

2011

# Action Research Challenges, Solutions & Opportunities

*A guide to The Global ARC's Sustainability Database*

ON HOW TO CONTRIBUTE:

1. An inspiring challenge (call for action research),
2. A solution (research in action, with lessons learned)
3. An opportunity (ways for people to participate)





**Vision:** A world of innovative bioregions where healthy, just and resilient communities—urban and rural—flourish together sustainably.

**Mission:** Strengthen sustainable local and regional development through civically-engaged action research, multimedia and global networking.

### Introduction

The 21st century's mounting social, economic and ecological problems are pressuring universities worldwide to do more civically-engaged and solutions-oriented research. As a result there is rising demand for *scholarship of engagement* including action research focused on civic concerns. Action Research is a method for creating, sharing, and using new knowledge through equitable partnerships and collaboration. Action research is use-inspired, problem-solving, and solutions-oriented; it brings together diverse people and organizations with common cause to improve quality of life and place—especially where harsh realities of poverty, environmental degradation, unemployment and social injustice loom large.

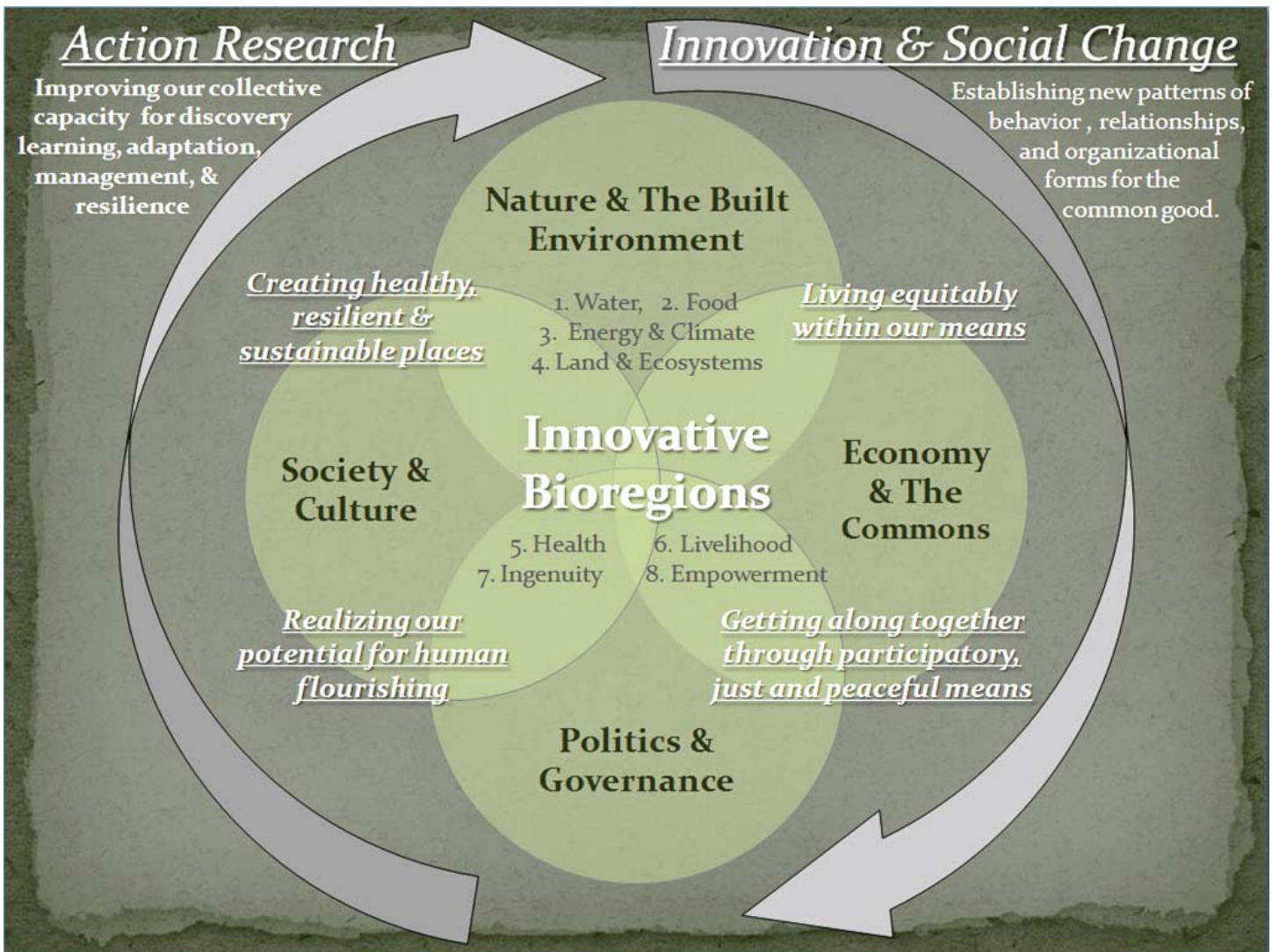
Scholarship of engagement grappling with sustainability challenges requires:

