



THE IMPACT OF CLIMATE CHANGE ON THE ENVIRONMENTAL RIGHTS OF DRY-ZONE FARMERS

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ABSTRACT

The climate, livelihood and lifestyle of people in the dry zone in any part of the world are closely interconnected. The livelihood, lifestyle and culture of people depend on the natural environment which is generally known as ecological determinism. Moreover, people adjust themselves according to the changes in the ecological system that take place in their surroundings. Nature, natural resources and climate all are basic part of human life and people must have equal access and right to enjoy all these commons. However, climate changes can cause immense impact on the livelihood of people in the dry zone. The main objective this paper is to analyse the impact of climate change on the environmental right of farmers in the dry zone of Sri Lanka. The twenty key informant interviews and secondary data collection as the reviewing relevant literature were the methodology adopted for the study. The field study was conducted among the farmers in Vavuniya district, Sri Lanka. Thematic analysis was used for the data analysis. The key findings are that farmers in dry zones adapt their lifestyles in response to limited water resources and arid conditions. This adaptation encompasses the utilization of drought-resistant crops, implementation of water conservation techniques like drip irrigation, and the transmission of traditional knowledge across generations to navigate these challenging environments. Furthermore, the effects of climate change directly impact livelihoods by diminishing agricultural productivity, reducing water availability, and threatening food security. This poses a significant threat to the farmers' reliance on agriculture in this district. Moreover, disparities in resource access persist due to factors such as land tenure systems, government policies, and socio-economic inequalities. This unequal (water) distribution has often marginalized vulnerable groups, including smallholder farmers, obstructing their access to crucial water resources and intensifying their vulnerability to the adverse impacts of climate change. The right to enjoy natural resources including access to water by farmers is deprived and ecological rights of farmers in the dry zone are challenged by the different power relationship operated in the social systems. The political ecology of the study area negatively affected the environmental rights of farmers.

KEYWORDS: Drought, Climate Change, Farmers, Environmental Rights, Dry Zone

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01. Introduction

Climate change is any systematic change in the climate system in the long-term statistics of climate elements (such as temperature, pressure, or winds) sustained over several decades or longer (Dessler, 2012). The climate changes bring negative impacts such as melting ice caps and glaciers, rising sea levels, extreme weather events, ocean acidification, change on ecosystems, the escalating threats to biodiversity, changes in rainfall patterns, impact on agriculture and warming oceans. These impacts of climate change can bring many consequences in the real world. They are environmental degradation, food and water insecurity, loss of agricultural harvest, infrastructure damage, health problems and human displacement and social inequality (Greenfield, 2023).

This paper is mainly focus on the impact of drought on the farmers in the dry zone. Sri Lanka being tropical country, climate change can have serious negative impact on the bio-diversity and human ecology. That rainfall changes effect in the paddy field, cultivation and other cropping calendar. As a result, farmers experience risk and vulnerability under this situation in handling and managing agricultural activities in the dry zone in Sri Lanka. “Dry Zone” covering predominantly the Northern and Eastern parts of the country, and “Intermediate Zone,” skirting the central hills except in the South and the West. A recent analysis of these data has shown that the country’s average temperature is significantly increasing at a rate of 0.01–0.03 C per year (Marambe, et al, 2014).

The issues related to climate change such as drought is critically discussed in the field of political ecology which is apolitical forms of explanation that saw environmental problems as a reflection of power dynamics, population growth, inappropriate technology, or poor management (Neumann, 2005 and Robbins, 2004).The political ecology explores the political dynamics surrounding material and discursive struggle over the environment in third world. The role of unequal power relations in constituting a politicized environment is a central them. Third world political critically looks at the access, ownership and control of natural resources (Bryant and Bailey, 1997). The political ecology has become increasingly prominent in understanding of violation of environmental rights of grassroots communities such as aborigines, women, farmers and fishermen in the ‘Global South’.

According to Pickering et al (2020), ecological or environmental democracy emerged as results of modern environmental movement, green political parties and environmental political theory. The issues regarding the environmental right or ecological democracy are mainly discussed in the environmentalism or environmental movement.

Drought is a condition in which the entire environment loses water and becomes completely dry, subject to high evaporation (Istiquar, 2013). Drought is a characteristic of climate recovery. This is a phenomenon that appears in practically all climatic zones of the world with high and low rainfall. This is a temporary change of climate. In contrast, aridity is a permanent feature of the climate. It is restricted to low rainfall areas (Department of Agriculture, 2011).

Drought has various impacts on the environment and social life. Drought does not occur suddenly but through a slow process. It is gradually intensifying over time and exerts impacts. Thus, drought is having a massive impact on agricultural activities that meet one of the basic human needs of food, water poverty, gender related health issues and social inequality. Under a changing and variable climate, the risk of drought is increasing worldwide and Sri Lanka is no exception. Thus, disaster management Act No.13, 2005 of government of Sri Lanka has identified drought as one among the 21 natural or man-made disasters observed in the island (Department of Agriculture, 2011).

