

**FACTORS INFLUENCING THE BEHAVIOURAL INTENTION TO ADOPT CLIMATE INSURANCE: A STUDY BASED ON INDIAN PRIMARY SECTOR****Sathiya. S, Rohith Eswar. H. M, Vishwa. G, G. Pavithra**

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E-Mail: [pavithra.g@eec.srmmp.edu.in](mailto:pavithra.g@eec.srmmp.edu.in)**Abstract:**

Extreme natural disasters cause substantial losses in developing nations. Planning tools are crucial for managing water resources during droughts and reducing losses. This paper is about how insurance could be used as a way for agriculture to adapt to climate change. We examine how appealing suggestions for developing insurance against climate risk are. Farmers with good soils who believe they have already adjusted their practices to climate risks and who have not previously suffered losses as a result of unfavorable climatic events are less likely to buy insurance. The study's results will be helpful for policymakers, managers, and insurance companies that want to find cost-effective ways to build adaptation and resilience to climate disasters.

**Keywords:** climate insurance, climate change, Policy, Sustainable development.

## Introduction

Insurance against climate change was created to protect individuals and companies from the long-term effects of catastrophic events. It may help mitigate the devastation wrought by weather-related calamities including floods, typhoons, severe rains, and drought by making more accurate predictions. Consequently, climate insurance may offer a long-term contribution to both the recovery process and the avoidance of calamities. The danger of natural catastrophes and the accompanying financial devastation has grown globally over the last several decades due to both socioeconomic growth and climatic change. This behavior will be maintained (1). Global food consumption is expected to increase by 70% in the next two decades, making agriculture a crucial economic sector (2). In the coming decades, agriculture will face significant challenges as a result of climate change. Increases in the frequency and severity of extreme weather events such heat waves and droughts, cold spells, excessive precipitation, storms, storm surges, and high levels of solar radiation have been noted as a concern that climate change poses to agricultural activities. This threat is linked to severe consequences, including significant repair bills (1). Insurance is a crucial adaptation strategy used to deal with the increased risk brought on by climate change, as the cost of reconstructing a home after a flood may be rather significant. Insurance firms usually foot the bill for disaster aid (3). Markets' ability to pool risk and reduce flood-related costs is threatened by low demand for flood insurance. Financial constraints (4), low household perceptions of flood risk (5), and the expectation of government reimbursement in the event of a flood are all factors that could influence whether people in countries where purchasing flood insurance is voluntary actually do so. There are many other factors to think about, but these are several. The writers are credited as Brown and Hoyt. In this piece, we look at the personal implications of climate change and how sustainable development may help to lessen those effects (6).

## REVIEW OF LITERATURE

Agriculture is one of the businesses that is most vulnerable to extreme weather events, which are anticipated to grow more common as a result of climate change. Some farmers believe that purchasing insurance is a more effective way to assure financial stability than providing assistance for damages once a calamity has occurred. On the other hand, if insurance is not structured correctly, it may discourage farmers from utilising greater agricultural adaptation strategies or encourage them to behave in a way that is more risky. This study investigates the attraction of publicly-backed climate risk insurance, as well as the preferences of farmers for components of insurance systems that do not weaken incentives for larger agricultural adaptation. It is a problem in several European countries that the amount of flood risk that is not covered by insurance, which is expected to increase as a result of climate change. Because people in certain countries assume that the government will pay for any damages that are not covered by insurance, the demand for flood insurance in those countries is relatively low. This phenomenon is referred to as "charity hazard," and it is so named because it makes customers less likely to get private insurance.

There is a growing reliance on cross-sector partnerships for the implementation and enhancement of catastrophic risk management. Partnerships are a crucial element of disaster risk management, especially for lowering risks, but they aren't a panacea, and more research is needed to fully understand their function. To encourage the reduction of flood risk in the United Kingdom, this article explores the possibility for public-private collaboration on flood insurance. Creating adequate flood insurance coverage is critical for promoting flood risk reduction and adaptation to climate change. With increased flood risks due to climate change and socioeconomic expansion, insurance partnerships can no longer rely only on the risk transfer function. Insurance companies have long had ambitious goals for reducing flood risk, but they lack the means to do it on their own. The UK's flood insurance market is an illustration of how other stakeholders must be included to generate meaningful incentives for risk reduction because national government and business alone cannot manage these risks successfully. This study employs an agent-based model to analyse surface water flood risk in London with the goal of determining how the insurance relationship might be reinforced by other partners via the reduction of risk and the preservation of affordable premiums.

