 of the Companies Act, 2013 and Rules made thereunder wherein the criteria has been provided for assessing the CSR eligibility of a company, implementation and reporting of their CSR Policies.

The National CSR Data Portal states that India having the most elaborated CSR mechanism and implementation strategy has started its journey to set a benchmark in attaining sustainability goals and stakeholder activism in nation-building. The CSR ambit is getting bigger and for upcoming years it would turn as a unique knowledge base for analyzing and achieving sustainability goals as India has mandated CSR through its legislative action.

HISTORICAL PERSPECTIVE OF THE CSR LEGISLATION



[Source: <https://www.csr.gov.in/>]

After Corporate Social Responsibility was introduced as a statutory obligation for companies by way of Companies Act 2013 under Section 135, the Companies (Corporate Social Responsibility Policy) Rules were notified on 27th February 2014 (“CSR Policy Rules, 2014”) to lay down the specifications and procedure to be followed by the companies while discharging their CSR obligations.

The Aspirational Districts Programme, launched by the Prime Minister in January 2018 and anchored by NITI Aayog, is a persuasive case study to show how the synergy of these three stakeholders – the district administration, companies and NGOs – can foster more equitable channelization of CSR funds in under-developed pockets which have been historically deprived of them. It also serves as good evidence of the fact that when CSR is discharged with co-actions, its impact is amplified. In December 2018, the Department of Public Enterprise (DPE) issued guidelines for CPSEs to use their CSR funds in a focused manner towards national priorities. It further advised them to spend up to 60% of their CSR funds in school education and healthcare while giving preference to Aspirational Districts (www.niti.gov.in)

The government expanded the scope of CSR with a view to spur the Research & Development (R&D) and innovation ecosystem in the country. The Schedule VII of the Companies Act now recognizes any contribution to incubators funded by Central or State Government or any agency or Public Sector Undertaking of Central or State Government, and, making contributions to public funded Universities, IITs, National Laboratories and Autonomous Bodies engaged in conducting research in science, technology, engineering and medicine aimed at promoting SDGs as falling within the ambit of CSR, as per the notification of the MCA deemed to have come in force since 24th August, 2020.

In March 2020, the Government of India declared the novel Coronavirus outbreak in the country a “notified disaster” and following the notification, the Ministry of Corporate Affairs (MCA) clarified that spending of funds for COVID-19 relief would be a permissible activity under CSR. The notification stated that Companies will be able to spend CSR funds through items listed under schedule VII related to promotion health care, preventive health care, sanitation, and disaster management including funds such as the Prime Minister’s National Relief Fund and Swacchh Bharat Kosh and that “items in schedule VII are broad-based and may be interpreted liberally for this purpose”.

The government has also set up the ‘Prime Minister’s Citizen Assistance and Relief in Emergency Situations Fund’ (PM CARES) to respond to the COVID-19 crisis and provide relief to those affected. Further, Schedule VII was amended to include contributions to PM CARES as CSR along with the existing Prime Minister’s National Relief Fund (pmindia.gov.in)

In August 2020, the Government amended the CSR norms to include research and development (R&D) spending on new vaccines, drugs, medical devices related to COVID-19 which is expected to greatly increase the flow of funds towards the COVID-19 vaccine and drug development.

The Companies Amendment Acts of 2019 and 2020 resulted in some major changes in the CSR provision under Section 135 of the Companies Act. To provide for the notified

changes, the Ministry of Corporate Affairs had released the Draft Companies (Corporate Social Responsibility Policy) Amendment Rules in March 2020 (“Draft Rules”) inviting public comments. On 22nd January 2021, the MCA finally issued the Companies (Corporate Social Responsibility Policy) Amendment Rules (“New Rules”) giving effect to the changes introduced in CSR by the Companies Amendment Acts of 2019 and 2020. (www.mca.gov.in/)

