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POLICY AND FOOD SECURITY:
A COMPARISON OF VIET NAM AND INDIA

by

Roxanne Nicole Buckman

A Thesis

Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Arts

Major: Political Science

The University of Memphis

May 2012

DEDICATION

To my husband, Joey. Thank you for supporting me in everything I do.

ACKNOWLEDGMENTS

If I were completely thorough, my acknowledgements would probably be as long as my thesis. For the sake of parsimony, I would like to thank first and foremost my thesis advisor, Dr. Nikki Detraz, for being constantly available over the past year to guide me in the process of writing my thesis, reading hundreds of pages of countless drafts, and encouraging me when I forgot why I was doing all of this in the first place. I would also like to thank my thesis committee, Dr. Matthias Kaelberer and Dr. Shannon Blanton, for their invaluable time and direction.

Thank you to Jack Busbee and Lauren Lewis for commiserating with me during the program and the long stretch that was our final semester. I wish you both the best of luck on your future endeavors. And thank you, Angela Kuykendoll, for all of your help and support these past two years.

Most of all I would like to acknowledge all those in my life, my family, friends, and mentors, who have allowed me to be the person I am today. I have been privileged to be surrounded by truly great people all of my life who have done everything in their power to help me succeed in this world. Let my academic accomplishments reflect not on my own efforts and abilities, but the blessings that have been bestowed upon me.

ABSTRACT

Buckman, Roxanne Nicole. M.A. The University of Memphis. May/2012.
Policy and Food Security: A Comparative Analysis of Viet Nam and India. Major
Professor: Nicole A. Detraz, Ph.D.

The following project investigates the important links between state policy decisions and food security by comparing the cases of the Socialist Republic of Viet Nam and the Republic of India. In this way, the project demonstrates how policy decisions impact food security by determining what a state does with its food resources. Each case study describes the types of policies pursued by the respective countries as well as the state of food (in)security within the population. The findings are then analyzed alongside one another to compare and contrast the different policy approaches and resulting food security situations. This analysis shows that Viet Nam has established a more food secure state by focusing on small farm approaches. Alternatively, India's large agribusiness model does not appear to adequately address food insecurity. These findings have important implications for the issue of food security, especially in the context of economic development.

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Chapter 1: Introduction

The fact that people need food to survive is intuitive. Yet as of 2010, the United Nations Food and Agriculture Organization estimated that there were 925 million undernourished people in the world (Food and Agriculture Organization (FAO), 2011). For these people, the reality of hunger constantly makes their lives less secure (McDonald, 2010). The problem was deemed so important that the World Food Summit of 1996 and the Millennium Development Goals of 2000 both set forward goals dealing specifically with hunger and malnutrition (McDonald, 2010). But what may be surprising is the fact that these problems were not due to a global food shortage. In fact even today there is more than enough food to feed our 7 billion strong population (FAO, 2003; McDonald, 2010). For developing countries an increase in world food supplies has practically no impact on hunger (Brahme, 2002, p.15). In fact, over three decades ago Bates (1981) found that in African states, even areas experiencing poverty and hunger were still exporting agricultural goods. While this seems counterintuitive, it is true for many places in the world.

So what then are the structures and processes that create and sustain chronic hunger in so many places around the globe? In many cases, food insecurity is not due to shortage of food supplies as much as it is due to a lack of access to that food by individuals in the population (FAO, 2008). This answer and its political implications are becoming more and more important as the population of the world continues to grow while climate change is simultaneously threatening the amount and availability of food stuffs in the world. However, the solution is also incredibly elusive as it involves a dynamic evaluation of not only agriculture and the production of food, but also

technological advances, social problems, and the political and economic structures that create or limit food security for individual states and regions. It is my intent to illuminate one facet of this very complex issue- the effect that agricultural policies can have on the food security of a state's population. More specifically, I would like to investigate why Viet Nam and India experience very different levels of food security despite the fact that they have very similar agricultural sectors. Can policy decisions and implementation explain these differences? In this way, I hope to provide some insight into the different structures and processes that both increase and decrease state food security in the hope that states can better shape their policies to alleviate hunger and malnutrition.

What is Food Security? One must first understand what exactly it means for a state to have 'food security'. The World Food Summit, a convention of world leaders and the FAO that met in Rome in 1996 to discuss hunger and food issues, defined food security as the idea that "all people, at all times, [should] have physical and economic access to sufficient, safe and nutritious food for a healthy and active life" (Food and Agriculture Organization 2011b). Schmidhuber and Tubiello (2007) went on to label food security as a four-fold concept including "availability, stability, utilization, and access" (p. 19703). Ingram, Gregory, and Izac (2008) took the definition even further by defining availability involving "food distribution and exchange" and stating the access also involves "utilization" (p. 4). All aspects of food security are determined by the workings of the 'food system' or the "dynamic interactions between and within the biogeophysical and human environments" (Ingram et al., 2008, p.6). As one can imagine, the complexity of these issues results in the food security of a state being dependent on a plethora of conditions and therefore very fragile. According to Brahme (2002), a secure food system

must also incorporate the “capacity to produce, store, and import sufficient food” as well as take into account the sustainability of the ecological system and the differences between social groups, among other things (p. 150). There is also the element of culture, and ensuring the food available is acceptable to the society to which it is presented (Mukherjee, 2002, p.291), as well as the nutritional content of food (Schmidhuber & Tubiello, 2007, p.19703) that must be considered. Taking all of these elements of food security into account, the challenge of feeding populations in the developing world becomes increasingly tied to other global processes and therefore becomes increasingly difficult. As a result, countries on every continent are failing to achieve these criteria for large segments of their populations. Between 2001 and 2008, 25 different countries were labeled as facing a “food crisis” from lingering climatic effects, and natural and human-induced disasters (FAO, 2008, p.19). One out of every seven people in the world are protein and energy deficient and one in five persons suffer from chronic hunger (Godfray et al., 2010, p.812). This hunger leads to ill health and “malnutrition undermines economic growth, perpetuates poverty, complicates education efforts, and increase vulnerability to and magnifies the impact of health threats such as infectious diseases” (McDonald, 2010, p.78). These problems are huge threats to many large segments of the world population.

But why are these problems conceptualized under the term ‘security’ rather than ‘food threats’ or ‘food issues’? It is true that food security is directly related to traditional state security. The FAO (2008) recognizes that several riots and disturbances have already occurred and “signal the desperation caused by soaring food and fuel prices” (p.4). In addition, Barnett and Adger (2007) argue that the impoverished (and therefore

hungry) have a comparative advantage in joining violent activities such as armed rebel groups because they have nothing to lose and therefore more to gain. Another study analyzes food riots in Argentina (over 289 riots in December 2001) and states that food riots have occurred all throughout history (Auyero & Moran, 2007). A third study goes so far as to statistically identify a food price threshold beyond which social and political unrest becomes highly likely (Lagi & Bar-Yam, 2011). All of these studies illustrate how food insecurity can be directly tied to violence and social instability. In addition, these problems also create issues for political and economic stability. For instance, Fernando warns that these same political structures that create food insecurity also lead to “greater social unrest, violence, and suppression” (Fernando, 2002, p.98). As a result, states with a large proportion of agricultural workers can find their national sovereignty quite vulnerable during periods of troubles and unrest (Carrera, 2002, p.287). The FAO (2008) recognizes that several riots and disturbances have already occurred and “signal the desperation caused by soaring food and fuel prices” (p. 4).

However, I argue that food can be seen as both a traditional security and a human security issue, and therefore the ‘securitization’ of food relates these problems to a broader and more varied audience within international relations. The concept of human security seeks to broaden the scope of security studies to consider non-state, non-military issues. Human security shifts the focus from the state to the individual and takes into context the social and political relationships that mitigate larger scale processes on the ground level (Dalby, 2009). Simon Maxwell (1996) describes human security as a movement “from the global and the national to the household and the individual” and “from objective indicators to subjective perception” (p.156). The United Nations

Development Programme (UNDP, 1994) identifies food security as one of the components of human security and illustrates how issues of justice and distribution come into play. Food security is deeply ingrained in human security issues such as health, development, and livelihood of individuals. Sandra MacLean (2008) warns that because the traditional militarized concept of security does not usually incorporate the human rights issues. It therefore does not address the basis of many problems that are directly related to state and international security. When one takes into account the fact that the FAO states food insecurity disproportionately affects the poor, women, and children, issues of equality and justice also come into play (2008). The FAO (2008) has found that within states “the poorest, landless, and female-headed households” are at the highest risk for food insecurity. Within homes, children, pregnant women, and breastfeeding mothers are at a higher risk than other family members (FAO, 2008, p.4). However, all states have these segments of their populations, and yet not all of them experience extreme levels of food insecurity.

At a broader level of examination, a pattern of global food insecurity can be detected. Jarvis, Upadhyay, Gowda, Fujisak, and Anderson (2007) determined that poorer countries in the global South tended to be the most vulnerable. The FAO (2008) found that 65% of the people classified as “hungry” live in only seven countries, all of which are located in Asia and Africa (p. 12). East Asia and the Pacific and Sub-Saharan Africa have not only qualified as the most food insecure regions overall (Schmidhuber & Tubiello, 2007, p.19707), but are also the areas that have experienced the largest increases in the number of undernourished (FAO, 2008, p.7). Africa alone contains 15 out of 16 countries in the world where hunger exceeds 35% of the population (FAO,

2008, p.7). China and India combined make up 42% of the chronically hungry in the world (FAO, 2008, p.15). This extreme regional concentration of hunger and food insecurity across the world suggests that there are global structures and process that shape what appears to be an international food system. However, the effects of these processes need to be studied and understood on multiple levels of analysis in order to provide us with the most complete description of how food security can be achieved and food insecurity prevented.

It is impossible to ignore the fact that there have always been hungry people in the world, as well as states that struggle to provide for every demographic of their society. Why then should special attention be given to the problem of food security at this day in age when most countries are already attempting to solve an array of other political and economic problems? The current state of food security (or insecurity) in the world today is unique for many reason. One of these is the eminence and persistence of the problem. Problems with availability and access to food are already present in many current conflicts such as the turmoil in Egypt and Libya, as well as rioting and unrest in over sixty countries in the past decade (McDonald, 2010). The FAO predicts that the “real prices of food commodities for the next decade are expected to remain above those of the previous ten years” (FAO, 2008, p.11). The persistence of these high prices will further limit the ability of impoverished families to purchase the food stuffs necessary for basic survival and climate change could very well limit the ability of families to produce food themselves. Food insecurity is not likely to be resolved without adequate attention, and the continuation of these problems is likely to have dire and lasting effects for a large portion of the world’s population.

Related Issues. Several scholars suggest that these problems are not likely to be resolved quickly and will continue to be a major issue (Rosengrant & Cline, 2003; McDonald, 2010). What is more, food production will compete with several other economic and political sectors in the procurement of land, water, and energy (Godfray et al., 2010). Ewing and Msangi (2009) have examined the relationship between the increased use of food crops for biofuel production and the record high international food prices (p. 520). However, academics are not the only ones to take notice. Protests in many states have been in response to high food prices resulting from the increased diversion of resources from food products to biofuel (Ewing & Msangi, 2009, p.521). Schmidhuber and Tubiello (2007) predict that this competition between fuel and food is likely to only increase in the near future (p. 19707). With tightening environmental regulations admonishing the use of petroleum based fuels, states may find their hands are tied when it comes to increasing food crop production.

Food security is not likely to disappear from international discussion. Rather, it is more likely that it will continue to be exacerbated though interrelation with other key issue areas. Integral parts of the international food system are now overlapping with several other fields such as agricultural sciences, ecology, ethics, public health, economics, politics, and sociology (McDonald 2010). The tendency of food security to incorporate several different sectors and actors makes it extremely volatile. And as difficulties arise with related areas, such as population growth, fuel prices, and climate change, food security will continue to be more and more of an issue.

Perhaps the issue with the most obvious link to food security is climate change. McDonald (2010) claims that “unsustainable agriculture and food production practices have driven many of the worst instances of human-induced environment change” (p. 47). However, the relationship is multi-directional. Food security and climate change share a unique, cyclical relationship (McDonald, 2010). Ingram et al. (2008) explain that “human activities related to the production, supply, and consumption of food, are partly responsible for changing the world’s climate” and that these changes “in turn further undermine food production” (p. 5). Therefore, while climate change has the potential to drastically affect how much and what kind of food is produced where, agricultural practices also affect climate change. This kind of ‘synergistic feedback’ complicates any solution that might become available and requires special consideration (McDonald, 2010).

For instance, the pursuit of more “efficient” agriculture practices in order to produce more food has led to the loss of biological diversity in many places as well as more intense consumption of natural resources (Shiva, 2002, p.47). One of the most controversial of these resources is fresh water, the use of which is often increased dramatically to mass produce crops in many states (Brahme, 2002, p.113). In addition, issues of deterioration of soil quality, pollution, and soil and water toxicity also accompany the production and transport of food crops as well as negatively affect climate change, which in turn negatively affects crop production (Mukherjee, 2002, p.314). In this way, the simple production of food can accelerate and magnify environmental and climatic problems both regionally and globally.

In turn climate change further weakens food security in many areas. Many important feed crops are heavily temperature reliant and the ability of developing countries to produce food could be compromised (Fedoroff et al., 2010, p.833). Extreme climate events, such as increased seasonal flooding and droughts, can also have a huge impact on crop production by either destroying standing crops or making the environment unsuitable for future cultivation (Schmidhuber & Tubiello, 2007, p.19704). Sea level rise reduces the land area in many countries which also limits their food production capabilities. Another aspect to consider is the fact that these issues of climate change are expected to disproportionately affect the poorest people and states in the world. These are the groups of people with the least ability to prepare for and recover from climatic events. Therefore, climate change effects on food security will be that much more drastic and devastating.

Therefore, it should not be assumed that food security is a purely environmental issue. All of the above are inextricable elements of human security that go hand in hand with access to food. These components, including food security, are highly interrelated and interdependent with other areas (UNDP, 1994). This makes sense when one considers that over 3 billion rural people live off of small farms (FAO, 2008, p.35). The most glaring evidence of this is the wave of farmer suicides in India as a result of agricultural troubles and food shortages, as well as regional increases in alcoholism, drug abuse, divorce, family violence and stress in agricultural communities (Shiva & Jafri, 2002, p.176). What is more, food security has been tied to several other societal and familial issues. For instance, children are more at risk for being abandoned or put up for adoption in food insecure communities (FAO, 2008, p.30). They also fall victim to more health

problems from lack of nutrition and therefore cannot participate in as much schooling (FAO, 2008). Food security is not just about the right to food, it is also about the right to basic human security.

Therefore for human security to exist, food issues must be addressed. It is for this reason that I wish to examine one possible avenue of addressing food security—via agricultural policies—in the context of India and Viet Nam. This chapter will provide an overview of previous analyses related to the topic of food security and agriculture, clarify the definitions of terms, and describe the methodology used in the additional chapters of the paper.

Previous Perspectives. Many examinations of the processes of the international food system have already taken place. For many people, World War II was proof that hunger and instability within a state could result in international conflict when the violence in Germany spread across the continent (McDonald, 2010). Attempts to reduce hunger began in earnest with the Green Revolution- an agricultural development program that developed countries and international organizations such as the World Bank and International Monetary Fund prescribed for developing states such as Mexico and India. The Green Revolution and other similar programs promoted a mix of economic adjustments, technological adaptations, and biological innovations in order to increase production of food and cash crops in the developing world. A main objective was to increase food supply by developing infrastructure and reducing poverty within states (McDonald, 2010). Since these programs were put into place (and have continued to be implemented), scholars have assessed the many ways that the alteration of the food systems in countries affected their societies, economies, and politics. However, many

academics have reached differing conclusions. Some applaud the programs as the key to solving world hunger while others criticize the methods and cite several direct and indirect negative impacts the programs have had in the countries in which they have been implemented.

