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Republic of Congo, Malnutrition

## **Republic of Congo: Rural Aquaponics & Global Hunger**

Did you know that the Democratic Republic of the Congo has the lowest annual salary rate, per capita, in the world? According to the World Bank, "72% of residents live in poverty and 21.8%" of them are acutely malnourished ("The World Bank...", 1). With a drastic level of poverty, political/ economic instability, and food insecurity the Democratic Republic of the Congo, or DRC, has a wide array of issues. And to compound this problem, education is neither affordable nor compulsory in the DRC, which means there are very few educated individuals to solve their growing problems. Violence, rape, lack of education, war, hunger, disease, and poverty are all prominent issues in the Congo. In order to reduce these issues, we must find a multifaceted solution that addresses most, if not all, of these problems. The way by which this is best accomplished is by understanding the average Congolese family unit, their lifestyles, and their occupations. Without this information, it is impossible to create solutions that will effectively and properly address the issues which are prominent within Congolese society.

Family ties in the Congo are extremely important since most people live in rural communities, farm for a living, and rarely leave the immediate proximity where they were born. According to the World Bank approximately 55%, the majority of Congolese people, live in rural environments ("The World Bank...", 1). In addition to this, "seven out of ten Congolese people are employed in agriculture making it the most prominent industry in the nation" ("Democratic Republic...", 1). This is an extremely relevant piece of information considering that the "average farm size is four acres" in the DRC ("Democratic Republic...", 1); many people are unable to grow a plentiful amount of crops because they do not have the technology to farm on a large scale. Since most residents in the Congo live and work with their family almost exclusively, they are very closely tied on a familial level. However, due to the fact that the average household contains five people, this lifestyle is very unsustainable; "the average fertility rate per woman is 5.92", meaning that one to two children die in their youth, typically by malnourishment or disease ("The World Bank...", 1). As it has been previously stated, family relations are important in Congolese villages, but a lack of access to medicine, food, and potable drinking water makes it difficult to ensure everyone's livelihood. Also, despite "deep family ties" in most villages, there are many children who are "products of wartime rape", leaving some families without a male leader and making survival much more difficult; this is just one of the very brutal and permanent effects of war in the region (Lemarchand, 1).

Local villages are the defining units of the Congo because their society is so decentralized. The federal and regional governments are unable to exert much power over the nation because of political instability. The size of most of the settlements in the DRC "ranges from 20- 250 huts", which are most commonly constructed out of solely organic materials (Lemarchand, 1). Since the Congo is a very diverse nation from an ecological standpoint, the environments of these villages vary drastically, however, most of the inhabited land of the DRC is arable and receives a generous amount of precipitation compared to its African counterparts; they receive so much rainfall because there is a "large river basin within its borders" (Lemarchand, 2). There are also many natural resources within the Congo because of the large rainforest

that occupies a significant amount of land. These resources include rubber, ores, and lumber which are some of the country's greatest non-agricultural exports. With all of these resources and materials present, if the turmoil which the DRC is experiencing could be reduced, the country would experience massive economic growth.

In order to utilize these resources, however, peace and stability need to become more commonplace throughout the region. To achieve peace in the region, first, the causes of war, violence, and instability must be identified; it is impossible to solve problems when the root causes from which they are derived are unknown. Now, the primary cause of war in the region is most likely hunger and low-income. With “72% of Congolese people experiencing poverty”, it is no wonder that many of them resort to violence in order to survive (“The World Bank...”, 1). Ergo, food must be made more secure in the region. Despite the fact that most of the Congo’s citizens are agrarian farmers, this may be harder said than done; agricultural solutions will need to be introduced to Congolese people on a village-by-village basis. Traveling to each of these villages on an individual basis will also introduce problems of its own; infrastructure and violence will make travel difficult in the Democratic Republic of the Congo. Also, there is a chance that Congolese farmers will be hesitant to adopt new agricultural methods. However, these are problems that must be overcome.

As it was previously mentioned, food insecurity is the primary issue in the Congo even though it is not the only issue; it is a probable root cause to the other complications in the Congo. An affordable, efficient solution to hunger (within the river basin region of the Congo) are aquaponic systems. Although this solution can only be utilized in wet, humid regions of the Congo, it can significantly reduce the number of issues that these regions within the country are facing. Large-scale aquaponic systems can allow for job specialization because people will no longer need to farm for a living and, hopefully, fewer young men will devolve to violence in order to survive. The water which will be used to circulate nutrients throughout the system will also be much cleaner than other water available. Lastly, although “cassava leaves and beans” are the primary sources of nutrition for agrarian communities right now, aquaponic systems will allow for a greater variety of crops to be grown, leading to a healthier populace (“The World Bank...”, 1).

