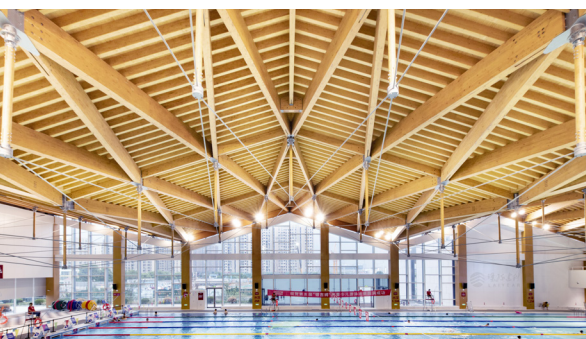




Forestry Innovation
Investment



MARKET DEVELOPMENT SUMMARY



*Yanling Jian Ye Adjacent Courtyard Time Pavilion, photo credit: CHALLENGE DESIGN LTD.
JiangSu Worker's 2nd Aquatic Centre, photo credit: ARTS GROUP*

Why China?

- **Large, growing economy**
- **Increasing reliance on imported lumber and wood products**
- **Strong demand for housing**
- **Broad interest in green building technology**
- **Shift towards prefabrication that uses advanced wood systems**

IMPORTANCE OF FORESTRY AND TRADE DIVERSIFICATION

British Columbia is one of the world's largest producers and exporters of wood products and employs thousands of British Columbians. With a relatively small population, the forest sector relies on export markets to grow and prosper. Maintaining and developing export markets is therefore crucial to protecting B.C. jobs and ensuring the sector remains a leading contributor to the B.C. economy.

SUPPORTING EFFORTS TO BATTLE CLIMATE CHANGE

Exports support Canada's international action on climate change, as B.C. and Canadian forest products are harvested sustainably and building with wood has a lighter carbon footprint than other construction materials.

MEASURING PROGRESS

China is an important market for Canadian wood products. Market development efforts have been underway for 15 years, with most Canadian exports sourced from B.C. The program is supported by funding from industry, and

the Government of British Columbia through Forestry Innovation Investment’s Market Initiatives program.

Largest Asian market for B.C. softwood

Since marketing efforts began in the early 2000s, B.C. exports to China have grown from a very low level to 4.4 million cubic metres of softwood lumber in 2019. China remains the second largest export market after the

United States and the largest Asian market for Canadian wood. More than 21 percent of softwood lumber exports from B.C. go to China.

Strong market presence

Since 2015, market development efforts have been consolidated under the Canada Wood Group through Canada Wood China (CW China). FII China continues to provide government relations leadership in China.

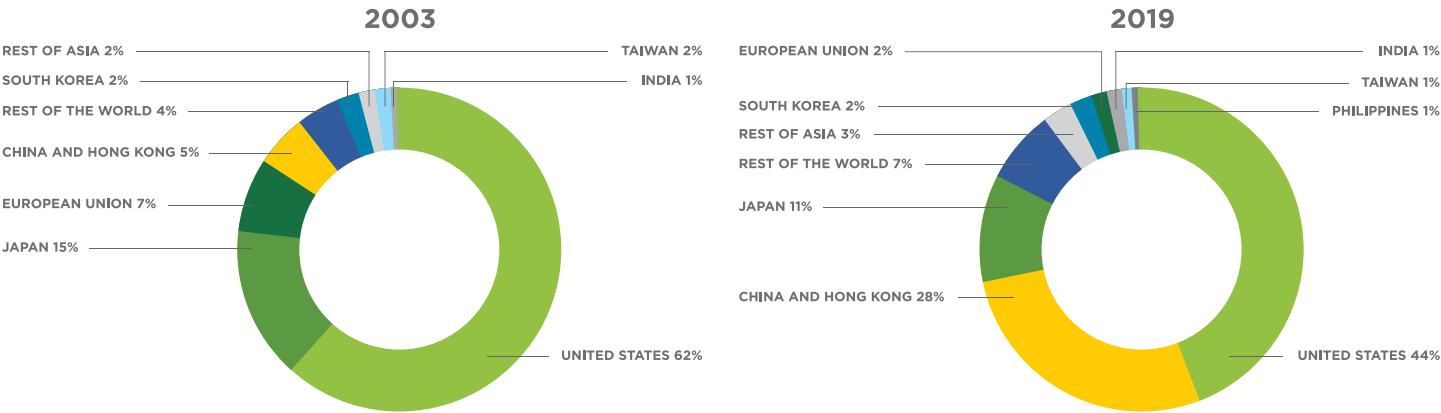
Branding results have been impressive. More than 70 percent of Canada Wood clients in China rank Canada as a leader in wood construction technology, well ahead of other nations, including China.