The programs often revolve around a few key elements, a major one being economic liberalization. It is assumed that free trade will increase food security. Also, proponents of trade liberalization claim it can result in “raising the incomes of farmers and generating employment in agriculture” thereby allowing farmers a greater ability to purchase food (Ewing & Msangi, 2009, p.520). The FAO (2008) states that these higher food prices help the poor by creating “an incentive to increase production, increase in agricultural wages, productivity-based agricultural growth, and overall positive impact on rural areas” (p. 24). In order to do this, the FAO (2008) stresses the importance of allowing foreign governments and businesses access to developing agricultural markets (p. 34). They claim that this is the key to ensuring food security in the world. The programs also stress the important role that technology plays in agriculture and food production, namely bioengineering and chemical inputs. Godfray et al. (2010) claims the Green Revolution was a success due to its use of hybrid seeds and corresponding chemical fertilizers and pesticides (p. 815). Others also note that the Green Revolution and similar policies have resulted in increased agricultural production and that technological advances have made huge improvements and enhanced human well being (McDonald, 2010).

However, there has been a post-Green Revolution rise in the critics of these programs. There is a wariness associated with the interconnectedness of the agricultural

sector of developing countries to the global economy and what new threats and vulnerabilities could be created (McDonald, 2010). Some argue that the temporary benefits of increased crop production are quickly outstripped by the negative effects of the program, such as the indirect effects that are not reflected in the economic models (Perlas, 2002, p.420). They claim that programs based around economic competitiveness and production often ignore issues such as climate, ecology, and local economies (Shiva 2002, p.32). The dependency on chemical and genetically modified inputs not only contaminates the environment, but decreases biodiversity and leads to the evolution of resistant pests which eventually further undermine crop production and therefore food security (Shiva, 2002). In addition, processes such as production, transportation, preservation, preparation, and consumption of food also involve a large amount of energy and waste and have significant environmental impacts (McDonald, 2010). Many disagree with the ideology that economic development should be a higher priority than environmental sustainability.

In addition to these issues of human and ecological security, critics also call attention to the societal and cultural results of altering a traditional agricultural system, as well as issues of equality and justice. The cultural and regional food needs no longer shape production. Instead crop varieties and amounts are determined by market prices and demand (Shiva, 2002, p.61). People who at one point ate according to the seasons, which provided biological and nutritional diversity, are now forced to eat only those foods that can be produced at a profit. Many scholars invoke the world systems perspective and note that international trade and development has historically been the result of

processes of decolonization and the enormous inequalities that these processes often encourage, including corruption among the elites who control economic systems and the distribution of food resources...and lack of development (or intentional deprivation) that impacts the poorest people in societies. (McDonald, 2010, p.32)

As a result, many inequalities exist in the world and these inequalities impact food security at multiple levels.

For some people, the participation of developing countries in the global food system is seen as “forced incorporation” (McDonald, 2010, p.49). Vandana Shiva (2002) makes the important distinction that “trade liberalisation does not imply farmers’ liberalisation” (p.12). Instead, she claims that many of these programs merely transfer resources and rights from individuals and small farms to industries, corporations, and the politically powerful which results in less food security for the marginalized segments of the population. Unsurprisingly, food security is less of an issue for the more wealthy members of a population (Shiva, 2002, p.81). Sen (2002) claims that these developmental programs “consistently marginalize the working people and that the benefits that are achieved are done so “at the expense of the majority by opening doors to international financial and industrial capital” (p. 164). Also, the emphasis on chemical inputs such as pesticides and fertilizers can result not only in environmental degradation, but increased costs of production. These increase costs make farmers financially dependent on loan companies and agricultural corporations for necessary supplies. As mentioned in the previous section, a disturbing trend in India is the widespread occurrence of farmer suicides due to the staggering debts that farmers accrue in this system (Shiva, 2002). On an international scale, these programs often put developing states at the mercy of wealthier countries and international organizations. They often receive monetary aid only

if they agree to specific adjustments, such as trade liberalization (Brahme, 2002). Failure to meet these requirements can also result in international sanctions (Dawkins, 2002).

Finally, there is the argument that Green Revolution type policies simply do not work. After all, there are still drastically uneven levels of scarcity and abundance across the world (McDonald, 2010). Some critics even refute the underlying assumptions of the economic models as they pertain to agriculture and claim that agriculture cannot be treated as “any other sector of the economy (Carrera, 2002, p.282). Food should not be reduced to a commodity whose access is limited by supply and demand and regulated by economic power. Instead, because food is necessary for life and health, its availability and distribution should be regulated through other means. Amitava Mukherjee (2002) calls attention to the fact that although the world food economy has grown, it has not eliminated hunger or even decreased the absolute number of the hungry in the world. He states that this is because “international prices do not, contrary to popular belief, reflect in any sense the true economic scarcities or values” (p.313). Basically, “feeding starving people is not profitable” (Mukherjee, 2002, p.344). As Susan George states in her book *Feeding the Few*, “transnational corporations are not there to feed people, they are not there to provide jobs, they are there to make profit” (Krebs, 2002, p.194). Therefore, critics of the Green Revolution argue that economics may not be the best judge of how to provide food security for the entire world population. Furthermore, the basic assumptions of the policies could be hindering more positive results. McDonald (2010) notes that the priority placed on production and technology and the shift to monoculture farming have failed to achieve consistent levels of productivity as the new policies originally intended.

Rather than continue along these same trends, perhaps it would be helpful to take into account the previous efforts and their failures and instead try to learn from them.

This backlash against the Green Revolution prescriptions suggests that there may be alternative policy solutions to food insecurity besides traditional methods of trade liberalization and increased biotechnology. Food security is not just about food production, but also about distribution, access, and utilization and therefore necessitates more appropriate “social, political, and technological systems to enable the sustainable intensification of agriculture” and the development of more decentralized, community based practices that sustainably increase food security, especially for rural communities and farmers (McDonald, 2010, p.118). Further research is needed to discover what these alternative policies might entail and how much they might shape the state of food security in the world.

However, it should not be assumed that this dichotomous issue of food security is a question of one side being right or wrong. Rather, the disagreement within the subject area lies in differences in scope, perspective, and priorities. And given the persisting prevalence of hunger in the world despite the vast number of structural adjustment programs that have taken place in the developing world, giving the anti-Green Revolution scholars a chance to develop their programs makes sense. At the very least, food insecurity is a problem so widespread and so crucial that all possible solutions deserve to be investigated. Therefore, it is my goal to investigate state responses to food security including those that are not prescribed by international organizations seen by many developing states as being “weighted in favour of industry and Northern agribusiness”

(Shiva, 2002, p.18). Yet in many ways, both approaches are still limited to the same narrow conceptualization of food security as an economic entity.

In the past food security has been studied in the context of solely economic models. In fact, the World Food Conference in 1974 defined food security as “availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices” (FAO, 2006, p.1). In line with this thinking most scholarship concerning food security tended to focus on things such as supply, demand, purchasing power, and comparative advantages in production. In some cases these economic principles can explain and address food security issues. Bates (1981) found this perspective especially useful in explaining food crises in post-colonial African states. Even scholars more critical of the Green Revolution tend to focus on economic arguments. Some scholars argue that free trade economics will only result in less food security due to the increases in resource use and that states need to consider alternate economic models for sustainable food security (Shiva, 2002, p.21). This also brings into play theories of ‘globalization’ and how trade liberalization affects peoples access to things such as food, which are necessary for life (Perlas, 2002, p.410). Therefore, even though explanations of food security are often highly contested, they are still extremely limited in their scope.

However, in recent years the FAO has begun to recognize the importance of other elements in determining food security within states. The 2006 Policy Briefing on Food Security stated that “the analysis of food insecurity as a social and political construct has emerged” and “the ethical and human rights dimension of food security has come into focus” (FAO, 2006, p.1). This does not imply that economic approaches have no insight

into food insecurity. Many facets of food security can be explained in economic terms and doing so is much more conducive to quantitative analysis. Because these quantitative models are more generalizable, they can easily generate broad policy prescriptions which can then be applied in a variety of states and circumstances. However limited and misinformed policy, no matter how generalizable, will not accomplish much in the way of providing food security at the individual level. It may be more beneficial to view economics as one of many concepts under the umbrella of food security. By limiting explanatory models to only economic theories, scholars are failing to account for a large variety of other processes and structures that shape food security. Therefore any solutions or policy prescriptions will be lacking and produce less than adequate results.

Methods

For the more specific purpose of this paper, my research will focus on agricultural policies within states and their impact on the overall food security of the country as well as its impact on individuals and the communities in which the policies are implemented. The global food network “is greatly influenced by policies and actions of states, such as subsidization of certain types of agricultural production and the creation or reduction of trade barriers” (McDonald, 2010, 30). Policies are the links between state’s international agreements and domestic implementation. As such, policies have a much more direct impact on domestic food security than do treaties and supranational organization mandates. They are often implemented on a smaller scale and therefore provide more oversight and are backed by a reasonable expectation of enforcement. Even effective programs fail when there is a “lack of appropriate policy support” (Mukherjee, 2002, p.304). Also, because they are usually developed at the state level, they can be analyzed

as a trend within a country and compared with others. Many scholars have noted the important role policy plays in food security. Today, trade and production specialization are determined not by the “natural endowment of a state, but by policy decisions” (Mukherjee, 2002, p.318). The FAO (2008) also stresses the need for “policies and programmes to deal with the negative impact of high food and fuel prices” for many of the poorest and most hunger-vulnerable societies (p. 4).

This paper will focus on the rural agricultural sectors of states for two main reasons. First, these are the sectors that are “crucial to achieving a substantial and sustainable reduction in hunger and poverty” according to the FAO (2008, p.33). After all, farming is the source of most of the food consumed in the world (McDonald, 2010). However, because food systems are “inherently multi-scale and multi-level” (Editorial, 2009, p.375), I hope to pull in many other facets of the societies that affect how the policies are implemented and whether or not they are successful. In this way, I will attempt to shed some light on both arguments that claim policies need to incorporate alternative solutions (Godfray et al., 2010) and those that state “freer trade and...investments in transportation, communications, and irrigation infrastructure” (Schmidhuber & Tubiello, 2007, p.19704) are the best approach.

In order to investigate how policy can impact food security, I will be examining the policy and food security situations in India and Viet Nam. However, given the plethora of perspectives and conceptualizations discussed above, I will first directly address the definitions that will be used throughout this paper. For the purpose of this work, food security will be defined as “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and

food preferences for an active and healthy life” (World Food Summit, 1996). I find this definition to be the most useful for two major reasons. It is widely used and recognized by most scholars. Therefore, this definition is familiar to most food security scholars and will complement previous analyses. In addition, this definition conveys multiple aspects of food security rather than focuses on only one source or solution. The FAO (2006) states that this definition includes the four main aspects of food security- availability, access, utilization and stability (p. 1).

The concept of availability is fairly straightforward. Simply put, it is the idea that there is food to be had. The origin of this food is unimportant. It can include subsistence produce, foreign food aid, government allotted rations, etc. Availability refers to the fact that there is food, and enough of it, to sustain the life of a given population. However, an important aspect that is sometimes overlooked is that idea that the food is not only available in quantity but also in nutritional value and safety. A large amount of nutritionally poor food or food contaminated with harmful substances such as toxins and bacteria is hardly more conducive to life than no food at all. Therefore, for the purpose of this paper food security implies that food be nutritious, safe, and physically available.

The conceptualization of access to food is slightly more complicated. According to the FAO (2006), access can include “legal, political, economic and social arrangements of the community” (p. 1). In this way, access includes the ability to afford food and therefore the ability to earn a living wage. It also includes government programs that distribute food to those that cannot produce it or purchase food. For the purpose of this paper, it will also include informal access, such as through farmer sharing and community based organizations.

Utilization refers to the non-food aspects of food security. In other words, the things that allow food to provide nutrition. Utilization includes clean water, sanitation services, and adequate healthcare (FAO, 2006, p.1). All of these things are necessary for individuals to ‘utilize’ the nutritional content of food stuffs. An unhealthy body will not absorb nutrients, thereby conflicting with the nutritional aspect of food security. Food that must be prepared with bacteria infested water will not meet the safety requirements of the definition of food security, etc. These facets are just as important as the existence of the food itself in terms of human security.

Finally, there is the concept of stability. To have food stability, the food security of a given population must be able to hold constant in the face of sudden shocks to the food system as well as in long-term planning. A food system that can only provide food for a brief period, or provides food in the present at the expense of future ability to provide food, is not secure. Likewise, a food system that cannot withstand environmental or economic shocks and fluctuations is not secure. The stability of a food system affects and is determined by availability, access, and utilization. Therefore all aspects of food security interact with and reinforce one another and no single concept is more relevant to overall food security than any other.

It is also important to have a good understanding of the concept of malnourishment. Generally, the degree of food insecurity for any population is indicated by levels of malnourishment or the number of malnourished per capita. Malnourishment is most commonly conceptualized as hunger, or a deficiency in energy consumption. However this is only one part of malnourishment. It also includes micronutrient deficiencies such as the lack of vitamins and minerals and excessive energy consumption

which can be seen in the obesity epidemics in developed nations. All of these types of malnutrition are problematic and indicate food insecurity (McDonald, 2010).

Using these definitions, India and Viet Nam will be evaluated and compared based on their policy approaches and food security. By doing this, I hope to add to the extensive literature on agro-economic structures by demonstrating how policy can also affect food security. While most of the previous literature focuses on what a state has in terms of resource abundance/scarcity and macroeconomic structures, I argue that what a state does within those conditions can be just as important for creating food security. Exploring the link between policy and food security could be an important step toward decreasing world hunger and allowing developing countries to boost the health and productivity of their populations.

Policies that impact all four aspects of food security will be analyzed, including economic, agricultural, land, and food policy. This is a very broad approach to the situation, but because the literature on food policy is relatively sparse, it seems prudent to cover as many bases as possible until a definite trend or relationship is identified. Therefore, the policy analysis will move from the more overarching economic policy to specific food policy. Similarly, the 'success' of each state will be analyzed with the four aspects of food security- (1) availability, (2) access, (3) utilization, and (4) stability- in mind. In order to incorporate this holistic view of food security, I will compare economic, agricultural, environmental, and health indicators between the two countries in order to determine which state has the higher level of food security. By incorporating multiple types of policy as well as all four aspects of food security, I hope to provide a comprehensive holistic depiction of the relationship between policy and food security.

In order to assess the above concepts, I will be conducting in-depth case analyses of India and Viet Nam and comparing their situations using data and research from the past decade. These states were selected based on the fact that they have very similar agricultural sectors in terms of size relative to GDP and proportion of citizen employment. They also share many major concerns such as the desire for economic development and climate change issues that impact their food security. However, as my analysis will show, they each took a different path in the pursuit of food security. India has traditionally been considered home to the Green Revolution and followed a traditional liberal market development strategy. On the other hand, Viet Nam has taken a state-regulation approach. The government heavily regulates the agricultural sector. In addition, Viet Nam places a large emphasis on subsistence and small farmers rather than large industrial agriculture. Viet Nam also stresses the importance of environmental sustainability. These two cases make for an interesting contrast in approaches to attaining food security.

However, I think that these approaches will prove to have two very different outcomes. Based on the above arguments concerning different agricultural development paths, it is my hypothesis that (1) Viet Nam will demonstrate a more food secure state based on the four criteria already discussed. Also, (2) I believe that Viet Nam's policy emphasis on farmers and community-based implementation allows them to more efficiently address food insecurity than macro-level approaches. Finally, (3) Viet Nam's attention to sustainability and self-sufficiency within the state help to insulate it from climate change variations and international market risks. The emphasis on sustainability also ensures future food security and leads to more stable food security situations that see

less fluctuation in food availability. For these reasons, I expect to find more indications of success in the case of Viet Nam than in India. It is important to note however, that it is not within the scope of this paper to make causal arguments regarding the relationship between any one policy and food security outcome. Rather, the purpose of this paper is to illustrate differences between similar agroeconomic sectors through the use of policy analysis in order to determine possible relationships that could serve as directions for future research.

In order to evaluate these hypotheses, the following chapter will illustrate Viet Nam's history and policy climate as well as the current state of food security. The third chapter will then examine the same concepts within the case of India. The fourth and final chapter will compare the two cases and discuss what conclusions can be made, whether or not there are any policy implications, and where future research could go to further develop strategies for food security. In doing so I hope to provide some insight into the many ways in which states address the issue of food insecurity and highlight some of the major strategies that are available.

