利用物質流成本會計分析建構水稻生產過程投入與產出架構

Constructing the Input and Output Framework of Rice Production Process Using Material Flow Cost Accounting Analysis

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摘　要

隨著國際碳議題之熱門，碳足跡(Carbon Footprint)計算概念也隨之而生，碳足跡指的是一項活動或產品的整個生命週期中，直接與間接產生的溫室氣體排放量。本研究採用物質流成本會計(Material Flow Cost Accounting, MFCA)方法，嘗試建構臺灣水稻生產過程中，所投入的物質以及產品以及產出架構。本研究設定水田從插秧到收割的種植階段為系統邊界，並且分一期作與二期作進行探討，以年為時間尺度進行分析。本研究提出水稻生產過程架構，資源投入面包含項目有：耕種期間所投入的人力、灌溉用水量、秧苗數量、農藥、肥料以及農機所需之燃料用油；而產出部分則可分為兩類，分別為稻田所生產的稻穀及稻梗，而衍生產出則為產製過程中各階段所產生的空氣污染物、溫室氣體、水污染以及土壤汙染與固體廢棄物等。

關鍵詞：碳足跡，物質流成本會計，水稻生產

Abstract

With the popularity of international carbon issues, the concept of carbon footprint (Carbon Footprint) calculation has emerged as the times require. Carbon footprint refers to the direct and indirect greenhouse gas emissions during the entire life cycle of an activity or product. This study applies the material flow cost accounting (MFCA) method to construct the input materials and the output of products in the rice production process in Taiwan. In this study, the planting stage of paddy field from transplanting to harvesting was set as the system boundary. The first-stage and the second-stage rice production within one year were taken into consideration. The input materials include manpower input during cultivation, irrigation water consumption, seedling, pesticides, fertilizers and fuel oil required for agricultural machinery. The output of products can be divided into two parts, rice and rice stalks from paddy fields and air pollution, greenhouse gas, water pollution, soil pollution and solid waste

generated at various stages in the production process.

Keywords: Carbon Footprint, Material Flow Cost Accounting, Rice Production