Building Community Resilience through Environmental Management done for Livelihoods and for Faith: The Case of Christian Impact Mission in Yatta Kenya

Lagat, Daniel Kipkemboi

Moi University

Abstract

The realization of Vision 2030 in Kenya greatly depends on how development will be carried out sustainably. Human development will depend on food and water security, and whether these people have money in their pockets for education, health, and proper living. Sadly, the reality of climate change is threatening to destroy all pillars of development in Kenya. Christian Impact Mission, a church organization in Yatta constituency in Machakos Kenya, has been exerting significant effort to build resilience of the residents of Yatta to have food and water security and to practice agribusiness to give them money. This study focused on the work of Christian Impact Mission to examine the strategies used to build community resilience in a context of harsh climate. The central question in this study is "what factors that are at play in successfully building resilience of Yatta residents?" A total of 20 participants were interviewed, including CIM leaders, key implementers if CIM initiatives, local administration and other knowledgeable informants that were accessed through snowball. Findings indicated that while livelihoods became the priority and foundational need for the people of Yatta, faith became the overarching motivation for people to remain resilient. The study findings show that when environmental management initiatives present people's felt need, they elicit an attitude of responsiveness. Furthermore, faith plays a crucial role in shaping people's attitudes and making them inclined towards transformation. Finally, when people are convinced that their environmental stewardship contribution adds value, they are motivated to participate. This study recommends that faith development organizations should capitalize on the religious faith of the people they work with to influence them to adopt positive practices and ethics.

Key Words: Resilience, Food, Faith, Entrepreneurship, Livelihoods, Sustainability

Introduction and background

The need for food has recently become a pressing concern in Kenya. Kenya's population is increasing by about a million people every year, but the size of the land obviously remains the same. The fact that Kenya is largely arid or semi-arid, makes production of food a difficult endeavour (Atlas of our Changing Environment, 2009). Furthermore, the changing climatic conditions, coupled with decreased land fertility and increased urbanization further compounds the problem in Kenya, worsening the already bad situation. Because of that situation that most of Kenya is in, the ability of Kenyans to produce food is severely compromised. The need for innovation and resilience therefore becomes urgent.

Several attempts have been made by various individuals, organizations, and state sectors to respond to the situation. Companies that market seeds have been developing varieties that can withstand adverse conditions, but this has not delivered much results. The government of Kenya has even tried to fund a multi- million project in Tana River County to do irrigated farming, similar to what is done in desert countries like Israel. This too has consumed more money than it has produced. Individual farmers have tried creating more land from grassland and forests but the situation is even grimmer. It does not matter that most of what used to be Mau Forest has now been deforested and transformed into crop farms. In 2017, Kenya had to import food from Mexico, a transaction that cost the county a lot of money due to the exchange rate and cost of transport. That money would have been used in development and infrastructure, yet this problem must be solved, otherwise the 'ship will sink.' The threat of the 'ship' sinking is aptly presented by Edward Brown (2006), who points out that in an ordinary ship, there are many people with different duties.

Some are cooks, others are captains, security personnel, cleaners, and engineers. If there is a leak, a dangerous one, all activities become temporarily useless, until the problem is fixed. In this analogy, Brown observes that the problem with the environmental 'ship' has to be fixed or nothing else will matter, because the ship has a problem, and if not fixed, it will not reach the port (Brown, 2006, p.91). This analogy, in my own view, truly represents the situation in Kenya.

The role of Christians in an environment has not been clearly evidenced all over the world. It is ironical that Christians seek to honour Christ and despise his magnificent works at the same time (Dewitt 1998, 37). Edward Brown (1996) avers that this should not be a hotel or conference declaration but an honest, committed change by the Church, both leaders and laity. It will even have more impact if the pastors and Sunday school teachers begin to deliver stewardship messages from the pulpit and writers use the power of the pen to change the situation (Brown, 2006, p.98).

In this study, the contribution of Christian Impact Mission is presented. This organization is considered strategic, because it mobilizes Christians (who represent 80% of the Kenya's total population) in Yatta constituency (which is a harsh[1] environment) and has been successful in transforming some people to produce food and make money. The most transformative activity, which is now known by very many people in Kenya is the OMO project. Bishop Masika, who is the leader of Christian Impact Mission has been able to transform the people to stop relying on relief food (*mwolyo*) and to work using their own hands (thus Operation *Mwolyo* Out - OMO).

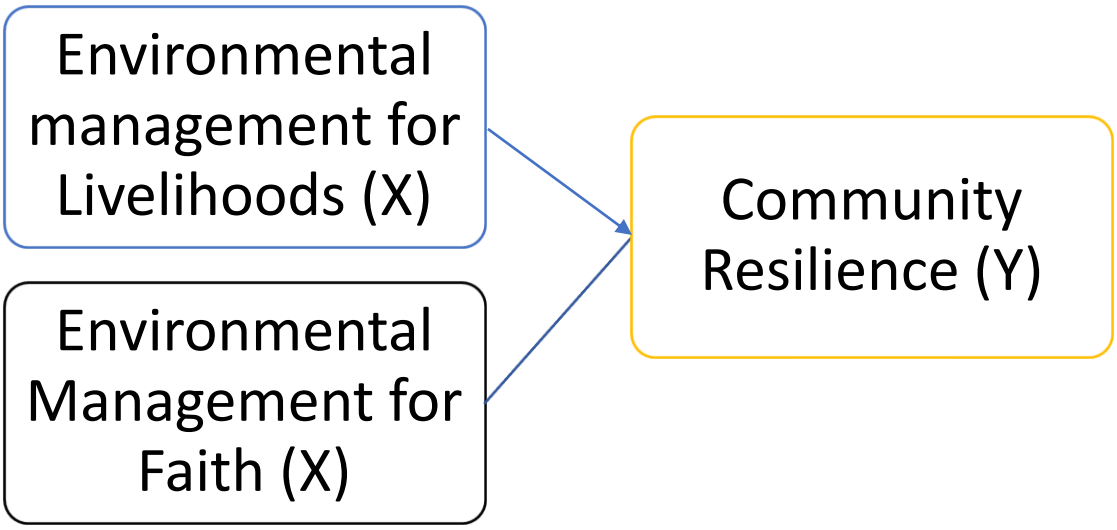
[1]Yatta constituency is a very dry place in Kenya, and has been used severally in the news in national television in Kenya, as a place of adversity, deaths, and suffering due to droughts, floods, and other climate related occurrences. In 2009, the Citizen Television broadcasted a feature story, where a woman died while giving birth, because there was no water and no food.

