GEF-8 REQUEST FOR CEO ENDORSEMENT/APPROVAL

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General Project Information

Project Title Supporting the shift to a low-emission, circular construction in Chile	
Region Chile	GEF Project ID 11071
Country(ies) Chile	Type of Project FSP
GEF Agency(ies): UNEP	GEF Agency Project ID N/A
Project Executing Entity(s) Ministry of Environment Fundación Chile	Project Executing Type Government CSO
GEF Focal Area (s) Climate Change	Submission Date 8/27/2024
Type of Trust Fund GET	Project Duration (Months) 48
GEF Project Grant: (a) 2,963,699.00	GEF Project Non-Grant: (b) 0.00
Agency Fee(s) Grant: (c) 281,551.00	Agency Fee(s) Non-Grant (d) 0.00
Total GEF Financing: (a+b+c+d) 3,245,250.00	Total Co-financing 31,922,703.00
PPG Amount: (e) 50,000.00	PPG Agency Fee(s): (f) 4,750.00
Total GEF Resources: (a+b+c+d+e+f) 3,300,000.00	
Project Tags CBIT: No NGI: No SGP: No Innovation: Yes	
Project Sector (CCM Only) Technology Transfer/Innovative Low-Carbon Technologies	

Taxonomy

Climate Change Mitigation, Climate Change, Focal Areas, Innovation, Capacity, Knowledge and Research

Rio Markers

Climate Change Mitigation	Climate Change Adaptation	Biodiversity	Land Degradation
Principal Objective 2	Significant Objective 1	Significant Objective 1	Significant Objective 1

Project Summary

Provide a brief summary description of the project, including: (i) what is the problem and issues to be addressed? (ii) what are the project objectives, and if the project is intended to be transformative, how will this be achieved? iii), how will this be achieved (approach to deliver on objectives), and (iv) what are the GEBs and/or adaptation benefits, and other key expected results. The purpose of the summary is to provide a short, coherent summary for readers. (max. 250 words, approximately 1/2 page)

Chile's construction sector is responsible for up to 23% of total annual GHG emissions, primarily resulting from energy consumption (process, electricity, and transportation) in the manufacturing of cement and steel.[1] As in most countries in the region, the construction sector currently follows a linear model of thinking and economics: raw materials are extracted from natural cycles, turned into goods and products for public consumption and eventually disposed of. At the end-of-use phase of building systems and infrastructure, any materials not recycled contribute substantially to the quickly growing waste production, exacerbating environmental impacts associated with current linear material production practices of 'take-make-waste.' In Chile, construction and demolition waste accounts for 34% of total solid waste generated in a year, totaling annually at least 7,455,602 metric tons, equivalent to more than 7 million cubic meters and the equivalent to 15.5 times the volume of Chile's largest stadium.[2],[3] Construction and demolition waste is composed mainly of rubble and other inert materials (approximately 70%), with a high recycling potential for the production of recycled aggregates, an industry that is at a very early stage of development in the country. Meanwhile, the extraction of (raw) natural aggregates is increasingly critical. Throughout the country, more than 1,000 hectares of illegal extraction have been identified in the desert and on riverbanks, affecting their course and increasing the risk of disasters of anthropic origin and increasing vulnerability to natural disasters.[4] Beyond the need for proper disposal, the country has an enormous opportunity in the prevention of the generation of this waste through the implementation of low-emission circular economy practices.[5]

This project will support Chile's construction sector in shifting to low-emission and circular, breaking the 'take-make-waste' logic described above. It will increase the usage of resources that are currently disposed of unused and drastically reduce the sector's energy consumption and GHG emissions. For this purpose, the country needs to address the following barriers:

I. An absence of low-carbon, circular economy principles in Chile's legal and regulatory framework;
II. Limited confidence and awareness of the viability of low-carbon, circular construction;
III. The absence of associative business models and insufficient financing for innovation and scaling-up of low-carbon, circular construction;
IV. Insufficient knowledge management and capacity to support the transition to a low-carbon, circular construction.

This project aims to address the global environmental challenge by promoting the shift to a low-emission circular construction model through an innovative combination of public policies and technologies that dramatically increase the material efficiency in the sector. This objective will be achieved through four components that directly address the four key barriers:

1. Updating sectoral policies and regulations. The expected outcome from this component is that national, regional and local governments adopt policies and legislation to accelerate the adoption of low-carbon and circular principles in the construction and demolition sector.

2. Creation of confidence and awareness of low-emission circular construction. By strengthening Chile's quality infrastructure system, this component will create confidence in circular materials and solutions for the construction sector.
3. Financing for a sustainable transformation to circular production and consumption models. The expected outcome of this third component is that the government, private sector, and financing institutions implement innovative mechanisms to scale-up the implementation of low-carbon and circular economy approaches in the construction and demolition sector.
4. Knowledge management and capacity building. The expected outcome from this component is that the Chilean construction sector has access to systematized sectoral data and demonstrates enhanced capacity for promoting a low-carbon and circular approach in construction and demolition.

Through achievement of the four outcomes above, the project is expected to play a key transformative role and support Chile in achieving its nationally determined contribution (NDC) and long-term climate strategy.[6] The project is expected to achieve greenhouse gas emissions mitigation of 352,004 tonnes of CO_2eq. The interventions included in this proposal will also lead to additional socio and environmental benefits, e.g. the reduction of harmful chemicals used in construction and an indirect contribution to land restoration and biodiversity through the reduction of illegal raw material extraction and construction and demolition waste (CDW) disposal.

[1] These figures include only formal construction. Informal construction has grown in Chile after the pandemic and the current immigration crisis; thus, these numbers are likely to be higher.
[2] Ministry of Environment (MMA) *Informe sobre Economía circular en construcción y residuos de construcción y demolición. Estimación y proyección de RCD* (Santiago, Chile, 2020) p.40.
[3] It is important to stress that this estimate only considers CDW generated by the construction of new houses; those from informal (i.e. undeclared) construction, public buildings, infrastructure, demolitions, or debris caused by natural disasters are not included. Estimates from the MMA calculate that natural disasters may double the amount of CDW generated in a given region and year.
[4] Construye2025, *Hoja de ruta RCD – economía circular en construcción 2035* (Santiago de Chile, 2020) p. 38.
[5] Ministry of Environment (MMA) *Informe sobre Economía circular en construcción y residuos de construcción y demolición. Estimación y proyección de RCD* (Santiago, Chile, 2020) p.6
[6] *Estrategia climática de largo plazo* (ECLP). This is presented and discussed together with the project rationale.

Project Description Overview

Project Objective

Accelerate the implementation of the Chilean Long-Term Climate Strategy in the construction and demolition sector through the promotion of low-carbon and circular economy principles.

Project Components

Component 1. Policies and regulations

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
677,569.00	1,626,535.00

Outcome:

1. National, regional and local governments adopt low-carbon, circular policies and regulations in the construction and demolition sector.

Output:

1.1. A gender-responsive legal framework for low-emission and circular economy principles in construction and demolition, aligned with the Chilean long-term climate strategy, is submitted for adoption by the national government

1.2. Public procurement mechanisms are updated to promote the use of gender-responsive low-carbon and circular economy principles in public construction and demolition

1.3. Regional and municipal governments have strengthened capacity to facilitate investments and planning for a resilient, circular, and regenerative built environment

Component 2: Advancing acceptance of circular construction

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
1,001,129.00	7,002,546.00

Outcome:

2. Private and public stakeholders in Chile gradually implement low-carbon, circular construction

Output:

2.1 Chile’s quality infrastructure system is strengthened to reflect low-carbon and circular economy principles in construction and demolition (TA).

2.2 Private sector adoption of wood-based building products is fostered through a certification scheme for circular timber products (TA).

2.3 CTEC's capacity to test alternative circular solutions for road infrastructure is strengthened (INV).

2.4. A multi-cultural, gender-sensitive stakeholder engagement campaign for promoting a just-transition to a low-carbon, circular construction is developed for enhancing private sector and civil society participation (TA).

Component 3. Financial mechanisms for scaling up

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
325,806.00	20,247,258.00

Outcome:

3. Key actors (government, private sector, and financing institutions) implement innovative mechanisms to scale-up the implementation of low-carbon and circular economy principles in the construction and demolition sector.

Output:

3.1. A sectoral financial strategy for scaling-up application of low-carbon and circularity principles is developed for adoption by public institutions (such as the Ministry of Environment, Ministry of Housing and Urbanism (MINVU), Ministry of Public Works (MOP), and others) and the private sector

3.2 Financial instruments in the construction and demolition sector are strengthened to integrate low-carbon and circular economy principles

3.3 Business models and networks for low-carbon and circular construction are developed to support small and medium enterprises (SMEs)

Component 4. Data, learning and knowledge management

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
686,939.00	1,119,151.00

Outcome:

4. The Chilean construction sector applies systematized, gender-disaggregated sectoral data to enhance sectoral governance and demonstrates improved capacity for promoting a low-carbon and circular approach in construction and demolition

Output:

4.1 Methodologies and information products on, inter alia, costs, impacts, carbon accounting and environmental footprint relevant for the valuation of externalities in the construction and demolition sector are available to public and private stakeholders

4.2 The National Statistics Institute (INE) is strengthened to collect and produce circular construction data and indicators

4.3 Gender-sensitive tools and trainings to incorporate low-carbon and circular economy principles in construction and demolition are made available for application by government officials at national and local levels

4.4 Gender-sensitive trainings to incorporate circular principles are designed for service providers and material producers in the construction sector

4.5 Tools for sectoral surveillance and risk management are provided to government officials in the Superintendence of the Environment (SMA), the National Service for Disaster Prevention and Response (SENAPRED) and other government bodies

M&E

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
131,128.00	289,983.00

Outcome:

5. The GEF project is effectively monitored and evaluated.

Output:

5.1. Monitoring and evaluation products are delivered.

Component Balances

Project Components	GEF Project Financing ($)	Co-financing ($)
Component 1. Policies and regulations	677,569.00	1,626,535.00
Component 2: Advancing acceptance of circular construction	1,001,129.00	7,002,546.00
Component 3. Financial mechanisms for scaling up	325,806.00	20,247,258.00