Major highlights of The Companies (CSR Policy) Amendment Rules, 2021 includes allowing corporate to undertake multi-year projects and making registration compulsory for agencies implementing CSR activities on behalf of companies. Further, while international organizations cannot act as implementing agencies, they can be hired to design, monitor and evaluate CSR projects, which would bring in global best practices. Non-compliance with these rules has been decriminalized, with the punishment shifted to a penalty. Other key amendment highlights include: changes in the definition clause of CSR; responsibility of Board and Chief Financial Officer (CFO); assistance from international organizations; Administrative overheads; annual action plan; treatment of surplus funds; creation or acquisition of a capital asset; CSR reporting; transfer of unspent CSR amount among others.

The amendment also includes website disclosure wherein the Board of Directors of the Company shall mandatorily disclose composition of CSR committee, CSR policy and projects approved by the Board on their website.

The Companies (CSR Policy) Amendment Rules, 2021 will require companies to closely plan review and monitor their CSR initiatives in order to comply with the directives which will play a major role in meeting the nation’s goals towards meeting the SDGs.

CSR IN CENTRAL PUBLIC SECTOR ENTERPRISES

A state-owned enterprise in India is called a Public Sector Undertaking (PSU) or a Public Sector Enterprise. These companies are owned by the union government of India, or one of the many state or territorial governments, or both. To be a PSU, the company stock needs to be majority-owned by the government. PSUs may be classified as Central Public Sector Enterprises (CPSEs), Public Sector Banks (PSBs) or State Level Public Enterprises (SLPEs).

CPSEs are companies in which the direct holding of the Central government or other CPSEs is 51% or more. They are administered by the Ministry of Heavy Industries and Public Enterprises. The Department of Public Enterprises (DPE) is the nodal department for all the CPSEs and formulates policy pertaining to them. It lays down, in particular, policy guidelines on performance improvement and evaluation, autonomy and financial delegation and personnel management in CPSEs.

DPE Guidelines on CSR and sustainability issued on 21th October, 2014 specifically states that, ‘It is mandatory for all profit making CPSEs to undertake CSR activities as per the provisions of the Act and the CSR Rules. Even the CPSEs which are not covered under the eligibility criteria based on threshold limits of net-worth, turnover, or net profit as specified by Section 135 (1) of the Act, but which made profit in the preceding year, would also be required to take up CSR activities as specified in the Act and the CSR Rules, and such CPSEs would be expected to spend at least 2% of the profit made in the preceding year on CSR activities.’

These guidelines which applied to CPSEs came into effect from April 1, 2014. These guidelines represent an important step in India's foray into CSR in an unparalleled manner. Long before the concept of CSR came into picture, PSUs have been at the forefront in solving socio-economic issues, may it be national emergencies, power and energy supply issues, education, public health issues and community development activities.

The CPSEs had been carrying out CSR activities under the DPE guidelines since 2010. Under these guidelines, each profit making CPSE was mandated to spend certain percentage of Profit after Tax (PAT) on CSR. However, after legislation of the Companies Act, 2013, all companies (including PSUs) above a certain threshold as defined in Section 135 (1) of the Companies Act, 2013 are required to formulate their CSR policies and spend at least 2% of their average net profit in preceding three financial years on CSR.

The Guidelines are applicable to all CPSEs and are subject to a higher standard of social responsibility than companies in the private sector. The CPSEs or the Public Sector encapsulates a larger element of public interest compared to other companies run on largely commercial lines with profit-making being the principal motive.