This paper examines environmental concerns in Yatta constituency and environmental adaptation measures implemented by the CIM adherents for mitigation purposes. The paper seeks to elaborately show what prompted CIM to participate in those activities. CIM website contains useful information related to environmental concerns. The mission of CIM is to work with others in promoting the transformation of mind sets and worldviews and mobilizing local and global capacities for sustainable community transformation. CIM's mandate is "environmental concerns," food security, human development and advocacy (CIM Website). The Yatta Transformation Model program otherwise known as OMO within its first year of inception made tremendous strides by turning into a transformation movement. Launched in 2009, covering a small village, the program grew rapidly and at the end of the year, it had over 3000 active members, who had constructed over 1000 water pans spread over a radius of 30 km. The members also began growing crops such as French beans for export, water melons and sweet potatoes, effectively converting the area to green in the midst of dry neighbourhood.

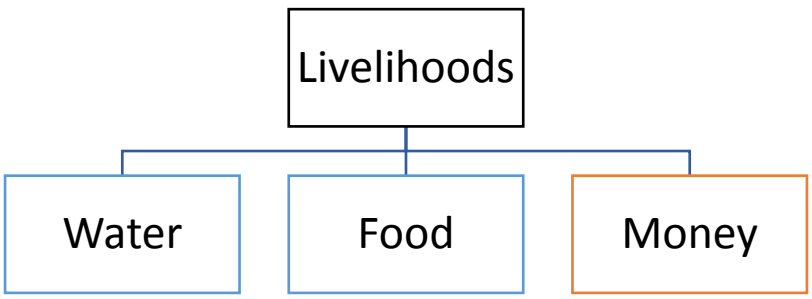
Objectives of this study

1. To find out and document the environmental concerns in the Yatta context.
2. To examine how the CIM's environmental management activities done for livelihoods purposes have helped to build community resilience.
3. To understand how CIM interventions through training and capacity building matched the need in Yatta constituency.
4. To explore ways in which CIM's environmental management activities done for faith purposes have helped to enhance Yatta community resilience.

Conceptual Framework



In this study, it is conceived that there are two aspects that influence community resilience in Yatta Kenya: Environmental management activities done for the purpose of livelihoods (for example food), and environmental management done for religious worship (for example growing trees and digging water pans as an aspect of Christian stewardship). Livelihoods are conceived as shown below:



This study investigated the roles played by Christian Impact Mission (CIM) to build community resilience in Yatta. It is not assumed that CIM alone led to the transformation. This study operates with an understanding that other factors (Z) such as formal education, development organizations, government agencies, et cetera, who also have a stake in Yatta, would have exerted some influence during this or other times. However, the interest of this study was on what CIM did, and the role it played. The research questions were therefore framed in such a way that they ensured control of the study, so as to collect data on what CIM did since 2009, during the time it has been present in Yatta.

Literature review

The meaning of climate change has been the subject of controversy in many countries. According to the United Nations Intergovernmental Panel on Climate Change (IPCC), climate change refers to a change in the state of the climate identifiable through weather changes that persist for decades. These changes definitely impact the ecosystem and with agriculture becoming the victim of change, especially because of climate change effects, which usually compromise water and soil potential. (UNFCCC, 2007). A key aspect that is examined in this study relates to desertification and drought. Boitt and Odima (2017) concluded that desertification has been sweeping at an alarming rate, with changes becoming evident even in just one decade. The following two photographs show the changes in one decade.

