India by Alexandre Conrady, Jason Wang, Madelyn Cohen, Isaac Schultz, Chris Gamble

Abstract
Most of India's people have been hungry for the majority of their lives. In fact, 45.9 - 47% of children under three years old are malnourished or underweight (Swaminathan 2009). There are many reasons for this, including faults in government policy for international imports and exports, and corruption amongst officials regulating farmers' access to grain mills. Fifty-two percent of India’s labor force is devoted to agriculture (CIA 2011); however, between 1991-2001, a large portion of the grain crop produced has been exported to other countries, and the agricultural yield has not risen enough to compensate for India's own nutritional needs (Patnaik 2004). This is an indirect result of the Indian government's new neoliberal economic policies that attempt to raise India's competitiveness in the global market. In addition to this problem, twenty-five percent of India's population is below the poverty line (CIA 2011). The rich can afford oil, meat, and sugar, whereas the poor may only be able to afford grain (Deaton and Dreze 2009). This problem is perpetuated by bribery of government officials by higher class farmers to obtain privileged access to mills, which allows them to produce more and raise their prices beyond what the poor can afford (Jeffrey 2002). The hunger issue has been addressed in the past with India's Green Revolution in the late 1960's. Characterized by "high yielding crop varieties, chemical inputs and an assured supply of water," the revolution was a major breakthrough in the food crisis (Rao 2002: 10). Since then, however, the intensive agriculture has depleted soils and is now an ecological issue contributing to the current hunger problem. Despite this failed solution, several current actions are still being taken to try and curve India's food production in favor of a more sustainable approach. These strategies - incorporating ecological, educational, and political aspects of society - demonstrate excellent initiative by the people and the government, both of which are hopeful for change. Excellent abstract... but no mention of current possible solutions which presumably you address below.

Figure 1: Map of India in relation to surrounding countries. (Discover Asia, http://www.discoverasia.com.au/country.php?country_id=3)
Figure 2: Map of India showing the major areas of crop production and which crop they produce. (University of Texas At Austin, [http://www.lib.utexas.edu/maps/middle_east_and_asia/india_crop_1973.jpg](http://www.lib.utexas.edu/maps/middle_east_and_asia/india_crop_1973.jpg) 1973

**Background To India**

India is located in Southern Asia, between Burma and Pakistan. With a population of nearly 1.2 billion people, India is the world’s largest democracy (CIA 2011). It was officially recognized as an independent country (from the United Kingdom) in 1947. India has extraordinary cultural diversity, despite its ethnic majorities of Hindus and Muslims (Clem and Mujtaba 2011). Socially, the country is divided into separate classes by the Caste System: a very strict, closed, hereditary system of stratification. Although not as apparent in the modern era (it is now illegal isn’t it?), the system is still known to be especially predominant at the local level, despite being outlawed more than 50 years ago.(agreed)

**Politics and Economics**

India’s political system is considered a federal republic, similar to the United States’ own federal system. Although similarities between the two are present (elected president and vice president), India’s government is much more reflective of Britain’s, including the existence of a Parliamentary system that is split into the Council of States and the House of the People (Clem and Mujtaba 2011). Another difference between India’s and the US’ political systems is the placement of executive power. Despite having a president, India’s executive branch is concentrated into The Council of Ministers - a cabinet consisting of the governor of each Indian State (Clem and Mujtaba 2011). India’s agricultural economy emphasizes grain and sugar production as commercialized cash crops. As of 1999, India is the second largest wheat producer in the world, leading the global market in high-yielding varieties of seed (Yadav et al. 2009). However, the political practices involved in cultivating sugar-cane have become corrupt - at the rural farmer’s expense. In rural areas, farmers of higher castes such as the Jat monopolize local government systems called panchayats, and thus have privileged access to land ownership and extended use of sugar mills due to bribery (Jeffrey 2002). As a result, lower caste farmers do not gain the access to crop processing they need. This triggers rising prices, making it difficult for the rural poor to afford food to eat. In an attempt to prevent these types of socially spurned disadvantages, lower caste farmers have united to form organizations such as the Bharatiya Kisan Union (BKU) in the Uttar Pradesh province (Jeffrey 2002).