The Guidelines state that it would be "mandatory for all CPSEs which meet the criteria as laid down in Section 135(1) of the Act, to spend at least 2% of the average net profits of the three immediately preceding financial years in pursuance of their CSR activities as stipulated in the Act and the CSR Rules." They also add that "in case of CPSEs mere reporting and explaining the reasons for not spending this amount in a particular year would not suffice and the unspent CSR amount in a particular year would not lapse. It would instead be carried forward to the next year for utilization for the purpose for which it was allocated." CPSEs are thus held to a much higher standard of CSR spending than companies in the private sector. (Umakanth Varottil, 2014)

STAKEHOLDER COMMUNICATIONS

While some would argue that CSR shouldn't be looked at in terms of PR and marketing, the reality is that every business embarks on CSR initiatives with the goal of improving brand image. CSR is becoming an important factor for influencing a company's image, reputation and stakeholder relations; however, the interactivity levels of online CSR communication are typically low. (Etter, 2013)

When it comes to communication, the most innovative companies are able to transform language from spoken/written to graphics and illustrations. For example, communication of the key points of the sustainability report through a graphic on social media may be able to boost engagement with and sharing of the content. Intelligent use of specific hashtags is a valuable tool when it comes to publicizing a company's CSR activities, promoting events and initiatives and positioning internal stakeholders as expert influencers on social media.

Communicating about CSR can play an important role in organization-stakeholder relations. An understanding of the organization's CSR philosophies, policies, and activities can allow stakeholder audiences to become more engaged in the issues affecting them and more willing to collaborate with organizations in reaching socially responsible solutions to

problems. CSR communication may also be used to maintain legitimacy for the organization. Such communication, even about unfavorable actions, allows the organization to explain and justify its actions and increases transparency about the social and environmental impact of the organization and its governance structure; thus, maintaining legitimacy (Tata & Prasad, 2014).

CSR COMMUNICATIONS BY PUBLIC SECTOR COMPANIES

A very important aspect of CSR is the reporting practices that corporates adhere to inform their key internal and external stakeholders of social responsibility practices. (www.in.kpmg.com).

CSR is becoming as an important factor for influencing a company's image, reputation and stakeholder relations (Etter, 2013). Stakeholder expectations are constantly in change and a company's CSR communication must be evaluated on a frequent basis (Morsing & Schultz, 2006). Social media has now changed conversations from being face to face to now talking with people through Facebook, twitter, messages and other media thus transcending the requirement of being connected in a physical real way.

In the past, companies had little interest in interacting with stakeholders in CSR issues (Moreno & Capriotti, 2009). Therefore, it becomes necessary to analyse whether today companies are addressing CSR communication through online social networks or not and, if so, whether they are doing it correctly using an interactive approach, that is "a two-way communication between source and receiver" (McMillan, 2006).

The large profit making CPSEs having pan-India presence and huge CSR budget communicate their CSR philosophy, activities, projects and benefits for building a favorable corporate image as well as under mandatory disclosure guidelines.

The Oil & Gas sector forms the backbone of the Indian economy and has all Indians as their customers and their products and operations have a tremendous impact on the lives of the customers and stakeholders. The study of CSR communications of the CSPE Maharatna becomes even more pertinent in light of the DPE Guidelines on CSR and Sustainability issued on Oct 21, 2014 and the amendment of January 2021.

Communication on CSR issues has only become a key part of corporate communications for large companies in relatively recently years (Arvidsson, 2010). CSR communication has been described as being associated with positive corporate values and an appropriate concern for stakeholders (Morsing & Schultz, 2006). Therefore, CSR communications are considered fundamental for company-stakeholder relationship building (Nielsen & Thomsen, 2007). It can take very different forms, from featuring on corporate website, annual report and such other media. Besides, online and social media CSR communications allows companies to communicate immediately, economically along with the benefits of two-way communications, which overcomes the limitation of one-way communications through print media.

THE CSR COMMUNICATIONS IN THE ENERGY SECTOR

The three Maharatna PSUs in the Energy Sector – Indian Oil Corporation Limited (IOCL), Bharat Petroleum Corporation Limited (BPCL) and Oil and Natural Gas Corporation Limited (ONGC) feature in the Global Fortune 500 listing of the world's largest companies are also

among the top ET 500 listing, the Forbes 2000 list and are leading on various performance parameters including CSR budget and projects. These companies communicate about their CSR through various media including the corporate website, annual report, brochure, advertisements and Social Media.

