Assignment 1 - ICGS112

In a normal condition, the trade winds over the Pacific ocean blows from the west coast of the American continent to the east coast of Asia, carrying warm current westwards, allowing cold current from deep sea which is full of nutrients to fill up its spot in the East coast of the Pacific ocean. This delicate balance of currents and atmospheric circulation plays a major role in global climate, geography and biodiversity. Once in a while, this system loses its balance, leading to a phenomenon called El Niño-Southern Oscillation (ENSO), which consists of two oppositions: El Niño and La Niña. Both significantly disrupt human food stability and the agricultural sector Worldwide.

El Niño is extraordinary where the trade winds weaken, thus warm water still lingers around the east of the Pacific ocean. In contrast, trade winds blew aggressively in the time of La Niña, bringing excessive humidity and warmth to the west. Although this antagonism may seems like a coin flip, the effect varies in each specific area (eg. During El Niño, while the south west state of the USA experiences floods, other areas may face drought due to polar jet stream) and may influence other parts of the world as well, such as the Atlantic Ocean and the Indian ocean. Major impact include:

- Hot and humid climates leading to natural disasters: typhoons, floods, and insect outbreaks, whereas dry climates cause droughts. Both of these cause great loss in agricultural production.
- The lack of nutrient-rich (plankton) upwelling currents means fewer fish, leading to fisheries decline.
- Both floods and droughts cause water and food scarcity for humans and livestock.

These issue will eventually leads to post-harvest spoilage, natural resources and habitat loss. As food is scarce, price inflates and eventually leads to suffering and death, especially in poorer countries where importing food is not an option.

Thailand's ambition to become the "world kitchen" started decades ago, though slightly dropped through the global ranking, we are still competitive contenders to achieve that vision. The country benefits from a rich agricultural background, along with fertile earth and a strategic geographical location - although, a lot of competitors: India and Vietnam. Ironically, younger generations have been flooding out of primary agricultural sectors creating labor shortages. The trend is likely driven by the low and unstable income. The government support on farming infrastructure and agricultural technology are mediocre, so when a natural disaster struck, their products got significantly destroyed. Additionally, the traditional farming and fisheries method still plays a major role in Thailand's primary industries, which is inferior to modern technologies. So, Thailand has to overcome these challenges first (which I will discuss in the next paragraph about the government role to mitigate the ENSO effect), in order to accomplish the vision, mainly getting more labor and making them more productive using technology.

Thailand is one of many nations that experience the impact of ENSO firsthanded, so it is essential for action to be taken by every level of society, from the government to communities and individuals. Here is what each group can do to withstand the phenomenal:

Government

- Build first sector's infrastructure (dam, reservoir) and advocate for farming technologies
- Early disaster warning and precise climate forecast
- Provide insurances and send help when needed
- Educate farmers on technologies, sustainability, and increasing yield
- Listen to representatives and prevent corruption

Communities

- Collaborate and share information to soothe the impact as a whole
- Community leaders play an important role in reporting problems to the authorities, prompting policy changes or assistance

Individuals

- Stay informed about the climate, seek knowledge, and be ready to adapt