

## STRATEGIC TRAINING DESIGN AND IMPLEMENTATION FOR TIMBER CONSTRUCTION IN URUGUAY.

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**ABSTRACT:** Within the framework of the Inter-American Development Bank (IDB) and the Uruguayan Ministry of Housing and Territorial Planning (MVOT), this study, held in 2022-2024, examines educational strategies employed in high timber building construction across Canada, Chile, Finland, and Japan. It aims to benchmark diverse methodologies for developing human capital in Uruguay's construction sector encompassing training at any tertiary education level. The research supports strategic planning recommendations to enhance Uruguay's timber construction industry, addressing education, training, and skills development transversely academia, public and private sectors. This with the purpose of achieving the objectives defined in the activities framed in the Roadmap for the construction of Wooden Social Housing.

**KEYWORDS:** Strategic planning, education, public policies, developing human capital, synergy

### 1 – INTRODUCTION

According to the United Nations (UN), the world population is expected to increase by 25% over the next 30 years, rising from 7.7 billion people in 2020 to 9.7 billion by 2050. This combined with increasing urbanization and mitigation processes, will result in a higher demand for resources, especially housing, creating a deficit that will need to be addressed in a short period [1]. Timber construction can help overcome the housing deficit while lowering the impact of the construction sector's impact on climate change [2].

Within the framework of Inter-American Development Bank (IDB) and the Uruguayan Ministry of Housing and Territorial Planning (MVOT), this study focuses on the "Roadmap for the Construction of Wooden Social Housing" [3], specifically in the "Generation and Implementation of collaborative multi-level educational programs (professionals, technicians, and on-site

workers) for both public and private sectors". The aim is to strengthen Uruguay's timber construction sector through strategic planning and recommendations based on international benchmarks.

Canada, Chile, Finland, and Japan were selected for their successful strategies in enhancing human capital in timber construction, contributing to sustainable development and competitiveness in national and international markets. This comparative analysis provides insights into the Uruguayan context.

Following the international benchmark, this study proposes eight recommendations for a strategic plan aligned with Uruguayan's vision of strengthening its timber construction sector. It leverages international experience to promote sustainable and synergistic development.

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## 2 – METHODOLOGY

This study aims to generate an international benchmark for human capital strategies to suggest recommendations to improve the timber construction sector in Uruguay.

A previous work developed in the National Center of Excellence of the Wood Industry (CENAMAD) with IDB and MVOT, helped to understand and analyze the Uruguayan timber industry context, proposing the following methodology for the present work, consisting of a i) Definition of four case study countries. ii) Non exhaustive collection of freely available education strategies information from digital media. iii) Interviewing experts from each case study. iv) Analyzing and comparing the collected information to identify opportunities and challenges. v) Developing a workshop with relevant stakeholders from the Uruguayan academic, private and public context. vi) Formulating strategies according to their potential for short, medium, and long-term implementation.

## 3 – DESIGN PROCESS

According to the methodology, the consultant (CENAMAD) proposes to the counterpart (MVOT and IDB) a list of 10 countries with recognized capacities for the generation of human capital in the wood construction sector. From this list, after contrasting the conclusions reached in previous works and the objectives pursued by the consultancy, the following cases are selected: Canada, Chile, Finland and Japan. (Figure 1).

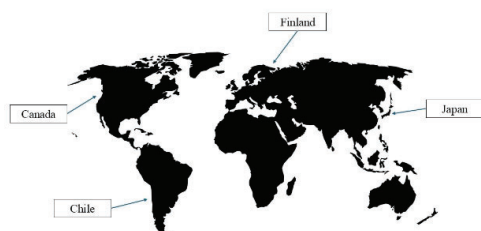


Figure 1: Selected countries for the study

After selecting the four countries to be studied, three background information and analysis aspects were defined. Firstly, an assessment of the current state of timber construction, specifically in tall wood buildings, and the development of human capital capabilities in this area is conducted, considering public policies promoting training models. Secondly, a listing of institutions

offering educational programs related to timber construction is categorized into: i) University: higher education institutions offering academic and research programs across various disciplines. ii) Technical: educational institutions providing training programs in specific technical and professional areas. iii) Public/private sector: non-educational institutions offering programs or courses in specific professional areas. Programs offered by each institution are reviewed and regarded as: a) University programs: master's or doctoral programs. b) Related university programs: university courses including specific modules. c) Diploma programs: programs consisting of multiple courses without granting a master's degree. d) Courses: short courses online or in-person. e) Technical programs: programs leading to a technical degree. Thirdly, the gathered information is complemented by conducting semi-structured interviews with timber construction experts from each country.

