

## Social Work Study on the Impact of Climate Change Among Communities in Kampung Pantai Johor, Kedah

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### Abstract

*Climate change in Malaysia has led to the occurrence of flooding disasters that have a negative impact on all parties, especially the vulnerable groups, including the community in Pantai Johor Village, Kedah. Climate change refers to significant changes in average climate conditions or its variability over a long period (usually near or more). The flooding disasters have caused the Malaysian government to incur significant expenses to assist flood victims. Therefore, a qualitative study was conducted on ten respondents in Pantai Johor Village, Kedah, who were heads of households selected through purposive sampling. In-depth interviews were conducted to obtain the necessary information. All collected data were analyzed using thematic analysis methods. The study findings indicate that flooding disasters have an impact on the community's life in Pantai Johor Village, Alor Setar, Kedah. The study found that all respondents stated that climate change has an impact on their lives. Climate change in this village has led to flooding disasters, affecting the community. For the first objective of the study, the researcher successfully answered it through discussions of the study findings. The conclusions that can be drawn by the researcher based on the study's objective, which is to examine the impact of climate change on the community in Pantai Johor Village, Kedah, are that climate change brings various negative effects on the community's life in the village. The climate change that occurs has caused economic problems and disrupted the well-being of the community.*

**Keywords:** *Climate Change, Community, Community Health, Flood, Social Work Intervention.*

### Introduction

The social work profession differs from other professions such as psychiatry, psychology, and counseling because social work not only focuses on individuals but also pays attention to the environment that influences those individuals [1]. Problems within the natural environment can bring about issues for humans [2]. This is because these problems can lead to ecological crises such as pollution, ecosystem destruction, extinction, and food shortages caused by climate change [1]. Currently, social workers face various contemporary challenges because they not only

need to uphold human rights and social justice, but they also need to preserve the earth through practical social work practices and address natural disasters resulting from climate change [3]. In addition, social workers take a broad view to understand the problems faced by humans, and this becomes a strong reason for social work to have a broader perspective on the social environment [1].

Climate change will have an impact on psychological well-being. Significant research has shown that exposure to extreme weather events connected with climate change has a negative influence on physical health, mental health, and social relations [2]. Climate

change's dangerous effects, shown in floods, droughts, water scarcity, depletion of the natural resource base, cyclones, and heat waves, disproportionately affect women, particularly those in rural communities. Climate change has shown it will give a huge impact towards human well-being. Physical health will be threatened by heat, at the same time increased the spread of water-borne and vector-borne diseases [4]. That is why, social workers must play role to promote social change by empowering and liberating people to participate in climate change [5]. Besides that, social workers have an important role in assisting these communities and individual clients in dealing with the effects of climate anxiety, extreme weather, and other climate-related concerns [6].

Climate change intensifies many social, environmental, and economic risk factors for problems in mental health and psychosocial wellbeing [7]. Long-term changes in global temperature and weather patterns are referred to as climate change. While natural phenomena like as changes in the sun's magnetism can have an impact on climate, human actions are the primary cause of the problem [8]. This warming has contributed to a variety of physical and mental health issues [6]. This warming has contributed to a variety of physical and mental health issues [5]. Social workers are particularly positioned to address the implications of climate change on individuals and communities since they are a helping profession with a focus on aiding the most vulnerable. Counseling persons with mental health concerns or linking community members to support programs are examples of this type of employment [2].

Researchers and practitioners in social work have become more aware of this fact, as their job requires them to assess and administer interventions for those who are affected, particularly the most vulnerable and marginalized [8]. Social work interventions focus and emphasize the relationships between

social, economic and human experiences, as well as the environmental consequences of human behaviour, thereby contributing to environmental justice and social justice [9]. Green social work is a developing concept that focuses on providing social workers with the tools they need to participate in these types of hazards, while tailoring research, practice, and policy to the specific needs of disaster survivors. Green social work integrates social justice and environmental justice theories to provide a method that social workers, regardless of scope, can adapt to their own practices. The major distinction between green social work and general social work practice is the incorporation of the natural and physical environment into practice to improve the well-being of clients and the ecosystems in which they live [10].

