LFB Eco-Research Project

The Lower Fraser Basin Eco-Research Project brings together social and natural scientists from the University of British Columbia in an attempt to explore the prospects for sustainability in the region. The project is coordinated by the Westwater Research Centre and the Sustainable Development Research Institute at UBC. Nine other faculties and schools are involved, with a total of more than 60 researchers in this major interdisciplinary research project on the ecosystem of the Lower Fraser River.

Jointly, the researchers address the natural environment, the human environment, and their interactions and dependencies. Some of the research areas include: historical development patterns, ecosystem health indicators, decision-making processes, possible future scenarios, and the feasibility of desirable options.

Eco-Research Program

In March of 1993 the University of British Columbia was awarded an Eco-Research Grant of $2.4 million by the Tri-Council secretariat. The Eco-Research Program was established with funds from the Federal Government's Green Plan to stimulate broad interdisciplinary research on regional ecosystems. The program has three major objectives: 1) to foster interdisciplinary research on regional ecosystems that integrates natural, social and medical science; 2) to foster research that is relevant to sustainable development policy; and 3) to train students in interdisciplinary research techniques.

Research Questions

The general objective of the LFB Eco-Research Project is to seek integrated institutional, scientific and technological solutions to sustaining the ecosystem of the Lower Fraser. Four fundamental and policy related questions provide a framework for this study:

- 1) What kind of ecosystem structure and function do we have at the present; what forces and processes shaped it historically; how is it affected by policy and institutional arrangements?
- 2) What kind of ecosystem structure and function do we want to have in 30+ years?

- 3) What is feasible; what can be accomplished in the context of social, biophysical, and economic constraints?
- 4) How do we get there; what policy instruments and processes will help us towards a more sustainable future?

Four components

The research has been divided into four components: river and river margins, terrestrial, sustainable urban systems, and whole basin. Each of these components will address the four policy related questions from their particular perspective. The whole basin component will integrate and bring out the linkages between the three more detailed components.

Whole Basin component

The primary objective of this component is to pull together information from the three other components and elsewhere, to produce a coherent visions of the Lower Fraser Basin and its future. In addition to the two specific research projects listed below, the Whole Basin component provides a forum for integration and conceptualization about the problem of sustainable development of the Lower Fraser Basin.

- Quest: Quasi Understandable Ecosystem Scenario Tool
- Demography

River and River Margins component

The river, its tributaries, and their margins play many roles in the Lower Fraser Basin. They are productive nursery and feeding habitats for salmon, other fishes, birds and mammals. They provide the major sources of drinking water for the growing population. They serve as a primary transportation corridor and a focus for industry, agriculture and urban development in the basin. And they are a primary receiving site for domestic, agricultural and industrial wastes. Much human activity has gone into both modifying the river for human uses and administrating those activities to preserve ecosystem values.

The study of the river and its margins is organized in several specific research projects:

- Public opinion research: environmental attitudes, behaviour, and policy preferences among B.C. residents.
- Ecological risk perception

- First nations governance and resource use
- Collective action
- Public bureaucracies, science and policy initiatives
- Main Fraser River
- Three case-study watersheds: Sumas, Salmon and Brunette River
- Other tributaries

Terrestrial component

This component will analyze and model a few selected and important exchanges between the economy and the environment. These analyses will not encompass all important problems but each will consider in depth both the socio-economic and the scientific-technical dimensions of the exchanges.

- Carbon gas source and sink scenarios
- Bioindication of atmospheric heavy metals
- Waste decomposition at Vancouver landfill site, Burns Bog
- Dissipation and mobility of four pesticides in a Ryder series silt loam soil
- Urban influences on the terrestrial ecosystem
- Nitrogen budget in the Lower Fraser Basin
- Historical changes in plant biodiversity in the Lower Fraser Basin
- Economic history

Sustainable Urban Systems component

This component builds on several years' experience of working together as a multidisciplinary research team, established as the Task Force on Healthy and Sustainable Communities. Its objective is to foster a better understanding of how social equity, community health, economic viability and ecological sustainability can be nurtured and integrated into policies simultaneously so as to bridge the gap that exists between Canadians' expressed desire for a sustainable future and our current pattern of development.

Projects within the Sustainable Urban Systems component include:

- Ecological footprint refinement and application
- Social carrying capacity refinement
- Ecological footprint and social carrying capacity linkages
- Risk perception and sustainability of B.C. sawmill communities
- Institutional and other barriers to sustainability

- Planning for sustainability with communities

Conclusion

The Lower Fraser Basin is experiencing major environmental and economic conflicts that are common in the industrialized world. Solutions to sustaining ecosystem functions are being researched worldwide. This study is unique, however, in the range of disciplines involved and in its proactive approach to integrating human and natural systems to explore sustainability. The results will provide a model for sustainability that goes well beyond the Lower Fraser Basin.

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