While India is growing economically, malnutrition and hunger surprisingly continue to rise. City centers grow as shopping outlets, multinational corporations, and industry all move into India. India’s rising middle class continues to move into expanding cities such as Chandigrarah. Even with the country's newfound wealth, however, poverty is still readily apparent, as slums line the outskirts of many major cities. One reason that this the economic growth hasn’t translated to a better food situation is because of the new globalized world economy that encourages India to outsource jobs and export cash crops; for impoverished families, the economy encourages reliance on organizations for food and health care instead of developing or improving education and self-sustainability initiatives for those in the lower class.
India's economy has experienced drastic liberal reforms ever since the passing of the New Economic Policy in 1991 (Yesudian 2007). The New Economic Policy was an economic reform policy designed to restructure India's economy at both the private and the state levels. Some major goals of the policy were to increase privatization and implement neo-liberal economic reforms that would benefit the heavily indebted public (Katrin 2008). Since 1991 India's economy has grown an average of ten percent per year and is the fourth largest economy in the world today (Yesudian 2007). However, this economic growth has not proven beneficial to all as many groups continue to suffer from poverty and hunger. In fact, every major labor union in India participated in protests against the economic reforms (Katrin 2008). This indicates that only a portion of the population actually experiences benefits from the reforms. Clearly, these changes have not solved all of the underlying economic and political issues of poverty and hunger in India.

Hunger In India

Hunger remains one of India's most continuous problems. Having been prevalent in the past, the hunger issue is far from solved, even worsening as the population of the developing country continues to expand. The area attributed with the largest concentration of hunger is also the most poor; rural India is burdened with social, economic, and political blights that prevent a future with long-term sustainability if changes are not made. Rural villagers and farmers, as mentioned previously, do not have the same access to agricultural processing or nutritional food resources as members of high castes. Relatively few Indians eat anything other than staple foods such as lentils, rice, or wheat. In overpopulated areas such as Bengal, the diet of rural villagers exhibits deficiencies in animal protein, calcium, fiber, folate, and Vitamin C intake, and are also limited to contaminated drinking water. Furthermore, poor nutrition in this area is linked to decreased overall health, which includes increased risk of cancer (Mitra et al. 2004). Another major health risk is the abundance of low birth weight in the country. In 2001, one of every three children born in India were considered underweight, increasing the prevalence of anemia and impaired brain development (Sharma 2001). Nearly 50% of pre-schoolers suffer from being severely underweight, ranking India third in the world for child malnutrition (The Hunger Project). In Andhra Pradesh, a province on the southeastern border of India, all age groups were seen to have an inadequate "intake of green leafy vegetables, milk, animal protein foods, and oils" (Mitra et al. 2004:1107). A major cause of rural India's hunger is it's high level of poverty. Of India's population, 80% live on less than the equivalent of 2 U.S. dollars a day (The Hunger Project). Such an extreme level of poverty influences many aspects of sustainability such as education and health. As indicated by several studies, including a study on the nutritional status of the people living in the Himalayas, rural populations appear to have a greater risk of malnourishment when compared to urban populations (Dutta and Pant 2003). According to Dutta and Pant's findings, nearly 40% of the Himalayan (rural) population was considered undernourished, 7.1% of which had BMI's (body mass index) that indicate severe malnutrition / thinness; the remaining 32.9% were considered moderately thin. Reasons for this greater nutritional risk include the fragile ecosystem of the Himalayas and the uneducated, traditional farming practices that are far from sustainable in the modern era (Dutta and Pant 2003).

Education on nutrition is another problem in the slums of India, and a lot of nutritional aid goes unused because of either its taste or lack of understanding of its purpose. According to Chatterjee, "The problem of low birthweight is due to inadequate food intake and maternal anaemia. There is little awareness among mothers about what food to eat, how much to eat, and an inability to co-relate the food intake with the outcomes. If this is showing up as low birthweight and child malnutrition, failure to identify maternal anaemia is to blame" (Chatterjee 2008: 1417). If mothers were more educated on health care, they could improve their health as well those of their families without much extra cost because, while health care is available, it isn't being used to efficiently.

Another major contributor to the malnutrition of the country is ecological. For example, micronutrient deficiency is often caused by frequent flooding of the arable land (Sharma 2001). These floods "rinse" the nutrients from the crops, essentially eliminating much of their nutritional value. Further environmental concerns include the long-term side effects of India's Green Revolution - an immediate solution to the hunger problem in the past. Characterized by intensive agriculture, the revolution exhausted much of the country's remaining arable land and threatens to greatly decrease crop yields in the near future (Rao 2002).