Climate refers to the weather conditions in a specific area for a long period [11]. It encompasses average temperature, heat intensity, the number of sunny days, and other measurable variables at a particular location [2]. Climate change refers to significant alterations in the average climate conditions or its variability over a long period (usually near or more) [11]. This occurs due to internal natural processes within the earth, external drivers, or continuous anthropogenic changes in the composition of the atmosphere and land use [11]. Climate change is a global phenomenon that has been occurring for the past three decades [12]. According to the fifth report by the Intergovernmental Panel on Climate Change (IPCC), there has been a global increase in average land and sea temperatures by 0.85°C since 1880 until 2012. The IPCC believes that between 1983 and 2012, the temperatures recorded were the highest in the past 800 years (IPCC-AR5-WG1, 2013). According to researchers, climate change occurs in daily life (for example, weather), and we may have experienced hotter summers and prolonged droughts [12]. The World Social Science Report 2013 states that climate change

is one of the global environmental challenges involving biophysical changes occurring on land, in the oceans, and in the atmosphere. This includes habitat loss, energy security, population growth, destruction of marine systems, and water pollution [13]. Furthermore, climate change leads to rising sea levels, frequently changing weather patterns, extreme heat, and alarming levels of greenhouse gas emissions, posing a significant concern. If not addressed, it will impact all humans, especially the poor [14]. Those affected by climate change are generally the focus of social workers when providing services at the individual, family, and community levels [30]. Moreover, this study is necessary because research on the intersection of social work and the environment is still relatively scarce. According to Miller and Hayward [15], the lack of emphasis on the environment in social work education indicates a low level of literacy compared to the population average [15]. Although the number of publications has tripled in the past fifteen years, students today want more research on how to engage with environmental issues [15]. This study is deemed necessary as it can provide exposure to all parties about the importance of the social work profession in addressing communities facing climate change.

In addition, this study can highlight the roles that a social worker needs to play when dealing with victims affected by disasters resulting from climate change. For example, after natural disasters such as floods and hurricanes, social workers will establish shelters for disaster victims and meet their needs [16]. Moreover, with the presence of social workers after natural disasters, they can help address poverty and other structural inequalities, simultaneously striving to improve the quality of life for disaster victims [16]. All the aspects covered in this study help social workers become more aware and prepared for any potential outcomes resulting from climate change. Ultimately, it is hoped that this study can serve as a reference and understanding for the practical application

of social work in comprehending climate change and its impact on society. This is essential as climate-related matters are still relatively new and receive limited attention, especially in the practical field of social work in Malaysia.

Climate change will affect the livelihoods of residents in rural areas, including their asset capabilities (shops, resources, and access) and the activities necessary to sustain life [11]. This refers to the ability to engage in various income-generating activities essential for survival [17]. Although not all communities rely on natural resources such as agriculture, fishing, and forestry, many rural residents depend on these sources to sustain their lives [13]. Furthermore, climate change has an impact on smallholders and farmers as it influences landscapes, affects crop production, has health implications, and affects non-agricultural livelihoods [18], including influencing food prices [5]. Generally, about 85% of farmers worldwide are smallholders, with the majority coming from low-income countries in South Asia and Africa [17]. The key characteristics of farmer groups consist of rural populations, severe poverty, and unproductive agricultural areas due to limited resources, weak markets, and high climate risks [17]. Moreover, changes in climate and weather also impact the livelihoods of households working in the agricultural and fisheries sectors, or any other affected sectors [18]. A relevant framework needs to be established to reduce the impact of climate change that affects various types of household livelihoods [18].

Climate change affects water supplies [18]. For residents in rural or village areas, groundwater and existing water irrigation are crucial because water is essential for their livelihoods, particularly in agricultural activities [17]. Additionally, several impacts caused by climate change, such as floods and storms, can affect water quality, leading to waterborne diseases such as hepatitis, cholera, typhoid fever, malaria, and dengue fever. These

diseases can escalate due to urbanization, industrialization, poor sanitation conditions, and inadequate water management [19]. Moreover, in Africa, analyses of existing rainfall patterns indicate that climate change may not result in major disasters that disrupt groundwater supplies in rural areas. However, it still affects approximately 90 million people living in villages where the annual rainfall distribution ranges from 200 to 500 mm. Any reduction in rainfall or changes in seasons can impact groundwater supplies [18]. Lastly, the temperature rise caused by climate change will affect all water sources, including drinking water supplies, and will also impact the quality of surface water [2].