The drought has become very crucial social-political discourse based on its determination and how it is defined. The scientific explanation as well as social and political perspectives on drought is important. There are two primary types of drought may affect Sri Lanka. These are:

(1) Meteorological drought (usually associated with a precipitation deficit), and (2) Hydrological (usually associated with a deficit in surface and subsurface water flow). However, in the real-world scenario, drought is always politically constructed based on the agricultural subsidiaries and relief program (dry ration) to people in the dry zone. At present, Sri Lanka faces an annual probability of severe meteorological drought of around 4%, as defined by the Standardized Precipitation Evaporation Index (SPEI) of less than -2 . One study suggested that between 2001–2013, approximately 10% of Sri Lanka's population was exposed to drought (Amarnath, et.al, 2017).

The main objective of this paper is to examine the impact of climate change on the environmental rights of farmers in the dry zone of Sri Lanka. This study attempts to explore the effects of climate change on agricultural productivity, water availability, and food security among farmers in Vavuniya, Sri Lanka and how political ecology of Vavuniya influence on the environmental rights of farmers in the dry zone.

02. Methodology

This study adopts a mixed-methods approach involving key informant interviews and literature review to achieve its objectives. Research area is the Vavuniya District; it is situated in the Northern province of Sri Lanka, dry zone and tropical land side. More than half percentages of the people engage in agricultural activities (Department of Census and Statistics, 2012).

Key informant interviews conducted with key stakeholders, including farmers, agricultural experts, local authorities, departments and community leaders in Vavuniya, Sri Lanka. These interviews provide qualitative insights into the lived experiences of farmers, their perceptions of climate change impacts, adaptation strategies, and challenges related to environmental rights. Sampling is purposive, ensuring representation from diverse socio-economic backgrounds and farming practices. There were 20 participants selected for this key informant interview.

Thematic analysis is employed to analyze qualitative data gathered from key informant interviews. Themes related to climate change impacts, livelihood adaptations, resource access, and political ecology identified and systematically coded.

03. Literature review

A comprehensive review of relevant literature conducted to contextualize the findings within existing scholarly discourse on climate change impacts, environmental rights, and livelihood adaptations in dry zone regions globally and specifically in Sri Lanka. This review encompassed peer-reviewed articles, reports, policy documents, and literature related to agriculture, climate change, and socio-economic dynamics in dry zone environments.

3.1 Climate Change

Climate change is the major discourse of contemporary world. The climate change is associated with the political economy and power relationship of the fast-moving world. Many major problems, such as floods, droughts, melting ice, and submergence of islands, are taking place on a daily basis (Giddens, 2009). People need to raise enough awareness to rebuild and revitalize the endangered natural features of the earth. Climate change can be controlled through activities such as tree planting, reforestation, measures to reduce carbon dioxide emissions, and the use of natural gas. Human activities are more likely to cause global warming than global warming by nature.

In today's world of technology, climate change is a major challenge. Climate is the generalization of a set of atmospheric conditions that occur over a period of time over a given area (Balachandran, 1998). Climate change is the most obvious, observable change in the structure of the global atmosphere caused by direct or indirect actions of man (United Nations Framework, 1990). The climatic features observed during the formation of the Earth have been gradually changing.

Climate change is a statistically significant change in the general nature of climate over a long period of time (usually several decades or longer) (IPCC, 2001). Climate change may be due to natural interactions such as exposures and continuous human activities in the atmosphere. A recent report by the IPCC predicts that the average temperature will rise by 0.76 ° C over the last century, and that this temperature will rise by 2 ° C by 2050.

An increase in the average temperature of the earth is referred to as global warming. The current average temperature is up to one degree Celsius compared to 1880 AD. That is what we call global warming. This number may seem small, but scientists have found that it is much higher than the average for the whole earth. There is strong evidence that the earth's climate is changing rapidly, mainly due to human activities. Increasing temperatures, sea-level rises, changing patterns of precipitation, and more frequent and severe extreme events are expected to have largely adverse effects on key determinants of human health, including clean air and water, sufficient food and adequate shelter (WHO, 2010). UN and other organizations organize gatherings and meetings to discuss about these issues and come with agreements. It should be implemented by all over the world.

The international treaties and agreements are very crucial in climate change policies and local adaptation. The Paris Agreement is a global agreement reached in December, 2015 plays significant role in this regard. Each country has agreed to control future emissions. Emission controls are arbitrary. It will be reviewed every few years, with countries announcing amendments to their caps. However, political ecology of powerful countries such as USA and China try to overrule the global climate agreement.