Increasing importance to B.C. forest sector

In 2019, 27.9 percent of all B.C. forest product exports were shipped to China, compared to only 5.3 percent in 2003, when the market development program was launched.

China is now one of the “big three” export markets for B.C. forest products (alongside the United States and Japan), with the three countries accounting for 83 percent of all exports in 2019.

B.C. FOREST PRODUCT EXPORTS BY MARKET



Source: BC Stats

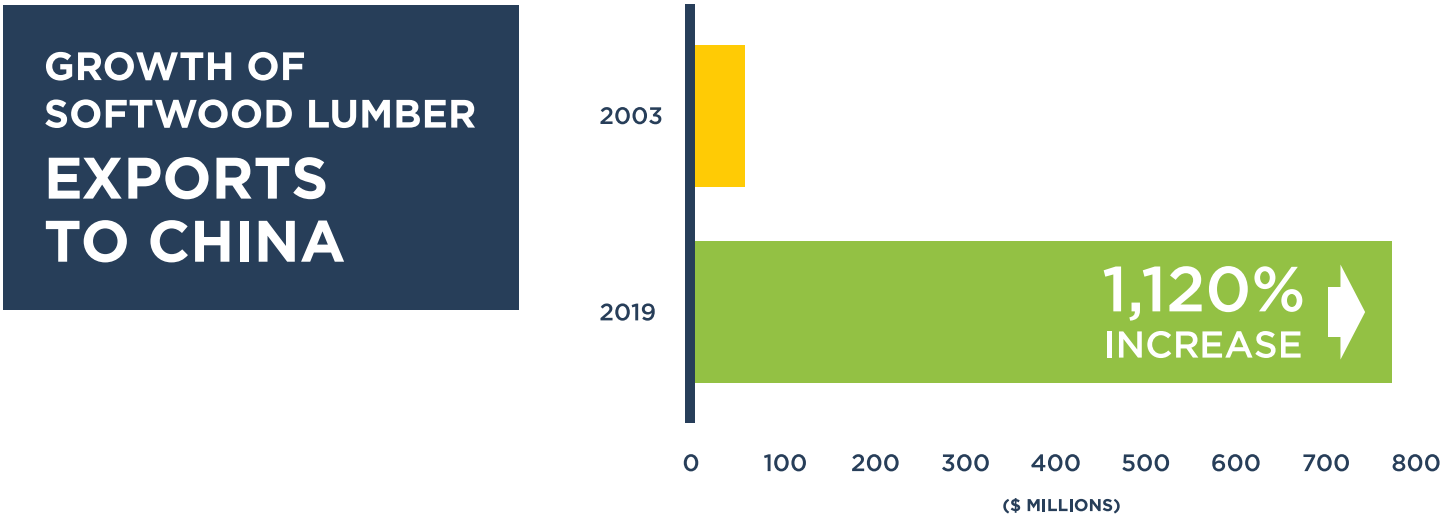
CONTEXT: DIVERSIFYING MARKETS, REDUCING RISK

Historically, the United States has been B.C.'s largest export market. However, repeated imposition of softwood lumber duties and the ups and downs in overall demand in the U.S. motivated industry and government to diversify export markets to Asia. This was a major factor in the decision to start market development efforts in China in the early 2000s.

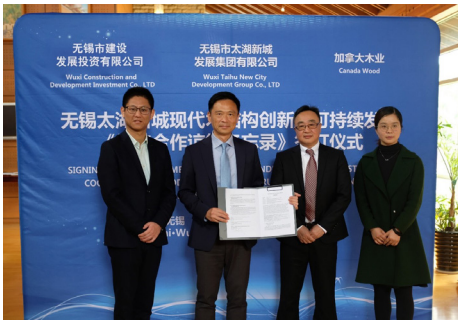
Targeted market development in China and other overseas markets helps expand exports, as a broader range of markets reduces the risks associated with trade disputes or economic downturns in any given country or region.

In 2019, the share of B.C. lumber exports shipped to China and other overseas markets was 40 percent of all exports by value, with 60 percent going to the United States. This compares to 2003, when 69 percent of B.C. lumber exports were going to the U.S. Exports to China have grown from \$69 million in 2003 to more than \$773 million in 2019.