One of the challenging-to-predict impacts of climate change is the occurrence of floods, especially flash floods [20]. Records show that around 50% of disaster events are caused by floods, and approximately 10% are attributed to temperature rise and heatwaves [19]. Extreme hot and cold weather can result in both droughts and floods, affecting water structures [20]. Floods also lead to biological and chemical pollution, potentially affecting groundwater [19]. The livelihoods of rural or village residents, who largely depend on agriculture and fishing, are significantly impacted by floods [21]. It is estimated that over 60% of village residents are farmers and fishermen [21]. Additionally, flood disasters disproportionately affect poor families living in low-lying areas, resulting in loss of lives and property [21], and causing diseases like diarrhea and mortality in children under one year old [20]. According to Short Gianotti, Warner, & Milman [22], floods impact psychology and landscape changes. Furthermore, the increased incidence of diseases affecting health due to floods, such as the spread of gram-negative bacteria including *Aeromonas* species, *Legionella* species, and *Mycobacterium* species, poses a significant health risk [19]. Lastly, floods have a higher impact on the poor, especially those in rural

areas [21]. This is because they lack assets, and their existing food supplies are insufficient [21]. Floods not only affect an individual's social life but also have economic implications. In conclusion, floods cause damage to crops, livestock, homes, transportation and communication systems, educational institutions, and other structures [21]. All these factors impact the economy and livelihoods of communities in rural or village areas [21].

The health, infrastructure, and economy of a community are closely linked to climate [23]. As temperatures rise, humans face increased pollution and diseases [23]. Severe weather conditions also impact vulnerable communities. Moreover, drought and pollution affect food and water sources and increase the potential for forest fires that can devastate homes and communities [24]. Furthermore, these extreme events have negative impacts on the economy and ecosystems, especially in rural communities [18]. For example, climate change-related events such as storms and droughts in Chiapas Coast in October 2005 affected over 600,000 people due to sudden floods and river overflow [18]. Additionally, droughts have led to economic crises, including job reductions and migration in rural communities [24]. Notably, nearly 80% of livestock in South Kenya, Africa, perished in 2009 due to extreme heat, significantly impacting the livelihoods and economy of rural communities [18].

## **Methodology**

Qualitative type research is used in this study. According to Jasmi [25], qualitative research is different from quantitative research because it has its own form of data. In addition, qualitative research focuses on finding meaning and translating it into the form of themes [25]. Qualitative research is designed to explore and explore the understanding of phenomena. This discovery is the result of observing daily behaviour in a special context that can include in depth interview with respondents [26].

As stated by O'Reilly, Ronzoni and Dogra [26], the methods followed through qualitative research allow the reviewer to record what the respondents say and explain their lived experiences. Therefore, in this study the reviewer used qualitative research. Next, case study is used in this study. Case study is a research methodology that is commonly applied in everyday life as well as social science [27]. Next, case study can be defined as an intensive study of a person, group or unit of people [27]. It can also be described as a systematic investigation of an individual, group or community where the investigator can dive in to get data with more depth [27].

If a reviewer wants to study about a certain phenomenon that occurs, then a case study needs to be carried out to allow the reviewer to understand more deeply about the phenomenon [28]. The reviewer applied the case study because the reviewer wanted to get more information about the effects received by the villagers of Pantai Johor as a result of the prevailing climate change. Finally, with this case study, the reviewer can explore the issue of study in more depth and can develop a comprehensive theory.

The location of the study is the most important thing in a study. This aims to facilitate the reviewer to get complete information regarding the issue being studied. The reviewer chose Kampung Pantai Johor, Kedah, Malaysia as the location of the study. This is because, based on findings and studies conducted, it shows that this kampong is often exposed to flood disasters. The prevailing flood disaster has directly and indirectly affected the villagers. The location of the population's placement adjacent to the river causes them to be exposed to flooding especially when it rains without stopping which causes the river water level to increase and overflow into their residential area [33].

The reviewer has chosen the residents of Kampung Pantai Johor, Kedah to be used as the study sample for this study. This is because,

residents in Kampung Pantai Johor, Kedah often receive impacts as a result of the prevailing climate change. Based on the temubual conducted with employees at the Pejabat Daerah Pertahanan Awam, Kota Setar has proven that residents in this village are often exposed to flood disasters as a result of the effects of climate change that occurs. In addition, this population was chosen because it coincides with the title of the study carried out by the reviewer. Then, the purposive sampling method is the method chosen when carrying out this study. This method was chosen because the reviewer has set criteria for respondents who are suitable for sharing information and experiences they have. The study sample size for the qualitative study conducted was as many as 10 respondents. Those selected were the heads of resident families in Kampung Pantai Johor.