Chapter 2: The Socialist Republic of Viet Nam

Before analyzing Viet Nam's policy decisions and the resulting impact on food security, it is important to have a general understanding of the context in which these processes are taking place. Policy choices are not made within a black-box state system void of any other mitigating factors. Rather, Viet Nam has a unique history and development path and these factors influence not only what policy decisions the government makes but also how they are implemented and what types of situations result. Therefore, in order to more fully investigate the relationship between policy and food security in Viet Nam this chapter will begin with an overview of the state. The following section will provide an account of Viet Nam's history, as well as important geographical, environmental, political and economic information that will aid in the evaluation of both policy and food security. The analysis will then turn to policy made by Viet Nam that has affected food security including economic, agricultural, land, and food related decisions. Next the chapter will survey the resulting food security situation including aspects of overall hunger, nutrition and health, environmental sustainability, and economic development. Finally, the chapter will conclude with an assessment of the relationship between Viet Nam's policy decisions and food security.

Overview

History. The history of the Socialist Republic of Viet Nam has been characterized by colonization and the struggle for independence. As stated in the preamble of the constitution,

The Vietnamese people have worked hard and creatively and fought valiantly to build and safeguard their country, in the nation's tradition of unity, humanity and of staunch and indomitable struggle has been forged and its cultural heritage built and nurtured. (Socialist Republic of Viet Nam, 1992, Preamble)

Viet Nam was first invaded by France in 1858 and conquered in 1884. Three years later the country officially became a part of French Indochina. After World War II, Viet Nam declared independence. However, France continued to control the territory until Ho Chi Minh and the Communist forces took control in 1954. This attempt at independence temporarily split the country into a Communist North Viet Nam and the anti-Communist South Viet Nam which led to the involvement of the United States. In 1973, the United States withdrew under a cease-fire agreement and two years later the country was united as a single communist state (Central Intelligence Agency (CIA), 2012).

Today, Viet Nam is a densely populated country of about 90.5 million people of “various ethnic communities” as of July 2011 (Socialist Republic of Viet Nam, 1992, Chapter 1 Article 5). Over the past 30 years, Viet Nam has struggled to recover from the war as well as the loss of Soviet support with the collapse of the Soviet Union. The country has also dealt with the difficulties of a rigid central economy while simultaneously seeking to develop and become a middle-income country. As following sections will show, Viet Nam’s unique path to becoming a state has greatly influenced how the government operates (CIA, 2012).

Geography and Climate. Viet Nam is a Southeast Asian country slightly larger than New Mexico that stretches longitudinally along the South China Sea. It shares borders with China, Laos, and Cambodia. Flat deltas exist in the North and South along the coast. The northern part of the state is characterized by mountains and hills and the center of the country is mainly highlands. The land is characterized mainly by forests and wetlands which both include “a high level of endemism” and diversity (The World Bank, 2011e, p.1). The variety of terrain in Viet Nam provides many different resources and

creates an environment suitable for many different types of activities. Viet Nam's climate is also quite varied. The southern parts of the country are very tropical and wet. The North experiences monsoonal patterns characterized by a hot rainy season and a mild dry season. The climate variations within the territory also help to encourage a diverse array of naturally occurring flora and fauna as well as many different areas suitable for a variety of crops.

However, due to many factors Viet Nam is also particularly susceptible to climate change effects. Its coastal location leaves it open to violent and unpredictable typhoons which may become increasing common due to changes in sea temperatures and weather patterns. In addition, the monsoons which have generally been relied upon for seasonal flooding and rice paddy production may become increasingly irregular leading to unpredictable, damaging floods in some areas and drought in others. Sea level rise could reduce total land area as well as portions of agricultural land. (Chaudhry & Ruyschaer, 2008)

Politics. After unification following war with the United States, Viet Nam became a "centrally planned communist states" (The World Bank, 2011b, p.1). The country is divided into 58 provinces and 5 municipalities. The current constitution was approved on April 15th, 1992 but has been amended as recently as December of 2001 (Socialist Republic of Viet Nam, 1992). While the local governments were practically irrelevant for the first years of the state's independence, the Viet Nam government began making reforms in the 1980s. Politically speaking, the Communist Party members continue to "maintain control on political expression" (CIA, 2012). However, due to increasing economic liberalization, there has been a "creation of a subnational

government framework” in which “provinces have greater power and authority over lower levels” of government (The World Bank, 2011b, p.1). Most of this authority is concentrated in the economic sector and includes important roles in “agriculture, forestry, irrigation, fisheries, power, water, education, and health” (The World Bank, 2011b, p.1). These political reforms have occurred partly in response to popular outcry for more political participation though Viet Nam is still a one party state. Time will tell if Viet Nam’s increasing role in the global economy will lead to a more open political structure or if it will follow in the footsteps of China and remain relatively closed.

Economy. Movement away from a central communist economy began in earnest in 1986 with the enactment of the Doi Moi policy. These were huge reforms of almost every sector of the Vietnamese government and economy that opened it up to the world and created a socialist-market system. This led to “increased economic liberalisation and enacted structural reforms needed to modernize the economy and to produce more competitive, export driven industries” (CIA, 2012, p.1). For instance, following the Doi Moi, the state relinquished control of most of the manufacturing and service industries to private markets. Currently, the economy is still dominated by state-owned enterprises but the government is trying to promote more liberal market reforms especially in the industrial and service sectors which currently employ just under half of the country’s labor force (CIA, 2012). The other half of the working population is employed in agriculture.

Viet Nam imported an estimated \$103.7 billion worth of goods in 2011 which consisted mainly of machinery, petrol products, raw clothing materials, electronics and automobiles. Viet Nam also exported almost \$97 billion that same year in the form of

clothing, rice, and manufactured goods. In regards to the population, GDP per capita was estimated to be \$3,300 as of 2011 with just under 11% of the population below the poverty line. Most of the poorest segments in the population of Viet Nam are made up of ethnic minority groups, those living in remote uplands, those affected by climatic events, migrants, the disabled, the landless and households headed by women (The World Bank, 2008a). Poverty continues to be one of the main stumbling blocks on Viet Nam's path to development.

Agriculture and Food. For different reasons, many people consider agriculture to be “the most important sector in the Vietnamese economy” (Tin et al., 2010, p.230). During colonization, the agricultural sector focused mainly on rice monoculture in the delta regions for the purpose of export (Smith & Le, 2008, p.178). After independence, Viet Nam pursued state-led agriculture, which is common to development strategies in Asia. Economic restructuring and collectivization have altered the structure of the agricultural sector in recent years. Cooperatives which originally ran production have “changed their function from the direct orientation of production to supplying services to their members” such as “irrigation, electricity, and inputs delivery” (Moustier, Phan, Dao, Vu, & Nguyen, 2010, p.70). Today, typical farms are small and run by either single families or communities.

The main product of the agricultural sector in Viet Nam is paddy rice which “has played an important role in food security, rural employment, and foreign exchange in Vietnam” (Yu, Ahu, Breisinger, & Nguyen, 2010, p.1). In fact, over two thirds of rural employment and three fourths of agricultural area are devoted to paddy rice (Yu et al., 2010). Rice comprises 90% of staple food consumption in Viet Nam (McPherson, 2011).

It is by far the most important crop produced in the country. Until the 1980s, Viet Nam was a net importer of rice. Since the economic reform, the state is now the second-largest rice exporter in the world behind Thailand (Yu et al., 2010). As the following sections will show, the importance of rice for the Vietnamese people has shaped how the government has approached policy related to food and agriculture.

Policy

According to McPherson (2011), “public policy is reflected in what governments do rather than what they say they do” (p. 5). With this in mind, the policy actions taken by the government in Viet Nam demonstrate the “priority the government gives to improving the living standards in the poorest parts of the country” (Castella et al., 2006, p.115). In fact, Viet Nam “has an extensive social security and safety net system by poor country standards” (The World Bank, 2007). This system of protection has evolved since decollectivization under the introduction of Doi Moi which began the implementation of numerous locally implemented initiatives (The World Bank, 2007). The government has also created many programs for the “mobilization and empowerment of diffuse, inarticulate and poorly organized rural producers into collective actors” in order to give them a voice within the policy making process (Castella et al., 2006, p.121). However, as Viet Nam continues to liberalize the industrial and service sectors of its economy, the problem of balance between “how much market; how much socialism” begins to shape what types of policies are continuing to be made and what their results look like.

Economic Policy. As stated in the constitution, it is the role of the state to build “an independent and self-reliant economy through promoting internal strength, [and] actively integrating into the world’s economy” (The Socialist Republic of Viet Nam,

1992, Chapter 2 Article 15). In addition, the constitution claims that the structure of the economy must be based on the ownership by the entire people as well as collective and private ownership. The state pursues this by striving for liberalized private sector production in the service and manufacturing industries while still promoting the development of the household economy (The Socialist Republic of Viet Nam, 1992, Chapter 2 Article 21). However, economic growth is not a solitary goal for the government. In response to high inflation in 2011, the government has “shifted its focus away from economic growth to stabilizing the economy” (CIA, 2012, p.7). Viet Nam has also been characterized by “widespread practices of promoting social solidarity and a relatively egalitarian distribution of wealth and income” (The World Bank, 2008c, p.1). Therefore, the policy focus in Viet Nam is not centered on economic growth. Instead it seeks to embrace a balance between growth, stability, and equality.

In order to achieve these simultaneous goals, the government of Viet Nam has developed a unique “socialist market-oriented economy” (The World Bank, 2007, p.1). In doing so, policy has encouraged investment in the private sector to which much of the country’s growth is attributed (The World Bank, 2008b). However, rather than dismantle the state sector in the wake of the new vibrant private sector, the government simply restructured the state sector for different types of activities (generally public goods related i.e. healthcare, utilities, etc.). As part of the reforms, the Communist government adopted a new policy of openness and transparency through the State Budget Law in 2004. This law made it mandatory for the state to disclose the national budget to the public. In addition, the National Assembly must approve the budget and judge how much money is allocated to local levels of government (The World Bank, 2008b). A resolution

comprised of 12 major policies made in the late 1980s was designed to strengthen renovation across three important economic sectors- agriculture, consumer goods, and exports (Socialist Republic of Viet Nam, 2012b). More recently, the state has emphasized strategies based “socio-economic stability and development” and maintaining a “high and sustainable economic growth rate” (Socialist Republic of Viet Nam, 2012b). The government has also expressed a d to enhance market stabilization in order to limit the impact from sudden price shocks. (Socialist Republic of Viet Nam, 2012a). These actions illustrate Viet Nam’s cautious transition from a centralized communist state to a socialist-market economy as well as their desire to create equal and stable growth across multiple sectors.

Agricultural Policy. Unlike liberal economic theorists who saw the agricultural sector as either an impediment or unimportant labor pool, Viet Nam has “recognized the unique, vital contribution of agriculture to economic modernization and growth” (Smith & Le, 2008, p.177). Because of this, the government has been very careful and deliberate during the process of liberalizing the formerly socialist agricultural sector.

Decollectivization of the agricultural sector began in the early 1990’s, but rather than open up the sector to foreign investment or sell of the land to large companies, the state took a “smallholder agricultural intensification path” (Meyfroidt & Lambin 2008, p.182). Resolution 10-NQ/TW made cooperative families economic entities and gave them rights to their lands and its yields (Socialist Republic of Viet Nam, 2012b). Not only has the state allocated agricultural land to small individual and community farms, but it has also developed many policies to improve the production capacity and purchasing power of those small farms.

For instance, Party General Secretary Nguynen Phu Trong has met with several farmers associations to facilitate the implementation of Resolution 26 which promotes information dissemination between farmers (Ministry of Agriculture and Rural Development, 2011a). The government has also taken steps to improve farmer access to markets via technology and infrastructure (The World Bank, 2011d). The state is also participating in the FAO's National Medium Term Priority Framework which seeks to "promote equitable sustainable sector growth through improved productivity, competitiveness and enhanced product quality" (World Bank, 2011d). One way the state is attempting to accomplish these same goals at the local level is through farmer field schools (FFS). These schools focus on local level participatory teaching of farmer skills and technology in order to enhance "human capital in the context of upgrading knowledge, enhancing skills, decision-making and experimentation" (Tin et al., 2010, p.231). The hope is that this personal, informal education system will provide necessary skills and tools to the impoverished rural farmers that will allow them to increase productivity with little financial investment. While it may appear to be antithetical to their overall goal of liberalization, the continued focus of the state in the agricultural sector demonstrates their desire to actively promote equality and sustainability within the agricultural sector in particular rather than directly open it up to global markets.

Land Policy. According to McPherson "in Vietnam, food security is directly linked to land policy" and since the mid-1980s, there have been over 600 laws, decrees, and directives regarding land in the state (McPherson, 2011, p.1). Chapter II Article 18 of the constitution states that "land is allocated by the State to organizations and individuals for stable long-term use" and that those "who use the land are duty-bound to ensure its

protection, replenishment, rational exploitation and economical utilization” (The Socialist Republic of Viet Nam, 1992). After the beginning of the economic reforms, land collectives were dismantled. However, the idea of stewardship- the people of the state being allocated land to care for- is one of the stronger socialist remnants of the past central communist system that is present in their current land policies. While the state has distributed most of the land, it also enforces state regulations on the use of that land, “the appropriation of natural resources and on environmental protection” (The Socialist Republic of Viet Nam, 1992, Chapter 2 Article 29). This has led to the adoption of land policy that seeks to maximize the individual use of allocated lands while at the same time protecting the integrity of the territory as a whole.

Following decollectivization, there was a transfer of 800,000 hectares of land to about two million households (Smith & Le, 2008). Some of this land was forested areas that had experienced high levels of degradation during the period of collectivization. The 1993 Land Law distributed forested land to households along with the rights to the land such as “the right to grow crops during the first years of forest regrowth and collect forest products” (Meyfroidt & Lambin, 2008, p.184). In return for protecting the land, households often received additional small cash payments. Rice paddy land was also allocated to individuals and households for their own production uses as well as the production of food for the state (Meyfroidt & Lambin, 2008). This land tenure policy allowed individuals, households, and communities to utilize land in the most effective way for their own needs while at the same time giving them the incentive to participate in sustainable resource management. The government stresses this idea of environmental protection, noting that special attention needs to be paid to issues such as soil

degradation, water conservation, coastal environments, pollution, and biodiversity (Socialist Republic of Viet Nam, 2012b). In addition, they explain their strategy in terms of decreasing vulnerability to natural disasters and changes as well as increasing production through technologies tailored to specific environments (International Cooperation Department, 2007a & 2007b). Environmental sustainability seems to be a large factor in how the state allocates and utilizes land.

Food Policy. In addition to policy regarding the economy, land, and agriculture the government explicitly addresses food issues in many ways. One of the biggest roles the state plays in food security in Viet Nam is its commitment to rice self-sufficiency. In 2007, the Party's Central committee stated it would maintain control of rice production in order to create sustainable food security for the entire country (McPherson, 2011). In fact, other industrial or cash crops only make up about 20 percent of agricultural production (The World Bank, 2011d). The state plans to further expand rice cultivation by 100,000 hectares in hopes of continuing to support its growing population (Ministry of Agriculture and Rural Development, 2011b). This policy is part of a master strategy that seeks to establish a plan for rice production until 2020 and looks ahead into 2030 (Ministry of Agriculture and Rural Development, 2011b). In this way, the state has been very proactive in establishing food security rather than relying of free markets to provide food security through enhanced purchasing power. Together with economic, agricultural and land policy, this focus on food has shaped many of the ways in which the state operates in Viet Nam and the food security situation that results from those actions.

Food Security

As discussed in the previous chapter, food security is a multi-faceted issue. It involves not only the existence of food stuffs, but also their distribution and ability to be accessed through purchase or allocation. It also involves environmentally sustainable production of food in order to ensure that present day food needs are not met at the expense of future food security and environmental wellbeing. With these important concepts in mind, the following section will explore the current food security situation in Viet Nam in several different contexts. First it will examine the overall prevalence of hunger and food shortages as the most basic indicators of food insecurity and overall health and nutrition of the population. Next, the environmental consequences of Viet Nam's food system will be analyzed. Finally, this section will conclude with an assessment of economic development and how it is affecting food security.