Component 4. Data, learning and knowledge management	686,939.00	1,119,151.00
M&E	131,128.00	289,983.00
Subtotal	**2,822,571.00**	**30,285,473.00**
Project Management Cost	141,128.00	1,637,230.00
Total Project Cost ($)	**2,963,699.00**	**31,922,703.00**

Please provide Justification

PROJECT OUTLINE

A. PROJECT RATIONALE

Describe the current situation: the global environmental problems and/or climate vulnerabilities that the project will address, the key elements of the system, and underlying drivers of environmental change in the project context, such as population growth, economic development, climate change, sociocultural and political factors, including conflicts, or technological changes. Describe the objective of the project, and the justification for it. (Approximately 3-5 pages) see guidance here

A1. Global environmental problem

The built environment sector is the largest single contributor to climate change, responsible for almost 43% of energy-related global carbon emissions[1]. Carbon emissions from the built environment are split broadly across two categories: 1. embodied carbon emissions – from all the processes related to material extraction, construction, and implementation, and 2. operational carbon emissions – that are released while maintaining the indoor 'climate' of the building, by heating, cooling, lighting and using electrical appliances[2]. While much attention has been focused in recent years on how to reduce the operational carbon of existing and new buildings, according to some estimates, over 50% of all GHG emissions from the building sector would fall within the category of embodied carbon[3]. It is estimated that the share of global greenhouse gas (GHG) emissions from building material production -the main contribution to embodied carbon- increased from 15% in 1995 to 23% in 2015. As both population and wealth, and associated living standards, grow worldwide, global floor space and the associated consumption of raw materials are both set to double by 2060. The OECD estimates that the biggest increase in resource consumption by 2060 will be in minerals, including construction materials and metals, particularly in developing economies[4]. The relative contribution of embodied to operational carbon in building materials is furthermore set to dramatically increase as building operations and the electricity grids become greener and more efficient.

Beyond this sharp increase lies the current linear model of thinking and economics: raw materials are extracted from natural cycles, turned into goods and products for public consumption and eventually disposed of. At the end-of-use phase of building systems and infrastructure, any materials not recycled contribute substantially to the quickly growing waste production, exacerbating environmental impacts associated with current linear material production practices of 'take-make-waste.' Globally, every year approximately 100 billion tons of construction and demolition waste (CDW) is generated, with about 35% of that sent to landfills – including materials that could have been recuperated and recycled[5].

Despite its massive contribution to global GHG emissions, embodied carbon within building materials has previously been under-addressed in strategies to reduce building emissions. In its 2020 report, the International Resource Panel underlined the massive GHG emissions reduction potential from material efficiency strategies applied in residential buildings[6]. A whole life cycle approach in line with the principles of circular economy that aims for innovative, low-carbon materials is required to simultaneously address embodied and operational emissions from the built environment sector.

A2. Baseline – Chile's current and future existing efforts

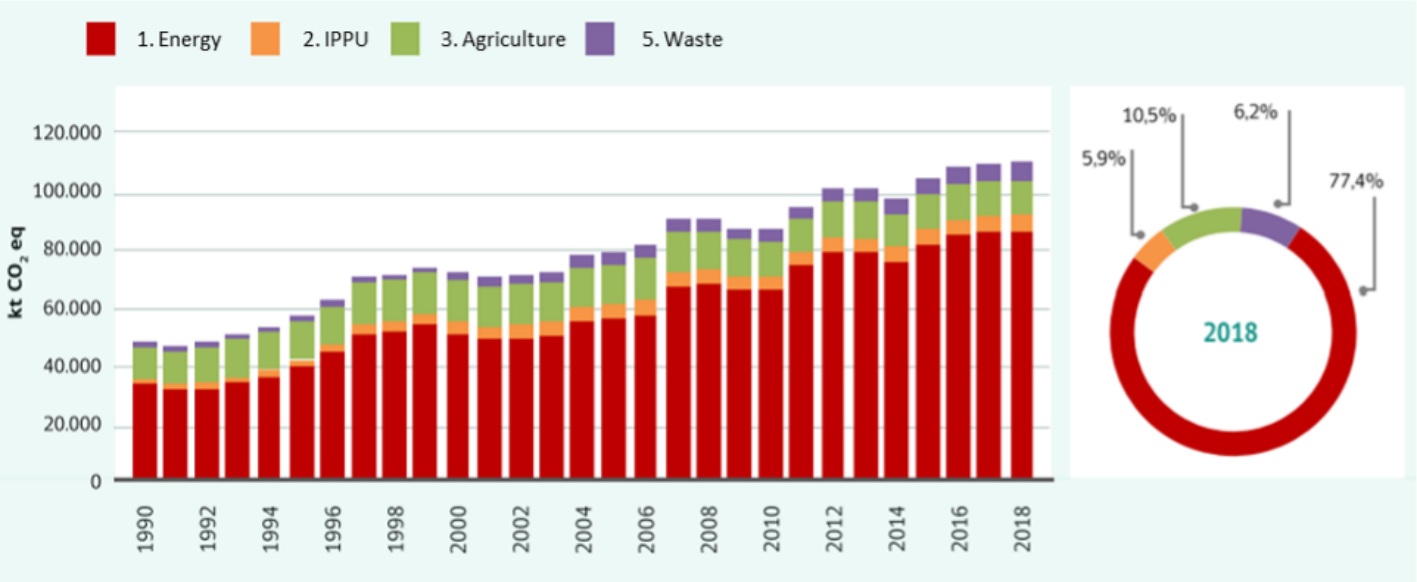
Environmental aspects of the construction sector

Chile is the fifth economy and the fifth emitter of greenhouse gases in LAC[7][8]. It is highly exposed and vulnerable to the negative impacts of climate change, as it has low coastal areas, arid and semi-arid zones, areas with forest cover and areas prone to forest deterioration, areas prone to natural disasters, areas prone to drought and desertification, areas of high urban air pollution, and areas of fragile ecosystems, including mountain ecosystems.[9]

Construction is estimated to contribute 7.1% of Chile's Gross Domestic Product (GDP) and 8.5% of the employed workforce. Out of the 30 thousand companies involved in this activity, 98% correspond to small and medium enterprises (SMEs) responsible for the creation of 81% of jobs in the sector and 34% of its revenues.[10] The economic contribution is based entirely on a linear economy approach, in which raw input materials are extracted, construction goods are manufactured and used to erect buildings, and then discarded as waste. This linear model poses environmental problems from start to finish, as illegal material extraction damages soils and biodiversity; manufacturing of construction goods is inefficient, and illegal disposal of construction and demolition waste further aggravates the impacts on land. These issues are particularly relevant given Chile's geography, which makes it highly prone to earthquakes.

Estimation of GHG emissions in the construction value chain are not straight forward, as GHG inventories are organized according to the aggregate supply of goods and services, irrespective of which sub-sector is ultimately responsible for its consumption. However, estimates can be made by observing the emissions from the production of raw material, i.e. electricity consumption, transport and process energy used in the manufacturing of cement and steel, IPCC sectors 1.A (energy), 2.A and 2.C (IPPU). A recent report from the Chilean Chamber of Construction estimates that emissions attributable to this activity may represent up to 23% of total GHG emissions in Chile.[11] In terms of trends, it is safe to conclude that emissions are increasing in line with the two main IPCC sectors where these are captured (i.e. energy and IPPU). Moreover, this trend is likely to continue its upward trajectory, as the country will need 5.96 million new housing solutions by 2050, and 174,505 million USD in infrastructure works by 2027.[12] These numbers are being revised upwards as a result of the major housing crisis in Chile following the COVID-19 pandemic.

Figure 1. Chile GHG emissions (1990 – 2018)[13]



This upward trend is also consistent with waste estimates and projections. In Chile, CDW accounts for 34% or more of total solid waste generated in a year[14]. A recent study from the Chilean Ministry of Environment (MMA) projects the volume and weight of CDW from information available on construction permits. The study estimates that, by 2023, CDW generation will reach 7,455,602 metric tons per year, which is equivalent to more than 7 million cubic meters and the

equivalent to 15.5 times the volume of Chile's largest stadium. It is important to stress that this estimate only considers CDW generated by the construction of new houses; those from public buildings, infrastructure, demolitions, or debris caused by natural disasters are not included.[15]

The speed of construction (and generation of waste and GHG emissions) is expected to increase for the 2023 – 2050 period (Figure 2), driven mainly by increases in population, urbanization, and income levels.[16] Furthermore, resource and land scarcity coupled with the increasing effects of climate change brings additional vulnerability, compromising Chile's resiliency. Thus, the linear consumption pattern in construction poses an environmental threat on two highly connected fronts: illegal extraction of raw material, and illegal disposition of CDW, i.e. the beginning and the end stages of the linear construction model, both of which are highly detrimental to environment quality and resilience.[17] This situation is critical considering the complexity in the legal framework for raw material extraction, and that currently nine regions in Chile lack authorized sites for an adequate disposal of CDW, nor planned investments to solve the problem.[18]

BOX 1. HOUSING CRISIS IN CHILE: GENDER ASPECTS[19]

Chile is experiencing a housing emergency of great magnitude. The last survey of TECHO-Chile emergency camps in 2021 warned of a growth close to 74% of households in precarious settlements in just two years, exceeding 81 thousand families. Then, a recent study by the UC Center for Public Policy estimated the housing deficit at 641,000 families, including multi-family homes, overcrowded, homeless or unrecoverable housing and families in camps. For decades, households in the country have not presented so many difficulties in accessing decent and adequate housing.

However, this emergency does not affect the entire population or the entire territory equally. Thus, for example, in the northern regions, indigenous peoples and migrant households present greater difficulties in accessing housing. However, the need for housing that is adapted to the needs of households, and that is also integrated in social and urban terms, has a face that has not been sufficiently relieved: that of women heads of household, who constitute the largest proportion of the housing deficit. An important part of this is explained by multi-family housing: many single-parent households headed by women must rely on their relatives. The lower the level of income of the relative household, the greater the probability that it will be headed by women: this intersects socioeconomic and housing vulnerability. According to the Center for Socioterritorial Studies of TECHO-Chile, when women are the main breadwinners, the years of savings necessary to obtain their own home increase by about a year and a half.

The camps replicate this trend. The 2019 MINVU cadaster indicated that 55.3% of households are headed by women and more than a third of them correspond to single mothers. The same with overcrowding: a third of women in 2017 lived in households with two nuclei, which reveals the impossibility of becoming independent from other members of their extended family.