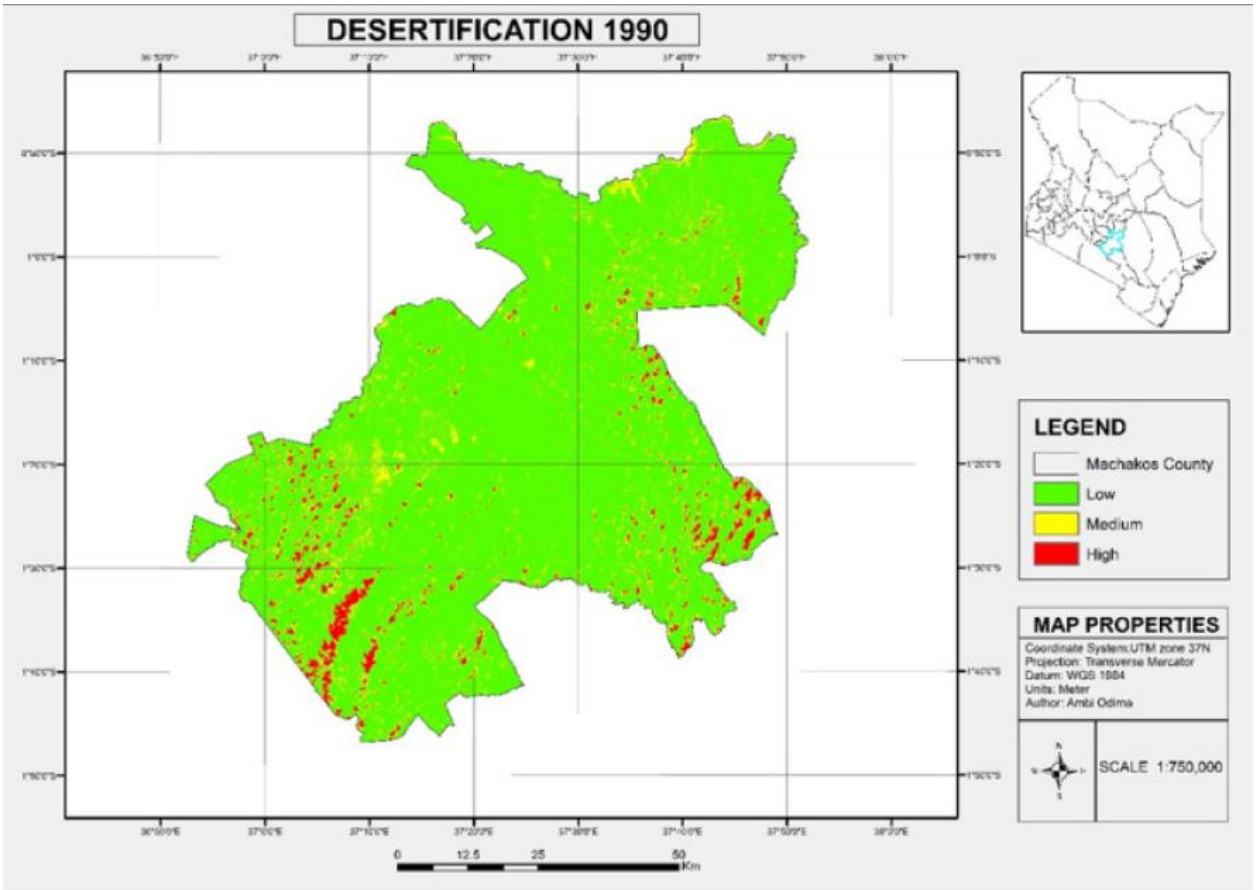


Figure 1: Desertification in Machakos County in 1990 (Boitt and Odima, 2017).

The figure indicates that the fraction of 'desertified' villages in Machakos County in 1990 compared to the rest of the county was negligible. Although definitions of desertification vary from individual to individual, it is notable that when the same study was done ten years later, desertification was conspicuous, as shown in the figure below.

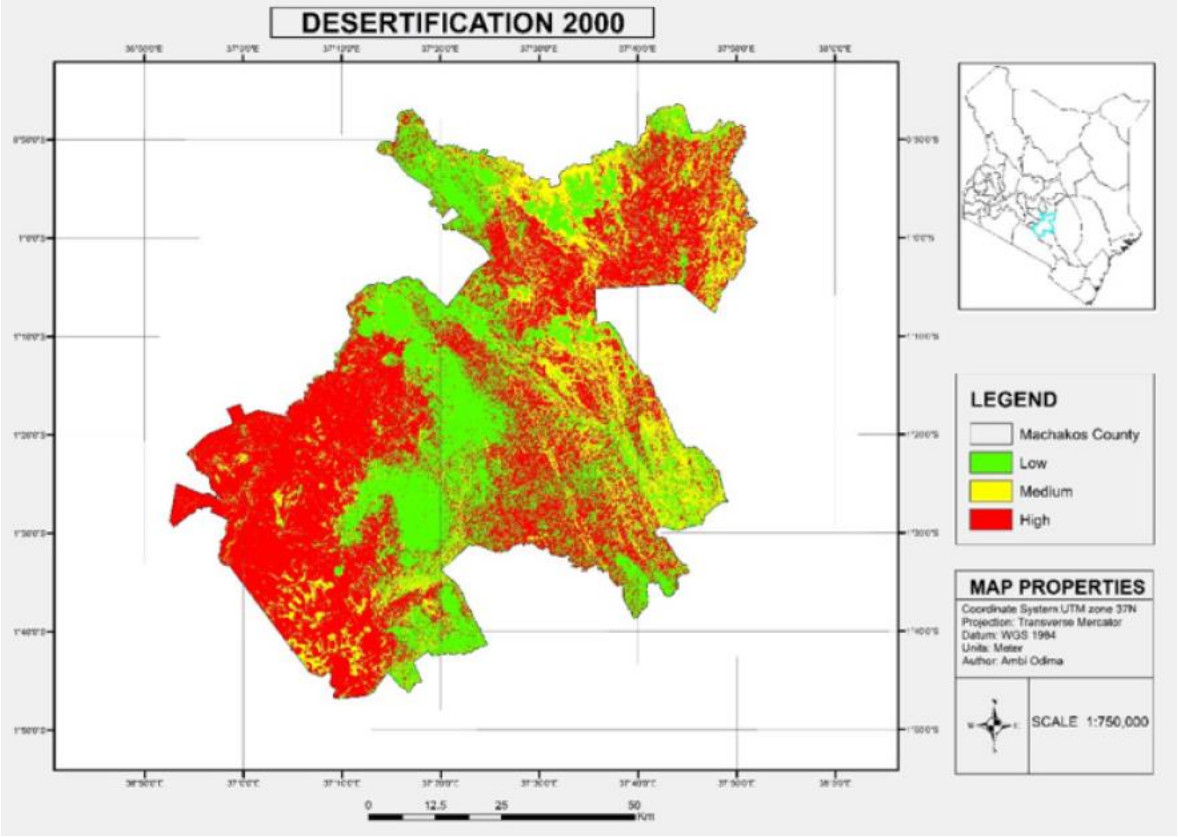


Figure 2: Desertification in Machakos County in 2000 (Boitt and Odima 2017).

