UNEARTHING THE ENVIROMENTAL IMPACT OF HUMAN ACTIVITY: A GLOBAL CO2 EMISSION ANALYSIS

1. INTRODUCTION

The increasing average atmospheric temperature has led to global warming, which drives a set of changes to the Earth's climate and weather systems. These swift changes are happening as humans continue to emit heat-trapping greenhouse gases (GHG) to the atmosphere . Among these emissions, carbon dioxide (CO_2) is the critical anthropogenic greenhouse gas due to its abundance and its ability to remain in the atmosphere for thousands of years.

CO_2 emissions can be from natural and human sources. One of these sources originates from the urbanization process. Urbanization is a dynamic process that changes rural areas into urban areas with an increasing number of people and the expansion of the built environment horizontally and vertically. The built environment is the anthropogenic surroundings that provide infrastructure and facilities for human activities, and they are the fundamental components of the economy and social development of a nation. Thus, the acceleration of urbanization played a considerable role in rising CO_2 emissions in the building sector.

In general, the building sector ranges from construction to operation, which can be further divided into residential and non-residential buildings. These include the processes of adding structures to areas of land and the operation, service, and maintenance of the building. With the building sector facing a resurgence in growth, a massive direct and indirect impact on the environment has been reported. It is considered as one of the significantly consuming and waste generating sectors of the economy . The environmental impact of this sector can be categorized into ecosystem impacts, natural resource impacts, and public impacts .This sector is also responsible for significant energy consumption and emission production, such as GHG emissions, particulate matter, sulphur dioxide, carbon monoxide, and nitrogen oxide . As a result of the energy consumption from this sector, the ambient CO_2 level has increased, which generates enormous proportions of CO_2 emissions . Sources of CO_2 emissions in this sector can be from the energy utilization required for the manufacturing and transportation of the building materials to the processing of resources, construction waste disposal, and the demands of construction equipment .

The building sector consumes a substantial portion of non-renewable energy and prompts the emission of a significant amount of CO_2 .Building contributes approximately 39% of the annual global CO_2 . It has been reported that more than a third of the usage of total energy and CO_2 emissions is a result of the building sector in the developed and developing nations .Therefore, CO_2 emission mitigation measures are crucial To promote CO_2 emission mitigation, planning on conservation of energy, and implementation of strategies to reduce potential emission mitigation should be prioritized.This paper aims to provide an overview of the issues, impacts, and mitigation strategies in the building sector to reduce and control CO_2 emissions. Carbon dioxide causes 80% of global warming.

1.1. Overview

Global warming is the long-term heating of Earth's surface observed since the pre-industrial period (between 1850 and 1900) due to human activities, primarily fossil fuel burning, which increases heat-

trapping greenhouse gas levels in Earth's atmosphere. This term is not interchangeable with the term "climate change."

1.2. Purpose

The data throws light onto how much fossil fuels are burnt, per year per nation, which amounts to an increase in CO2 every year. This will help researchers and environment experts to predict global warming. So countries should set a goal to decrease this amount year.

2. PROBLEM DEFINITION AND DESIGN THINKING

Definition

Carbon dioxide emissions or CO2 emissions are emissions stemming from the burning of fossil fuels and the manufacture of cement; they include carbon dioxide produced during consumption of solid, liquid, and gas fuels as well as gas flaring.

2.1. EMPATHY MAP

An empathy map is a template that organizes a user's behaviour and feelings to create a sense of empathy between the user and the team. The empathy map represents a principal user and helps teams better understand their motivations, concerns and user experience.

An empathy map helps to map what a design team knows about the potential audience. This tool helps to understand the reason behind some actions a user takes deeply. This tool helps build empathy towards users and helps design teams shift focus from the product to the users who are going to use the product. Empathy maps could vary in forms, but they have common core elements. Other than the four traditional categories mentioned above, empathy map could also include other categories. Here are two other categories commonly used:

• **See category** contains information users observed through eyes. It could be what users see in the marketplace or in the immediate environment, other people's saying and doing, or the content they watch or read.

• **Hear category** is what user hears and how that impacts the user. It could be personal connections as well as other recourses such as media. Instead of documenting superficial information streams, team should focus on details that influence the user.