Construction and demolition waste is composed mainly of inert rubble and other materials (approximately 70%), with a high recycling potential to produce recycled aggregates - an incipient industry in the country. Meanwhile, the extraction of (raw) natural aggregates is increasingly critical. Throughout the country, a minimum of 1,000 hectares of illegal extraction have been identified in the desert and on riverbanks, affecting their course and increasing the risk of disasters of anthropic origin (including mass wasting and fires) and increasing vulnerability to natural disasters.[20]

Construction is also one of the most chemical-intensive sectors downstream of the chemical industry. Due to chemicals of concern contained in products such as insulation materials, flame retardants, wood preservatives, adhesives, paints, lacquers, sealants, varnishes, and other coatings, CDW may fulfill the criteria for being considered hazardous waste and include pollutants for which international action already has been agreed on, such as Persistent Organic Pollutants (POPs) listed under the Stockholm convention, or legacy asbestos (banned in Chile in 2001). Unless managed in a sound manner, chemicals of concern in hazardous CDW may pose a considerable risk for environmental pollution and impacts on human health and the environment and can significantly diminish the circularity of construction products.

Beyond the need for proper disposal, the country has an enormous opportunity in the prevention of the generation of this waste through improvements in design and on-site practices.[21]

Figure 2. Estimation of waste generated from authorized construction of buildings[22]



Institutional framework

Chile has one of the most comprehensive policy and legal frameworks on climate change in the region, becoming the first developing country to establish carbon neutrality as a legal, nation-wide mandate, with sector specific carbon budgets. Its climate framework follows an explicit nature-positive approach towards decarbonization and adaptation to climate change and introduces the need for a shift towards a circular economy.

The following elements summarize the institutional framework relevant to the construction sector in general, and for this project in particular. The institutions, regulatory framework and financing mechanisms presented in the following subsections will be of relevance to the proposed project interventions, to be presented further below.

Table 1. Key policies and legislation for the project

Element	Description
National Determined Contribution (NDC)	As per its April 2020 update, Chile commits to begin a downward pathway to decarbonization starting in 2025, aiming to achieve carbon neutrality by 2050. An additional revision was submitted to UNFCCC in November 2022 to reflect Chile's subscription of the Global Methane Pledge and the use of nature-based solutions for adaptation, as well as conservation commitments included in the Long-term Climate Strategy (discussed in the next bullet). The NDC also establishes the need for a shift from linear to circular principles as a cross-cutting element for the achievement of both mitigation and adaptation goals.
Long-term Climate Strategy (ELCP) [23]	Issued in 2021, the ECLP sets the path to achieve the objectives laid out in the NDC, including net decarbonization by 2050. The commitments in the NDC are broken down into a series of (sectoral) carbon budgets that are assigned to different ministries according to their scope. The Ministry of Environment (MMA) is responsible for overseeing the implementation of the strategy as a whole. Note however that the ECLP is wider in scope than the NDC, as it consists of an all-encompassing development vision and strategy with over 400 targets in terms of decarbonization, adaptation, biodiversity, coastlines, and water resources (inc. oceans). The ECLP also refers to the circular economy principles referred to in the NDC.
Framework Law on Climate Change (Law 21455)	In force since June 2022, this law formally adopts the targets in the NDC and recognizes the ECLP as an official climate management instrument. The Law recognizes the pivotal role of regions and municipalities to mitigate GHG

	emissions and achieve resilience to natural hazards. As a result, the Law mentions specific policy instruments for the implementation of climate actions at regional and local levels. Specifically, it establishes Regional Climate Change Action Plans (PARCCs, for its acronym in Spanish), as policy instruments on climate change mitigation and adaptation for the sixteen (16) administrative regions of the country. The design and implementation of PARCCs rely on each Regional Climate Change Committee (CORECC, for its acronym in Spanish).
Governance and coordination	• **Inter-Ministerial Table for Sustainable Construction (MICS)** is the primary coordination body on sustainable construction, an initiative led by the Ministry of Housing and Urban Planning created in 2012, in order to coordinate, promote, disseminate and encourage sustainable construction in the country. Six ministries participate in MICS, being the primary line ministries with different responsibilities related to sustainable construction (MMA, MINVU, MOP, ME, and MF). • **The Ministry of Environment (MMA):** Acts as the central governing body for environmental protection, designing national environmental policies, setting standards, and coordinating efforts across sectors. • **The Ministry of Housing and Urban Planning (MINVU):** Ensures that urban development and housing projects integrate environmental considerations, promoting sustainable construction and minimizing impact on natural resources. • **The Ministry of Public Works (MOP):** Oversees infrastructure development, ensuring that projects like roads, dams, and water systems adhere to environmental regulations and minimize their ecological footprint. • **Superintendency of the Environment (SMA):** Acts as the environmental enforcement agency, monitoring compliance with regulations, conducting inspections, and applying sanctions when necessary. It ensures industries and projects follow environmental guidelines. • **Environmental Assessment Service (SEA):** Reviews and evaluates the Environmental Impact Studies (EIS) of construction projects, ensuring they mitigate their potential negative effects before approval. • **Municipal Governments:** Municipalities play a crucial role in enforcing zoning regulations, approving building permits, and ensuring construction projects follow local environmental guidelines.
Legal framework	• Law Nº 16391 (issued: 1965, last updated: May 2022): Creates and sets the attributions of MINVU. • Law Nº 20417 (issued: 2010, last updated: 2022): Creates and sets the attributions of MMA. Creates the Superintendency of the Environment (SMA). • Law-ranking Decree N° 850 (consolidates several existing legislations; issued: 1997, last update: August 2022): Establishes competencies and attributions of the MOP. • General Law on Urbanism and Construction (“LGUC,” Law-ranking Decree N°458; issued: 1975, last updated: May 2022): The General Law contains principles, attributions, responsibilities regarding urban planning, urbanization and construction. • General Ordinance on Urbanism and Construction (“OGUC,” Decree N° 47; issued: 1992, last updated: February 2022): The General Ordinance contains the regulatory provisions and administrative procedure for the process of urban planning, urbanization and construction, and generalities regarding technical standards of design and construction (building codes)

	• Technical norms[24]: The Technical Norms set the technical characteristics of projects, materials, and construction systems, according to the general requirements established by the General Ordinance.
	• Law of Concessions (Decree N° 900; consolidates previously existing regulations issued in as early as 1991; last update: November 2017): Regulates all matters related to public infrastructure, including procurement procedures and concessions.
	• Supreme Decree N° 956 (Regulatory decree of the Law of Concessions; issued in 1997; last update: February 2022)
	• Law N° 19865: Law on joint urban financing (issued: 2003; last updated: January 2011): Authorizes regional institutions (Urbanization and Housing Service, "SERVIU," dependent on MINVU) and municipalities to participate in Public Private Partnerships (PPP) for the purchase of goods and the execution of urban works (including construction of buildings and infrastructure)
	• General basis of the Environment Law (Law 19300, issued: 1994, latest update: June 2022): Basic legislation on environment, establishes main roles and responsibilities in the sector.
	• Energy legislation: This legislation package sets measures and goals in terms of energy efficiency, including for industry and buildings. While the latter have an impact on operating carbon emissions, applying energy efficiency measures in cement industries may help reduce embodied carbon from the production of raw materials in the construction sector. The include:
	  ○ National Energy Efficiency Law (issued: 2021);
	  ○ Regulatory Decree of the
	  ○ National Energy Efficiency Law (issued: 2022);
	  ○ National Energy Efficiency Plan 2022 – 2026 (issued: 2022)
	• Law 20.920 (General Framework for Waste Management, Extended Producer Responsibility and Recycling) (issued: 2016): General regulatory framework for waste management. The aim is to reduce the generation of waste and promote its reuse, recycling, and recovery through the introduction of extended producer responsibility and other waste management instruments.
	• Law-ranking Decree N° 725 (Health Code) (issued: 1967; last-updated: 2023): Regulates all matters related to the promotion, protection, and recovery of health, including competencies at the national and local level.
	• Relevant for the safe disposal of CDW. Include the following decrees:
	  ○ Decree Nº 148 (Hazardous waste management) (issued: 2004)
	  ○ Executive Decree N° 57 (Classification, labelling and reporting of hazardous chemicals and mixtures) (issued: 2021)
	  ○ Decree N° 594 (Basic sanitary and environmental conditions in the workplace) (issued: 1999; last-updated: 2019)
	• Law 21.074, issued in Chile on February 15, 2018, aims to strengthen regionalization by enhancing regional governments' autonomy, improving public administration efficiency, and promoting equitable regional development. The law seeks to decentralize power, allowing regions to have more control over their development and resources.

Relevant policies	Besides from the ECLP (discussed above), other relevant policies include: • Roadmap for a Circular Chile by 2040 (issued: 2021): Roadmap for a national shift to a circular economy; one of the reference documents used in this project.