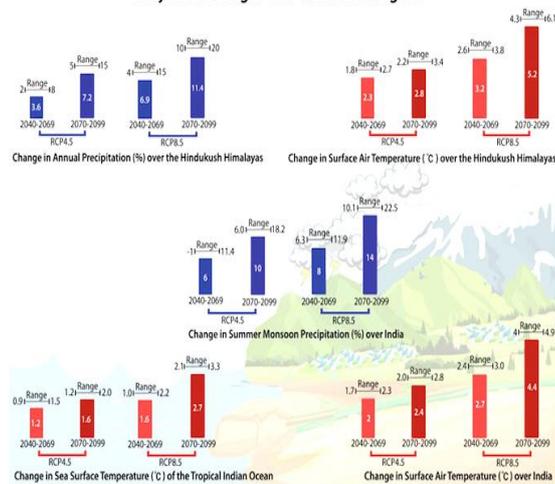
This study proposes a new explanation for the strange occurrence. Many sectors, including agriculture, stand to lose a great deal as a result of the predicted rise in the frequency of extreme weather events brought on by climate change. Farmers argue that insurance is more effective than disaster aid at restoring their economic stability. If insurance isn't set up correctly, though, it might discourage farmers from making significant improvements or tempt them to take risks they would otherwise want to avoid. Farmers' preferences for parts of insurance systems that do not reduce incentives for larger agricultural adaptation are explored, as is the appeal of publicly funded climate risk insurance. (7) The amount of uninsured flood risk, also known as the flood insurance protection gap, is expected to rise in various European nations as a result of climate change. Charity hazard, in which private insurance demand is suppressed because individuals expect government recompense for uninsured damage, may contribute to low flood insurance demand in some nations. Here, a fresh hypothesis is advanced to solve the mystery. Given that farmers are likely to incur losses over a wide range of scenarios due to environmental change and the increasing likelihood of drought over time, determining the genuine advantages of insurance may be challenging (8).

If customers choose to learn about climate change more slowly or largely rely on assumptions made in the past, their demand for insurance will be lower under climate change than it would be in a world where the distribution remained unchanged. According to our findings, the number of people interested in index insurance is affected by three different climate change-related factors. Farmers will learn about the new distribution when more weather shocks strike their fields, and they will modify the amount of their premium payments appropriately. Second, the mere possibility of climate change influences consumer demand, regardless of whether or not actual climate change has taken place. Uncertainty is increased not just by changes that have actually occurred or are anticipated to occur in the underlying distribution, but also by the possibility of climate change. Based on previous research (9) Climate change, it is predicted, will exacerbate health disparities and poverty in the United States over the next few decades. Millions of families are threatened economically by an ageing society, a shortage of affordable

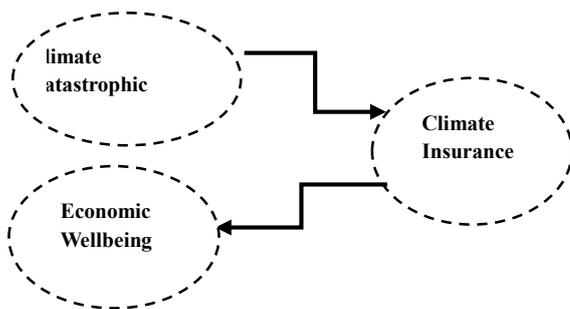
housing, and technology. The first drop in life expectancy to occur in the United States during a non-war period has been attributed to depression, drug misuse, and poor lifestyles. It is expected that millions of additional Americans would be pushed into poverty because of the economic disruption, property damage, and infrastructure failures caused by extreme weather occurrences that are attributed to climate change. Heat exhaustion, increasing pollution, and the introduction of new tropical illnesses to the United States are all possible outcomes of a warmer climate, especially for at-risk groups like the elderly (10).

