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Burma: Factor 12

Burma: Introducing Gem Market to Increase Agricultural Education and Modern Technology

A country steeped in tradition, Burma—formally known as the Republic of the Union of Myanmar—has a rich sector in agriculture and a land plentiful with minerals. However due to lack of expertise and leadership, most mining potential is still untapped and what arable land used for crop production suffers from desertification. Further economic development is necessary to improve food security. Therefore, funding is needed for research in horticulture to increase crop yield and combat land exhaustion (Myint). Coupled with this is the problem of Myanmar's tropical climate. Rain is often irregular and uneven over the region, making cultivation difficult without irrigation. And even then, irrigation systems are mostly antiquated and have not been replaced since the British rule in the early 20th century (Aung-Thwin). In order to solve Burma's major problems, a jumpstart is needed to revive its economy. Since agriculture is the country's main source of input, mining would be a great potential for creating new jobs and ameliorating the failing economy, especially with plant production slowing even more every year. With a reenergized people and more funding for research, rural farmers will be able to find the best possible solutions for better yield while stopping, and possibly reversing, the soil erosion caused by chemical fertilizers and climate change.

Not only will the renewed economy help agricultural systems, but it will also restore legitimacy to the Republic's name. Burma is famous for its rare pigeon-blood rubies, but is equally infamous as the world's 2nd leading producer of illicit opium (CIA). This unseemly reputation has caused powerful nations, such as the United States and Australia, to enforce economic sanctions, impeding international trade (Burma Economy). Burmian government is still adjusting to new democratic rule and, because of inexperience, often makes unwise decisions in time of crises that accelerate inflation and exacerbate trade imbalances. Foreign investors are therefore deterred by the uninviting business environment and unstable economy. Currently, Burma's economy is dragging and its 2011 growth rate of 3.2% is one of the slowest in the region compared to India's 9.1 percent. ("Burma", World Development). Should mining begin, experienced teams of miners would be needed to train people in harvesting these minerals, which would reduce the number of workers in the opium industry, contributing to the increase of the country's credibility.

Under the British reign, Burma was the World's leading exporter of rice (Culture). Although Burma has since lost its lead to Thailand and the United States, rice is still the dominant agricultural export (Aung-Thwin). Goats, pigs, and poultry are also raised all over the nation for market and consumption; the protein, an assortment of nuts, produce and rice make up a typical Burmian diet (Culture). Two-thirds of the country's labor force is devoted to agriculture which, other than rice, includes crops such as sesame, groundnut, sunflower, and pulses (Thein). Even those working in other sectors will most likely have a job that is involved in agriculture like transporting, processing, or marketing goods (Aung-Thwin). Most farmers employ shifting agriculture, in which land is left for some time to allow soil to recover before further cultivation. However, this technique is not reliable; after a few seasons, the soil is too depleted of nutrients to use and the land is completely abandoned before it turns into a wasteland ("Shifting Agriculture"). Inorganic fertilizers may improve the soil quality for a brief period, but over time, the toxins and salts in inorganic fertilizers will ruin the soil (Myint). There are a variety of alternative organic fertilizers such as green manure that are beneficial for both soil and crop. Unfortunately, in a time of economic instability, farmers are reluctant to make the switch due to the slow rate at which organic fertilizers decompose before providing the desired result. Since only one-sixth of Burma's land is arable, the lack of fertile land also poses another problem: most of the populace are forced to migrate to non-mountainous regions where the soil is rich enough to grow crop and provide a living, in densely

populated regions. In large cities such as Yangon, overpopulation invites tuberculosis and other diseases to spread in close quarters. Sanitation, along with insufficient health care and transportation, has long been a problem for authorities (Aung-Thwin).

Most Burmian families are rural with farms about two to four hectares large (Thein). Families consist of approximately 4 to 7 members where the median age is 26.9 years (Thein). Men are mostly responsible for the transportation of goods while both women and men are involved in commercial crafts such as lacquer ware, stone working, and wood carving (Culture). In addition to rubies and jade, the land has rich deposits of silver, tungsten, and natural gas. Burma also possesses the bulk of the world's exploitable teak, which unfortunately is sometimes exported illegally across borders (Aung-Thwin). The social classes are very disproportionate: a very small number of elite, whose wealth stems from the narcotics trade, contribute to market fluctuations while a large number of very poor citizens suffer the brunt of inflation (Culture). In spite of everything, Burma has had much success in education. Nine-tenths of the population is literate, with both men and women having about the same percentage of literacy nationwide (Aung-Thwin; CIA). All children attend a mandatory five years of primary schooling at the age of five, which is followed by a four-year, then two-year cycle of secondary schooling. After which, if the family is able to afford tuition, the child may then attend a public or private college (Aung-Thwin).

