

Opportunities to advance capacity building under Future Earth

1. Preamble

This capacity building strategy has been co-developed by the Future Earth Global Secretariat Hubs at Colorado and Japan together with START. In developing this strategy, efforts were made to reach out to regional centers, core projects, FTIs, KANs and others within Future Earth. The strategy, as presented here, is a 'living' document that will be iterated and refined in the coming year as Future Earth transitions from a mode of establishing its internal structures to a more active phase of initiating and catalyzing action.

This strategy is aligned with the priorities and milestones of the Future Earth [Research and Implementation Strategy](#), covering the 2016-2018 period. In particular, this strategy speaks to Outcome 4 (*Enable and mobilise capacities for sustainable development*), which emphasizes strengthened capacities for science leadership by Future Earth regional centers, training on transdisciplinary methods and approaches for co-designed and co-produced research, engagement of early career cohorts from research, policy and practice, and developing opportunities for an early-career fellowship program that can be integrated into the KANs where appropriate. As well, this strategy speaks to Outcome 3 (*Pioneer approaches to co-design and co-produce science solutions, knowledge and innovation for global sustainable development*) in which strengthening capacities for doing co-design and co-production is an important priority.

2. Introduction

As an integrated platform for global sustainability research, Future Earth provides a unique opportunity for advancing capacity building that is responsive to evolving societal needs for new kinds of knowledge and for engagement with new actors, agendas, and perspectives. Future Earth is thus well-positioned to advance skill building across research, policy and practice domains. Capacity building under Future Earth is viewed as encompassing actions that *strengthen and mobilize existing capacities as well as build new ones*, and thus the term 'capacity building' as used in this document is shorthand for a more comprehensive and dynamic approach.

Future Earth capacity building will be:

- Flexible and responsive in adapting its approach and priorities to widely varying capacities across and within regions;
- Issues based, with activities determined by societal needs to be addressed rather than determined by a specific tool, program or expertise;

- Experience based in which training, learning and application are fully integrated;
- Designed to emphasize relevance and to prioritize regional ownership so as to ensure sustainability of capacity building activities; and,
- Facilitated in ways that achieve a multiplier effect by engaging early- and mid-career professionals, and by adding value to existing networks and communities of practice.

The emerging Future Earth Knowledge Action Networks (KANs) provide a key framing for capacity building actions described in this white paper. The KANs will serve to implement Future Earth’s collaborative approach to knowledge generation by pulling from many areas of academia and society, and centrally involving research by the Core Projects that integrates natural and social sciences and humanities, co-designing research questions with users, co-producing outcomes, and broadening engagement activities through state-of-the-art communications at key societal interfaces. The KANs currently under development are: Natural Assets, Health, Food-Energy-Water Nexus, Cities, Oceans, Sustainable Finance and Economics, Transformations to Sustainability, and the Sustainable Development Goals.

Partnerships that advance capacity building will be critical to Future Earth’s success in this endeavour. There is a significant body of knowledge and experience on capacity building that Future Earth can draw on to ensure it achieves positive impact, and Future Earth has an unparalleled cohort of global change science, though the Core Projects, that can add significant value to capacity building effort of the broader global change community. Future Earth’s partnership with START is an example of a larger partnership effort that should be pursued across the global change landscape.

3. A multi-level, integrated approach to capacity building

In considering the complexity of global challenges with which Future Earth is engaged, a systems-level perspective for capacity building is needed that spans the research community, civil society, government and the private sector. This systems-level¹ perspective finds resonance in capacity building efforts that consider how individual and organizational/network actions can be integrated to more effectively support problem solving in the face of high complexity and uncertainty.²

Table 1 on page 4 identifies *potential* actions and activities that Future Earth could

¹ The systems-level approach in this context refers to problem solving that involves integrated multi-sector, multi-scalar and multi-domain (research/ policy/practice) engagement process.

² “Capacity-building efforts need to be considered from a systems perspective that recognizes the dynamics and connections among various actors and issues at the different levels, as part of a broader unit rather than as loosely connected factors.” Monica Blagescu, & John Young. (2006). [Capacity Development for Policy Advocacy: Current thinking and approaches among agencies supporting Civil Society Organisations](#). Overseas Development Institute.

undertake in supporting capacity building. Near-term opportunities for consultative processes related to capacity building—such as through the upcoming KAN scoping process and activation of the Future Earth Early Career Network and Open Network—will provide opportunities to accommodate a range of perspectives in further refining actions and activities at individual and organizational/network levels. Capacity building at individual and organizational/network levels is described as follows:

Individual level capacity building takes numerous forms including technical, academic, and professional skills as well as strengthening of complementary soft skills. In the context of Future Earth, individual capacity building will be largely focused on advancing skills and knowledge that better enable transdisciplinary approaches to research co-design and knowledge co-production and strengthen the impact of communications related to Future Earth's mission.

