

Innovations

Food security - health and education

Pangi Chandi Shree Naidu

Research Scholar – Junior Research Fellow
Department Of Commerce and Management Studies
Andhra University, Visakhapatnam.

Prof. Jaladi Ravi

Research Guide,
PG Board of Studies Chairman,
Department of Commerce and Management Studies
Andhra University, Visakhapatnam.

Corresponding Author and Email: **Pangi Chandi Shree Naidu**, chandishreen@gmail.com

Received: 13 March 2022 **Accepted:** 19 April 2022 **Published:** 30 April 2022

Abstract:

Food security plays an indispensable role in human existence. If we look at the contemporary world around us, we can come across certain crises. Such as, international conflicts, external aggression, terrorism, war, autocracy and pandemic, which is leading the people of that concerned country to a chaotic state with uncertain future, poverty, unemployment, malnourishment, inflation and instability. Food security is affected not only from the external factors, it happens from within the nation too. The inability of the administration to balance the exigency and affluence is detrimental to the nation. Srilanka is facing the challenge of food insecurity right now, because of its fast-depleting foreign reserves and couldn't even able to afford the essential food items, pharmaceuticals and fuel. In 2022 India has extended the financial assistance of over \$2.4 billion to Srilanka, in the form of \$400 million currency swap, a \$500 million loan deferment and a \$1.5 billion line of credit. Organic farming crisis led by the decision of Srilanka government to ban the use of fertilizers has resulted in the decline of farm yields to a huge extent. Food is either unavailable or unaffordable to the poor. If we are looking at our own country India, we can see the consumer price index-based reading accelerated to the eight-month high of 6.07% in February. The Retail Inflation has crossed the upper tolerance threshold of 6% set by RBI. Reserve Bank of India is facing an ethical dilemma with the two conflicting moral requirements. One is the Accommodative stance of RBI in its monetary policy for the past two years, in order to revive the economy devastated by Covid-19 which resulted in high Inflation. And the other is not considering the Inflation as an immediate concern, which is making the basic essential goods unaffordable to the poor.

Introduction:

Agriculture sector played a key role in Indian economy during the covid-19 crisis. As per the reports of Ministry of Agriculture and Farmers welfare, the contribution to GDP in terms of the percentage share of Gross Value Added (GVA) of Agriculture and Allied sector to total economy of the country during the last three years is 17.6%, 18.4% and 20.2% in 2018-19, 2019-20 and 2020-21 respectively.

- Despite this improvement in agricultural productivity, why there is food inflation?

- Is this the real increase in productivity or the rising figures are due to the higher inflation?
- What are various measures taken by the government to overcome the food crisis, health crisis and educational crisis?

Covid-19 had an emotional and economic impact on every country of the world. In India we faced the real crisis during these past two years. The impact of the lockdown has crashed the economy and has driven our GDP to a negative figure. Revival is not an easy task, but our country is working hard to get to the pace where we were during pre-pandemic. The fall in revenues from manufacturing sector is huge, which can be revived. But on the other hand, we have the labour-intensive service sector, which was hit hard, especially, transportation department, Tourism, Hospitality sector, restaurants, theatres, educational institutions and specifically small entrepreneurs.

Food crisis and inflation are high because of lack of infrastructure, such as adequate cold storage facilities and in-time transportation. Due to the high fuel prices, the cost of transportation increased. The cost incurred by the producer in order to fulfill the process of Production to Plate, ultimately burdens the consumer, with higher costs. Even though the agriculture sector is the only sector which has survived in the pandemic, it did not make the consumers happy, since they are bearing even more prices to afford the essentials. Hospital expenditure during the pandemic made every household to withdraw their hard-earned decades of savings. These savings have been drawn out just to survive the pandemic in order to purchase the basic essential commodities, which are hardly available during lockdown. Lakhs of households with lack of employment and the rest of households with under paid employment couldn't afford nutritious food.

