An analysis of CO_2 emission in tourism industries of multi-country region using I-O table – A case in Japan and Korea -

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Abstract

The objective of this study is to develop a simple method on estimating CO_2 emission volume in tourism industries of multi-country regions using I-O table and data on tourism consumption and GHG emission factor database provided by research publications. International tourism demand has grown rapidly in these decades due to economic growth in many developing regions, and this fact suggests the importance of researches dealing cross border effects of tourism promotion policy on both economic and environmental impacts. Japan and Korea are selected as an example in the study.

Two I-O tables, Japanese table and Korean table are not merged into one table, but used separately considering the connection. The method consists of three steps. In the first step, I-O tables with same sectors including tourism industry are developed. Tourism industry in the original I-O tables in Japan and Korea is not regarded as an individual industry. Using tourism consumption survey data, tourism industry is newly created both in Japanese and Korean I-O tables. Tourism industry is divided into two individual industries, tourism industry only by Korean (in case of Japanese table)/Japanese (in case of Korean table) contributions and other. Then, 27 industries (including two tourism industries) Japanese and Korean I-O tables are created. In the second step, economic features of tourism industries in both countries are deeply analyzed by important parameters (forward linkage, backward linkage, etc.) frequently used in I-O table analysis. In the

third step, these important parameters in production base are converted into those in CO_2 emission base using GHG emission factor database, and features of CO_2 emission from tourism industry in both countries are discussed.

Tentative major results of the study are, 1) both Japanese and Korean tourism industries emit more CO_2 per production, around 2-3 times, than average of all industries, 2) the production-based forward and backward linkages of tourism industry are smaller than those of whole industry, however the CO2 emission-based backward linkage of Korean tourism industry is larger, 3) transport sub-industry is the major emitter in tourism industry, covering 56-87% of total CO2 in tourism industries. This study may suggest how we implement in-bound tourism promotion policies and measures in multi-country region resulting in lower CO_2 emission and higher economic gain.

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