The corporate website of all the three companies communicates in detail about their CSR. On the IOCL website, the CSR communication can be accessed from 'About Us' section under 'Indian Oil for Community (CSR)' which mentions Indian Oil's key Corporate Social Responsibility (CSR) thrust areas which include 'Safe drinking water and protection of water resources', 'Healthcare and sanitation', 'Education and employment-enhancing vocational skills', 'Empowerment of women and socially/economically backward groups', among others.

The CSR introduction enumerates the various focus areas under CSR projects - improving the quality of life in various communities, which invariably include marginalized / underprivileged sections of the society, viz. scheduled caste, scheduled tribe, other backward caste, physically handicapped. With the pan-India presence, Indian Oil undertakes CSR activities across the country, from Leh in Ladakh in the north, to the North Eastern States, to Gujarat in the West and Tamil Nadu/Kerala in the South and to the aspirational/ backward districts/ naxal affected areas of the country.

Regarding the CSR spending, it informs that for the year 2018-19, entire CSR budget allocation of Rs. 490.60 crore was spent, thereby achieving 100% budget utilization while there is no mention of spending in 2019-20. The key CSR initiatives of Indian Oil are also showcased here.

The website also gives data on the CSR expenditure for the FYs 2013-14 to FY 2019-20, and about the Indian Oil Foundation (a non-profit trust to protect, preserve and promote the National Heritage in collaboration with ASI and NCF of the Government of India).

Indian Oil's CSR for SCs/ STs & weaker section of society, Indian Oil's Sustainability & CSR Policy and Sustainability Report 2018-19 are available on the corporate website. A pdf Brochure, '*CSR Agenda Enriching the Tapestry of Life*' showcasing the CSR overview and the company's CSR projects is also available on the website.

The Integrated Annual Report 2019-20, Annexure-III provides information about the CSR budget, CSR expenditure and CSR budget utilization, the key CSR initiatives during 2019-20, the composition of the CSR & Sustainable Development Committee, Indian Oil's Sustainability & CSR (S&CSR) policy, continuing Flagship/Special Projects alongwith details of amount spent on them.

On the BPCL Corporate Website, CSR is easily accessed from the main heads and the CSR pages conveys the five core areas of its CSR – education, water conservation, health & hygiene, skill development, and community development and projects undertaken in these areas are showcased on the website.

The page has a document for registration of vendors for CSR to be empanelled for specific works such as Needs Assessment or Outcome/Impact Assessment, Project conceptualization or design/ Proposal Assessment and Project Monitoring.

The corporation publishes the details of its CSR activities in the annual report as per the format prescribed. Project-wise details including project name, state where implemented, implementation agency as well as budget are available for the FYs 2016-17 to 2019-20. BPCL's efforts towards Swatch Bharat Abhiyaan are also featured on the website, besides news and events pertaining to CSR are also accessible on the website. Queries, suggestions or feedback are solicited on the CSR page, which provides a channel for a two-way communication and stakeholder engagement in their CSR.

The Annual Report on the website contains information on the company's CSR as part of the mandatory Annexure B to the Director's Report which briefly outlines the Company's CSR policy, including overview of projects or programs proposed to be undertaken and a reference to the web-link to the CSR policy and projects / programs.

ONCC states its CSR vision & mission as well as CSR and Sustainability Policy on its homepage under CSR. It informs that as per the Government's mandate, 33% of the CSR budget is spent on Swacchh Bharat project. Further, 65.90% of the projects in the last three years were implemented in the priority focus area of education and health care.

As per directives of the Niti Aayog, ONGC has identified 20 aspirational districts and is committed to raise the social and economic condition of these districts by implementing strategic CSR projects. The website shares that projects worth more than Rs 31 crore has been successfully implemented till FY 2018-19 and in the year 2018-19 ONGC has implemented more than 4000 projects covering the country. CSR expenditure year wise is provided for FYs 2013-14 to 2018-19 and for FY 2019-20, and project-wise expenditure is given on the website. Various CSR projects and activities done across the country, projects undertaken in Gujarat and the aspirational districts are also showcased on the website.

