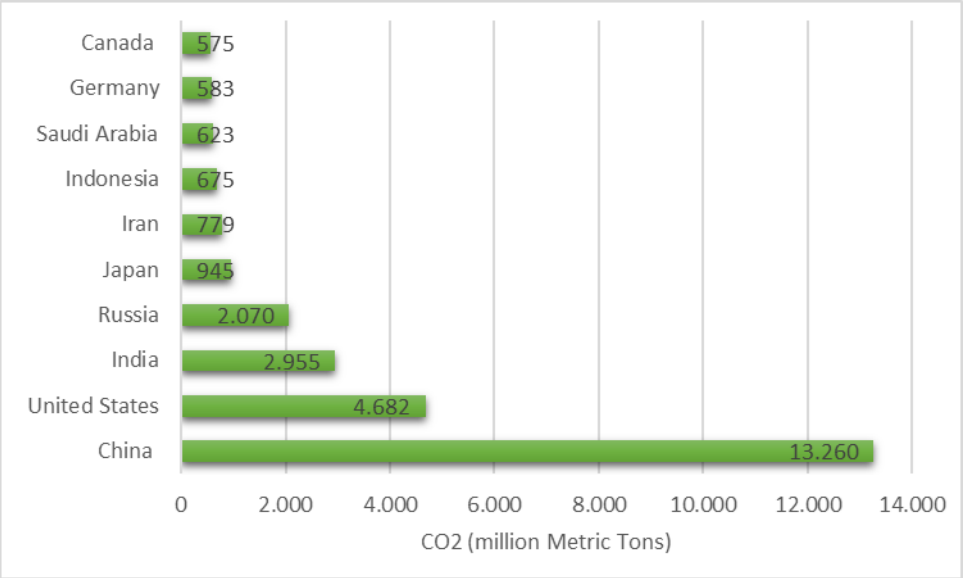
CHAPTER I

INTRODUCTION

1.1 Problem Identification

What's clear are the bad repercussions on the economy, society and the environment, and that a lot of other things have been affected. Based on Kementrian Lingkungan Hidup (2003), so that global warming occurs due to the increase in greenhouse gases such as carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O). This is an enormous threat to all life on Earth. And the world is getting hotter, and natural disasters are becoming more frequent. There are a great many more people concerned about pollution today. Cap and Trade - Carbon Emission Trading System (ETS) The Emission Trading System is one of the US policies to decrease the greenhouse gases that go into the air. This article suggests that addressing climate change involves a large number of people acting together to do many different things (Zhang et al., 2020).

The ETS is a means of reducing carbon emissions through the market. The whole point of an ETS is to prevent firms from pumping too much carbon dioxide into the air. Employees of companies covered by the ETS can swap such emissions between themselves. The government hands each business a fixed number of licenses that instruct the company in how much carbon it can put into the air. Companies that are not as big polluters can sell more of what they produce. Firms with higher than allowed pollution can sell the surplus permits (Jiang et al., 2024). The ETS provides an incentive for businesses to reduce their emissions in the most cost-effective and efficient manner possible. It also allows them to decide how they will meet their own emissions targets.



Source: World Population Review (2025)

Graph 1.1 List of Top 10 Co2 Emission Country in The World

According to the World Population Review (2025), China is the biggest producer of carbon dioxide, releasing 13,260 million tonnes of it. India comes in third with 2,955 tonnes of carbon dioxide, and the United States comes in second with 4,682 tonnes.