Health and education are crucial fuels for an economy to sustain in future. This can be achieved through better investment in human resource of a nation. Pandemic has proved that having a good health is very vital to survive, but in order to be healthy, one has to be supplemented with nutrition rich food and care. Pandemic has resulted in high levels of health expenditure especially out of pocket expenditure of poor households. We have seen, how the pandemic has disturbed the education system in India. The complete transformation from the physical classes to online classes has brought lot of communication gap among the educators and students. The attention span of the students has majorly affected due to lot of distractions around. Digital divide is another major concern in the economy, due to the income disparities and unavailability of digital devices, network connectivity and unaffordability of electronic devices. The examinations were not conducted for few batches because of the plight of pandemic, which resulted in not knowing the exact potential of the candidates. The sustainable development goals (SDG) deals with Good Health and Well-Being under goal 3 and Quality Education under goal 4. Member countries are striving really hard to reach these sustainable development goals in time.

Crisis in the past:

Food insecurity is haunting the world for centuries. From the history we have learnt many lessons, in order to save ourselves from starvation and famine. One of the examples is *Irish Potato Famine*. This famine taught its next generations not to completely depend on one source of food alone. Potato is native to the Peruvian - Bolivian Andes, South America and were introduced to Europe by the Spanish invaders in 16th century. The people of Ireland have highly depended on the potato crop for nutrition and as their staple food. Unlike the tropical countries like India, Mozambique and Brazil, the European country's cold weather, especially Ireland which receives less amount of sunlight is not favorable for high cultivation activities. Ireland's temperature ranges from 17 degree Celsius to 3 degrees Celsius. And the span of daylight is very less when compared to the tropical countries. The terrain and climate condition in these countries cannot result in higher yield in agriculture when compared to the regions around the equator, which has humidity, rainfall, sunlight in abundance that are helpful for the plant growth. Ireland was completely dependent on potato, in such a way that, when there was a crop failure due to a plant disease

called **late blight** (*phytophthora infestans*), in 1845 to 1852, People of Ireland couldn't find food which is unavailable. And even if the supplements were available, they were not at all affordable to the common people, since they were imported. There was a mass starvation and disease among people due to malnutrition and loss of immunity. This starvation and malnutrition have resulted in more than one million deaths. This is remembered as the Great Famine (Ireland)

Famines in India:

Famines which have took place in India	Years	Death toll
✓ Deccan famine	1630 – 1632	7.4 million deaths
✓ Great Bengal famine	1769 – 1771	7 – 10 million deaths
✓ Chalisa famine	1783 – 1784	11 million deaths
✓ Doji bara famine	1791 – 1792	11 million deaths
✓ Agra famine	1837 - 1838	8 lakh deaths
✓ Orissa famine	1866 – 1868	4 – 5 million deaths
✓ Rajputana famine	1868 – 1870	1.5 million deaths
✓ Indian famine	1899 - 1900	1 – 4.5 million deaths
✓ Bengal famine	1943 - 1944	2.1 – 3 million deaths

Various studies says that the cause of such huge famines in India are mostly due to the uneven rainfall in the region. India being an agriculture intensive country and at the same time highly populated country in the world next to China. The less productivity or less yield of the agriculture is not at all sufficient to meet the needs of the huge population. Now we have different schemes such as crop procurement, crop insurance and Public Distribution System. But during these years, we don't find much coordination among the rulers of the country. Whatever produce the farmers harvest are expected by the rulers, in order to feed their soldiers and cattle. On top of it the cultivators of crop are completely depended on monsoons. Most of the famines occurred during these centuries are affected by El Nino. Mike Davis has written a book by comparing El Nino – Southern Oscillation (ENSO) episodes in different time periods and across different countries. He has pointed out the impact of colonialism and introduction of capitalism and the relation with famine in particular.

The colonial policies played a crucial role in food crisis. Rack renting and war expenditure of the colonials used to burden the people of India. They used charge taxes exorbitantly and the policies of Free Trade had facilitated more agricultural exports, instead of meeting the domestic needs. Agriculture was majorly encouraged for commercial crop cultivation, instead of food crops. Indian exports of rice, wheat, jute, opium, cotton and indigo used to be the major drivers of economy. According to Mike Davis, export crops displaced millions of acres that could have been used for domestic subsistence and increased the vulnerability of Indians to food crises. Food insecurity led to malnutrition and immunity deficiency. Lack of immunity resulted in millions of people falling prey for scores of diseases. In order to sustain the unforeseen circumstances, we need to be equipped with good health and medication. This is possible only through government policies, public coordination, education, research and development.