In addition, the respondents selected are permanent residents in this village and they are the ones who have received the impact of the prevailing climate change. The reviewer chose the head of the family because the head of the family has a fundamental role such as providing food, shelter, and clothing. In addition, family leaders also have good interpersonal skills, and they are responsible for managing the family dynamic [34]. Not only that, but family leaders also have a deep and thorough knowledge of family relationships and all the issues that occur within their families [34]. Hence, the reviewer selected family heads as respondents. Finally, the number of respondents as many as 10 people was chosen because if the respondents exceeded 10 people, the data obtained would reach saturation point. Generally, saturation point refers to the same (overlapping) information obtained by researchers through the conducted interviews.

The study instrument is a tool used by the reviewer when carrying out an investigation. The study instrument is used as a basis for obtaining data as desired by the reviewer to achieve the objectives of the study [35]. In

addition, semi-structured interview in this study. The reviewer recorded all the themes that were carried out after obtaining the truth from the respondent. Journals and articles are used by the reviewer to facilitate the reviewer to understand more deeply regarding the issue of climate change. Finally, this study uses thematic analysis which is one of the methods of qualitative data analysis. This thematic analysis looks at the patterns or themes that emerge in the data. The data collected and obtained are the

results of the interviews conducted and translated in the form of transcripts.

## Results And Discussion

### Respondents Demography

Table below shows respondents demography of the ten respondents that are involved in the research. Ten respondents are male as they are the sole caregiver of their family.

**Table 1.** Brief Information on Respondents

<b>Respondents</b>	<b>Age</b>	<b>Sex</b>	<b>Race</b>	<b>Status</b>	<b>Occupation</b>	<b>Residential Address</b>
R1	55	Male	Malay	Married	Farmer	<i>Kampung Pantai Johor, Alor Setar, Kedah.</i>
R2	68	Male	Malay	Married	Rent Collector	<i>Kampung Pantai Johor, Alor Setar, Kedah.</i>
R3	56	Male	Malay	Married	Self Employed	<i>Kampung Pantai Johor, Alor Setar, Kedah.</i>
R4	77	Male	Malay	Married	Farmer	<i>Kampung Pantai Johor, Alor Setar, Kedah.</i>
R5	49	Male	Malay	Married	Self Employed	<i>Kampung Pantai Johor, Alor Setar, Kedah.</i>
R6	57	Male	Malay	Married	Farmer	<i>Kampung Pantai Johor, Alor Setar, Kedah.</i>
R7	56	Male	Malay	Married	Army Veteran	<i>Kampung Pantai Johor, Alor Setar, Kedah.</i>
R8	43	Male	Malay	Married	Self Employed	<i>Kampung Pantai Johor,</i>

						<i>Alor Setar, Kedah.</i>
R9	63	Male	Malay	Married	Farmer	<i>Kampung Pantai Johor, Alor Setar, Kedah.</i>
R10	28	Male	Malay	Married	Clerk	<i>Kampung Pantai Johor, Alor Setar, Kedah.</i>

### Climate Change Leads to the Occurrence of Floods

The study results indicate that all respondents, namely R1, R2, R3, R4, R5, R6, R7, R8, R9, and R10, state that climate change has an impact on their lives. Climate change in this village leads to the occurrence of flood disasters, affecting the community. R1 believes

that the floods are caused by heavy rainfall, leading to river overflow. R2 mentions that the most severe flood occurred in 2010, causing water to rise up to chest level. Additionally, R3 states that climate change causes flood disasters, but the current floods are not as severe as the ones before, which submerged their homes.

**Table 2.** Climate Change Leads to the Occurrence of Floods

<b>Respondents</b>	<b>Interview excerpt</b>
R1	<i>"Here, the most. the most pronounced issue is floods, especially during the rainy season, the rainy season, even during the rainy season because we are close to the river. Yeah, it overflows from that side, its water will pass through here, it will come out here, it."</i>
R2	<i>"Floods have occurred up to now, but not as severe as before. But in the year 2010, it was a severe flood, a severe flood that reached up to chest level."</i>
R3	<i>"There are floods, but not as bad as back during the year 2010. that one was the biggest. the houses were completely submerged."</i>
R4	<i>"In the village, it's the same, we are used to it, if there's a flood. It's like a tradition, people say it's a tradition. They say floods have been happening since we were little until now."</i>
R5	<i>"No shortage of floods here. Hahaha. Flooding is frequent; as soon as it rains a bit, the water rises."</i>
R6	<i>"There are floods, but after the flood resettlement project, it has reduced a bit. In the past, in which year did we have a major flood? Two thousand. yes, a major flood."</i>
R7	<i>"There are floods here, but the worst was in 2010 when the water reached the top of the poles. It submerged everything."</i>