Analysis of the change seen between the average temperature over 1900–1917 and 2000–2017 suggests Sri Lanka experienced warming of around 0.8°C over the 20th century. This estimate broadly agrees with the temperature rise reported in Sri Lanka's NC2, which estimated 0.16°C of warming per decade between 1961–1990. Temperature rise has accelerated toward the end of the 20th century (Second National Communication to the UNFCCC (NC2), 2012).

Sri Lanka is a country with admirable climate. However, the climate has changed over the last 100 years. The temperature has risen by 1.06 ° C from the average temperature prevailing here. Agriculture is seen as the basic economic activity of the country. Such an increase in temperature is affecting agricultural production activities. The Northern, Eastern, North Central and Southern Provinces of Sri Lanka have experienced continuous drought conditions for many years (Marambe, et al 2014).

3.2 Sociological Perspectives on Drought

According to Dunlap and Brulle (2015), human-caused climate change is clearly one of the most important issues of the twenty-first century, and understanding climate change its sources, impacts, and potential enhancement is a fundamentally sociological concern. It is well established that the primary drivers of global climate change are social-structural and sociocultural phenomena. Since sociology possesses considerable knowledge of social and cultural systems, it has a great deal to offer in helping understand the societal origins of climate change, as well as how social, economic, political, and cultural factors are likely to affect efforts to both mitigate and adapt to climate change. Sociology can also make important contributions to clarifying the adverse social impacts of increasing climate change, such as forced migration, increased social conflict, and growing levels of injustice. These studies provide a good sense of what sociology can contribute and why sociological and other social science perspectives need to be incorporated more fully into future research on climate change.

The overwhelming scientific research has provided evidence of two general trends in Sri Lankan climate, (1) increasing temperatures resulting in more heat stress, and (2) more frequent and severe occurrence of extreme rainfall anomalies such as droughts and floods. Both of these conditions strongly affect the crop and animal production and thus the food security in the country (Marambe, et al 2014).

Drought is seen as a social problem. This is man-made disaster. Human construct society and social structure and keeps human living according to culture. Drought, like possession, is a man-made phenomenon. Although there are a number of reasons why drought can occur naturally, they can be remedied in nature. But human-induced drought is caused by their behaviors, and it is difficult to control it naturally.

Globally, natural disasters such as droughts, floods and storms kill more women than men, and tend to kill women at a younger age. These effects also interact with the nature of the event and social status. The gender-gap effects on life expectancy tend to be greater in more severe disasters, and in places where the socioeconomic status of

women is particularly low. Other climate-sensitive health impacts, such as under nutrition and malaria, also show important gender differences (WHO, 2010).

3.3 Issues and Challenges Experienced by Farming Community

Poverty is the main impact to the farmers when they experience drought. Poverty, restrained both in terms of monetary and non-monetary dimensions, continues in Sri Lanka (Joshi, 2011). Also, poverty as “a deprivation of essential assets and opportunities to which every human is entitled” (Asian Development Bank, 2018). According to the government data, four out of five districts in the Northern Province coped poorly. Mullaitivu is 28.8%, Kilinochchi is 12.7%, Jaffna is 8.3% and Mannar is 20.1% of higher poverty data recorded (Perera, 2014). The vast majority of the residents in these districts are post war resettled people. As well as being primarily a rural province over half of the people depend on agriculturally based income. In addition to that, in Kilinochchi district 74,000 people and in the Mullaitivu district over 56,000 people are severely affected by the drought and above 100,000 farmers are facing challenges of the inadequate rainfall (Perera, 2014).