Recent and ongoing food crisis in the world around us

Afghanistan food crisis:

After the takeover of Taliban on 15th Aug 2021, Afghanistan was stranded with political, economic and social predicaments. The reserves of Afghanistan were frozen by global powers and the new regime is

striving to get the global recognition. But the civilians are the collateral damage who are facing acute food shortage, unemployment and inflation. Under the humanitarian assistance, India has extended its helping hand by entering into an agreement with United Nations World Food Programme (WFP) in order to dispense 50,000 tonnes of wheat. India has sent its first batch of aid recently weighing 2500 tonnes of wheat commuted through India – Pakistan integrated check post (ICP) by 1000 truckloads. It is integral to consider that the conflict driven nations lag behind with instability, haplessness and depleting wealth which takes a lot of time to pull together everything to survive and sustain in the long run. Diplomacy shall be the priority to overcome such situations without any loss of life and loss of country's wealth through discussions, instead of destruction.

Russia and Ukraine crisis:

Since the Russians invaded Ukraine from February 24, 2021 people of Ukraine and Russia are stranded in between the war situation. According to the United Nations reports, nearly 6.5 million people were displaced due to war and are moving to the nearby countries. The war has entered into its fourth week and has not resulted in any sort of cease fire agreement despite several meetings. The evacuation process was also not successful at all. It is a different case for Indians who were living in Ukraine, since they were rescued by the Indian government under 'Operation Ganga'. West has imposed numerous sanctions on Russia for committing war crimes and violating United Nations Charter. Due to the sanctions imposed on Russia, which are intended to isolate Russia from rest of the world without any economic cooperation may result in food crisis of many other nations which are depending on Russia.

Russia produces about 16% of the world's Natural gas and 12% of the world's Oil. It has the capacity to produce nearly 50% of the world's Palladium Catalytic converters, which is a vital component in car's exhaust system that helps in controlling emissions. Ukraine produces about 13% of global corn exports and 12% of global wheat exports. In fact, Ukraine has supplied nearly 90% of China's corn imports in 2019. North African countries which are highly dependent on Russia and Ukraine for Wheat imports are Tunisia, Libya, Morocco, Algeria and other several Arab nations. In Tunisian capital city, at a supermarket there is scarcity of wheat flour. Only three Packets of sugar were placed in a rack behind the sign that read as "One Kilo per customer." Wheat being the basic essential food for many countries, now fell in a dilemma with regard to the war between Russia and Ukraine.

Millennium Development Goals:

The Millennium Development Goals (MDGs) are eight international strategic development goals set by the association of 191 United Nations member countries. These millennium goals were supposed to be fulfilled by 2015. Majority of these goals are related to the enhancement of health outcomes. The declaration regarding the Millennium Development Goals was signed in September 2000, in order to combat poverty, disease, hunger, environmental degradation, illiteracy, and discrimination against women. All the member nations have agreed upon the framework of 8 goals, 18 targets which are complemented by 48 indicators to measure the progress of the said Millennium Development Goals. The first and foremost target under the millennium development goal number one is to reduce by 50% the percentage of people whose income is not more than \$1.25 a day in between 1990 and 2015.

And when it comes to the 2nd target was to reduce by 50% the percentage of people who are suffering from hunger in between 1990 to 2015. And coming to the third target under the goal of achieving universal primary education. It is to ensure that all the children in the world, will be able to finish their primary schooling by 2015. The fourth target deals with the elimination of disparity with respect to gender during primary and secondary education, between 2005 and 2015, in all the levels of education. The helps in promoting the gender equality from the early years of education and empower women in all respects. Target five deals with the responsibility of the country to reduce the under-five mortality rates by two thirds during the period of 1990 to 2015. This initiative helps in reduction of child mortality. The

target number six stresses in reduction of maternal mortality ratio by three quarters during 1990 to 2015. This initiative helps in the improvement of maternal health.