Climate change and increased economic fragility are both contributing to an increase in the frequency and severity of flooding in many parts of the world. Appropriate flood insurance programmes are required to adapt to the rising flood risk and minimise welfare losses for families at risk of floods. Adjustments to the flood insurance market may be necessary to provide enough and appropriate financial protection and risk-reduction incentives. This report details the outcomes of a research that aimed to determine whether or not European flood insurance policies could adjust to shifting flood risks by applying standards that reflected the consensus view on key issues in the discussion around flood insurance reform. We demonstrate that between 2015 and 2055, the average risk-based flood insurance premium might triple if flood-prone households did not take further measures to lower their risk. We show that the expected future rise in flood risk may be mitigated in part by flood insurance plans that offer increased incentives for policyholder risk reduction, which decreases vulnerability. It is possible to reduce the cost of flood insurance by incorporating key PPP components such as public reinsurance, limited premium cross-subsidization between low- and high-risk households, and incentives for risk reduction on the part of policyholders. It is challenging to establish the genuine advantages of insurance since farmers would suffer an unexpected distribution of losses owing to a changing environment in which the chance of drought is increasing over time (7)(8).

Projected Changes over the Indian Region



**Model:**



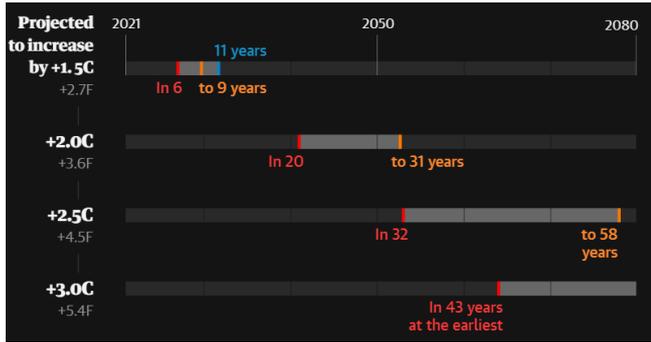
**Climate Apocalypse:**

A climate apocalypse is a term used to describe a scenario in which human civilization as we know it will collapse globally and humans will perhaps go extinct as a direct or indirect effect of human-caused climate change.

The world is 1.1 degree Celsius warmer than it was before the Industrial Revolution, and it is on an alarming trajectory to go up another half degree by the early 2030s. This is due to human use of coal, oil and gas.

These figures may appear insignificant, but if the world temperature rises by 2 degrees Celsius above pre-industrial levels, we will witness cataclysmic changes in the environment. The Greenland ice sheet will collapse into the sea, causing a six-foot rise in sea levels that will flood most coastal cities. Glaciers and snowpack that supply water to cities and farms will be lost. Aquifers will be depleted. Farmland will be converted into deserts. Global starvation will occur on a massive scale.

Snow and ice melt as the climate warms. It is predicted that melting of glaciers, ice sheets, and other snow and ice on land will continue to be greater than precipitation in the winter, resulting in a decrease in the total amount of snow and ice on the planet. Mountain glaciers around the world have shrunk in size over the last century, as has the amount of permafrost in the Arctic. Greenland's ice sheet is also melting faster. It is expected that the amount of sea ice (frozen seawater) floating in the Arctic Ocean and around Antarctica will decrease. Already, the summer thickness of Arctic sea ice is roughly half of what it was in 1950. Arctic sea ice is melting faster than Antarctic sea ice. Melting ice may also cause changes in ocean circulation. Although the amount of melt is uncertain, summer in the Arctic Ocean will most likely be ice-free by the end of the century.