- Inclusive and trusted ways for community organizations to clarify/broadcast hot topics of their own that are ripe for action research, development and evaluation;
- Collaborative infrastructure (internet and institutional) that incentivizes citizens, scientists and others to collectively pool research-based evidence for public benefit;
- Holistic “connect the dots” approaches to urban-rural sustainability that integrate otherwise fragmented efforts in the quest for justice, environmental health and good jobs;
- Leadership skills in community engagement, research translation and science communication.

The Global ARC addresses these needs. The Global ARC is a nonprofit organization dedicated to scaling up sustainability innovation thru community-based action research, social media and global networking. We bring together researchers, scientists, educators, professionals, students and community organizers. Our mission is to holistically interconnect and scale up sustainability solutions (across urban-rural divides) in eight areas of concentration: (1) food and foodsheds, (2) water and watersheds, (3) energy and climate, (4) land and ecosystems, (5) the built environment and health, (6) economy and livelihoods, (7) culture and human development, and (8) communications and empowerment. The organizing framework we use to interweave these elements is place-based, globally-minded and solutions-oriented; it puts a premium on integrative concepts including bioregionalism, permaculture, watershed, foodshed, socio-ecological systems, knowledge commons, environmental health, justice and ecological democracy.

The Global ARC is in the process of engaging 750 of the world’s universities that have programs in urban and regional planning. We energize science-society connectivity thru action research, social media and trusted global networks. The Global ARC’s Sustainability Database provides a participatory platform for less advantaged urban and rural communities to shape the agendas, processes and outcomes of action research. Community-based organizations can use the Sustainability Database—with help from our technical support network—to make known their priority needs for evidence-based knowledge. This provides civic-minded faculty, students and others an innovative way to identify local priorities and community partners. When fruitful connections happen they can amplify the impact and reach of social and technical innovation for the global good. We aim to thicken such connections by using a variety of methods: publications, blogs, video, photos, forums, educational outreach, radio, news media, workshops in the field, and social media including Facebook, Vimeo, YouTube and Twitter.

**Figure 1:** Eight Areas of Concentration in the Global ARC’s Sustainability database.



Each Area of Concentration provides context for The Global ARC’s action research challenges, solutions and opportunities. Of course, these AOCs are not mutually exclusive. Most challenges and solutions will directly involve more than one AOC. Together the AOCs constitute what we believe are the most fundamental elements to consider in a globally-minded, regional-scale approach to sustainability. On the web site each AOC

contains the following sections: (1) an overview of the AOC, (2) a global outlook that places the AOC in a comparative perspective, (3) an action research status report, (4) resources (e.g., bibliographic references, links, applications), and (5) blog space. Below is a list of the fields inside The Global ARC's database entry forms for (1) Action Research Challenges, (2) Solutions, and (3) Opportunities.

