**Proposal Topic: Data Based Outlook to Reduce Flood to Property Damage**

**Exploratory Data Analysis: Flood Damage to Property Reduction**

BAT-404 Analytics Techniques and Tools

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**Introduction**

Floods are the most prevalent natural catastrophe in both developed and developing countries, accounting for around 40% of all natural disasters. Flooding has serious consequences for human health before, during, and after the flood. Southeast Asia is highly susceptible to frequent and severe environmental disasters. The recent floods in Southeast Asia have been caused by a variety of events, including typhoons, severe rainfall, and tropical storms. Four tropical cyclones, as well as strong and extended monsoon rains, caused extensive damage in Thailand, Cambodia, the Philippines, Vietnam, and Indonesia. On a massive scale, these tremendous monsoon rains, typhoons, and tropical storms are the outcome of climate change, a complex system marked by dynamic relationships between land, bodies of water, and inhabitants. Southeast Asia is vulnerable to the adverse effects of climate change due to its rapidly rising population, the majority of whom are impoverished, insufficient food security, and decreasing natural resources. Small–scale mitigation has been undertaken by both governmental and non-governmental entities across Southeast Asia. These initiatives, however, are frequently unsustainable due to a lack of community connection and engagement. As a result, it caused tremendous and widespread damage across Southeast Asia regions livelihood and economy. The aim of this analysis is to construct an Exploratory Data Analysis of floods from the year 2000-2022 that will calculate the total damages to each country recorded in the data sets. Furthermore, it will be ranked up from each country based on the numbers of floods recorded and it will show the difference between the most damaged country based on the total damage to the least damaged country. This information will show precise and intact statistics of data that can help and prevent the damage caused by flood to every country in Southeast Asia.

**Problem Statement**

Floods are disastrous natural hazards accused of human live losses. As a flood-prone area, Southeast Asia (SEA) has often been hit by floods, resulting in the highest fatality in the world. Despite the destructive flood impacts, how has flood occurrence changed over the past decades, and to what extent did floods affect the SEA are not yet clear. Using the data, we gather; we aim to assess the trend of flood damages to properties in the SEA in 2000–2022.

As low flood protection standards in Cambodia and Myanmar are considered a reason for high flood-induced mortalities, building higher flood protection standards should be taken as a priority for mitigating potential flood impacts. With quantifying flood occurrence and impacts, this study offers scientific understandings for better flood risk management.

**Significance of the proposed topic**

The key findings of this study will be useful to the following entities and solve related issues in relation to food waste.

**Community.** The zero-food waste reduces local pollution because the more emission we produce, the more we generate trash that could lead to health issues for humans.

**Animals.** Instead of dumping the excess foods into landfills which affect our greenhouse, it’s cheaper and safer to feed it to starving animals. Through this, it will reduce dying animals because of hunger.

**Reduce Hunger.** Foods that can still be eaten and not spoiled can be donated. This will support one’s community by providing donated untouched food to those who might not have a steady food supply that would have otherwise gone to waste and landfills.

**Reduce methane that food waste emits.**  Composting practices minimize anaerobic conditions and maximize aerobic conditions will be the most effective at reducing greenhouse gas emissions. Cutting methane emissions is the opportunity that our world has to slow the rate of global warming.

**Fight climate change and pollution.** Zero waste conserves resource and minimizes pollution. It also conserves natural resources and reduces pollution from extraction, manufacturing and disposal.

**Methods**

* Preparedness and response capacity at local communities should equally be promoted through a community-based approach. This includes building community-to-community coordination. For example, if there is heavy rainfall and a flash flood is likely in an upstream community, that community can inform the downstream community and activate an alert system—which should be installed.
* “Green-gray” infrastructure like retention basins, wetlands, vegetation shields, sediment traps, flood walls, diversion channels, retaining walls, and other measures can improve the geo-morphology of the mountain rivers including slope stabilization and overall flash flood risk management.
* Local governments urgently need greater expertise on flood management, both on the technical and non-technical aspects, and in each and every stage of the risk management cycle, which is greatly lacking in the region.

**Expected Output**

This research aims to bring about an exploratory data analysis of floods from the year 2000 to 2022 from the countries within the South Eastern region of Asia that resulted in the highest damage to property as well as their respective local governments that experienced the least amount of damage to property. The worldwide flood datasets derived from the Centre for Research on the Epidemiology of Disasters' Emergency Events Database (EM-DAT) will be used to rank up the number of damages to property to each country from the highest to lowest and then determine what location in the South Eastern Asia had the best countermeasures for flood damage. This data will be utilized to be able to develop a flood countermeasure strategy that can potentially help the countries most affected by floods be more capable of saving as much as they can. By collaborating with other countries in developing new strategies, next time floods arrived not much would be carried away.

**Sustainable Development Goals (SDGs) of the Project**

The SDGs that this project aims to achieve are Sustainable Cities and Communities and Climate Action. These SDGs are further described as follows;

1. **Goal 11: Sustainable Cities and Communities** - This SDG aims to make cities and human settlements inclusive, safe, resilient and sustainable.
2. **Goal 13: Climate Action** - This goal strives to take urgent action to combat climate change and its impacts.

These SDGs are in line with the Proposal Topic: Data Based Outlook to Reduce Flood to Property Damage EDA: Flood Damage to Property Reduction as it will provide a mitigation and quick response plan based from multiple frameworks from different countries within the South Eastern region of Asia that are tried and tested. These frameworks will help the governments of the countries that are take more damage caused by flood by assimilating the said frameworks from other countries and applying it to their own allowing them to mitigate damage to property caused by floods.

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