Although Burma has a high literacy rate, only 34% of children enroll in secondary school (US Campaign). Statistics in the United Nations database found that only 1.3% of government expenditure is used for education. Because of the lack of funding, schools are in short supply, as are the number of available teachers and textbooks (NHEC). What tutelage students receive during their primary school years are insufficient, causing their families to reason that the children's time would be better suited with helping around the farm. When these under-educated children grow up and take over the family farm, they lack the knowledge to cultivate the land to its full capacity. This of course leads to low crop production and efficiency, all contributing to the economy's downward spiral.

“Improving agricultural productivity, profitability, and sustainability in the developing world depends on the ability of rural people in those countries to adopt change and innovate in their use of technologies, management systems...institutions, and environmental resources. Expanding the people's capacity to innovate depends on their access to knowledge and information services” (USAID). In order for Burma to improve its nation's food security, government must provide allotment towards educating and training farmers to use the best possible farming techniques to gain the most yields. Presently, farmers are using antiquated methods, unknowingly destroying more land. By employing shifting agriculture, land is used for about three years, and then abandoned for the next ten years, allowing whatever vegetation to take root and renew the soil (Ranjan). Not only is this time-consuming, but it is also an inefficient way for nutrients to regenerate. In contrast, crop rotation allows land to be used each consecutive season, and each rotated crop provides different nutrients and bacteria to regrow. Legumes, for example, are known for its many benefits to soil quality. Rhizobia bacteria living in the roots produce nitrogen for the legume to sustain its protein-rich seed. When the plant matter decays, all the nitrogen is absorbed into the soil and most remains until the next planting season (*Legumes*). Using this method, farmers will increase their yearly yield and profit, all the while enriching their land even more each season, eliminating the need to purchase more farmland after the soil is exhausted.

Another major impediment is the inorganic fertilizers used on soil. As stated before, inorganic fertilizers only work temporarily, and actually harm the soil over time. Green manure is a very good alternative with multiple benefits. Even though manure is in its name, green manure isn't actually manure in the crudest sense. It is considered waste from plant decomposition. This technique is also called cover cropping, in which plants are planted during off-seasons to reduce erosion and provide nutrients. Plants that cover the soil during fall, winter, and early spring will prevent wind from blowing the top-soil away while its decomposition replenishes the ground (Sundermeier).

By using these methods to improve agricultural education, future farmers will have better knowledge of the best possible ways for implantation, fertilization and soil management to produce the highest quality crop. Over the past few years, inorganic fertilizers have risen in costs, causing farmers to use less than the recommended amount, an action which decreases crop size and quality drastically (Myint). On the other hand, organic fertilizers such as compost are not only effective, but they are also much less expensive. Higher grade yield will better sustain both the farm family and its consumers, raising immune systems while lowering the number of diseases and infant mortalities. With newfound education of forestry, the environment will also be preserved and protected for future use.

A major uncontrollable factor in slow crop production is the inconsistent climate in Burma. The colder, drier monsoon that ranges from October to February is longer than any other type of Burmian weather, which consists of the dry, hot summer, and rainy fall monsoon (Aung-Thwin). Burma's "winter" does not completely kill plants, but the dry monsoon—a seasonal shift in wind direction—causes much erosion and affects precipitation and rainfall greatly (Baumann). Winds may cause small shoots of new growth to uproot while the lack of rain makes farming difficult without proper irrigation. Lacking the appropriate funding for research, technologies will not be developed to improve yield that uses less water and a limited amount of chemicals (US Department). According to the Department of Agriculture, the United States' can attribute its vast advancement in agricultural productivity over the past century to "investments in agricultural research and technology development". New machinery, cultivation techniques, and better usage of non-toxic fertilizers would greatly increase productivity, which would boost the economy and altogether benefit the entire populace. To expand research facilities for agricultural improvement, Burma needs to find a source for funding. In the future, Burma can develop its own advanced agricultural technology suitable for the country's tropical climate.