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### **1. CONTRIBUTE AN ACTION RESEARCH CHALLENGE (ARC)**

*Broadcast here an inspirational call for civically-engaged research (i.e., what we call Action Research). Action Research is use-inspired, problem-solving, and solutions-oriented; it is an approach to creating and sharing new knowledge through equitable partnerships, collaboration and networking. Action Research brings researchers and communities together with common cause to improve quality of life and place for the common good.*

#### DATABASE FIELDS

- ARC Title (140 characters)
- ARC Area(s) of Concentration (select from drop down menu of ten choices)
- Synopsis (100 words—what precisely is your challenge?)
- Significance (250 words—who cares? why does it matter? at what scale?)
- Methods (40 words per entry—list ways of finding out what we need to know)
- Data (40 words per entry—list sources of existing and/or needed data, information, knowledge)
- Soapbox (150 words; Optional field—use this space however you like to reinforce the significance of your ARC, motivate interest in it, highlight the science, the ethics, the heat of urgency, whatever)
- Links (enter one or more relevant links to websites, images, video, applications, etc)
- Supporting Materials (upload documents of interest)
- Location

### **2. CONTRIBUTE A SOLUTION**

*Document here a real (as opposed to imaginary) community-based Solution that relates to an Action Research Challenge (ARC). You can associate your Solution with your own ARC and/or with an ARC shared by someone else. Solutions can take the form of projects, initiatives, events, networks, organizations, and any other type of concerted action that generates new knowledge with bearing on one or more ARCs. Solutions can be historic or current; something that has or is happening where one can extract lessons useful for social learning, innovation, and further action research. While we call these entries solutions, we recognize that some solutions turn out to be problematic for a range of reasons. Solutions should not be posed as one-size-fits-all. Solutions are always tentative. They enable learn-by-doing; hopefully in a way that helps us identify worthwhile pathways forward for realizing just, healthy, resilient and sustainably development.*

#### DATABASE FIELDS

- Solution Title (140 characters)
- Synopsis (100 words—what precisely is your solution?)
- Description (250 words—background, context, people involved, relationship to ARC)
- Progress and Evaluation (250 words—status, value metrics: performance/outcomes)
- Needs/ Next Steps (250 words—resources needed to improve/ possibly scale up)
- Links (enter one or more relevant links to websites, images, video, applications, etc)
- Supporting Materials (upload documents of interest)
- Location
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### **3. CONTRIBUTE AN OPPORTUNITY**

*Announce here an opportunity associated with a challenge. You could offer a chance for someone in The Global ARC community to come on board your organization as an intern or employee. Or you could provide access to some form of intellectual, economic, financial, or social capital (e.g., unique data set, research archive, set of journals or books, funds, group project, network, community event or any myriad of things). You might even make land available (e.g., a vacant lot for a community garden).*

#### DATABASE FIELDS

- Opportunity Title (140 characters)
- Synopsis (150 words—what precisely is your opportunity?)
- Location (if place-based)

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#### **Related efforts**

The Global ARC is part of a worldwide effort to energize knowledge co-production and networking for sustainability innovation and education through university-community partnerships and collaboration. There is a rising tide of work documenting such efforts: Farrant et al.'s *Approaches to sustainable development : the public university in the regional economy*; Gilderbloom and Mullins' *Promise and betrayal : universities and the battle for sustainable urban neighborhoods*; Jones et al.'s *Creating knowledge, strengthening nations : the changing role of higher education* ; Shapiro's *A larger sense of purpose : higher education and society*; Rhoads and Torres' *The university, state, and market : the political economy of globalization in the Americas*; and Sonnert and Holton's *Ivory bridges : connecting science and society*. This body of work can add significant value to the discourse and praxis of civically-engaged research aimed at promoting sustainability. Upon reviewing such work, the essential role of collaborative infrastructure for action research, sustainability science, and service learning becomes clear. The National Service-Learning Clearinghouse (NSLC) in the USA defines service learning as "a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities."