A section on CSR films, sports initiatives as well as an indicative List of projects/programs covered under focus sectors as per Schedule VII enumerating the various CSR initiatives under various sectors such as promoting healthcare & poverty eradication, promoting gender equality and socio-economic empowerment, ensuring environmental sustainability, preservation and protection of national heritage, art and culture, welfare of armed forces veterans and dependents, promotion of sports, contribution to Central Government Relief and Welfare Funds, contribution to technology, rural development projects and slum area development are published on the website.

The Annual Report has a report on CSR and details of activities enclosed at Annexure-B. It also mentions that the CSR efforts of the Company has been recognized at various fora including the prestigious international recognition of S&P Platts Global Energy Awards, 2019 – the only Indian company to receive this award for CSR.

All the three companies have social media presence and convey about their CSR activities on Facebook, Twitter and YouTube in a bid for CSR branding building and to engage with the stakeholders on their CSR activities and projects.

CONCLUSION

Considering the tremendous impact of digital media on CSR branding and forming of

perceptions, the energy majors are showcasing their CSR vision / mission, activities and projects on their website in details including location of projects and expenditure incurred project-wise and year-wise, as part of mandatory disclosure in their Annual Reports. These companies also showcase their CSR through PDF brochures, films, photographs, etc., to create a positive image in the minds of the stakeholders, with one company even seeking queries, suggestions or feedback are providing a channel for a two-way communication and stakeholder engagement in their CSR.

As per the changes in Rule 8- CSR Reporting have added Rule 8(3) as per which companies having average CSR obligation of ten crore rupees or more in three immediately preceding financial years are required to undertake impact assessment through an independent agency of their CSR projects. The impact assessment reports are required to be placed before the Board and annexed to the annual report on CSR.

The changes in Rule 9 - Display of CSR Activities on website require the Board to disclose the composition of the CSR Committee, CSR policy and projects on their website for public access. This provision is similar to the earlier Rule 9 under CSR Policy Rules 2014. Making the companies disclose their CSR Activities and contributions to society is important to help the public make informed decisions. The investors these days are becoming socially aware and want to engage with companies that take positive steps for the development of the society.

The energy majors have been already communicating their CSR on the corporate website, annual report, publications and social media as per mandatory guidelines as well as for CSR branding. With the amendment to CSR Act and the increasing public and media scrutiny on the business operations, stringent environmental norms and stakeholder activism amongst others, will require these companies as well other business organizations to take their CSR communications to the next level. They need to go beyond the mandatory communications to truly engaging with them through two-way communications on their websites or by harnessing the social media that has enormous potential to engage with the stakeholders to do meaningful CSR and also build a good corporate image through responsible and effective CSR communications. social media communications for CSR branding is an area that can be examined to understand how these companies are engaging with their audience.

The contemporary directives for CSR with a mandatory schedule have raised the stakes for large corporations and Indian companies have never been more answerable for their social responsibility as they are now.

The COVID-19 pandemic has brought Corporate Social Responsibility to the forefront. Corporates, both large and small, headquartered in India or abroad, have risen to the challenge and augmented the government's efforts by re-orienting their CSR strategies. It is hoped that the same zeal and mission-mode orientation carries over to activities beyond the pandemic. The response to Covid-19 disruption, through contemporary CSR directives, by the Government and the response of corporate sector have established that CSR will continue to play an increasingly important role in how companies approach business and engage communities. CSR assumes even more significance in the context of warnings by global watchdogs of bigger disruptions including climate change, resource scarcity, zoonotic pandemics among others

in the near future which will require interventions like CSR to mitigate the challenges in achieving human development and sustainability goals.

