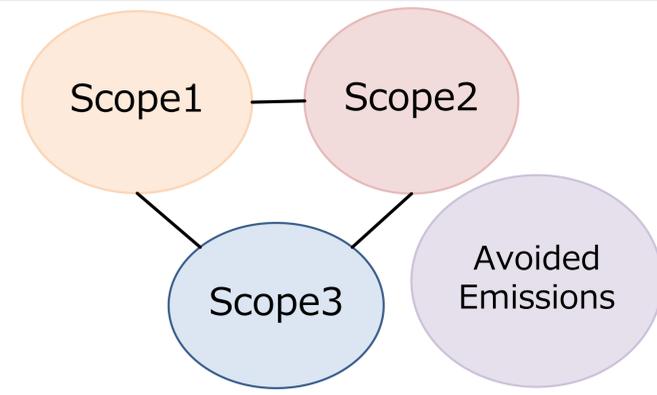


Greenhouse Gas Reduction Scenarios of Corporate Activities Incorporating Avoided Emissions

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Backgrounds and Objectives

- ▶ The Science Based Targets(SBT) used in the company's greenhouse gas (GHG) reduction strategy consider only Scope 1 and 2 and do not use Scope 3 related information.
- ▶ We propose a method for formulating scenarios for GHG reductions that take into account the avoided emissions throughout the product life cycle.
- ▶ This time, we will examine the technical issues and examine countermeasures for calculating the avoided emissions necessary for setting future GHG reduction scenarios.



Conceptual framework

① Future technology forecasts

Estimate future avoided emissions considering future market
(The avoided emissions, which are the difference from the current situation, appear to be smaller by the improvement of the current technology level to be compared)

② Allocation of Avoided Emissions

Parts supply companies
Product manufacturers
End use companies

Allocate avoided emissions to each company in the supply chain, and each company calculates the avoided emissions

③ Setting up GHG reduction scenarios

Science Based Targets(SBT)
Indicators that help companies set ambitious goals for Scope 1.2 to achieve the goal 2°C

Scope 3 and avoided emissions value are larger than that based on indicators then Scope 1.2 value also increases as for parts supply companies

Case study of future avoided emissions (①)

Products

Aircraft using 50% weight ratio of CFRP (carbon fiber reinforced plastic)

→ Improved fuel consumption with lighter aircraft

→ GHG reduction at the use stage

Method

1. Calculate the avoided emissions (difference in GHG emissions from conventional aircraft) in introducing aircraft using 50% CFRP for 2017-2037 in the world
2. Calculate the avoided emissions based on the improvement in fuel consumption by the ratio of new and existing technologies that change each year in the world

Consideration of avoided emissions scenario

1. Base-year scenario
Calculate the avoided emissions of the comparison product without changing the target product that is the baseline
2. Baseline-change scenario
Calculate the avoided emissions based on the mainstream products each year
3. The-improvement-in-fuel-consumption scenario
Calculate the avoided emissions based on the average fuel efficiency of airplanes existing in each year

Results and discussions

I. Change in the avoided emissions based on the penetration ratio

• We can fully consider the possibility that a new product will become a standard product by the advancement of technology and the increase in the penetration ratio.

• Calculating with a baseline change scenario is not an overestimation, and is considered a better method for calculating the avoided emissions.

II. Change in avoided emissions based on fuel consumption

• Since the calculation is based on the penetration of each year, it is possible to calculate the avoided emissions in each year.

• Calculation is possible as long as there are future predictions.

• When a company incorporates avoided emissions into GHG reduction measures, this method that can be calculated continuously is considered good.

Summary

- ▶ In I, Despite the creation of avoided emissions, it is possible that the avoided emissions to new products will be zero, which will be a disadvantage when companies adopt GHG countermeasures.
- ▶ In II, it is considered that this method, which can be calculated continuously, is good when companies incorporate avoided emissions into GHG reduction measures.
- ▶ When companies incorporate avoided emissions into GHG reduction measures, it is considered appropriate to introduce them using the II methods that can calculate avoided emissions each year.