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Madagascar, Malnutrition

### **Madagascar: A Proposal to Decrease the Effects of Chronic Malnutrition**

Home to one of the most diverse ecosystems on the planet, Madagascar is a prime specimen when it comes to isolated environments. Being the fourth largest island, Madagascar harbors over 27 million inhabitants, many of whom suffer from chronic malnutrition in the form of stunting. Stunting, as defined by the World Health Organization, is “the impaired growth and development that children experience from poor nutrition, repeated infection, and inadequate psychosocial stimulation.” Not only are the effects detrimental to the physical body, they often lead to much more extreme consequences later on in life (Severe wasting). It is imperative that certain necessary actions are taken in order to prevent a clearly avertable predicament among the population, considering that “it affects 42% of children under five years old.” (Madagascar MICS, 2018). The critical rates of chronic malnutrition require the whole-hearted attention from the rest of the world and is deserving of immediate relief, as according to the UN Human Rights Office, “The right to adequate food is realized when every man, woman and child, alone or in community with others, has physical and economic access at all times to adequate food or means for its procurement.”

Madagascar is arguably one of the most captivating landmasses on Earth considering the impressive biodiversity it boasts, not to mention the unusual land formations on the 587,400 square kilometer island. Despite the magnificence of Madagascar, it is one of the most susceptible countries to climate change. According to USAID, “Madagascar is uniquely vulnerable to natural disasters, which routinely strike different regions of the country and can suddenly and drastically affect the food situation of varying parts of the population,” further suggesting that there are various factors that impede the full development of the country (Working in Crises and Conflict). In an approximation from 2018, Madagascar consists of 71.1% agricultural land, 6% arable land, and 21.5% forest (CIA).

Madagascar has a GDP per capita of \$471.49, placing the country among the likes of Mozambique and the Central African Republic (World Bank). Despite the opportunities that the land offers from an economical standpoint, not much can be done to resist the impacts of climate change and the commonly occurring natural disasters that are the byproducts of it. In reference to a survey conducted by UNICEF, the average household size is 4.5 and will tend to vary slightly from rural to urban areas. According to The DHS Program, around 20% of the population have access to electricity, 35% of households have access to safe drinking water, and 55% have access to toilets (Madagascar DHS, 2003-2004). However, it should be noted that the percentages are the combination of data collected from both rural and urban regions, as there were higher percentages closer to the capital, Antananarivo. Particularly in rural regions of the island, there is a shortage of paved roads as accessibility to certain facilities is limited. Madagascar, officially known as the Republic of Madagascar, is a semi-presidential government that relies on a Chief of State in the form of a president, a Head of Government in the form of a prime minister, and a cabinet of

ministers (Madagascar: Government). Madagascar has had a history of both colonization and ineffective governments since the state's independence in 1960, as the most recent coup d'état saw a transfer of power from former president Marc Ravalomanana to Andry Rajoelina.

One of the main health concerns within the population is stunting and is the source of countless chronic illnesses and diseases that may contribute to a shortened life span. While the rates of stunting often vary depending on the region, they remain within the range of 32% to 50% for children under the age of 3. From this large percentage, approximately "14 percent suffer from acute malnutrition and are wasted." (Madagascar DHS, 2003-2004). Child wasting, as defined by the World Health Organization, "refers to a child who is too thin for his or her height and is the result of recent rapid weight loss or the failure to gain weight." Stunting is often a major concern in developing nations and must be addressed efficiently and appropriately, considering that future generations are undeniably at stake. It is imperative that immediate action is taken considering that the initial "1,000 days of a child's life" are vital in determining to stunt. While there are several different methods to approaching this issue, it is asserted that the evident lack of nutrition emanating from the children's diet as well as certain hereditary factors are the two primary components that need to be resolved (Reduce stunting).

Subsistence farming has long been a common practice in developing countries due to a lack of organization and presence of the agricultural industry. All things considered, it makes logical sense to establish an association of farmers that would not only organize the yielding of crops but would also eliminate the risks involved in subsistence farming, which is the prominent technique commonly found in Madagascar. While there are no definitions set in stone, subsistence agriculture is defined by Barnett et al. as "farming and associated activities which together form a livelihood strategy where the main output is consumed directly, where there are few if any purchased inputs and where only a minor proportion of output is marketed." The effects of the drought in southern Madagascar are critical, and can partially be accredited to the flaws of subsistence farming. The transition from subsistence agriculture to an organized, "market-oriented agriculture...through commercialization of agriculture" would essentially serve as the basis of gradually resolving many of the nutritional issues present throughout the country (Food Security, Poverty and Nutrition Policy Analysis, 2009). Rather than depending on local farmers who are often affected by the extreme changes in climate, it would be both efficient, cost-effective, and profitable from an economic perspective to unionize rural farmers. Such a coalition among farmers would establish a structure of resistance against the effects of climate change, which often come in the form of cyclones, floods, droughts, and rising sea levels to name a few (Environment and Climate Change, 2022). The unionization of farmers would allow for standardized methods of agriculture, as well as provide a safe and advantageous economic environment that has the potential to benefit the entire population. Subsistence agriculture is too risky of practice to be responsible for providing nutritional value for a large amount of the population and is arguably one of the main contributing factors that encourage the stunting rates within Madagascar. While this proposal may not have an immediate effect on the current crisis, it is undoubtedly an option to consider in the long term.