R8	<i>"Floods used to happen frequently, but in the last two years or so, they have become less frequent."</i>
R9	<i>"Yes, floods used to happen often, but now it's less frequent. The river water quickly overflows when it's full, causing minor floods."</i>
R10	<i>"Floods, yes, severe floods. In the past, if there was a flood, the water only filled the drainage, but now the water has started to enter the houses. All the furniture is ruined."</i>

For R4, flood disasters have been occurring in this village for a long time, causing the community there to be accustomed to this disaster. Furthermore, R5 states that if there is rain, it will cause water levels to rise, leading to floods, while R6 believes that the floods in the village have decreased after the flood placement project. In addition, R7 mentions that the current floods in the village cannot be compared to the floods that occurred in 2010. Moreover, R8 and R9 believe that flood incidents still occur but have been decreasing recently compared to previous years. Next, R10 says that small-scale flood incidents are increasing because previously when the water was full, it would overflow into the drains, but now it starts overflowing into the local area and entering their residences. In conclusion, the research findings indicate that all respondents state that climate change causes flooding incidents in their village. All respondents, namely R1, R2, R3, R4, R5, R6, R7, R8, R9, and R10, agree that climate change leads to flooding in their community. This theme is supported by a study conducted by Sen [20], which states that one significant impact of climate change is the occurrence of floods, especially flash floods, which have a major impact on water resources. In Malaysia, the most severe flood incidents affected the peninsular region during the monsoons of 2006 and 2007 [12]. Flood is an event that occurs when an excessive quantity of water submerges a large area or property [21]. Therefore, floods are recognized as natural disasters [21].

The definition of a disaster is an event that occurs and impacts human social functioning

and state affairs, resulting in property damage, loss of life, economic losses, and environmental destruction [21]. Geographically, Malaysia is located outside the Pacific Ring of Fire, making it less susceptible to severe destruction from volcanic eruptions, earthquakes, and typhoons [28]. However, heavy rainfall throughout the year in Malaysia, from March to November, causes these flood disasters [28]. Another factor causing floods in urban and rural areas is deforestation activities leading to a lack of rainwater absorption [28]. The quantity of rainwater cannot be contained, and it will flow directly to residential and farming areas [28]. Flood disasters have significant effects on the economy and social well-being of the community. Malaysia has been facing flood disasters for several decades [29]. This occurs due to the year-round monsoon rains, and Malaysia receives an average of 2,500 mm of rain per year, making it one of the countries with the highest rainfall distribution in the world [29].

According to Sen [20], floods not only affect water resource management but also have an impact on regional or national food security. In Malaysia, annual floods are caused by changes in the annual monsoons, and the most severe flood recorded occurred in 2010, affecting states like Kedah and Perlis the most [28]. The poor, in particular, are more affected and suffer as a result of these flood disasters [21]. Those affected by climate change impacts are generally the groups that social workers focus on when providing services at the individual, family, and community levels [30]. Additionally, climate change also affects river

flow [23], as changes in the average river discharge vary in each region, and several studies indicate that seasonal changes also impact flood occurrences [31]. In general, river floods have more impact on communities compared to other natural disasters, and the estimated global damage from floods is USD 104 billion [32]. This is due to global climate change [32]. Floods also weaken certain groups because they affect their livelihoods and leave few resources for them to cope with these issues [21]. Moreover, due to flood disasters, rural area residents lose jobs and reduce their incomes [21].

Not only that, evidence from European countries, including the United Kingdom, shows that floods affect physical infrastructure providing health services, such as flood disasters leading to patient relocations, disruptions in hospital power supplies, disruptions in clean water supplies, and difficulty for ambulances to move [13]. Communities exposed to flood disasters also experience a crisis in obtaining clean water supplies [28]. Clean water supplies will be severely affected when floods occur over an

extended period. This will impact the daily activities of flood victims because clean water is essential for human daily use [28]. Finally, in most flood incidents, flood victims tend to face stress, anxiety, and worry about what is happening [11]. All of these factors will affect their well-being, especially after the flood disaster, and if they do not receive proper assistance and support, it will be difficult for them, from a psychosocial perspective, to rebuild their lives after the flood disaster ends [11].

