

東日本大震災と IHDP 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.

キーワード: IHDP, 人間的側面, IRG, 持続可能性, 地球人間圏科学
Keywords: IHDP, human dimensions, IRG, human geoscience, sustainability

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

キーワード: agriculture, vulnerability, climate change, dry region, Haryana, India

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

昆山市の住宅開発 Residential Development of Kunshan City

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本研究では昆山市における住宅開発や住宅市場形成の歴史的プロセスや制度的枠組みの特質について考察を行った。現代中国都市の住宅市場は社会主義市場経済という独特の環境下で形成された。全国的に見ても急速な工業化が成功したという点で、本研究で対象とする昆山市は北京市や上海市といった大都市とは異なる小規模都市の特質が現れていると考えられる。

昆山市は昆山経済技術開発区に代表される製造業の成長に牽引されて、経済発展が進展して人口増加が顕著となった。住宅の市場化で全国を先導する上海市と比べると数年のタイムラグがあるものの、昆山市の経済発展と歩調を合わせるように、住宅開発が増加し、住宅の市場化が進展した。

昆山市における住宅開発の計画立案は経済開発区とそれ以外の地域で異なる。経済開発区は開発区委員会が、それ以外の地域は市政府が計画立案を行うが、計画段階から不動産企業の連携のもとに住宅開発が行われているのが特徴である。これらの住宅開発計画は市のマスタープランの枠組みの中で行われており、その中に示された目標などが個別開発計画に投影されることになる。また、昆山市においては昆山経済技術開発区の持つ意味が非常に大きく、実質的な昆山市中心市街地の発展動向はこの開発区の空間的拡大の動向によって規定されている。

昆山市の商品住宅の開発においては、高級住宅の割合が大きいが、昆山市内の高所得層ばかりでなく、上海に隣接するという位置的条件のため、上海市民の別荘型住宅などの高級住宅の需要が及んでいるのではないかと考えられる。その一方で、中低所得層の購入を対象とする経済適用住宅の割合が小さいことも特徴である。これは昆山市の就業者の構成において、高所得層と低所得層が分化しており、経済適用住宅の購入に該当する市民が相対的に少ないことが反映されているのではないかと考えられる。同様な条件により、廉租房や康居工程による住宅供給も限定的である。

キーワード: 中国, 工業化, 都市計画, 住宅改革

Keywords: China, industrialization, urban planning, housing reform

黄河全流域における水資源需給構造の類型化

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

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大西ら(2006)は、黄河流域全体の水資源需給の時空間構造を県級行政単位別・月別に表現し、上流から下流への取水・耗水・還元といった一連の水循環を分析するための枠組みを提示した。彼らのモデルにおいては県級行政単位をボックスで表現し、そのそれぞれにおいて降水量・蒸発散量からもたらされる水資源量と、生産・経済活動に伴う取水量および耗水量を推計している。そこでは人口やGDPから推計された産業構造・工業生産額、既存統計などによる作物別水需要パターン・灌漑面積などが用いられている。次に、黄河流域全体にわたって上流から下流へとすべてのボックスを配置し、河道に沿ってそれらをリンクさせることで上流から下流までのカスケード関係を構成している。しかしここでは、地表水と地下水の水資源量が手法上の制約から混同されており、これらの現象を個別に再現するには至らなかった。

一方 Ichinose et al. (2009) は、黄河流域における地下水位の挙動を数値シミュレーションで再現することを目的として、具体のデータが公開されていない地下水需要の空間分布を高解像度のグリッドベースで把握することを試みた。この推計には、本来地表面における人間活動としての水資源利用とはなんら物理的関係を持たない地表面夜間光衛星画像や、統計資料として公開されている県級行政単位別耕地面積などを参考に、省級行政単位別に公開されている農業・工業・生活用の地下水取水量を各県級行政単位やグリッドに配分する手法を採っている。しかし、農業用取水量の季節依存性は非常に大きいため、地下水の挙動を理解するためにも、単純な灌漑モデルを立てての季節変化の推計ではなく、正確な農事暦を反映した取水シナリオの把握が課題として残っていた。また、それにより、地域ごとの地下水需要内訳を把握し、地表水との併用を念頭にした季節別水資源融通方策を考えることも可能となる。