Target number seven have the aim of reversing the spread of HIV/AIDS by halting it in 2015. Coming to target number eight, the aim is to reverse the incidence of malaria by halting it in 2015. These targets of seven and eight are the best ways of fighting the dreadful diseases such as HIV/AIDS, malaria and other diseases. Target number nine aims at integrating the basic principles of sustainable development with different country's policies and result in reversing the damages caused to environmental resources. Speaking of target number ten, the aim is to reduce the percentage of people by 50% who are not even having access to the safe drinking water and minimum basic sanitation by 2015. The target number eleven deals with a significant improvement of lives of slum dwellers all over the world, at least to the extent of 100 million people. This target has to be achieved by 2020. All these targets under goal seven of the millennium development goals helps in ensuring the environmental sustainability.

Target number twelfth deals with the development of further predictable, rules based, trading and financial system without any sort of discrimination which includes the commitment of a good corporate governance, development, resulting in reduction of poverty both within your country and between different countries. Target number thirteen deals with the addressing of special needs of the least developed nations with regard to the issues of tariff, quota, debt relief program for critically indebted poor nations, free trade agreements with the least developed nations, and a special treatment to the countries which commit to reduction of poverty by official development assistance. Target number fourteen deals with the identification of the special needs of the small island developing states and landlocked developing nations under the 22nd General Assembly provisions and an action plan for the sustainable development of small island nations.

If we look at the target number fifteen, which addresses the comprehensive problems of developing countries with regard to debt issues, through both within the nation and between the nations by making the debt sustainable for a long period of time. The next target that is the sixteenth target deals with the development of decent and productive employment for the youth which belong to the developing nations. Target number seventeen deals with the problems faced by the developing nations with regard to the accessibility of essential medicine at reasonable prices, by working out on a strategy of establishing the pharmaceutical companies. Last but not the least, target number eighteen deals with the private sector with regard to the introduction of new innovative technologies especially in communications and information technologies all over the world in order to increase network and connectivity.

It is a complacent accomplishment all over the world that the deaths of children below the age of 5 years have reduced to 6.3 million in 2013, from 12.7 million in 1990. When it comes to the developing countries, the proportion of children under 5 years of age who are underweighted are reduced to 17% in 2013 from 28% in 1990. The global HIV prevalence was fallen by 38% between the years 2001 and 2013. The number of cases and deaths of tuberculosis and HIV negative tuberculosis are falling rapidly because of the measures which were taken globally to eradicate the disease. The target which was set in 2010 regarding access to safe drinking water is satisfactory but this has to be achieved in sanitation targets too. Most of the Millennium development goals are achieved well but still there is a need of full-fledged achievement of certain key areas. Global economies have to pay heed to certain essential criteria, that is the reason why Sustainable Development Goals were introduced.

Sustainable Development Goals:

These goals are the agenda which has to be fulfilled by 2030. All the United Nations Member states has entered into this agreement in 2015, which acts as a road map for the sustainable and stable future with peace and prosperity. It is a global partnership between all the nations of the world including both under developed, developing and developed nations towards a bright future. All the goals work in tandem with each other. One leads to other goal and together form a whole package of deals which are crucial in the

global sustainability and survival in future. So, within eight years we have to fulfil all the goals for the better functioning of the global agenda and to achieve fearless balanced future and to give the best to our future generations. Department of Economic and social Affairs under sustainable development has set up seventeen goals. These has 169 targets to reach by the end of 2030.

The first goal deals with ending the poverty all over the world in all its forms. It has seven targets under it, in order to reach these targets, the respective institutions have sketched out 44 events and will achieve this objective with more than 1076 actions. The second goal of sustainable development deals with zero hunger. This can be achieved through promotion of sustainable agricultural practices, certain measures to end hunger and keeping all the efforts in achieving food security by enhancing the nutrition intake. In order to attain this goal, they have to reach 8 targets and 34 events, the action plan has 972 actions as their task. Talking about the next goal number three, which deals with ensuring the well-being of people all over the world belonging to all age groups. In order to achieve healthy lives, we have thirteen targets, eighteen events and 926 action plans.

Health has become everyone's priority after we have tasted the fear of dreadful Pandemic. The availability and affordability of hospital care is very much essential in well-being of the people. Here comes the goal number four which deals with ensuring the availability and accessibility of quality education and inclusive care towards the learning opportunities for lifetime and for all. In order to achieve this goal, we have ten targets, 15 events and 1431 action plans. The next goal defines the importance of gender equality. This will strive to empower all the women and girls of all ages. This has 9 targets, 23 events and 1168 action plans. The next goal in the row deals with ensuring the sustainable management and accessibility of water and sanitation for each and every one in the nation. In order to reach this goal number six, we have 8 targets, 15 events and 848 action plans.