The figures show that desertification in Machakos has been extremely rapid, with conspicuous ramifications. The second concern is drought. According to Ackello-Ogutu (1991), records show that there was drought in Yatta in 1949 and in 1975-76 period. Mortimore and Gichuki (1994), record that there were droughts in 1928-29, 1933-36, 43-46, 1949-1951 and 1975 periods. Other writers Rocheau *et al* (1995) record that there was a biting drought in 1984-85 period. International Federation of the Red Cross records that Yatta suffered drought in the years: 91/92, 95/96, and 98/2000, with the year 2000 drought being the worst in 37 years (IFRC, 2016, p. 1). There are thousands of other materials available online that provide discussions related to droughts in Yatta context, which then reveal that this concern is significant.

This aggravates the already worse situation of erodible and infertile Yatta soil types: Acrisols, Luvisols, Ferralsols, Alfisols, Ultisols, Oxisols and Lithisols (Lezberg, 1988; Barber et al., 1981; Scott, 1963).

The third concern was wanton deforestation in the Yatta Plateau. The dominant vegetation in Yatta constituency is dry bush (Lezberg, 1988). The problem was further compounded by laxity or unwillingness of farmers to plant trees (Munyao, Muisu , Mbego , Mburu , & Sirma, 2013). According to Munyao, Muisu, Mbengo, Mburu, and Sirma (2013):

> Despite the potentially important role Jatropha can play in Yatta District and notwithstanding the many agencies such as NGOs, private investors and churches involved in the promotion of *Jatropha curcas* cultivation in the country, its uptake remains low. This may perhaps be as a result of unavailability of land for *Jatropha curcas* cultivation.

Although these authors' interest was only on the cultivation of Jatropha curcas, it is notably interesting that the people of Yatta did not plant other types of trees, even those which the local people thought to be directly beneficial in the providence of fruits. Many farmers are reported to have preferred crop farming and livestock herding over planting of trees (Munyao et al., 2013)). An article by Mburu, Kung'u, and Muriuki (2015) point out to the fact that a lot of deforestation happening in Yatta is for charcoal burning. They observe:

> The farmers pointed out that they use species such as *Terminaliabrownii* (Fresen), *Dalbergiamelanoxylon* (Guill.&Perr), *Acacia tortilis* (Forssk.), *Acacia senegal* (L.) Willd, *Melia volkensii*, *Albiziaanthelmintica* (Brongn)and*Acacia mellifera* (Vahl) *Benth* among others for charcoal making. All these are trees of significant ecological importance in the dry lands. From field observations and farmers' responses regarding species that used to be common in Yatta area but are now very difficult to find, it was evident that charcoal burning has contributed to the disappearance of some of these species. Species such as *Dalbergiamelanoxylon* and *Albiziaanthelmintica* are quite rare in Yatta district. Indeed *Dalbergiamelanoxylon* is listed in the IUCN Red List (2010) as a near threatened species. (Mburu, Kung'u, & Muriuki, 2015, p. 716)

The fourth concern was water scarcity. Reports by the Republic of Kenya (2009), Yatta Constituency receives about 450-800 mm of rainfall per year and average temperatures range from 25 to 29°C. According to Ngigi (2002), Kenya has only about 17% of its total land area, available for farming due to rainfall patterns. The rest receive less rain, usually not more than 700 mm annually, and which would not support crop farming (Ngigi, 2002). A book by Mogaka, Gichere, Davis and Hirji (2005) reports that water scarcity due to droughts or water degradation to floods cost Kenya about 16 billion shillings every year, equivalent to 2.4% of the GDP, which is a serious encumbrance to the country's economy. Masika (2016) points out that water scarcity was a major struggle for the people of Yatta Plateau and one of the main reasons why he sprang up to action when he heard that people were dying in Yatta due to lack of drinking water and food.

The fifth concern was overgrazing. A relevant article that follows this problem historically was Peberdy (1958). He noted that the first government-posted District Agricultural Officer to Machakos in 1931, was Mr. Leckie, who sought to work with Local Native Council (LNC) to rehabilitate an 80 hectare steep, badly eroded land. He intended to use this as a case that would serve as a demonstration for future endeavours. He employed methods such as planting of Mauritius beans along the trench banks, keeping off the cattle, planting exotic drought resistant forage plants and supplying gullies with wash stops etcetera. A nursery was set up to supply fodder plants, trees and wash-stop grasses, such as the Mexican daisy, spineless cactus, napier, woolly-finger, Bermuda and crested wheat grass, Kudzu vine, black Mauritius bean, and drought-resistant fodder trees and shrubs (Kenya, DoA, 1932).

Furthermore, persuasion by the government administrators improved the adoption rate. These efforts were complemented by a regular supply of prisoners' labour for reconditioning work; introduction of meat factory to easy the culling of cattle and persuaded the Akamba to use the money gained from sale of their cattle to buy carts necessary for the transport of manure (Kenya, DoA, 1934; KNA:DC/MKS/8/4). Even with such efforts that seem relevant, the move was vehemently resisted, because it was being enforced by a government administrator. The demand for pasture and poor government intervention meant that it became difficult to control pasture in Yatta and this contributed to environmental collapse.