	• Roadmap for a Circular Construction (issued: 2020): Roadmap for the adoption of circular economy principles in the construction sector, aligned with the 2040 roadmap and the ECLP. Key reference document used in this project for the identification of barriers, gaps, and required interventions. • National policy on territorial planning (2021): Relevant in the context of the location of sites for the disposal of CDW. • National Waste Policy 2018-2030 (published in 2017): General regulatory framework for waste management. The aim is to reduce the generation of waste and promote its reuse, recycling, and recovery through the introduction of extended producer responsibility and other waste management instruments. • National Strategy for Sustainable Construction (under development): The former strategy (2013 – 2020) is currently being updated. The revised strategy will provide alignment with the ECLP and other recently adopted policies and regulations. • National Policy for Disaster Risk Reduction (*Política Nacional para la Reducción del Riesgo de Desastres*, PNRRD): comprehensive framework that outlines Chile's strategy for reducing disaster risk and building resilience. It is aligned with the Sendai Framework for Disaster Risk Reduction 2015-2030, an international agreement adopted by the United Nations. The National Service for Prevention and Response to Disasters (SENAPRED) is the main government agency responsible for implementing the PNRRD.
Sectoral data and progress tracking	There are currently no sector-specific systems for the construction sector within Chile's official climate reporting mechanisms, namely, the National Inventory System and the National Prospective System. Sector data can be found mostly through publications from the Chilean Construction Chamber (IChC) and Construya2025. Other relevant sources include: • **ARClim (Climate Risk Atlas for Chile):** a project of the Ministry of Environment of the Government of Chile, developed by the Climate and Resilience Research Centre (CR2) and the Global Change Centre (CCG-Catholic University of Chile) with the collaboration of other national and international institutions. The objective of ARClim is to develop a set of climate change-related risk maps for Chile using a common conceptual framework and a consistent database. ARClim includes diverse sectors with national coverage and communal or specific detail, thus becoming an important tool for the design of public policies and the implementation of adaptation measures. • **The National Environmental Oversight Information System (SNIFA)** is a public access website developed by the Superintendence of the Environment. The site provides information to the public on the inspection and sanctioning processes carried out by the SMA, under a territorial approach, along with rulings, sentences, and resolutions of authorities, related to environmental matters. It also includes access to public registers of environmental instruments and sanctions. • **Other relevant platforms** include the Geospatial Data Infrastructure (IDE), the National Environmental Information System (SINIA), and the National System for the Declaration of Waste (SINADER), among others.
Other research and support institutions	**National Research and Development Agency (***Agencia Nacional de Investigación y Desarrollo,* **ANID)**: State agency that administers and executes postgraduate scholarships, programs and competitions, whose purpose is to promote, encourage and develop research in Chile, in all areas of knowledge, technological development and innovation based on science and technology, in accordance with the policies defined by the Ministry of Science,

	Technology, Knowledge and Innovation. Key beneficiaries include researchers, postgraduate students, research centers, higher education institutions, regional bodies, industry professionals with doctorates. ANID holds a total of 60 competitions annually, with more than eleven thousand projects and grants. **Production Development Corporation** (*Corporación de Fomento de la Producción*, **CORFO**): its mission is to promote competitiveness and diversification of Chilean industries, encouraging investment, innovation, and entrepreneurship. It provides various programs offering financial support through grants and guarantees available to companies operating in Chile. CORFO also supports entrepreneurs by facilitating innovation, business productivity improvement, and attracting investment. Its focus is on sectors with high growth potential, aiming to steer Chile towards a sustainable, socially responsible, and resource-conscious economy that prioritizes people's well-being. CORFO has supported key initiatives in the construction sector, including the Technological Center for Innovation in Construction (*Centro Tecnológico para la Innovación en Construcción*, **CTEC**) and the Interdisciplinary Center for Productivity and Sustainable Construction (*Centro Interdisciplinario para la Productividad y Construcción Sustentable*, **CIPYCS**), among others. **Chilean Agency for Sustainability and Climate Change** (*Agencia Chilena de Sustentabilidad y Cambio Climático*, **ASCC**)**:** government entity tasked with driving sustainability and climate change action in Chile. It manages the Clean Production Fund (FPL) that provides financial aid to companies, particularly small and medium-sized ones, to implement 'Clean Production Agreements' (*Acuerdos de producción limpia*, APL). APLs are voluntary public-private agreements subscribed by the ASCC either with individual companies' multiple businesses in a given region or industry sectors, which receive support in exchange of the adoption of cleaner production practices that go beyond legal requirements. APLs contain measurable, verifiable goals and targets, as well as a timeframe for achieving them. The **National Certification System of Labor Competencies** (*Sistema Nacional de Certificación de Competencias Laborales*, SNCCL), also known as ChileValora, is a Chilean government initiative that aims to recognize and certify the skills and abilities of workers, regardless of how they acquired them. The SNCCL is a voluntary system that is open to all workers, regardless of their age, gender, nationality, or educational background. For workers, the SNCCL certifies workers' skills and abilities, improving job and career opportunities. For employers, the SNCCL reduces training costs, improving employee morale by recognizing and rewarding workers' skills and abilities. The SNCCL is run by **National Training and Employment Service** (*Servicio Nacional de Capacitación y Empleo*, SENCE).
Forestry related institutions and funds	**National Forestry Corporation, National Forestry Corporation** (*Corporación Nacional Forestal, **CONAF***): Cretated in 1973 and under the Chilean Ministry of Agriculture, is the public entity in charge of the administration and conservation of the country's forest resources and protected wild areas. Its mission includes the protection of national parks, reserves and natural monuments, as well as the prevention and combat of forest fires. Through various initiatives and programmes, CONAF works to ensure the sustainable management of forest resources, contributing to the preservation of the environment and biodiversity.

	Conservation Fund (*Fondo de Conservación*): The Conservation Fund refers to various programmes and financial mechanisms aimed at the conservation of natural resources in Chile, often administered by government agencies, such as CONAF, in collaboration with international organisations. These funds aim to finance projects that promote biodiversity, ecosystem restoration and the protection of natural areas. **Sustainable Native Forest Management** (*Manejo Sustentable del Bosque Nativo*): This is a policy implemented by agencies such as CONAF and the Ministry of Agriculture, focused on the long-term management of native forests to preserve their ecological functions and biodiversity. This approach includes responsible logging practices, biodiversity conservation and restoration of degraded areas, with the aim of ensuring that native forests can continue to provide ecological, economic and social benefits. **Forestry Institute** (*Instituto Forestal,* **INFOR**): Established in 1965 under the Chilean Ministry of Agriculture, is a research institute dedicated to the generation and transfer of knowledge and technologies in forestry. Its objective is to promote the sustainable development of the Chilean forestry sector through applied research, technological innovation and the dissemination of technical information. INFOR conducts studies on the management of native forests and forest plantations, as well as on the forest products industry, thus supporting the formulation of policies and the improvement of practices in the sector. **Forest Stewardship Council** (*Consejo de Administración Forestal*, **FSC**): An international non-governmental organisation founded in 1993, whose mission is to promote responsible forest management worldwide. Through the certification of forests and forest products, the FSC ensures that these are sourced in an environmentally, socially beneficial and economically viable manner. FSC implements a certification system based on principles and criteria that must be applied in all countries. These standards are developed internationally and adapted to local conditions by national FSC groups. **Programme for the Endorsement of Forest Certification** (*Programa de reconocimiento de Sistemas de Certificación Forestal*, **PEFC**): An international non-profit organisation founded in 1999, which acts as a global alliance of national forest certification schemes. PEFC recognises and evaluates national forest certification schemes and national standards that meet its rigorous sustainability criteria, promoting sustainable forest management worldwide. PEFC recognises and endorses certification schemes that meet its sustainability criteria at national level. Each national scheme develops its own standards, which are then evaluated and endorsed by PEFC.
Gender policies, legislation, and international agreements	The main structures of the Chilean government in promoting gender equality and empowering women involve the institutionalization of gender issues in public policies through the creation of the National Women´s Service in 1991 and the Ministry of Women and Gender Equity created by Law 20.820 of the Ministry of Social Development in 2015. These efforts are also joined by actions in the private sector. More details are provided in Annex K: Gender.

Relevant stakeholders in the construction sector include:

Public sector

- Ministry of Social Development and Family (MDSF)
- Ministry of Economy, Development and Tourism
- Ministry of Transport and Telecommunications
- Ministry of Education
- Ministry of Health
- National Institute of Statistics
- National Service for Prevention and Response to Disasters (SENAPRED)
- Regional Governments (16 regions)
- National Institute for Standardization
- Production Development Corporation (CORFO)
- Sustainability and Climate Change Agency
- Pro Chile (belonging to the Ministry of Foreign Affairs)
- Municipalities (total: 345), through the Chilean Association of Municipalities (AChM).
- Customs
- Productivity Commission

Sectoral representatives

- Chilean Chamber of Construction
- Construction Institute (Instituto de la Construcción, IC)
- Construction Normalization Council (CNC - part of the IC)
- Guild of hopper drivers
- Chilean Association of Municipalities
- Chilean Association of Municipalities for Sustainability (*Asociación de municipalidades por la sustentabilidad*, AMUSA)
- Association for Industry Promotion (*Sociedad de Fomento Fabril,* SOFOFA)
- National Association of Recyclers of Chile
- Guild of Bioconstructors
- Chilean Steel Institute (ICHA)
- Institute of Cement and Concrete (ICH)
- Construction Managers Guilds
- National Recycling Industry Associations (ANIR)
- National Centre of Excellence for the Wood Industry
- Interdisciplinary Center for Productivity and Sustainable Construction (CIPYCS)
- Industrialized Construction Council (CCI)
- Programme for the Endorsement of Forest Certification (PEFC)

Financing sector (banks working with sustainable construction)

- State Bank (Banco Estado)
- Scotiabank Chile
- Santander Bank
- Banca Ética

Civil society

- Construye 2025
- Center for Technological Development (CDT)
- Technology Center for Innovation in Productivity and Sustainability in Construction (CTEC)
- Council for Industrializad Construction (Consejo de Construcción Industrializada, CCI)

Academia

- National Research and Development Agency (*Agencia Nacional de Investigación y Desarrollo*, ANID)

- University of Chile
- University of Santiago de Chile
- Pontifical Catholic University
- University of Valparaiso
- Metropolitan Technological University
- University of Bío-Bío
- University of Concepción
- Austral University
- University of Antofagasta
- Catholic University of the North
- Diego Portales University
- Finis Terrae
- Los Lagos University
- Central University

Fiscal and financial aspects

As for the financing of Chile's NDC, the country published its first Climate Change Financing Strategy in 2019.[25] The economy-wide financing strategy considers three priority areas: information, financial instruments, and market development, and strengthening of capacities in the financial sector. As part of the financial instruments line of work, the strategy document reports initial efforts taking place in the country. For housing, the publicly owned Banco Estado developed a soft credit line for certified green houses in 2016, issuing a total of 1,205 credit loans up to December 2019; a similar product is offered by private banks.[26] Green bonds are increasingly used as a financing instrument in Chile; however, out of the USD 892 million issued in 2019 by the private sector (latest data available), no funds were directly allocated to the construction sector.[27] Similarly, green public bonds ("Sustainable Bonds", *Bonos Sostenibles* issued through the Ministry of Finance) include "green buildings" among its eligible activities, although focusing on the operative carbon aspect instead of embedded carbon (i.e. material consumption and CDW management).[28]

Element	Description
Key financing institutions	• **Chile's Central Bank (*Banco Central de Chile*):** Chile's autonomous central bank is in charge of monetary policy. Its primary objectives are price stability and the proper functioning of internal and external payments. The BCCh sets interest rates, controls the money supply, manages foreign reserves, and provides liquidity to the financial system. • **Ministry of Finance (*Ministerio de Hacienda*):** Manages Chile's public finances with responsibilities including the development and implementation of fiscal policy (taxation, budgeting, public spending), managing public debt, overseeing fiscal aspects of state-owned enterprises, and setting economic and financial policies. • **Public-Private Roundtable on Green Finance (*Mesa Público Privada de Finanzas Verdes*):** meeting place for the different institutions of the national financial industry and aims to define a long-term agenda for dialogue and joint work between the government, regulators, and financial market institutions to advance sustainable development. • **State bank of Chile (*Banco Estado de Chile*):** State-owned bank that plays a crucial part in promoting financial inclusion in Chile. It offers a variety of banking products and services, including loans, credit cards, insurance, etc. • **Santiago Stock Exchange:** main stock exchange in Chile, allowing companies to raise capital by selling shares to the public. • Other national banks include Banco Santander, Banca Ética, Scotiabank Chile, among others.