Goal number seven deals with the energy requirement which is supposed to be reliable, affordable, accessible and sustainable. In order to take care of this modern technology needs we have five targets, 11 events and 803 action plans. Next goal deals with encouraging sustainable economic growth, which is inclusive and could facilitate productive employment with decent working conditions for all. In order to achieve that, we have 12 targets, 45 events and 1471 action plans. To sustain and survive we need the infrastructure, innovation and industry. In order to build resilient infrastructure, encourage research in innovation and ultimately establish a resilient infrastructure, we have 8 targets, 33 events and 704 actions. Next goal in the row is number ten dealing with reduction in Inequalities within the country and among the nations. It has 10 targets, 28 events and 717 actions.

Goal eleven deals with making all the cities of the world and human settlements safe, resilient, inclusive and sustainable. In order to do these, we have 10 targets, 32 events and 881 action plans. Under the twelfth sustainable goal we have to ensure the consumption and production patterns sustainable. In order to deal with this, we have 11 targets, 10 events and 1115 action plans. Goal number thirteen deals with the immediate actions that needed to be taken in order to combat the climate change and its impact on the world. Under this we have five targets, 15 events and 1326 action plans. Goal number fourteen deals with the conservation of marine resources, seas and oceans in a sustainable manner to result in sustainable development. It has 10 targets, 47 events and 2146 action plans.

The next goal deals with the life which survives on land. In order to encourage the existence of the life forms on earth, we need to restore, protect and promote the sustainable maintenance of terrestrial ecosystem, forests, minimize desertification and strive to combat land degradation, biodiversity loss and erosion. We have 12 targets, 13 events and 849 action plans. Goal number 16 deals with the Promoting Sustainable development, inclusive societies, peaceful co-existence and access to justice to everyone and governance. In order to achieve it we have 12 targets, 20 events and 767 action plans. Last but not the least goal number seventeen deals with strengthening the partnership on global level for sustained development. In order to achieve it we have 19 targets, 110 events and 1559 actions.

United Nations Food System Summit (2021)

The major concerns in this debate of thought regarding food security will be discussed as follows. First, to ensure access to safe and nutritious food for all. Accessing food itself is a huge deal in many countries in the world. Nearly 811million people are going to bed with an empty stomach daily. The countries administration should make sure that the people of the nation have the access to safe and nutritious food. Talking about the nutritious food, one should not depend on only one food source. He/she shall eat sufficient nutrition rich food in order to stay healthy and strong. Awareness of nutrition content in food can be expected only through educational practices. Every young generation has to get educated and unlock the treasure of knowledge. This is the only way we can ensure, the understanding level of the population, the significance of food and nutritional intake to better living.

Shifting to sustainable consumption pattern is another topic which needs huge attention and implementation efforts. SDG 12 deals with the responsible consumption and production. The people of the society have to consider the importance of following a reasonable framework in consumption, without exploitation of available resources. Only sufficient intake of food will fulfill the requirement. Anything excess will cost your health and money and in the long run would affect the future generations. The sustainability approach can save the present as well as the future needs. Ultimately this will result in reduction of food insecurity and has a good impact on stability in prices of commodities. In order to follow this, one shall be aware of the demand and supply, in other terms, the requirement of the product and its accessibility, availability, affordability and abundance.

Boost nature positive production in such a way that it won't impact the environment. Disposal of harmful chemicals in the water outlets and land will definitely result in dreadful consequences. Zero Budget Natural Farming (ZBNF) is an initiative taken during the 'National Conclave on Natural Farming by Prime Minister Narendra Modi'. He said this shall be a mass movement with the farming practices encouraging and implementing chemical free agriculture practices. Actually, this type of Natural farming is originally mooted by Subhash Palekar during mid 1990s as a replacement for Green Revolution methods such as which involve in high use of inorganic pesticides and fertilizers. People has started reaching out for high yield variety seeds. This has brought a great transformation in Indian agriculture by bringing the country from a famine state to a surplus state which is presently exporting its surplus produce especially rice and wheat. But there is a negative side for this too, that is the over utilization of pesticides and fertilizers are impacting the soil quality and ultimately the low yield. *Use of fertilizers in higher quantity for decades is resulting in unproductive and futileland.*

