ABSTRACT

The present study is a macroeconomic analysis of agriculture sector indicators which provides agriculture-specific determinants of ecological dimensions of economic growth. Study evaluates success levels of countries in greening the economy with agriculture and examines agriculture-specific determinants of carbon footprint. Agriculture sector plays a key role in economic growth and development of a country. It is a significant employer of natural resources, provider of food to world, and source of raw materials for industry. Furthermore, agricultural events can have negative impact on environment or can provide positive externalities to environment and ecosystem.

The increased environmental issues and global economic failure gave birth to the new concept green growth. This idea has gained importance as a driving force for sustainable development during the last decade. There are three main institutional advocates of green growth concept at global level: The Organization for Economic Cooperation and Development (OECD), the United Nations Environment Program (UNEP) and the World Bank (WB). Agriculture sector can play a crucial role in green growth of countries. On the other hand, the international food production is reason of almost one-third of the total humans caused Greenhouse Gas (GHG) emissions. Carbon footprint is indicator of GHG intensity, creating from different economic actions. Sustainable development goals include agriculture sector growth and management of climate change. Carbon footprint is an accepted indicator of GHG intensity, created from different economic actions. The carbon footprint represents more than fifty percent of the total ecological footprints and used as managing tool for estimating environmental pollution.

The first essay adds to the existing literature by undertaking a comparative analysis to measure the ecological impact of agricultural sector indicators. Current study advances the OECD methodology by adding evaluation metrics to assess the performance of each country. The study also introduces a novel approach 'taxonomic linear ordering method' to measure the ecological impact of agricultural inputs and outputs by developing a synthetic measure of the green growth. The study performs analysis of greening the

economy with agriculture in one hundred and six countries by highlighting performance levels of each individual country. Synthetic evaluation permits countries to clearly find indicators, where their performance is weak and suggests improvements in measures accordingly. Therefore, this evaluation helps to recognize the strengths and weaknesses of each country in agriculture sector. The results show that the overall level of green growth in agriculture, among sample countries, is low and insufficient.

The second essay of current study contributes to the existing literature by evaluating agriculture-specific determinants of carbon footprint. The study investigates the relationship between agriculture sector indicators and carbon footprint in fifty-six countries by using panel econometrics. The study finds that there exists negative association between carbon footprint and agricultural development. Agriculture sector expansion by employing environment friendly methods and technologies decreases carbon footprint in selected countries. Furthermore, the relationship between carbon footprint and agricultural exports is positive. It implies that agricultural exports encourage the carbon footprint growth by stimulating the production and transport of agricultural commodities. Finally, there is positive relationship between carbon footprint and high scale of agricultural production, which supports the concept of production-based emission. This relationship underlines that too much use of fertilizers in agriculture sector fosters the carbon footprint growth and damages natural environment of countries.