The study gathers information about these four countries, identifying approximately 17 universities offering doctoral and master's programs, as well as diploma and short courses aligned with the development of timber construction, particularly in tall wood buildings. Additionally, 9 technical institutions offer 35 diverse programs, and 6 public/private sector institutions provide 86 online or in-person programs.

Each country was found to have different public policies contributing to the development of human capital in timber construction, specifically for tall wood buildings. This was supplemented by 5 interviews with experts in the field from WoodWorks in Canada, CENAMAD in Chile, Aalto University in Finland, Alliance for Humanitarian Architecture (AHA), and the University of Kagoshima, last both in Japan.

### 3.1 CANADA:

Currently, the context of wood building in Canada is experiencing significant growth and has become a prominent trend in the industry [4]. The construction of high-rise timber buildings is on the rise, with projects in various provinces demonstrating the acceptance and willingness to explore new possibilities in this area [5].

The wood construction sector in Canada has evolved through a combination of factors. The historical tradition of the forestry industry in Canada, coupled with the abundance of forest resources, has provided a solid foundation for the development of wood construction. In

addition, a focus on sustainability and environmental awareness has led to a renewed interest in wood construction [6]. Likewise, the Canadian government has shown strong support for wood construction and a progressive building codes [7].

The human capital consists of workers with technical carpentry skills, as well as professionals specialized in design, engineering and project management. The demand for skilled labor in this field is increasing as the industry grows.

**Universities:** There are four institutions of interest. The University of Quebec at Chicoutimi offers a Bachelor's degree in Civil Engineering that includes courses on the design of wood structures and a graduate program for the use of wood in construction. Laval University offers a Bachelor of Science in Forestry Engineering, a Bachelor of Science in Civil Engineering with an emphasis on Wood Structures Design, a Master of Science in Wood Engineering and Bio-sustainable Materials, and several doctoral research groups in wood.

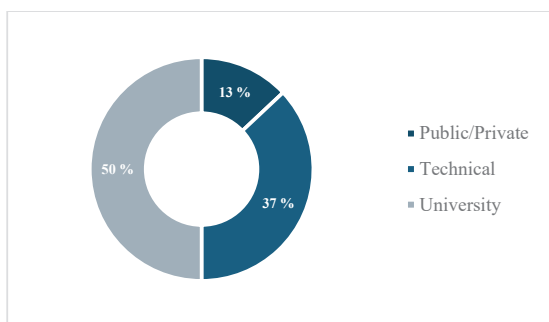


Figure 2: Distribution of collected educational institutions in Canada

The University of British Columbia offers an online Micro certificate in tallwood structures, fire safety for timber buildings and hybrid timber construction and a certificate program in industrial wood finishing.

In addition, there are several research groups at different universities focused on wood. The Timber Engineering and Applied Mechanics (TEAM) group at the University of British Columbia researches timber building performance and innovative construction technology. Also, the Advanced Research in Timber Systems (ARTS) group at the University of Alberta focuses on large-scale wood building products and systems. Similarly, the Green Structures and Materials group at the University of Victoria develops technologies to reduce the environmental impact of buildings and structures. On the

other hand, the Wood Science Technology Centre (CAWP) at the University of New Brunswick is a research center that focuses especially on education and technical assistance for the wood products industry in Canada, offering courses and services to improve manufacturing.

**Technical:** Carpenters Union, British Columbia Institute of Technology and Jason Gibsons School of Timber Framing offer a wide range of programs and certificates in carpentry and timber construction.

**Public and private sector:** the WoodWorks organization stands out. It has played a crucial role in raising awareness, educating and promoting wood construction, offering educational resources, training programs and technical support to construction professionals, carpenters and other workers in the sector. It partners with educational institutions, including universities and technical colleges, to promote specialized academic programs in wood construction.