	• **Association of Banks and Financial Institutions:** Trade union that brings together established private banks and those foreign institutions that maintain offices in the country.
Key environmental taxes	Law 21.210 Green tax[29]: Chile's green tax system shifting the focus from technical capacity to emissions thresholds, taxing facilities emitting significant amounts of CO_2. The law aims to incentivize emission reductions, establishes a monitoring and verification system, and introduces flexibility through the use of offsets.
Taxonomy	Chile is currently developing its sustainable taxonomy: • 2019: creation of Public-Private Roundtable on Green Finance (*Mesa Público Privada de Finanzas Verdes*), the group identifies the need of a taxonomy and stablish the green agreement. • 2021: the Chile Taxonomy Roadmap[30] for Chile was launched as a joint effort developed by the Climate Bonds Initiative (CBI) in partnership with the Chilean Ministry of Finance, the Inter-American Development Bank and the Public-Private Roundtable on Green Finance (La Mesa), with support from the International Climate Initiative Germany (IKI). The objective is to serve as a guide for the Chilean government with regard to the future development of a Chilean green/sustainable taxonomy. • 2022: a committee to prepare the taxonomy is founded, integrated by MdH, CMF, SP, BCCh and MMA. • 2023: Structure of the Classification System or Taxonomy of Environmentally Sustainable Economic Activities for Chile[31] is released by MdH that is the first step in the process of developing a taxonomy system at national level. Chile's taxonomy will include six environmental objectives (i.e. climate change mitigation, adaptation, sustainable use of seas and rivers, transition to circularity, pollution prevention and control, and biodiversity. The construction sector is among the nine eligible activities to be included in the upcoming taxonomy. Developments will take place according to the availability of resources, prioritizing the climate change mitigation and adaptation objectives in an initial stage.[32]
Green bonds	The scale of cumulative climate bond issuance in Latin America currently stands at $45 billion in absolute terms across 11 countries as of the end of 2021. This is small for the region relative to the overall size of the global climate bond market, which now stands at over $1 trillion. Only Chile stands out as a consistent sovereign green bond issuer to date (although countries like Mexico and Ecuador have issued related, sovereign sustainability bonds.) • In June 2019, Chile issued the first sovereign green bond in the Americas. With an amount of USD 1.418 billion, this bond financed projects dedicated to infrastructure for electrified public transport (trains, buses); solar projects; energy efficiency; renewable energy; water management and green buildings (i.e. certification of energy efficiency measures). The Chilean government has continued its sovereign green program in 2020 and 2021, amounting to USD 8.58 million. • According to the latest data, private green bonds were issued for a total of USD 1,490 million between 2017 - 2019.
Public investment	**Chile's National Investment System** (*Sistema Nacional de Inversiones,* **SNI**) regulates the public investment process. Administrated by the Ministry of Finance (MF) and Ministry of Social Development and Family (MSDF), it defines the stages of the process, from the technical evaluation of initiatives to the execution of the budget. The operation of the SNI is supported by a set of laws, rules, and internal management procedures.[33] **Public-Private Partnerships** (PPPs) in Chile are long-term contractual agreements between the State and a private company for the development and operation of public infrastructure or the provision of public services. In Chile, PPPs have been used to finance and build a wide

	range of projects, including highways (Aconcagua Highway), Arturo Merino Benítez Airport in Santiago, Antofagasta Hospital, Bicentennial High School in Temuco, Punta Arenas Penitentiary Compliance Center, among others. The Ministry of Public Works is the entity responsible for granting concessions and supervising their compliance. PPPs in Chile are regulated in two legal bodies; the first of these is the Organic Law of the Ministry of Public Works (MOP) – (Decree with Force of Law 850, of 1997) which authorizes the execution, repair or maintenance of fiscal public works under the competence of said ministry to be carried out in exchange for the temporary concession of their exploitation. This provision is developed by the *Ley de Concesiones de Obras Públicas* (Decree with Force of Law 900) and its regulations. The **Shared Urban Financing** (*Financiamiento Urbano Compartido*) allows the Housing and Urban Planning Services (SERVIU) and municipalities to partner with the private sector to finance and develop urban infrastructure projects. Through this instrument, health centers, schools, kindergartens, sidewalks, among others, can be built. These are smaller-scale initiatives where the Concessions Law is not the most appropriate instrument. This scheme is regulated in Law No. 19,865 on Shared Urban Financing (2023). The FUC system allows municipalities to acquire assets or contract the execution, operation, and maintenance of urban works in exchange for usage rights or other types of payments.
Key financing lines	**State bank of Chile (*Banco Estado de Chile*):** It promotes sustainable initiatives through its Green World initiatives for individuals and businesses. • For individuals: ○ Chile Ecological Mutual Fund (*Fondo Mutuo Chile Ecológico):* a fund that invests in debt instruments and at least 60% of its assets are invested in instruments and/or national issuers whose policies or regulations incorporate principles that contribute to the preservation and care of the environment. ○ Ecovivienda: access is available if the energy rating of the home must be letter D or higher (C, B or A) and C or higher (B or A) in homes built between the O'Higgins Region and Aysén, the area with the highest atmospheric pollution index (PDA). Financing with or without subsidy with no limit on the amount of housing with a fixed preferential rate. ○ Clean Energy and Energy Efficiency Credit: to finance individual projects for thermal insulation, solar energy and air conditioning, ventilation and lighting. Up to 100% of the project can be financed at a preferential rate. ○ Credit for Electromobility: it is possible to finance approved electric vehicles, such as scooters, bicycles, motorbikes, tricycles, hybrid cars and electric cars, including used hybrid and electric cars. Financing of up to 100% of the vehicle and preferential monthly rate. • For businesses: ○ Circular Economy Credit: for all companies that have participated with circular economy projects and have benefited from a CORFO subsidy in the programmes, Access to financing in national currency for working capital and investment with preferential interest rates.: ▪ Innovation Prototypes - Circular Economy ▪ Create and Validate - Circular Economy ▪ Consolidates and Expands - Sustainable Reactivation ▪ Companies with current APL certification ○ Financing for B Companies: Micro, Small, Medium and Large Companies that are certified as B Companies can access. They obtain financing in local

	currency for Working Capital and Investment with flexible instalments and preferential rates. ○ Credit for Clean Energy and Energy Efficiency Companies: to finance solar thermal projects, solar panel (photovoltaic), heat pump, condensing or pellet boiler, thermal insulation of roof, wall and window, efficient lighting, and efficient air conditioning and ventilation projects. They obtain financing of up to 100% of the project and a preferential rate, with a grace period of up to 90 days. ○ Soil recovery credit: finances projects according to the bonus granted by SAG/INDAP. It provides financing of up to 90% of the project, allows part of the bonus to be advanced to carry out the works and preferential rates. It includes projects such as: ▪ Incorporation of essential chemical elements. ▪ Management plans for degraded soils. ▪ Incorporation of phosphate-based fertilisers. **Santander Bank:** • Benefits for businesses with Company B Certification (SME category) ○ Current Account Plan, free of charge for 12 months. ○ Receive the money from your sales the same day with Getnet, 6 months free of charge in the monthly acquisition service fee (normal price 0.55 UF + monthly VAT). ○ 25% discount on the interest rate of your Commercial Credits. Valid for financing in Chilean pesos up to 5,000 UF. Excludes State Guaranteed Credits. • Mortgage credit: A preferential interest rate is obtained for choosing environmentally committed projects. Projects that obtain the following certifications qualify for this product: ○ MINVU Sustainable Housing Certification (CVS). ○ LEED certification. ○ Housing Energy Rating (CEV). ○ EDGE Certification. ○ PassivHaus Certification.
Funds[34]	**Clean Production Fund** (*Fondo de Producción Limpia,* FPL)**:** financial instrument managed by the Chilean Agency for Sustainability and Climate Change (ASCC) that aims to support companies in the implementation of **Clean Production Agreements** (*Acuerdos de Producción Limpia*, APLs, which support the implementation of production practices that go beyond mandatory environmental requirements). The FPL provides co-financing to companies, particularly Micro, Small, and Medium Enterprises (MSMEs), as well as labor unions and business entities, for the development and implementation of Clean Production projects. These projects can encompass a wide range of activities, such as: • Conducting environmental audits to identify and prioritize environmental impacts • Developing and implementing cleaner production technologies and practices • Training employees on environmental management • Implementing waste reduction and recycling programs

- Developing and implementing environmental management systems
- The FPL also supports the development and implementation of Territorial Clean Production Agreements (*APL Territoriales*), which are voluntary agreements between companies, the public sector, and civil society organizations to promote sustainable development in specific geographic areas.

Environmental Protection Fund (*Fondo de Protección Ambiental,* FPA): created in 1994 and administered by the Ministry of the Environment, is a fundamental tool for financing projects and activities aimed at the protection, restoration and conservation of the environment in Chile. Its legal framework is established in Law 19,300 (General Bases of the Environment). The central objectives of the FPA are:

- Support citizen initiatives that contribute to the protection or repair of the environment, sustainable development, the preservation of nature and the conservation of environmental heritage.
- Promote the active participation of the community in environmental management, fostering environmental awareness and responsibility.
- Strengthen local capacities for the implementation of sustainable environmental projects.

