

# Urban and Regional Carbon Management (URCM) of the Global Carbon Project (GCP)

URCM invites Earth System Science researchers and decision makers in cities, regions, and cities-in-regions to embark on a collaborative effort to guide our collective paths to a de-carbonized future.

**This is one example of the adage, "Think Globally, Act Locally."**

Cities and regions are dynamic, complex systems where the flows of goods and services among them generate shared patterns of direct and embedded carbon emissions, land uses, and land-use changes, all of which contribute to global environmental change (Fig. 1).

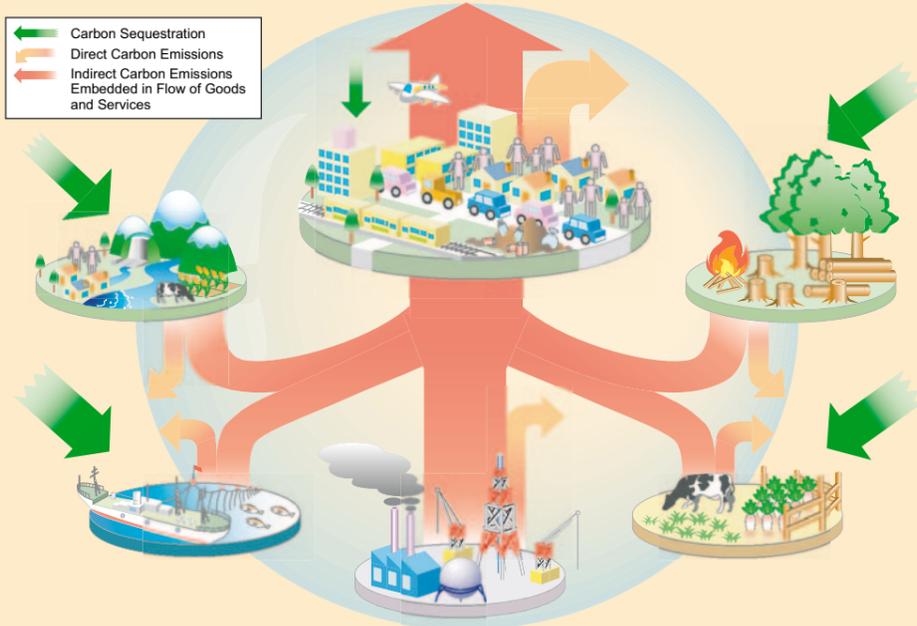
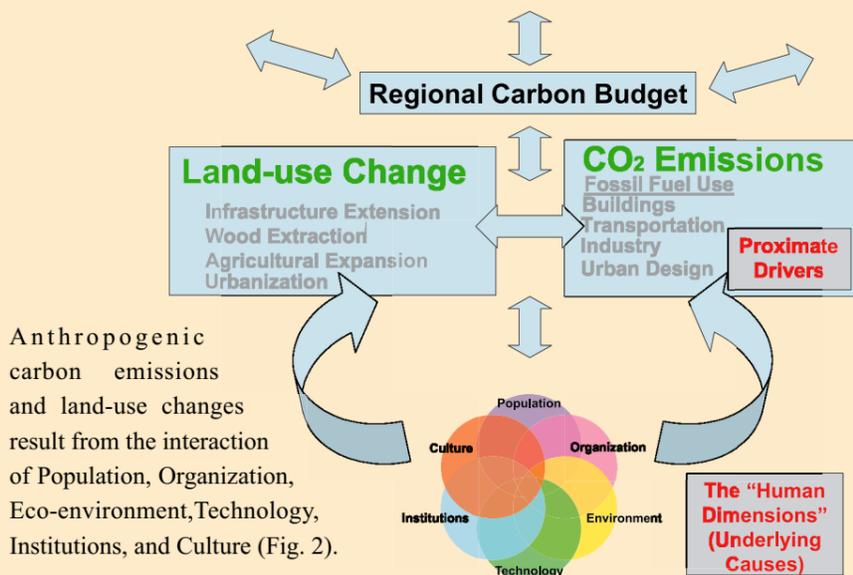


Figure 1. Urban and Regional Carbon Flows, Direct and Embedded



Anthropogenic carbon emissions and land-use changes result from the interaction of Population, Organization, Eco-environment, Technology, Institutions, and Culture (Fig. 2).

Figure 2. Proximate Drivers and Underlying Causes of Regional Carbon Budgets

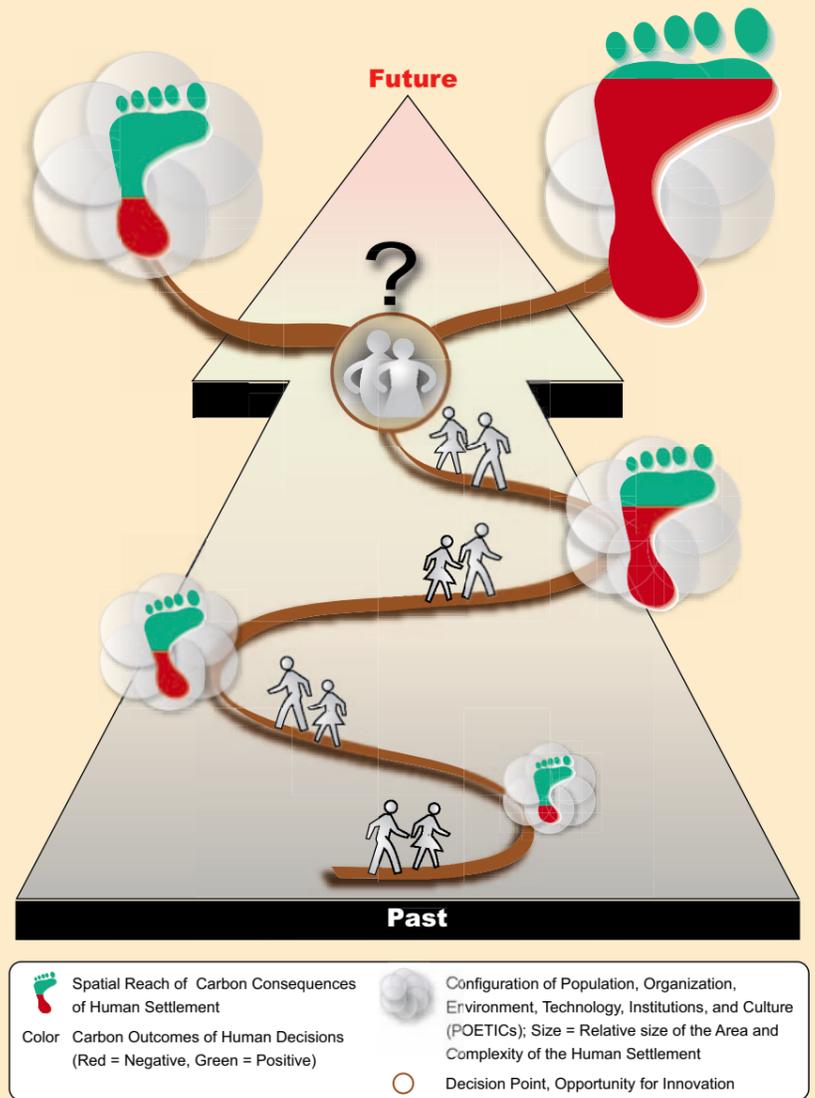


Figure 3. Urban and Regional Carbon Management: Development Path, Spatial Reach and Carbon Balance Decisions

Over time, the carbon outcomes of human decisions at many levels determine whether communities around the world are sustainable. URCM encourages research to support urban and regional communities giving thoughtful consideration to the consequences of development decisions and viable opportunities for achieving local carbon balance (Fig. 3).

## Working Definitions for the URCM Initiative of the Global Carbon Project

<i>Proximate Drivers of the Global Carbon Cycle</i>	Carbon emissions, deforestation and other land-use changes that affect carbon sinks
<i>Carbon Footprint</i>	Direct and embedded carbon emissions and land use/land-use change associated with urban areas and regions and their production and consumption practices
<i>Underlying Human Dimensions of the Global Carbon Cycle</i>	The systemic interplay of human populations, social organization, the natural environment, technology, social institutions, and culture which determine the proximate drivers of the global carbon cycle
<i>Foci</i>	Urban, Peri-urban, Regional, Global
<i>Ecosystem Types</i>	Island, Montane, Arid, Wetlands, Forest, Coastal, Plains, Agriculture, Pastoral
<i>Human Settlement Types</i>	Mega-city, city, town
<i>Development Pathways</i>	Significant patterns of social change and their associated transformation of the relationship between societies and natural resources
<i>Portfolio of Research/Knowledge Approaches</i>	Case studies, cross-sectional statistical approaches Narratives, surveys, interviews, secondary data analysis Qualitative Comparative Analysis Quantitative Indicators of Trends Remote Sensing Social Network Analysis Participatory Action and Management Research Models, Scenarios, GIS, Simulations

## Policy-Relevant Science Themes of the URCM Initiative

1. **Patterns and Variability in Urban & Regional Carbon Footprints**
2. **Proximate and Underlying Causes of Urban & Regional Carbon Footprints**
3. **Development Pathways to Urban and Regional Carbon Footprints**
4. **Opportunities for Innovative Carbon Management**
5. **Decision-Support Systems for Carbon Management**



Earth System Science Partnership



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