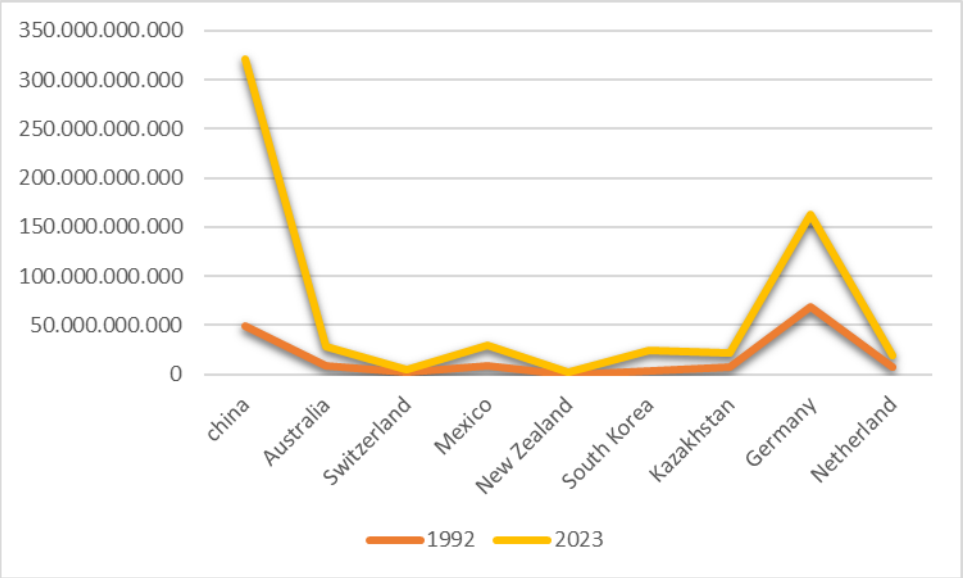
The high carbon emissions in these countries are largely due to their reliance on fossil fuels, massive industrial activity and rapid economic and population growth. These large emissions have an effect that makes the world warmer and changes the climate (energy agency, 2022). So, we need to take real steps to cut emissions, like switching to renewable energy and making environmental rules stronger.

The emission trading plan lets people exchange emissions permits, which helps countries cut down on greenhouse gas emissions. China began its national ETS in 2021. It is now the largest carbon market in the world. There are more than 2,000 firms that make electricity that release more than 26,000 tons of

carbon dioxide every year (Liu et al., 2022). China's ETS aims to cover nearly 60% of the country's total greenhouse gas emissions by expanding into industries such as steel, cement, and aluminum (David Stanways, 2024).

The European Union's ETS is regarded to be the biggest and most powerful carbon trading system in the world. It covers 27 countries and is responsible for about 80% of all trade (Liu et al., 2022). In addition, the EU ETS system also trades Certified Emission Reductions (CERs) from Clean Development Mechanism (CDM) projects, allowing developing countries to benefit from emission reduction. Although challenges such as the allocation of free emission permits may reduce the effectiveness of emission reductions, the ETS remains an important instrument in global climate change mitigation efforts.

Currently, 46 national carbon pricing initiatives have been implemented or are scheduled to be implemented, such as those in the European Union, New Zealand, China, South Korea, and Kazakhstan. Another 32 initiatives are being implemented in subnational areas, for example California, and the northeastern US states are participating in the regional greenhouse gas initiative. This initiative covers the equivalent of 12 gigatons of carbon dioxide, about 22% of global GHG emissions. Many more such initiatives are planned or under consideration (World Bank, 2020).



Source: World Bank (2024)

Graph 2.2 Cumulative Carbon Emission Trend in 9 Country

The graph presents cumulative carbon emissions data in metric tons for nine countries in the years 1992 and 2023. The data shows a substantial increase in emissions over the three decades for most countries, with particularly sharp growth observed in China. In 1992, China's cumulative carbon emissions were approximately 48.74 billion tons, which surged to 272.53 billion tons by 2023 more than a fivefold increase, underscoring its rapid industrial expansion. Germany followed with emissions rising from 68.78 billion to 94.58 billion tons, maintaining its position as a major emitter in Europe.

Other countries also experienced significant increases: Mexico grew from 8.07 billion to 21.59 billion tons, South Korea from 3.69 billion to 20.11 billion, and Australia from 8.03 billion to 19.66 billion tons. Kazakhstan's emissions went up from 7.73 billion tonnes to 14.46 billion tonnes. The Netherlands emissions rose from 7.00 billion tonnes to 12.14 billion tonnes. Even though they

were smaller, both Switzerland and New Zealand had more emissions. Emissions in Switzerland rose from 1.84 billion tonnes to 3.13 billion tonnes, and emissions in New Zealand rose from 59 million tonnes to 1.98 billion tonnes.

All countries have seen an increase in emissions, starting slowly but growing steadily, with China topping the list. Those numbers help explain that the economy, energy demand and industrial activity have all increased over the past 30 years. This sort of research underscores how it's very important for countries to work together in a cooperative fashion, to reduce the amount of carbon that they're putting in the atmosphere.

The Emission Trading System (ETS) allows each country to make their own decisions. There must be less burning of fossil fuels, more dependence on renewable fuels, and innovative ways to grow with low-carbon tools. This is not the easiest method to use. It's also very hard to monitor emissions because the carbon market is not open and the permits aren't credible (Jiang et al., 2024).

