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The Siberian Forest Study and its Relevance to Canada

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1. What is IIASA?

The International Institute for Applied Systems Analysis (IIASA) is a non-governmental, non-profit research organization focused on the study of the sustainable use of natural resources and the human dimensions of global change. Based in Laxenburg, Austria, this interdisciplinary scientific centre provides research and analysis that contributes to develop a scientific basis for economic and political decision-making. IIASA was founded in 1972 on the initiative of the US and the former USSR, and 11 other countries in the East and West, including Canada. Its initial mandate to conduct research on environment-related issues led IIASA to become one of the first centres for international studies on climate change and its potential impacts on ecosystems in various regions of the globe.

IIASA's strength lies in its ability to create networks of scientists, reaching into every region of the world, who are able to participate in joint research efforts.

Over the years, IIASA's work, guided by a council of representatives from the research and academic communities in 17 nations, has evolved to address issues affecting global demographic development, climate change, water resources and economic transition which concern all regions of the world.

2. A Record of Research Leadership on Boreal Forests

The current IIASA research program is organized under the following headings: Global Environmental Change, Global Economic and Technological Transition, and Systems Methods for the Analysis of Global Issues. Within the Global Economic and Technological Transition themes, IIASA has done considerable work on the forest industry.

The circumpolar boreal forests occupy a Northern Hemisphere belt up to 1,900 km wide. It extends from northern Scandinavia to northeastern Siberia, and all across northern Canada. The boreal forests contain three-quarters of the earth's softwood resource. Their economic value is surpassed by their importance to the global environment. In addition to the natural habitat, they provide for a host of species, boreal forests also take up enormous amounts of carbon. Preliminary work carried out at IIASA with different scenarios of global warming has shown that this could lead to a widespread, near-term decline in boreal forests. This has the potential for greatly increasing the concentration of carbon dioxide in the atmosphere, further aggravating climate change due to the greenhouse effect.

The groundwork for IIASA's extensive body of scientific work on the world's boreal forests began in the 1970s, when Canada requested that the Institute conduct research on the spruce budworm infestation that was putting much of the country's forests at risk. The scientific work conducted by the Institute provided the basis for decisions by federal and provincial authorities on measures to deal with the spruce budworm threat. As a result,

savings to the industry and to Canadians have been extensive.

IIASA research teams, with networks of collaborators around the globe, then focused on the European component of boreal forests. While one team of specialists developed the RAINS (Regional Acidification Information and Simulation) computer model, others gathered data on actual forest conditions. The result was a composite picture of the current and (likely) future state of the forests subject to acid rain deposition. The RAINS model proved so effective in developing impact scenarios on acid rain that it was used in negotiations within the European community to reduce sulphur emissions. Work done on the RAINS model has since been used by researchers in North America to study acid rain transport and deposition and has contributed to the development of public policy in setting protocols for environmental regulations.

The future of boreal forests has also been studied at IIASA in the context of work on global climate change. Researchers at IIASA contributed valuable methodology and research findings on how boreal forests could react to projected climate changes due to warming caused by increased concentrations of greenhouse gases.

3. The First Comprehensive Study of the Siberian Forest

Having assembled one of the best databases on European forests, it was a logical next step for IIASA to focus its forest studies on Russia. The Siberian forests account for nearly 20 per cent of the world's forested areas and some 57 per cent of the total coniferous forest volume. This important expanse of forests constitutes a valuable resource for the international forest products industry. It also has tremendous ecological value. Studies indicate that the Siberian forests are nearly equal to tropical forests of the Amazon basin in terms of their impact on the greenhouse effect.

The knowledge gained through a study of the Siberian forests will provide valuable insights on the role of Siberian forests within the overall global ecosystem and opportunities for future industrial linkages. The study will also provide much practical information related to sustainable forest management practices.

The Siberian Forest Study is the most extensive international study ever carried out on this vital resource. Its goals are to assess Siberia's forest resources, forest industries and infrastructure, and to examine the forest's economic, social and biospheric functions. The study also aims at identifying possible pathways for sustainable development and to translate these pathways into policy options for Russian and international agencies.

Phase I of the Study included:

1. The establishment of a unique Russian network of 25 research institutes, which facilitated the gathering of data on the widest possible front.
2. The development of a unique, consistent and comprehensive database on forest resources, ecology and global change, markets, industry and infrastructure, and socio-economics.
3. The development of a geographical information system (GIS), based on the information contained in the meta-database.

Phase II of the Siberian Forest Study includes:

1. A forest industry and market study that will generate data to support policy decisions for the forest industry, trade, infrastructure and socio-economic aspects of forests.
2. Creation of a consistent forest sector database for Siberia. This includes forest inventory and industry data, as well as data related to the forest's environmental status.
3. A greenhouse gas balance for Siberia that establishes the current and possible fixation rates of greenhouse gases in the Siberian forest ecosystem.
4. An assessment of the maximum sustainable yield of industrial wood that can be obtained from the Siberian forest.
5. An assessment of which management regimes will best promote the sustainability of the Siberian forests.
6. A new database to help develop policies for forest conservation, recreational and other non-industrial uses of the Siberian forest.
7. An environmental study which will support the formulation of policies to deal with environmental stress, land-use and pollution.

