

## INTISARI

Sektor pertanian merupakan salah satu tulang punggung pertumbuhan ekonomi nasional. Walaupun memiliki kontribusi besar, namun sektor ini juga memiliki dampak negatif terhadap lingkungan yakni emisi gas rumah kaca (GRK) yang cukup besar. Penelitian ini bertujuan untuk; 1) Mengkaji pengaruh pertumbuhan ekonomi sektor pertanian (bersama dengan pertumbuhan ekonomi, pertumbuhan ekonomi sektor industri, dan urbanisasi) terhadap emisi GRK di Indonesia, 2) Mengkaji hubungan kausalitas antara pertumbuhan ekonomi sektor pertanian, pertumbuhan ekonomi, pertumbuhan ekonomi sektor industri, urbanisasi dan emisi Gas Rumah Kaca di Indonesia, 3) Mengkaji pengaruh pertumbuhan ekonomi sektor pertanian, keterbukaan perdagangan sektor pertanian, penduduk terhadap emisi GRK sektor pertanian di Indonesia, 4) Mengkaji hubungan kausalitas antara pertumbuhan ekonomi sektor pertanian, keterbukaan perdagangan sektor pertanian, penduduk dan emisi GRK sektor pertanian di Indonesia, 5) Mengkaji pengaruh pertumbuhan ekonomi sub sektor pertanian (1. Sub sektor tanaman pangan, hortikultura dan perkebunan, 2. Peternakan, dan 3. Kehutanan), pertumbuhan penduduk dan kebijakan penurunan emisi GRK terhadap emisi GRK sektor pertanian di Indonesia, 6) Mengkaji biaya yang dibutuhkan untuk mitigasi emisi GRK di Indonesia.

Hasil penelitian menunjukkan bahwa pertumbuhan ekonomi sektor pertanian meningkatkan total emisi GRK di Indonesia. Hasil uji kausalitas juga menunjukkan ada hubungan kausalitas dua arah antara pertumbuhan ekonomi sektor pertanian dengan total emisi GRK. Sementara pertumbuhan ekonomi sektor pertanian juga terbukti meningkatkan emisi GRK sektor pertanian, dan terdapat hubungan kausalitas dua arah antara pertumbuhan ekonomi sektor pertanian terhadap emisi GRK sektor pertanian. Pada tiap sub sektor menunjukkan bahwa pertumbuhan ekonomi sub sektor tanaman pangan, hortikultura dan perkebunan serta pertumbuhan ekonomi sub sektor peternakan masing – masing berpengaruh terhadap emisinya. Sementara pada sub sektor kehutanan, pertumbuhan ekonomi sub sektor kehutanan justru akan menurunkan tingkat emisi GRK nya. Penelitian ini juga menunjukkan bahwa teknologi mitigasi padi organik, budidaya padi ramah iklim dan *System of Rice Intensification* tidak hanya efektif menurunkan emisi GRK namun juga mampu meningkatkan keuntungan petani.

Kata kunci : emisi GRK, pertanian, pertumbuhan ekonomi, mitigasi

## ABSTRACT

The agricultural sector is one of the backbone of national economic growth. Although it has a large contribution, this sector also harms the environment, namely the emission of large greenhouse gases (GHG). This research aims to; 1) to study the effect of agricultural sector economic growth (along with economic growth, industrial sector economic growth, and urbanization) on GHG emissions in Indonesia, 2) to study the causal relationship between agricultural sector economic growth, economic growth, industrial sector economic growth, urbanization and emissions Greenhouse Gases in Indonesia, 3) to study the effect of economic growth in the agricultural sector, trade openness in the agricultural sector, the population on GHG emissions in the agricultural sector in Indonesia, 4) to study the causal relationship between economic growth in the agricultural sector, trade openness in the agricultural sector, population and sector GHG emissions. agriculture in Indonesia, 5) to study the effect of economic growth in the agricultural sub-sector (1. Food crops, horticulture and plantations, 2. Livestock, and 3. Forestry), population growth and GHG emission reduction policies on GHG emissions in the agricultural sector in Indonesia, 6) to study which costs are at needed to mitigate GHG emissions in Indonesia.

The results show that the economic growth of the agricultural sector increases the total GHG emissions in Indonesia. The results of the causality test also show that there is a two-way causality relationship between economic growth in the agricultural sector and total GHG emissions. Meanwhile, economic growth in the agricultural sector has also been shown to increase GHG emissions in the agricultural sector, and there is a two-way causal relationship between economic growth in the agricultural sector and GHG emissions in the agricultural sector. Each sub-sector shows that the economic growth of the food crops, horticulture, and plantation sub-sectors as well as the economic growth of the livestock sub-sector respectively affects its emissions. Meanwhile, in the forestry sub-sector, economic growth in the forestry sub-sector will reduce the level of GHG emissions. This study also shows that organic rice mitigation technology, climate-friendly rice cultivation, and a *System of Rice Intensification* are not only effective at reducing GHG emissions but are also able to increase farmers' profits.

Keywords: GHG emissions, agriculture, economic growth, mitigation