Template

Empathy map

Use this framework to develop a deep, shared understanding and empathy for other people. An empathy map helps describe the aspects of a user's experience, needs and pain points, to quickly understand your users' experience and mindset.

Share template feedback

Build empathy

The information you add here should be representative of the observations and research you've done about your users.

Says
What have we heard them say?
What can we imagine them saying?

A large amount of co2 emissions affect our human health.

save our world from this emission.

in uses of fossils fuels can harm our environment.

Thinks
What are their wants, needs, hopes, and dreams? What other thoughts might influence their behavior?

why the industries produce large amount of co2?

Factories release more co2 in atmosphere.

why co2 is bad for environment .

users

a way to reduce co2 in a atomosphere would be to plant more trees in our areas.

We have to make alternative source for using fossil fuels.

Try to switch to eletric vehicles.

Reducing the emissions can improve air quality and save lives.

We have a responsibility to protect our environment for the future generations.

Electricity and heat sector produce a major amount of co2.

Does
What behavior have we observed?
What can we imagine them doing?

Feels
What are their fears, frustrations, and anxieties? What other feelings might influence their behavior?

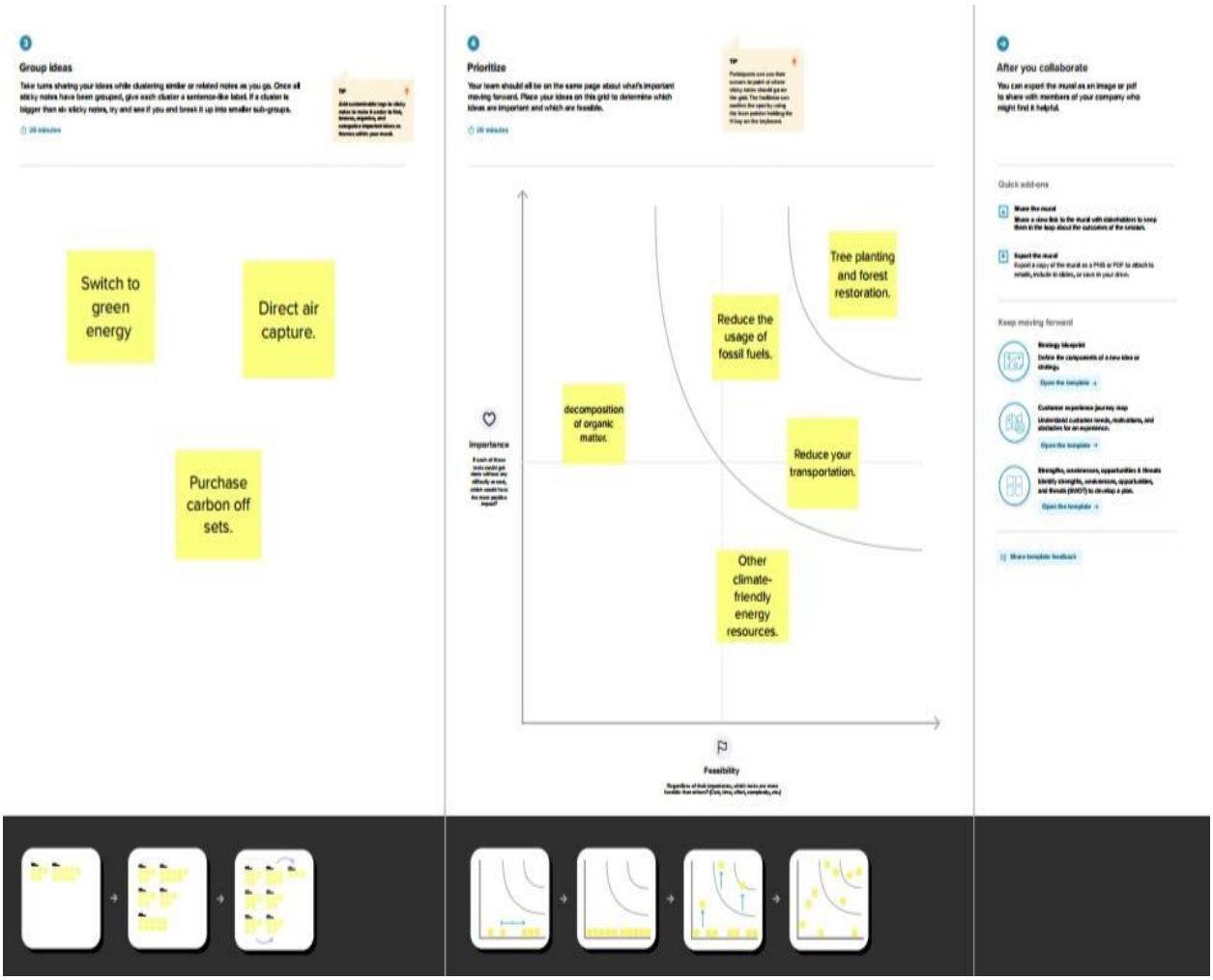
Need some inspiration?