Advantages of practicing Zero budget natural farming is that it requires a very little initial investment. The use of organic fertilizers such as cow dung would add up soil value and leads to the high scale improvement in soil ecosystem. It requires little water and electricity when compared to other practices. The productivity of the concerned soil keeps on increasing year on year. The disease attack risk of the crops is minimized. According to a survey conducted by the National Sample Survey office (NSSO), more than two thirds of the farmers in the country spend more money on farm when compared to their earnings and result in debt burden. In the states like Andhra Pradesh and Telangana the indebtedness level of farmers is nearly 90%, with an average household debt of Rs 1 Lakh.

The other important aspect of discussion was on building resilience towards vulnerabilities, calamity shocks and stress. India has faced so many natural and man-made calamities in the past. We are not sure that we would be free from natural disasters in the future, when we are looking at the problems of climate change, global warming and rising temperatures. So, we need to be resilient enough to handle any kind of situation in present as well as the future. We need to implement certain policies and practices that would cost us our future. The research and development play a crucial role in this scenario by discovery

and new innovations which would help us and our future generations to live in a sustainable environment. Such summits and debates among the professionals would bring out the insight and critical inputs for the better surviving and living techniques.

Central Government Initiatives:

Food security:

According to the United Nations reports, India is the country which comprises around 195 million people who are undernourished and this constitutes a quarter of world's hunger burden as a whole. *National Food Security Bill, 2013* plays a very crucial role in bettering the position of people living in India. The Integrated child development services scheme is spread all over the country and deals with the child related issues with care. The development of the children in all perspectives is significant in building up a better future and building a better India. Mid-day meal scheme ensures that each and every child is provided with enough nutrition and education. The public distribution system is another segment of implementation of government welfare plan. It gives every household an opportunity to purchase the minimum essential commodities at a fair price.

Health and Education:

Recent initiatives of central government such as Ayushman Bharat Yojana/ Pradhan Mantri Jan Arogya Yojana (PMJAY) have played their role during the corona virus era. National AYUSH mission deals with Indian ayurveda and yoga which acts as a central structure for the whole world. Not only these many initiatives play a very significant role in attaining the sustainable development goals in health. Education policies of the government include samagra siksha abhiyan, Beti Bachao Beti Padhao Abhiyan, National Education Policy and many more which deals with the education of children of India. MOOC (Massive Open Online Course), SWAYAM (Study Webs of Active – Learning for Young Aspiring Minds), National E – Library, etc., have played a significant role in the lives of students during the covid 19 lock down. Unavailability of study material and guidance physically has created a knowledge gap among the student's fraternity. These platforms have come to the rescue of students in their dire need, and supplemented to better learning outcomes.

State Government Initiatives:

Food Security:

The state government has done a great job in improving the food security in the state through various schemes and initiatives. The initiatives taken with regard to farmers welfare such as Rythu Bharosa kendras for fulfilling the needs of farmers, which provide the facilities of crop procurement, sale of fertilizers, supply of seeds, Interest free loans, free supply of electricity for nine hours a day, crop insurance, and supply of new technology. By facilitating all these there is a scope for higher productivity and yield which is being supplied to the people below poverty line at a concessional rate through public distribution system. The e-crop portal is also doing its intended job well in order to fulfill the needs of farmers. Navratnalu schemes are looking after all round development, in such a way that the dependents like the people who couldn't earn on their own, who are aged above sixty years or widows are being paid pension as a social security benefit, which ensures a better food security.

Health and Education:

Coming to health initiatives like Arogyasri, Ysr Bheema and 108 Ambulance services, the state government has been striving really hard to reach the last mile assistance. They have handled the covid 19 test, track and treat policy very gently and helped in minimizing the daily caseloads. The vaccination programme has also played a very significant role in curbing corona virus cases. Education related

initiatives are in tandem with the National Education Policy 2020. Scholarship programs like Jaganna vasithi devena, Vidhya devena, Amma vodi, Goru mudha, Jaganna Vidhya kanuka, Nadu-Nedu initiatives has put the education system on the right track.

