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.

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.

キーワード：共有林経営、天然林、ネパール
Keywords: community management, natural forests, Nepal
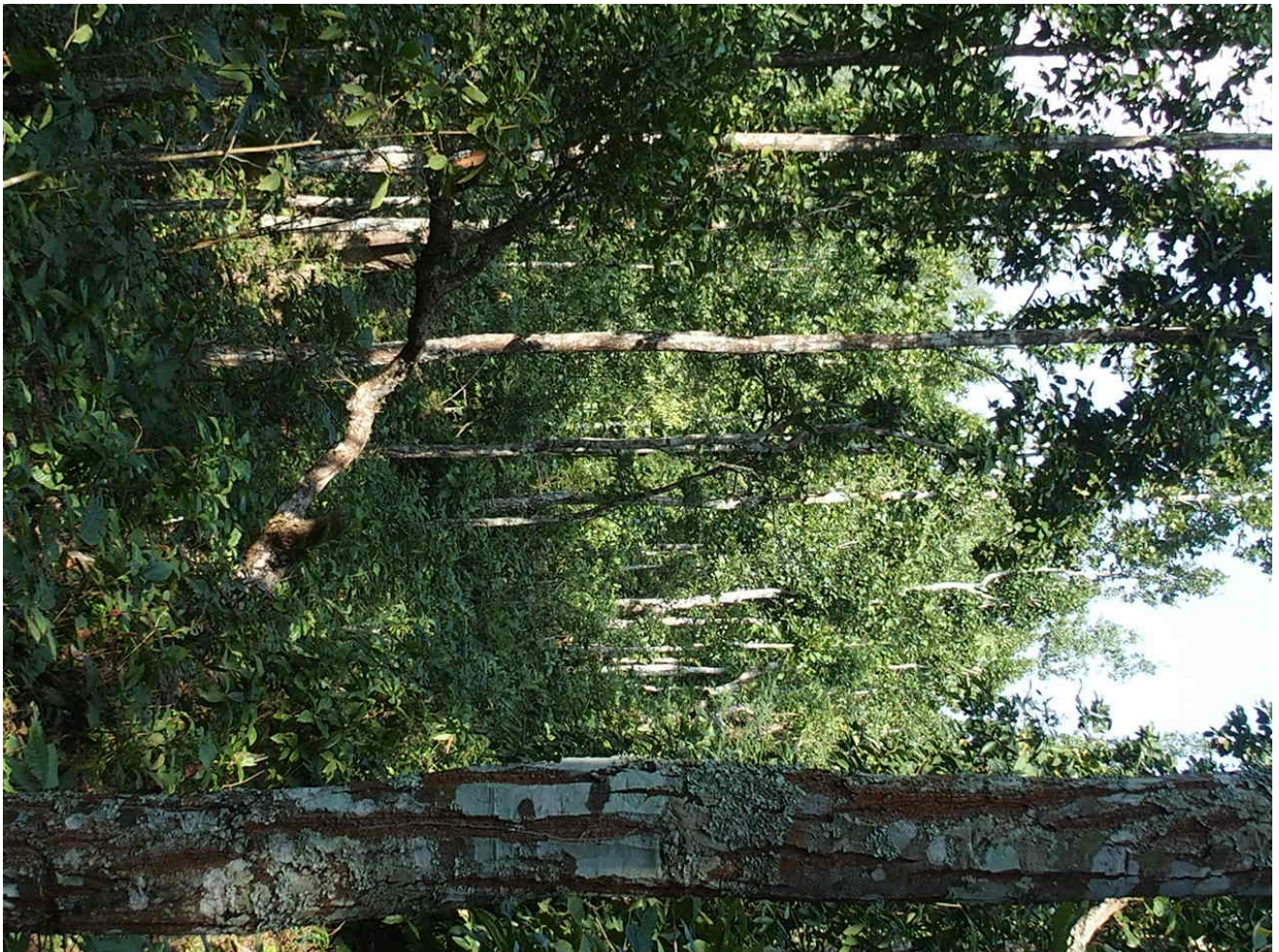
中国の農地への人為的な窒素投入量の時空間的変化
Spatial and Temporal Variation of Anthropogenic Nitrogen Inputs to the Agricultural Lands in China