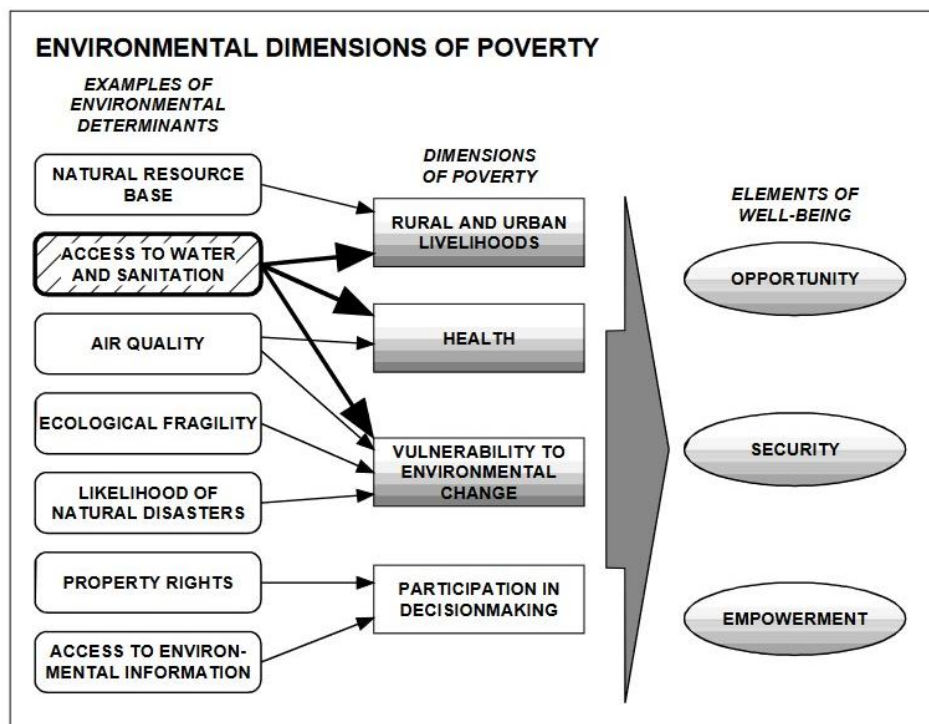
Droughts have been closely linked to increased poverty levels in affected regions (World Bank, 2020). The lack of rainfall and subsequent agricultural losses have a significant impact on the income and livelihoods of individuals and communities, particularly those heavily reliant on farming as their primary source of income (World Bank, 2021). Crop failures and reduced agricultural productivity during droughts often result in decreased earnings and financial instability for farmers, leading to a rise in poverty rates. Furthermore, the economic consequences of drought, such as limited job opportunities and income disparities, can further exacerbate poverty and create a cycle of vulnerability in affected areas (World Bank, 2021).

The drought has had a profound effect on the local economy, specifically on the agricultural sector (FAO, 2020). Insufficient rainfall has prevented many farmers from cultivating crops, leading to crop failures and diminished income. Consequently, this has had a ripple effect on other sectors of the economy, given that farmers serve as the primary source of employment and income for numerous rural communities (FAO, 2020).

The drought-related economic hardship has led to an increase in poverty within the study area (World Bank, 2019). Families have been compelled to reduce expenditures on essential needs such as food, education, and healthcare in order to cope with the situation. Moreover, many families have resorted to taking on debt in order to meet their basic expenses (World Bank, 2019). In 2001, the World Bank published a report titled “World Development Report 2000/2001: Attacking Poverty”. In this report, the

World Bank identified water supply and sanitation as one of the key environmental determinants of poverty.

Figure 1: Water supply and sanitation as an environmental determinant of poverty



Source: Environment Matters 2001, The World Bank, p. 14

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The World Bank report (2001) noted that inadequate access to clean water and sanitation facilities can have significant negative impacts on human health and well-being, particularly in low-income communities. Lack of clean water and sanitation can lead to waterborne diseases such as diarrhea, cholera, and typhoid fever, which can be fatal, particularly for young children and the elderly. Furthermore, the report highlighted that poor access to water and sanitation can have a negative impact on economic productivity, particularly in agriculture. Without access to clean water for irrigation and sanitation facilities for workers, agricultural productivity can be severely impacted, leading to reduced incomes and increased poverty.

The World Bank (2016) report emphasized the importance of improving access to clean water and sanitation as a key strategy for reducing poverty and promoting economic development. This could involve investments in infrastructure, policies to promote greater access to water and sanitation services, and initiatives to raise

awareness and promote behaviour change around hygiene and sanitation practices. The same report stated that the natural disasters push 26 million people into poverty each year. According to the UNDP, about 1.5 billion people live in multidimensional poverty globally, and an additional billion are at risk of falling into poverty (UNDP, cited in IPCC 2018). Undoubtedly increase the risk of populations falling below the poverty line.

The poverty associated with the drought has had detrimental effects on mental health (Sri Lanka College of Psychiatrists, 2020). The stress caused by financial insecurity and the uncertainty surrounding the future has resulted in heightened levels of anxiety and depression among residents in the study area. Regrettably, in certain cases, this psychological distress has contributed to instances of suicidal behavior (Sri Lanka College of Psychiatrists, 2020).

The government and NGOs have implemented a range of relief measures to address the poverty-related impacts of the drought in Vavuniya. For example, cash transfers and food aid have been distributed to vulnerable households, and employment opportunities have been created through public works programmes. However, these measures have been insufficient to fully address the scale of the economic and social challenges faced by the farmers in the dry zones.

To address the poverty-related impacts of the drought in Vavuniya in the long term, there is a need for comprehensive solutions that address the root causes of the problem. This could involve investing in sustainable agriculture practices that are less vulnerable to the effects of climate change, improving access to education and healthcare, and promoting economic diversification to reduce dependence on agriculture. Additionally, targeted interventions aimed at improving mental health and addressing the social determinants of suicide risk could help to reduce the number of suicides in the region.

