Customer pain point - **Increased Disaster Severity:** Climate change is causing more frequent and intense natural disasters, putting a strain on existing response systems.
Communication Breakdown: Disasters often disrupt communication infrastructure, hindering coordination and rescue efforts.
Unequal Impact: Vulnerable communities often lack resources to prepare for and recover from disasters, leading to greater devastation.

Environmental Damage: Floods can contaminate water supplies, erode soil, and damage ecosystems. This can have a long-term impact on public health and the environment.

- flood control projects age over time and therefore be continuously maintained and updated, requiring investments of manpower and financial resources

Current flood management techniques

Measures	Description
Structural	Keeping water away from populations, for flood hazard reduction. Measures include dams, dikes, levees, weirs, seawalls, dykes, reservoirs, pump stations, embankments, tidal gates, diversion channels, etc.
Non-structural	Keeping populations away from water bodies, for flood vulnerability reduction. Measures include policies and laws, raising public awareness, flood forecasting and warnings, evacuation, training and education, land use adjustment, regulations and insurance, funding and subsidies, spatial and flood management plans, etc.

In an effort to reduce the impact of flood disasters on human life and property, humanity has gone through thousands of years of water control experience. Societies have continuously improved flood control standards through engineering measures—to keep flood waters away from humans, and non-engineering measures—to keep humans away from flood waters. However, despite all efforts, the economic losses caused by flood disasters have not been reduced, and thus finding the optimal combination of engineering and non-engineering measures has become one of the hot topics in reducing flood disaster damage. However, from the perspective of disaster reduction, human intervention only minimally affects the occurrence of natural disasters. But humans can reduce the losses from natural disasters by reducing the assets exposed in flooded areas and decreasing the vulnerability of disaster victims, as well as strengthening disaster prevention and mitigation capabilities. Thus, flood management strategies based on both structural and non-structural measures have been transformed to risk-based flood management strategies.
When disruptive events occur, infrastructure has four resilience properties, defined as the 4R's: Robustness, Redundancy, Resourcefulness, and Rapidity, and a community/city has five resilience properties: Robustness, Redundancy, Rapidity, Resourcefulness, and Adaptivity.

For feasibility - risk management, prior and post disaster effects should be discussed

- How far can it be beneficial for preventing urban floodings
- **How long will this last?**
- **System Reliability:** What measures are in place to ensure your prototype functions during a disaster, even with potential power outages or communication disruptions?
- Comparison with dubai flooding

Innovativeness

Functionality and Effectiveness:

- **Specific Disaster Types: How well does your prototype address different types of disasters (e.g., floods, earthquakes, wildfires)?**
- **Data Integration: Can your prototype integrate with existing disaster management systems and data sources (e.g., weather forecasts, emergency response databases)?**
- **User Interface and Usability: Is your prototype user-friendly for people with varying technical backgrounds, especially those under stress during a disaster?**
- **Scalability: Can your prototype be easily scaled up to handle large-scale disasters or geographically diverse regions?**

For presentation -

Feasibility -While neural networks offer exciting possibilities for natural disaster forecasting, there are important feasibility considerations. One key factor is data availability. We will need access to comprehensive historical and real-time data sets to train and run the network effectively. Additionally, the computational power required for complex neural networks can be significant. Luckily, cloud computing solutions offer a viable option. However, ensuring the transparency of the neural network's decision-making process is crucial. We are exploring techniques to make the system's reasoning understandable for human users. Finally, integrating seamlessly with existing forecasting and alerting systems is essential for real-world application. We are confident that by addressing these feasibility considerations, our project can become a valuable tool in natural disaster preparedness.

For commercial viability -