The National Science Foundation's (NSF) new *Sustainability Research Networks Competition (SRN)* is a clear indicator of the rising demand for integrative and civically-engaged research of the sort The Global ARC is promoting. The 2011 NSF call for SRN proposals states: "Fundamental to all sustainability research is the simultaneous consideration of social, economic, and environmental systems and the long-term viability of those systems. An important research goal is to understand how patterns and processes at the local and regional scales are shaped by and feed into processes and patterns that manifest at the global scale over the long term." Two areas of concentration the NSF highlights as potential foci for SRNs are Water and Food, both of which are Global ARC areas of concentration (see NSF descriptions copied below for illustrative purposes):

WATER: Water Sustainability is a social challenge because the complexity of responses of individuals and communities tends to increase with decreasing resource availability, and adaptive decisions choose winners and losers. The lack of a comprehensive knowledge of patterns and policies for water and energy uses, and their interconnections in the US, limits the ability to apply the adaptive management necessary to maintain energy and water security. Sustainability of the freshwater supply is a problem of hydrology and hydrometeorology, as we wrestle with predicting water fluxes and quality at decadal and regional scales; a problem of biology and conservation, as water availability and quality are determinants of ecosystem health; a problem of economics

because of the inherent link of water supplies to food production, energy and industrial uses; and a problem of engineering as engineers design, install, and operate the freshwater supply and treatment systems of the nation.

FOOD: Food production is vital to the populations of the world; it is the most fundamental element of human well-being and is intricately tied to the social and economic dynamics of the world. Production is intimately tied to energy and water use, technological developments in harvesting and culturing food species, education, human health, preservation of human culture, and the environment's ability to provide such critical ecosystems services. A SRN might be developed around improving our understanding of the economic and culture drivers for change in food provision, the long-term changes within environment systems that impact food sustainability (changes in soil and water quality attributes, the water cycle, erosion, oceanic ecosystems and physical processes, competing spatial use patterns on land, coastlines and the oceans), and examining the tradeoffs necessitated by technological innovation. “

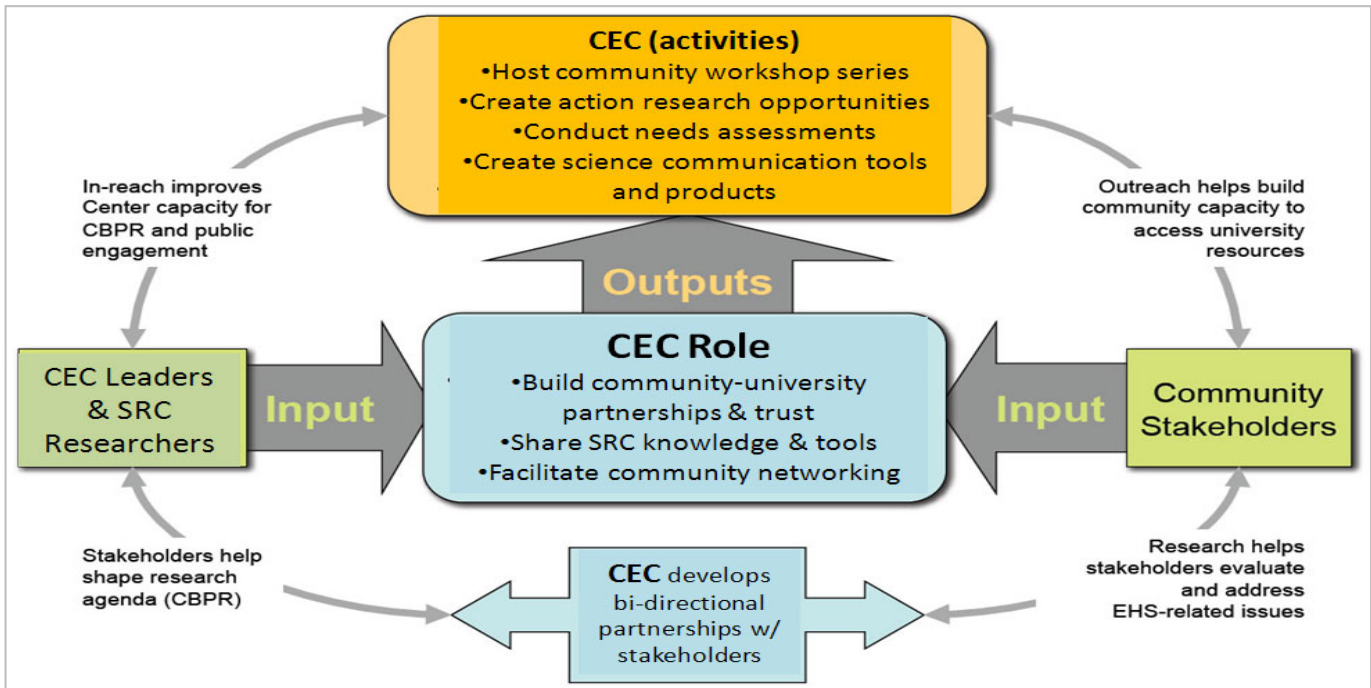
In line with the kind of integrative approaches to food and water noted above, Harvard University leads a Sustainability Science Forum that inspired The Global ARC early on—we are a registered member. The Sustainability Science Forum “...highlights people and programs that are studying nature-society interactions and applying the resulting knowledge to create a sustainability transition around the world.” The World Bank is creating a Urbanization Knowledge Partnership that aims to become “the world’s “go to” hub for creating, sharing, and trading knowledge on urbanization.” There are plenty of local and regionally focused portals with similar aims (e.g., The San Diego Association of Governments is a good clearing house of local and regional information). Changemakers.com is another good site. The Global ARC sees ample room for multiple platforms that get beyond static repositories in favor of open-source knowledge exchange.

