Impacts of Water Scarcity on Social Economic Development: a Case Study of Gaotai County, China

Qing Zhou\textsuperscript{a,b,c}, Xiangzheng Deng\textsuperscript{a,b}, Feng Wu\textsuperscript{a,b}

\textsuperscript{1}Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Beijing 100101, China;
\textsuperscript{2}Center for Chinese Agricultural Policy, Chinese Academy of Sciences, Beijing 100101, China;
\textsuperscript{3}University of Chinese Academy of Sciences, Beijing 100049, China;
Corresponding Author: dengxz.ccap@igsnrr.ac.cn

Abstract: Provisioning services for socio-economic development is an important hydrological ecosystem services human obtains from freshwater. The dilemma between water scarcity and economic development in arid regions influence water utilization among different sectors. A water resource embedded Social Accounting Matrix (WSAM) helps to analyze the interrelation between water resource utilization and social economic development. In this paper, by establishing the WSAM and applying SAM multiplier and decomposition analysis in Gaotai County northwestern China to explore the economic structure and the feedback mechanism and water flows among different sectors, we found that though agriculture is less productive than the second industry due to its low development stage and lack of deep processing chain, as the dominated sector, it still plays the most important part in the whole national economy in the study area. Considering the strategic location of Gaotai county, which is an important hub in the One Belt and One Road economic zone, different economic development scenarios were modeled. Analysis shows that expanding agricultural exports can promote rural employment and improve rural household welfare, but will also lead to water resources outflow and aggravate the water conflicts among different water users. In order to simulate the water price reform effects, the price multiplier was calculated to measure the social economic effects of the irrigation water price reform on the whole economic system. Results indicate that the price of agriculture products, industrial products, and price of labour will increase by 0.03, 0.018 and 0.005 units respectively when water price increase by one unit. And the Consumer Price Index (CPI) will increase by 0.005 units.

Keywords: Social Accounting Matrix; national economy; SAM multiplier; irrigation water price; water scarcity; Heihe River Basin.

1 Introduction

Physical and economic water scarcity and limited or reduced access to water are major challenges facing human society (Bakker, 2012; Cosgrove and Rijsberman, 2014). During the past century, water utilization has increased by six folds globally (WWAP, 2015). Climate change, industrialization and changed human consumption patterns further aggravated the conflicts between water demand and water supply from both global and regional perspective (Piao et al, 2010; Grafton et al, 2013; Haddeland et al, 2014). This irreversible trend has led water resources shortage a main constraint of the socio-economic growth and ecological security especially in arid
دریافت فوری
متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات