

Great East Japan Earthquake Disaster and IHDP

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The Great East Japan Earthquake Disaster of May 2011 caused unprecedented damage in Japan, particularly on the coastal areas of East Japan facing the Pacific Ocean and in part of Fukushima Prefecture heavily contaminated by radioactive substances ejected from Fukushima Daiichi Nuclear Power Plant. The effect of the Disaster has been far-reaching not only spatially, but also socially, economically, culturally, humanly and scientifically. IHDP (International Human Dimensions Programme), as the main international social/human global environmental initiative, can play an important role in re-shaping the existing global environmental research and disaster research by incorporating them into a larger research framework. Prior to the incidence, IHDP officially launched a new core project entitled IRG (Integrated Risk Governance Project) in 2010. It has been a timely and foresighted initiative in view of the East Japan Disaster and the other recent mega disasters endangering human society with increasing frequency and severity. The paper shows what we have learned from the Disaster, and discusses why and how IHDP, with its core projects including IRG, can contribute to the new research framework and enhancement of global sustainability.

Keywords: IHDP, human dimensions, IRG, human geoscience, sustainability

Agricultural vulnerability to climate change in the dry region of Haryana, India

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The most important feature of the climate of the dry region of Haryana is the meagreness, concentration, variability and unreliability of rainfall. Among the major geographical factors which influence the agriculture of a region, climate seems to be the most important. The analysis of 60 years climatic data reveals the changing trend in the climatic patterns in the dry region of Haryana. Temperature is increasing and the average amount of precipitation has decreased significantly, causing water scarcity in the region for both crop and livestock. The cropping pattern is changing and region is approaching towards mono cropping. Wheat is the dominant rabi crop in the region followed by bajra in kharif season and both these crops are facing problems of crop yield reduction due to temperature rise. Soil moisture deficiency is observed in most parts of the region. The short rainy season is succeeded by long dry season, leads to lack of soil moisture and reduces the yielding capacity. Rainfall in the region is insufficient to recharge naturally the ground water resources or depleted soil moisture. Though the green revolution has made tremendous contribution to the food production in the region, but it also caused heavy loss to soil fertility due to excessive use of chemical fertilizers and pesticides. Integrated resource management practices are essential to protect the resources of the region for future sustainable agricultural growth. Emphasis should be given to create stronger incentives for climate friendly investments and support policies that address both climate and local environmental needs. For the formulation and implementation of sound environmental programmes and policies, it is essential to assess the vulnerability of the particular region based on composite indicators under GIS framework, which affect the agricultural practices in the region. On the basis of the composite analysis of the indicators used, the study area is categorized into three regions as of high vulnerable, medium vulnerable and low vulnerable. High vulnerable areas include the districts of Mahendergarh and Hisar. There is an urgent need to adopt the strategies which are capable of mitigating climate change, while promoting sustainable and equitable way of livelihood. Adaptation and mitigation policies in a region are complementary to each other to cope with the dearth of climate change. In dry regions water is the prime resource, so the practice of water harvesting needs to be encouraged, particularly in Bhiwani and Mahendergarh districts. Traditional water bodies as Johads has strong bondages, from the past with economy and culture of the traditional societies, now in the era of changing climatic conditions, these water bodies needs to be revived.

Keywords: agriculture, vulnerability, climate change, dry region, Haryana, India

Residential Development of Kunshan City

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The author considered the housing development in Kunshan City in the scope of its historical process and the system frame of the housing market formation in the present study. The housing market of urban areas in contemporary China is constructed under the socialist-market economy. Kunshan City is not the same situation of the major cities such as Beijing and Shanghai that it is rather small scale in its population and also has grown by introducing manufacturing industry.

Manufacturing industry has pushed the economic growth of Kunshan City, and it introduced a lot of population mainly engaging manufacturing industry. The housing market has progressed with the economic development of the city, though in the viewpoint of the preeminence of the housing market, there is a time lag for several years compared with the leading city of the whole country Shanghai.

The planning system of the housing development in Kunshan City is different in the economic development districts and other regions. The committees of the districts are responsible for the housing development in the districts, and the several bureau of the city council is managing the rest of the city area. The feature of the planning process is that the housing development project is planned and executed in the cooperation of the real estate enterprise from the planning stage.

In the development of the commercial house of Kunshan City, the ratio of the luxury home is large. This type of house is supplied for the upper-income group of not only the city but also other cities like Shanghai adjacent the city. It is a feature that the ratio of the economical house intended for the purchase of lower and medium income groups is small on the other hand. The economical house is developed for some households to move out by a downtown remodeling project in addition to the lower income group. The housing supply of other type of welfare purpose is also limited according to a similar condition.