#### A Proposal Currently Under Review

For eleven years, the Global ARC’s Founder and Director served as the Principle Investigator of Research Translation and Community Engagement for UC San Diego’s Superfund Research Center (SRC) –a large, multidisciplinary grant focused on environmental health. The SRC funding came to an end on April 1, 2011; but a renewal application is currently under review by the funder—the National Institute of Environmental Health Sciences (NIEHS). The NIEHS supports a holistic approach to research (including research translation and outreach) for the protection of human health. This is accomplished through interdisciplinary programs that integrate biomedical research with engineering, hydrogeologic, and ecologic components within the context of unique scientific themes. The UCSD SRC identifies and characterizes genomic stress responses elicited by waterborne pollutants found at Superfund sites. Our location in a coastal environment and transboundary watershed that spans the U.S.-Mexico border creates unique challenges for protecting environmental public health. The SRC is a good example of how the Global ARC model works. Below we describe the proposed Community Engagement Core as indicative of the Global ARC’s approach to linking science and society through action research.

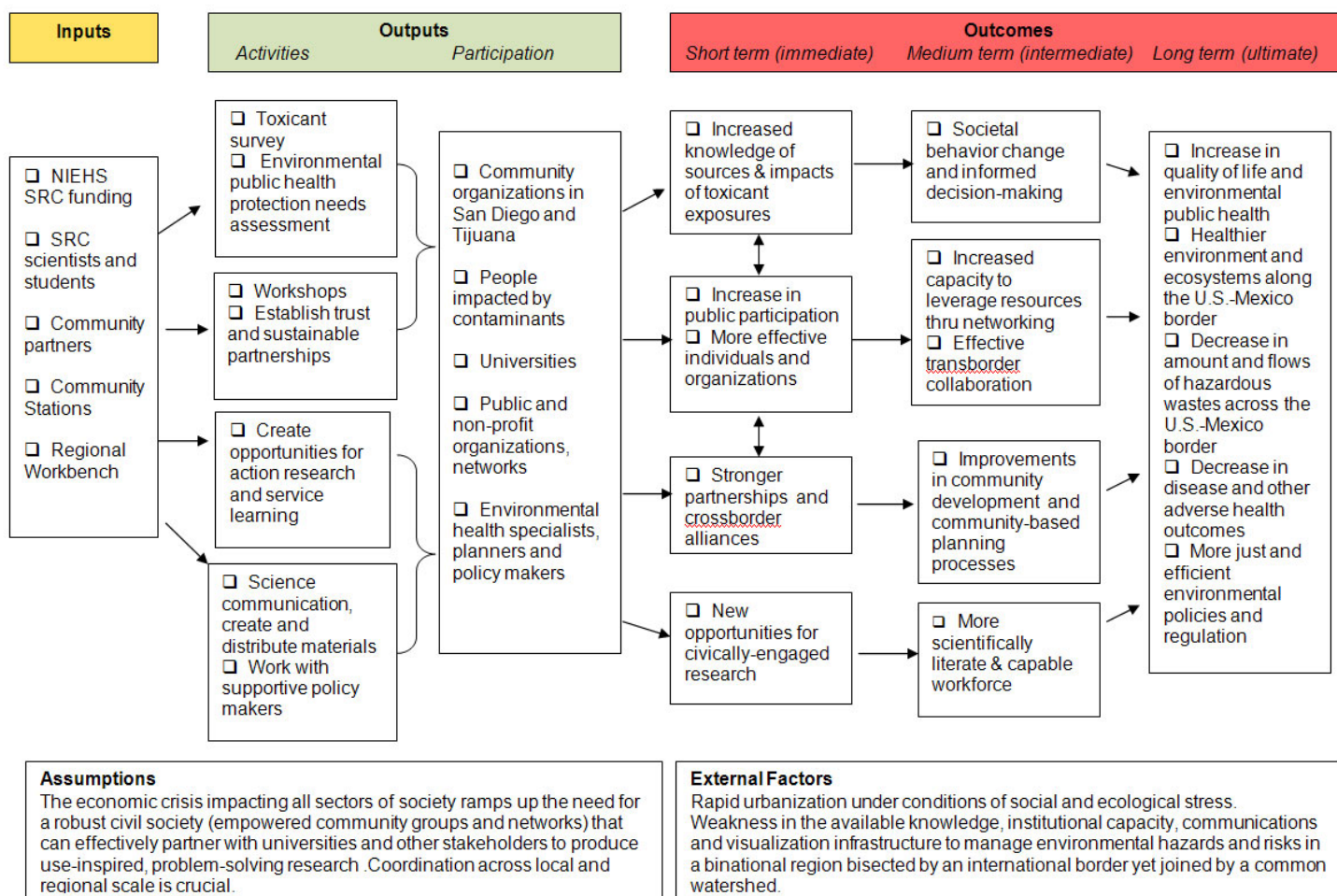
**The Community Engagement Core (CEC)** is a community-university partnership to help reduce exposures to crossborder flows of hazardous wastes and to improve environmental public health in the San Diego-Tijuana city-region. The CEC will utilize community-based participatory processes to engage and learn from community leaders how best to assist in building the capacity of vulnerable communities to identify, prioritize and address Superfund-related environmental health hazards and issues. We will do this with the help of a CEC advisory committee composed of community leaders, scientists, government officials and several grassroots environmental organizations active in the U.S.-Mexico border region. Our proposal has four aims:

(1) In consultation with our community partners, produce and update a toxicant survey and environmental health protection needs assessment for the Tijuana-San Diego border region based on literature, workshops, existing field research (e.g., source tracking of hazardous waste flows), and some testing of soil, sediment and water by our Research Translation Core; (2) Launch a series of community workshops in partnership with Casa Familiar (San Diego) and Alter Terra (Tijuana), our two lead community-based partners, titled “Making Science Matter: Community-University Engagement for a Healthier Society.”



