

Six Years from the Great East Japan Disaster –Achievements and Regrets in GLP Context

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The Great East Japan Disaster triggered by the M 9.0 earthquake and the subsequent gigantic tsunami of 11th March 2011 has left huge changes on the land, its use and the environment, as well as many other things, and there have been a lot to be learnt, discussed and practiced. The paper discusses what have been actually achieved and what haven' t in the context of GLP (Global Land programme) core project of Future Earth.

Keywords: Great East Japan Disaster, GLP, Future Earth

Has Community-based Management Improved Natural Resource Condition? Evidence from the Forests in Nepal

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Does community management improve the condition of local natural resources? Do interventions by official agencies enhance the functions of voluntary communal management? With 101 randomly-sampled natural forests in the Middle Hills of Nepal, we address these questions. Forest condition was evaluated by forest inventory conducted in 1997-1999 and 2014-2016. One of our major interests is whether the improved regeneration under the community management, which was found in 1997-1999 survey, has resulted in improved forest resource stock in 2014-2016. We will also show the impacts of civil war from 1997-2006 on natural forest conditions.

Keywords: community management, natural forests, Nepal



Spatial and Temporal Variation of Anthropogenic Nitrogen Inputs to the Agricultural Lands in China

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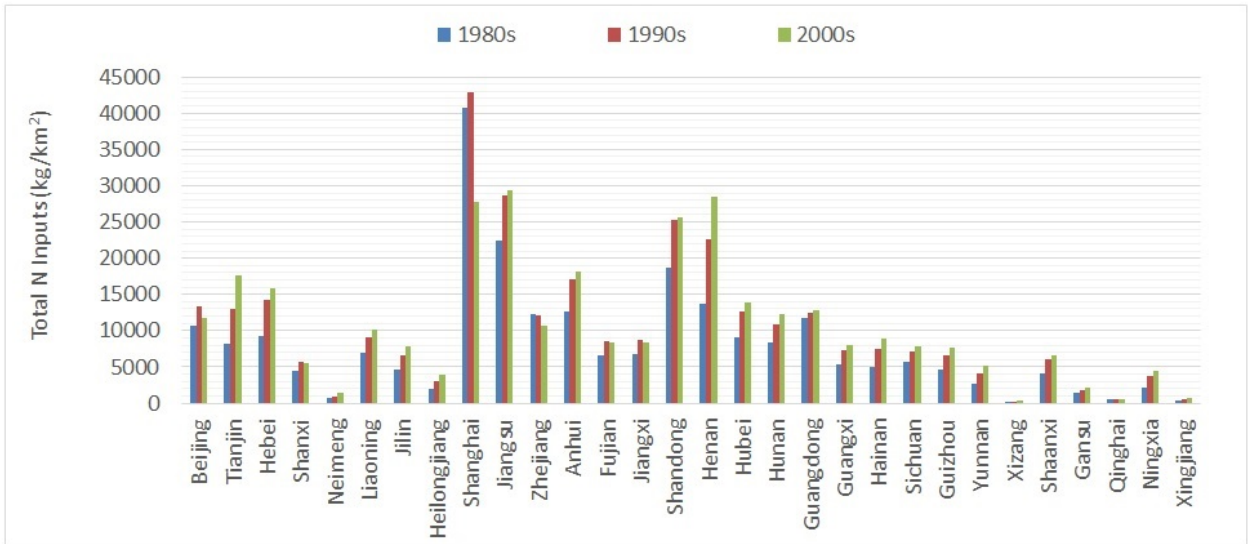
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The anthropogenic nitrogen (N) inputs to the agricultural lands are the major non-point sources of water eutrophication. In order to make clear both spatial and temporal variation of the anthropogenic N inputs in China, we collected the statistical data of agricultural land use, crop production, population and livestock from 1980 to 2010. Based on these datasets, we estimated both spatial and temporal variation of N inputs to the agricultural lands, including the atmospheric deposition, synthetic N fertilizer, biological N fixation and recycling reactive N inputs, such as N from human waste and animal excrement, crop residue recycled as manure, and N emission from burning crop residue.

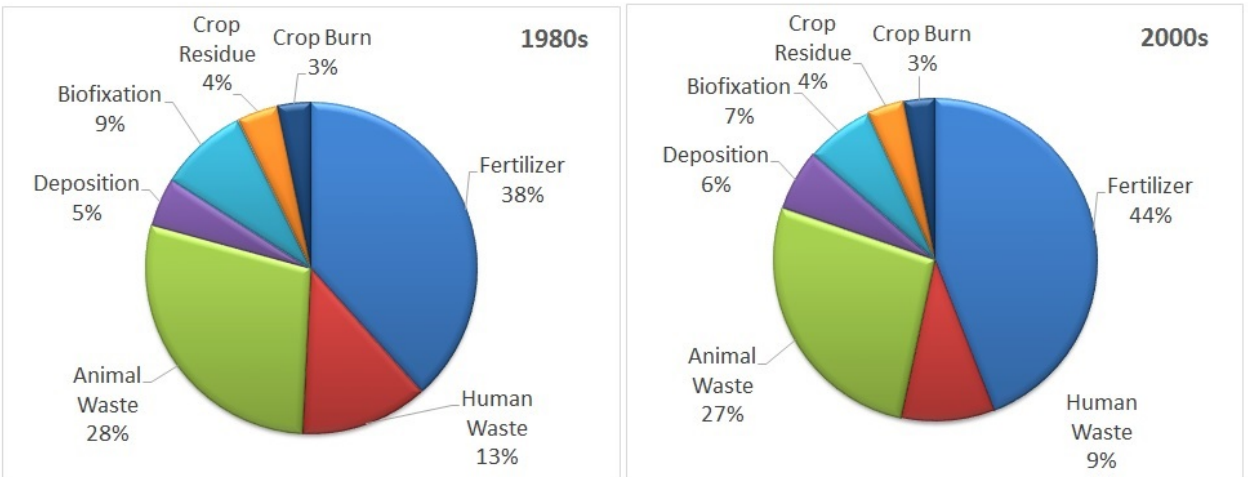
The results showed that the annual total N inputs increased by 1.5 times from 3,550 kg/km² in the 1980s (1981-1990) to 5,281 kg/km² in the 2000s (2000-2010). The synthetic N fertilizer dominated the N source and showed a 1.7 times increase from 1,361 kg/km² in the 1980s to 2,328 kg/km² in the 2000s. The animal excrement was the second important N source and showed a 1.4 times increase from 1,007 kg/km² in the 1980s to 1,415 kg/km² in the 2000s. The third important N source was human waste, which increased by 1.1 times from 443 kg/km² in the 1980s to 491 kg/km² in the 2000s. The most rapidly increased N source was the atmospheric deposition, which increased by 1.9 times from 170 kg/km² in the 1980s to 325 kg/km² in the 2000s.

