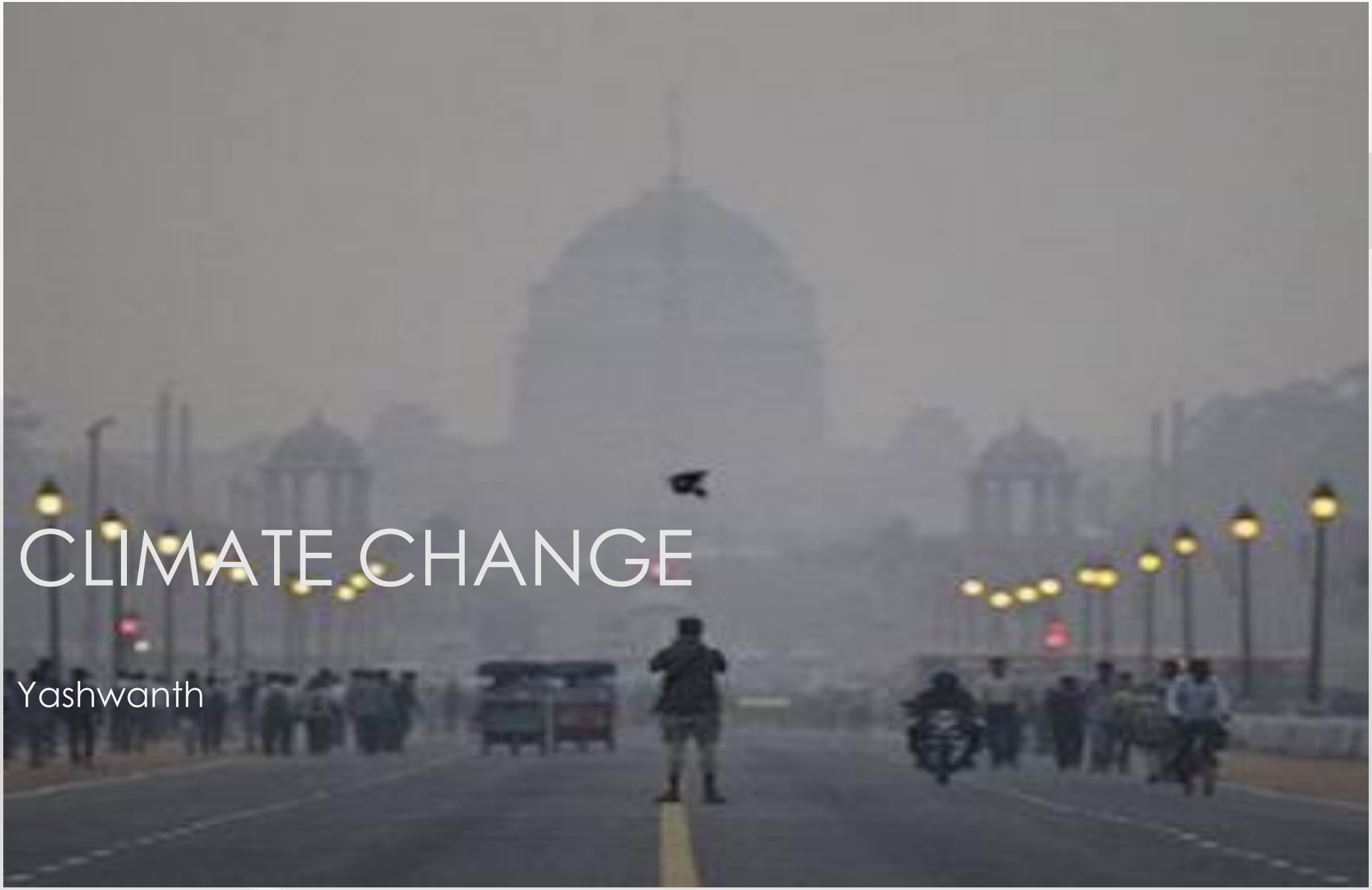

CLIMATE CHANGE

Yashwanth

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CLIMATE CHANGE IN INDIA

- **Climate change in India** is having profound effects on India, which is ranked fourth among the list of countries most affected by climate change in 2015.India emits about 3 gigatons (Gt) CO_2 of greenhouse gases each year; about two and a half tons per person, which is less than the world average. The country emits 7% of global emissions, despite having 17% of the world population.

DELHI: A CLIMATE CHANGE CASE STUDY

- *Dangerous air-pollution levels in Delhi illustrate why multifactorial pollution must not be ignored*
- This year, Delhi has been ranked fifth out of the 32 megacities in the world in terms of population
- Regional meteorology results in a number of phenomena that influence Delhi's air pollution. These include: high winds and dusty conditions in summer emphasised by low relative humidity conditions, which enhance the resuspension of particles; episodic dust transport events from nearby areas; background ozone concentrations and long range transport of precursor emissions from subcontinental and intercontinental sources.
- As a result of Delhi's geography, air – sometimes more polluted than in Delhi itself – moves into the city from surrounding areas

DELHI AIR POLLUTION: PM2.5, PM10 LEVELS SHOOT THROUGH THE ROOF MORNING AFTER DIWALI

EMPATHIZE

- Empathize with the affected communities: Start by understanding the climate change impacts that people in India are experiencing, such as floods, droughts, heat waves, and sea-level rise. Engage with the communities and stakeholders to understand their needs, challenges, and priorities.

EMAPTHY MAP

See: images of polluted skies, garbage on the streets, and changing weather patterns.

Say: expressions of concern, frustration, or hope for the future.

Do: include actions such as recycling, conserving energy, or protesting for change.

Feel: include anxiety, sadness, or hope for a better future.

- Empathy is a crucial step in the design thinking process, allowing us to gain a deep understanding of the needs and perspectives of stakeholders.
- Delhi climate has several stakeholders, including local communities, government, and environmental organizations, all of whom are affected by the climate.
- To empathize with these stakeholders, we use various methods such as surveys, interviews, and observation
- These insights were synthesized to create a problem statement for climate which helped us develop effective and sustainable solutions

DEFINE THE PROBLEM

- Define the problem: Define the specific problem you want to solve, such as reducing greenhouse gas emissions, increasing resilience to climate impacts, or promoting sustainable lifestyles. Identify the key stakeholders, their interests, and the barriers to change.

- In recent years, Delhi has seen an increase in temperatures, particularly during the summer months. Heatwaves have become more frequent and intense, which can have serious health consequences for residents, particularly the elderly and those with underlying health conditions. The city has also experienced more extreme weather events, such as heavy rainfall and flooding, which can cause damage to infrastructure and disrupt daily life.

- In addition to these direct impacts, climate change can also exacerbate existing environmental and social challenges in the city, such as air pollution, water scarcity, and social inequality. These challenges can create complex and interrelated problems that require a coordinated and long-term approach to address.