**Figure 2. Logic model of the proposed NIEHS Superfund Research Center’s Community Engagement Core**  
(Template copied from: [http://depts.washington.edu/ceeh/community\\_ceeh.html#](http://depts.washington.edu/ceeh/community_ceeh.html#))

These workshops will bring community leaders, experts and scientists together in a two-way learning experience where the community learns about the relevant translational science from our SRP, and we learn from the communities their regional needs, priorities and concerns to help develop future research directions as well as explore the solutions to environmental health issues dealing with Superfund toxicant exposures. Two areas of concern identified by our community partners include the contamination taking place as a result of uncontrolled hazardous waste disposal, and soil contamination in areas where people are growing their own food; (3) Co-create with our community partners individual and team-based opportunities for undergraduate and graduate students to design and carry out community-based service learning projects, and (4) Building on the success of our Los Laureles Canyon documentary (viewed over 100,000 times and picked up by the NSF for rebroadcast on their Research Frontiers channel) we will co-author a series of bilingual (Spanish-English) reports, guides and science communication videos with our community partners that can serve as community empowerment tools. Our progress will be systematically evaluated using a logic model on an annual basis with input from our external advisory committee. We will share our progress and lessons learned with border communities, SANDAG, U.S.EPA, ATSDR, PEPH, and the NIEHS Community Engagement network.



**Figure 3. Logic model of the NIEHS Superfund Research Center's Community Engagement Core**

Another related model worth noting here is the Community Outreach and Ethics Core (COEC) at the University of Washington's Center for Ecogenetics and Environmental Health (CEEH). With a track record going back sixteen years (1995), the CEEH has developed a good process model for bi-directional capacity building linking communities and researchers. They use a logic model to capture this process and lay groundwork for evaluating outputs. Likewise, the Global ARC embraces bi-directional communication with our community partners and we use logic models to help gain clarity in our approach. Communities that influence the decision-making process and understand concepts and consequences of environmental public health issues are much more likely to become active participants in research projects, education initiatives, and interventions. Indeed, such empowerment of the community ensures the success of such projects. Without collaborative research efforts, elimination of environmental health disparities within and between communities may be more difficult. The risk factors and determinants of disparities need to be documented. The unique attributes of a community, which includes environmental factors, as well as cultural and educational characteristics, are important to consider when interpreting available data and planning interventions that can help eliminate disparities. Communities need the expertise of researchers and academics who know how to address these disparities in a scientifically-sound approach. Similarly, those in the academic and environmental public health fields require the working knowledge and cultural competency of the community to optimally define their research questions and motivate community collaboration, plan

effective and accurate data collection strategies, assist with analyses and interpretation of data, and guide implementation of the culturally competent use of the scientific discoveries.

**Table 1. The Global ARC’s Key Principles and Approaches.**

Principles	Approach
Place-based; take into account complexity, multiscalar flows & networks	<ul style="list-style-type: none"> <li>• Facilitate multidisciplinary, place-based, action research taking into account how local, regional and global forces interact .</li> <li>• Highlight urban-rural interdependencies by making hidden resource and energy flows/transfers more apparent.</li> </ul>
Integrative and multidisciplinary; weave together knowledge commons, create synthesis	<ul style="list-style-type: none"> <li>• Cross fertilize planning with sustainability science and other relevant fields through better communication and collaborative means.</li> <li>• Create incentives for integrating increasingly diverse types of data, information and knowledge (e.g., physical, biological, socio-technical, expert and non-expert).</li> </ul>
Normative; articulate critical standpoints while avoiding fundamentalism; promote justice	<ul style="list-style-type: none"> <li>• Promote the three E’s of sustainable development (equity, environmental stewardship, and economic efficiency) in a whole systems approach aimed at eradicating root causes of poverty, social injustice and environmental degradation.</li> <li>• Raise consciousness of asymmetrical power relationships and uneven development (calling into view social and environmental justice issues, ethics and the sociology of knowledge)</li> </ul>
Historical and Forward-looking; action-oriented	<ul style="list-style-type: none"> <li>• Articulate historically-informed views of alternative futures (i.e., actionable “Vision”) sensitive to issues of class, race, gender &amp; ecology.</li> <li>• Pursue a core set of pressing problems/projects that require regional-scale intervention.</li> <li>• Establish multi-sector constituencies (including university-community partnerships), networks and cultural bridges necessary to advance progressive agendas for the common good.</li> </ul>
Collaborative and communicative; embrace values of inclusiveness, transparency and accountability	<ul style="list-style-type: none"> <li>• Foster relationships and networks driving the shift from “planning for the public” to “planning with the public” (good governance).</li> <li>• Devise creative ways (e.g., multimedia narratives) to improve the co-production of knowledge, research translation and communication for the common good.</li> <li>• Build sustainable cyberinfrastructure that supports the continual improvement and progressive use of regional information systems and planning and decision support systems.</li> </ul>
Comparative and evidence-based with metrics for evaluation	<ul style="list-style-type: none"> <li>• Encourage comparative methods in research and education as a way to foster global-mindedness in regional planning theory and practice</li> <li>• Support efforts (often led by non-profits and regional planning organizations) aimed at creating regional indicators and informatics for measuring progress toward sustainable development.</li> <li>• Devise performance-based measures of sustainability solutions, programs and policies to promote learning and continual improvement.</li> </ul>