Early and mid-career professionals from within and outside of core projects will be a priority group for capacity strengthening at the individual level. However, nurturing communities of practice able to address complex sustainability challenges requires that individual capacity building expand beyond the research community to consider capacity building and mobilization needs and priorities within policy and practice domains. For example, the increasing prominence of the private sector in capacity building, exemplified by a rapidly expanding professional services sector and technologic development in data management provides potential opportunities for Future Earth to support workforce development that advances sustainability goals.

An **Organizational/network level** approach to capacity building encompasses nonprofit, for profit, governmental, and research organizations, as well as coordinated networks with interest in policy, sustainability science, and development. Under Future Earth, this approach will carefully target capacity building to better enable organizations and networks to more fully engage with, and take advantage of, systems-oriented science that Future Earth will undertake through the KANs. This capacity building will be supported both through in-person engagement in KAN research and synthesis, as well as support for engagement facilitated through the Future Earth Open Network. In this regard, there are strategic and learning opportunities for Future Earth in studying and working closely with similar types of bodies that have been created in other fields (e.g. health care, disaster management etc.) for similar purposes. Future Earth should seek to learn from and build partnerships with similarly large distributed networks.

Achieving more effective **systems-level** capacities for problem solving is largely an outcome-driven process stemming from capacity building investments made at the individual and organizational/network levels augmented with actions and partnerships that strengthen knowledge exchange and provide access to tools that enable more effective cross-sector and cross-scalar planning. The potential for capacity building at

individual and organizational levels to in turn strengthen systems-level capacities lies in an increased ability of researchers and societal partners to engage as co-equals in framing sustainability challenges, enhanced understanding of co-dependencies and teleconnections that affect resources and people, and mobilization of capacity within organizations and networks through access to new learning opportunities and data sources.

Table 1. Proposed actions and activities, and outcomes envisaged, for *individual-organizational- and systems-level capacity building*

Individual-level		
Target actions *	Potential type of activities **	Intended outcomes supporting KAN & Core Project efforts
Strengthen skills for: -- Transdisciplinary (TD) research -- Communications and networking -- Subject matter technical expertise -- Workforce development	-- Training courses in TD -- Advanced institutes/summer schools on sustainability topics -- Young scientist forums and peer platforms -- Future Earth fellowship program -- Business & NGO training and certification specific to FE goals	Enhanced capacities for: --Co-designed & co-produced research -- Networking -- Incorporating sustainability issues into private and public enterprises
Organizational/network-level		
Strengthen regional organizations and networks to: -- Bolster coordination, data management & communications for future-focused strategy planning -- Develop and promote sustainability education	-- Sustainability science curricula development, incl. through online education platforms -- Open data platforms (where possible) combined with webinars on data application -- KAN-related forums focused on building peer-support networks through the Future Earth Open Network	Enhanced capabilities for: -- Sustainability education incl. systems-level learning -- Communications and learning across orgs & networks -- Engagement of the Future Earth Open Network -- Emerging communications technologies to support sustainability aims of networks
Systems-level ***		
Strengthen alliances for understanding and utilizing a systems approach to address sustainability challenges	-- Strengthened platforms for supporting regional knowledge exchange -- Partnerships with tech sector to incorporate data visualization in systems-level planning	Enhanced capabilities for integrated problem solving

* The actions are intended to target communities both internal and external to Future Earth.

** The activities proposed in the 2nd column of this table are indicative and aspirational, and do not represent specifically funded and planned activities.

*** Systems-level capacity is largely enabled through actions taken at individual and organizational levels, as described in column 1. The additional activities proposed for systems level is intended to more effectively mobilize capacities at the other two levels.

In the coming year, an important priority will be to engage across the span of Future Earth to identify potential entry points for individual and organizational/network level capacity building. Likely entry points for doing this include the KAN scoping process (and the Core Projects involvement in them), establishment of the Open Network and [Early Career Professionals \(ECP\) Network](#) (where this capacity building strategy will link to and align with the ECP strategy), and involvement of Future Earth regional structures in regionally based partnerships with organizations from research, policy and practice domains. Secretariat hubs with the Capacity Building Function lead (Colorado, Japan, and Paris) and other subcommittee E members will actively identify opportunities to promote capacity building within these various entry points and through this process solicit input on capacity building priorities and actions.

4. Strategic entry points for capacity building in the 2016-18 period

Items 4a-e highlight potential entry points for capacity building that are in varying stages of planning and that link with the Future Earth Research and Implementation Strategy.

4.a. *Future Earth Fellowship program*: In 2016 and 2017, Future Earth, START and other partners will collaborate to develop and nurture a fellowship concept that would be embedded within multiple Knowledge-Action Networks. This fellowship programme will serve to strengthen capacities of early-career professionals working at the interface of policy, practice and research. The initial effort will target the research community but would be expanded to include individuals from the public and private sectors if sufficient resources can be mobilized. The fellowship concept will initially be developed for one or more Knowledge-Action Networks, and learning from that process, attempt a larger effort that would span several Knowledge-Action Networks.

