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

**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 a tremendous and widespread damages across Southeast Asia regions livelihood and economy.

The aim of this analysis is to construct an Exploratory Data Analysis to 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 flood recorded and it will show the difference between the most damaged country based on the total damage to the least damage country. This information will show a precise and intact statistics of data that can help and prevent the damage caused by flood to every country in Southeast Asia.

**Problem Statement**

**Significance of the proposed topic**

**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 (https://sdgs.un.org)
2. **Goal 13: Climate Action** - This goal strives to take urgent action to combat climate change and its impacts ( https://sdgs.un.org ).