A plausible, yet immediate solution to the hunger crisis occurring in Madagascar would be to provide food, not in the form of funding but with the actual distribution of sustenance. As stated prior, the right to access food is imperative and should be prioritized over any of tomorrow's solutions that may still be in the works. Humanitarian aid such as the World Food Programme, UNICEF, and Action Against Hunger,

among other organizations, have taken similar measures in an attempt to minimize the potential effects of chronic and acute malnutrition, particularly among children. To digress, an additional yet relevant solution would be to provide school meals for children. This initiative would effectuate two objectives in the sense that it encourages parents to enroll their children into schools, while also feeding the children at least one meal a day. Not only would this provide an incentive for education, but it would also ensure that the children are not on the streets, often begging for food or laboring to put food on the table (Southern Madagascar: Hunger looms). This would seem plausible considering that humanitarian aid such as the World Food Programme has taken similar initiatives, partnered with the Ministry of National Education (Madagascar). Albeit this proposal may not apply to the entirety of the age range that is susceptible to stunting, it can indeed minimize the impacts for children over the age of 2. With adequate funding and proper motives, children can be both fed and educated, further promoting the growth of tomorrow's generation in Madagascar.

Genetically modified organisms, better known as GMOs, are often viewed as a double-edged sword considering the potential impacts of their consumption. Genetically modified organisms, or in this case crops, hold several benefits in terms of being capable of growing in unfavorable conditions. Southern regions in Madagascar that are often affected by climate change are a propitious prospect for the introduction of genetically modified crops considering the flexibility it offers. The advantages that genetically modified crops present are beneficial to the population as it allows for the agricultural field to prosper while minimizing the environmental challenges that may curb the natural crops. The adaptability of GMOs, as well as the capacity to adjust depending on the various demands of the population, are certain characteristics that are alluring to the discussion on resolving world hunger. The proposal of genetically modified crops has long been relevant in aiding certain issues in developing countries, as "Half of the global GM crop area is located in developing countries," (Qaim & Kouser, 1). Despite the benefits of such initiatives, one must also consider the risks involved in genetically modified organisms. While it can be argued that there is an insubstantial amount of evidence to support each side of the debate, there are more concerns in comparison to the praise of the proposal. In the case of Madagascar, GMOs can aid in the shortage of food in correspondence to the national demand through a process known as CRISPR-CaS9, which would "be an eco-innovation that would reduce the use of chemical fertilizers in rice production in Madagascar." (Nlend Nkott & Temple, 2). The introduction of GMOs should not necessarily symbolize Madagascar's total reliance on such scientific advancements, considering the risks that are being taken by implementing them. The FOFIFA, or the "national center for Agronomic research," is the most involved in the overall distribution and production of such seeds, in spite of the inventory concerns "because of the lack of financial means, FOFIFA cannot produce large quantities of basic seeds, which limits the certified seed production capacities of seed producers." (Nlend Nkott & Temple, 6). Despite this, however, the viability of this proposal remains in doubt considering the costs as well as the controversy that is associated with the modifying of genomes in crops. According to a survey conducted by Nlend Nkott and Temple, "Producers prefer to rely on exchanges among themselves to obtain seeds because, they find that price of seeds are expensive (2500 Ar/kg) and that sales points are insufficient and far from their homes," further complicating matters and raising a question on the accessibility of genetically modified seeds. With full disclosure to the public, GMOs can be introduced as an alternative option for nutrition, as it would be a better option than the limited supply of food that dwindles. Disregarding the doubts and potential threats of genetically modifying crops, "biotechnology will provide major gains in agricultural productivity and effective biological means to prevent and to

remove pollution,” while also providing a means of resistance against certain uncontrollable factors that hinder the agricultural growth and development of Madagascar (Horsch, 2).

The implementation of the various solutions that were proposed does not only raise awareness of the current circumstances in Madagascar but also reflects on other countries that are facing similar challenges, despite the lack of connection geographically or culturally. It is ludicrous that certain countries and their people are not being granted a basic human right in the form of nutritional deficiencies at a time period when humanity has developed the most in history. All things considered, resolving the issue of chronic malnutrition and stunting, in particular, should be a main priority for the Malagasy government, non-governmental organizations, and global activists who seek to accomplish a common goal of ending hunger in Madagascar. The incorporation of school meals, genetically modified crops, and the unionization of farmers all serve as possible solutions for this while ultimately encouraging the development of The Red Island and its population.

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