See a finished version of this template to kickstart your work.

Open example →

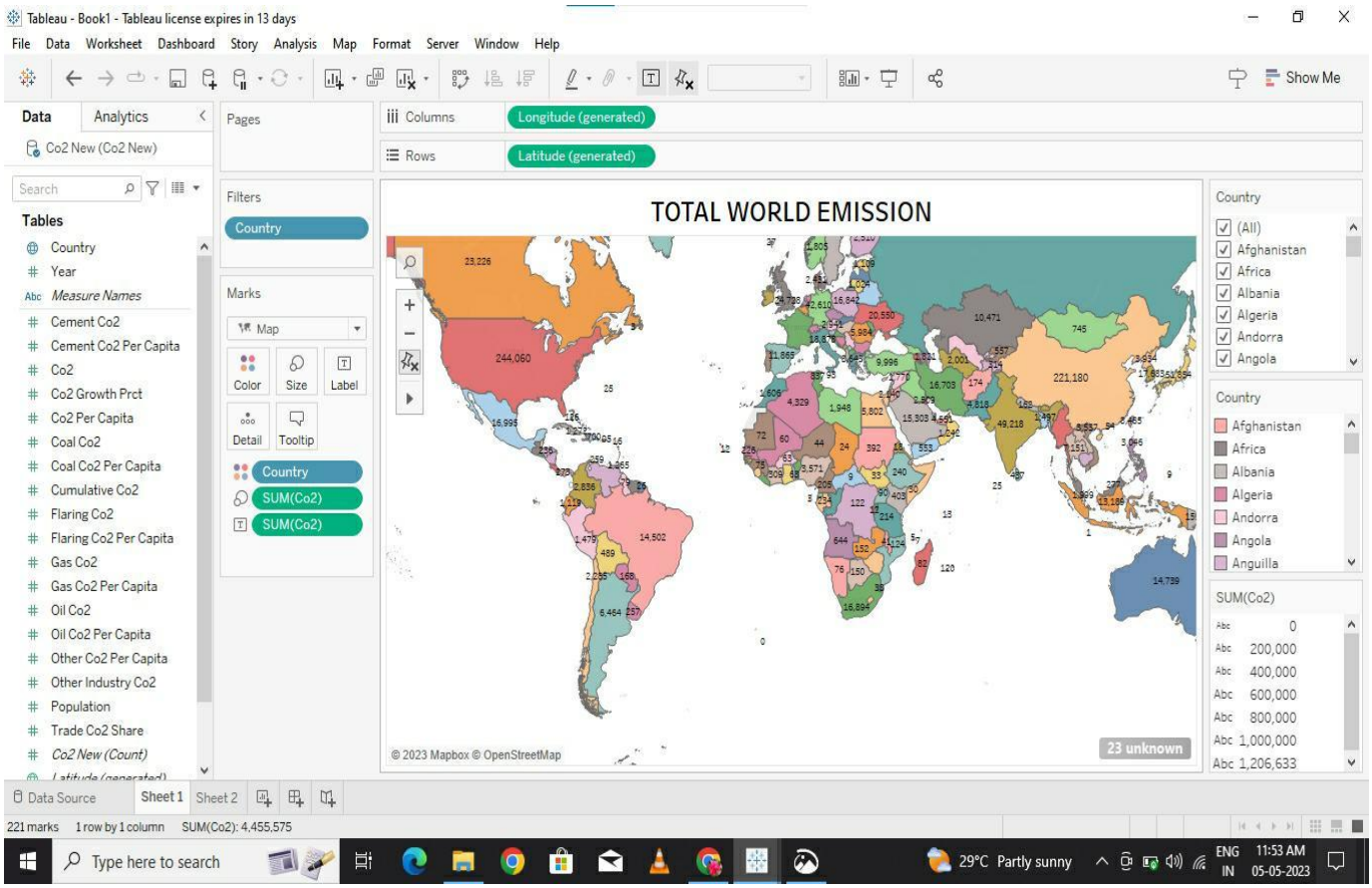
2.2. Brainstorming

Brainstorming is a group creativity technique by which efforts are made to find a conclusion for a specific problem by gathering a list of ideas spontaneously contributed by its members. It is a situation where a group of people meet to generate new ideas and solutions around a specific domain of interest by removing inhibitions. People can think more freely, and they suggest as many spontaneous new ideas as possible. All the ideas are noted down without criticism and after the brainstorming session ideas are evaluated.