According to Holling (1973, p. 17), "resilience determines the persistence of relationships within a system and is a measure of the ability of these systems to absorb change of state variable, driving variables, and parameters, and still persist". As Holling further observes, resilience is a component of the system which determines whether the system will persist in certain circumstances, or it will become extinct. In this study, examination of CIM's environmental management activities related to building resilience will focus on aspects in which Yatta society has been transformed to persist.

Methodology

The study was carried out in Yatta constituency in Machakos County in Kenya, an area which is within the larger Yatta Plateau. The area covers approximately 2,469 Km^2 (Mburu, Kung'u, & Muriuki, 2015) and has a population of 299,435 inhabitants, most of who live along water sources and semi-urban areas within the constituency (Kenya, 2009).

This was a qualitative study with key participants being selected for interview. CIM leadership was interviewed and were also consulted to make reference on other potential participants for similar interview.

Snow ball technique was used to access participants, until saturation was reached. In total, 20 people were interviewed, including 3 CIM leaders, local administration, key implementers of CIM environmental management initiatives and senior members of the society with quality information regarding environmental and climatic information in the area.

Primary data was collected using in-depth interviews. The interview guide had been prepared ahead of time to guide on qualitative questions to be asked. Focus Group Discussion was also employed, to gather data that could best come during discussion. Observation was also done to gather qualitative occurrence that was observable. Pictures were taken and recorded. All information was recorded in note books, audio recorders, and computer drives. Audio recorded information was transcribed, and translated into English.

Data management was undertaken in an inductive thematic manner to allow proper analysis. This was followed by the task of identifying to categorising emerging themes and key issues from the data and noting the flow and relationship of ideas, in order to help generate a description of the setting, the act/actors, the events and the goals, which were important in guiding analysis. After this, ideas were synthesized and the themes coded to generate descriptions. This gave way to the third step: arriving at conclusions and ongoing tentative theoretical explanations of relationships of the variables and meanings of ideas from the field data. To develop a narrative, interconnectedness of themes was discussed and an interpretation of the meaning of the analysed data was done to explain how CIM succeeded in building resilience among the people of Yatta Constituency.

Results and Discussion

Desertification and Droughts

The most manifest environmental concerns in Yatta constituency are desertification and droughts. Interestingly, the residents of Yatta use one term in Kiswahili, '*ukame,'* to mean both desertification and drought. Measurable attributes used to describe '*ukame'* was thus used to determine whether the participant meant drought or desertification. Most of the people interviewed, shared their experiences of diminishing vegetation, bare sand becoming more and more visible, dominance of drying acacia trees, (unlike neighbouring Kiambu and Kangundo areas which had other types of trees) and continued denudation of grass land.

Although there is evidence that these characteristics have been evident in Yatta for a long time, it was also clear that the trajectory of change has been enormous, noticeable in one generation, as opposed to ordinary desertification that usually take several years before measurable change is recorded. Bishop Masika shares a story about his land that he bought in 1987. According to him, the land was 'good' when he bought it, but when he came 20 years later to show his wife, he was ashamed of it, because it looked like a desert. In my understanding, Masika successfully exposes the speed with which desertification is sweeping through Yatta, through this discussion of his experience.

Another participant, in his fifties who also is a leading implementer of CIM initiatives, points out that as far as he could recall, there were more drought years than rainy years in Yatta constituency and drought has been a recurring menace. Droughts and famine have become part of the life of the people of Yatta, such that it is difficult to remember a time in history when Yatta would rain regularly.

Rainy seasons, such as the El Nino witnessed in 1997, have always been followed by intense droughts, totally extinguishing all hopes for rainy years in the future (Interview 19/9/2016). These findings agree with other available literature relevant to Yatta constituency. For example

Deforestation

The third environmental concern affecting the people of Yatta constituency and which is also a basis for CIM response is the wanton destruction of existing tree cover. It was also reported that the frequency of afforestation was almost zero. Many people did not plant trees any more. The reason given was that, there was frequency of droughts which made survival of young seedlings almost impossible.

Pasture and vegetation

Pasture and vegetation are very scant in Yatta constituency. During the course of data collection for this research, I observed that most of the fields were open and denuded. According to a research participant accompanying me and who has been a resident in Yatta constituency the whole of his life, during the rainy seasons, lush grasses also grow, quickly covering the ground. Grassland occurs on black clay soils and areas of impeded drainage. In some parts of Yatta location, I notice some *Commiphora* species, along the streams; I could notice evidently woody vegetation, *Combretum,* which formed a semblance of forest bush along streams.

Land Degradation

Closely related to droughts discussed above is land which has also become an environmental issue. In the course of this study I observed that the land had experienced degradation, visible due to long years of drought and inactivity. Soil had also suffered cases of infertility and erosion which made the soil weak and unable to support agriculture.

Water Scarcity

As is the case with soil, Yatta has another problem: water scarcity. Societies that lack this resource have their livelihoods significantly compromised. During the course of this research, Bishop Masika repeated several times the stories of women who suffered because of water scarcity. Some were constantly raped at night, when going to look for water while others died as a result of fatigue and snake bites as they would trek for more than 20 kilometres to look for water, and this would normally happen at night when it is cool. In Yatta constituency, extensive droughts have resulted into dry river beds. The people therefore have been subjected to the trouble of looking for water from places far away from their homes. Another problem noted by another CIM leader is that there are increasingly erratic rainfall patterns which flood the rivers, but quickly disappear. This is not good for farming.

