

# Implementing Suggestions from COP27's Solutions Day

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**Abstract:** This essay explores the potential benefits and challenges of implementing a market-based Carbon Emission Trading System in Australia's mining sector to address the country's peak carbon dioxide emissions. The policy aims to control greenhouse gas emission by setting limits and allowing firms to trade emission licenses. The essay discusses the advantages of this approach, including fostering technological advancements, generating revenue for companies and governments, and promoting sustainable mining practices. However, it also acknowledges potential challenges, such as administrative complexity and determining optimal carbon prices. Despite these challenges, careful design and refinement could lead to effective climate change mitigation and align with the SURGe initiative launched during COP27's Solutions Day.

**Keywords:** Carbon emission trading; Mining; Economic benefits; Sustainable development; Climate change mitigation

## 1. Introduction

In recent years, many countries are suffering from peak carbon dioxide emission. In relation to the SURGe initiative launched during COP27's Solutions Day, governments should continue to adopt policies to create a better and more sustainable urban world to peak carbon neutrality. According to IEEFA data, Australia is world's third largest carbon emitter, and its mining industry ranks first in the world, generating approximately 4% to 7% of global greenhouse gas emission. In addition to resulting climate change, Australian mining sector is currently facing many other significant issues, such as environmental problems, rising production costs, resource depletion and so on. To mitigate these problems, Australian mining sector can implement an effective policy – the establishment of a Carbon Emission Trading System including cap-and-trade and carbon offset systems. Specifically, Australian government can control Greenhouse gas emission by setting a limit on it and allowing companies or governments to buy and sell carbon credits.

## 2. Materials and Methods

Suppose Australian government issue tradable emission licenses that each license allows firms that holds it to produce a certain

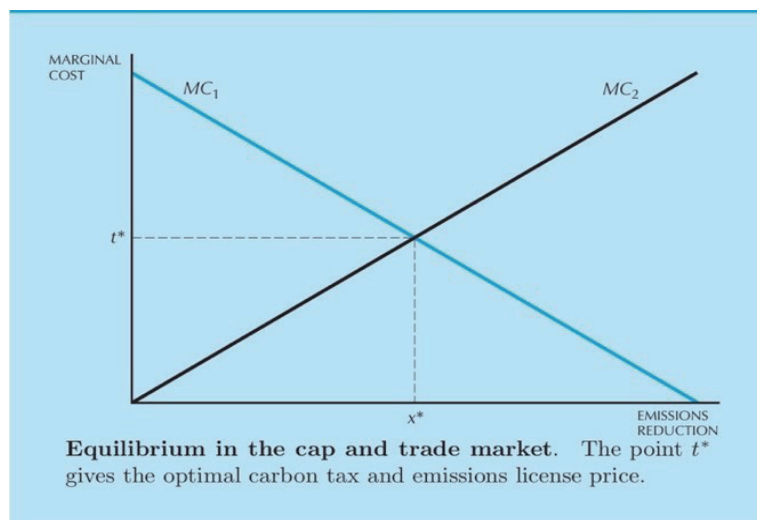


Figure 1

amount of carbon emission and government can set different limits for each firm through giving different numbers of emission license to control or reduce total carbon emission. Meanwhile, Australian national carbon exchange centers can be established to allow enterprises to trade license with each other here. The price of each license can be assumed as  $P$  per  $Q$  unit emission and the cost to firm A of reducing emission by  $Q_A$  is  $C_A * Q_A + P(\overline{Q_A} - Q)$ . Clearly the firm will want to operate where the price of the emission permit equals the marginal cost  $P = MC_A * Q_A$  that indicates the cost of reducing one unit is exactly equal to the cost saved by not having to buy a license. Thus, the optimal carbon emission license price can be determined by the marginal cost curve that can be found in the Figure1. Australian government can pick a proper price for license and sell it, then this permit license can be traded within mining firms.