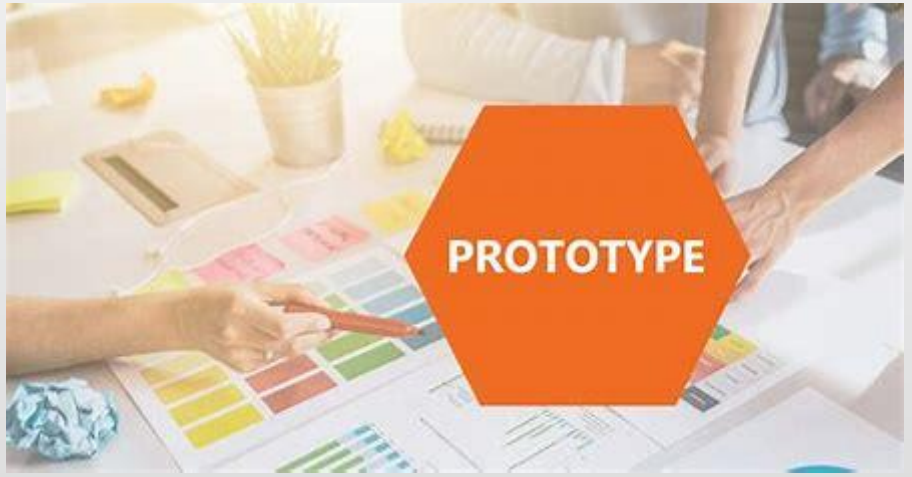
IDEATE SOLUTIONS

Ideate solutions: Generate a range of ideas for addressing the problem. Brainstorm innovative approaches, consider new technologies, and explore alternative business models. Use creative thinking techniques such as brainstorming, mind mapping, and design sprint to generate ideas.

- Clean energy vehicles: The government of India introduced a plan to phase out all vehicles that are 10 – 15 years old and replace them with new models.
- Increasing the use of renewable energy: One of the major contributors to climate change is the burning of fossil fuels. In Delhi, the use of renewable energy sources such as solar, wind and hydro power can be increased to reduce the dependence on fossil fuels.
- Promoting energy efficiency: Another way to reduce carbon emissions is by promoting energy efficiency in buildings, transportation and industry. This can be achieved by using energy-efficient appliances and equipment, promoting public transportation and encouraging industries to adopt cleaner technologies.
- Greening the city: Planting more trees and creating green spaces in the city can help to reduce carbon dioxide levels in the atmosphere. This can be achieved by creating more parks and green spaces in the city and promoting the use of green roofs and walls.
- Promoting sustainable waste management: Improper waste management contributes to greenhouse gas emissions and air pollution. Implementing sustainable waste management practices such as recycling and composting can help to reduce the amount of waste that ends up in landfills and reduce the associated emissions.

PROTOTYPE SOLUTIONS

Prototype solutions: Select the most promising solutions and create prototypes to test them. Develop physical or digital prototypes, models, or simulations to illustrate how the solution could work in practice. Test the prototypes with users, get feedback, and refine them based on the feedback.



1. Promotion of public transportation: Encouraging people to use public transportation, such as buses and metro trains, can help reduce traffic congestion and air pollution in Delhi. This can be done through subsidies for public transportation, implementing better infrastructure, and providing incentives for using public transportation.

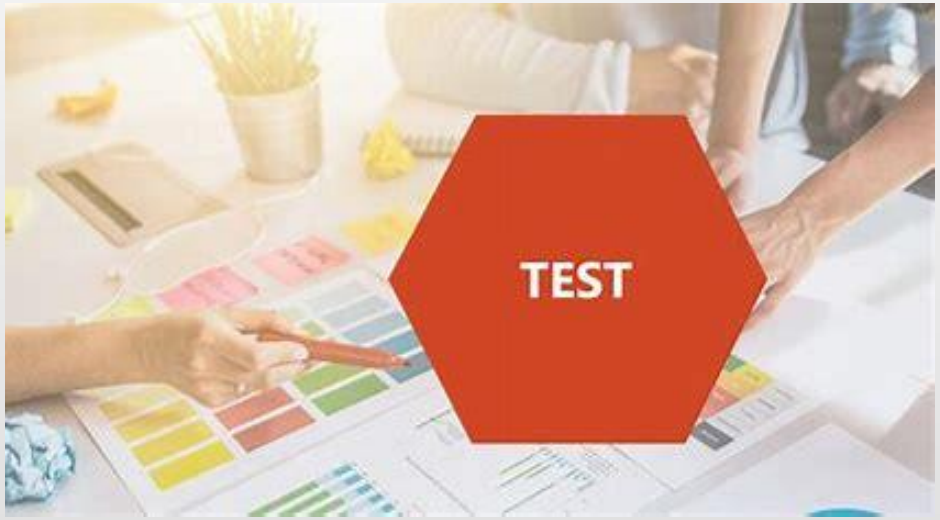
2. Planting trees and creating green spaces: Planting trees and creating green spaces can help absorb carbon dioxide and other pollutants from the air, while also providing shade and reducing heat islands in urban areas. This can be done by promoting tree-planting drives, creating green corridors, and encouraging citizens to plant trees in their own neighborhoods.