How CIM environmental management activities are building resilience

As defined earlier, resilience is the ability of a system to absorb change of state variable, driving variables, parameters and still persist in productivity (Holling, 1973). Water scarcity in Yatta constituency was noted to be a pressing need that threatens to collapse the system in Yatta.

Under the leadership of Titus Masika, Yatta community has tried rainwater harvesting and established small-scale water reservoirs (*Silanga*s) on farmlands. On those contours, the farmers are growing bananas to ensure that every flow of water is used to the maximum. This came as a realization that the area was prone to flash floods and sweep erosion which resulted every time there was rain either in Yatta constituency, or in the neighbouring Kiambu County. It came also after the realization that heavy vegetation loss had already occurred and there was no sufficient mechanism to increase infiltration mechanism. Water harvesting methods capture roadside runoff, and permit the intensive cultivation of cut-off drains and infiltration ditches and use of

banana pits. These water pans are sometimes reinforced using plastic dam liners to improve retention of water. Water is pumped out of these dams for irrigation, using either foot pump or solar power water pumps.

Masika (interview September 2016) observes that the people who dig water pans near their homes and direct rain water flow into those pans are few. The majority of the people do not harvest rain water. However, the few who practice runoff water harvesting on the farms had reported tremendous changes in production from their irrigated farms. In fact, as Ibraimo and Munguambe (2007) rightly observe, it is possible to double or triple crop yields through the technique of water pans. Resilience in this case, is evident in the ability of the people of Yatta constituency to continue producing food even with the reality of change of climate and increased droughts. Resilience is also seen in the ability of this system to overcome sweep erosion threats by using artificial means of water pans constructed along what would otherwise be 'water way.'

It has also been noted that the absence of reliable rain has directly and negatively impacted crop farming in Yatta, threatening food security in the area. Many people were already giving up on farming in order to become permanent candidates for relief food (*mwolyo*). This also had other ripple effects, in that it increased dependency syndrome, and increased vulnerability. The farming techniques advocated by CIM are those that help in water conservation. Techniques such as Farming God's Way, rip-ploughing, incorporation of livestock manure and crop residue to improve soil water holding capacity, infiltration and even reducing evapotranspiration (Interview with Masika, October 2016). Farmyard manure in farms, since the use of compost improves soil water-holding capacity and soil fertility, and increases water use efficiency. CIM has already done this experiment severally and confirmed the same. Dry tillage was also advocated for, to catch the first rains and store the water; ridge tillage which form furrows that increase surface

water retention, thereby reducing run-off, and increasing infiltration; and mulch tillage which retain surface vegetative cover, to reduce raindrop impact and evaporation.

Furthermore, modifications of cropping system have been employed, which is believed to be able to increase the efficiency of water use by plants. Such methods include timely planting and optimal planting density, the use of drought-evading and drought-resistant crops, crop rotation and fallowing, intercropping, relay planting and weed control.

They have innovative ways of maximizing the use of water for irrigation, such as using plastic linings to minimize infiltration. They also use other modern ways to ensure that water used for irrigation can be harvested and redirected to the fish ponds. Water from the fish ponds also get sucked and used for irrigation. In so doing, the fish and the plants get the advantage of both the water and the nutrients.

Figure 3: Vegetable farming under improved technology at CIM, used to conserve water.

As noted in the picture above, the use of technology to prevent water loss, and the fact that water is recycled, ensures that resilience is attained through maximum and sustainable use of available water. In summary, building resilience has come as a result of deliberate mechanisms associated with changing people's mind set, adopting technology and use of well researched information; which together has made Yatta constituency persist in productivity even with increased climate change.

The second issue noted in Yatta constituency and which presses the people in similar way as water scarcity do, is food insecurity. The breakdown of the agricultural system in Yatta constituency as a result of soil fluctuating droughts and floods, coupled with the problem of heavily eroded soil and aging farming community have together made food production almost impossible. CIM's strategy however of adopting a three pronged method of attitude change towards work, developing an attitude of loath towards *mwolyo*, and adopting technology and innovation in agriculture, has born some resilience fruits.

CIM adherents have been trained on how they could do adaptive farming. For example, instead of growing maize alone, the farmers are also growing sorghum, sweet potatoes and pigeon peas. Other crops that are suited to Yatta are cowpeas and green grams that are drought-tolerant and mature within a shorter period. This improves farmer resilience. Zai pits (technology of planting holes about 1 cubic foot) were dug in the farms to catch and hold run-off water and ensure minimal seed, water and soil erosion. All these have to be done on one acre pieces of land, which are managed to high standards. This ensures efficient use of labour. These ecological farming practices help to increase farmers' capacity to adapt, cope with and recover from climate shock, thereby establishing their resilience (Interview with Masika, October, 2016).

Figure 4: One leading CIM implementer showing visitors his garden

As shown in the picture above, hard work and the use of farming technology is helping farmers to produce food even when the climate conditions are harsh. The interesting relationship between mindset change and food production is seen here: only the hard working farmers related to CIM, and who have faithfully followed the details of what is required (such as having a water pan), are the ones that had crops in their farms in the month of October 2016.

Resilience in this sense is seen as a product, not just of innovation, but of a transformed mind, able to perceive work in a positive way. During this study, a research participant revealed how rigorous and expensive it was to dig one dam. Disciplined CIM adherents would need to work in a team, and work faithfully for a long time together, to get one pan ready. Then they would move to another pan belonging to the next person in the team.