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GLOBAL IMPACT OF COVID-19 ON AGRICULTURE

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ABSTRACT

The world had witnessed several pandemic diseases and each pandemic has affected the human activities and economic growth of any affected nation. The pandemic disease known as COVID-19 (Corona Virus Disease of 2019) originated from Wuhan, China, and the disease is spreading at an alarming rate. India, like every other country, enforces some measures to contain the disease and preventing its further spread. The preventive measures have immensely help in limiting the spread of the disease; however, they have caused a serious impact on major economic sectors of the country like agriculture. Agriculture in India is a very important sector due to its significant contribution to the country's economy. Therefore, this paper aims at highlighting the containment impact of COVID-19 on agriculture. The impact of COVID-19 on agriculture is complex and varied among different sectors of agriculture. The containment measures made farmers face a shortage of agricultural inputs such as seeds, fertilizers, agro-chemicals. The harvesting and marketing of crops have been affected due to the unavailability of labor. The livestock and fisheries industries were also affected by the pandemic due to limited access to labor, animal feeds, vaccines, and drugs. The marketing of dairy products and other perishable commodities got affected due to the closure of processing industries. The containment measures have led to an increase in the consumer's price of agricultural commodities. It can be concluded that the containment measures have affected all aspects of agriculture and is causing serious food security concern.

Keywords: Agriculture, COVID-19, economy, pandemic.

INTRODUCTION

A global pandemic is no longer a new scenario. The world has witnessed several pandemic diseases such as the Spanish Flu, Asian Flu, Hong King Flu, and HIV/AIDS. Each pandemic disease has affected human activities and the economic growth of the world (Hanashima and

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Tomobe, 2012). The world is currently witnessing COVID-19 (Corona Virus Disease of 2019) which is an infectious disease caused by Severe Acute Respiratory Syndrome Coronavirus -2 (SARS-CoV-2). The first confirmed case of coronavirus was detected in Wuhan, China, and the rate at which the disease is spreading is of serious concern. World Health Organisation (WHO) declared the COVID-19 outbreak as a global pandemic on March 11, 2020(Cucinotta and Vanelli, 2020). The preventive measures adopted worldwide to contain and prevent further spread of the disease include border closure, travel restrictions, lockdown, social distancing, and wearing of protective materials such as facemask (Anderson *et al.*, 2020). It has been noted, that the various organizations have a significant impact on their scope and scale in terms of supplies risk, demand risk, financial risk, logistics, and infrastructure risk, management and operations, policies and regulations, and biological/environmental (Sharma *et al.*, 2020). As the number of cases of contagion rises, governments take more aggressive steps to stop the virus from spreading, affecting the global food system (Siche, 2020).

The rapidly evolving situation with COVID-19 is raising serious concern about the general global economy. The devastating impact of COVID-19 on agriculture is conspicuous; no sector has escaped its impact (Figure 1). The impact of COVID-19 on agriculture is complex and varied among different sectors of agriculture (such as crop, fisheries, and livestock) and among different segments that constitute the agricultural value chain. Therefore, this paper will discuss the impact of COVID-19 on different sectors of agriculture based on the agricultural value chain namely; input supply, production, processing, marketing, and distribution and consumption.



Figure 1: Devastating impact of COVID-19 on Farming

IMPACT OF COVID-19 ON INPUT SUPPLY

Due to the preventive measures adopted such as the closure of borders and travel restriction or travel ban which are geared toward containment of COVID-19, farmers are facing a shortage of agricultural inputs such as seeds, fertilizers, herbicides, pesticides, sprayers, etc., for crop production (Poudel *et al.*, 2020). For example, China is one of the major fertilizer producers and exporters in the world. The lockdown in China due to COVID-19 has seriously affected the international fertilizer trade. The pandemic already affected the growing of rabi season crops and if the pandemic is prolonged the growing of Kharif crops will also be severely affected because it was reported that India alone needs 250 lakh quintals of seed for crop production in the Kharif season (Singh, 2020). The travel restriction imposed due to COVID-19 has affected the delivery of the breeding stock of poultry. In many countries, COVID-19 has caused a serious impact on livestock production due to limited access to animal feeds, vaccines, and drugs. Fisheries and aquaculture in Africa, Asia, and Europe are seriously hampered by the COVID-19 pandemic. The preventive measures adopted like the travel ban, total lockdown have led to the shortage of seed stock and feeds. All these impacts of COVID-19 on input supply when combined altogether have affected the remaining part of the value chain and may have a serious impact on global food security which may, in turn, lead to hunger, starvation, the spike of the price of agricultural commodities, increase in the cost of production, among others.