### **Flooding Due to Climate Change Has Caused the Connection to Be Disrupted**

The study findings in table 3 show that the flood disaster caused the relationship to be disrupted. R1 said that flooding causes disconnection. In addition, R2 also stated the same thing because when flooding occurs, people cannot make pilgrimages. In addition, R3, R4, R5, R6, R7, R8 and R9 did not state that the flood disaster broke their relationships. In conclusion, the findings of this study prove that flooding causes relationships to be disrupted.

**Table 3.** Flooding due to Climate Change has caused the Connection to be disrupted

R1	<i>"Disconnected, disconnected, because of this flood, we are disconnected."</i>
R2	<i>"When disaster strikes, relations with the community are disrupted because pilgrimage is not allowed."</i>

The next theme is interrupted relationships. The results of the study found that as many as two respondents, namely R1 and R2, stated that the flooding caused them to interrupt relationships. The prevailing climate change, especially with the sudden rise in temperature has triggered an increased risk of flooding around the world. Malaysia is no exception to the climate change effect because since a few short years ago, Malaysia has experienced various weather extremes such as the El Nino phenomenon in 1997 (which led to severe droughts), La Nina in 2011 and 2012 (which

caused flooding), lightning storms almost every year (which cause flash floods and land collapses), monsoonal floods (which cause severe damage, including loss of life in some areas exposed to monsoon winds), and jerebu (which leads to severe air quality, extreme heat and drought) [36].

This flooding incident has caused the community's communication system to be cut off. This is because, when flooding occurs it submerges roads, bridges and damages boats [36]. In addition, most flood disasters occur suddenly and without any warning [11].

Therefore, it gives a big impression because most people are not ready to deal with the disaster such as causing public relations to be cut off or communication disruptions due to the damage to the prevailing infrastructure [11]. In addition, the flood disaster in Malaysia also gave a social impact and this matter deserves the attention it deserves [11].

Although flood disasters occur within a short period of time, they have a huge impact on the community such as disruption of transport, disruption to daily activities, health and serious physical injuries to flood victims [11]. All of these things can have a big impact on the emotions and psychology of the affected communities [11]. Commonly known, the flood disaster that occurred in Malaysia has damaged roads, houses, and the public transport system and this also causes community relations to be disrupted [11].

According to Ngai [14], in Malaysia a paradigm has been used to study the hazards of flooding and propose measures to reduce the impact of floods that bring harm to the community especially the weak groups. The results of this study found that flood disasters not only affect poverty, but it also affects the awareness, attitudes, perceptions, experiences

and social relations of the community [14]. Not only that, the occurrence of flooding causes people who experience it to be trapped at home because the flood disaster submerges the road and causes them to be disconnected [14].

### **Floods Due to Climate Change Are Causing Agricultural Devastation**

The study findings based on table 4 show that R1, R2, R5, R6, and R9 said the flood disaster caused agricultural devastation. Based on the interview with R1, he said the flood had destroyed the community's rice crop. R2 stated that the flood destroyed the rice crop and caused losses to farmers. In addition, R5 stated that flooding caused crops to be destroyed because the crops were submerged for a long time due to the prevailing floods.

Next, R6 said his rice crop was destroyed by the floods and only received an allocation of RM 600.00 from the government. Furthermore, R9 also stated that the flood not only destroyed the rice crop but also destroyed the steel. Meanwhile, R3, R4, R7 and R8 were not affected because they did not have paddy fields. In conclusion, the results of the study show that flooding results in the devastation of farmers' agriculture.

**Table 4.** Floods due to Climate Change are causing Agricultural Devastation

<b>Respondents</b>	<b>Interview excerpt</b>
R1	<i>"the paddy field was destroyed."</i>
R2	<i>"hmmm damaged. The paddy is damaged. There are many losses and house also damaged."</i>
R5	<i>"plants do die as a result of being submerged for a long time in flood."</i>
R6	<i>"hmmm, the paddy fields were destroyed and the government only paid RM 600 hundred."</i>
R9	<i>"fertilisers used for the paddy plants washed away by flood."</i>

Furthermore, the study findings also showed that five respondents, namely R1, R2, R5, R6 and R9, stated that floods affected their agriculture. This theme is supported by a study carried out [37] which states that flooding

affects the community of residents outside the city because it damages agriculture, affects agricultural production, and destroys agricultural assets. Flooding is considered the most prevalent disaster in countries around the

world that has caused various losses on a large scale [37]. The occurrence of flood disasters in Malaysia has caused losses of millions of ringgits and destroyed native resources and the surrounding nature [38]. This makes the rice production area at risk of flooding due to its low land area and imperfect irrigation system. Farmers are more exposed to disasters due to the lack of early warning systems in use [38].