Consequently, resilience has been built by 'soil capacity building.' This is a case where farmers deliberately and consistently work to improve the ability of their soil to support agriculture. In a way, when soil is really strong, the chances of return on investment is usually higher, a case in which it motivates farming practices. As discussed above, 'tired' and 'sick' soil is also to blame for perennial crop failure in Yatta area. CIM has sought to correct this problem by influencing the farmers to plant a certain species of crops and trees for soil fertility improvement: *Gravellier, Acacia albida, Calliendra, Sesbania, Gliricidia* and lablab beans. Another intervention observed is the crop rotation with a *Tithonia*, a green manure cover crop. These trees and crops fix nitrogen into the soil. Furthermore, mulching and other conservation techniques are practiced, which help to control soil erosion and water loss through evaporation. As the mulch and other soil cover decompose, they also help to improve soil fertility. Organic farming has also been practiced.

The growing importance of organic farming is gradually being felt, especially due to specific demands of certain high value crops to have been no chemicals used. Techniques such as intercropping and terracing techniques promoted by the government and which were popular among farmers succeeded, slowing down both the rate of sedimentation at dam-sites and the decline in on-farm soil quality and moisture retention (Interview with Masika, October 2016).

Training and Capacity Building: How CIM Environmental Management Initiatives are matching the need in Yatta Constituency

Generally, success can be attributed to transformation of the mind that happened to CIM adherents in Yatta constituency. This need for mindset change was necessary in this community because people were already giving up and retiring their energy and mind, so that they could wholly depend on relief food.

The challenge on depending entirely on relief food is that it reduces a society to inaction and a closed mindset, so that they cannot even try new technology or anything innovative. During this time however, CIM entered the scene and began working alongside people on a path that would later become internationally exemplary. This mindset change, first transformed people to determine, not practice unsustainable economic activities. Mindset changes enable CIM to overcome five problems: destructive human practice, domino effect, poverty, delinquent culture, and overgrazing.

First, Masika mentioned that they had to decide what problems were caused by human actions. They argued that vegetation collapse in Yatta constituency, based on their lived experiences, was majorly caused by human behaviour. Secondly, there was the problem I call "environmental collapse domino effect," where, as a result of frequent alternation between droughts and floods, one problem leads to one element of the system failing and the failure of that element leads to the breakdown of another and so forth, till the entire system fails.

For example, lack of food makes a group of people to adopt charcoal burning, then denuded land become vulnerable to erosion, then erosion makes the land unarable, and so forth and so forth. Those interventions became the reason for environmental collapse. This is what I call "domino effect." Domino effect is the repercussions one action choses to have on a greater system. The effect can be small or big, but in either circumstance, the impact of what is done creates a new problem, which in turn creates more problems and finally compromising the ability of the system to remain in its original condition. Masika pointed out that the persistent drought conditions implied an overall decline in agricultural production as well as increased investment in the affected areas in an attempt to ameliorate the condition. At the end, those actions, such as farming, became the reason for soil erosion.

Thirdly, poverty was found to have had significant possibility of impeding environmental management initiatives. When people are poor, their primary needs become more and only physiological in nature. In those moments, environmental management is viewed as a luxury that can only be practiced by *Wazungu*, and the rich people from the city. Cutting down trees to make charcoal in order to buy food become a necessity, and any attempts to deny people that option is greeted with rage and suspicion. Poor people in the villages also depend on trees for firewood, for they cannot even imagine using electricity or liquefied petroleum gas. Sometimes also charcoal burning is practiced to raise school fees, which has recently become a primary necessity in many homes. CIM's farming education, technology and initiatives, not only helped people to produce food, but also to make money, more money than they would ever make from charcoal. In providing people with alternatives that clearly provide a reasonable hope and attraction, CIM's initiatives match the pressing need and result in successful implementation.

Fourthly, and probably a deeply destructive problem was that of delinquent culture that was evident in Yatta constituency, and which make CIM initiatives become necessary and a priority. Some of the practices that have recently become a norm include sand harvesting, gambling and deforestation. Dependency syndrome has also led to theft, corruption and other dishonest behaviours. Lastly, overgrazing had also become too rampant, threatening irreversible ecosystem collapse. The challenge of a place like Yatta is that once the ground is denuded, sweep erosion continue removing top soil, thus making it almost impossible for regeneration to occur. Finally, rocks become the only visible picture on the ground.

The demand for pasture is the sixth cause for environmental crisis. Too many domestic animals and diminishing grazing land minimize the chances for grass re-growth and increase the dangers of soil erosion.

A local leader in Yatta observed that the demand for pasture in Machakos has been very high, illustrated by recurrent intercommunity conflict in Yatta. He further points that tradition has it that about 100 years ago, cattle from various clans and communities were left to roam from place to place, sometimes even leading to wanton destruction of crops. In response, the governments of those days, sought to rehabilitate pasturelands in Machakos. Some of the interventions were good, but most were perceived to be colonial and unjust to the local owners. He opined that government interventions could not have been the solution because they only breed resistance among the people it seeks to transform.

Role of Faith in environmental management activities in Yatta

The previous two sections discussed the Yatta context and environmental management activities done for livelihoods purposes. The role of Christians in environment has not been clearly evidenced all over the world. It is ironical in many aspects that Christians seek to honour Christ and despise his magnificent works at the same time ((DeWitt, 1998, p. 37). Edward Brown (1996) avers, creation care should not be a hotel or conference declarations, but an honest, committed change by the Church, both leaders and laity. It will even have more impact if the pastors and Sunday school teachers begin to deliver stewardship messages from the pulpit and writers to use the power of the pen to change the situation (Brown, 2006, p. 98). This section delves on a unique area, special to CIM: environmental management done for faith's purpose, as described in the conceptual framework, faith in this study is conceived as a demonstration of the love for God and love for neighbour.