Phase III of the Study will employ policy exercises to conduct integrated assessments and policy analyses. Knowledge acquired through the Siberian Forest Study will enable policy-makers to formulate options for the

forest sector that will encourage the sustainable socio-economic development of the Siberian society.

4. Importance of IIASA's Project for the Canadian Forest Industry

The wealth of data, research findings and scientific conclusions derived from the Siberian Forest Study are invaluable in the Canadian context. Canada's boreal forests are second in importance only to those of Russia. The research conducted as part of the Siberian Forest Study will provide Canadian forest experts and policy makers with:

An overview of the boreal forest:

This work will give additional information on what constitutes the world's boreal forests. Combined with work already underway in Canada, this will assist Canadian researchers in further evaluating the potential impacts of climate change on forests.

A comparative forest database:

The empirical information gathered through the study will offer Canadian researchers the opportunity to compare conditions and circumstances in the Canadian and Siberian components of the boreal forest.

Opportunities for the Canadian forest industry:

It is inevitable that Siberian forests will play an important role in the worldwide markets for forest products. Canadian forest industry companies might want to combine their knowledge of international markets and their modern forestry expertise to become valuable partners of the Siberian logging and forest products industries. The involvement of several prominent Canadian researchers in the Siberian Forest Study has already introduced Russian industry leaders to Canada's expertise in this sector, paving the way for the development of future commercial relationships.

The fact that Canada shares with Siberia many aspects of a northern region, and our long history of good trade and political relations with Russia create a basis that favours Canada in the development of partnerships with Russian firms.

Competition for the Canadian forest industry:

The project will lead to a better understanding of the economic significance of the Siberian forest within the context of the global market for lumber and other forest products. Canada's leading role as an exporter of newsprint, wood pulp and softwood lumber makes it essential to understand the impact that timber harvests in Siberia will have on the worldwide forest products industry.

Forest management scenarios:

The evaluation of various management scenarios in Siberia will provide valuable information that can be used in Canada to refine our own methods for the sustainable use of our boreal forests. In particular, this work has contributed to the inclusion of Russia in the International Model Forests Network, a \$10million program initiated by Canada and involving Mexico and United States, that aims to facilitate the development of an international consensus on approaches supportive of the sustainable development of forests in all eco-regions of the world.

5. Canadian Researchers Play a Prominent Role in the Siberian Forest Study

Michael Apsey, president of the Council of Forest Industries (COFI), is Chairman of the scientific advisory committee for the Siberian Study. This has enabled him to gain first-hand knowledge about the industrial potential of the Siberian forests which will be of tremendous value in helping position the Canadian forest industry for the future.

Peter Duinker, of Lakehead University, is one of several Canadian researchers who have played a leading role in the IIASA Forest Study. As lead researcher of the Biodiversity and Landscapes component of the research project, he has acquired expertise on methods for studying conservation and biodiversity in vast forest landscapes.

Dr. Duinker believes this study is of great importance to the Canadian forest industry. "Canadian forest and

forest industry stakeholders need to see the Siberian Forest Study as the first-ever, comprehensive examination of an mammoth (1 billion hectares) forest estate. The study is comprehensive in that it incorporates ecological, economic, technical and social dimensions. Canada is building up its reserve of forest analysts who have a detailed knowledge of the Siberian forests. Canadians are bringing home, as a result of this study, new knowledge and methods to study the future sustainable development of the world's largest expanse of boreal forest".

Michael Apps, Natural Resources Canada, Canadian Forest Service, head of the Carbon Balance component of the study, is gaining valuable experience that has applications for Canadian forests.

Charles Backman, lead researcher of the industrial infrastructure component of the study, has gained valuable insight into the prospects for wood-products manufacturing across Russia and has been supported by Industry Canada in disseminating the results of this important research project to the Canadian forest industry.

6. Participation in the IIASA Siberian Forest Study: Opportunities for the Canadian Forest Industry and Other Stakeholders

As a collaborative research organization, IIASA welcomes the participation of international experts, representing various disciplines and research interests. There are various forms of collaboration possible for Canadians in the context of the Siberian Forest Study. These include opportunities to provide financial support for specific research components, the possibility of assigning researchers to specific aspects of the project, as did the Forest Industries Branch at Industry Canada, the sponsorship of projects to adapt knowledge gained through the study of Siberian forests for application in Canada, and the sponsorship of young Canadian researchers within IIASA's Young Scientists Summer Program. Canadian industry has already helped Canadian students participate in this project at IIASA, and this has proven to be valuable to public and private sector interests. In addition, the recent establishment of a new network of Centres of Excellence on Sustainable Forest Management in Canada offers a valuable mechanism for enhanced cooperation between IIASA and Canada. Other possibilities can be discussed with the project leadership.

7. Further Sources of Information:

The following persons can be contacted for further information about the Siberian Forest Study and its various components.

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