When it comes to the suicide rate in Sri Lanka, men (22.9 per 100,000) have a greater rate than women (6.3 per 100,000), and the Northern Province has a higher incidence of suicide. The suicide rate in 2016, Kilinochchi had the highest (32.8 per 100,000) and the Kegalle had the lowest suicide rate in Sri Lanka (7.1 per 100,000) (Duleeka, 2017). Studies have shown that farmers have the highest rate because of many reasons behind. Such as, drought causes rigid hardship to poor farmers, dry weather pushes them to loan, increase micro finance and low income annually.

Due to a combination of political, geographic, and social factors, Sri Lanka is recognized as vulnerable to climate change impacts, ranked 100th out of 181 countries in the world. Source from Notre Dame Global Adaptation Initiative Country Index

(ND-GAIN Index, 2017). Paddy cultivation is carried out in two stages. Most are dependent on rainwater and the rest are dependent on irrigation. Paddy production has declined in 2009 compared to 2008. This is due to the post-monsoon rainfall and dehydration. Climate change is causing changes in groundwater, surface water levels, coastal areas, and land use (Climate Change Secretariat, 2011).

Farmers face challenges in their livelihood to overcome from these agricultural major issues. In the dry zone, paddy cultivation as the main activity, also occupying over 60% of the agricultural land. Paddy production in the Maha season is high but the Yala season limited production because of water shortage. It is included chili, onion, brinjal, urad bean, sea same seeds. Also, ponds fill up with soil and buildings is happened directly impact on the livestock, aqua cultural and raw water fishing activities.

Also, in the North Central and Northern Provinces, which is dependent on the agrarian economy, animal husbandry is next to paddy cultivation. Extreme drought increases heat stress on livestock. Thus, reducing milk-based production. Drought increases water demand. Also, Drought and declining rainfall are affecting paddy and livestock and the production is declining. These Provinces are experiencing severe drought. Also, Drought is causing sea levels to drop and other freshwater reservoirs to dry up. Thus, the living creatures in these waters and the endangered conditions are in critical conditions.

When discussing the several unknown diseases affecting farming community. CKD (chronic kidney disease) is the contemporary disease among the farmers. Between 2009 and 2018, dry zone has kidney disease patients of at least one member diagnosed with CKD who resided in the household (Kashi, 2019). There is unknown etiology for this and also found the reason behind drinking water drawn from wells and use of pesticides with proteinuria nephropathy. Also, found protein-energy malnutrition, poor oral hygiene, and respiratory disease symptoms as some drought-related health issues. And, psychosocial problems emerged. Those are stress, anxiety, depression, fear, stigma, and various trauma.

04. Findings and Discussion

The findings of this paper are based on key informant interviews of qualitative data and the secondary information about farming and the livelihood of Vavuniya farmers. It is emphasized that drought conditions have brought significant changes to the daily lives of farmers and their families. The drought has impacted migration patterns and has put their lives at risk, even leading some to engage in self-harm. Additionally, farmers have adapted various farming practices and lifestyles in response to the new political debates surrounding contemporary droughts in Sri Lanka.

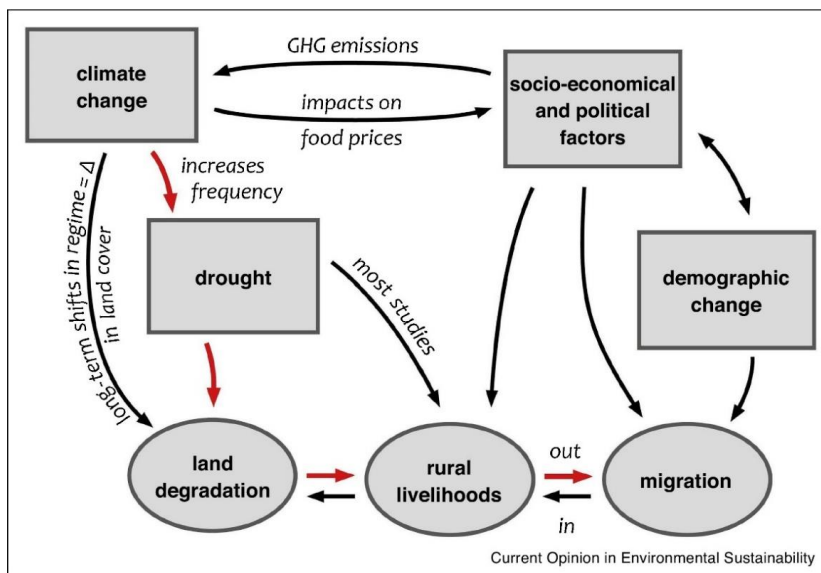
4.1 Drought Induced Migration

The Vavuniya District relies heavily on an agricultural economy, primarily focused on paddy cultivation. However, the region is highly susceptible to climate change, leading to a series of droughts in recent years (Department of Census and Statistics, 2020). These recurrent droughts have had a profound effect on the local population, particularly on farmers and their families, who bear the brunt of the agricultural losses and economic hardships (Department of Census and Statistics, 2020).