The FPA grants full or partial funding to selected projects or activities (protection, restoration, preservation and conservation of nature, capacity building, among others), with amounts varying depending on the specific call. In general, funding ranges from $5,000 to $100,000.

Recycling fund (*Fondo para el Reciclaje*, FPR): Established within Article N°31 of Law 20.920 (Framework for Waste Management, Extended Producer Responsibility, and Promotion of Recycling). Managed by the Ministry of the Environment to ensure efficient operation and fair resource distribution. It seeks to prevent waste generation at the outset, incentivize reuse of materials to maximize their lifespan, promote recycling to divert waste from landfills and support exploration of alternative valorization methods (energy recovery, byproduct creation). Municipalities and Associations of Municipalities are the primary beneficiaries eligible to apply for funding to implement local initiatives aligned with the Fund's goals. Total financing amount changes annually; 2024 allocation was approximately USD 144,000.

There are currently no specific funding lines dedicated to Construction and Demolition Waste (CDW).

National Regional Development Fund (*Fondo Nacional para el Desarrollo Regional*, FNDR): Created in 1974 by Decree-Law No. 575, the FNDR is an investment fund allocated through the national budget law to Regional Governments (GOREs) to promote balanced and equitable regional development. It is currently the only source of freely available funding for regional governments. The FNDR finances all types of investment initiatives (basic studies, programs and projects) in any public investment sector (education, culture, health, sports, etc.), which must be framed within the regulations of the National Investment System (SNI) and consider the restrictions established in the Public Sector Budget Law of each year. It will be the Regional Council (CORE) of each region that approves the investment of resources in the regions, in accordance with the provisions of Articles 76 and 77 of Law No. 19.175.

The FNDR also provides funding to smaller support instruments, such as the **Regional Innovation and Competitiveness Fund** and the **Regional Local Initiative Fund**, for local infrastructure.

On-going initiatives in the sector (preliminary mapping)

Program / Project	Leading ministry and any supporting entities	Brief description	Duration (beginning and ending year)	Estimated value (in USD million)	Alignment with project objectives
Construye 2025	CORFO	Public-private program that seeks to promote changes in practices in the construction sector towards increases in productivity, sustainability, innovation, and industrialization	2015 – 2025	0.30 per year (approx.)	Covering topics on governance, identification of gaps in regulation, negotiation of APLs, technical norms, among others.
Transforma Economía Circular	CORFO financing, supported by MMA.	Public-private program that will work with 14 of the 27 initiatives of the national circular economy roadmap to 2040 in two axes -innovation and circular territories.	2018 – on-going	0.30 per year (approx.)	Governance, development of technical norms in mining and construction sectors
World Bank (WB) credit line	Ministry of Energy, WB funds	Carbon pricing, reforms to the green tax, general support on the implementation of the Climate Change Framework Law	2023 – on-going	5.00	Seeks to accelerate energy transition in Chile
Household energy rating (*Calificación energética de vivienda*)	MINVU – MIN Energía	Voluntary energy efficiency rating for buildings	2012- on going	0.24 per year (approx.)	Key certification instrument can be used to estimate operational carbon.
Sustainable Home Certification (*Certificación Vivienda Sustentable* - CVS)	MINVU, CTEC, several public and private organizations	Voluntary environmental certification system that evaluates the performance of residential projects nationwide.	2020 to present	0.12 per year (not including contribution from the private sector)	Reference mechanism aligned with project objectives.
Sustainable Building Certification (*Certificación Edificio sustentable* – CES)	MOP (leads)	Voluntary environmental certification system that evaluates the performance of buildings nationwide.	2014 to present	0.12 per year (approx.)	Reference mechanism aligned with project objectives.
DOM online	MINVU (leads)	On-line platform for administrative procedures with the municipalities' public work departments. Once the platform is fully	2019	0.12 per year (approx.)	Modernization of municipal administrative procedures

		implemented, permissions, authorizations, receptions, and certificates can be requested, managed and granted online.			
Desafío Net Zero 2030	Construye 2025 (leads)	Competition for students from different careers related to construction, which seeks to promote innovative housing prototypes that support Chile's carbon neutrality goal for 2050.	2022-2023	0.12 (approx.)	Potential alignment with project pilots
Chilean Pact on Plastics (*Pacto Chileno de los Plásticos*, PCP)	Led by Fundación Chile and MMA, along several private companies	Chile was the first country in Latin America to join the Global Network of the Pact for Plastics, with the aim of rethinking the future of plastics by bringing together all the actors in the value chain: companies, public sector and NGOs. The initiative is part of the Global Network of Pacts for Plastics launched in 2018 by the Ellen MacArthur Foundation in the United Kingdom.	2019- hoy	n.a	Works on circularity topics with plastics
Strengthening the Housing Emergency Plan and Containment of the Urban Deficit (CH-T1300)	Inter-American Development Bank (IDB), MINVU	This technical cooperation project is expected to support the preliminary studies required for a larger programme that is currently under preparation (CH-L1173). Thus, CH-T1300 includes support in baseline studies and methodologies for social housing and urban planning.	2023 -2025	0.2	Relevant for the GEF project's work on the national quality infrastructure system (output 2.1) and sectoral methodologies (4.1).
Acceleration of Investment for Sustainable Development in Chile (CH-T1312)	IDB, Ministry of Economy, Development and Tourism	The specific objectives are: (i) to strengthen the tools for supporting sustainable productive development of the lithium value chain in Chile; and (ii) to improve the permitting processes to facilitate investments.	2024-2027	0.15	Procedural improvements suggested for the lithium value chain might be of relevance to the legal output in this GEF project (output 1.1).

Aster: Accelerator of Efficient Technologies in Chile (CH-G1011 and CH-T1309)	IDB Lab, Aster	This IDB Lab project seeks to contribute to the development of green technologies in northern Chile's Antofagasta region, which is the country's main copper and lithium mining hub, as well as the early-stage development of technological innovation around these industries. The financed solutions will contribute to improving climate indicators in the communities of the Antofagasta region related to the efficient use of water resources, energy efficiency, transportation and logistics, renewable energy storage, process optimization, and other areas.	2024 -	1.2	The project seeks to support the financing of climate innovation startups in Chile by strengthening a local startup accelerator (Aster), building capacity for the assessment of environmental and social risks, creating the positive impact of climate-related technology solutions, and encouraging women's participation in innovative ventures of this kind. These actions are mainly aligned with the GEF project's output 3.3 (Business models and networks for low-carbon and circular construction to support small and medium enterprises)
Global Subnational Climate Fund (FP152)	GCF, Pegasus Capital Advisors	The goal of the Sub-national Climate Fund Global (SnCF Global or the "Fund") is to catalyze long-term climate investment at the sub-national level for mitigation and adaptation solutions through a transformative financing model. The SnCF Global's business model is designed to attract primarily private institutional investment and to deliver certified climate and Sustainable Development impacts and Nature-based Solutions at global scale (SDGs, NbS).	2020 - 2040	750 (global)	FP152 will establish an impact equity fund to provide equity investments for climate projects ranging from USD 5 to 75 million, at the sub-national level. The USD 750 million fund is anchored by a GCF investment of USD 150 million, providing first-loss coverage to crowd-in private institutional investors in particular. Thus, this project is of relevance to the financial strategy to be developed under component 3.
Green Climate Financing Facility for Local Financial	GCF	The objective is to reduce GHG emissions in Latin America through locally financed and developed	2020 - 2027	150.2 (all four countries)	The Programme will provide LFIs with access to a green finance credit line. It

Institutions in Latin-America (FP149; Chile, Panama, Ecuador, and Peru)		climate change projects for micro, small, and medium enterprises (MSMEs) in the renewable energy, energy efficiency and land use sectors.			will also implement four grant-funded sub-components with a focus on education, awareness raising and technical support. Thus, FP149 is aligned mainly with component 3 of this GEF project.

A3. Barriers

Transitioning the construction sector to low-emission embodied emissions operating according to circular construction principles requires radically rethinking the way resources are managed in the construction industry and the built environment. As discussed in the previous section, construction is a key contributor to global warming – and one that is often overlooked. This activity is responsible for an increasing amount of GHG emissions that result from the consumption of energy required to manufacture and transport raw materials, and its reduction will be among the most challenging elements in the implementation of Chile's decarbonization strategy. Moreover, the linear approach to construction implies that resources are used once and then discarded, resulting in an unnecessary consumption of primary raw materials, the loss of otherwise valuable resources, as well as a number of health and environmental issues due to the improper disposal of large volumes of waste and the proliferation of illegal dump sites.

The main barriers preventing this transition are discussed below. This discussion can be summarized in the project's problem tree (Figure 3 further below), which informed project design.

Barrier I. Low-carbon, circular economy principles absent from legal and regulatory framework

The absence of circularity principles that foster the adoption of low-carbon materials, designs and technologies in the sector's main regulatory framework has been identified as one of the fundamental barriers preventing the mainstreaming of circular construction principles and the availability of funds required for this purpose.[35]

Like most countries, Chile has traditionally focused its mitigation efforts on the reduction of operating carbon. For this purpose, a complex regulatory framework (including national legislation on energy efficiency) has already been set in place, with increasingly stringent standards for buildings and electric devices becoming mandatory over the coming years.[36]
For embodied carbon, on the other hand, the country is only taking its very first steps, and the entire regulatory framework still reflects a linear rather than a whole-life, circular approach. This regulatory gap leads to a relatively low price of virgin materials in comparison to secondary materials that make use of recycled inputs. Moreover, incentives or any type of prioritization of low-carbon materials are altogether absent from key legislation such as the General Law of Urbanism and Construction and its regulating ordinance, failing to reflect the full cost of traditional linear approaches.

On the waste front, MINVU and MMA have made some progress;[37] however, several key elements are still pending, for example, regulations on the availability of appropriate disposal sites (including capacity for natural disasters), provisions to facilitate the traceability of CDW and the quantification, valuation, and allocation of its externalities.