Life-Saving Environmental Management Activities

Drought has negatively impacted people, animals and crops in various ways. The repercussion of persistent rain failure has been the loss of crops and livestock, which are the only resources the people of Yatta have. The ripple effect on livelihood of the people living in Yatta as not just starvation, but also poverty, diseases, death and grounding of local economy. According to Masika, the 2009 drought, where a lady named Kanyiva (his neighbour in Yatta) died of hunger, three days after giving birth to twin daughters, became a major motivation for the people of Yatta to want change.

The death, caused by lack of food, and absence of other relatives, who had gone beyond 20 kilometres in search of water, hit the people of Yatta with sudden realization that something needed to be done urgently. Every activity from that time was directed towards saving the people of Yatta, so that nobody dies again because of lack of food or water. All these were done because human life is precious before God and any activity to preserve it is considered the best form of worship.

CIM has therefore organized trainings, workshops and seminars to talk to people and inform them how God is also concerned about their environment. The realization that environment on earth is under God's observation and care, helps transform people to work hard and to live fulfilling lives.

Shaping of People's Worldviews

According to a lady who has been a resident of Yatta for more than five decades, droughts in Yatta were always evident. When Bishop Masika talked to them about the possibility of overcoming drought, the idea seemed too farfetched and impossible. Yet over time, she has been able to understand how environmental problems and livelihoods challenges are also spiritual problems. The stability of a community in terms of food, money and water helps to raise people's self-esteem. Another spiritual challenge associated with worldview, is that the lack of water scarcity is often associated to power of witchcraft against the people.

'Fishing' Seminars rather than 'Fish Giving'

An old adage goes like this: give a man fish, and he will always beg; teach a man to fish, and he will always have food. Yatta situation has created a new twist of problems: degraded society. The 'sick and tired' soil has discouraged farmers so much that majority of young people in Yatta constituency have moved to Nairobi and other urban centres.

The overdependence on food relief (*mwolyo*) however, instead of being the solution to the chronic food shortage, has aggravated the problem. The people have been reduced to beggars, always waiting for 'the next *mwolyo* lorry.' The corruption in the country also leads to this aid running out quickly or getting withheld by local administrators for sale. Instead of working in the farms (when rains come), the local populace prefer to wait strategically for *mwolyo* supply, or politicians who would give little cash and promise bigger quantities of *mwolyo*, if they are 'voted' into power. Due to continued supply of *mwolyo* many people do not see why they should continue working in their farms. The average crop yield has gone down in many parts of Yatta (Masika, interview 9th September 2017).

According to Mwaniki *et al*, "owing to the high level of poverty in the region, the majority of the people in the area depend on relief aid provided by international organizations, non-governmental organizations (NGOs) and the government." (Mwaniki, Mbuchi, Leleruk, & Mwei, 2007, p. 9).

According to the CIM website, more than 10,000 individuals have been trained and are now implementing CIM initiatives. The attention that these initiatives have attracted in Kenya and in the world, have portrayed CIM implementation zones within Yatta Plateau as being an "oasis in the desert," reveal that those activities must have been carefully thought out and planned to be appropriate and suitable to meet the needs of the people. As a result, CIM attracts attention of government and other development agencies. World Vision Area Development Programs (ADPs) from all over the country have brought groups of people to learn from CIM transformation activities. Other organizations such as Action Aid Kenya among others have also sponsored study tours to the area. Government ministries such as the Ministry of Agriculture, Ministry of Water and Irrigation, Ministry of Cooperative have also visited the program (CIM Website). The foregoing illustrates environmental management success.

Conclusions and Recommendations

This paper has examined how CIM's environmental management practices led to Yatta community resilience over time. The study described Yatta context to show that the area has suffered from numerous climate change and environmental degradation that have compromised the potential of that area to support human development. The study also examined how CIM's environmental management activities done for livelihoods purposes, have helped to build community resilience.

The study found that the initiatives improved water retention strategies, farming methods using irrigation, afforestation by fronting fruit tree planting and agroforestry and other similar ways. These interventions strengthened the systems in Yatta to make the people resilient, able to produce food, access water and make money, even during dry conditions. The study explored the environmental management initiatives done for faith purposes. The study found that lifesaving intentions, training to transform people's worldviews and capacity building to help people produce their own food rather than depend on relief food, have strengthened people. These activities were done because of faith component of CIM, which is love for God and love for neighbour.

The second conclusion is that when initiatives fronted match people's felt need, it elicits an attitude of responsiveness. CIM interventions matched people's need in several ways, but majorly in dealing with water, food and poverty. It shows that environmental management can be implemented successfully, if the activities also help deal with primary and mostly physiological needs of a society. Thirdly, faith plays a crucial role in shaping people's attitudes and making them inclined towards transformation. The people that wilfully participated in CIM activities did so because they accepted spiritual values placed on them and which they were expected to display.

This was done through training to cultivate an understanding of the relationship between environmental degradation and human sinfulness. Redeemed people of God would therefore participate in the liberation of the earth from further decay. Faith also played an important role in the killing of dependency syndrome because people understood their spiritual responsibility of leaving productive lives and demonstrating positive ethics related to work.

It is recommended that organizations wanting to participate in climate change adaptation mechanisms in Yatta and other places should find ways in which the initiatives they advocate for, first deal with economic and social problems of the community. When people develop a trust that their environmental and climate activities will also make them food secure and economically supported, they will participate.

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