These results show the positive impact that international market development programs have on diversifying market risk for the B.C. forest sector.



Sino-Canadian Workshop on Technology of Prefabricated Building and Modern Wood-Frame Construction, Jiangsu province | Photo: Canada Wood China



MOU Signing for the promotion of Wood usage at Wuxi Taihu New City | Photo: Canada Wood China

CHINA STRATEGY IN THREE PARTS

Market development in China has followed a logical progression starting with an initial market entry program that focused on research, identifying opportunities, building

relationships and creating the conditions for a sustainable export market for B.C. wood products.



Changzhou Sino-Canada Nearly Net Zero Demonstration Project | Photo: Canada Wood China

PHASE 1: LAYING THE FOUNDATION

In the early 2000s, wood construction was not widely used in China, and B.C. and Canada had a low profile as suppliers of wood products. Developing demand for wood construction—and supplying this market with quality Canadian lumber—was seen as a great opportunity, given the rapid growth of the Chinese economy. Responding to these two opportunities was the basis of the market development strategy in the Phase 1 period.

Between 2003 and 2015, the goal was to establish a presence in China, develop a brand for Canadian wood products, transfer Canadian wood technology and expertise, develop wood-friendly building codes, and increase the volume of lumber exports to China. Industry and all levels of government in Canada were supportive of growing trade with China, which ensured support for the ongoing capacity and infrastructure required for program delivery.

When Canada Wood China was first established, local policies and building codes did not recognize wood; in fact, in many cases wood's use was restricted. Therefore, during Phase 1, the China team was tasked with laying the groundwork for a wood construction sector where none existed. Government to government relationships were established by B.C. and Canada at the national, provincial and municipal levels to tackle China's heavily regulated construction sector, which is strongly influenced by state-owned enterprises and government policy.

To create commercial opportunities for Canadian lumber, Canada Wood began to promote the benefits and applications of Canadian forest products through an integrated marketing campaign. They also provided technical support on building codes and product standards, and delivered educational programs targeting practitioners and next generation design and construction professionals to help build China's capacity for wood construction.

Another component of Phase 1 included completing a series of demonstration projects using Canadian wood products and Canadian construction technology. This allowed architects, engineers, developers, government officials and consumers to see and experience Canadian

wood products and their potential applications in China. Some of the projects Canada Wood has been involved with include the Canada-B.C. Wenchuan Earthquake Reconstruction Project, Dream Home Canada in Shanghai, the 2010 Vancouver Pavilion at the Shanghai World EXPO and the Sanlin Affordable Housing Project.

For all demonstration projects, the China team provided design and engineering support as well as construction supervision to ensure quality control. Finished projects were then heavily promoted, creating a better appreciation in China for how wood technology could address the country's growing construction needs.

FII China and Canada Wood also carried out technical and market research, which helped the team understand the opportunities, market segments, business channels, distribution networks and challenges of doing business in China. At the same time, regular government-led trade missions introduced Canadian government officials and forest companies to China and its potential. Over time, companies developed their own in-market strategies and infrastructure.

Throughout Phase 1, Canada successfully established itself as a preferred supplier of softwood lumber and Canada Wood established itself as the leading brand in the industry in China. Today, Canada Wood is the go-to source in China for information and technology on wood construction.



The 2010 Vancouver Pavilion at the Shanghai World EXPO.



PHASE 1: DEMONSTRATION PROJECTS

Demonstration projects are a highly effective way of promoting the benefits of wood construction. Doing so allows the construction to be adapted to local conditions and requirements, thus showing how wood construction can meet Chinese needs. It also demonstrates respect for Chinese culture and helps to build strong relationships with Chinese officials, developers, building professionals and other stakeholders.

Sino-Canadian Eco-District Townhouse project, Tianjin / Photo: Canada Wood China

Building capacity in wood construction

Initial market research in China identified a major barrier in the lack of engineers, architects and trades workers who were trained to build and design with wood. In the early years of the program, Canadians were often used to provide design and engineering services, supervise work sites and provide ongoing quality assurance. While these services continue to be offered on an as-needed basis, domestic capacity in China is key to the long-term growth of wood construction.

In support of a sustainable wood construction sector, the market development program has funded training programs and assisted with curriculum development. The results have been impressive:

- 6,800 construction employees trained
- 8,600 students completed vocational school training in 22 schools
- 2,400 eLearning students
- 18 university partners trained 2,000 students

Codes and standards

In 2003, there were no building or fire codes in China specifically applicable to wood. In fact, many codes had standards that made it very difficult, if not impossible, to use wood-based construction. The market development team realized that updating codes and creating a new regulatory framework were key to creating a sustainable wood construction sector.

