China has become Canada’s second-largest export market for forest products after the United States, rising from a little over 3% in 2006 to more than 15% by 2011. In fact, the value of Canadian lumber exports to China in 2011 increased by some 61% over 2010, and pulp exports by almost 23% (CFS 2012). British Columbia’s forest sector is a major beneficiary of increased trade with China. The value of B.C.’s softwood lumber exports to China has increased by 1500% since 2003, and China now accounts for 32% of B.C.’s total volume of exports of softwood lumber (BC Stats 2012). With these figures bound to increase, it is useful to look at the early development of Canadian/Chinese partnerships in forestry.

Canada’s agency for development is the Canadian International Development Agency (CIDA), established in 1968 to initiate programs that “support sustainable development to reduce poverty and contribute to a more secure, equitable and prosperous world” (CIDA 2007). This mandate has remained unchanged, although program priorities and strategies have evolved. CIDA has supported development in China for over three decades. And with support of Canadian and other donors, China has made remarkable development progress in the last 30 years—its transition to a market system, water management, agriculture and forestry. The mission headed by Dr. Vidar Nordin, at the time Dean of the Faculty of Forestry, University of Toronto, reported that there were areas in forestry where Canada could definitely help: education, fire management and forest management (Dr. V.J. Nordin, pers. comm.).

Two major projects came out of this mission:

Both projects were in northeast Heilongjiang Province and began around the same time. The forests of the northeast were extensive and economically important and both projects involved management training in China with Canadian expertise, training in Canada for Chinese researchers and students, and the provision of technical equipment. Heilongjiang in the 1980s had a third of China’s total forest area and produced over 40% of the country’s timber but annual forest loss due to fire was 20 times the Canadian average. Ontario’s Ministry of Natural Resources, the Alberta Forest Service, the Canadian Forest Service and the Chinese Ministry of Forestry developed a framework for technical assistance for the Jiagedaqi Fire Management Area of the Daxinganling Forest Management Bureau. Although the project centred on the transfer of relatively unsophisticated equipment, a key achievement was the development of a model fire management system to be used as a template in other parts of the country. A centralized organization under the direction of a single fire centre manager was created that was capable of predicting fires on the basis of weather and fuel data. By detecting fires when they were small enough to manage, the centre was capable of undertaking coordinated, rapid initial attacks (John Goodman, consultant to JIAPRO, pers. comm.).

Other major accomplishments (Thomas 1990)
- 34 Chinese fire managers spent months training in Canada (a number of them even worked for several months on wildfires in northern Ontario); several managers studied for undergraduate and graduate degrees;
- 146 new fire towers were built and fully equipped in the project area;
- An operational VHF radio network was developed to link all towers to the fire centre and command structure.

When the Integrated Intensive Forest Management (IIIFM) (1985–1990) project started with the Lanxiang Forestry Bureau (LxFB), the Northeast Region was China’s most important supplier of wood products. There was a...
long history of exploitation; management and harvesting practices were unsustainable. Important natural ecosystems were at risk in addition to the hazards of economic dislocation as local wood-based industries collapsed. The project began on-site activities in May, 1985 with two main objectives: to introduce modern technology into all aspects of forest management in the Bureau as the basis for increasing sustained economic output, and to develop a model that could be duplicated in other forestry bureaux. Several Canadian universities and government agencies participated and identified key areas for support: resource inventory monitoring, tree improvement, management information systems, nursery management, forest soils, forest pathology and pest management, harvesting, transportation and wood processing. This was an exhaustive list of subject areas with Canadian support in each one and involving many people and institutions. Numerous tours were carried out in Canada and several technical training programs were provided by Canadian universities. In China there were on-site training programs and workshops. A number of Canadian researchers were based at the NE Forestry University in Harbin.

The IIFM project achieved an impressive array of human and technical achievements (George Nagle, consultant to IIFM, pers. comm.):

- Improved forest inventory procedures for 265,000 ha;
- Developed new forest management plans;
- Established a computer centre capable of new integrated resource and manufacturing problem analysis, improved management of existing data;
- Established a Forest Experiment Centre fully equipped for soil analysis, plant physiology and forest pathology;
- Established a pilot container seedling greenhouse and transfer of modern silvicultural techniques in seed orchard management, tree improvement and stand tending;
- Introduced improvements to milling equipment and processing at sawmills and panel mills; and,
- Provided new high-lead logging systems and road construction and maintenance for operations in steeper areas of the LxFB.

There were other partnership activities in addition to these two large programs. Space permits only a brief mention. In 1987 a Canadian mission visited China to support forestry education. It was led by Ralph Roberts, CIDA’s senior forestry officer at the time, and Dr. Peter Murphy, Dean of the Faculty of Forestry, University of Alberta. Although there was no follow-up agreement on forestry education, at least two Canadian universities later developed individual projects with Chinese counterparts. The mission did result in a major reforestation project in Gansu Province (Dr. Peter Murphy, pers. comm.).