Hunger and Health. During the 1980's Viet Nam was a net importer of food and the state was characterized by experiences of chronic food shortages (The World Bank, 2011d). However, today Viet Nam is the one of the largest exporters of rice in the world (The World Bank, 2008b). Viet Nam is completely self-sufficient in rice, which makes up approximately 90% of the Vietnamese diet (McPherson, 2011). Viet Nam has also received recognition from the World Bank (2007) "for making good progress towards reaching both the targets of the World Food Summit and Millenium Development Goals". While the existence of adequate food within the state is not in and of itself a testament to the food security of individuals, the health and nutrition indicators support the assessment that Viet Nam is drastically improving food security for its population.

For example, in just over a decade the state managed to halve the number of underweight children in the population. In 1990 that percentage was 37% yet it fell to 20% by 2000 (McPherson, 2011). That puts Viet Nam at 36th in world percentage of underweight children (CIA, 2012). The country has also significantly decreased the number of malnourished. It is currently estimated that there are about 9.6 million malnourished people in Viet Nam (11% of the population) which is down from 13.3 million since 2002 despite a growing population (The World Bank, 2007). According to the World Bank (2008c), “Vietnam has achieved levels in basic health indicators that are remarkably better than other developing countries with similar or even higher per capita incomes” (p. 1). Even infant mortality rates and life expectancy are “at par with richer countries like China and Thailand” (The World Bank, 2007, p.1). These feats have been accomplished through an emphasis on agricultural land reform, equitable land distribution, investment in irrigation, and protection of the domestic rice industry through export restrictions (Integrated Regional Information Networks, 2012).

One indicator that may be misleading is the Human Development Index. The HDI incorporates health, education, and income to establish a measure for overall well-being within a state. Viet Nam’s HDI is slightly below the regional average. However, when the HDI is broken down into composite parts, the health indicators are far above the education and income factors and overall HDI. The low income could be attributed to the strong socialist tradition within Viet Nam where state provision of goods negated the need for purchasing power. In any case, the lower education and income variables bring down the HDI for Viet Nam and fail to represent the achievement it has made in regards to health. While many other factors such as healthcare and income also affect these health

indicators, the improvements demonstrated would not have been possible without adequate nutrition through food security. (United Nations Development Programme (UNDP), 2011b).

Environmental Sustainability. As discussed in the previous sections, Viet Nam is fairly susceptible to many effects of climate change including “harsh natural conditions and frequent natural disasters” (World Bank, 2008a, p.1). Due to economic growth over recent years, the state has seen rapid increases in industrialization and urbanization. These processes have led to an increased use of natural resources and have “created significant pressures for the environment” (The World Bank, 2011e, p.1). As a result, the environmental conditions in some areas are deteriorating. Conditions such as these can have negative impacts on food security through the loss of arable land and changes in temperature and rainfall patterns. If these changes are not addressed, Viet Nam could struggle to continue its successful path towards food security.

As of now, the state policies of land allocation and management seem to be making some headway. As McPherson (2011) notes, “environmental sustainability and land management are closely connected” (p.2). Through the current policies the state “provides incentives for a sound management of allocated land” and the people are able to produce food for subsistence or for sale to add to their purchasing power (Meyfroidt & Lambin, 2008, p.191). As a result, not only is Viet Nam seeing results in terms of food security, but also in regards to environmental preservation. Some states in Viet Nam have been able to stop deforestation and actually increase forest cover in some areas, an achievement that few tropical countries have been able to attain (Meyfroidt & Lambin, 2008). In order to make the most improvements with as few resources as possible, the

government has implemented similar policies “designed to target less-develop regions and vulnerable populations” by increasing productivity of available land and these “have proven an effective measure to augment rice yields” (Yu et al., 2010, p.18). For the time being, it appears that Viet Nam’s policies are able to balance the importance of food security for today with environmental sustainability and food security for the future.

Economic Development. According to the World Bank (2007, 2008b), Viet Nam has “succeeded in translating economic growth into poverty reduction in recent years” (p. 1) and has been “one of the most spectacular success stories in economic development” (p.1). In fact, Viet Nam has been one of the best performing economies in the last ten years despite disease epidemics, climate events, inflation, global trading disputes, and high prices (The World Bank, 2008b). Exports have been the main area of growth, particularly in the industrial sector which increased from 29 to 41% from 1995 to present day (The World Bank, 2008b; CIA, 2012). While Viet Nam does currently have a level of public debt at 42% of their GDP, this level is “moderate and is considered to be sustainable” (The World Bank, 2008b, p.3). In addition, the poverty rate in Viet Nam fell from 28.1% in 1993 to 16% in 2006 and is now down even further to 10.6% (The World Bank, 2008b; CIA, 2012). The decline in deep poverty has been attributed to the adoption of policies that “create jobs to meet the challenge of a labor force that is growing by more than one million people every year” (CIA, 2012,. p7).

In regards to agriculture, growth has continued at about 4% per year and is “partly due to policy reforms including ongoing impacts of allocating land use rights to individuals” (The World Bank, 2011d, p.2). This is partly because of the “institutional restructuring that created incentives to invest and enhance productivity in a market

oriented economy” (The World Bank, 2008a, p.1). The increase in “agricultural output contributed greatly to improved household income:” (The World Bank, 2008a, p.1) and as a result, the household poverty rate is now below 10% (Ministry of Agriculture and Rural Development, 2010). In addition, the land policies which transferred the collectives to household units have “been fundamental in minimizing poverty and maintaining an egalitarian livelihood system” (Smith & Le, 2008, p.180).

In light of this evidence, it seems that policy decisions in Viet Nam have had great success in transitioning from a central communist economy to a liberalized, export oriented market system. Not only are they seeing economic growth which is improving the purchasing power of the population (which positively affects food security), but they are also doing so in a way that does not compromise the agricultural sector and the state’s priority on being self-sufficient in food production. In this way, Viet Nam remains insulated from food market price fluctuations and scarcities. They are able to pursue development and a globalized economy without sacrificing the most basic needs of the people by making a distinction between the policies made for agriculture and other industries.

Analysis

The previous sections illustrate the complex political, social, and economic activities that are taking place in Viet Nam. Since the beginning of economic reforms in the 1980s, the state has been characterized by the dual desires of becoming a middle income country integrated into the global economy and maintaining its socialist ideals of equality and state self-sufficiency, particularly in terms of agriculture and food security. As the above evidence illustrates, Viet Nam appears to be successful at this point in time.

Not only has the state been able to greatly reduce the number of hungry and malnourished in their population, but they have also made great strides on the path to economic development especially in their service and industrial sectors. However, this achievement “was not due to a single process or policy but to a combination of economic and political responses” (Meyfroidt & Lambin, 2008, 194). It is not only their commitment to liberalizing their economy but also locally implemented participatory approaches that have created their stable and sustainable development. Approaches that “increase the community knowledge base, promote agricultural practices which are compatible with the environment, and develop awareness in policy-makers, authorities and service providers” have allowed Viet Nam to develop economically without compromising the food security of portions of its population (Castella et al., 2006, p.111).

Strategies. According to Smith and Le (2008), the “large agrarian sector of Vietnam’s market-socialist transition economy remains a paradoxical incoherent and unintegrated social system of production” (p. 187). Some scholars feel that these elements are “inconsistent with the development trajectory of other rapidly growing” states (McPherson, 2011, p.5). While that may be true in terms of classical economics, Viet Nam’s agricultural policy is nothing if not intentional. The state’s desire to maintain socialist policy elements can be found within the constitution itself. In Article 8 of Chapter 1, the state expresses its desire to “maintain close ties with the public opinions of the people and accept their supervision” (The Socialist Republic of Viet Nam, 1992). This focus on the general masses of the population has shaped Vietnamese policy to reflect a preference for the populous over industry.

This can be seen in the dominance of micro-level approaches such as farmer field schools and the “integrated approach to innovations [that] shifts attention to feed back and upwards communication from farmers” (Castella et al., 2006, p.111). Rather than rely solely on market economics to guide the country to development, Viet Nam has pursued hybrid strategy by which the state incorporates liberalization in some sectors while protecting those like agriculture. By doing so, the state ensures that agricultural production and by extrapolation food security are not at the mercy of market prices and overseas supplies. Therefore, the overall strategy of Viet Nam’s development seems to be bifurcated. On one hand, the state is pursuing the liberalization of the service and industrial sectors of the economy to increase purchasing power. At the same time, the state is taking a locally focused, farmer based, bottom up approach to the agricultural sector in order to ensure national food security and environmental sustainability.

Trade-offs. It is important to note that in choosing to pursue these particular policies, the state is also choosing to *not* pursue other options. As with any decision, Viet Nam’s policy choices involve trade-offs. For instance, those who would recommend liberalizing and industrializing the agricultural sector point out that Viet Nam has an “ecologically-based comparative advantage in rice production” (Smith & Le, 2008, p.179). McPherson (2011) claims that the state’s failure to industrialize agriculture “is inefficient because it locks land and other resources...into a low-value use” (p.3). Instead, it is suggested that agricultural land be converted into industrial parks (McPherson, 2011). In addition, rather than pursue rice self-sufficiency, Viet Nam could import rice from neighboring Cambodia and create a more intense competitive market (McPherson, 2011). These policy choices would have created more economically

efficient outcomes than those actually put in place. In this way, the argument focuses on the economic access part of food security and claims that establishing reliable economic access will alleviate food insecurity.

However, it appears that Viet Nam and its citizens may simply not see economic efficiency as the highest priority. As illustrated previously, the state seeks to create stability, equality, and growth simultaneously. If these are in fact the overarching goals of the state, it could be considered quite 'efficient' to set aside more aggressive economic policies in favor of developing a stable egalitarian society. As will be shown in the case of India, industrialization of the agricultural sector does not always result in economic prosperity. In fact, it can also create inequalities and volatility. Also, the above concepts of 'efficiency' appear to be short-sighted ones. As Keil, Saint-Macary, and Zeller (2011) point out, there is a "trade-off between wealth enhancing effects of intensive commercial agriculture and adverse long-term effects on farmers livelihoods due to natural resource degradation" (p.1). What may seem inefficient for the time being may prove to be the best policy choice in the long run.

Finally, the citizens themselves seem to demonstrate a preference for self-sustained food security over economic advancement. In a study conducted by Keil et al. (2011), it was found that household farms preferred to produce paddy rice over commercial maize. In fact, the more literate households (presumably the more educated) produced the least amounts of commercial maize. It appeared that the farmers "view it as too risky to rely on rice markets for the acquisition of their major food crop and are willing to pay a considerable risk premium...for ensuring food security through home-produced rice" (Keil et al., 2011, p.10). Therefore, the portions of the rural farming

populations that have the most access to information and are able to make the most well rounded decision show a preference for food security through self-sufficiency over economic access. Seeking sustainable food security at the expense of economic development may not sound like very good economic policy, but it is an excellent survival strategy.

Future Difficulties. Despite its recent successes, the feasibility of Viet Nam's food security policy may encounter many more difficulties in coming years. As the country continues to develop rapidly it will face the changing needs of its population as well as a new set of economic goals and constraints in which to operate. Population growth and changing diets may prove to be a huge stumbling block for Viet Nam which has had fair success insuring food security for a fairly small population with a fairly simple diet. For example, "economic growth, international market integration, urbanization, and changing lifestyles are associated with transformations in the food systems of developing countries" (Mergenthaler, Weinberger, & Qaim, 2009, p.426). Diversification of diets and an increase in the consumption of meat and dairy will likely occur. So far Viet Nam has been successful at increasing food security through domestic rice production, with accounts for about 90% of the population's caloric intake. However, as food preferences change and the cultural inclusion of a wider range of foods grows, Viet Nam's strategy for providing for its citizens will have to change accordingly if it is to maintain food security.

In addition, modernization in Viet Nam is like to result in "a widening gap between urban and rural areas" (The World Bank, 2011d, p.3). Workers in other sectors of the economy are likely to benefit from increased trade and liberalization while those in

the agricultural sector risk being left behind. This is especially true because of the fact that the rural poor “have limited access to productive resources and basic financial services” (The World Bank, 2008a, p.1). If the state truly wishes to maintain food security and equality through economic development, it will have to find a way to support the agricultural sector that does not compromise food security or create economic inequalities. These are serious problems that are beginning to arise and will require adequate and timely attention if Viet Nam’s success is to continue.

Conclusion. The ways in which Viet Nam will proceed in terms of development and food security have yet to be determined. Many changes will take place as the country becomes more involved in the ever-altering global system. As for the current situation, Viet Nam seems to be adequately maintaining food security at relatively high levels while simultaneously achieving economic growth. While the state has adopted liberal economic policy in some sectors, it has not allowed large industry and market access to their vital agricultural sector. In addition, the policies aimed at implementing local, farmer oriented approaches to agriculture have not only supported self-sufficiency in rice production now, but have also proved to promote environmental sustainability thus ensuring future food security as well. In this way, Viet Nam has refused to adopt a ‘one-size fits all’ approach to their economy. Through this unique, multi-faceted approach, the state has managed to actively pursue its three-fold goal of achieving growth, equality and sustainability.

Chapter 3: The Republic of India

The previous chapter demonstrated Viet Nam's unique food security situation and the policies and processes that led up to the present state. In order to offer an additional parallel perspective on the issue, this chapter will examine the same elements within the context of the state of India. As the analysis will show, India has experienced different results in their path to food security than Viet Nam. In order to better understand the underlying policies and processes that influence food security, this investigation of India will explore the same facets of policy and food security as the previous chapter. The following section will provide an account of India's history, as well as important geographical, environmental, political and economic information that will aid in the evaluation of both policy and food security. The analysis will then turn to policy made by India that has affected food security including economic, agricultural, land, and food related decisions. Next the chapter will survey the resulting food security situation including aspects of overall hunger, nutrition and health, environmental sustainability, and economic development. Finally, the chapter will conclude with an assessment of the relationship between India's policy decisions and food security. In this way, I will develop a parallel analysis between the two states, their policy choices, and their resulting food security situations in an effort to understand how policy can shape food security within a state.

Overview

History. The civilization that has populated the Indus Valley region is one of the oldest in the world today. What is generally considered to be Indian culture is actually a mix of Aryan and Dravidian peoples which came together around 1500 B.C. In more recent history, Indian peoples were exposed to Turk and Afghan cultures in the tenth and

eleventh centuries. Great Britain established power over the region by the 1800's and India remained in their control as a colony until they declared independence in 1947 (CIA, 2011).

India is currently the second largest population in the world at about 1.2 billion in July of 2011 (CIA, 2011). The state is made up of many ethnic groups, languages and religions. In addition to this diversity are the remnants of the caste system that was formally abolished by Article 15 of the Constitution of India (Republic of India, 1950). These many levels of diversity and division within the population have led to civil unrest in many parts of the country over the years. As one of the largest and fastest growing countries in the world today, India faces many unique challenges and situations on its path to development.

Geography and Climate. The state of India is roughly the size of one third of the United States. It is bordered by Bangladesh, Burma, China, Nepal and Pakistan as well as the Arabian Sea and Bay of Bengal. The Deccan Plateau in the south creates an upland plain while the north is characterized by the Himalayan Mountains. The Ganges River flows through the eastern part of the country and is an important cultural and religious symbol as well as a source of water. The west of the country is primarily desert. In addition to the array of landforms, India also experiences varied climate with tropical monsoons in the south and more temperate areas in the north. Like Viet Nam, these geographical and climate variations provide for a diverse ecological activities (CIA, 2011).

Also similar to Viet Nam, India faces many climate related problems. Common natural hazards for the area include droughts, floods and earthquakes. Climate change is

likely to alter these processes by creating less predictable monsoon seasons and more severe flooding and droughts. Rising sea levels will also have an impact on India due to its 4,350 miles of coastline. The implications for these issues in relation to food security will be discussed in more detail in later sections.

Politics. India is currently identified as the world's largest democracy (World Bank, 2011c). Since it declared independence from Great Britain in 1947 it has operated under democratic elections held between over forty different political parties in a parliamentary system of government (Republic of India, 2011). Due to the number of parties, no one coalition has developed an overly strong influence on domestic politics. In addition, the country operates through a federal system in which it is subdivided into twenty-eight states which have a certain amount of local power and self determination not unlike the United States (CIA, 2011). Together, the decentralization of the government and the large number of participating parties have created a certain lack of cohesion within the country. Many laws, policies and programs are implemented and overseen differently depending on the local government. While this is not in and of itself problematic as far as government is concerned, it does make it more difficult to analyze the country as a single unit.