Aquaponic systems essentially circulate nutrients from fish to plants and from plants to fish, using water as a mode of transportation. These systems are able to produce ample amounts of fruits, vegetables, and fish. While they are often complex, it is possible to create simplified systems which can be implemented on a large scale basis. Once again, it is necessary to keep in mind that the average salary in the Democratic Republic of the Congo is “the second-lowest in the world” according to Business Insider (Tasch, 1). Maintenance costs of aquaponic systems are typically inexpensive after they have been initially built; seeds can be harvested from plants, fish will reproduce, and water can be recirculated throughout the system. Plants are much easier to plant, harvest, and care for, considering the fact that aquaponic systems are not as labor-intensive as traditional agriculture methods. Ergo, only a few individuals would be necessary to achieve the nutritional stability of villages ranging from 20-200 people, which is the common village size in the Congo (Lemarchand, 1).

As I stated, this solution is only applicable to certain demographics of the Democratic Republic of Congo’s population. The reason that this solution would not be optimal in a war-torn, urban city is because it takes a lot of resources in order to get aquaponics systems started; ergo, it would be wasteful to implement these systems where they would be more likely to experience vandalism. Also, it would be difficult to operate and maintain these systems in regions that do not receive much rainfall or that are not near rivers. However, the Congo receives an average of “forty-eight inches in rainfall” annually; this is an

ample-enough amount of rainfall for the system which I am proposing (Lemarchand, 1). Finally, the other complexity which may complicate the implementation of these devices is the fact that many Congolese people are undereducated. Therefore, in order for them to operate these systems on a permanent basis, an educational campaign may be necessary throughout villages where aquaponic systems are present. This will increase the self-sufficiency of the Congolese people.

Some of the content that would be important to teach about in educational campaigns would be: physical science, biology, geometry, and botany. These topics would give learners at least a basic understanding of how aquaponic systems work and how to maintain an operating system. In addition to teaching this curriculum, it would be important to teach them skills as well. Having the Congolese villagers assist in building aquaponics systems would be a very effective way to do this. They would learn construction skills, the specifications of aquaponic apparatuses, and also how to fix any issues that arise after the construction is finished.

Once again, the issues presented in the Democratic Republic of the Congo are complex and will require more than one solution. Another solution to resolve the Congo's problems would be government/ political reform. The only people who can effectively enact and implement this solution are the Congolese; they must heavily reform their government so that corruption and violence are reduced; this is an especially vital component to reducing violence because the government often acts in a very corrupt and questionable manner. Positive reformation will promote industrialization and a healthy economy, which would reduce hunger and "drastically improve quality of life" (Majewski, 1). In order for this to occur, there must be widespread unification and support across the Congo for implementing basic human rights. In theory, this should not be difficult because most of the Congolese have common values and lifestyles, yet in reality, the revolutionary measures which are necessary are not easily accomplished.

Recreating the Congolese government would not only create a safe and rich economic environment for the Congolese people, but these changes would also be long-lasting. It is vital that the government of the Congo is able to ensure rights and security to its citizens; they are not doing this at the moment. As I stated, these revolutionary means would require a driven and unsatisfied populace to enact difficult reforms or even commit upheaval. However, many republics and democracies would be likely to support an uprising that promises freedom because they have done this in the past in other countries. The U.S. government is already granting the Congo aid for humanitarian purposes. U.S. aid is one of the leading organizations involved in supporting the Congo, having given "them and their neighbors over \$370 million since 2018" ("Democratic Republic...", 1). While foreign aid cannot solve all of the Congo's problems, U.S. assistance in political reform and the reduction of hunger is likely to have a beneficial impact on the Congo.

Therefore, many of the resources that the Congo requires for reformation are at least semi-likely to be attained. If the E.U. and the U.S. redirect a large portion of their aid to the Congo into aquaponic systems and informational funds then it is much more likely that their money will be spent efficiently and productively. "Between the two nations over one billion dollars have been provided to the Democratic Republic of the Congo since 2014" ("European Union Backs Peace...", 2). Currently, most of the aid provided to the Congo is for "medical purposes", but this use of funds fails to address long-term problems, which are far more prevalent in Congolese society; the only way to solve these long-term issues is to address them with a long-term-oriented solution ("European Union Backs Peace...", 2). Now, how to reorient these funds and who to contact must be addressed.