India's government has always been actively working to fight the hunger problem that has persisted for years. The success of these attempts, however, is far from clear. The Public Distribution System (PDS) is a rationing and food distribution system designed to distribute food to impoverished households around India that began during WWII for wartime food rationing (Swaminathan 2009). Seeing as India has a very large number of people living in chronic hunger in the world it is clear that the PDS isn't really doing it's job (Swaminathan 2009). Since India underwent economic reform in 1991 the PDS has drastically changed its approach by implementing a targeting system where needy households are targeted based on income (Swaminathan 2009). The targeted PDS has failed in a number of ways, most significantly the system of targeting has led to many truly needy and hungry people being excluded from the PDS and left on their own.

The current level of food grain consumption per capita in India is at 155 kg per year, the lowest levels seen since WWII (Patnaik 2004). This downward trend is not seen in the urban population who has been experiencing a steady rise in absorption and availability of food grains. The current hunger problem in India is most prevalent among the rural population. These trends can be directly linked to the neoliberal economic reforms put into place by India's government in 1991 (Patnaik 2004). Since then, eight million hectares of growing land has been turned over from domestic crops to exports (Patnaik 2004). Not only have the reforms increased the emphasis on exporting crops but also they have resulted in the government heavily subsidizing these export crops and leaving farmers who grow crops for domestic sale on their own (Patnaik 2004). While this may further India's progress in the global market, at home it has only furthered the massive hunger problem that is most prevalent in rural areas.

Prospects and Strategies for Hunger Reduction in India

In the 1970s, India incited its own “Green Revolution,” cultivating only high-yielding varieties of wheat which demanded high quantities of fertilizer and increased irrigation systems. Although the efficacy of wheat production has increased, the amount of arable land in India has decreased due to exhaustion of the irrigated soil (Yadav et al. 2009). The remaining cultivable land is intensively farmed, while newly fertile areas may no longer yield productivity, leading to increased hunger in those rural areas. In fact, only 48.83% of India’s land is arable (CIA 2011). India continues to develop this system of “high yield” agriculture to make it more sustainable in the long-run, by introducing genetically modified seeds, such as the Bt 34 variety, which are resilient through heat stress and resistant to some diseases such as “leaf rust” (Yadav et al. 2009: 168).

Indian farmers are also adopting other sustainable strategies, such as the cultivation of cassava root, or tapioca. This crop may become an economical, biologically diversifying, crop as it can withstand high heat stress through drought, and may be farmed with less fertilizer and less manual labor than grain (Finnis 2006). This much needed food diversification is considered by many scientists to be the key factor for long term sustainability (Sharma 2001).

In a slightly different approach for a solution, several rural women in Andhra Pradesh have been trained as “nutrition entrepreneurs,” enabling them to process foods while packing them with much needed micronutrients (Sharma 2001: 130). Continuing with the empowered roles of women, The Hunger Project (THP) has been actively working in India since 1984 to help alleviate this problem. Focusing on making women agents of change, THP helps the population work towards self-reliant action and control (The Hunger Project). Another solution for the social aspects of hunger is the education of rural populations, specifically the indigenous people of the Himalayas whose traditional ways prevent long term sustainability and ecological security (Dutta and Pant 2003).
One legal strategy for reducing hunger in India was implemented in April 2001. The case PUCL v. Union of India and ORS was brought before the Supreme Court of India. As a result of the case the Supreme Court declared a “right to food” for all Indians. Following their anti-hunger initiative, the Supreme Court required all government schools and schools that received government funding to provide midday meals to students (Caplin 2008). This new lunch requirement not only improves childhood health in India, but education as well. A good meal is reason enough for undernourished children to attend school, and with children no longer hungry in the classroom, they can focus more on learning. This regulation not only encourages attendance, health, and education in India’s public schools, it helps their parents financially as well by eliminating the cost of their children’s lunch from their budget. However turning legal mandates into real results isn’t as smooth as it is in theory, many schools don’t have the resources to provide all of their students with a wholesome meal every school day, especially in more rural areas.

References Cited  just a few minor edits below.

Caplin, Jessica


The success of public food access programs in India have been limited. Although "the right to food" has been ordered by the Supreme Court of India, corruption and exportation limits the food that is redistributed to those that are hungry and impoverished. This article discusses malnutrition in India, and how the government's lack of adequate response has made the situation worse.

Chatterjee, Patralekha


This article deals mainly with the factors surrounding child malnutrition in India. The author looks at how child malnutrition has remained a growing problem, despite India's economic growth and success. Lack of information and public knowledge about child malnutrition, and how to prevent it are serious problems, especially for recent and expecting mothers.