Economy. During colonization, India's economy was based primarily around the export of raw materials into the British markets. Since independence, India has been developing into an open-market economy (CIA, 2011). Extensive trade liberalization measures began in the early 1990's with help from the World Trade Organization, the World Bank, and the International Monetary Fund. (Dorosh, 2001; Shiva, 2004). Services, though they make up only one-third of the labor force, are the fastest growing

sector and account for more than half of India's economic output (CIA, 2011). On the other hand, agriculture employs slightly over half of the working population (CIA, 2011). India primarily exports information technology services and software workers, as well as petroleum products, precious stones, chemicals, iron, and steel, among other things. Their GDP is now at \$4.06 trillion and the fifth largest economy in the world . However, their GDP per capita is at \$3,500 with 25% of their population below the poverty line. Widespread poverty is one of the long term challenges India is facing despite its rapid economic growth in recent years (CIA, 2011).

Agriculture and Food. The country of India has developed with “agriculture at the heart of its economy” (Shiva, 2004, p.715). After independence, the government developed a procurement and public distribution system in order to ensure production of food, just wages, and availability for consumers (Shiva, 2004). As the next section will show, many of these strategies were coupled with land and agricultural policy. While some of these institutions have been altered through market participation and trade, agriculture continues to play a vital role in the state.

Today agriculture provides a livelihood for more than 59% of the population and has created one of the world's largest agrarian economies (Department of Agriculture and Cooperation, 2011). India's agricultural sector produces rice, wheat, oilseed, cotton, tea, sugar, and a variety of other products for export as well as domestic consumption (CIA, 2011). Consumption of agricultural products has begun to change in India as well. Diets are becoming increasingly varied and there is a growing demand for dairy and meat products, with overall food consumption expanding rapidly (Demeke, Pangrazio, &

Maetz, 2008). These changing preferences and growing demand will shape how India approaches future food security.

Policy

According to the government of India, “the Constitution lays down certain Directive Principles of State Policy, which though not justiciable, are 'fundamental in governance of the country', and it is the duty of the State to apply these principles in making laws” (Republic of India, 2010). These principles outline the basic focal points of government activity within the state. They include the promotion of welfare, public order, justice in the social, economic and political sense, right to a livelihood, and public assistance among others (Republic of India, 2010). The following section will describe the ways in which the state of India has pursued these goals by looking at economic, agricultural, land and food policy. In this way, this paper will juxtapose India’s unique policies, strategies, and frameworks with those of Viet Nam that were explore in the previous chapter.

Economic Policy. As was noted by Headey and Fan (2008) many of the impoverished people in India “depend upon food production for their livelihood, and virtually all poor people spend large portions of their household income on food” (p. 375). Therefore, economic policy is not only important for how it shapes food production, but is also fundamental to providing access and purchasing power for food through wages and livelihoods. Over the past years, a particular set of economic policies and principles-liberalization, stabilization, and structural adjustment- have had a dramatic impact on the economic develop of countries such as India (Patnaik, 1996). Many of these policies were also remnants of the Green Revolution and appear to have “succeeded

in transforming India from a large food importer and larger recipient of food aid” into a food exporter (Larson, Jones, Pannu, & Sheokand, 2004, p.257). Going forward, the state of India hopes to “make India a major player in the world trade by 2020 and assume a role of leadership in the international trade organizations commensurate with India’s growing importance” (Department of Commerce, 2011, p.1).

In order to accomplish this feat, the state of India has enacted several policy measures over the years. Most of the policy measures have been in line with the set of policies mentioned above. India has strived to create more open markets, to diversify their exports, increase productivity, and maintain competitive activities in its flourishing sectors such as services and technologies (Department of Commerce, 2010). The overarching policies that India generally favors revolve around “increased reliance on the market—both domestic and international—on the ground that this reliance would increase efficiency” (Demeke et al., 2008). Because of this stance, the role of the government in setting prices and maintaining subsidies had actually decreased due to the measures being considered “market distorting” (Shiva, 2004, .p725). However, due to volatile world markets and prices in the last decade, the state has had to take additional policy measures to maintain growth and stability. When prices of essential commodities began rising in 2006, the state took measures to augment supplies and stabilize the prices (Demeke et al., 2008; Ministry of Consumer Affairs, 2011). The two most common methods of intervention in India were releasing public stocks and providing subsidies to consumers, such as subsidized food (Demeke et al., 2008). Therefore, what was once a generally cohesive economic policy strategy has been modified in recent years in order to deal with global market crises.

Agricultural Policy. In line with the above liberal economic policies, agricultural policy in India has been characterized by “a progressive withdrawal of the state from the food and agriculture sector, on the ground that the private sector was more efficient from an economic point of view” (Demeke et al., 2008, p.20). These policies were based on the underlying assumption that small farmers were less productive than larger industrial farms (Shiva, 2004). Also, small farmers had less access to costly inputs such as genetically modified seeds, fertilizers, and irrigation which were regarded as the key to increasing yields (Shiva, 2004). However, in direct contradiction to these policies is the statement made in a report by the Indian Agricultural Research Institute (2011) which credits agricultural success in the state to the millions of small farmers. This institute is an organization under the Ministry of Agriculture that was established to promote research and education in the agricultural sector of India. The same report calls for additional policies to be made at the community level rather than the continuation of broad, macro-economic policy (Indian Agricultural Research Institute, 2011). In fact, the government of India attempted to implement a \$15 billion plan to cancel small farmer debt across the country as well as establish increased farmer credit, irrigation investment, and subsidies (Demeke et al., 2008). This focus on small farmers seems to be an abrupt about-face in policy focus.

Whether or not these contradicting policies are evidence of a change in strategy or simply competing interests is hard to discern at first glance. However, as the future sections will show, these somewhat confusing policy positions make more sense in light of the actual state of the agricultural sector. In the context of India’s current state of affairs, the diverging policies identified above seem to indicate either a shift in strategy or

an incorporation of multi-level approaches to a unique situation. Which is more accurate is not readily apparent at this time.

Land Policy. After achieving independence, India went through the largest land reform to be implemented in so short a time period (Besley & Burgess, 2000). The initial reform policies revolved primarily around land ceilings which limit the amount of land an individual entity can own, and the transfer of previous government, colonial, and public lands to both individual cultivators as well as landlords (Besley & Burgess, 2000; Banerjee & Iyer, 2005; Deininger, Jin, & Nagarajan, 2008). By most accounts, the actual implementation of these policies has been less than rigorous. For one, there was lag between the development of the policy after independence in 1947 and its implementation in the 1970s which resulted in many large landlords having time to prepare and utilize legal loopholes to avoid land ceiling restrictions (Deininger et al., 2008). In addition, the impact of the policies was “muted by unenthusiastic implementation of proposed changes” (Besley & Burgess, 2000, p.390). Many of the policies have lost popularity in favor of more liberal, market based approaches to land distribution. Critics of the original policies claim that they obstruct the rental market making access to land more difficult and leading to inefficiencies (Deininger et al., 2008). Also, the redistribution of land could result in parcels being allocated to individuals who will use it less productively than others (Deininger et al., 2008). In this way, existing land policy “limits the level of market activity and the ability of the most productive producers to access more land, thus reducing overall welfare” (Deininger et al., 2008, p.913).

Others claim the policies have been relatively effective and should either be sustained or modified to the current policy environment. Shiva (2004) points out that

areas in which land distribution is left up to market forces, many small farms and communities lose access to not only arable land, but also to natural resources and water supplies due to the concentration of property ownership by large landholders and corporations. Similarly, Besley and Burgess (2000) state that due to the inverse relationship between farm size and productivity, small farmer access to land is important. However, they also state that reforms in place are not usually able to exploit this option and should be addressed. In summation, land policy across the state of India is neither uniformly implemented nor universally agreed upon. Yet as the later sections will demonstrate, these policies are impacting food security.

Food Policy. As is noted by the Ministry of Health and Family Welfare (2010), nutrition is a vital component of the overall health and welfare of the population as well as a major point of continued focus on the part of the state. Not only does the state recognize food and nutrition as being important to public welfare, the government of India has recognized food as a human right. In 2001, the People's Union of Civil Liberties v. Union of India & Others Writ Petition No. 196, the Indian Supreme Court "explicitly established a constitutional human right to food in India" (Birchfield & Corsi, 2010, p.693). In addition, India is party to several international documents establishing a right to food (Birchfield & Corsi 2010). With this perspective in mind, India has taken several policy measures to move towards food security in the state.

The state developed the Food Corporation of India in 1965 which uses a network of government institutions and cooperatives to create a national supply of grain which is then subsidized through ration systems (Dorosh, 2001). In addition, India encourages the use of new technologies in the agricultural sector in order to increase food supplies

(Kumar, Joshi, Johansen & Asokan, 1998). As a result, India has created a food production sector that has become more input based in order to increase yields and buffer food supplies to ensure food security. In order to pursue these policies, India is a part of several international organization projects, including the Pilot Project for Developing National Food Insecurity and Vulnerability Information and Mapping with the Food and Agriculture Organization of the United Nations (FAO, 2012a). Organizations and projects like this not only providing funding to India but also help shape the strategies and approaches that are implemented.

Together, India's policies appear to be a mix of approaches. On the one hand, the state is certainly pursuing liberal, market based economics focused on increasing productivity, generating income, and boosting overall economic development. On the other hand, India still very much committed to a set of safety net type of institutions that are attempting to combat inequality, poverty and hunger. It remains unclear however if these policies are working together to achieve both goals simultaneously or if they are opposing forces that are limiting overall efficacy. The following section will investigate the impact these policies are having on different aspects of food security.

Food Security

As in the case of Viet Nam, the examination of food security in India will include several different aspects of food security. It will first look at the basic levels of hunger and malnutrition in the state to ascertain whether the population has basic physical access to enough food to sustain a healthy life. Secondly, this section will examine the environmental state of India in regards to food production and in this way evaluate whether or not present day consumption is occurring at the expense of future food

security. Finally, this section will explore levels of economic development in India and how they shape economic access to food. In so doing, the previous section of state policy positions will be juxtaposed with their actual effects within the state of India.

Hunger and Health. Despite the recognition of food as a human right, the situation in India is less than secure. As of 2011, 43.5% of India's children were malnourished, with 25% suffering from severe malnourishment (CIA, 2011; Indian Agricultural Research Institute, 2011). Twenty-one percent of the population as a whole are undernourished (FAO, 2012a). In addition, Human Development Indicator Index score is at .548, which is below the regional average (UNDP, 2011a). Like Viet Nam, low scores in education and income do negatively skew the HDI, but health itself is still a major issue for the state.

These numbers may seem surprising given India's rapid economic development and the number of policies that seem to be in support of achieving food security. However, despite a steady increase of both gross domestic product and aggregate wealth, India's rates of malnutrition and starvation remain high and in some instances nutritional intake is decreasing (Birchfield & Corsi, 2010). It appears that these discrepancies between policy and reality are due in part to implementation, or lack thereof. A severe drought in the early 2000s created instances of acute hunger and starvation deaths across the entire country. This was despite the fact that the Food Corporation of India had a surplus amount of food grain in the early 2000s (Birchfield & Corsi, 2010). While many claim that agricultural policy measures have led to increased production of food, some also say that this increase in production was paired with an increase in instability of yields (Larson et al., 2004). Therefore, even though long term production was increasing,

it was characterized by unreliability in stocks and intermittent periods of scarcity. It would appear that while the policy language has been very successful at framing food as a human rights issue, that same frame of urgency and importance has not been translated into implementation.

Environmental Sustainability. In addition, while increasing yields and food production have helped to mitigate growing hunger and malnutrition, it “has become very difficult to sustain growth due to environmental degradation” (Demeke et al., 2008, p.16). India is currently faced with a wide range of environmental problems including deforestation, soil erosion, overgrazing, desertification and pollution (CIA, 2011). Many of these problems have been created or exacerbated by agricultural activity. In turn, regions that previously experienced enhanced production and contributed to food security and self-sufficiency are now threatened by stagnating and declining productivity (Kumar et al., 1998). In many areas, stocks are not likely to grow beyond minimal target levels (Dorosh, 2001). Across many areas, productivity is declining which is increasing the need for inputs such as fertilizers and pesticides as well increased irrigation. In this way, the environment appears unable to sustain the present demand on the land.

What may be even more problematic is that these same systems may be even less able to produce food security in future years. This could be related to climatic variations that are hostile to certain crops, as well as increased water shortages. As Singh (2000) explains, India’s food production practices that have been responsible for increased yields and productivity have done so at the expense of the environment and cause continual environmental degradation. However, this degradation necessitates further intensification of production, creating a cyclical effect by which 60% of the land area was under soil

degradation by the year 2000 (Singh, 2000). Therefore, not only are agricultural practices becoming more costly and less productive in the present scope of food security, but future food security is also being compromised due to a lack of sustainable practices. These are serious issues that will need to be addressed if India wishes to continue basic production of food and agricultural commodities.

Economic Development. Despite the economic policies discussed in the previous section, 25% of the population in India is still below the poverty line and India is still home to the largest number of poor people of the world (CIA, 2011; Indian Agricultural Research Institute, 2011). The state has continued to deal with widespread poverty, as well as inequality, lack of mobility, and high food prices (CIA, 2011). In addition, the Ministry of Consumer Affairs and Public Distribution (2011) noted that agricultural share of the GDP has declined to 14.2%. Considering that agriculture provides a livelihood for more than half of the population, that kind of reduction in growth can have negative affects for food security by limiting economic access through purchasing power. Moreover, policies such as the reduction in food tariffs that were intended to combat these problems do not appear to be very effective. Food prices have not actually declined in response to these measures (Demeke et al., 2008). Subsidized food also seems to be missing the mark. During times of crisis and hunger, state food aid often fails to reach those in need despite plentiful stores. Government agricultural subsidies are available only for buffer stocks and do not appear to be improving food security (Birchfield & Corsi, 2010).

According to the Indian Agricultural Research Institute (2011) “the magic of globalization has not been felt in India” (p.14). Instead, the past decade has seen a

deceleration of growth in the agricultural sector, deceleration of yield growth within that sector, and low non-agricultural employment (Indian Agricultural Research Institute, 2011). Huge segments of India's population are stuck in a declining sector with no access to other forms of economic activity. Therefore, not only are they losing physical access to food through declining yields; they are also losing economic access to food through declining wages and employment opportunities. While India's economy is doing fairly well overall, the agricultural sector is too large ignore. Failure in this sector will have consequences for the state of India in terms of food security and beyond.

While India has had undeniable economic and development success over recent decades, the state's record in terms of food security does not appear to be as big of an accomplishment. There are still some major issues India must address in order to promote more widespread food security. Physical access needs to be increased through more productive farming practices. These practices must also be environmentally sustainable so that future food security is not compromised. And economic access must be ensured by creating an affordable food market as well as ensuring a thriving, healthy agricultural sector to provide a livelihood for over half of the population. The following section will discuss these issue areas as well as summarize the overarching concepts that characterize food security in India.

Analysis

Like most developing (and even developed) countries, the Republic of India is currently pursuing economic development and global competitiveness while at the same time trying to combat domestic issues such as poverty, inequality, and food insecurity. Accordingly, the policies discussed above have attempted to ensure both of those goals

simultaneously. India has taken measures to liberalize its economy and open up the state to foreign trade and investment. At the same time, India has developed many domestic programs to act as safety nets for the marginalized portions of its population. The state has become a prominent exporter of food products and has also developed distribution systems for subsidized food programs. India has made great strides in economic development and growth, especially in its service sector, yet over half of the population is stuck in a decaying agricultural sector and poverty and malnutrition are rampant. This is the Indian paradox- a thriving, technologically advanced world power with one of the most hungry populations in the world. How does this happen given India's focus on food security and elevation of the issue to human rights status? Why are the policies seemingly so ineffective for providing food security despite their direct attention to the problem? The following section will explore the strategies, trade-offs, and difficulties that are incorporated into India's policy decisions that shape food security.