Tracking the origination of these funds and those who allocate them is a difficult process. Most, if not all, of these funds, are generated in taxes from either United States citizens or citizens of the European Union member states. In the United States, most of the aid is provided either directly, or indirectly, by Congress; if Congress is allocating money indirectly they are granting it to the organization “U.S. Aid for distribution”, however, Congress can ultimately dictate where funds are received as well as how they are received (“Democratic Republic...”, 1). The European Union’s funds are distributed according to the “European Commission”; it is composed of citizens from its member states (Parandii, 1). Therefore, members of these organizations are the people who must be convinced that the previously stated solutions are appropriate and efficient uses of their funds.

Ergo, petitioning and lobbying to members of Congress and the E.U. commission is what you can do to enact these proposals. In addition to this, creating popular support amongst community members for these policies would also be beneficial. If you want to create real, substantial change you should reach out to your representatives and let them know that this is a priority to you. These proposals and solutions do not require the United States or the European Union to generate more money in aid for the Congo than what they typically contribute, they simply require that the funds which are being given to the Congo are used in a more appropriate and efficient manner.

In conclusion, the Congo and its people are facing some very harsh and complex issues, but they are not unamendable either. Despite the fact that the Congo has an abundant amount of natural resources, the living and working conditions of the average citizen are abysmal. However, the Congo’s access to several very valuable resources is extremely promising; if the nation can be stabilized these resources can be utilized to raise the standard of living of the average citizen by an exponential level. Although, in order for this to occur, real and substantive change must first be made in reducing the acute hunger within the country’s borders. There is a cruel cycle that is repeating itself in the Congo and it begins with people’s struggle to survive. To create this change, the foreign aid which the Congolese receive from organizations such as the European Union and U.S. Aid needs to be redirected into funding for aquaponic systems and educational campaigns. While the solutions I have presented are complex in practice and will not be easily achieved, they are necessary to provide a long-lasting cure to the violence, poverty, and hunger that the people of the Democratic Republic of the Congo experience.

## Work Cited

Lemarchand, René "Democratic Republic of the Congo". Encyclopedia Britannica, 11 Sep. 2020, <https://www.britannica.com/place/Democratic-Republic-of-the-Congo>. Accessed 4 March 2021.

Majewski, John. *How the Industrial Revolution Increased Quality of Life*, Foundation for Economic Education, 1 July 1986, [fee.org/articles/the-industrial-revolution-working-class-poverty-or-prosperity/](http://fee.org/articles/the-industrial-revolution-working-class-poverty-or-prosperity/).

Parandii, Khrystyna. *Is Development Aid a Victim of the EU Budget Deal?*, Centre for European Reform, 15 Sept. 2020, [www.cer.eu/insights/development-aid-victim-eu-budget-deal](http://www.cer.eu/insights/development-aid-victim-eu-budget-deal).

Tasch, Barbara. *The 23 Poorest Countries in the World*, Insider, 13 July 2015, [www.businessinsider.com/the-23-poorest-countries-in-the-world-2015-7](http://www.businessinsider.com/the-23-poorest-countries-in-the-world-2015-7).

*Democratic Republic of the Congo*, US Aid, 11 Dec. 2020, [www.usaid.gov/democratic-republic-congo](http://www.usaid.gov/democratic-republic-congo).

*European Union Backs Peace and Security in the Democratic Republic of the Congo with New Aid for Police Reform*, European Commission, 16 Nov. 2020, [ec.europa.eu/international-partnerships/news/european-union-backs-peace-and-security-democratic-republic-congo-new-aid-police-reform\\_en#:~:text=In%20the%20Democratic%20Republic%20of%20the%20Co](http://ec.europa.eu/international-partnerships/news/european-union-backs-peace-and-security-democratic-republic-congo-new-aid-police-reform_en#:~:text=In%20the%20Democratic%20Republic%20of%20the%20Co).

*The World Bank in DRC*, World Bank, 4 May 2020, [www.worldbank.org/en/country/drc/overview](http://www.worldbank.org/en/country/drc/overview).