A substantial investment was made over several years to work with regulators to update codes and regulations, including technology transfer, research and testing, and demonstration projects. While it takes time to change government regulations, steady progress has been achieved in making China a more wood-friendly market.

Given the increased profile of climate change and the development of policies by Chinese government to combat it, the market development program has become increasingly focused on promoting the environmental benefits of wood construction to Chinese officials. These efforts have included addressing barriers to wood use through supporting the development of codes and standards and other technical guidelines.

125 CODES, STANDARDS & POLICIES
INFLUENCED AND SUPPORTED SINCE
THE INCEPTION OF THE CANADA
WOOD PROGRAM

TIMELINE: BUILDING WOOD FRIENDLY CODES AND STANDARDS



Major regulatory changes

Achievements

- Wood-frame construction (WFC) system fully codified
- Canadian lumber and panels fully accepted for structural use
- Regional WFC codes in place with provisions for local conditions
- Engineered codes for timber structures created
- National fire code updated to recognize timber structures
- National prefabricated building code recognizes wood
- Tall wood building code allows higher timber structures
- Certification scheme for glue-laminated timber (glulam) created

Technical literature

- National Standard Design
- Design Manual for Timber Structures (3rd Edition)
- Technical guides: prefabricated timber buildings; seismic design for WFC and hybrid buildings; wood infill walls in concrete structures; energy efficiency solutions

Collaborative research

- Fire safety research with Tianjin Fire Research Institute
- Seismic shake table tests with Tongji University, Shanghai
- Lumber grading and WFC durability research with China Academy of Forestry
- Energy efficiency and life cycle analysis with Tsinghua, Beijing & Harbin universities
- Thermal performance research and acoustic performance tests of wood-frame construction with China Academy of Building Research

CW China is currently working to influence the following priority code work:

- Revision of fire code
- Development of glulam and cross-laminated timber (CLT) codes
- New national mandatory code on timber frame structures, which is part of an effort to revise the entire building code system

PHASE 2: SHIFTING VALUES

In 2015, the strategy for market development of Canadian wood exports to China was updated. The strategy began a shift away from the initial market entry strategy focused on growing export volumes to China to one focused on achieving more value for Canadian exports.

At that time, more than three quarters of Canadian lumber exports were of lower grades, directed to lower-end products, such as concrete forms and furring strips.

Increasing competition from Russia in the low-value segment, B.C.'s shift away from mountain pine beetle fibre, and a desire to derive greater value out of our forest resource motivated a shift into higher-value market segments.

It was also recognized that many of the competitive advantages of the Canadian wood sector, including chain of custody/certification, reliable quality, expertise in prefabrication, green building/energy efficient building solutions, and mass timber technology and design, could better be leveraged in higher-value applications.

A narrower focus to take advantage of market opportunities and Canadian strengths in the marketplace, while mitigating competitive threats, was needed. The updated approach continued the successful approaches of Phase 1—brand awareness, capacity building and regulatory reform—but narrowed the focus to markets with greatest potential return. It also combined operations under Canada Wood China, with a smaller FII China operation focused on government relations.

At the same time, projects started in Phase 1 were continued, such as those related to government policies on green building and urban planning, prefabrication and energy efficiency, leveraging China's evolving policy frameworks.



Yi Jing Yuan Multi-functional Hall, Xijiao State Guest Hotel, Shanghai | Photo: Canada Wood China

PHASE 3: SHARPER FOCUS

The review conducted in Phase 2 identified three sectors as the key focus for marketing efforts over the next phase of development. The China strategy is now focused in these areas:

- Culture, tourism, wellness and elderly care (CTWE)
- Industrialized construction
- Wood in manufacturing

These programs are supported by an initiative to continue removing barriers that may inhibit sales of Canadian wood products in the market.

Culture, tourism, wellness and elderly care projects

The focus on the resort sector of previous years is now being broadened to other sectors with similar opportunities for wood use, such as in mass timber or hybrid construction. This has expanded the program to include culture, tourism, wellness and elderly care (CTWE).

