

<Original article>

Evaluation Index System and Comprehensive Evaluation Research of Power Enterprise Circular Economy 1

Lei ZHANG, Toru MATSUMOTO, Xing MENG, Zhiyi LIANG, and Hongbing YU

Energy is an extremely important basic industry. China is a developing country where coal accounts for around 75% of primary energy. Although the level of global economic integration is increasing, the energy needed to support economic development must mainly come from domestic sources. Therefore, the use of coal as the main energy source for long-term development is inevitable (Lu, J., 2010). Energy issues are always important from the perspective of sustainable development, and coal-based energy supply forms the core of China's energy issues. As far as major coal-based pollution in China is concerned, promoting electric power and increasing the conversion ratio of coal to electricity are the important and effective measures to reduce air pollution, protect the environment, and develop the circular economy (Wang, S., 2009). This paper introduced the power industry's cycle of economic development, analyzed industry-specific economic characteristics using cycle indicators. According to the characteristics of the power industry, established an index system suitable for the industry features, and calculated using the analytic hierarchy process right weight value. Taking the Tianjin SDIC power plant as an example, its characteristic cycle of economic development was introduced. Combined with the evaluation index system of power industry circular economy, the level of economic development cycle was evaluated using a fuzzy comprehensive evaluation method, and the application of the index system was described.

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Risk-Seeking Behavior in Poorer Cultivators and Growing Income Disparity: A Case of Cash Crop Farming in Teknaf Wildlife Sanctuary, Bangladesh 13

Maiko SAKAMOTO, Masakazu TANI, and Zulfikar Rahman

This study examines the risk of cultivating betel leaf, a popular cash crop in the region of southern Bangladesh, and reveals its effect on income generation in connection with forest degradation. We analyzed panel data from farmers for 2010 and 2014 and revealed that betel leaf cultivation has widened income disparity and does not necessarily contribute to income generation, in particular for poorer farmers. Such farmers have undertaken risks including disease, climate change, and price fluctuations, and yet they continue to engage in cultivation. In conclusion, this study provides evidence of poor farmers' myopic risk-seeking behavior, which contradicts past findings.

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Impact of the 2011 Tohoku Earthquake on the Use of Tidal Flats: A Case Study in Inner Tokyo Bay 25

Takehisa YAMAKITA, Yoshimi MATSUOKA, and Shimpei IWASAKI

Coastal areas have recently been reevaluated to understand the relationship between ecosystem services and humans. However, devastation from the 2011 earthquake and tsunami in Japan might have limited the use of ecosystem services. Thus, we investigate the effects of the earthquake and tsunami on the use of tidal flats. We used questionnaires to evaluate changes in the number and anxiety of users for each type of use of the Sanbanze tidal flat in the innermost part of Tokyo Bay. We also conducted a field survey to verify the trends.

We found that clamming and walking or jogging were the most common uses in the surveyed area. However, clamming activity decreased after the earthquake as indicated by field observation (73% decrease in spring long holiday season) and questionnaires (64%). Other clamming ground in Tokyo Bay also showed a similar decrease (62%). Many visitors were anxious about the damaged infrastructure. Compared to other types of use such as swimming or total tourism in the tourism statistics, the recovery phase was slower for clamming using the data of other locations. Considering these evidence, the innermost part of Tokyo Bay can be classified as an earthquake-devastated area, from the view point of ecosystem services.

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Post-disaster recovery linked with pre-disaster land development and damage density of Typhoon Yolanda: Toward better land-use planning in Tacloban City, the Philippines 1

Yuji HARA, Tasuku OHSUGI, Kazuaki TSUCHIYA, Akinobu MURAKAMI, and Armando M. PALIJON

Coastal cities in Asia face increasing risks of extreme climate events and urgently need to develop risk-reduction plans to mitigate the harmful socioeconomic consequences of such events. In this study, we undertook geographical analyses and conducted interviews with stakeholders in the Tacloban City area, the Philippines, to investigate the relationships among building types, storm-surge inundation and post-disaster recovery after 2013 Typhoon Yolanda. Squatter settlements in low-lying urban and coastal areas were destroyed by the typhoon, but were rapidly rebuilt by squatters using debris from the typhoon. Government programs relocated some of the affected squatter populations to new socialized housing developments on safe higher ground that were some distance from the squatters' former urban and coastal livelihoods, thus causing reluctance to relocation. Our GIS analysis of available geo-spatial data, coupled with extensive stakeholder interviews, showed that there were enough vacant lots within pre-existing housing subdivisions to house more than 7000 squatters and provide them with plots for urban vegetable farming that would provide their livelihood. Interviews with stakeholders suggested that this approach would not encounter excessive resistance. Thus, our study demonstrated that comprehensive GIS analyses and stakeholder involvement can contribute to effective land-use planning for community resilience.