Floods are also the third most devastating natural disaster in the world and have caused the devastation of property and the death of thousands of people [39]. Flood disasters also affect livelihoods, especially for small-scale households living on the coast [38]. Commonly known, flood disasters are the main cause of the devastation of the agricultural sector (crops) compared to other natural disasters [37]. Among the visible effects of the prevailing global climate change is the devastation to agriculture that is felt by all populations especially those in developing countries that are organised as "smallholders" or "self-sufficient farms" [18]. The term smallholder describes the out-of-town agricultural expenditure by developing countries and farms that contribute to the main income and use family labour for agriculture [18].

Agricultural production is generally closely related to the weather which is influenced by climate change [18]. In addition, some plants such as water lilies and paddy can live with large quantities of water but in dry areas such as grasslands will die if exposed or drowned with excessive water [39]. Long periods of flooding can also cover soil pores and block tree roots from getting oxygen while causing tree roots to "stress" and die [38]. Floods also affect pH and soil base nutrients that contribute to tree growth [38]. Flood assessments conducted show that flooding disasters have more of an impact on the agricultural sector for people in out-of-town areas compared to those living in town [18].

Flood disasters that occur in a short or long period of time not only affect the agricultural sector but also affect infrastructure [18]. Floods

caused by prolonged heavy rains have impacted the agricultural sector, especially paddy [18]. Paddy around the world is destroyed by floods and it is estimated that 15-20 million hectares of paddy fields in South Asia and Southeast Asia suffer losses of up to USD 1 billion every year [38]. In Malaysia, an estimated RM 84 million worth of agricultural produce has been destroyed as a result of floods and has affected approximately 7000 farmers across the country [38].

Generally, natural disasters such as flooding in Malaysia as a result of climate change contribute to the decline in agricultural productivity [38]. Not only that, but another effect is that it is not only affecting agriculture but also affecting human health [18]. This is because, climate change will lead to an increase in the transmission of diseases such as malaria and this will affect the agricultural sector to provide labour in the agricultural sector and will indirectly affect the source of income of the population in the rural areas [18]. Last but not least, flood disasters not only reduce agricultural productivity in Malaysia, but it indirectly affects the country's food security [38].

### **Climate Change-Induced Flooding Is Jeopardising Livelihoods**

The results of the study based on table 5 show that flood disasters due to climate change have an impact towards livelihoods. A total of four respondents stated this, namely R2, R5, R6 and R9. R2 explained that he suffered losses because his paddy was destroyed, and he could not do business as always because his selling items were destroyed. In addition, R5 said he could not do business because the processing goods were at home and the floods that occurred caused him to be unable to process sales goods.

Furthermore, R6 said the flood destroyed his paddy field and caused him a loss of RM 2000 per paddy field. In addition, R9 stated that his paddy field was destroyed, and his fertiliser was

washed away by the flood. This caused R9's livelihood to be affected. For R1, R3, R4, R7, R8 and R10, the flood did not affect their income because they did not have paddy fields

and run businesses. In conclusion, the results of this study show that floods cause affected livelihoods.

**Table 5.** Climate Change-Induced Flooding is Jeopardising Livelihoods

<b>Respondents</b>	<b>Interview Excerpt</b>
R2	<i>"Hmmm bad. The paddy is damaged. There's a lot of loss, and the house also affected. Even the rental shop cannot run because the goods are ruined."</i>
R5	<i>" I'm not a farmer but a businessman. If we process it at home, then when the flood rises, we cannot process it. We can't do it because we have to wait until the flood runs out."</i>
R6	<i>"hmmm, paddy field is damaged, the government pays 600 hundred."</i>
R9	<i>"there are paddy fields. when it floods, our fertiliser is washed away. most of the people in this area, rely on paddy field as their source of income. Yes, livelihoods have been affected."</i>

Next is the theme of livelihoods. The results of the study showed that as many as four respondents namely R2, R5, R6 and R9 stated that the flood disaster affected their livelihoods. This theme is supported by the study conducted by [40], which stated that flood victim loss of shelter, damage to property, destruction of sources of livelihood and need to rebuild the strength to rebuild life after experiencing a traumatic flood disaster. Disasters have been classified into two parts namely natural disasters and disasters resulting from human actions [39]. Flooding is one of the natural disasters and it is beyond the control of human beings while human-generated disasters are known as sociotechnical disasters [39].