Canadian wood products have a number of marketing advantages in the CTWE sector, including:

- Wood-based design is natural and more conducive to the outdoor look and feel desired for many CTWE projects.
- Many CTWE projects are constructed in mountainous settings, where WFC, being lighter with prefabrication, requires less complicated foundations and can be less expensive than concrete construction.
- Projects can duplicate well-known Canadian and West Coast architectural styles (adapted to Chinese tastes) that have grown in popularity through Chinese outbound tourism and exposure to western architecture.
- Developers often shift into CTWE projects from wood-based residential projects where they were supported with Canadian expertise and used Canadian wood products, so they are comfortable with Canadian lumber and suppliers.
- Exposed wood provides biophilic benefits, which is the innate sense of wellness humans feel when surrounded by natural materials. Designers are increasingly using renewable materials for biophilic design to create warm and friendly spaces that help guests feel welcome and comfortable.



GuangWuHeGu Resort | Photo: Sichuan Kaiyuan Group



Hongyang Dujiangfu Art Museum | Photo: Suzhou Crown Homes



Hui-xin Valley Villa Resort | Photo: MOPU Arch Design

Industrialized construction

The development of an industrialized construction sector (prefabrication) is a priority of the Chinese government as it is considered a way to reduce the carbon footprint and increase the efficiency of building construction. Prefabrication is being targeted for use in 30 percent of projects by 2025.

Canada Wood China has identified prefabricated wood walls as a significant marketing opportunity. The walls are energy efficient, easy to manufacture in a factory setting and can be used for external (non-load bearing) or internal infill walls. Work is now underway with Chinese firms to expand the use of the next generation of precast concrete—wood hybrid wall systems (PEC 2.0), build capacity, support quality control initiatives and work to remove regulatory barriers related to glue-laminated timber (glulam) certification.

A significant benefit of the promotion of wood wall systems is that it allows cross-promotion of other products that can be manufactured in an industrial setting, such as CLT, nail-laminated timber (NLT), glulam products, or roof trusses. All of these products expand the potential market for Canadian wood.



C-Mars Office Project—installing the prefabricated wood wall | Photo: Canada Wood China



Canadian delegates visit Rugao factory demonstration of Shanghai Electric Matechstone Engineering Group (MTS), Jinagsu province | Photo: Canada Wood China

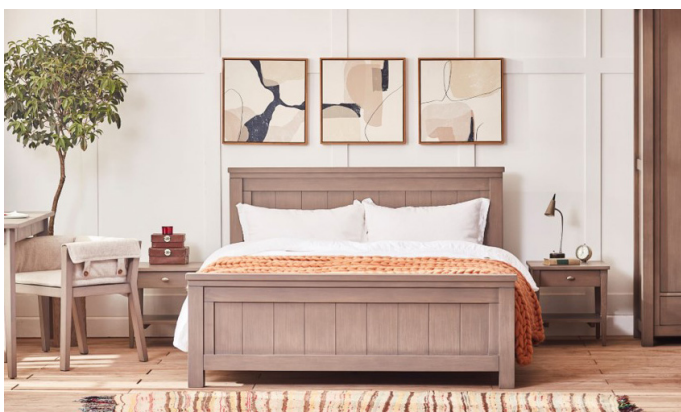
Removing barriers

Regulatory/technical barriers, capacity issues and buyer awareness all limit growth of a market. As a result, efforts in all three areas reach across market sectors and are required to achieve growth goals.

Work on removing barriers involves collaboration with various levels of governments and regulators to understand current attitudes towards wood use and the reasons for any regulatory restrictions, such as building or fire codes. Technical transfer, education, testing, and demonstration projects are all used to overcome these barriers.



NLT Fire Resistance Test, Beijing | Photo: Canada Wood China



Hemlock furniture manufactured by Foshan Yiyuan, Guangdong province | Photo: Canada Wood China

Wood in manufacturing

China has a large, mature, value-added wood manufacturing sector. Softwood consumption in the sector is estimated at 15 million m³ per year. The sector is a logical market for higher grades of Canadian lumber, including spruce-pine-fir (S-P-F) and coastal hemlock. Target applications include furniture, windows, doors, cabinetry/joinery, bed frames, upholstered furniture and other appearance grade needs. The sector is also a market for Canadian hardwood, with imports going into flooring, furniture and other decorative uses.