The Global Secretariat together with START are currently seeking private-foundation support for a pilot fellowship effort within two to three KANs. The fellowship would target early-career professionals who demonstrate a commitment to excellence in inter- and transdisciplinary collaboration and a strong motivation to provide leadership in using the Open Network to build links across disciplines and regions. In this inaugural effort, the fellows would receive travel support to participate in KAN activities, such as a research roundtable, that would also include participation in a specific capacity building event, such as a transdisciplinary training workshop on methods and tools for research co-design and knowledge co-production. This initial effort can be built on to include a small opportunities grant fund that would allow fellows to receive specific training and mentorship opportunities related to their research and communications effort or support to undertake a network strengthening activity. Both the pilot action and the more comprehensive effort will depend on finding resources.

4.b. *Capacity building on co-design/co-production*: Future Earth's commitment to stakeholder-engaged science through research co-design and knowledge co-production requires strong interdisciplinary and transdisciplinary skills and knowledge. As described in the Research and Implementation strategy, Future Earth has begun to make inroads through recent (and upcoming) workshops and symposiums on co-design. A key next step in this process (as described in the Research and Implementation Strategy) is to convene co-designed research scoping workshops for each of the Knowledge-Action Networks.

This action provides an excellent opportunity to provide training on the latest methods and approaches for co-designing research questions and co-producing knowledge for transdisciplinary research outcomes. A critical starting point in designing this kind of training will be to assess the the Core Projects' current state of expertise and experience with research co-design and knowledge co-production and use that as a foundation upon which to develop a useful and appropriate training program. The aforementioned effort (see 4b) to acquire private foundation support for two or three of the KANs will, if successful, provide an opportunity to begin developing a training initiative. Also, in the pipeline is a transdisciplinarity training opportunity through the Belmont Forum. Belmont has requested the ISSC and START to lead a TD training component under the upcoming Belmont Collaborative Research Action on the food-energy-water nexus; this effort will involve co-design and co-branding of a transdisciplinary training effort with Future Earth.

4.c. *Regional excellence in KAN research*: The global reach of Future Earth provides an excellent opportunity for strengthening existing regional capacities and fostering greater cross-regional science engagement. Africa, and LDCs within Asia and Latin America, are priorities in this regard. A Regional Excellence in KAN research effort would serve to promote research-driven capacity building by, for example, providing regionally driven and designed training on research tools and methods, data sharing and analysis, and science communications targeting both early and mid-career researchers. The effort will emphasize advancing experiential learning for assimilation and translation of new skills and knowledge into practice and will center on the co-design/co-production mission of Future Earth.

As the KANs roll out and the regional centers become active, opportunities for such training will surface and the Secretariat will work with these partners to help mobilize resources for activities. Currently, the Secretariat and START are reaching out to private foundations for potential support to implement some preliminary regional capacity building activities in two to three KANs.

Also, START is committing grant funds it receives from the US Global Change Research Program (and is actively seeking co-funding) to support science capacity building in

Africa that aligns with Belmont and Future Earth priorities related to the Food-Energy-Water nexus. The effort will target early and mid-career researchers in Africa who have an active research effort on aspects of the FEW nexus and who can demonstrate that engagement in capacity building aligned with the upcoming Belmont CRA on the FEW nexus would strengthen their research and science-communications impact. The exact contours of this capacity building effort will be developed through active collaboration with African partners and will likely include a small opportunities grant for individuals to get hands-on methods training on key aspects of FEW nexus research, training on transdisciplinary research and communications approaches, advanced institutes on critical issues related to the FEW nexus, and opportunities for network building across the region. The effort will be co-branded with Future Earth and will emphasize collaboration with Future Earth regional centers in Africa.

4.d. *Future Earth Open Network*: The Open Network aims to enable practical co-design and co-creation, and be a space where experience is shared on successful examples of co-design and co-creation from other projects. Clearly, the Open Network has potential to become a space for researcher-stakeholder interaction and for transdisciplinary meetings on topics. As the Open Network goes live, the Future Earth Secretariat will play a light-touch facilitation role in helping various communities to identify opportunities to reinforce capacity building potential through the Open Network.

4.e. *Engaging the private sector*: Future Earth places high priority on engaging the private sector in capacity strengthening and in partnering with them to enable more robust capacity building across different segments of society. At one level, Future Earth will be reaching out to the private sector in order to integrate private sector concerns on sustainability into KAN research. This engagement process presents opportunities to advance capacity building through increased understanding and awareness of global change science.

At another level, Future Earth should harness opportunities created by the dynamic technology sector in the service of sustainability. In the near term (2016-18 period) there is excellent potential to begin substantive outreach to the tech sector. For example the Colorado Hub is located within the newly created Sustainability Innovation Lab at Colorado (SILC) located at the University of Colorado, Boulder. SILC was developed to create partnerships between private sector and academic/research communities to stimulate innovation and technology transfer in the service of sustainability. SILC is in the process of developing partnerships with a number of Colorado-based startup accelerators, including one focused on using technology to advance efforts on the UN Sustainable Development Goals. As Future Earth works to identify the key research needs of the KANs, partnerships with the tech sector provide an opportunity to explore potential market opportunities for entrepreneurs to strategically target areas that utilize technology to advance sustainability goals.