The climate change that has been occurring since the past few decades is troubling all parties as it has led to an increase in the quantity of rainwater as well as resulted in the frequency of flood disasters occurring around the world [40]. In addition, flood disasters affect the urban communities because it causes them to lose their jobs, two over three of their sources

of income is reduced which all of this limits them to provide for their needs after the occurrence of flood disasters [40]. Another impact is that flood victims who lose their income will face debt problems and lose their assets [40].

Generally, a flood disaster not only affects the local community, but it also affects their livelihoods [18]. The negative impact of flood disasters on livelihoods is such as decrease in agricultural production [18]. Flood disasters cause crop damage and have affected crop productivity by 60% up to 100% [18]. This not only jeopardises food sources in the area but also affects the economic resources of the population as agricultural produce cannot be sold to buy basic necessities and goods for children [40]. For residents in the outer urban areas, their livelihoods are directly or indirectly dependent on land and water thus frequent flooding has affected their livelihoods and endangered their lives [40].

The population in the rural areas relies heavily on agriculture and fisheries as their

source of income and it is estimated that as much as 60% of the population in the rural areas consists of fishermen and farmers [40]. The flood disaster that occurred in the rural areas not only took their lives but also destroyed their assets and livelihoods [40]. According to [20] flood disasters cause flood victims to lose their source of income and experience financial problems. There are flood victims who stated that they lost their jobs, and their income was affected and had difficulty continuing their lives after the flood ended [38].

Floods also destroy infrastructure such as shops and furniture, therefore flood victims need a significant amount of money to be used as capital to resume their business [38]. In addition, flood disasters also influence people to migrate, especially people in rural areas because floods cause an increase in disease, reduce food expenditure, cause stubbornness and reduce the household income [38].

Not only that, but the flood also destroyed the farmers' seeds [38]. The flood caused the crops that were about to be harvested to be destroyed and it also destroyed the supply of seeds for the next season's farming [38]. Finally, it also destroys the warehouse that stores the seeds and causes farmers to experience a shortage of seeds for the next farming season [38].

## **Conclusion**

This study has presented a thorough discussion based on the objectives and problems of the study. For the first objective of the study has been successfully answered by the reviewer through the discussion of the results of the study. The conclusion that can be made by the reviewer based on the objective of the study, which is to study the impact of climate change on the community in Kampung Pantai Johor, Kedah, is that climate change brings various negative effects on the lives of the community in the village. Climate change that occurs causes the community to face economic problems and disrupts the welfare of the

community's life. With this first objective, it helps the reviewer to know more deeply about the problems faced by the community of Kampung Pantai Johor, Alor Setar, Kedah. It is hoped that studies on the impact of climate change will always continue because it affects all levels of society. As we know, climate change causes droughts, floods, heavy rains, and heat waves that impact the population especially in the outer city areas. It also causes food security and poverty among the urban dwellers [12].

Furthermore, vulnerable persons such as the poor, the elderly, children and families as well as persons with a history of mental illness are likely to suffer the effects of climate change [2]. These groups are generally the main focus of social work practice. In addition, social workers adhere to the principle of social justice and carry out fair and careful interventions [11]. Finally, social workers in Malaysia in particular, need to be given more exposure in relation to climate change. In conclusion, social workers need to study and prepare themselves with sufficient knowledge about climate change. This is because, climate change has a big impact on society especially the helpless groups such as children, women, and the elderly. In general, these groups are the main focus in the practical field of social work so that these groups can function as before. Therefore, the debate on climate change has brought many benefits to social work engagement [3].

Social workers have an important role to play in reducing carbon, promoting the efficient use of energy, and protecting communities from the negative impacts of climate change by increasing the resilience of individuals and communities and helping communities to access green technologies [3]. Social workers are also committed to respecting the dignity and worth of the individuals they work with regardless of social status and class, and this is used to promote social justice and provide a strong framework for delivering social work justice with the natural environment in social

work practice [12]. Thus, the relationship between social workers and the social and economic effects of changes in the environment is a new challenge that needs to be met by a social worker [28].

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## Conflict Of Interest

The authors declare no conflict of interest.

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