Going forward, the strategy will focus on:

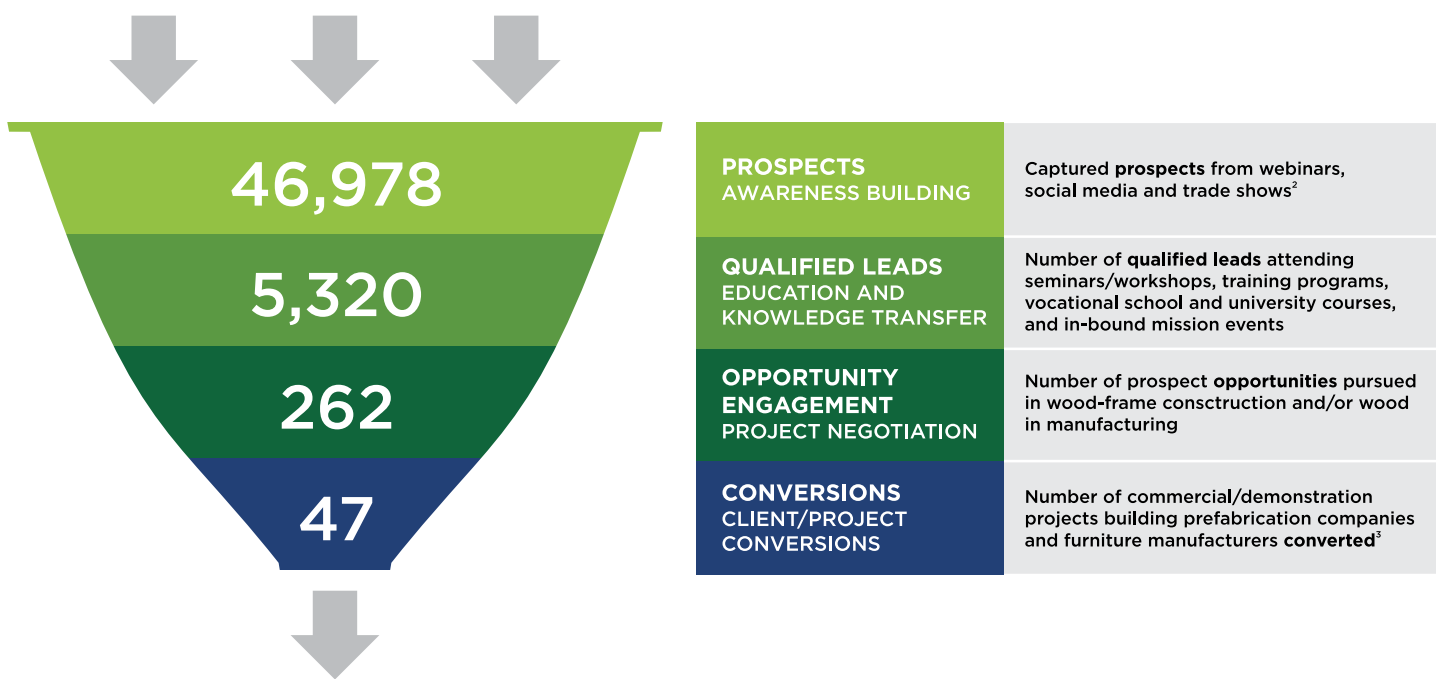
- Developing and promoting the branding of hemlock and Canadian species.
- Identifying champions in the wood in manufacturing industry for a deeper partnership to develop higher quality products and marketing materials
- Promoting softwood as a sustainable substitute for hardwoods, as there is decreasing availability of hardwood materials from Africa and Asian suppliers.

China by the numbers

FII and Canada Wood closely monitor performance measures to track progress and accomplishments against China program activities. On an annual basis,

both outcomes against key program priorities as well as aggregate outcomes from overall program delivery are tracked to ensure the program is achieving what it set out to accomplish.

CANADA WOOD CHINA 2019/20 BUSINESS DEVELOPMENT ACTIVITIES — SUMMARY RESULTS¹



¹ Summary results for Business Development activities only. Results do not include Canada Wood China's market access program (e.g., addressing regulatory barriers to Canadian wood products/systems through codes and standards), government relations program and other related efforts that provide a foundation for the market development program in China.
² The number of "Prospects" are cumulative over the history of the program. Numbers reported for "Qualified Leads", "Opportunity Engagement", and "Conversions" are for 2019/20.
³ Conversions directly or indirectly influenced through technical support provided by Canada Wood. Conversions include non-wood projects converted to wood; and projects using non-Canadian wood converted to Canadian wood.

KEY FUNDERS

In all its market development efforts, FII seeks to work in collaboration with government and industry partners to support long-term market diversification and growth. The program's aim is to extract the greatest value out of every dollar spent, and to ensure that investments remain focused on the highest-potential opportunities for the Canadian forest sector.