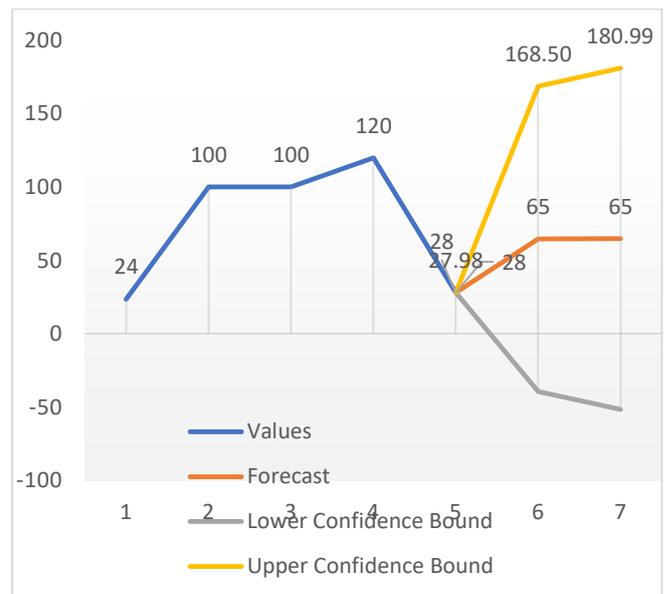
**Economic Wellbeing:**

Climate risk insurance can help safeguard people, small businesses, and entire nations from the long-term effects of extreme weather conditions. In the near term, it can lessen the effects of natural disasters, and over time, it can help reduce the risk of disasters. Extreme weather protection strategies must constantly be adapted to local conditions and needs, including the needs and financial capabilities of potential clients as well as the potential climatic risks that a region or community may face. The same is true for climate risk insurance: localized assessments are crucial for comprehending the requirements of vulnerable groups and figuring out how to effectively prepare them in the event of a shock like a natural disaster. To ensure that losses and damages from natural disasters are kept to a minimum, proactive risk management strategies must always be used in conjunction with climate risk insurance. Accessing risk-based premiums is extremely challenging for low-income populations. The effectiveness of insurance plans depends on efforts to reduce the cost of products. Governments or other funders may offer partial or full subsidies to lower the cost of insurance. Regional risk pools can also protect the most vulnerable and underprivileged during a catastrophe. Payment schedules must be modified to the client's unique financial and personal situation. The insurance for assets (IFA) programme may allow those who are unable to pay a premium to obtain climate risk insurance. They will receive financial compensation for taking part in local catastrophe risk reduction initiatives, such as constructing flood defenses. For climate risk insurance to be adequate, beneficiaries and other local stakeholders must be involved and held responsible: Transparent insurance that involves communities in the design and delivery fosters trust. Higher levels of meaningful involvement are facilitated by openness about funding distribution, collaboration with community-based organizations, and assuring the participation and inclusion of women. It must be economically, socially, and environmentally sustainable for climate risk insurance to be successful. When clients are rewarded for making wise decisions, well-designed schemes can encourage them to take less risk. Higher premiums may persuade people to avoid living in flood- or landslide-prone areas or encourage them to take precautions, lowering their risk over time.

**Analysis:**

In this study, we use forecasting analysis to estimate probable meteorological catastrophes. This chart's value translated into billions. "Upper confidence" in this context refers to the probability of an event. Lower confidence reveals the unfavorable outcomes. The term "forecast" refers to data that were predicted but ended up happening in the preceding report.

Month	Year	Disaster	Region	Overall Loss
25 to 29-May	2021	Cyclone Yaas	India, Bangladesh	3 billion
14 to 19-May	2021	Cyclone Tauktae	West of India, Maldives, Sri Lanka	1.5 billion
June - October	2020	Cyclone Amphan	India, Sri Lanka, Bangladesh	10 Lakh Crore
May	2019	Cyclone Fani	India and Bangladesh	10 Lakh Crore
June- July	2018	Cyclone Ockhi	Kerala, India	295 Million



### OBJECTIVES OF THE STUDY

- To raise people knowledge of climate change and to better comprehends it.
- Dealing with the policy issue of climate change
- To fill a study gap, we are concentrating on the factors that influence a person's decision to buy climate insurance in India's primary sector.
- Recommendations for enhancing Insurance Design are included in this study.

### SCOPE OF THE STUDY

The study is focus on factors that influence a person's decision to buy climate insurance in India's primary sector.

### RESEARCH METHODOLOGY

#### A. Data

The required Secondary data collected through questionnaire.