### 3. Results and Discussion

#### 3.1 Advantages of Carbon Emission Trading System

Implementing a Carbon Emission Trading System in the Australian mining sector can bring forth numerous short-term and long-term economic benefits. Firstly, it incentivizes mining companies to invest in emission reduction technologies and fosters the development of new industries focused on sustainability and environmental preservation. This, in turn, creates new job opportunities, reducing unemployment rates and stimulating economic growth in Australia.

Furthermore, the adoption of a Carbon Emission Trading System can attract skilled talent to the mining industry in Australia. As the global community continues to shift towards sustainability, companies that demonstrate a commitment to reducing their carbon footprint and embracing green practices are more likely to attract top talent. By positioning itself as a leader in sustainable mining practices, Australia can enhance its global competitiveness and build a reputation as a responsible and environmentally conscious mining destination.

Another significant advantage of carbon trading is the potential for cost reduction and improved efficiency in emissions reduction. By allowing companies with lower emission reduction costs to sell their excess allowances to those facing higher costs, the trading system creates an economic incentive for firms to reduce their emissions more efficiently. As mining companies strive to minimize their carbon footprint to save on the costs of buying and selling carbon credits, overall emission levels in the sector are likely to decrease.

Moreover, the revenue generated from carbon trading can be reinvested in green innovation and sustainable initiatives. Governments can allocate funds to research and development in renewable energy, clean technologies, and carbon capture and storage solutions. Additionally, with more financial resources at their disposal, enterprises may invest in cleaner production processes, such as the adoption of renewable energy sources or the implementation of energy-efficient technologies.

Furthermore, the Carbon Emission Trading System is a crucial tool in the fight against climate change. By putting a price on carbon, the system encourages companies to adopt cleaner technologies and reduce their overall carbon output. This contributes to the global effort to limit global warming and minimize the adverse impacts of climate change on the environment and human society.

#### 3.2 Challenges of Carbon Emission Trading System



Figure 2

Despite the numerous advantages, the implementation of a Carbon Emission Trading System presents several challenges that must be carefully addressed.

One of the primary challenges is the administrative complexity of the system. Implementing and managing a carbon trading mechanism requires the establishment of regulatory frameworks, emission monitoring systems, and carbon trading platforms. The government needs to carefully monitor and enforce compliance, which can lead to increased administrative costs. Moreover, companies may face difficulties in understanding and adhering to the regulations, particularly small and medium-sized enterprises without sufficient resources for compliance.

Another challenge is the potential for low carbon prices and policy uncertainty. In some cases, governments may set carbon prices too low (see Figure 2), undermining the effectiveness of the carbon trading system. Low prices may fail to create the necessary economic incentive for companies to invest in emission reduction measures. Additionally, frequent changes in carbon pricing policies or uncertainty about future policies can deter businesses from making long-term investments in emission reduction technologies.

Addressing carbon leakage is another significant challenge. Carbon leakage refers to the potential scenario where companies relocate their operations to countries with less stringent emission regulations to avoid higher costs associated with carbon trading. In the case of the mining sector, this can result in a shift of production to countries with lax environmental standards, leading to a global increase in emissions instead of the desired reduction.

Furthermore, the Carbon Emission Trading System may create entry barriers for new companies trying to enter the mining market. Established firms with surplus emission allowances may have an advantage over new entrants, which could hinder competition and limit the infusion of fresh ideas and technologies into the industry. This raises concerns about equity and fairness in the marketplace.

#### **4. Conclusion**

In conclusion, the implementation of a market-based Carbon Emission Trading System in the Australian mining sector presents a promising approach to tackling carbon emissions and fostering sustainability. Through a carefully designed and well-managed system, the government can set a price for emission licenses that encourages carbon reduction while promoting economic growth and innovation.

By leveraging carbon trading, the mining industry can be transformed into a more sustainable and environmentally responsible sector, contributing to Australia's commitment to global climate goals. This policy aligns with the SURGe initiative launched during COP27's Solutions Day and represents a crucial step towards a more sustainable and resilient future for Australia and the planet as a whole.

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