According to a report by the Internal Displacement Monitoring Centre (2019), Sri Lanka experienced drought conditions from 2016 to 2018, which resulted in internal displacement of people, particularly in the Northern and Eastern regions of the country. The report also notes that drought conditions can lead to out-migration from affected areas, particularly among farmers who rely on agriculture for their livelihoods. Further, Leal-Arcas (2012) explained the term ‘climate induced migration’, and those who migrate are referred to as ‘climate migrants’. It was also predicted that 200 or 250 million to those possibly a billion people would have to move by the mid-21st century because of the climate change impacts.

Additionally, a report by the World Food Programme (WFP) highlights that climate-induced disasters, including droughts, are a significant catalyst for migration in Sri Lanka. The report emphasizes that farmers facing crop failures as a consequence of drought may be compelled to migrate in search of employment or alternative means to support their families (World Food Programme, 2020).

Figure 6: Human Mobility of Migration



The above diagram elaborates human mobility of migration because of the drought and social impacts of direct loss of lives, livelihoods, deterioration of human health, increase in poverty and inequality and conflict. People living in high-risk area, and drought will move, sometimes permanently, to safer locations, for example, people are likely to adapt to the said circumstances by migrating (Leal-Arcas, 2012).

While there are no specific statistics on the number of farmers who migrated from Vavuniya during a specific drought period, it is widely recognized that drought conditions can contribute to displacement and migration, particularly among vulnerable populations such as farmers (World Bank, 2021). The adverse impacts of droughts on agricultural activities and livelihoods often create economic and social pressures that may drive farmers to seek alternative means of sustenance, including migration.

As a result of droughts, many families in Vavuniya have been forced to migrate to other areas in search of employment and better living conditions. According to available district profile reports, many families have migrated to urban areas, such as Colombo and Jaffna, while others have migrated to neighboring districts such as Mannar and Kilinochchi. The majority of those who migrate are farmers and their families who have lost their crops due to droughts.

“I was displaced in 1990 due to the war in Jaffna and settled temporarily in *Mulankavil*, *Mallakam*, and *Paranthan* before coming to Vavuniya. Now, I live here with my family under the government housing scheme. Within two years, my neighbours rented their houses and resettled in their homeland in Jaffna for work. We tried cultivating black gram, but it was not profitable due to climate change. I am also considering migrating to a Middle Eastern country to earn money. Nowadays, I feel that doing agricultural work is pointless. I and my villagers have never experienced flooding, but drought is a significant problem that we cannot control. Although the government provides compensation, it is still not enough to manage and regrow us” (Key informant # 09).

Drought-related migration has had several consequences for the local population in Vavuniya. Firstly, it has led to the disruption of family and social ties, as families are forced to separate and live in different areas. Secondly, it has had a negative impact on the local economy, as the loss of agricultural production has led to a decline in income and employment opportunities. Finally, it has increased the vulnerability of those who migrate, as they often face difficulties in finding employment and accessing basic services in their new locations.

4.2 Suicidal Incidents during Drought Conditions

In recent years, the region has been experiencing severe drought conditions due to changes in weather patterns and the effects of climate change. The prolonged dry spell has resulted in crop failures, water shortages, and a variety of socio-economic challenges.

The drought in Vavuniya has taken a toll on the mental health of the local population, and suicide rates have been on the rise. This result relates with the findings from Australia' Millennium Drought (2001-2009), which triggered higher levels of suicide in rural men compared with urban men and rural women (Australian Institute of Health and Welfare, 2009). Many individuals have been struggling to cope with the financial difficulties and stress caused by the drought, leading some to feel helpless and without hope for the future. As Alston (2011) illustrated this was due to men's commitment to maintaining farms for livelihoods, their isolation, and immense grief from witnessing land degradation and dying livestock. Many of them are believed to be linked to the drought and its associated hardships.

“As far as I know and based on the records of my GN Division, there were three cases of suicide reported last year (2020), all of whom were young married male farmers who died due to debt and alcohol addiction. There may have been other cases of suicide that were not officially reported to us. However, I can say that in my area, people - especially farmers who are farming on leased land and depend solely on the agricultural sector - are severely affected by poverty and debt” (Key informant # 11).

According to data from the Ministry of Health (2020), there were a total of 84 suicides in the Vavuniya district in 2020. This represents an increase from the previous year, when there were 68 suicides reported in the district. Of the 84 suicides in Vavuniya in 2020, 42 were committed by men and 42 by women. This indicates that suicide rates were relatively evenly distributed between genders in the district.