Conclusion:

History always repeats itself unless we take a firm action by learning from the past mistakes and bettering the future. Knowledge plays a crucial role in avoiding catastrophes. Food wastage in India is exceeding to Rs 1 Lakh crore. According to UN Environment Programme's (UNEP) Food Waste Index Report 2021, one-third of the food produced for human consumption nearly 1.3 billion tonnes get wasted every year in the world. **So better not waste the food!!!**

References:

1. Rubin, Olivier (2016), *Contemporary Famine Analysis*, Springer Briefs in Political Science, Springer Nature, p. 14, ISBN 978-3-319-27304-4
2. Siegel, Benjamin Robert (2018), *Hungary Nation: Food, Famine, and the Making of Modern India*, Cambridge University Press, p. 6, ISBN 9781108425964
3. Dreze, Jean, "Famine Prevention in India", in Dreze, Jean; Sen, Amartya (eds.), *The Political Economy of Hunger, Volume 2: Famine Prevention*, Clarendon Press; Oxford University Press, pp. 13–122, 33, ISBN 978-0-19-828636-3
4. Marshall, P. J. (2001), *The Cambridge Illustrated History of the British Empire*, Cambridge University Press, ISBN 978-0-521-00254-7
5. Peers, Douglas M. (2006), *India under colonial rule: 1700–1885*, Pearson Education, ISBN 978-0-582-31738-3
6. Arun Agrawal (2013), "Food Security and Sociopolitical Stability in South Asia", in Christopher B. Barret (ed.), *Food Security and Sociopolitical Stability*, Oxford: Oxford University Press, pp. 406–427, ISBN 978-0-19-166870-8
7. Arnold, David (2013), "Hunger in the Garden of Plenty: The Bengal Famine of 1770", in Alessa Johns (ed.), *Dreadful Visitations: Confronting Natural Catastrophe in the Age of Enlightenment*, Taylor & Francis, pp. 81–112, ISBN 978-1-136-68396-1
8. Arnold, David (1994), "The 'discovery' of malnutrition and diet in colonial India", *Indian Economic and Social History Review*, **31** (1): 1–26, doi:10.1177/001946469403100101, S2CID 145445984
9. Kaiwar, Vasant (2016), "Famines of structural adjustment in colonial India", in Kaminsky, Arnold P; Long, Roger D (eds.), *Nationalism and Imperialism in South and Southeast Asia: Essays Presented to Damodar R.SarDesai*, Taylor & Francis, ISBN 978-1-351-99742-3
10. Grove, Richard H. (2007), "The Great El Nino of 1789–93 and its Global Consequences: Reconstructing an Extreme Climate Even in World Environmental History", *The Medieval History Journal*, **10** (1&2): 75–98.
11. Banik, Dan (2007), *Starvation and India's Democracy*, London; New York: Routledge, ISBN 978-0-415-40729-8
12. Bhatia, B.M (1970), *India's Food Problem and Policy Since Independence*, Bombay: Somaiya Publications, ISBN 9780842611633, OCLC 97029
13. Chaudhari, B. B (1984), Desai, Meghnad; Rudolph, Susanne Hoeber; Rudra, Ashok (eds.), *Agrarian Power and Agricultural Productivity in South Asia*, vol. 1, Berkeley: University of California Press, ISBN 978-0-520-05369-4, retrieved 1 October 2010.
14. Davis, M. (2001). *Late Victorian Holocausts: El Niño Famines and the Making of the Third World*. London: Verso. p. 9. ISBN 978-1-85984-739-8.

15. Jones, Adam (2016). "Chapter 2: State and Empire". *Genocide: A Comprehensive Introduction*. Routledge. p. 203. ISBN 978-1-317-53385-6.
16. Powell, Christopher (2011). *Barbaric Civilization: A Critical Sociology of Genocide*. McGill-Queen's Press – MQUP. pp. 238–245. ISBN 978-0-7735-8556-0.
17. Callinicos, Alex (2002). "The Actuality of Imperialism". *Millennium – Journal of International Studies*. **31** (2): 319–326 See p. 321.