In addition, the Canadian Wood Council (CWC) promotes a number of state projects and programs aimed at promoting wood construction. For example, Tall Wood Building Demonstration Initiative between 2013 and 2017 [8]. During this period, the government invested to demonstrate the commercial viability of tall building construction using wood as the primary material. Also, the Construction through Wood Program – GCWood [5], launched in 2017, aims to promote greater use of wood in construction projects across the country.

Another initiative is the creation of the WoodWorks Pilot Project, which includes the incorporation of CLT panels to structure children's schools in the state of Washington. This seeks to incorporate wood from an early age [9].

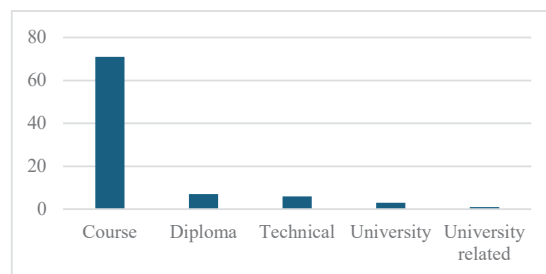


Figure 3 Types of programs offered in Canada

A total of 88 educational programs were developed, ranging from courses (71), related university programs

(1) diploma programs (7) university programs (3) and technical programs (6). (Figure 3).

From the interview conducted with a WoodWorks expert, in the interviewee's opinion, much of the Canadian success has been achieved thanks to the promotion of integrated programs in the curricula of professionals as well as technicians and public-private institutions, favorable government policies, effective collaboration between different actors in the construction industry and the invitation of international experts for advise.

The expert mentions some strategies to incentive and support professionals to design wood projects with a "Five Step Plan": i) Inspire professionals in the field such as architects, engineers and builders, among others, to be able to think about wood projects; ii) Once inspired, provide them with the necessary knowledge to be able to do it correctly, enabling these professionals to carry out their projects in wood; then iii) Provide them with support in the development process, providing them with knowledge in specific construction solutions, contacts with the industry; iv) Promote their projects so that they can be recognized nationally and thus achieve their construction; and v) Give awards to the professionals who have been in charge of developing the project, which serves to inspire and motivate more professionals to be motivated to create and think about wood projects.

To conclude, the following strategies are highlighted: 1) Generation of diverse programs and specializations for professionals; 2) Significant progress can be made in a partial manner (concentration of programs in a few institutions). 3) Need of national support for the growth of human capital formation. 4) The online modality is popular and effective. 5) The combination of theoretical and practical approaches ensures that professionals are well prepared. 6) National commitment to sustainability and innovation. 7) Collaboration between universities, technical schools and industry.

## 4.2 CHILE:

In Chile, wood has acquired a prominent role as a construction material, thanks to extensive forest areas. This condition has also allowed Chile to become one of the ten largest producers of wood in the world [10]. In addition, the wood construction industry has experienced remarkable advances in technology and types of products during the last years, with new industrialization technologies, allowing the creation of more efficient and higher quality structures [11] [12]. Architects and

designers have recently adopted wood in their projects, this trend contributes economically and socially by strengthening the local forestry industry and helps generate employment in rural areas [13]. Furthermore, the Chilean government has supported this direction by promoting sustainable construction practices through incentives and standards that ensure the safety and quality of wood buildings [14].

**Universities:** There are four institutions of interest. Chilean universities include wood-related courses as part of their undergraduate programs, offering them as specialization electives in various disciplines or as a course unit.

The Pontificia Universidad Católica de Chile offers a variety of courses focused on wood within its Faculty of Engineering. These courses delve into aspects such as the structural behavior of wood, advanced design and construction with this material. In addition, the Faculty of Architecture offers wood design workshops as part of its undergraduate program, as well as semester courses that address wood construction systems in detail. The School of Civil Construction offers undergraduate courses related to wood construction systems. The mentioned University also has a diploma specialized in the design, calculation and construction of wood, and a masters of sustainable architecture where wood is chosen as a material for research and exploration.