In order for Burma to attain savings for researching, a solution is necessary. Having a vast reserve of gems and minerals provides a very obvious route. With international guidance, Burma could start mining its non-arable land without risk of destroying good farmland. Where previously rural folk relied on unsteady incomes in a job market with limited opportunities outside the agricultural sector, a blooming mining industry will create new jobs and reduce poverty in rural areas. In addition, the official mining sector, under government supervision and with better protective measures, will deter those who formerly exported minerals illegally. New availability of jobs would also attract people from other sectors, including the opiate industry. This would undoubtedly lead to a better international image as illegal activities decrease and the economy starts booming. Trade with affluent nations would then restart, causing farmers to produce more crops in order to meet consumer demands. The populace will then crave local goods, which are fresher, and better tasting. Exported goods that used to dominate the Burmese markets would now be replaced by local produce, with which Burma will be able to self-sustain.

As farmers become more prosperous, they will be able to pay for their children's higher education. The future generations of farmers will thereby be more knowledgeable about the land, the crops, and the effects of weather. With a new breed of educated farmers, shifting agriculture will slowly be replaced by better, more advanced methods of cultivation. Soil erosion will begin to reverse, increasing the percentage of arable land, which will make the economy thrive even more. In addition, as crop production improved, machinery would replace manual labor; the new farm families would evolve into smaller, less disease-prone crowds.

Current data is difficult to find since statistics released by the Burmese government is often incomplete and unreliable (CIA). However, the most recent data collected by legitimate organizations such as the United Nations provides some insight into the nation's progress. According to a 2008 report by UNICEF, the rate of enrollment in secondary schools for both genders has been climbing steadily from 1999 to 2005. The same report also charts the percentage of education expenditure from the total government

expenditure. The data shows that expenditure dropped from 14% to around 7% from 1994 to 1999, but went up to 18% from 2000 to 2001 (UNICEF). From the information available, it can be inferred that the increase in spending affected the percentage of students in secondary school. It is also possible to further infer that, with more educated young adults, the knowledge about better cultivation methods grew, and the amount of arable land grew (Arable Land). In all three statistics, government expenditure in education, number of students in secondary schooling, and percentage of arable land all started to climb during the late 1990's into the mid 2000's. When funding in education increased slightly, it affected other factors and altogether raised food security a little more. The funding garnered from mining will generate larger revenue, and if the government used a larger percentage of its expenditures for investing in education, the effect will be much more prominent, setting a chain reaction that will eventually lead to better food security.

In order for the solution to take full effect, however, both the national government and rural farmers have to work alongside each other to implement the plan of action. Farmers will be overwhelmed by the new information that will suddenly surge into the country. Communities must then help each other change the villages' methods of agriculture to improve yield and crop production. The only way future farmers in Burma can become more educated is if a larger part of government expenditures is used to improve the country's educational facilities. More schools could be constructed throughout the land, making it easier for children in rural areas to have access to higher education. The funds could also go towards increasing educators' wages, providing another reliable source of work for those with degrees in teaching. Because of the wider array of occupations, this will inspire young adults to go into the teaching field.

With a little guidance to help the Burmese open a mining industry, the Republic of Myanmar may have a solution to stabilize its economy and bring prosperity back to the once-thriving land. Partially due to the inexperienced democracy and the former military regime, Burma's economy is unstable and inflation is out of control. The lack of leadership in the national government has caused the small number of elite to rule the rest of the populace. Since the elite profit from the opium industry and/or illegal smuggling of gems and teak, much of the nation's GDP stems from these unsavory businesses. Therefore, international image has plunged as drastically as Burma's rank on the list of the world's leading opium industries has soared. Burma's bad record then impedes trade and deters investors. To amend the country's reputation, international businessmen can help guide the Burmese to start a market in gems and minerals. Not only will this reduce illegal exporting, but it will also help Burma lend credibility. The newly developed gem industry will provide new job opportunities and revitalize the economy. With its newfound wealth, the Burmese government can then use the funds to improve education and enhance students' learning environments.

After several years, consumer demand will gradually rise, bringing more customers and saving countless farm families from poverty. Families can better afford to pay for their children's higher education. As the younger generation becomes more educated, better farming techniques are employed. Soil erosion is greatly reduced and crop production is more productive. Little by little, Burma will once again become prosperous.

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