以上により本研究では、大西らの推計した水資源利用構造と、Ichinose et al. の推計した地下水利用構造とを地域別に直接比較することにより、データが存在せず実態把握の困難であった地表水の利用構造を描き出すことを試みた。大西らの対象年次は1997年、Ichinose et al. の対象年次は1996年である。Ichinose et al. においては、グリッドで表現された工業用と生活用の地下水利用量を県級行政単位別に集計したマップも提示しており、今回比較に用いられるのはそのデータである。

黄河流域に大部分が含まれる35の地級行政単位を抽出し、地下水利用構造(棒グラフ)の形態的類似性のみに着目してそれらを12の小流域に分類した。地表水を含んだ水資源需要量と地下水利用量とを交互にならべたグラフの事例を図に示す(単位は万t/km²)。一般に上流域では地表水に依存し、農業での利用割合が低いため、地下水利用の季節変動性は小さい。一方、中流域から下流域では地下水への依存の度合いが高くなり、農業での利用割合が高くなるため、地下水利用の季節変動性は大きくなる。とりわけ、その傾向は黄土高原において顕著である。また、最下流域では再び地表水に依存している。さらに地下水利用構造の類似性にもかかわらず、小流域の中でも地表水を含めた水資源の需給構造に多様性が見られる地域がある。とりわけ中流域では、大河川へのアクセスの状況に応じて多様性が顕著である。また、農業以外で地表水が使われるのは工業が多い。

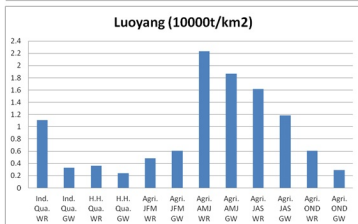
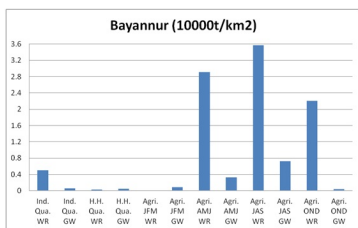
キーワード: 黄河, 地下水, 水資源, 都市, 中国

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

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インドにおける土壌収奪の現況 Soil Plundering in India

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インドにおける経済発展と人口増加は、土地及び土壌に深刻なストレスを加えている。住宅や工場などさまざまな用地の確保が都市周辺部で土地利用・土地被覆に急激な変化を与えていることは周知に属する。農村部では旺盛な食料生産への需要から農地が拡大され、一方で、環境や生物多様性への配慮から森林の保全や植林活動への要請もある。そうした土地利用・被覆をめぐる人間活動のもとで、土壌への圧力も見過ごせない。土壌汚染など局地的に深刻な問題もあるが、本報告では、小規模な土壌収奪や土壌流出がより広い地域スケールにおいてどのような影響を及ぼしているのかについて、カルナータカ州南部、ラジャスタン州東部の事例を紹介しつつ、検討したい。

キーワード: 土壌収奪, インド, 土地利用・土地被覆変化

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

ザンビア南部における環境変動と食料安全保障への農民のレジリエンス 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.

キーワード: 食料安全保障, 生業, 気候ショック, 農業システム, 適応能力

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

季節的消費平準化における野生食物の役割：ザンビア農村部の事例 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.

キーワード: 野生食物, 食料消費, 消費平準化, 季節性, ザンビア, サブサハラ・アフリカ

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

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 scenarious have been simulated in attempt to find better development direction fo the region.

キーワード: land use/cover change, Jakarta, Megacity, economic hegemony, Jabocetabek

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

Assessing Resilience of Household Food Security in Zambia 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.

キーワード: Resilience, Climate Variability, Food Security, Anticipatory Responses, Reactive Responses, Adaptive Management
Keywords: Resilience, Climate Variability, Food Security, Anticipatory Responses, Reactive Responses, Adaptive Management

21世紀における持続可能性のためのガバナンス

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

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may involve amending the UN Charter to better reflect the challenges of the 21st century.

キーワード: ガバナンス, 持続可能性, Rio+20, アスピレーション, アクター, アーキテクチャ
Keywords: Governance, Sustainability, Rio+20, Aspirations, Actors, Architecture

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Discussion on IHDP 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.

キーワード: IHDP, UGEC, ESG, GCP, IDDRI, IRG

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