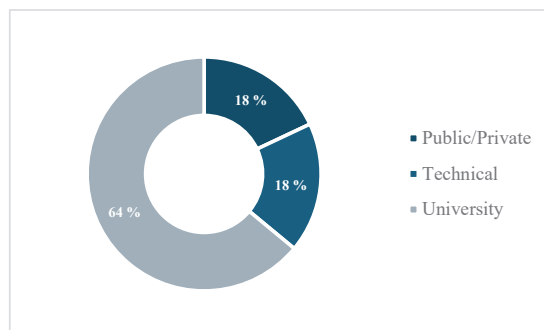


Figure 4: Distribution of collected educational institutions in Chile

Universidad del Bío Bío has a Department of Wood Engineering within its Faculty of Engineering, where research is conducted on sustainable processes and materials derived from the wood industry. It also grants the professional degree of Civil Engineer in Wood Industries and a Master's degree in Wood Construction for professionals in the field. In addition, the Faculty of Architecture offers a minimum course dedicated to wood design in the third year of the degree program.

Universidad de Concepcion offers a Master in Industrialized Wood Construction and a Diploma in Sustainable and Industrialized Wood Construction. Universidad Diego Portales and Universidad de Temuco offer undergraduate courses in their architecture programs that include relevant topics related to wood.

**Technical** There are several technical programs related to the wood industry, offered in various high schools throughout the country. However, these technical programs focus on furniture manufacturing and wood finishing techniques.

**Public and private sector:** The UC Wood Innovation Center (CIM UC) has currently established an agreement with the Chilean Ministry of Housing and Urbanism (MINVU). Through this agreement, several projects related to wood construction are being carried out, and the aim is to transfer this knowledge both to the materialization of projects and to training, by offering specific courses. On the other hand, there is EligeMadera, a virtual platform that offers a variety of specialized courses in wood construction.

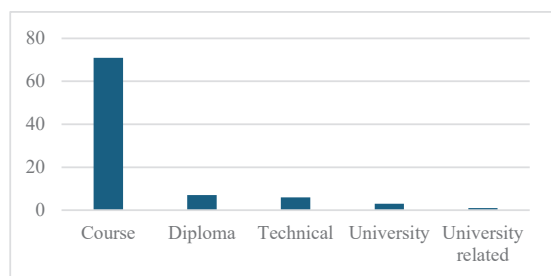


Figure 5: Types of programs offered in Chile

A total of 22 educational programs were found, ranging from courses (12), related university programs (1) diploma programs (3) university programs (2) and technical programs (4). (Figure 5).

In the interview with the expert, he highlights the importance of the presence of highly qualified teachers and experts in the field of wood construction. The interviewee mentions that it is essential to ensure an effective and quality transmission of knowledge to other professionals interested in learning about this discipline. Postgraduate programs can play an important role in the training of these Professors. He also mentions how fundamental it is to be able to carry out national icon projects in order to encourage new generations.

To conclude, although Chile is still in constant development to improve its human capital strategies, it is important to highlight the following practices: 1) Development of incentives and awareness in the construction industry to make it more sustainable. 2) Specialization of postgraduate programs for professionals in the field. 3) Particular online courses on various topics related to wood construction. 4) Qualified teachers and experts. 5) Development of public policies to encourage the use of wood.

### 4.3 JAPAN:

Wood construction has deep roots in its cultural heritage and architecture. Over the years, a valuable tradition of Japanese carpentry has been passed down that teaches the basics of processing trees and working with wood [15]. Japan is where the training of professionals and the traditional technique is intertwined with the culture and tradition of the country.

The Japanese government has also shown its commitment to ensure a more sustainable construction by implementing policies that promote the use of wood in construction projects. This includes tax incentives and support programs for sustainable projects that use wood as the main material [16].

**Universities:** University education in Japan in architecture- and engineering-related fields that teach content on wood construction has a strong foundation in traditional Japanese carpentry techniques, which have been perfected over centuries of practice. Academic programs provide students with a deep understanding of the fundamental skills and principles that have characterized wood construction in Japan, including mastery of traditional assembly techniques.

As mentioned above, in construction-related university degrees, teaching about wood as a structural material is ingrained. Some of the programs related to tall wood building construction are also noted: Hokkaido University has specialized courses in Wood Construction in Artic Region, such as a university related course of laboratory of Timber Engineerings. Okayama University offers a university related program in Design of Timber Structures. Kyushu University has a university related course in the Faculty of Timber Structure Engineering and the Institute of Technologists also offers the Graduate School of Environmental and Life Science.