Keywords: China, industrialization, urban planning, housing reform

Classification of structure of water resource supply and demand in the Yellow River Basin of China

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Onishi et al. [2006] presented time-and-space structures of water resource supply and demand over the whole of the Yellow River Basin, broken down by county and month, and proposed a framework for analyzing a series of hydrological cycles-extractions, losses and returns-from upstream to downstream. Unfortunately, water resource volumes of surface water and groundwater were mixed together because of methodological limitations, and they did not manage to separate the effects of surface water and groundwater.

Ichinose et al. [2009] attempted to establish a spatial distribution of groundwater demand, for which concrete data is not publicly available, in a high-resolution grid. However, the seasonal dependency of agricultural extraction volumes is very large. Therefore, to understand the behavior of the groundwater, there is still a question of establishing extraction scenarios that accurately reflect agricultural records, instead of just setting up a simple irrigation model and estimating seasonal variations. When such extraction scenarios have been established, breakdowns of groundwater demand may be established for individual regions, and seasonal water resource adaptation measures that take account of the interaction with surface water may be considered.

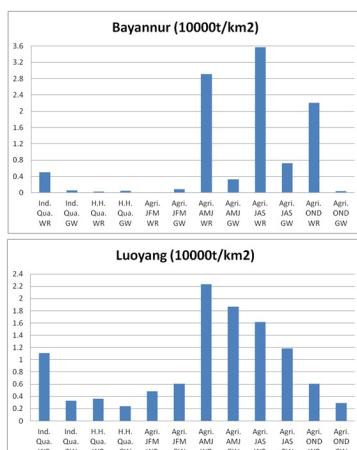
Data on surface water usage structures is lacking and the reality is difficult to establish. In this study, we attempted to map out surface water usage structures by directly comparing the water usage structures estimated by Onishi et al. [2006] with the groundwater usage structures estimated by Ichinose et al. [2009], region by region. The year studied in Onishi et al. was 1997, and the year studied in Ichinose et al. was 1996. Ichinose et al. presented maps in which groundwater usage amounts for industry and for households, expressed in a grid, were aggregated by county. We used this data for our comparison.

First, we compared and analyzed breakdowns of groundwater demand by region in the Yellow River Basin. We selected 35 municipalities, covering the greater part of the yellow River basin, and assigned them to 12 small catchments, giving consideration only to morphological similarities in groundwater usage structures. The groundwater usage structures of the municipalities assigned to each small catchment were similar to one another.

In general, the upper catchments depend on surface water and the proportions used for agriculture are low, so seasonal variations in groundwater usage are small. By contrast, the middle and lower catchments have high levels of dependency on groundwater and the proportions used for agriculture are high, so seasonal variations in groundwater usage are large. This tendency is particularly striking on the Loess Plateau. The catchments that are furthest downstream are again dependent on surface water.

In spite of the similarities of groundwater usage structures, regions with complicated water resource supply and demand structures that include surface water can be observed among the small catchments. Particularly in the catchments of the middle reaches, the diversity in water resource supply and demand structures, which is related to conditions of access to the main rivers, is striking. Outside agriculture, surface water is mostly used by industry.

Keywords: Yellow River, ground water, water resource, urban, China



Soil Plundering in India

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Population growth and economic development in India have caused severe stress in soil and land. As is well known, to secure sites for housing and factories have given the rapid change in land use and land cover in the peri-urban areas in recent decade. In rural areas, farmland has been expanded from strong demand for food production, and there is the broadly request of forest conservation and afforestation activities for consideration for the environment and biodiversity. Under the pressure of human activities over such land use and cover change, we cannot overlook the soil related issues. In this report, we would like to focus on what is affecting the regional scale soil erosion and soil exploitation in wider regional context, in a case of southern Karnataka and eastern Rajasthan, India.

Keywords: soil plundering, India, land use and cover change

Environmental variability and farmers' resilience to food insecurity in Southern Zambia

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Within the Semi-Arid Tropical Sub-Saharan Africa, communities' livelihoods depend critically on fragile and poorly endowed natural resources, and poverty and environmental degradation are widespread. People in these regions depend largely on rain-fed agriculture, and their livelihoods are vulnerable to environmental variability. Environmental resources such as vegetation and soil are also vulnerable to human activities. To surmount these environmental challenges, human society and ecosystems must recover quickly from environmental shocks. In other words, resilience of social-ecological system (SES) is considered an important component for achieving sustainability.

We argued that in order to operationalize resilience, it is important to consider resilience in the context of rural households in SAT region; i.e., resilience to environmental variability, such as drought, flooding and social changes. We consider resilience of food supply and consumption, health status, agricultural production and livelihoods and resilience for protecting human security, i.e., survival, livelihoods and dignity.