As a result of this and other large-scale reforestation projects taking place throughout the country in the 1980s and 1990s, China’s forests changed from a carbon source to a carbon sink (Chen et al. 2005). In the early 2000s, CIDA created the “Canada Climate Change Development Fund” and as part of this global program, $2.3 million dollars were provided to a partnership of Canadian and Chinese institutions to enhance China’s capacity for carbon sequestration. The purpose was to build China’s capacity to address natural and human-induced climate change and to enhance China’s capacity for carbon sequestration in natural sinks (Dr. Jing Chen, project director, University of Toronto, pers. comm.).

This was a highly successful partnership and culminated in a policy conference in Beijing in May 2006, entitled “Enhancing China’s Carbon Sequestration” that presented the project’s major outcomes: a user-friendly Landuse Decision Support Tools package to assist in policy formulation for carbon sequestration, environment, and land use; and a computerized map of all China’s carbon sinks and sources. This research is documented in the 2007 issue of the Journal of Environmental Management, Volume 85.

Canada’s lead agency for international development is CIDA. However, there was another organization also building partnerships with China at this time. IDRC (International Development Research Centre) was created by Prime Minister Lester Pearson and the Canadian government in 1970 to support research on development. In the 1970s and early 1980s it was a unique agency to help developing countries find solutions to social, economic and environmental problems through research. Since 1981 over $65 million has been invested to support Chinese and Canadian partners in a wide range of scientific disciplines, including forestry (IDRC 2012).

Cooperation between China and IDRC in forestry was with the Chinese Academy of Forestry (CAF). A review in 1988 noted the positive impact of IDRC support on the academy’s programs of manpower development, forestry and agroforestry research (Ker et al. 1988). Quotes from the report: “IDRC funds were wisely and effectively used to enhance CAF’s research capacity and capability”, “Research results were promptly and widely adopted”.

Forestry Education Mission, 1987. Delegation at the North East Forestry University, Harbin. Canadian delegation members (left to right): W. MacDonald, CIDA; Dr. Peter Murphy, University of Alberta; Ralph Roberts, CIDA delegation head; Rosalind Coleman, CIDA; Pierre Bellefleur, Laval University.
Although the direct recipient of IDRC support was CAF, through formal and informal networks researchers at universities and provincial and county research centers also received IDRC support either in the form of funds or materials.

In fact, the whole process of proposal preparation, project management, accounting and evaluation required by IDRC helped to introduce Chinese researchers to international best practices in research management. International contacts made possible through IDRC-funded projects had far-reaching impacts on CAF researchers (IDRC 2012). Three IDRC-supported forestry programs that had significant importance (Dr. Cherla Sastry, IDRC senior program officer for Asia, pers. comm.):

**Paulownia in Social Forestry (1982–1994).** One way to reduce pressure on local forests and increase wood resources is to simply plant more trees. However, large-scale afforestation programs can be expensive. An alternative strategy is to encourage the participation of rural communities in tree planting. A “social forestry” approach can take the form of individual or village woodlots or the integration of trees in existing farming systems.

The Paulownia genus of nine species is very adaptable, widely distributed and extremely fast-growing and has been used by the people of China for many centuries—wood for carvings, furniture, plywood and musical instruments; leaves for medicines, fertilizer and fodder; flowers for honey. Several species can be intercropped with wheat on the plains and with rice and tea in hill areas.

This was a remarkable series of projects promoted and coordinated over 12 years by senior IDRC program officer, Dr. Cherla Sastry. Researchers identified and selected species, varieties and provenances for different soils, terrains and micro-climates; there were many excellent results shared throughout the country and beyond. Research in nursery management and propagation techniques such as tissue culture, direct seeding and root cuttings enabled the rapid propagation of improved clones. Over 60,000 ha of nurseries and plantations were established over the life of the project. Selection and breeding for specific ecological zones and to develop superior trees resulted in timber gains of 25% to 75%. Most of the research on wood properties was carried out in the early years of the project. The results were published in *Paulownia in China* (Rao 1986). An important area of research was on the use of the genus for farm forestry or agroforestry.

**Farm Forestry Program (FFP).** This was another program of several projects. When it began in 1990 it represented the single largest IDRC contribution to China at $1.1 million dollars (Dr. Cherla Sastry, pers. comm.). It was also the most comprehensive farm forestry research ever carried out in China and was inspired by research on *Paulownia* under the leadership of Prof. Zhu Zhaohua of the Chinese Academy of Forestry (Dan 1995).

The objective was to provide farmers with an effective land management system to bring about higher yields and incomes in a balanced ecological environment. The tremendous amount of work carried out under this program contributed to the recognition by research institutions and government agencies in China that agroforestry was a legitimate form of forestry with a role in national programs.