Regionally, some provinces in the eastern part of China like Shanghai, Jiangsu, Henan, Shandong, Anhui, Tianjin and Hebei, where the total amount of N inputs was over 15,000 kg/km² in the 2000s. However, those provinces in the western part of China like Xizhang, Qinhai, Xinjiang, Neimeng, Gansu and Ningxia, where the total amount of N inputs was less than 5,000 kg/km². The spatial distribution of its change rate during the last 3 decades shows that, some provinces like Tianjin, Neimeng, Henan, Ningxia, Xinjiang and Heilongjiang, where the total amount of N inputs increased by more than 2 times, only 3 provinces: Shanghai, Zejiang and Qinghai, where the total amount of N inputs decreased. In most part area of China, the total amount of N sources increased more than 1 to 2 times. According to the theory of the mass balance, we could make sure that the nitrogen outputs to the environment, such as water bodies, atmosphere and soils might increase by more than 1 to 2 times from 1980 to 2010 in the most part area of China.

Keywords: Nitrogen input, N fertilizer, Atmospheric deposition, Agricultural lands, China



Changes in the total amount of N inputs at the provincial level during last 3 decades



Changes in the percentage of each component of N input from the 1980s to 2000s

Evidence of Institutional Bias against Flatland Forests in Suburban Tokyo: The Analysis of Long-term Plot-level Panel Data

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This study analyzes the factors affecting the conversion of agricultural land (i.e. forest land or crop field) into non-agricultural land (i.e. commercial or residential land) in suburban Tokyo. We take the case of Santomi area, which was created as an agricultural settlement about 300 years ago on flatland located about 30km away from the center of Tokyo. Since the flatland was infertile, settled farmers planted trees and converted barren land into fertile crop field using leaf litter to produce compost. Thus, a sustainable agriculture system was established in the Santomi area in the long run. The planted trees became flatland forest, which was an indispensable part of this agricultural system. In addition, the combination of forest and crop field makes a unique landscape that attracts visitors.

However, during the last 60 years, many parts of the Santomi area have been converted into non-agricultural land. This study constructs a plot-level panel dataset of 381 plots using aerial photos taken 7 points of time from 1956 to 2016. Then, fixed effect regressions reveal that the differential taxation between forest and crop field, which was intended to protect agricultural land from conversion, promoted the conversion of flatland forest into commercial land. As a result, the sustainable agricultural system that depends on compost from forest is no more practiced much and the value of the unique landscape has been reduced.

There is demand for the conserving the unique agricultural landscape of Santomi area and discussions are going on. But so far there is no agreement as to how to protect the flatland forest.

Keywords: land use, flatland forest, sustainable agriculture, Santomi

Trend of graveyard development in Beijing City

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An urban spatial expansion by the residential house and industrial development is active in Beijing City advanced by economic growth and a population increase. And, the city has a lot of graveyard development for the dead by using the farmland and the forest in a few decades. In a word, the area of land used for the dead in addition to the land for the population of this world has increased in Beijing City.

The graveyard as the place in which it holds a funeral for the dead strongly reflects people's sense of values. The sense of values is strongly related to the religion and the culture in the region and the country. Therefore, the mode of the graveyard and the usage condition of land are different according to the country and the region. The Feng Shui thought has traditionally influenced the location of the graveyard, and the thought was displaced as a superstition as the socialist state in the latter half of the 20th century in China, but it is said that it influences again with the rise in richness.

As a result, the control of the expansion and maintenance of the graveyard area becomes a serious problem as part of the management of the land resource for the increase in the demand for the citizens who request a better graveyard. The present study aims to clarify the formation mechanism and the sustainability of "Land use for the dead" indispensable for the human race by understanding the area of land of the graveyard, the form of the burial and relating social and cultural factors.

Keywords: Graveyard, A population increase, Economic growth, Feng Sui

Bridging across scientific disciplines and societal sectors: Examples for actionable knowledge generation from Future Earth's Knowledge-Action Networks

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The global socioeconomic transformation to sustainability is not an option, but an essential need for humanity's wellbeing. It is also evident that this transformation can only succeed if based on sound scientific knowledge that integrates the many different aspects that are inherent to the complex and interconnected processes underlying all sustainability challenges.

My presentation will feature examples how the integration of the broad scientific spectrum such as across natural sciences, social sciences and law, and the involvement of relevant stakeholders, can provide knowledge that is useful for decision making and for implementation of solutions on sustainability issues. Examples will be drawn from some of Future Earth's existing and emerging Knowledge-Action Networks such as those on ocean sustainability, the food-water-energy nexus, extremes and disaster risk reduction, decarbonisation, and the sustainable development goals.