We conducted an integrated study for analyzing farmers' coping strategy against climatic shocks in selected areas in Southern Province in Zambia. We collected various household level data including on-farm precipitation, agricultural production, off farm production, consumption, and anthropometric measures as a proxy for nutritional status for three cropping seasons from 2007/2008 to 2009/2010.

Purpose of the paper is to show our empirical evidence of dynamics of farmers' livelihoods in response to various shocks in Zambia. The empirical evidence suggests that farmers' food consumption is affected not only by rainfall shock but also by food price hike. Lastly, role of institutions to build adaptive capacity of the communities is discussed.

Keywords: food security, livelihoods, climatic shock, agricultural system, adaptive capacity

Role of Wild Food Items for Seasonal Consumption Smoothing: The Case of Rural Zambia

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Introduction

It is widely recognized that while rural farmers face a number of income risks, they have developed a variety of strategies to mitigate these, including the diversification of income sources, risk-sharing with friends and relatives, and settlement in safe areas. From the viewpoints of economics, farmers will improve their welfare if they smooth their consumption levels. However, a change in consumption and its sources are in themselves important strategies to manage unexpected falls in income, although consumption levels do not appear to be smoothed by such strategies (it is possibly their utility that may be smoothed). Nevertheless, existing literature provides little empirical evidence regarding changes farmers may make to their consumption to mitigate income shocks during and after a shock event. One explanation for a lack of evidence is that there is no dataset available to enable such an empirical study. However, our household survey data includes high-frequency panel data regarding household consumption during a period when farmers suffered through heavy rainfalls. This data provided us with a rare opportunity to investigate the consumption adjustment behavior of farmers when they experienced income fluctuations. Thus, the aim of this article is to describe how surveyed households change the composition and source of consumption over a two-year period, to better enable us to develop an empirically testable hypothesis for future research.

Survey Outline

The data used in this chapter were collected as part of the Resilience Project of the Research Institute of Humanity and Nature. The Project identified three study sites in the Southern Province of Zambia, the most drought-prone zone in the country. The three sites, which we name Site A, Site B, and Site C, are spread over the slope adjoining Lake Kariba within some 15 km radius and are agro-ecologically distinctive. Site A is located on the lower terrace of the slope on the lakeshore (altitude 500 m); Site C is on the upper terrace of the slope on the southern edge of the Zambian plateau (altitude 1050 m); and Site B is located on mid-escarpment between the other two sites (altitude 850 m). Based on a village census conducted before the rainy season in 2007, 16 households in each site, thus 48 households in total, were selected for household survey. The household survey consists of three components: (i) interview of sample households; (ii) anthropometric measurement; and (iii) rainfall measurement at the plot level. The interview was conducted every week by an enumerator, using structured questionnaires to obtain information about household agricultural production, income, consumption, and time use. This article uses data from a two-year period, November 2007-December 2009.

Conclusion

This article has discussed how farmers in rural Zambia adjust consumption levels and its composition to mitigate the impact of income fluctuations. First, we demonstrated that farmers smooth their consumption level of staple foods, and vegetables and fruit, and that they use animal/fish products and non-food items as buffers. Second, we illustrated that cash purchases played a critical role in smoothing consumption levels regarding staple foods, and vegetables and fruit. Finally, we showed that the collection of wild food items also played an important role in the smoothing of consumption levels for vegetables and fruit.

Keywords: wild food items, food consumption, consumption smoothing, seasonality, Zambia, Sub-saharan Africa

Recent Development of Jabodetabek Region (Jakarta Megacity): The Dynamics of Population, Economic Hegemony and LUCC

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Jabodetabek Region or the greater Jakarta metropolitan has been growing and became a megacity which consist of continuous urbanized regions of Jakarta City and its surrounding regions, namely Bogor, Tangerang, Depok and Bekasi regions. In national context, his hegemony on national economy tends to steadily in increasing but its interaction with surrounding regions and the rest of Indonesia economy has not gave a sufficient spread impacts as the main national growth center. The urbanized areas as well as its built-up areas are predicted still continuously expanded encroaching its surrounded prime ricefield areas and other greenary areas. Some previous studies have been indicating that this expansion passed its environmental carrying capacity impacting various anthropogenic disaster. Some development scenarios have been simulated in attempt to find better development direction fo the region.