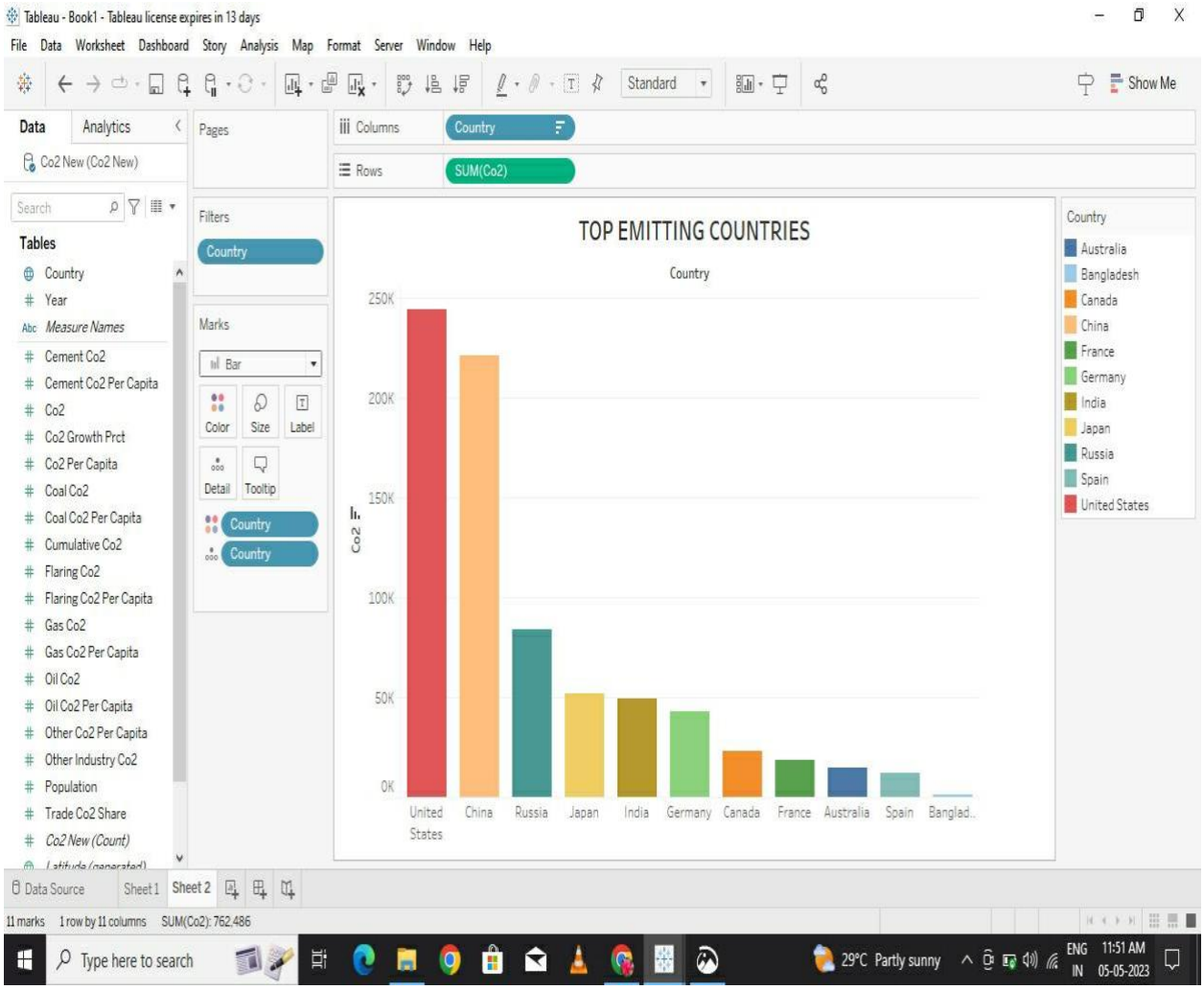


3. RESULT

By doing the empathy map and the brainstorming, we get an idea about the theme of the given topic. With the help of those maps, the graph is plotted which depicts the different forms of accurate emission of co2 in the world. It is the map depicting the emission of co2 gas in the entire country. The rate of emission is labelled besides the country.



It is the map depicting the emission of co2 gas in the entire country. The rate of emission is labelled besides the country.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SUM(Co2): 762,486
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4. ADVANTAGES & DISADVANTAGES

Advantage of CO2 Emissions

- The Arctic, Antarctic, Siberia, and other frozen regions of the earth might experience more plant growth and milder climates.
- The next ice age could possibly be prevented
- The Northwest Passage through the formerly icy Canadian Arctic Archipelago could arguably open up to transportation.
- Fewer deaths or injuries would occur due to arctic conditions.
- Longer growing seasons could mean increased agricultural production in some areas.
- Previously Previously untapped oil and gas reserves might become available.

Disadvantages of CO2 emissions

- Changes in ocean circulation and the resulting warmer temperatures disrupt the world's normal weather patterns, bringing about more extreme weather and an increased frequency of severe and catastrophic storms, such as hurricanes and typhoons. The increase in severe storms leads to a more frequent occurrence of such things as "hundred-year floods," decimation of habitats and property, not to mention, loss of life—human and otherwise.
- Higher sea levels lead to flooding of lowlands. Islands and coastlines are engulfed by water leading to death and disease due to flooding.
- The acidification of warming oceans leads to a loss of coral reefs. Coral reefs protect shorelines from heavy waves, storms, and floods and while they only cover about 0.1% of the ocean floor, reefs provide a habitat for 25% of the ocean's species.2 Demolished reefs lead to increased erosion and coastal property damage and the extinction of species.