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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/km^2 in the 1980s (1981-1990) to 5,281 kg/km^2 in the 2000s (2000-2010). The synthetic N fertilizer dominated the N source and showed a 1.7 times increase from 1,361 kg/km^2 in the 1980s to 2,328 kg/km^2 in the 2000s. The animal excrement was the second important N source and showed a 1.4 times increase from 1,007 kg/km^2 in the 1980s to 1,415 kg/km^2 in the 2000s. The third important N source was human waste, which increased by 1.1 times from 443 kg/km^2 in the 1980s to 491 kg/km^2 in the 2000s. The most rapidly increased N source was the atmospheric deposition, which increased by 1.9 times from 170 kg/km^2 in the 1980s to 325 kg/km^2 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/km^2 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/km^2. 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.
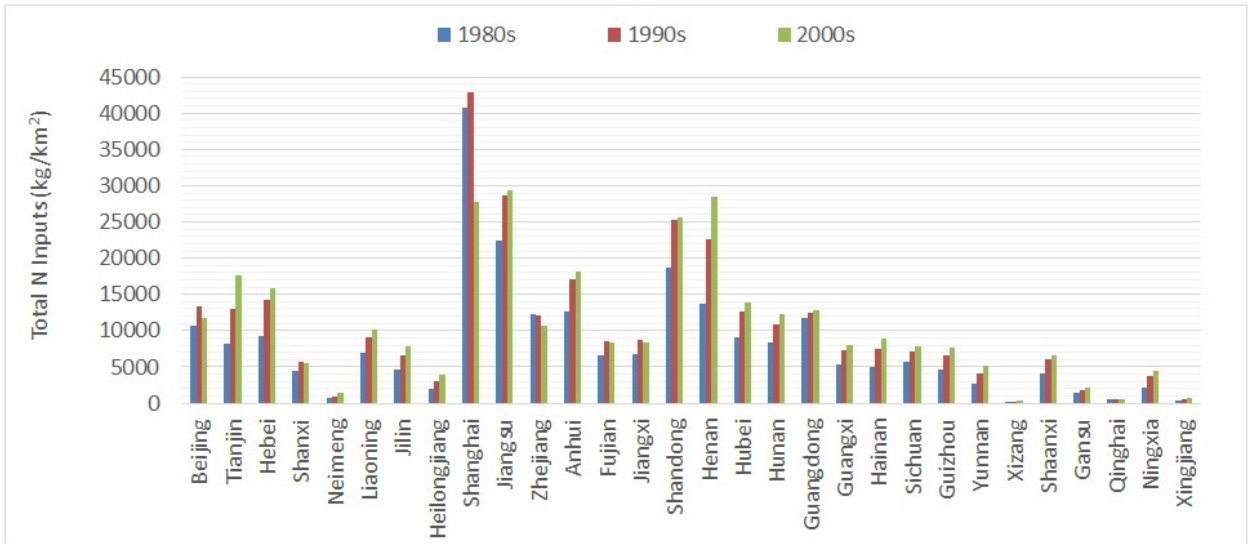
Changes in the total amount of N inputs at the provincial level during last 3 decades
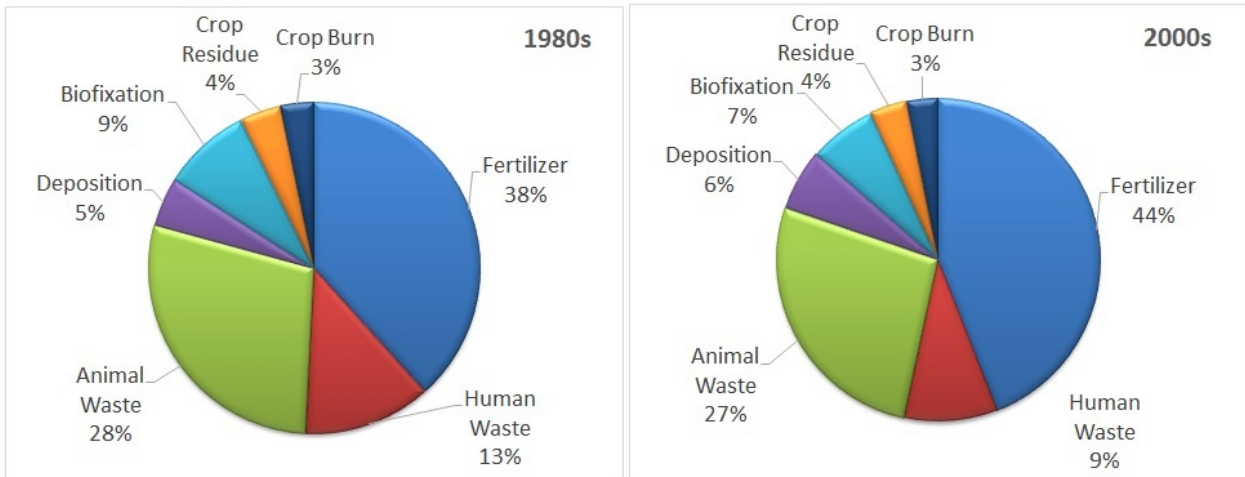
Changes in the percentage of each component of N input from the 1980s to 2000s

Evidence of Intitutional 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.

キーワード：土地利用、平地林、持続的農業、三富
Keywords: land use, flatland forest, sustainable agriculture, Santomi

北京市における墓地開発の動向
Trend of graveyard development in Beijing City

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　経済成長と人口増加が進む北京市では，住宅や工業用地の開発などによる市街地の空間的拡大とともに，農地や山林を利用して，死者のための墓地開発が盛んに行われてきた。つまり，現世の人口のために使用される土地面積に加えて，死者のために利用される土地面積が増加した。

　死者を弔い，悼む場所としての墓地は文化，宗教などに根ざす人々の価値観を強く反映するため，墓地の態様や土地の使用状況は国や地域により異なる。中国においては，伝統的に風水思想が墓地の立地に影響を与えてきた。風水思想は社会主義国としての中国において20世紀後半に迷信として位置づけられたが，豊かさの上昇とともに，再び影響を与えるようになっていると言われる。

　その結果，より良い墓地を求める市民の需要の増大に対して，土地資源の管理の一環として墓地面積の拡大を如何に抑制するかが課題となっている。本研究は，以上のような問題認識に立ち，「死者のために利用される土地」，つまり墓地の土地面積と埋葬の形態や関連する経済的・社会的・文化的要因を把握することで，人類にとって不可欠の「死者のための土地利用」の形成メカニズムと持続可能性を明らかにすることを目的とする。

キーワード：墓地、人口増加、経済成長、風水思想
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.