The age group with the highest number of suicides in Vavuniya in 2020 was 20-29 years old, accounting for 26 of the total suicides reported. This was followed by the 30-39 age group, which had 22 suicides, and the 40-49 age group, which had 17 suicides (Ministry of Health, 2020).

There were also differences in the methods of suicide used by individuals in Vavuniya. Hanging was the most common method, accounting for 65% of all suicides

in the district in 2020. Poisoning was the second most common method, with 25% of suicides committed using this method. Other methods, including drowning and self-immolation, accounted for the remaining 10% of suicides (Ministry of Health, 2020).

4.3 Contemporary Drought Debate in Sri Lanka

Drought in Sri Lanka has taken on a new dimension in recent years, with profound cultural, social, and political ecological implications. It can be called ‘navigating the dry spell’ and ‘endless discourse’. The debate surrounding this ongoing crisis underscores the complex interplay between traditional cultural practices, the changing social fabric, and the political ecology of water resources management. Additionally, differing definitions of drought have contributed to the multifaceted nature of this discourse.

According to cultural dimensions that Sri Lanka’s rich cultural heritage is deeply intertwined with water. For centuries, rituals and ceremonies have been performed to appease deities responsible for water supply. However, changing climate patterns and prolonged droughts challenge these traditions. There is a growing tension between preserving cultural practices and adapting to water scarcity.

Social Dynamics of drought’s impacts on communities are multifaceted. While some urban areas have adapted through technological advancements, rural communities often bear the brunt of water scarcity. Social inequalities become glaringly apparent as access to water resources becomes a privilege. This has sparked discussions on social justice and the need for equitable water distribution.

The political ecology of water resources management is another critical aspect of the drought debate. Issues such as land use policies, water governance, and the impact of development projects on local ecosystems are central to the discourse. Controversies over dam construction and its environmental consequences have led to conflicts between government authorities and environmental activists.

Defining drought is no straightforward matter. Meteorological, agricultural, hydrological, and socioeconomic definitions all offer unique perspectives on drought, often leading to differing assessments of its severity. These varying definitions have significant implications for policy and resource allocation, adding complexity to the drought debate.

The contemporary drought debate in Sri Lanka is a multifaceted discourse encompassing cultural preservation, social justice, political ecology, and the challenge of defining drought itself. Navigating these intricacies is crucial for crafting effective

policies and interventions that address the diverse dimensions of this ongoing crisis. As Sri Lanka grapples with the evolving nature of drought, it becomes evident that a holistic approach, encompassing cultural sensitivity, social equity, and sound ecological practices, is essential for a sustainable solution to this complex problem.

4.4 Adaptation of Farmers to Climate Change

Integrate the adaptation plans into the sustainable development also link into the farmers in the dry zone. Policy makers and expertise should join to develop more accurate drought early warning system to raise awareness about drought among farmers. Farmers should be accustomed to using drought tolerant paddy seeds for cultivation. The duration of the seed should be considered. Previously, paddy was harvested in four and a half months. But now some farmers are using paddy which can be harvested in three and a half months. This should be introduced to all farmers in the dry zone.

The climate is constantly changing. Therefore, farmers should be advised to cultivate accordingly as the rainy season also changes. Encourage them to engage in agricultural activities using new technologies. When the government takes such adaptive measures keeping in view the education, living environment, ability and age of the farmers, the farmers will definitely adapt themselves accordingly.

The implementation of mitigation programmes, the study of major river basins and reservoirs for drought management policy making, and the maintenance of a framework for preserving water resources are all suggested as part of the sustainable development process. It should be commenced from ground level.

4.5 Navigating Adaptation and Power

The concept of adaptation is a vital aspect of human survival. It refers to the ability to adjust to changing situations or environments, whether it is a natural, social, or technological change. Self-indicated power positioning, on the other hand, is the process of strategically positioning oneself to gain power, authority, or influence over others (Parson, et al, 2016). This part, explore the relationship between adaptation and power through self-indicated power positioning.

Climate change has become one of the biggest challenges of contemporary time, impacting individuals and communities worldwide. In the face of this challenge, people have developed various adaptation strategies to cope with the changing environment. Among these strategies is the concept of self-indicated power positioning, which involves individuals taking control of their circumstances and adapting to the changes in the climate.

Self-indicated power positioning can be seen as a form of empowerment, in which individuals become agents of their own lives and take charge of their own adaptation strategies (Gonda, 2019). It involves taking actions that are based on one's own experiences, skills, and knowledge, and that are grounded in local and traditional practices. This approach recognizes that individuals have agency and that they can use this agency to make a difference in their own lives and in the lives of their communities.

