



Future Earth activities in China: Towards a national sustainable development

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Abstract

This article provides an overview to Future Earth activities carried out by the Chinese National Committee for Future Earth (CNC-FE). Future Earth is an international research programme which aims to provide critical knowledge to face the challenges posed by global environmental change and to identify opportunities for a transition to global sustainability. CNC-FE is the main body devoted to implementing the Future Earth programme in China. Incorporating Future Earth themes and national science needs, CNC-FE has identified 14 priority areas. Since its establishment, it has conducted an array of activities to fulfill its missions, including implementing projects, convening international meetings, translating and publishing Future Earth and CNC-FE related documents and promoting Future Earth and CNC-FE on various outreach occasions. CNC-FE closely follows Future Earth's development and meanwhile integrates its themes with Chinese practice. It is hoped that implementing Future Earth in China can boost global environmental change including climate change research in China and also have positive implications for developing countries who are trying to adapt to climate change and address the challenges for the national sustainable development.

Keywords: Future Earth; Global sustainability research; The Chinese National Committee for Future Earth (CNC-FE); Research priorities

1. Introduction

Future Earth is a 10-year international research programme jointly initiated by ICSU (International Council for Science), ISSC (International Social Science Council) and others. It was launched in June 2012 at the UN Conference on Sustainable Development (Rio+20). The programme aims to provide critical knowledge required for societies to face the challenges posed by global environmental change and to identify opportunities for a transition to global sustainability (FE, 2013).

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Embracing the principle of co-design, co-produce and co-deliver, Future Earth also expects to be a platform for international engagement to ensure that knowledge is generated in partnership with society and users of research. The programme defines three broad research themes: dynamic planet, global development and transitions towards sustainability and calls for building of a set of cross-cutting capabilities: observing systems, data systems, Earth system modeling, theory development, scoping and synthesis, communication and engagement, capacity development and education, and science-policy interface activities (FE, 2013).

Recognizing the importance of Future Earth, a Chinese National Committee was established in 2013 to mobilize Chinese scientists and stakeholders to participate in the Future Earth and make full use of international resources to address challenges in the national sustainable development, using a multi-disciplinary approach. The primary focus of this paper is to provide a review of Future Earth activities conducted by the



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Chinese National Committee for Future Earth in China (CNC-FE).

The remainder of the paper is organized as follows. Section 2 presents an overview of Future Earth programme. In Section 3, the establishment of CNC-FE is introduced. Section 4 reviews the evolution of identifying priority, which is the core of CNC-FE work. Various activities are introduced in Section 5. Implications of CNC-FE activities for climate change research in China are suggested in Section 6. A summary and discussion is provided in Section 7.

2. Overview of Future Earth programme

In its 2025 vision released in 2014, Future Earth identified eight grand challenges ranging from synergies and trade-offs of water, energy, and food, decarbonization of socio-economic systems, valuation and governance of biodiversity, ecosystem functioning and services, social resilience building to sustainable pathway development. By developing and publishing strategic research agenda every few years, Future Earth intends to provide information and advice for global environmental change researcher and funding agencies and stakeholders. Based on the three themes and eight grand challenges, it issued Strategic Research Agenda 2014, which further suggested 69 key priorities for global environmental change and sustainability research for the next 3–5 years (FE, 2014). These being the crystallization of compressive consultancy with Future Earth expert panels and global societal partners received favorable comments across global research communities.

Future Earth is to fulfill its vision by building on and integrating existing Global Environmental Change programmes (GEC) (Diversitas, IGBP, IHDP, WCRP and ESSP) and developing new broader initiatives. Up until 31 March 2015, five out of 21 GEC projects have formally merged into Future Earth and transition of other 16 are in progress. The

governance of Future Earth consists of four core bodies: a Governing Council, a Science Committee, an Engagement Committee and the Executive Secretariat. The Executive Secretariat is innovatively globally based, which comprises five Global Hubs in Canada, France, Japan, Sweden and the U.S. and four Regional Hubs in Middle East and North Africa, Latin America, Europe and Asia (<http://www.futureearth.org/secretariat>).

While challenges are posed in global scope, there is a great disparity concerning the implement of GEC projects, economic development, social environment and science-policy among different countries. Thus establishing Future Earth national committee is an effective and feasible way of accomplishing Future Earth missions at national level and networking of national committees serves as good complements to regional hubs.

Future Earth introduced into its projects a new concept of research approach, different from the previous GEC projects. The idea of co-design, co-produce and co-deliver (Fig. 1), in our view, arose from people's, in particular funding agencies and stakeholders' disappointment in traditional linear model of research (Fig. 2) which creates a deep gap between the science and its supposed end-users. This new approach involves stakeholders from the very beginning, instead of only informing end-users when the research results become applications, if there are any, and make sure the end-users' experience and observation is also brought back to the labs for a new cycle of research.

3. Establishment of CNC-FE

3.1. Formation of CNC-FE

Supported by Chinese Academy of Sciences, China Association for Science and Technology and others, Chinese scientists have been involved in several GEC projects. In addition

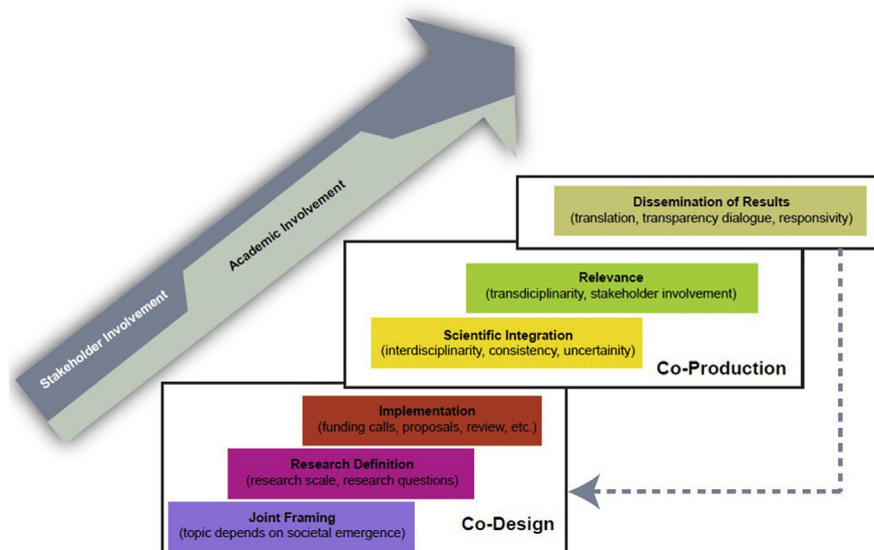


Fig. 1. Framework for interdisciplinary and transdisciplinary co-creation of the knowledge castle (reproduced from Mauser et al. (2013)).

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