IMPACT OF COVID-19 ON PRODUCTION

COVID-19 has a serious impact on production in all sectors of agriculture, be it crop production, livestock production, or fisheries. The effects mainly come through worker's health and availability of labor in addition to inadequate supply of inputs. Farmers are a relatively older population as compared to the general worker population. The result of some findings revealed that the average age of a farmer is 58. Based on extensive testing of COVID-19 conducted in various part of the globe, it was reported that COVID-19 has a much higher level of severity for those in their 60's and above, thus farming population are at high risk to be infected by the disease (Mercy Corps, 2020). The social distancing and travel restriction are important measures enforced to contained COVID-19, however, the agricultural industry is seriously affected via labor shortage, meaning that the output of the different agricultural sectors are affected and this will pose a threat to global food security. International labor organization (ILO) estimated that COVID-19 has caused 81% (2.7 billion) of the global workforce to lose their jobs due to full or partial closure of workplaces. Poultry producers are also hit hard by the pandemic due to misinformation on social media that poultry is among the carriers of COVID-19. Livestock and fisheries sectors are severely affected because the subsectors are highly labor demanding (FAO, 2020).

IMPACT OF COVID-19 ON FOOD PROCESSING

Most agricultural produce needs to be processed from raw materials into a finished product for ultimate use by the consumer. The processing aspect of the value chain helps in achieving utility value. The industries involved in processing need a large workforce, which

may not be available due to lockdown, travel restriction, and social distancing. Therefore, the processing and the supply of finished products are limited and this has also affected the price of several commodities and the cost of food items may spike soon. Besides, some agricultural commodities such as meat, milk, tomato, etc., are highly perishable and cannot be kept longer without being processed. This has undoubtedly affected farmer’s cost of production and will lead to serious food security concerns (Mercy Corps, 2020).

IMPACT OF COVID-19 ON MARKETING AND DISTRIBUTION

The buying and selling of agricultural commodities are seriously hampered by COVID-19 (Figure 2). The border closure, total lockdown, and travel restriction directly affect the marketing of agricultural inputs (such as seeds, fertilizer, feeds, drugs, vaccines, seed stock) and output. Moreover, agricultural products are mostly perishable, therefore, farmers are forced to store their unsold produce and this may lead to a reduction in the quality of the food so also the cost of production. Dairy farmers are compelled to dump milk and milk products due to the closure of milk processing companies in many countries of the world. In Nepal for example, a dairy product worth NPR 2 billion have been damaged and dairy product in stock worth NPR 5 billion deteriorated. Dairy farmers in America estimated that farmers nationwide are dumping nearly 4 million gallons of milk each day(Poudel *et al.*, 2020). On the farm, another possible source of concern is the growing use of hired trucking to transport crops from the field to storage and the elevator. However, this may raise their chances of acquiring the virus and decrease the availability of truck drivers, increasing the cost of getting grain to market and possibly causing supply chain delays (Brewin, 2020).