#### B. Tools used

The collected data have been analysed by using Forecasting Analysis

#### Recommendations for improved insurance design

Form a list of priorities. Participatory approaches should be utilized to determine the priorities for risk reduction. It's possible that insurance isn't always the most effective strategy to reduce vulnerability; in other situations, for instance, access constraints to resources could be a far more significant factor (11). Comparisons should be made between insurance and other types of financial services, such as credit or transfer programmes, as well as between insurance and non-financial methods of risk management (12). Even if a community chooses to prioritize an intervention other than insurance, it is still required that the social-ecological background, which includes the institutional structure, the distribution of resources, and the structural inequities, be recognized in an open and honest manner. In addition to this, the requirements and recommendations on local knowledge must be considered (13). However, enhanced social-ecological outcomes are not guaranteed even with increased engagement from many stakeholders. Motivate people to stand out from the crowd. Insurance should be developed to support variety (e.g., of crops, seeds, and techniques) and "should not constrain the farmer's choice set of adaption approaches" by creating crop-specific insurance policies that do not cover all crops equally. This can be done by creating crop-specific insurance policies. While encouraging crop diversity, insurance premiums ought to reflect the higher risk that non-sustainable management practices like monocultures imply. A novel solution to this issue is the Whole Agricultural Income Program (WFRP), which has been in existence in the United States since 2015 and recognizes that diversifying a farm lowers the risk of financial loss. Policies offer greater coverage and a lower premium rate if a farm produces more products, a practise known as diversifying its output (14). The policy should be modified. The impact of policies frequently varies dependent on the distinctive characteristics of local environments. Locally severe effects on the chemical and physical features of soil may not be visible in aggregate analysis if policies are executed uniformly throughout large geographic regions (15). The Index-Based Livestock Insurance Programme in Northern Kenya responded to requests made by pastoralists by reducing the geographical extent of several index units so that they would more accurately represent the conditions of the vegetation in the pastoralists' home grazing regions. The Index-Based Livestock Insurance scheme responded to requests from pastoralists for a more realistic representation of the vegetation conditions in their home grazing lands by reducing the geographical scope of several index units. Choose the right degree on the scale. It is possible that, rather than being sold to individual homeowners, insurance products could be made available on a village or community level. This would help prevent the overloading of social networks. The current situation in rural areas demonstrates that not all households are subject to the same risks, and that the benefits of payment may not be equally distributed either.

The scope of coverage should be kept to a minimum. It is critical to actively incorporate ecological forms of "natural insurance," as well as existing risk-coping and risk-sharing systems, into insurance contracts and trigger levels. Contracts that are only activated by more extreme events and account for shifting shock frequencies and impacts may aid in the development of local risk-coping mechanisms capable of withstanding small and moderate shocks. A connection between insurance and environmentally responsible practices is also essential. Despite the challenges posed by climate change, policies should encourage sustainable human development in order to reduce maladaptation (16). Lastly, premium subsidies might be granted only if environmentally friendly land-use practices, such as methods that support sustainable agriculture, are implemented (see (17) for example, investment in education on sustainable farming techniques such as efficient fertiliser application and soil fertility-increasing cultivation practices; also see (18) and (19)). For example, the Harita/R4 insurance scheme in Ethiopia involves efforts for reducing ecological risk. Farmers can pay their insurance premiums through the government-sponsored Productive Safety Net Program, which rewards residents for labour.

#### Conclusion

Agricultural insurance against climate hazards may improve people's lives, but designers must give much more thought to the social and ecological impacts of such programmes before implementing them. Unless precautions are taken, the environment may suffer from the continued use of these popular treatments. In the future, the economic metrics that have been used to evaluate the performance of a wide range of ecological and social goods that cut across space and time will be inadequate. Academic study on insurance products should expand beyond economics to include subjects such as environmental science, geography, and ethnography to better comprehend land-use transitions and the interdependence of social-ecological systems. Existing forms of "natural" and informal insurance, such as agricultural biodiversity and societal norms of redistribution, should be studied as part of the frameworks for design and assessment. Because the effects on these systems may be cumulative or only visible at a given point, evaluation time constraints must be more stringent than in standard economic impact studies. At the very least, we're talking about five to ten years. Given the typically brief durations of donor funding, privately funded impact evaluation studies may present an attractive option (20). Methods that look into the future, like context-aware modeling, can be used to predict a range of possible risk outcomes, which can be changed as social and ecological responses change.

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