# A Sustainability Framework: Six Interconnected Challenges

## **ENVIRONMENT AND ECOSYSTEMS:** *Creating healthy, resilient and sustainable places*

*Natural resources, environmental flows and ecosystem services*

Hydrosphere (Water), Lithosphere (Land), Atmosphere (Air), Biosphere (Life)

- Minimize the use/waste of non-renewable resources (fossil fuels, minerals, biodiversity)
- Create and implement sustainable uses of renewable resources (aquifers, freshwater, wetlands, soils, biomass)
- Keep within absorptive capacity of local, regional, global sinks (air, land & water)

## **SOCIETY AND CULTURE:** *Realizing our potential for human flourishing*

*Social and cultural resources*

Civil Society, People, Families, Community groups, Cultural diversity, Cultural heritage

- Enable the flourishing of civil life in association with others, and joyful living conditions
- Ensure environmental and social justice for all
- Fulfill present generation needs without undermining future generation's ability to meet their own needs

## **ECONOMY AND GREEN JOBS:** *Living equitably within our means*

*Economic resources, Markets, Livelihoods*

Cash, Monetary instruments; Workforce, Systems of innovation, Principles for Responsible Investing (PRI)

- Establish full and productive employment (including livable wages/benefits) based on sustainable means of energy use and transportation
- Make affordable health care, community services and a social safety net available to all
- Instill efficiency in markets and systems of production, distribution, exchange and consumption

## **INSTITUTIONS:** *Improving our collective capacity for discovery, learning, management and adaptation,*

*Formal and informal organizations; Established patterns of value, beliefs, and expectations*

Organizational design, Hybrid organizations (public-private), Transboundary organizations (local-regional-global)

- Create institutional arrangements that enable social learning and continual improvement in collective efforts for the common good.
- Establish new Means of Administration (federated, integrative, holistic)

## **POLITICS AND GOVERNANCE:** *Getting along together thru participatory, just and peaceful means*

Public administration, State-Society relations, Rules governing the commons, Regulatory frameworks

- Establish good governance (i.e., accountable, transparent, participatory, respectful of human rights and cultural diversity)
- Bring about a culture of regulatory innovation that effectively integrates science, society and democracy

## **KNOWLEDGE AND TECHNOLOGY:** *Creating understanding and tools for improving quality of life and place*

*Intellectual and technical capital, Wisdom, Know-how, Universities*

Systems of knowledge/technology production, sharing, and use; Knowledge commons, Appropriate technology

- Create web infrastructure, planning and decision-support tools (on-line interactive maps, visualization, grids, GIS, models, scenarios, informatics) that can empower social learning and institutional transformation
- Enrich knowledge production, integration and sharing through creative combinations of story, art, multimedia, and social networking technologies
- Stimulate mutually reinforcing interconnections among those doing grassroots-based action research for healthy communities
- Invest in appropriate technology (socio-technical systems) that can foster sustainable development.