Strategies. The underlying strategy in India's policy choices appears to be the pursuit of economic growth in order to increase purchasing power and therein access to a number of needed goods and services. The several ministries of government are heavily focused on increasing exports in order to further the state's economic development (Department of Commerce, 2010, 2011). This is a liberal approach by which increased trade and production results in increased wealth by which a state (or individual) can meet their needs at a lower opportunity cost than self-sufficiency would allow. For instance, the Ministry of Rural Development (2011) states that in order to eradicate hunger and poverty in rural areas, the state must focus on an acceleration of economic growth in those areas.

In many ways this macro-level strategy seems sensible. Birchfield and Corsi (2010) note that “being poor almost always means being deprived of full nutritional capabilities” (p. 691). It seems logical then, that in order to solve problems of hunger and malnutrition the state seeks to solve the problem of poverty. Therefore, India has taken a ‘livelihood approach’ to combating food security (Birchfield & Corsi, 2010). If poverty results in food insecurity, reducing poverty should reduce food insecurity. And what better way to reduce poverty than to boost productivity and efficiency by creating large corporations and industries that can exploit economies of scale and produce food and goods cheaper? Then those goods can be traded on global markets according to comparative advantage and the resulting profits be used to ensure food security at home. The economic thought behind such a strategy is sound. Why then are there so many hungry people in India?

Trade-offs. Like the principles of comparative advantage and economies of scale, opportunity costs come into play. The specific strategies India has chosen in order to pursue economic growth and food security are done at the expense of alternative approaches, and these trade-offs matter. For instance, high grain prices on the global market do bring more foreign exchange into the state but they also create the difficulty of reconciling those high prices with domestic markets (Demeke et al., 2008). So while increase in prices may be good for producers overall, they also result in less economic access to food for many individuals. In addition, the focus on purely economic profit as success tends to downplay the productivity of small farmers who are actually very competitive at the farm and community level (Gulati, 2008). By bypassing chains of production and supply, small farms are able to keep costs and expenses low and provide

food for themselves and others at relatively little costs. While they may not be maximizing monetary gains, they are very successful in maintaining food security while still creating some small profit. Also, the focus on macro-economic processes and emphasis on efficiency and productivity create incentives for the exploitation of environmental resources (Demeke et al., 2008). As discussed previously, these practices may lead to increased profits in the short run, but in the long run could drastically undermine food security.

There is also an incentive to use costly inputs in agriculture such as fertilizers, pesticides, and genetically modified seeds. However, due to the cost of these inputs, small farmers often do not have access which leads to the monopolization of those markets by large businesses (Demeke et al., 2008). Also, the government states that “the more rigid and rigorous the labour laws in place the more difficult it would be for industry and trade to remain internationally competitive” (Department of Commerce, 2011, p.14). Unfortunately, this can translate into a lack of employment or livable wages for employees. This creates a barrier which prevents the profits of trade from reaching the poor and marginalized populations which undermines their economic access to food and goods. The Republic of India’s policy decisions are not without their costs.

Future Difficulties. Some aspects of India’s policies, as well as their inherent trade-offs mentioned above, could create major challenges to future food security. One problem is the assumption that decreasing poverty is the best way to increase food security. It is true that decreasing poverty can have a positive effect on malnutrition by improving economic access to food. However malnutrition itself perpetuates poverty through inefficiencies in economic activities due to hunger related disease and illness

(Birchfield & Corsi, 2010). This presents the conundrum where an individual needs access to food in order to earn money, yet needs money in order to purchase food. Therefore focusing on poverty alleviation through livelihoods may not be adequate for providing food security to already hungry portions of the population. And though India does have several programs in place to provide direct hunger alleviation, the future of these safety nets is uncertain due to the state's rapidly growing population. The state currently relies primarily on subsidy programs to provide food assistance, yet the "sustainability and effectiveness of India's huge and expanding subsidy programme" is uncertain (Demeke et al., 2008, p.16). The need for the subsidies may outgrow the government's ability to supply them.

In addition, the industrial and service sectors in India have seen rapid growth which is leading to a declining share for the agriculture sector in state accounts. This decrease in public investment in agriculture is resulting in deceleration in growth. As a result, agricultural workers must turn to the private sector to supply inputs and investment. However, due to patent laws, the high costs of materials, and lack of access to credit, small and poor farms are not able to access these resources. Often times the only other option available for these marginalized populations is to work for industrial farms, yet to due to mechanization and a surplus of labor, jobs are not always available (Ministry of Consumer Affairs and Public Distribution, 2011).

Finally, some argue that the market is simply not effective in providing things like poverty reduction or food stability (Timmer, 2010). Because states like India are dependent on world markets to set prices, times of crises, shortages, and fluctuation can causes food bills to drastically increase while at the same time decreasing overall

purchasing capacity (Demeke et al., 2008). Moreover, markets are generally not good mechanisms for preventing food crisis situations because of the time it takes markets to respond to increased demands (Timmer, 2010). Though markets are important for long term improvements in productivity and livelihood access, sudden changes in supplies and prices often negatively affect agricultural workers and consumers (Timmer, 2010). Difficulties such as these will have to be addressed in order for India to experience true food security.

Conclusion. India's strategy of allowing macro-level liberal economic policies to regulate the agricultural sector like any other economic activity does not bode well for food security. It appears that a "one size fits all formula" simply does not work in the agricultural sector (Gulati, 2008). Instead of pace with the service and industrial sectors of the economy, the state of India has seen its agricultural sector begin to decline, taking over half of the population with it. As a result, India is still in a state of food insecurity and does not seem to be making progress towards correcting the issue. This could prove extremely problematic in the future given that the recent jump in food prices is suggested to have severe impacts on the already food insecure populations of the world (Headey & Fan, 2008; Timmer, 2010). While India's achievements in development are certainly laudable, they may be for naught if do not address the food insecurity that is continuing to plague their country.

Chapter 4: Comparative Analysis and Conclusions

The two previous chapters investigated the policy approaches and food security situations in Viet Nam and India. The context of each state was established by briefly identifying their major historical, geographical, environmental, political, and economic characteristics. The analysis highlighted policies that affected food security by impacting economic, agricultural, land and food processes within the country. Finally, the food security of each country was evaluated in terms of hunger, nutrition, health, environmental sustainability, and economic development. This chapter will juxtapose the two cases and identify the specific ways in which both policies and food security differ as well as the implications of those differences. In doing so, this project will help to explain how to fairly similar countries (in terms of food producing agricultural sectors) may experience drastically different food security situations and what role state policies play in shaping those circumstances. This chapter will begin by reviewing the basic hypotheses and definitions addressed in this project. Then both states will be compared based on their overarching policy strategies and food security. Finally, the results and their implications will be discussed as well as directions for future research questions.

Brief Review

Terms. In order to determine if policy decisions shape food security in Viet Nam and India, one must remember how these terms are being conceptualized within the context of this project. For the purposes of this analysis, food security is understood to mean a state in which “all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (World Food Summit, 1996). The state of negative food

security or food insecurity is commonly understood to result in malnutrition can include energy deficiency (in terms of caloric intake), nutrition deficiency (due to lack of overall intake or by adequate caloric intake of nutrient deficient foods), and excessive net energy intake (caloric intake in excess of what is needed resulting weight gain and related illness, can coincide with nutrient deficiency) (McDonald, 2010).

Within this analysis, achieving food security is conceptualized as reducing or eliminating the prevalence of malnutrition within the population. For the purpose of this analysis, lower levels of food insecurity are the primary indicators of successful food security policies in this project. The term ‘food security policies’ as used here is meant to be a broad construct of state led policies and decisions that influence economic and agricultural behavior as well as those that explicitly pertain to food and hunger. These are the ways in which the following analysis will conceptualize food security, policies, and the success or failure of those policies to promote food security within the contexts of India and Viet Nam.

Hypotheses. As previously stated in Chapter 1, analysis of previous research resulted in the following hypotheses:

H1: Viet Nam will be more food secure than India

H2: Viet Nam’s policy emphasis on farmers and community-based implementation allows them to better address food insecurity than India’s macro-level focus

H3: Viet Nam’s attention to sustainability and self-sufficiency policies within the state help to insulate it from climate change variations and international market risks.

The accuracy of these hypotheses will be addressed in a later section after comparing the two cases based on their policies and food security.

Cases. Viet Nam and India were chosen as cases due to several factors. Both states were specifically mentioned by the FAO Policy Brief on Food Security. Viet Nam was cited as having made great strides towards achieving food security and reaching the Millennium Development Goal of reducing hunger. India was referred to as state where wide spread hunger continued to be present and food insecurity remained a pressing issue. Several other countries also met these descriptions. However India and Viet Nam share many characteristics. For instance, both states have similar climatic and geographical variations despite India having a much larger land area. They also share a fairly recent history of colonization followed by conflict. In addition, their overall agricultural sectors are similar in terms of their size relative to GDP and overall labor forces as is illustrated in the following chart.

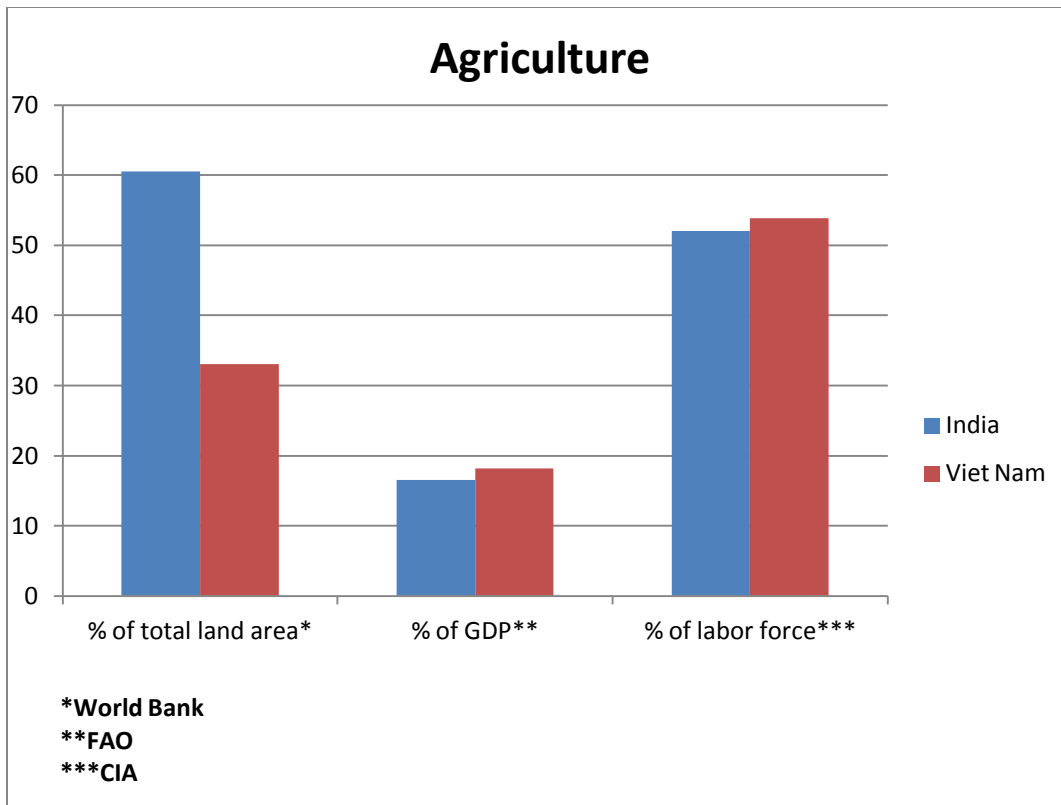


Figure 1. Comparison of Agricultural Sectors

One obvious difference is the percentage of total land area devoted to agriculture- Viet Nam's proportion is just over half that of India. However, less agricultural land area results in less potential food production. Therefore, because the primary hypothesis is that Viet Nam is more food secure than India, the fact that they are at a disadvantage in terms of proportion of agricultural land area makes it a more conservative analysis.

Policy

With these terms, hypotheses, and cases in mind this section will compare and contrast the policy approaches taken by both states. Given the similar agricultural sectors of each country, why is Viet Nam being lauded for its success in reducing hunger while India remains an example of food insecurity? It is the argument of this project that the

physical presence of food within a state as well as the economic ability of a state to purchase or trade for food do not in and of themselves guarantee food security. At the state level, food security depends not only macro structures but also on the policy choices made within those structures. In regards to policies that affect food security, the theoretical understanding behind different approaches often reflects the divide addressed in Chapter one. On the one hand, many advocates of Green Revolution policies and liberalization believe economic development is the best way to approach food security. On the other hand, some scholars suggest that those policies are actually ineffective in the context of food security and suggest other alternative frameworks. The following section will review the policies discussed in each case study and examine the strengths and weaknesses to each approach according to the these two schools of thought.

Economic Policy. Viet Nam's economic policy is described by the World Bank (2007) as a "socialist market-oriented economy" (p. 1). Though the state has abandoned communism, it has not entirely dismantled the state sector. Instead, it restructured state sectors to provide public goods and services while simultaneously encouraging private sector investment and employment. In addition, the state continues to encourage collective as well as private ownership and stresses the importance of household and community level economic activity. The Socialist Republic of Viet Nam has emphasized the importance of egalitarian distribution of wealth and income and the preference for stability over growth (CIA, 2012; World Bank, 2008). Based on economic policies, Viet Nam desires to balance growth, stability, and equality when making state level policy decisions.

India on the other hand has expressed the desire to become a major economic power (Department of Commerce, 2011). In order to achieve this type of economic development, India has pursued a conglomeration of measures and structural adjustment programs based on economic liberalization in order to participate more fully in world markets and trade. These include creating more open markets, diversifying products, increasing exports, and avoiding market distorting trade practices (Demeke et al., 2008; Shiva, 2004). However, due to volatile world markets and prices in recent years, some of these overarching approaches have been modified such as providing subsidies for specific products. Despite recent adaptations, India's present strategy favors market regulation of economic activity.

Those in favor of Green Revolution/liberal market policies claim that Viet Nam's approach is inefficient because it requires land and labor to be engaged in 'low value' economic activity (McPherson, 2011). They also claim that government support of small farmers results in trade distortion that interferes with the superior functionality of the market (though incentives for investment by large corporations does not appear to be distorting) (Shiva, 2004). Instead, they cite the increases in production that resulted from the Green Revolution in places like India as evidence that highly technological, liberal economic approaches to state food security will not only increase food supplies, but increase wages of farmers in order to ensure food security (McDonald, 2010). However, critics of these approaches claim that these policies favor large agribusinesses and that increased profits do not trickle down to the average farmer (if the average is not replaced by high tech machinery in the first place) (Shiva, 2004). Instead, the higher global market prices result in the higher domestic price of food which limits access for the poor

(Demeke et al., 2008). As an alternative, scholars suggest that ensuring local food supplies, low consumer prices, and government support should be the policy focus (FAO, 2008).

Agricultural Policy. After dismantling the communist agricultural communes, Viet Nam distributed farms to smallholders rather than sell off large portions to companies and corporations (Meyfroidt & Lambin, 2008). The state also set up community farmers organizations such as Farmer Field Schools (FFS) to encourage the dissemination and implementation of new technologies and practices to boost productivity (World Bank, 2011d). The purpose of these small-farm supporting policies is to promote productivity and enhanced human capital with little financial investment required (Tin et al., 2010). Therefore, despite the increased liberalization of other sectors of the economy, Viet Nam has maintained a relatively protected and isolated agricultural sector.

India has treated its agricultural sector similarly to other parts of its economy. Through Green Revolution policies and practices, the state of India has withdrawn from the agricultural sector and allowed market forces to take over its regulation (Demeke et al., 2008). These policies as well as incentives for large industrial agricultural corporations were adopted on the basis that small farms are less productive and large farms are better for increasing agricultural exports and trade (Shiva, 2004). In addition, productivity is encouraged through the use of expensive inputs such as fertilizers, pesticides, and genetically modified seeds which also lend themselves better to industrial agricultural than small farms. Despite a report by the government crediting small farmers

with agricultural growth, the majority of India's liberalized agricultural policy seems to favor large agribusiness (Indian Agricultural Research Institute, 2011).