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The Characteristics of Time Changes of CO₂ Emissions by Transport Sector in China 13

Akio ONISHI, Du JIHAO, and Ming LI

In China, CO₂ emissions have increased in part due to the introduction of a market economy and because of rapid financial growth as a result of economic reform. China's manufacturing industry has become popular as the "factory of the world," and people's lives have become richer due to this. Transportation volume has increased due to the improvement of such income and changes in lifestyle. In comparison to 1980, the current passenger traffic and freight traffic has expanded manifold, especially since the increased demand for private vehicles has also increased ownership rapidly. As a result, CO₂ emissions from the transport sector have increased significantly. In this research, using statistical data from 1995 to 2013 from China, we analyzed the factors of CO₂ emissions in the transport sector by both nation and region (eastern, central, and western). Furthermore, we clarified the influential elements for the factors that contributed strongly to the increase in CO₂ emissions which revealed why CO₂ emissions began to increase.

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The Use of Ethnobotanical Landscape to Revitalize Rural Communities: Learning from Todmorden, England, Past and Present 25

Sofia M. PENABAZ-WILEY, and Isami KINOSHITA

This study aims to analyze one method in current usage helping small suburban or rural communities to not only survive, but thrive, specifically through strategic landscape incorporation and use of ethnobotanical (ETB) plants native to or adopted by the area. We focus on the Incredible Edible (IE) movement in Todmorden, England as a successful case using ETB landscape, and reviewed positive changes over nine years. We also study how widely and when the IE method has spread. Methodology includes interviews, multimedia literature review, and trend analysis. Methodology and keywords used in the IE system are discussed, and are based upon a few basic ideas to create a sustainable community-landscape system. Our results show that people in the economically depressed rural zone of Todmorden desired change, but were hesitant to do so. Our study's main findings are that independent global media can have a deep effect on grassroots movements, and that, compared with the lack of it, the use of ETB landscape when incorporated into community planning and activities can have deeply positive sociological and environmental effects, including heritage preservation and sustainability.

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Societal Transition Regarding Japanese Post-War Pollution Issues

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Aki NAGANO

During the mid-1950s and the 1970s, Japanese society undermined serious pollution issues. Nowadays, similar destruction is evident in developing countries. This study aims to address the transformation of Japanese society to overcome pollution issues to make recommendations to countries facing environmental degradation. The method applied integrates the multi-level perspective, multi-phase transition, and multi-level governance. This study identified three social innovations: the anti-pollution movement in Mishima, Numazu, and Shimizu; development of the epidemiological causal relationship strategy; and implementation of Pollution Control Agreement. These triggered the transformation of local autonomy, industry ethics, mutual interaction between multi-stakeholders, institutional changes, and environmental policy and governance. To overcome the side effects of industrialization and advance to the next stage of modernization, a healthy democratic system and cooperative policymaking are necessities for the environmental governance.

<Technical report>

Influence of Five-day Suburban Forest Stay on Stress Coping, Resilience, and Mood States

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Norimasa TAKAYAMA, Kaoru SAITO, Akio FUJIWARA, and Sueharu TSUTSUI

This study aimed to investigate the absence or existence of changes and traits of stress coping, resilience, and mood states of respondents, who usually live in urban areas, during their stay in a suburban forest in a popular resort area. The study site and accommodation facility belonged to Fuji Iyashinomori Woodland Study Center, the University of Tokyo Forest. The respondents comprised 10 students who participated in the exercise lecture of graduate school (five days and four nights). Respondents were required to answer Lazarus-type stress coping inventory (stress coping), Sukemune-Hiew Resilience Test (resilience), and Profile of Mood States (mood states). Both stress coping and resilience tests were conducted twice: on the first morning and the last evening of lecture series. Mood state test was conducted five times, that is, every morning of the lecture series. We can find the marginally significant difference in one indicator of stress coping and confirm statistical differences in two indicators of resilience. A statistical difference was also observed in two mood state indicators, such as tension-anxiety and depression-dejection. Results indicated that staying in a suburban forest for five days may promote stress coping, resilience, and positive mood states.

本英文誌はオンラインジャーナルとして科学技術振興機構の J-STAGE 上で公開しており、どなたでも自由に閲覧できます。なお、バックナンバーは当センターHP で閲覧できます（会員限定）。冊子体のバックナンバーをご希望の方は、事務局（E-mail: info@ceis.or.jp Tel. 03-3265-3916）までお問い合わせください。