Another key gap is the lack of circularity principles in public spending. As discussed in the baseline, Chile's public sector's consumption and investment oscillates between 20-30% of the country's annual gross domestic product[38] and the

government is expected to participate in around two thirds of the USD 175,000 million that are required as infrastructure investment over the next decade.[39] However, low-carbon, circular principles are absent from the evaluation criteria at the time of the appraisal of public investment and the guidelines and procedures for public procurement. Moreover, relevant legislation such as the Shared Urban Financing Law (Law 19865)[40], that establishes a mechanism for public-private financing of housing projects executed by municipalities, or the Law for the Concession of Public Works,[41] does not include any provisions for the usage of low-carbon materials or the consideration of circular economy principles. Similarly, the National Investment System (SNI) -responsible for the appraisal of most public infrastructure investments- does not foresee methods to reflect the true cost of linear consumption patterns. Without low-carbon, circular principles in the government's procurement guidelines, most (if not all) of this investment will follow the linear business-as-usual scenario described in the previous section.

Barrier II. Limited confidence and awareness of the viability of low-carbon, circular construction

Besides basic legislation, the application of circular economy principles will require the development (or adjustment) of a set of auxiliary norms, quality standards, and labelling and certification schemes required to bring confidence to manufacturers and consumers alike, adequately reflecting the benefits of circular construction. For instance, the two existing standards -Certificate of Sustainable House (CVS) and Certificate of Sustainable Building (CES) only focus on the yearly consumption of energy (i.e. operating carbon) and generation of waste, without considering embedded carbon, material efficiency and waste generated at the construction and demolition phases.

Local sectoral studies highlight the advantages of introducing sustainability concepts to the construction sector. However, these advantages refer mostly to energy efficiency measures, thus focusing on the operating carbon aspect of buildings.[42] Mitigation measures targeting embedded carbon in construction, on the other hand, have received considerably less attention from consumers, product manufacturers, and service suppliers, who are generally concerned that the application of circular principles would entail a longer, more expensive construction period.[43] As a nascent market, manufacturers and importers perceive low-carbon products as risky, relying instead on traditional goods and processes. To date, studies have been undertaken that demonstrate the feasibility of innovative processes (such as the use of greater recycled aggregates in structural concrete),[44] but this remained mostly within the orbit of researchers and universities. Testing and laboratory capacities that can support industrial symbioses for the development of innovative materials are still scarce.

Barrier III. Absence of associative business models and insufficient financing for innovation and scale-up of low carbon, circular construction

Circularity requires high levels of collaboration, information exchange and a technical match between the inputs and outputs of diverse organizations, often requiring innovative patterns of interactions between actors based on cooperation and sharing mechanisms. In Chile, the combined effect of an insufficient legal framework (barrier I) and lack of government capacities to exercise its supervisory role (barrier IV, discussed below) results in irregular business practices that sustain the traditional linear approach to construction. The best example of the simultaneous occurrence of all these barriers is the disposition of CDW, where:

- Construction sites generate a substantial amount of waste, as no mandate or guideline to avoid generation of CDW exists;
- None of the valuable materials in this waste stream are recovered, as no information on the quantity and value of the materials is available, and the actors perceive the recovery process as a waste of their time and money;
- Transport companies remove the generated waste and take it to informal / illegal dumping sites; the companies' entire business model is designed to exploit this logic.
- Municipalities lack the capacity to prevent or sanction this behavior.

Thus, to abandon traditional linear construction, a different set of business models -one that relies more on association and innovation- are needed besides the required regulatory improvements.

Similarly, financing institutions in the construction value chain are yet to incorporate provisions for circular construction. As mentioned earlier, existing certification schemes (CVS and CES) focus on energy requirements during the operating phase (i.e. operating carbon), without considering embodied carbon and generation of waste during construction and demolition. But more importantly, the volume of operations using financial instruments designed for green housing is still extremely low: as mentioned in the baseline section, the largest financier for green housing (Banco Estado) gave 1,205 credit loans between 2016 and 2019. Considering that MINVU alone builds between 30,000 – 70,000 social houses per year, the share of green loans ranges between 0.43% - 1.00% - just when considering social housing alone.

Financing of new products and services is equally challenging, with CORFO as the only actor providing support to much needed innovation. Moreover, there is a growing need to promote greater exchanges between academia, training institutions and the private sector, so that scientific and technological advances become eligible for funding and are incorporated more quickly in the construction industry.

Barrier IV. Insufficient knowledge management and capacity to support the transition to a low-carbon, circular construction

To operate according to circular economy principles, the construction sector requires detailed, properly organized sectoral data, as well as a trained workforce in the public and private sector.

To understand material flows and enable their incorporation into closed cycles, circular construction requires detailed data sets – including information on quantities, qualities, emission-intensity, dimensions, and positions of all materials used in buildings and infrastructure, but also on any significant waste streams generated and transported during their construction and demolition. In Chile, none of this information is currently available,[45] which is partly explained by the occurrence of informal / illegal construction activities, but also due to limitations in a) the systems that were implemented to capture and maintain sectoral records, and b) stakeholders lacking capacities to provide input data required to update the sector's monitoring and evaluation (M&E). Similar limitations exist for public construction.[46] Another data gap reported in the sector is related to the generation and valuation of externalities, including a mapping of illegal dumping sites for CDW and the environmental risks represented by them, including the common occurrence of illegal burn offs of such waste, resulting in GHG and black carbon emissions.[47]

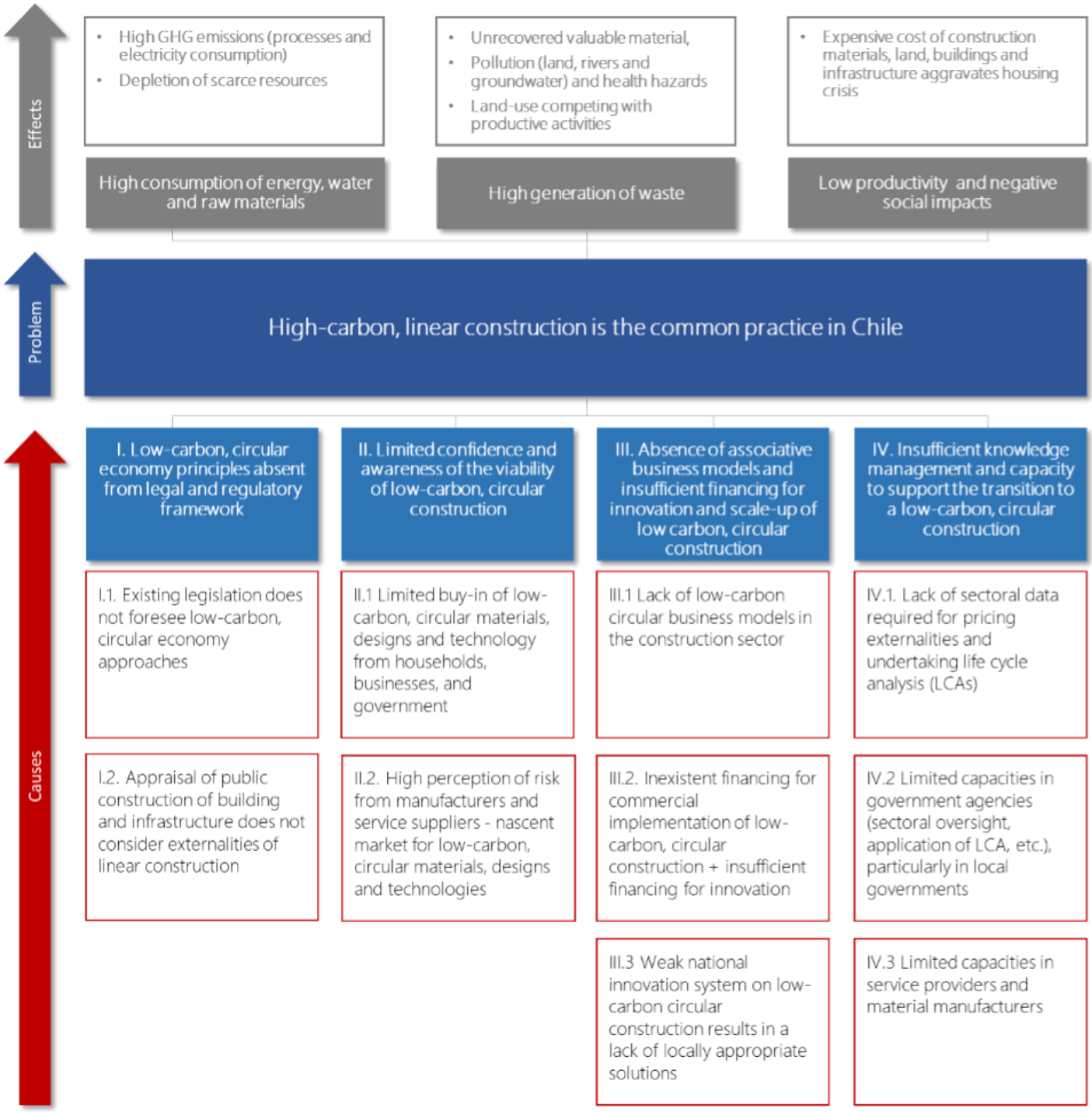
As mentioned, another important challenge is in terms of capacities, as circularity in construction is still a novel approach in the country. In a recently conducted survey involving 314 companies in the Chilean construction value chain, 28% of the respondents declared that their knowledge on circular construction was either low or very low; this number rose to 65% when including respondents declaring to have a "medium" knowledge of the subject.[48] Moreover, most of the respondents relate circular construction with recycling, without mentioning other aspects such as material innovation, reduction of overspecification, decarbonization and achieving climate goals, and optimization through design. Similar conclusions can be derived regarding the specific case of waste, where another survey revealed that over 70% of companies in the Chilean construction value chain were not aware of laws and regulations that were already in force.[49] Thus, there is a strong need for raising awareness of the scope and benefits of low-carbon circularity, as well as the costs and consequences of maintaining the business-as-usual, linear approach. Recent reports have identified several training needs:

- Government capacity gaps include training on the application of Life Cycle Analysis and valuation of waste for investment appraisal, as well as training and tools required for urban planning, construction sector oversight and regulation, and CDW tracing and management in case of catastrophes, among others. This applies to all relevant institutions with sectoral responsibilities, including the Superintendency of Environment, the Ministry of Health, municipalities, and national law enforcement gendarmerie (Carabineros de Chile).
- Service suppliers (including construction companies, architects, engineers and service providers) require training in circular construction design, prevention of waste, use of buildings as material banks, reduction of overspecification, development and application of CDW management plans, among other topics.
- For manufacturers, preliminary needs identified include training in innovative materials and production processes, production of pieces endowed with circular attributes, and use of recycled secondary raw materials.