In the context of climate change, self-indicated power positioning involves developing adaptation strategies that are based on local knowledge and practices, and that are responsive to the changing environment. For example, individuals may develop new agricultural practices, such as using drought-resistant crops, or they may adopt new technologies, such as rainwater harvesting systems, to cope with water scarcity. These adaptation strategies not only help individuals to cope with the immediate impacts of climate change, but also build resilience over the long term.

Moreover, self-indicated power positioning can be a tool for challenging power imbalances and promoting social change. By taking control of their own adaptation strategies, individuals can challenge dominant power structures that may not be responsive to their needs. For example, women farmers may develop new agricultural practices that challenge traditional gender roles and promote gender equality. Similarly, indigenous communities may use traditional knowledge and practices to challenge dominant models of development that are not appropriate for their local contexts.

Self-indicated power positioning is a powerful tool for adaptation to climate change. It involves individuals taking control of their own circumstances and adapting to the changing environment based on their own experiences, skills, and knowledge. This approach not only helps individuals to cope with the impacts of climate change, but also challenges power imbalances and promotes social change.

4.6 Harnessing Tradition: Exploring Adaptation Strategies in Farming

Traditional farming techniques have been developed over centuries of agricultural experience and observations of the natural environment. These techniques have evolved to cope with the challenges of climate change, soil degradation, and water scarcity. This information was gathered from the Department of Agriculture which is situated in Vavuniya District.

“Crop rotation and intercropping are common practices in traditional farming techniques. Crop rotation is the practice of growing different crops in the same field in successive seasons to prevent soil degradation and pest infestations. Intercropping involves growing two or more crops simultaneously on the same field. This strategy helps in maximizing the use of available resources while minimizing the risk of crop failure” (Key informant #02).

Organic farming is a sustainable farming technique that relies on natural inputs such as compost, manure, and green manure. Organic farming avoids the use of synthetic pesticides, herbicides, and fertilizers, which can be harmful to the environment and human health. Organic farming also helps in maintaining soil fertility and biodiversity.

Water harvesting and management in the study area, rainfall is the main source of water for agriculture. Therefore, traditional farming techniques have developed strategies to conserve and efficiently use water. Farmers use techniques such as rainwater harvesting, construction of small reservoirs, and irrigation channels to capture and store water. They also practice crop scheduling to ensure that water is used efficiently.

Traditional farming techniques emphasize the conservation of biodiversity. Farmers use techniques such as agroforestry, mixed cropping, and the cultivation of traditional crop varieties to preserve biodiversity. These practices help in maintaining soil fertility, reducing pest infestations, and increasing resilience to climate change.

Traditional farming techniques have developed various adaptation strategies to cope with the challenges of climate change, soil degradation, and water scarcity. These strategies include crop rotation and intercropping, organic farming, water harvesting and management, and the conservation of biodiversity. These practices have evolved over centuries of agricultural experience and are sustainable, efficient, and effective in adapting to changing environmental conditions.

05. Conclusion

The severe drought in Sri Lanka has led to many unexpected changes in the farming community, both directly and indirectly. This study aims to analyze the impact of climate change on the environmental rights of farmers in the dry zone of Sri Lanka. The findings indicate that drought remains a significant issue affecting agriculture, livelihoods, food security, and the socio-cultural lives of farmers. In the dry zone of Sri Lanka, drought has a profound economic impact, characterized by annual and recurring crop losses, reductions in crop yields, degradation of output quality, revenue

loss, difficulties in obtaining and repaying loans, and insufficient rice for consumption.

As discussed in the literature reviewed and the key informant interviews, farmers in Vavuniya primarily rely on rainwater and groundwater for both agriculture and household needs. Even a short period of drought can have a severe negative impact on the livelihoods of farmers. Consequently, drought in Vavuniya has led to a vulnerable situation for the survival of farmers. Climate change-related drought in Vavuniya has also resulted in significant social injustice. The drought has exacerbated poverty and contributed to health problems, with economically disadvantaged and socially marginalized groups experiencing the most severe impacts.

Women are the most vulnerable group, facing greater difficulties in adapting to water scarcity compared to men. Overall, the drought has violated the environmental rights of the farming community in Vavuniya. The ongoing struggle against drought has had numerous negative effects on farmers, including an increase in suicide rates and suicidal attempts, as identified by various sociological studies. This study also reveals that the adverse life changes caused by drought are a major contributing factor to suicidal behaviour among farmers. Additionally, de-peasantification—a gradual process of farmers abandoning agriculture—is largely driven by climate change and its severe consequences.

Some farmers attempt to adapt by changing their livelihoods, lifestyles, or agricultural practices. However, these adaptations can also lead to social stigma due to shifts in their social and livelihood identities. Finally, it is evident that the political ecology of Sri Lanka, particularly in Vavuniya, has damaged the ecological rights of farmers and their future generations in the context of drought-related climate change.

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