3. Implementing energy-efficient measures: Encouraging the use of energy-efficient appliances and promoting the use of renewable energy sources can help reduce greenhouse gas emissions and improve air quality. This can be done through incentives for renewable energy adoption, tax breaks, and subsidies for energy-efficient appliances.

4. Reducing waste and promoting recycling: Promoting the segregation of waste, encouraging the use of biodegradable materials, and promoting recycling can help reduce waste and improve air quality. This can be done through public awareness campaigns, providing incentives for recycling, and promoting composting.

TEST

- Test solutions: Test the prototypes in real-world settings to assess their feasibility, effectiveness, and sustainability. Measure the impact of the solutions, monitor their performance, and collect feedback from users. Iterate and refine the solutions based on the feedback and the data



1. Conduct a feasibility study: Before implementing any measures, it's important to conduct a feasibility study to assess the potential impact, cost, and feasibility of each measure. This can involve assessing the current state of the environment in Delhi, conducting surveys to determine public attitudes and opinions, and evaluating the potential benefits and drawbacks of different approaches.

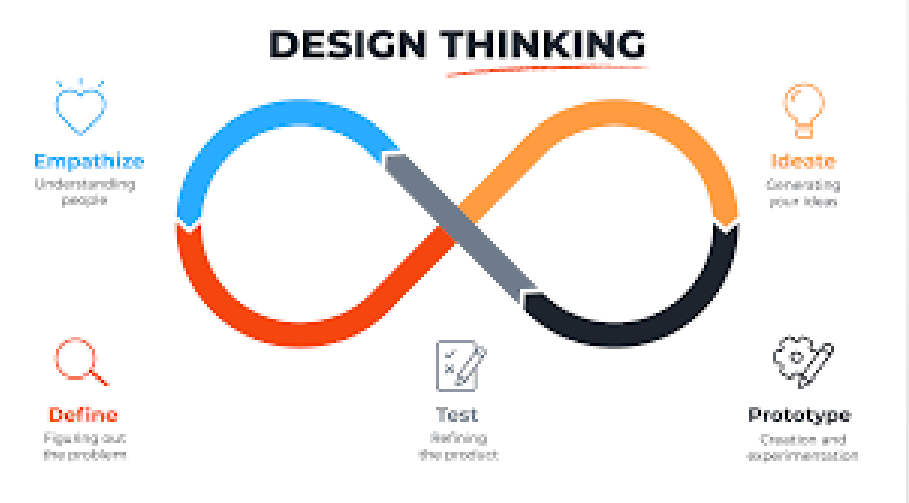
2. Develop a plan: Based on the results of the feasibility study, develop a plan that outlines the specific measures to be taken, the timeline for implementation, and the resources required. The plan should be realistic, achievable, and tailored to the unique needs and challenges of Delhi.

3. Pilot the measures: Before implementing measures on a large scale, it can be helpful to pilot them in a smaller area or with a smaller group of people. This can help identify any issues or challenges that may arise and allow for adjustments to be made before the measures are implemented more widely.

4. Monitor progress: Once the measures are implemented, it's important to monitor their progress and evaluate their impact. This can involve tracking key indicators such as air quality, energy use, and waste reduction, as well as gathering feedback from citizens and stakeholders.

CONCLUSION

- Overall, design thinking can be a powerful tool for addressing climate change in India by fostering innovative solutions that are grounded in the needs and aspirations of the people.



DONE BY:

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