Clem, Andrew H. and Bahaudin M. Mujtaba


Although the authors' main focus is on the business dynamic of India, the article's introduction is a very solid resource for background information on India. Touching upon political, economic, social, and cultural aspects, this source is a great starting point for gathering information on the basics of Indian life.

Deaton, Angus, and Jean Dreze


The authors examine why per capita consumption of calories has been decreasing in India despite it having one of the fastest growing economies in the world. Main points the authors tries to convey is that there is no correlation between income and calorie intake, and that there is no correlation between calories consumed and general health.

Dutta, Anuradha and Kiran Pant


This experiment report explains the purpose, methods, results, and discussion of the study of malnutrition of the rural populations in the Himalayan Mountains. The report provides useful information on comparing the nutrition of these indigenous people to what is considered healthy and "normal", mainly through the comparisons of BMIs. Also touched upon in the discussion section are possible solutions.

Finnis, Elizabeth


This article weighs the pros and cons of farming tapioca/cassava root as a major cash crop in the Kolli Hills of India. This includes summarization of the crop's viability despite poor soil conditions due to drought or reduced rainfall, with a lesser dependence on chemical fertilizers for maximal production. The cultivation of tapioca may be a possible solution to lessen the rifts between India's castes, especially if rural farmers make more money by farming this way. Plus, it is an environmentally friendlier way to farm.

Gavan, James D. and John A. Dixon


This article looks at elements of India's Green revolution, and specifically how the Green Revolution was not as profound as it was originally said to have been. There are also agricultural statistics provided and a case made for varied diet and food production in India.

Jeffrey, Craig

This article was a good source of background information about the political corruption in India from the 1920s to the present. It explained the corrupt marketing practices of sugar cane that have indirectly increased poverty levels of the lower castes. These include the actions of higher class farmers and how they bribe marketing officials to secure privileged access to sugar mills and end up securing unfairly high prices that the rural poor cannot afford.


This article is a scientific study of surveyed rural villages in Bengal, India revealed deficiencies in animal protein, calcium, fiber, folate, and Vitamin C intake in the typical Bengali Indian diet. These dietary deficiencies, plus contaminated drinking water, not only contribute to high percentage of malnutrition in the area, but also serve as factors that increase susceptibility of people in the sampled areas to contract arsenic-induced skin lesions.

Patnaik, Utsa


This paper discusses the recent trends that have led to widespread hunger and starvation in India. The author blames the governments recent neo-liberal economic reforms as the main cause of the problems. These policies opened up India’s farmers to the international market and forced them to start exporting a huge percentage of their crops that were previously consumed domestically. These changes have resulted in levels of foodgrain consumption per capita that havent been seen since the WWII era (150 kg/head).

Rao, R


The article focuses on a past solution to India’s hunger problem – the green revolution – and how it is now contributing to the current lack of food. The revolution although once the “breadbasket” of India, has now diminished healthy soil and increased India’s dependence on only a select few crop varieties.

Roy, Tirthankar


This article looks at the connections between India’s economic past and present. The author examines the economic past of British India and how colonialism in the past continues to affect its economic structure today.

Shafi, M


This chapter is a comparative study of the production efficiency of crops per acre in a Standard Nutrition Unit (SNU, 2,000 calories) and the availability of nutrition in calories. The author takes into consideration soil types, irrigation, crop varieties, and other factors to compare the different production efficiencies of the different regions. He notices that the total production of food in India is not sufficient to supply the minimum of 1 S.N.U per person in India.

Sharma, Dinesh C.


This article, although short, gives a good general idea of the hunger in India, providing a few major problems and possible solutions.

Swaminathan, Madhura


This article was a good straightforward account of the current hunger problems in India and how the situation got to its current state. The author discusses the public distribution system that was set up to provide families living in poverty with affordable and available food sources. This program has gone downhill in the last few decades ever since the focus was switched to targeting “poor” households. This targeting system has ended up leaving out many people in need from the program because they don’t meet the new requirements and this is one of many factors contributing to the massive hunger problem in India.

Uba, Katrin


This article outlined that, surprisingly, the outlook on India’s grain production could be positive. Now that India has adopted the high yielding seed varieties of grain ever since the Green Revolution of the 1970s-1980s, production growth rates are slowly climbing. However, the author of this article advises India to take more steps to develop its grain production program, including heightening breeding performance by planting hybrid varieties of wheat that are more adapted to the hot climate.

Yesudian, C.A.K.


Other References Cited

Central Intelligence Agency of the United States of America

2011 India. CIA World Factbook

Discover Asia


The Hunger Project