Those who are critical of approaches such as the ones utilized in India note that the inputs required to participate in this type of sector are extremely costly and eat into overall profits and productivity (Demeke et al., 2008). Therefore, only large businesses that can utilize economies of scale benefit from these types of activities. Instead, some suggest focusing on traditional small-farm practices "that are less capital-intensive" (FAO, 2008). These "smallholder agricultural intensification paths" like those that were a part of Viet Nam's Doi Moi are able to incorporate a larger majority of the rural and agricultural population and require less financial investment (and therefore less risk) on their part (Meyfroidt & Lambin, 2008). However, the liberal argument remains that rapid industrialization and modernization similar to what India experienced in the 1990s are the only ways to reduce the inefficient, ineffective, and inequitable operation of small farmer agriculture (McPherson, 2011).

Land Policy. Both states initiated serious land reforms after independence. Viet Nam nationalized the land area under communism, but has redeveloped land policy through over 600 different initiatives since 1980 (McPherson, 2011). The state retains a socialist perspective where the land is allocated by the government to individuals and communities with the understanding that they are to be stewards of the land (The Socialist Republic of Viet Nam, 1992). The use of the land by the individuals and communities includes cash subsidies in return for environmental protection as well as cultivation for personal consumption and for economic exchange (Meyfroidt & Lambin,

2008). In this way, the state encourages sustainable practices as well as provides food and livelihoods for individuals, all through land policy.

India's land reforms have been slightly contested over the years. Initial policies put in place land ceilings and rent restrictions that were meant to limit the ability of large landholders to gain monopolistic control of large tracts of land (Besley & Burgess, 2000). However, these policies have been historically poorly implemented and are now being abandoned in many areas in favor of more market based approaches. The elimination of these land regulating policies is thought to increase the efficient use of available land (Deininger et al., 2008). Despite these recent changes, land policy in India is in no way uniform across the country and is generally implemented in only very limited contexts.

The liberal argument is that state land allocation to individuals, land ceilings, and rent restrictions are undesirable because it locks up important resources that might not be used efficiently (McPherson, 2011). Instead, land distribution should be left up to the markets, which would open up land for conversion to large industrial farms and parks where productivity could be maximized, increasing food security through increased production. However, critics claim that allocation of land to small communities and individuals can be beneficial in ways that are not always taken into account through economic models. Meyfroidt and Lambin (2008) note that households in Viet Nam that received parcels of farm land were also given incentives to take responsibility for the environmental management of that land as well as utilize it for household food security by gathering forest products and creating small vegetable gardens. The counter argument to liberal land policies therefore the idea that while allocation of land to smallholders may

not be more economically productive, it promotes external processes and practices that positively impact food security as well as environmental sustainability.

Food Policy. Viet Nam's food policy is epitomized in its commitment to rice self-sufficiency within the state. Because rice makes up such a large portion of the Vietnamese diet, the state feels that rice self-sufficiency is the key to food security. For this reason, agricultural production is focused on rice for domestic consumption rather than crops for export (The World Bank, 2011d). In addition, Viet Nam is continuing to seek food security improvements by expanding cultivation and taking measures to increase productivity (The Socialist Republic of Viet Nam, 2011b). In Viet Nam, the state plays a large, direct role in influencing food security.

In India, access to food is seen as a human right. This is established in the constitution as well as through many international human rights documents (Birchfield & Corsi, 2010). In addition, the state developed Food Corporation of India creates government stores of grain that are available as subsidized food for portions of the population and in times of food crises (Dorosh, 2001). At the same time, the policies favoring the private agricultural sector give an incentive for the production of food for export and encourages the production of cash crops. It is not apparent if these policies are working together to simultaneously achieve physical and economic access to food or if they are working against each other to prevent food security.

McPherson (2011) claims that pursuing food self-sufficiency is a semantics game which ensures food security by simply redefining the term. This is important to consider because food security also relies on things like distribution, quality, and access. However, that is not to say that food self-sufficiency can create food security. Instead, the liberal

approach to food security suggest that decreasing the government's and allowing trade to regulate food imports and exports will better provide for the population (Shiva, 2004). For example, India devotes a large part of its agricultural sector to products for export, the profits of which can be used to the import necessary food supplies. The following section will investigate the merit of these policies based on actual food security results provided for each case. Table 1 presents a brief summary of the policies discussed above.

Table 1.
Comparison of Policy Approaches

Summary of Policies			
	India Policy	Common Policy	Viet Nam Policy
Economic	<ul style="list-style-type: none"> • Liberal-market economy • Global participation 	<ul style="list-style-type: none"> • Privatized industrial and service sector • Growth 	<ul style="list-style-type: none"> • Socialist-market economy • Stability, equality
Agricultural	<ul style="list-style-type: none"> • Liberalized agricultural sector • Favors agribusinesses 	<ul style="list-style-type: none"> • Increased productivity 	<ul style="list-style-type: none"> • Small farm focused • Protected sector
Land	<ul style="list-style-type: none"> • Not uniform • Hard to implement • Some liberalization 	<ul style="list-style-type: none"> • Some state regulation 	<ul style="list-style-type: none"> • Stewardship • Sustainable practices • Livelihood
Food	<ul style="list-style-type: none"> • Food is a human right • Produced for export 	<ul style="list-style-type: none"> • Domestic consumption 	<ul style="list-style-type: none"> • Self-sufficiency

The highly contested interaction of the above policies within their respective states helps to shape the food security of each country. While many other factors determine things such as hunger within the state, the policies chosen and implemented by governments can shape how and to what extent other factors influence food security. As

the following section will show, India and Viet Nam experience very different levels of food insecurity in many different ways.

Food Security

Before looking the specific context of the case countries, it is important to reiterate the different aspects of food security that are addressed in the definition. It is not enough for the previous components to exist in one specific moment. They must be present in long term and also be resistant to shocks such as climatic events and price variations. With these components of food security in mind, the following sections will investigate food security in the context of India and Viet Nam from three major perspectives- hunger and nutrition, economic development, and environmental sustainability.

Hunger and Nutrition. Methods for measuring hunger and nutrition are somewhat contested. There are several different indices that use a multitude of indicators in order to assess hunger and nutrition, such as anthropometric measurements (height, weight, etc), caloric intake, vitamin deficiency, and mortality (Masset, 2010). The following chart illustrates underweight children and undernourished people as proportions of the overall population for both Viet Nam and India. These are the same indicators used by the United Nations in assessing counties' progress towards meeting the Millenium Development Goal to halve world hunger by 2015 (Masset, 2010).

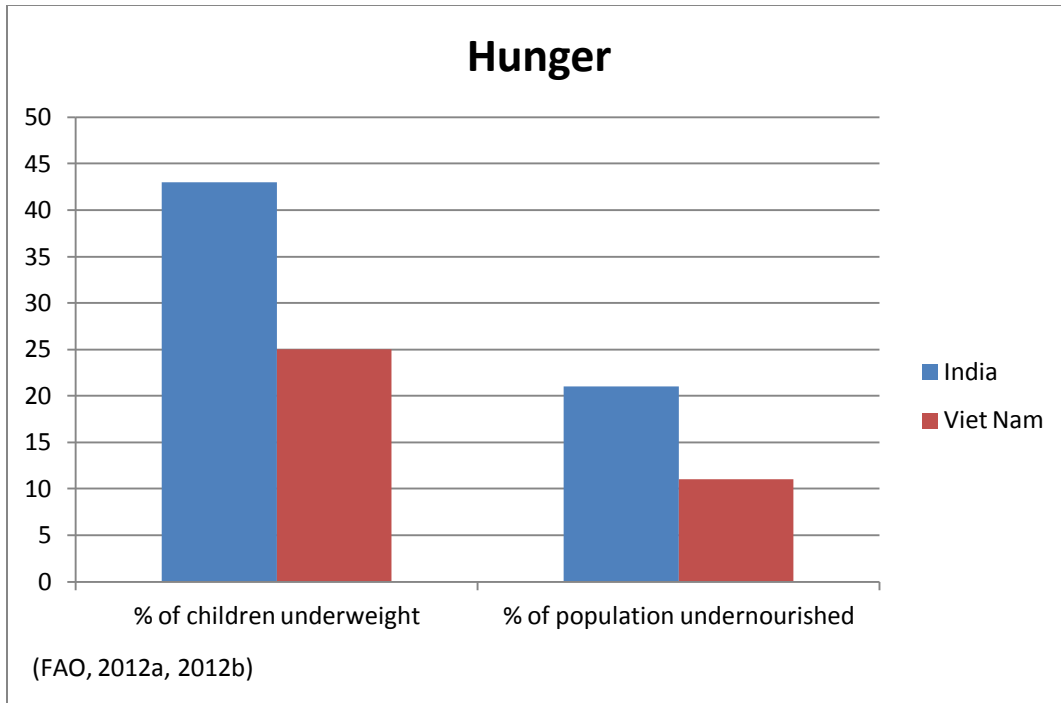


Figure 2. Comparison of Hunger

The percentage of underweight children is the proportion of children under the age of 5 that are under a healthy weight compared to the total number of children under the age of 5 in the population. The percentage of the population that are undernourished are the proportion of people in the population that are either nutrient or calorie deficient compared to the total population. As is shown by the graph, Viet Nam’s hunger indicators are well below those of India.

Another indicator that is more closely associated with the utilization aspect of food security is life expectancy or mortality. According to Masset (2010), “undernutrition rates are strongly correlated with other variables associated with hunger like...mortality” (p. 3). While life expectancy can be determined and affected by many different variables, it can shed some light on overall health and well being that should accompany food

security. According the FAO (2012a, 2012b), the population of Viet Nam has an average life expectancy of 74 years . In India, the life expectancy is 64 years. While life expectancy alone is not an indicator of hunger or malnutrition, the utilization aspect of food security could impact life expectancy.

Finally, measures of hunger and malnutrition could speak to the stability aspect of food security when measured over time. The following chart shows trends in each country's Global Hunger Index (GHI) from 1990 to 2011.

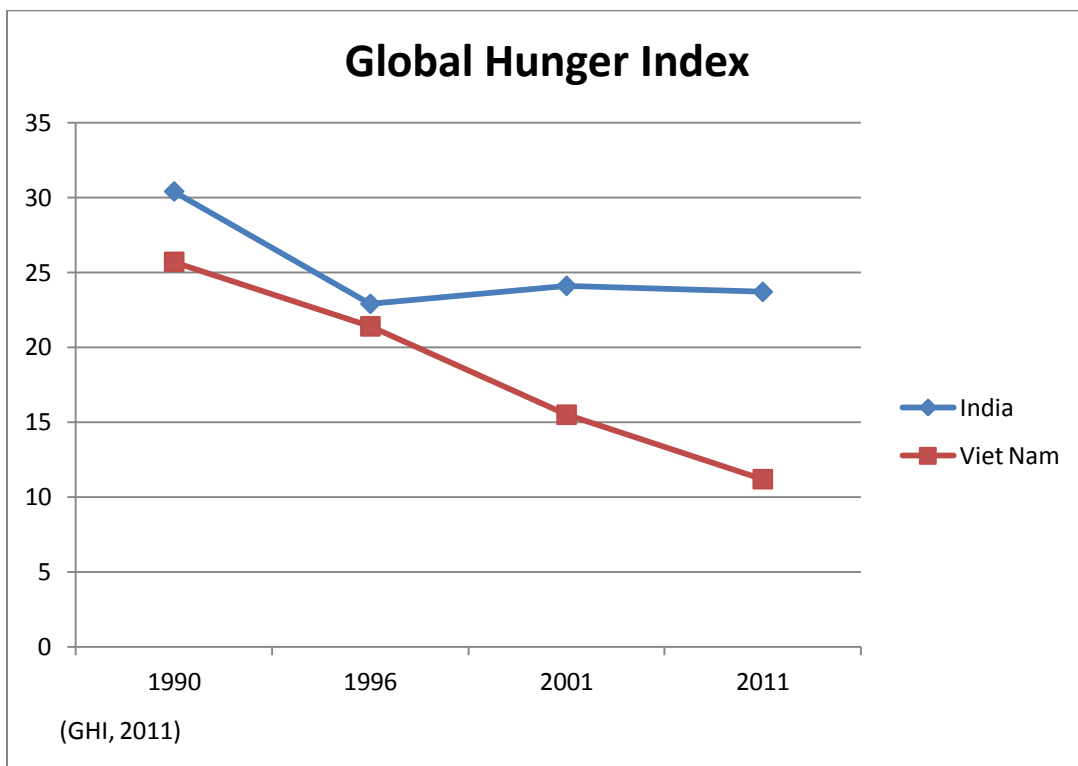


Figure 3. Comparison of GHI Over Time

The data for this chart were taken from the International Food Policy Research Institute. The index is a combination of three equally weighted indicators. It includes undernourishment and children underweight like the previous table, but also takes in to account child mortality which is often a result of inadequate dietary intake (GHI, 2011). In this way, it accounts for the fact that hunger is a complicated, multidimensional concept (Masset, 2010). Because of the long intervals between data collection, it is not able to demonstrate short term shifts or crises, but still has “explanatory power on a range of socio-economic phenomena” such as food security (Masset, 2010, p.4).

As the chart shows, Viet Nam has maintained a steady decrease in hunger and the trajectory of the chart suggests it will continue to do so. Though it is not shown in this set of data, Viet Nam decollectivized its agricultural sector in the late 1980s and early 1990s and redistributed land and resources to many small farmers (Meyfroidt & Lambin, 2008). It appears that since then, Viet Nam has been on a path of food security improvement in terms of hunger. On the other hand, India saw a decrease in hunger in the 1990s, but has since leveled off without much improvement and has in fact worsened slightly between 2001 and 2011. This is very interesting considering the agricultural sector was heavily reformed in 1991 (Agoramoorthy, 2008). The technological aspect of the Green Revolution had been present since the 1960s with an emphasis on increasing productivity and crop yields, however in the 1990’s Prime Minister Singh took steps to privatize the agricultural sector and open it up to liberal markets (Agoramoorthy, 2008). As one can see on the graph, just a few years later, the reduction in hunger leveled off and has remained fairly constant ever since. This would seem to support arguments that the positive effects of increase biotechnology use are short lived and are not sustainable over

time (Shiva, 2002). In terms of stability, India could be at risk for food crises due to a lack of improvement on its food security situation.

Economic Circumstances. Economic circumstances have the potential to affect all aspects of food security. Economic situations that are hostile to agricultural production can limit food availability by discouraging domestic production. Also, development has direct effects on people's livelihoods which can limit their economic access to food. Similarly, inadequate livelihoods can limit an individual's access to nutritional education, clean water, and health services which can affect utilization. And finally, economic crises including price and supply fluctuations can harm stability in terms of food security by either making food too expensive to buy, making wages too low to purchase food, or creating shortages of food products.

In terms of access and utilization, GDP per capita can be used as an indicator. A state's GDP per capita can give some insight into an individual's ability to purchase food and also utilize the non-food aspects of food security such as clean water and health services. In India, the GDP per capita is USD\$1,475.00 In Viet Nam, the measure is slightly less at USD\$1,224 (The World Bank, 2011a). This would indicate that the population of India might have an advantage over that of Viet Nam in regards to economic access to food as well as ability to utilize that food.

In terms of availability, the following chart illustrates the role agriculture plays in trade for each country.