**Technical:** In Japan, vocational or technical schools, known as “Senmon Gakko” offer specialized training and practical skills. These schools award a “Diploma” degree to students who have completed more than a 2-year training period and an “Advanced Diploma” degree to students who have completed more than a 3-year training period. Individuals who obtain a “Diploma” are eligible to transfer to universities, and individuals with an “Advanced Diploma” are eligible to enter postgraduate schools.

These schools offer carpentry and construction training programs where they provide practical and technical education that prepares students to enter the workforce with the skills necessary to succeed in the carpentry and construction industry.

In Japan, individuals who wish to become certified carpenters can do so through a structured training and certification system. This program aims to ensure a high level of skills and expertise in various vocational fields, including carpentry.

**Public and private sector:** In the public sector, training centers, supported by the government and specialized government institutions, play a crucial role in offering high quality carpentry and wood construction training programs.

On the other hand, there are private sphere, independent carpentry schools, numerous construction companies and private workshops provide carpentry training programs, offering professionals the opportunity to hone their skills in specific techniques.

Thus, in the public/private sector, certifications and courses are offered by the General Incorporated Association Japan Association of Certified Architects and Engineers. This professional organization represents certified architects and engineers in the construction and architecture industry. The association's primary focus is to promote professionalism and expertise among its members by offering a variety of training programs, continuing education, certification preparation, technical training, leadership and management development, and networking and professional growth opportunities.

Regarding new technologies in wood, the work of Team Timberize is born. This is a corporation of academic/professional origin that seeks new ways to use wood as a building material in modern Japanese architecture.

In the interview, the expert highlights Japan's deep spiritual connection with nature and the importance of training human capital in construction, balancing the preservation of its traditions with modern demands. While wood construction education in Japan places a strong emphasis on traditional techniques, it often lacks adequate integration of contemporary methods, such as mass timber systems, whose use has expanded in recent years.

To conclude, the following strategies are highlighted: 1) Enfoque en experiencia practica. 2) Fuerte formacion de profesionales y tecnicos. 3) Incentivos gubernamentales para el apoyo de practicas sostenibles y conservacion de la tradicion japonesa. 4) Gran variedad de especializaciones en torno al area de estudio.

#### 4.4 FINLAND:

Currently, wood is an important material in the Finnish construction sector. To achieve this, various programs have been proposed to encourage its use. Over the years, prototype buildings have been built with the aim of demonstrating the advantages and feasibility of wood, highlighting its ecological and sustainable benefits. State incentives have also been provided through the Wood Building Program. This, under the Ministry of Environment since 2016, has been dedicated to promoting and increasing the use of wood in various areas of construction, from urban development to the construction of public buildings and large-scale structures such as bridges and pavilions. Its focus is on improving skills and knowledge in the wood construction industry through education and support [17]. Out of this program comes the Wood in Public Construction initiative, which promotes the use of wood in public construction projects by providing specific tools for municipal officials to educate them about wood.[18].

The country is known for its free education for every citizen at any level [19], and for its focus on sustainability and innovation in several sectors, including construction, industry and energy. Its commitment to promoting environmentally friendly practices and developing nature-friendly solutions positions it as a referent in the transition to a greener and more sustainable economy in the European region. [20].

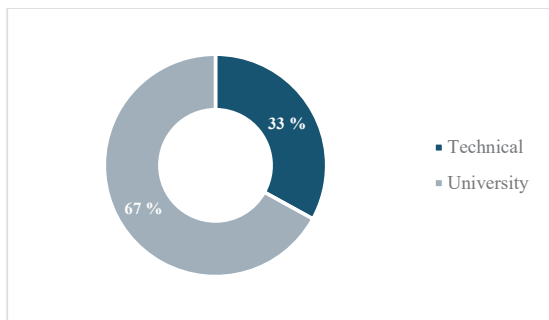


Figure 6: Distribution of collected educational institutions in Finland

**Universities:** At the university level, there are multiple programs that address the study of wood construction and associated knowledge. The education of professionals, such as architects and engineers, considers the study of wood as much like other materials. Likewise, and considering the importance of wood in the country, there are also programs specifically dedicated to different specialization in wood construction. An example is the Wood Program at Aalto University. This presents a one-year curriculum that focuses on wood architecture and industrial construction, providing architects, engineers and other students with design experience, an opportunity to expand their knowledge and skills in the use of the latest technologies in wood as a building material.