- Warming ocean waters means increased melting of glaciers and ice sheets. Smaller ice sheets form each subsequent winter, which has a devastating impact on the habitat of cold-climate animals and the Earth's reserves of freshwater.

5.APPLICATION

Multi-Industry Uses for Carbon Dioxide (CO2):

Carbon dioxide in solid and liquid forms is used for refrigeration and cooling. It is used for refrigeration and cooling. It is used as an inert gas in chemical process in the storage of carbon powder and in fire extinguishes metals industry. Carbon dioxide is used in the manufacture of causing moles to enhance their hands on.

Reducing greenhouse gas emission can improve air quality and save lives. Reducing global greenhouse gas emission to slow climate change could prevent according to a new study funded by NIENS.

Metals Industry:

Carbon dioxide is used in the manufacture of casting moulds to enhance their hardness.

Manufacturing and Construction Uses:

Carbon dioxide is used on a large scale as a shield gas in MIG/MAG welding, where the gas protects the weld puddle against oxidation by the surrounding air. A mixture of argon and carbon dioxide is commonly used today to achieve a higher welding rate and reduce the need for post weld treatment.

Dry ice pellets are used to replace sandblasting when removing paint from surfaces. It aids in reducing the cost of disposal and clean-up.

6.CONCLUSION

In conclusion, climate change is the most significant problem facing the world. Global warming is increasing day by day. If we cannot prevent it as soon as possible, our world will face undesirable consequences.

7. FUTURE SCOPE

Essentially, scope 1 and 2 are those emissions that are owned or controlled by a company, whereas scope 3 emissions are a consequence of the activities of the company but occur from sources not owned or controlled by it.