FFP mobilized a wide range of senior and junior researchers to investigate farm forestry systems. In total, more than 250 scientists and technicians from over 30 research stations and eight of CAF’s research institutes worked on the FFP (Zhaohua et al. 1991). Initial research focused on many single technologies or single commodity subprojects but quickly moved to a more integrated, systems-oriented approach. Projects supported by FFP addressed all aspects of farm forestry—tree improvement, land management systems, forest product processing, and the social and economic impacts of agroforestry systems. For example, under the topic of processing of forest products, a number of subprojects looked at wood utilization, *Paulownia* foliage utilization, mushroom processing, bamboo shoot preservation, and rattan grading and utilization.

This program of farm forestry projects had a major impact on farm and household productivity in the subtropical and tropical regions of China and for similar ecosystems throughout the Asia-Pacific region.

**Bamboo and Rattan Research.** Both these plant groups were long considered minor forest species of little commercial value, but they are of enormous importance in rural and national economies of many Asian countries. IDRC was the pioneer in promoting research on these plants, and it all began with meetings of senior scientists from around the world at IDRC’s offices in Singapore in 1979 and again in 1980. As a result of these meetings, bamboo and rattan were seen as resources to improve the livelihoods of hundreds of millions of people, and IDRC put bamboo and rattan on its research agenda (Webb 1990).

Bamboo has a “thousand-and-one uses” and is often referred to as “the poor man’s timber” and “the miracle grass.” It is used for house construction, scaffolding, water pipes and ladders, furniture, musical instruments, handicrafts and cooking vessels, pulp and paper, fodder, fuelwood and food.
Rattan is one of the most important natural resources in almost all Asian tropical and subtropical rainforests because of its economic value. In southern China, the importance of rattan as a forest product is second only to timber and bamboo. There are over 600 species of these climbing palms that support a cottage industry and labour-intensive manufacturing sector. In parts of Thailand, Indonesia and the Philippines, entire villages are financially dependent on rattans and thousands of workers are involved.

Before the Paulownia and Farm Forestry projects, IDRC’s support for forestry in China started with a bamboo project in 1981. Rattan research began in 1985. These were followed by projects on bamboo breeding and bamboo technology (Rao et al. 1987). During this period, the Centre supported 19 research projects on bamboo and rattan in nine Asian countries. This was a significant achievement, with much credit going once again to Dr. Cherla Sastry. It resulted in an informal network of projects where information was exchanged and shared and was known as “The IDRC Bamboo and Rattan Research Network”.

To assist this network, IDRC sponsored the Rattan Information Centre in 1984 at Malaysia’s Forest Research Institute and at the end of 1987, a Bamboo Information Centre in China. The role of both was to promote information-sharing on all aspects of bamboo and rattan research, management and utilization, and to organize seminars and conferences for the regional network.

As the number of bamboo and rattan projects increased (there were even projects in Kenya and Zambia in East Africa), a meeting of researchers and donors in New Delhi in 1993 formalized the network as the International Network for Bamboo and Rattan or INBAR as part of IDRC. However, by 1994 rattan and bamboo specialists realized INBAR’s efforts to build partnerships were hampered because it remained a time-limited IDRC project. In 1995, China offered to host INBAR’s headquarters and, as they say, the rest is history. By late November 1997, a special signing ceremony established the first international research centre in Beijing, initially with four funding partners—China, the Netherlands, the United Nations’ International Fund for Agricultural Development (IFAD) and IDRC. IDRC continues to support INBAR through its global bamboo housing initiatives in Kenya, Ethiopia and Uganda.

As of the end of January 2012, INBAR was a world-wide network of 38 member countries. This significant achievement is a result of many dedicated and hardworking researchers in several countries, and to the early work of IDRC’s Dr. Cherla Sastry and to his Chinese colleagues.

These are some of the productive forestry partnerships between Canada and China over the last thirty years. The results of many contacts are personal and enduring and new partnerships continue to develop, such as the recent one between the Canadian Institute of Forestry/Institut forestier du Canada and the Chinese Institute of Green Carbon. Key to all this cooperation is to regard each other as genuine partners based very much on friendships started more than thirty years ago.

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I was invited to join a CIF/IFC delegation to the 4th Beijing Forest Forum in late September, 2012 because I was Editor-in-Chief of The Forestry Chronicle. I had never been to China but I was asked to make a presentation. This paper, more or less, is it. As many files were “ unavailable” I relied almost entirely on “old China hands” for information.

Most of these people have been to China numerous times and they have their own stories to tell, especially of the early years. I appreciate their time and insight into “China and forestry”: Dr. Jing Chen, Department of Geography and Planning, University of Toronto; Dr. Peter Murphy, Edmonton; George Nagle, Nawitka Consulting, Sooke, BC; Dr. Vidar Nordin, Ottawa.

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References