Keywords: land use/cover change, Jakarta, Megacity, economic hegemony, Jabocetabek

Assessing Resilience of Household Food Security in Zambia

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Traditionally, food security research tends to focus on reducing future likelihoods to experience food inadequacy, i.e. vulnerability thinking. Recently, focus has been shifted toward building a food system that can withstand shocks without losing its main function, i.e. resilience thinking. The two concepts are not opposite but interlinked. A shift from vulnerability reducing thinking toward resilience enhancing thinking, though subtle on a surface, implies a much greater efforts demanded on all parties involved in manifesting a food secured system. Such shift in perspective is analogous to a psychological shift of sport players from playing not to lose toward playing to win. It is argued in this study that combining vulnerability and resilience indicators will provide richer insights for adaptive responses and managements.

Early resilience research defines resilience as recovery time after perturbations. In actuality, the resilience as returning times after perturbation posts a practical difficulty in that it cannot be assessed independently of manifested disturbances. Its retroactive nature makes the short-run resilient concept less useful for utilizations as policy tools to guide anticipatory responses to future shocks. In this study, we define resilience as capacity to absorb shocks, capacity to adapt and capacity to learn, innovate and transform. Under what may be called a long-run resilient perspective, we use a latent variable approach to measure social-ecological resilience to food insecurity as proposed by Luca Alinovi and others of the FAO. Factors associated with resilient food system are identified and utilized to quantify latent values of resilience scores in a two step procedures. The resilience scores were subsequently mapped out to identify weak resilience regions. Causes of low resilience to food insecurity were also determined. Policy implications for enhancing resilience to food insecurity among the vulnerable groups and areas were discussed.

Keywords: Resilience, Climate Variability, Food Security, Anticipatory Responses, Reactive Responses, Adaptive Management

Towards a Charter Moment: Hakone Vision on Governance for Sustainability in the 21th Century

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Introduction

The issues and political dynamics in the 21st century are different from those in 1945 when the institutions in the United Nations were founded. Today's problems are characterized by temporal, spatial, and sectoral interdependencies, complexity, as well as uncertainty. While incremental changes have enabled certain progress towards sustainability, the current system governing sustainable development is no longer sufficient given the number, impact, interdependence and complexity of problems associated with global change. Governance for sustainability requires transformative reforms with clear vision. The 2012 United Nations Conference on Sustainable Development (Rio+20) could be a charter moment²the beginning of a reform process leading to transformative change of sustainability governance.

We propose principles and recommendations to guide this transformation clustered around three interrelated issues: Aspirations, Actors, and Architecture.

Aspirations

We are living in a highly dynamic, human-dominated earth system in which non-linear, abrupt, and irreversible changes are not only possible but also probable. Governance for sustainability in the era of "anthropocene" requires that objectives, underlying values and norms, as well as knowledge and uncertainty be refined and operationalized.

Actors

Governance for sustainability demands the broadening of meaningful and accountable participation and solutions from people for people.

Architecture

The architecture for sustainability governance needs to be re-built to include better integration, as well as improved institutions and decision-making mechanisms.

Proposals for the required transformative changes in the architecture of governance for sustainability need to be assessed based on a set of criteria, including:

1. Membership: Meaningful participatory approaches that are inclusive and account for power differentials between nation states, non-state actors, and other groups in society.
2. Funding: Appropriate and stable levels of funding.
3. Authority/Mandate: Appropriate authority and efficiency.
4. Compliance and Implementation: Appropriate capacity to address compliance and implementation.
5. Adaptability: Effective adaptive approaches that could include sunset clauses and scheduled re-chartering moments in agreements, dynamic criteria to all selection and decision-making mechanisms to reflect changes in natural and social systems, and network approaches.
6. Accountability: Strong accountability and transparency safeguards

The absence of suitable arrangements on one or more of these criteria will jeopardize prospects for transformative change.

Sustainable Development Council

Drawing on the discussion of Aspirations, Actors, and Architecture, We discussed and evaluated many of the proposals for a re-structured institutional framework for sustainable development that would improve governance and determined that proposals for a Sustainable Development Council deserve more serious consideration.

Rio+20 and beyond

Fundamental improvements in the economic system are necessary in addition to improved governance for sustainability. Green economy should be linked up with IFSD in this regard. We see that Rio+20 is the beginning of a charter moment. Ultimately, this may involve amending the UN Charter to better reflect the challenges of the 21st century.

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Keywords: Governance, Sustainability, Rio+20, Aspirations, Actors, Architecture

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Discussion on IHDP

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To discuss the issues related with IHDP, namely global/regional environmental changes, their mechanisms, effect, problems and mitigation from the broad perspectives of human geosphere sciences including earth sciences, geography, hazard studies and social sciences.

Keywords: IHDP, UGEC, ESG, GCP, IDDRI, IRG