In this area, it is also important to highlight the collaboration that has emerged between university programs, municipalities and companies. On occasions, programs such as the Wood Program seek to establish collaborative agreements with the objective of generating training experiences that end in the actual construction of projects according to the infrastructure needs of the municipalities.

At Aalto University, there are also specific courses on wood, specializing in different aspects, offered by the School of Chemical Engineering, and School of Architecture.

At Novia University of Applied Science, specialized masters and courses in wood are offered by the School of instruction and engineering. At Karelia University of Applied Science, Faculty of Engineering offers a Bachelor's degree in Civil Engineering with a focus on wood. University of Eastern Finland also offers specialized masters in wood. Also, there are different doctoral research groups in the mentioned Universities focusing on wood.

**Technical:** There is a wide range of technical education, which plays a crucial role in the development of human capital in the wood construction industry. These institutions provide practical skills and knowledge that train technicians in specific areas and/or complement theoretical university training.

Ammattikoulut is the vocational education system in Finland, which offers an efficient and fast track into practical work. Studies are conducted on a full-time basis and various degrees and vocational qualifications can be obtained through different study options. There are several vocational schools in different parts of Finland offering courses, programs and degrees. Courses are taught by different educational institutions, providing a wide range of study options throughout the country.

**Public and private sector:** Puutuoteteollisuus ry / Federation of Finnish Woodworking Industries is a confederation of Finnish companies in the wood and wood products industry. It was founded in the 1940s and represents various players in the industry. It plays an important role in promoting and defending the timber industry in Finland, working in various areas to ensure its sustainable development and its contribution to the construction sector and the environment.

Different actors that make up the Federation express their intention to design kindergartens built mainly in wood. This approach aims to allow children to grow up immersed in new wood-related technologies, ensuring that they are not disconnected from these advances.

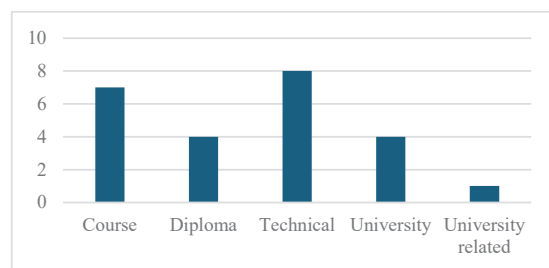


Figure 7: Types of programs offered in Finland

A total of 24 educational programs were found, ranging from courses (7), related university programs (1) diploma programs (4) university programs (4) and technical programs (8). (Figure 7).

The interview highlights the success of motivating future generations through the government's commitment to wood construction education. Government support,

through funding and grants, has been key to developing quality programs and encouraging student interest in the field. Collaboration between government, educational institutions and industry ensures comprehensive training, encouraging young people to acquire skills and contribute to the sustainable growth of the sector. The perception of solid support reinforces their interest and participation in an industry that is essential for the country's development.

To conclude, the following strategies are highlighted: 1) A diverse and high level of specialization in different Universities. 2) Diversity of programs at any level. 3) Collaboration between educational institutions, state and industry. 4) Promotes sustainable practices at a national level. 5) Commitment to generate incentives and promotion of wood from all sectors. 6) Theoretical and practical studies for an integral education of quality.

## 5 – RESULTS

The study cases exhibit diverse realities regarding the strategies to develop human capital capabilities in timber construction. In some, wood construction is deeply ingrained in the cultural tradition, facilitating its integration into modern educational programs. Conversely, in other countries, it needs to be introduced as a foundational element within construction-related curricula or offered as elective courses.

This research identifies that the level of strategies for human capital capabilities is influenced by the socioeconomic status of the country. In developed nations, public policies are structured to support innovation and advanced studies, whereas in emerging countries, such endeavors can be more challenging due to socioeconomic constraints.



Figure 8: Roundtable with Uruguayan academic, private and public sector (MVOT, 2023)

After analyzing the gathered information and presenting it at a roundtable with Uruguayan academic (9%), private

(18%), and public (73%) sector representatives, eight recommendations were suggested to enhance human capital in Uruguay in the short, medium, or long term. (Figure 8).