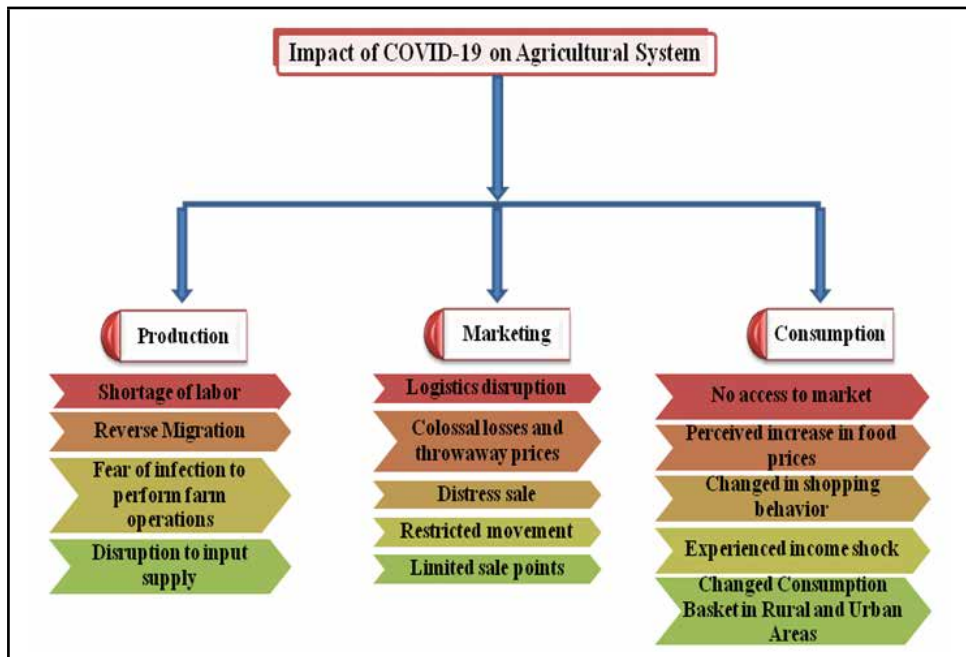


Figure 2:Impact of COVID-19 on Production, Marketing, and Consumption in Agricultural System

Impact of Covid-19 on Consumption

The demand which is the desire and capacity of the consumer to purchase goods and services in a given period of time is affected due to a reduction in income of the consumers and purchasing capacity. Hoarding of farm produce is now common and has affected food availability and price as consumers now have to pay for an exorbitant price for a given commodity. However, the price of the commodities depends on the country and its ability to control the COVID-19 pandemic.

CONCLUSION

It can now be concluded that COVID-19 has a serious impact on agriculture. It affects all aspects of agriculture and the value chain of each sector. The global concern of the impact of COVID-19 is on food security which is the ability to assure, on a long-term basis, that the system provides the total population with a timely, reliable, and nutritionally adequate supply of food. The other devastating impact of COVID-19 decrease in labor availability, loss of jobs across the different agricultural value chain, increased cost of production, the spike of the price of agricultural commodities, reduction in quality of crop production, and deterioration of highly perishable commodities such as milk, egg, vegetables, and fruits. The devastating impact of COVID-19 on agriculture cannot be over-emphasized as it affects all sectors of agriculture and different segment of the agricultural value chain of each sector. Therefore, the government should enforce measures that will help in containing the disease and preventing its further spread without sacrificing the food security of its nation.

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Peer Review Policy

Journal of Indian Research (JIR) ensures that only good science should be published. Our referees play a vital role in maintaining the high standards Transport Policy and all manuscripts are peer reviewed following the procedure outlined below.

Initially the Editor of JIR first evaluates all manuscripts. Manuscripts rejected at this stage are insufficiently original, have serious scientific flaws, have poor grammar or English language, or are outside the aims and scope of the journal. Thereafter to meet the minimum criteria are normally passed on to at least 2 experts for review.

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A final decision to accept or reject the manuscript will be sent to the author along with any recommendations made by the referees, and may include verbatim comments by the referees. On the basis of Referee's advice and report, Decision of Editor, JIR is final.

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The paper should be composed using MS Word 6.0 and above. An Abstract of about 100 words should be included to describe the main argument and the conclusions of the paper. The Abstract cannot contain endnote references.

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Write dates by beginning with the date, followed by the month and the year (e.g.: 2 October, 1869).

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