Because people in different fields know different things, it is much more difficult to use ETS. This concept tends to work out great for those companies keeping the place clean. Firms that don't transform will be pummeled with steep financial penalties for violating environmental rules. And the European Union Emissions Trading System (ETS) experience is evidence that this plan will not cause large job or profit losses. Instead, it enables companies to make more profit and upgrade their fixed capital (Dechezleprêtre et al., 2023). By these sorts of studies, the ETS appears an appealing prospect for a country that wishes to reduce the quantity of carbon emitted by its economy. But the effectiveness of it

depends heavily on how well the rules work and how ready the firms in each country are.

The Emission Trading System (ETS) aims to reduce carbon emissions globally as much as possible. That is especially the case for countries with big economies and heavy pollution. China, Germany and South Korea are three major industrial countries that let out a great deal of carbon dioxide into the air. The Chinese ETS has three main objectives: reducing the consumption of solid and liquid fossil fuels, stimulating the transition to renewable energy and promoting the development of new low-carbon technologies. A myriad of problems remain unsolved, including monitoring emissions, facilitating the linkage of people to carbon markets, and not issuing enough emission permits (Koh et al., 2021).

There are some countries that find it difficult or impossible to use an ETS, like the US, Kazakhstan, Mexico and Australia. There are any number of ways to get energy, the institutions are not strong enough and the industrial sector is not prepared. Countries like Switzerland, the Netherlands and Germany are richer in infrastructure and regulations. These nations would be more likely to employ the economic trading system (ETS) to reduce the amount of carbon emissions they circulate into the atmosphere. Dechezleprêtre et al. (2023) demonstrated that firms participating in the EU ETS do not employ more people or generate more revenue. But the concept might help people make more money and buy more things that aren't subject to change.

It's also been shown to help make new technologies that are more environmentally friendly. Companies that were members of the EU ETS had

8.1% more patents for environmentally friendly products. But this didn't prevent other technologies from improving Calel et al. (2014). The EU Emissions Trading System (ETS) cuts emissions in the near-term and also promotes long-term technological development. This is great for the economy and the environment.

ETS may work better in some countries than in others, depending on the country's economy, energy system and institutions. The Netherlands and Germany are better placed to use low-carbon technologies as they have better laws and infrastructure. But Mexico and Kazakhstan both still rely on fossil fuel and don't have much control over their administrations. This means they have to do more to be the most out of the ETS. Rafaty et al. (2025) contend that the ETS market will continue to expand and evolve in the future. Markellos (2007) demonstrated that the EU ETS market has improved its efficiency over time due to legal modifications and the emergence of new information since its inception.

The Emissions Trading System (ETS) lets businesses buy and sell permits that enable them to release carbon dioxide. The Emissions Trading System (ETS) is being used by China, South Korea, and the EU to lower emissions. ETS can help curb climate change, but it can also make money for the government by selling permits to pollute and getting people to put money into clean technologies.

However, the effectiveness of ETS in reducing emissions and its impact on the national economy varies across countries, depending on policy design, industry compliance, and institutional capacity. Therefore, it is important to conduct a comparative analysis of the implementation of ETS in various

countries, to understand how this policy can reduce carbon emissions while increasing state revenues, especially as a reference for countries that are in a trial period such as Indonesia which is in a trial period for implementing the ETS system (katadata, 2022)

1.2 Problem Formulation

Based on problem identification, this research will be focused on:

1. Does the implementation of the Emission Trading System (ETS) have a significant impact on reducing carbon emissions?
2. Does the ETS contribute to economic growth in countries that implement it?

1.3 Research Objective

Based on the formulation of the problem above, the objective of this study are:

1. To analyze the impact of the implementation of the Emission Trading System (ETS) on reducing carbon emissions.
2. To evaluate the effect of the implementation of the ETS on economic growth in countries that implement it.

1.4 Writing System

The systematic discussion in this study is as follows:

Chapter I : Introduction.

This chapter describes the background, problem formulation, objectives, and the use of research, hypotheses, scope, and systematics discussion.

Chapter II : Theoretical Framework

This chapter discusses the theoretical framework used in the discussion and previous research that became a literature review in this review.

Chapter III : Research Methodology

This chapter discusses data analysis methods and data sources used.

Chapter IV : Result and Discussion

It contains research results and discussion as well as policy implications of the research conducted.

Chapter V : Closing

This chapter outlines the conclusions that can be drawn from analysis and suggestions that constitute input for both industry and government.