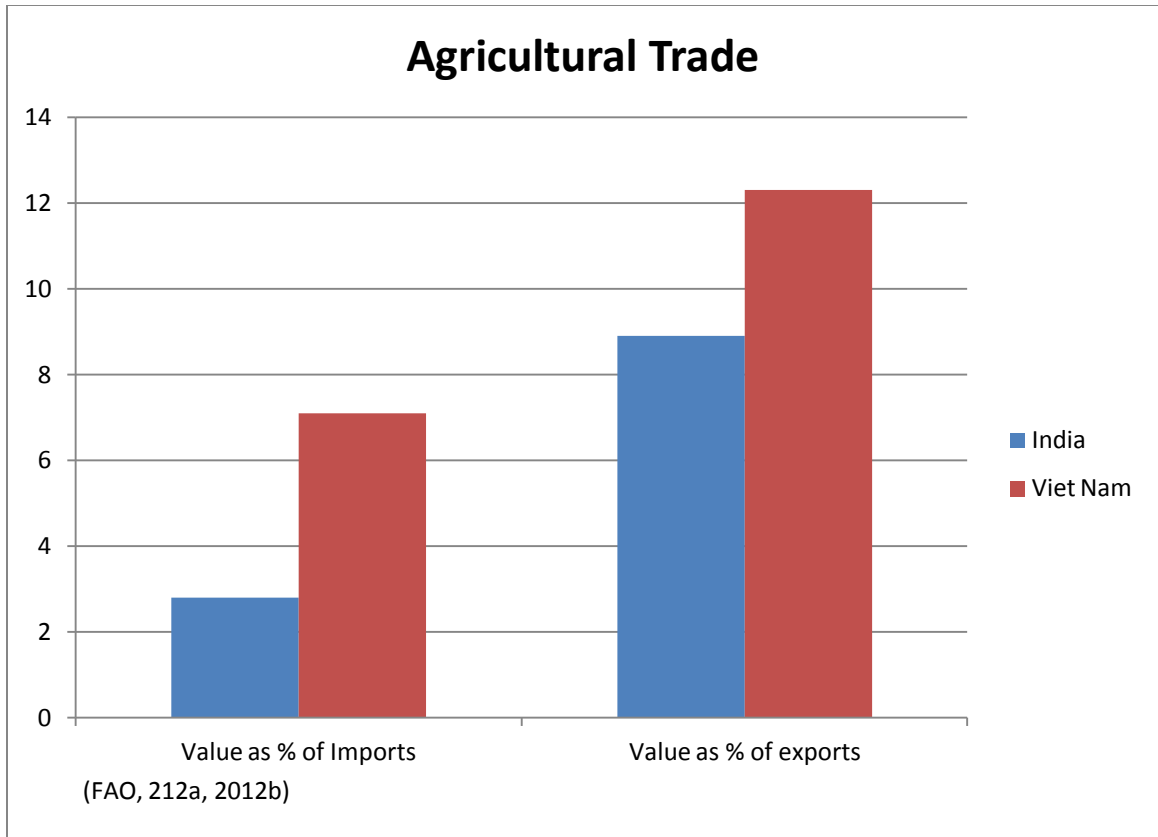


Figure 4. Comparison of Trade in Agriculture

According to the data provided by the FAO, Viet Nam imports a larger portion of agricultural goods in relation the overall value of its imports than does India. While agricultural goods do not necessarily indicate food goods, it would appear that Viet Nam would be more capable of importing food than is India. On the flip side, agricultural goods also make up more exports in Viet Nam than in India if the sudden need should arise. Given Viet Nam’s commitment to self-sufficiency in food production, it is logical to see agricultural exports from Viet Nam as surplus. Therefore, if Viet Nam is exporting food, domestic availability must be fairly well off.

Finally, price fluctuations can greatly affect food security by creating crises as discussed above. The FAO has developed a Consumer Price Indices (CPI) that measures changes overtime in price levels of different goods. The Food CPI monitors the changes in the price of food and non-alcoholic beverages. For the year 2010, Viet Nam's Food CPI was 151.79. India was divided into four different sectors whose Food CPIs ranged from 176.41 to 193.78, but the average Food CPI of the four sectors was 185.91. Since 2005, Viet Nam's Food CPI score has been less than that of India (CPI, 2010). It would appear that India has experienced more drastic food price fluctuations than Viet Nam.

Environmental Sustainability. As explored in previous chapters, environmental sustainability can also affect food security by limiting availability through climate change and decrease production of food. It can also reduce access and utilization for individuals whose livelihoods are dependent on environmental conditions or specific ecosystems. A lack of sustainable practices can also negatively impact stability by creating shortages and supply demand issues as food production-friendly environmental factors are strained or exhausted. The 2005 Environmental Sustainability Index (ESI) has integrated 76 data sets and 21 indicators of environmental sustainability to provide an index value for each country based on how sustainable the practices of the state as a whole are. For perspective, Finland is ranked number one with an ESI score of 75.1 and North Korea is ranked 146 (last of the given countries) with a score of 29.2. India is ranked 101 with a score of 45.2 and Viet Nam is ranked 127 with a score of 42.3 (ESI, 2005). Unfortunately, this index is only for the year 2005 so monitoring change over time is not possible. It would be interesting to see if the countries are improving their sustainability, worsening, or remaining fairly constant. India as an entire state appears to be more

environmentally sustainable than Viet Nam at the present time. This could mean that they will experience less shocks and limitations associated with environmental degradation and climate change.

Another way to conceptualize sustainability and stability is to use the Environmental Vulnerability Index (EVI) developed by UNEP along with several other organizations. It looks at indicators within environmental, social, and economic facets of environmental sustainability to identify vulnerabilities that could influence a state (EVI, 2005). On this indicator, India score 385 which is in the 92nd percentile of the countries measured indicating that India is ‘extremely vulnerable’ to environmental change (EVI, 2005). Viet Nam received a slightly higher at 357 which is in the 88th percentile. It is described as being ‘highly vulnerable’ (EVI, 2005). Though neither score is ideal, Viet Nam does appear to be slightly less vulnerable to environmental change than India even if the former is still not as sustainable. The lack of precision does not bar the scores from offering insight into broader environmental situations and challenges that each state is facing.

As detailed in the introduction chapter, environmental change is closely linked with food security. Macro changes in the environment as well as sudden shocks and crises could limit environment’s ability to produce food (through rising temperatures, soil degradation, water scarcity, etc.) as well as create a shortage through the destruction of existing food supplies (flooding, increase in pestilence, drought). Moving towards sustainability is important for reducing the former long-term impacts while reducing vulnerability is necessary to guard against short-term events. Both countries could stand to improve substantially in both categories in order to better ensure food security.

Table 2 summarizes the indicators discussed above. The more positive (in the normative sense) score for each given indicator is in bold. The indicators for trade were omitted from the chart due to the fact that they do not explicitly indicate a food security promoting circumstance (i.e. more trade in agriculture is not necessarily better than less trade in agriculture in terms of food security).

Table 2.
Comparison of Food Security

Summary of Food Security Indicators		
	India	Viet Nam
% of children underweight (FAO, 2012a, 2012b)	43%	25%
% of population undernourished (FAO, 2012a, 2012b)	21%	11%
GHI change from 1990-2011 (GHI, 2011)	-7.7	-14.5
Life Expectancy (FAO, 2012a, 2012b)	64	74
GDP per capita (World Bank, 2012a)	\$1,475	\$1,224
Food Price Fluctuations (CPI, 2012)	185.91	151.79
Environmental Sustainability (ESI, 2005)	45.2	42.3
Environmental Vulnerability (EVI, 2005)	385	357

Discussion

The purpose of this section is to revisit the original hypotheses in light of the policy and agricultural evidence presented above, as well as any evidence that was particularly interesting or unexpected. It is important to note that due to the nature of this research, no causal links can be identified. The purpose is instead to compare overarching trends in both policy and food security to determine if there might be important relationships that could serve as the basis for future research. In addition, there are a multitude of other factors and indicators that affect or are affected by food security. The above evidence are only a few selected for their simplicity, direct ties with food security, and available and current data. A larger project could develop a variety of additional data and indicators to hone in on different aspects of food security.

Hypotheses. In the context of this project, it would appear that all three hypotheses were at least partially correct. Hypothesis 1 was correct in that Viet Nam does appear to be more food secure overall than does India. It had more positive indicators in hunger, life expectancy, hunger over time, and price stability. However, it is not immediately clear why this is the case. In Chapter 1 my initial inclination was that this might be a result of the emphasis placed on small farmers and communities that have created a micro-level approach to food security in the state. While it is true that Viet Nam does emphasize these types of policies more than India, there are many other policy differences that could explain Viet Nam's food security success, including their emphasis on self-sufficiency, the relative protectionist attitude towards the agricultural sector, or their preference for equality and stability.

Hypothesis 2 was not as accurate. It asserted that Viet Nam's policy emphasis on sustainability would help to insulate it from climatic variations. However, Viet Nam was ranked as substantially less sustainable than India on the Environmental Sustainability Index. And though it was ranked slightly higher on the Environmental Vulnerability Index, it was a fairly poor score. Therefore, sustainability does not appear to play a large role in Viet Nam relative to India. Also, Viet Nam did see less price fluctuation than India, but as is stated above, it is not clear how large of a role self-sufficiency played. It could be any one or a combination of policies in Viet Nam that allow it to be relatively insulated to market changes.

Hypothesis 3 also fell short by crediting stability and enduring food security to environmental sustainability. While the GHI data show that Viet Nam has steadily reduced hunger in the state, it is not clear which policies are creating these trends. Once again, Viet Nam actually has a lower environmental sustainability indicator than India and a poor score on the EVI. This does not necessarily mean that environmental sustainability in Viet Nam is having no effect. As was mentioned in the food security section, the ESI data are for 2005 only. Viet Nam could have improved drastically since then or could be improving over time. However, there are likely other factors contributing to food security stability.

Unexpected Findings. Viet Nam's relatively low levels of environmental sustainability and high levels of vulnerability were surprising given the amount of policies that emphasize environmental concerns relative to those of India. The government specifically addressed environmental problems and the importance in solving them in several documents concerning a variety of issues (Socialist Republic of Viet

Nam, 2012a & 2012b; International Cooperation Department, 2007a & 2007b). The state might be experiencing problems with implementation of the policies. It could also be an issue of time. If Viet Nam was relatively worse off than India in the past or began environmental reforms later in time, it would presumably take Viet Nam longer to catch up or surpass India in the long run. Likewise, India could actually be growing less sustainable over time yet still be ranked higher than Viet Nam in 2005. A more in depth analysis as well as a time series study could shed some light on the intricacies of environmental sustainability in each state.

Overall, however, it would seem that the state of Viet Nam is experiencing higher levels of food security than the state of India. This is slightly surprising given the fact that Viet Nam uses less of its land for agriculture, which one would think would lead to less relative food production vis-a-vis India. In addition, the agriculture sector is larger in Viet Nam than in India in terms of exports, imports, employment, and share of GDP making Viet Nam the more agrarian state. Based on development literature, agrarian states are typically poorer and less developed overall. As Gollin, Perente, and Rogerson (2002) explain, development relies on agriculture becoming more productive in that the labor force is able to move into non-farming sectors where they are more efficient. According to them, this movement of employment out of farming would result in GDP per capita growth. This could possibly indicate that Viet Nam would be less food secure due to limited economic and trade access to food. However, the opposite seems to be the case. Despite having a large agricultural sector and small GDP per capita, Viet Nam experiences fairly high levels of food security compared to richer, more developed India.

This is especially surprising in light of Viet Nam's policy preferences for equality and stability in addition to economic growth and development. The common liberal arguments that opening industries and allowing markets to regulate privatized sectors will lead to increased wealth and terms of trade have been largely ignored by Viet Nam in terms of the agricultural sector and especially food production. While the argument can be made that this puts them at a disadvantage economically due to less efficient and less productive practices, the government has expressed deliberate preference for pursuing small farm, self-sufficient agriculture. India on the other hand has embraced the liberal tradition within their agricultural sector. Their markets are open to foreign businesses and investment and economies of scale show preferences for large agribusiness. In theory, the increased productivity of these practices should lead to more food at lower prices, yet India not only lags behind Viet Nam in terms of food security but also seems to have stagnated in the pursuit of reducing hunger.

Conclusion

While it may seem too inherently complex to be of any benefit, a broader approach can at least provide a wider range of possible solutions than traditional economic models by including informal practices and household units of analysis (McDonald, 2010; Shiva, 2002). For this reason I move away from a simple agro-economic perspective and sought to incorporate multiple dimensions of food security. Food security involves much more than supply and demand mechanisms. I think this approach, if taken by more scholars, could help to deliver "outputs both better integrated within the overall context of food security and better tuned to the needs of food security policy formulation" (Ingram et al., 2008, p.5). For decades now, food security

policy has revolved around technical and economic solutions and yet there are more hungry people in the world today than ever before. Perhaps it is time to try an approach that incorporates nutrition, social and cultural food values, consumption patterns, and environmental tradeoffs into the discussion (Editorial, 2009).

The arguments within this project are important for many reasons. First, they look at food security from an angle that has been largely ignored in previous literature- policy. At the state level, food security has generally been conceptualized through macro-economic theories and overarching structures. Common themes have been discussions of resource abundance and scarcity as well as size and productivity of agricultural sectors. However, as this project demonstrates, there may be more to food security than structural/economic arguments. While what a state *has* in terms of potential food production and trade is important, it also necessary to look at what the state *does* with it. State policy can demonstrate not only state plans and actions for food security, but also overarching attitudes and conceptualizations of how food issues should be addressed. This project illustrates the policy link between structural and economic constraints and actualization of food security on the ground level.

In addition, the project demonstrates a possible stumbling block for liberal development. Market economics may not always be the most effective framework through which to structure every economic sector or ensure food security. India's economy grew and developed rapidly while Viet Nam's trajectory has been more of a slow and steady approach. Yet at the present time, Viet Nam is the more food secure state while it appears India may have trouble increasing or even maintaining levels of food security. What is more, India's decline in food security occurred right after the

implementation of liberalization policies. This would seem to support the arguments that these policies fail to address large segments of the population, namely rural farmers, in the pursuit of large business (Hyman, Larrea, & Farrow, 2005). These findings also seem to be in congruence with those that claim these policies create productivity stagnation overtime (Shiva, 2002). Both factors could explain the patterns observed for India's GHI trend. This also appears to indicate that there may be something unique to the agricultural sector. India's improvements in technology, industry, and service are undeniable. So why then is their agricultural sector lagging so far behind?

It would appear that at least in terms of the agricultural sector and food production, the Vietnamese model is better equipped to ensure food security. The commodification of food via the liberal market does not seem to adequately supply food equitably across the population. If true state wide food security is to be pursued, the market based economic model needs to be seriously reconsidered. Rather than relying on industry driven export earnings and increased wages to increase access to food, state policies favoring food self-sufficiency and physical access, even at the subsistence level, appear to be much more effective. The relatively low level of technology and inputs used within the Viet Nam model could also benefit farmers by reducing costs of production while simultaneously creating more disposable income. In totality, the small-farmer oriented system of agriculture in Viet Nam better combats food insecurity than the industrial farm model used in India.

But how feasible would it be for India to adopt a more Viet Nam-like model? Unfortunately, it is highly unlikely that India could completely adopt a more state-led approach like that of Viet Nam. Large business with international ties and substantial

political clout would certainly oppose such an attempt. It would also be likely that organizations such as the World Bank and International Monetary Fund might be wary of state driven reforms given their traditional preference for free markets. The nature of India's democratic system itself could be an obstacle. The decentralized nature of India's political system makes state-wide reforms and implementation difficult. India also has a much more varied society than Viet Nam and is still dealing with the residual effects of the caste system. However, among the rural farming communities there is likely to be much more ethnic and social homogeneity than across India in general. If India were to take steps to increase support for small farmers, it might be most feasible to start by allocating small tracts of land for environmental conservation and subsistence farming. This would help to ensure basic food security and the individual and community level for those who are not incorporated into formal agricultural markets. Small measures such as these are generally low cost and would not put a great strain on the state economy as a whole. By ensuring basic food security to the most marginalized of the population, states such as India could allow individuals to provide for their basic needs a little cost and free up more of their income and resources to engage in more 'productive' economic activities, thus developing a holistic approach to food security as well as economic development.

These observations open up many questions and areas for future research. Studies have found that several countries have begun to make policy changes that would appear to be more in line with Viet Nam's approach such as protecting domestic markets and prices, moving towards food self-sufficiency, and critically regarding the private sector (Demeke et al., 2008). It would be valuable to look at the prevalence of these policies in

the world today as well as how many are newly implemented (a change from a previous approach). A global level statistical analysis could be useful in order to compare these types of policies with a multitude of food security related data and indicators. Different types of policies, such as environmental or small farm supporting, could be explored in isolation in order to develop a better understanding of how each contributes to food security. In addition to food security via a lack of adequate food, many countries are now struggling with food security via excessive net energy intake. This may very well be the ‘new frontier’ for food security research and focus. Given the prevalence and persistence of hunger and food crises in the world today, these questions cannot be left unanswered. If my observations about India are correct and there is something distinct about the agricultural sector and food security that conflict with economic and state development, a much more in depth analysis of policy recommendations and development approaches is vital to the success of developing states. For this reason, it is imperative that the issue of food security continues to be explored.

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