The strategic plan of recommendations aims to leverage international best practices while being tailored to Uruguay's context, addressing both current capacities and future potential in the timber construction sector.

Recommendations:

- 1) **Strengthen the curricula of related careers:** Promotion of timber construction through scholarships, academic competitions, industry-supported courses, research funding, international exchanges, and outreach activities at secondary and university levels to attract and train future professionals. (Implementation: medium term).
- 2) **Strengthen and (eventually) create complementary specialized professional programs:** Expansion of (any level) scholarships, international double degrees, short courses, certification pathways, online programs, technical materials, and broader specialist profiles to enhance timber construction expertise and public sector capacity. (Implementation: medium to long term).
- 3) **Strengthen and (possibly) create technical training programs:** Promote the development of technical trainers, updated higher education curricula, short specialised courses, practical training, industry-education cooperation and funding for accredited programmes in engineered wood and industrialised construction technologies. (Implementation: short, medium and long term).
- 4) **Expanding the capacities of educators:** Support for training through scholarships, international exchanges, study visits, and knowledge transfer from experienced wood building companies to strengthen local expertise and encourage innovation. (Implementation: short, medium and long term).
- 5) **Development of open access basic course:** A basic training course is proposed as a mandatory requirement for timber projects, covering wood properties, construction systems, design, assembly, certification, maintenance, and deconstruction practices. (Implementation: medium term).
- 6) **Invitation of international specialists "Mentors Plan":** This plan involves inviting experienced professionals for limited periods to guide real timber projects and industry challenges, transforming them into learning opportunities for a broader community

of professionals and technicians. (Implementation: Short term).

- 7) **Digital platform for the dissemination of wood:** Digital platforms are effective tools for disseminating educational content to diverse audiences. Their scope can range from basic informational resources to sophisticated, interactive learning environments, depending on defined objectives. (Implementation: Short term).
- 8) **General public education plan:** Public education campaigns highlighting the benefits of timber construction are key to cultural change, using seminars, workshops, media, and school outreach to promote sustainable wood use, as seen internationally. (Implementation: Short term).

These recommendations and content of the pilot course were validated with focus groups with representatives of the academic, public and private sector.

Currently, part of the suggested recommendations have been developed to improve the human capital strategy in Uruguay. A one-day pilot course (basic course) was held in May 2024 at the congress of mayors in the city of Montevideo, covering key issues for wood construction. It was divided into 4 modules, being distributed in 1) introduction to wood, 2) technical construction, 3) technical regulations, 4) case studies. Relevant actors and experts on the subject were invited to carry out this pilot course. It was a success, and it is hoped that in the future a course of this magnitude will be open to all those who wish to be trained on the subject.

Secondly, this year 2025, the first version of the master's degree in wood buildings of the ORT University in Uruguay was launched in April. This is a great step forward in the improvement of human capital strategies.

## 6 – CONCLUSIONS

It is important to note that these conclusions and recommendations are based on the context of Uruguay, but they can be extrapolated to any emerging country in the wooden construction sector.

Examining the strategies implemented by leading countries can serve as inspiration and provide a model for countries seeking to strengthen their timber construction sectors. Adopting and adapting these strategies can be an effective approach to enhancing human capital capacity.

It is also essential to study the country in question thoroughly before introducing any recommendations. Understanding the local context is a prerequisite, and it is crucial to hold roundtables and focus groups with stakeholders from the academic, private and public sectors to align perspectives and jointly define a roadmap for the next steps.

The collaboration and synergy between academia, private and public sectors assure quality education and promote the use of timber as a construction material. Aligning educational programs with market needs, based on accurate short-and medium-term assessments, is an opportunity to enhance human capital capabilities. Furthermore, short courses focused on practical skills are particularly in demand because of their convenience.

Developing roadmaps for human capital in timber construction helps streamline content delivery, improve efficiency, and expand training offerings. These strategic plans ensure that educational efforts are well-coordinated and effectively address the evolving needs of the timber construction sector.

Developing public policies is fundamental to support these initiatives. Their effective implementation can provide a framework for sustainable growth in the timber construction sector.

## 7 – ACKNOWLEDGEMENT

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