Thus, it is imperative to train professionals in the construction value chain and provide support to organizations that promote learning within the industry.

Problem tree

Figure 3. Project problem tree



A4. Project objective

The objective of this project is to accelerate the achievement of the targets in the Chilean long-term decarbonization strategy (ECLP) for the construction and demolition sector.[50] For this purpose, the project will create an enabling framework and address gaps identified in sectoral strategies, mainly, the "Roadmap for a Circular Construction".[51]

The intended transformational impact is summarized in the following table:

Current and future baseline context	Desired transformation after the project
I. Low-carbon, circular economy principles absent from legal and regulatory framework	This barrier has been addressed mainly through the project's component 1. In particular: - Legislation (LGUC, OGUC and relevant technical norms) has been updated to reflect the true cost of linear construction and create incentives for low-carbon and circular construction. Increased cost of waste disposal generates incentives to reduce the amount of waste from design. Similarly, the internalization of carbon costs in the production of primary raw materials creates an incentive to increase the efficiency in industrial processes and substitute primary raw material with recycled aggregates, for which the carbon cost is lower or zero. - By including a whole-life-cycle approach that adequately captures the costs and environmental impacts of CDW disposal and embodied GHG emissions in raw materials, the revised MPGs for the appraisal of projects in the National Investment System strongly disincentives the use of public funds for linear construction projects. Public officials re-design projects to drastically reduce the generation of high-carbon materials, waste and the use of raw materials. Bidders in public procurement processes for public construction become aware that low-carbon, circular approaches significantly increase their chances of being awarded a contract. - Regional governments and municipalities have access to a set of standard strategies adaptable to their local circumstances and aligned with the ECLP and the Circular Construction Roadmap. Municipalities become more aware of the dynamics and importance of proper CDW disposal and management and adapt local ordinances to include circular economy considerations. - The stakeholder engagement campaign gave high visibility to all of the sectoral policies, as well as the interventions funded through the project, actively engaging with all relevant stakeholders in participatory processes. By the end of the project, all actors in the construction sector are aware of the benefits and feasibility of low-carbon, circular construction; and have a clear understanding of any income distribution impacts allowed for the implementation of timely mitigation measures to ensure a just-transition to circular construction.
II. Limited confidence and awareness of the viability of low-carbon, circular construction	This barrier has been addressed mainly through component 2: - An enhanced quality infrastructure system sets standards for the production and certification of reliable, innovative, low-carbon and bio-based construction materials that create symbioses with the industry and agriculture.

	- An aggressive communication and stakeholder engagement campaign supports the mainstreaming of circular, low-carbon materials and approaches.
III. Absence of associative business models and insufficient financing for innovation and commercial up-scaling of circular construction	This barrier has been addressed mainly through component 3. In particular: - As new markets begin to arise following the regulatory reforms in Component 1, supply of circular services and low-carbon materials increase to catch up with demand. The project has helped to identify synergies, close loops, create networks and establish new business models for low-carbon and bio-based materials and services, which become mainstream in the construction sector. - Following the sectoral financing strategy prepared by the project, newly developed or strengthened existing financial instruments are now available and offered by banks and development agencies (CORFO, ANID, and SERVIU) to fund material innovators, developers, service suppliers, and consumers. Municipalities continue to rely on public-private alliances to fund the construction of hospitals, schools, and social housing projects. However, funds available to municipalities now favor circular practices, and procurement models now introduce circularity certifications (developed in Component 2) as an eligibility requirement.
IV. Insufficient knowledge management and capacity to support the transition to a low-carbon, circular construction	This barrier has been addressed mainly through component 4. In particular: - Transparent, organized information required for sectoral decision making is now widely available through the National Statistics Institute. This information supports the internalization of linear construction costs and sectoral decision making. - Government agencies are now better suited to undertake sectoral oversight, and appropriate fines deter CDW transport companies from further dumping waste in illegal sites. The cost of appropriate disposal is passed-on by CDW companies to consumers, which in turn put higher scrutiny in avoiding overspecification in design. - Likewise, service providers and manufacturers have been trained to undertake their business under the new, more sustainable approach.

In order to address the key barriers described previously and achieve its ultimate objective, the project aims to achieve the following outcomes:

1. National, regional, and local governments adopt policies and regulations to accelerate the adoption of low-carbon and circular principles in the construction and demolition sector (component 1: policies and regulations)
2. Private and public stakeholders in Chile gain confidence in low-carbon circular construction (component 2: demonstration of feasibility)
3. Key actors (government, private sector, and financing institutions) implement innovative mechanisms to scale-up the implementation of low-carbon and circular economy principles in the construction and demolition sector (component 3: financing mechanisms for scaling up)
4. The Chilean construction sector applies systematized, gender-disaggregated sectoral data to enhance sectoral governance and demonstrates improved capacity for promoting a low-carbon and circular approach in construction and demolition (component 4: Data, learning and knowledge management)
5. A fifth component is included to undertake GEF project monitoring and evaluation in accordance with GEF and UNEP policies.

[1] UNEP *2022 Global status report for buildings and construction: towards a zero-emission, efficient and resilient buildings and construction sector* (Nairobi, 2022)
[2] It is important to stress that the choice of construction materials also impacts a building's operating emissions due to the way in which it affects energy demand by either absorbing the heat from the sun (concrete, brick), reflecting solar heat gain (light surfaces), or transforming solar energy (on-site power generation and/or living materials such as green roofs).
[3] OECD *Global Material Resources Outlook to 2060 Economic Drivers and Environmental Consequences* (OECD publishing, 2019)
[4] OECD (2019)
[5] Chen, Z., Feng, Q., Yue, R., Chen, Z., Moselhi, O., Soliman, A., Hammad, A., & An, C. *Construction, renovation, and demolition waste in landfills: A review of waste characteristics, environmental impacts, and mitigation measures* (Environmental Science and Pollution Research, 2022)
[6] International Resource Panel (IRP) *Resource Efficiency and Climate Change: Material Efficiency Strategies for a Low-Carbon Future* (United Nations Environment Programme, Nairobi, Kenya, 2020).
[7] International Monetary Fund *Report for Selected Countries and Subjects* (World Economic Outlook Database, 2021)
[8] Climate Watch *GHG Emissions* (Washington, DC: World Resources Institute, 2020).
[9] Ministerio del Medio Ambiente, *Cuarta comunicación nacional de Chile ante la Convención Marco de las Naciones Unidas sobre Cambio Climático* (Santiago, Chile, 2021). p. 182
[10] Cámara Chilena de la Construcción (CChC), *Introducción a la Economía Circular: diagnóstico y oportunidades en Chile* (Santiago de Chile, 2020), pp. 14-15. Reliable estimates of the contribution of informal construction are not available; hence, the numbers in this document should be understood as a minimum.
[11] Cámara Chilena de la Construcción (CChC), *El sector de la construcción ante el desafío climático global* (Santiago de Chile, 2019), p. 24.
[12] CChC (2019), p.
[13] Ministerio del Medio Ambiente, *Cuarta comunicación nacional de Chile ante la Convención Marco de las Naciones Unidas sobre Cambio Climático* (Santiago, Chile, 2021).
[14] CChC (2020) op. cit. p. 15.
[15] Estimates from the MMA calculate that natural disasters may double the amount of CDW generated in a given region and year. See Ministry of Environment (MMA) *Informe sobre Economía circular en construcción y residuos de construcción y demolición. Estimación y proyección de RCD* (Santiago, Chile, 2020) p.40.
[16] Climate change itself is not listed as a driver, as this is mostly related to *operating* emissions (from increased energy consumption due to increased temperature) rather than *embedded* emissions (i.e. in the amount of buildings), the latter of which is the focus of this project.
[17] A third front is that - as a result of inadequate controls over the raw inputs used- imports and domestically produced materials generate impacts on human health and ecosystems.
[18] Construye2025, *Hoja de ruta RCD – economía circular en construcción 2035* (Santiago de Chile, 2020) p. 37.
[19] Adapted from Larraín, C. and Zúñiga, P. *Déficit habitacional: un problema de género* (Vivienda al día. Blog del Centro de Documentación del Instituto de la Vivienda. Facultad de Arquitectura y Urbanismo, Universidad de Chile. June 2022). Available here.
[20] Construye2025, *Hoja de ruta RCD – economía circular en construcción 2035* (Santiago de Chile, 2020) p. 38.
[21] Ministry of Environment (MMA) *Informe sobre Economía circular en construcción y residuos de construcción y demolición. Estimación y proyección de RCD* (Santiago, Chile, 2020) p.6
[22] Ministry of Environment (MMA) *Informe sobre Economía circular en construcción y residuos de construcción y demolición. Estimación y proyección de RCD* (Santiago, Chile, 2020) p.18
[23] Gob. of Chile *Estrategia Climática de Largo Plazo de Chile – Camino a la carbono neutralidad y resiliencia a más tardar el 2050* (Santiago, Chile, 2021)
[24] The set of norms are publicly available in MINVU's website.
[25] Now under revision to align with the ECLP.
[26] Ministry of Finance *Estrategia financiera frente al cambio climático* (Santiago, Chile, 2019) p. 20-22
[27] Ministry of Finance (2019), op cit. p.22
[28] More information on the sustainable bond framework is available here.
[29] Further information related to the Law 21.210 can be found here.
[30] Available here.
[31] Available here.
[32] Ministerio de Hacienda, *Estructura del Sistema de Clasificación o Taxonomía de Actividades Económicas Medioambientalmente Sostenibles para Chile* (2023). Available here.
[33] Including:
- Decree Law 20.530: defines the role of the MSDF in assessing the social profitability of investment initiatives applying for state funding.
- Decree Law 1.263: This article establishes the obligation to carry out a technical-economic evaluation of investment projects requesting state financing. This evaluation is an important input for investment decisions by the MF.
- Decree Law 19.175: This article reinforces the mandatory nature of the technical and economic evaluation of investment projects. It specifies that the evaluation must consider the social profitability of the project. It establishes additional requirements for projects financed with external credits.

[34] Besides from these funds, public services (such as MINVU) have programs and budget assigned by law directly for housing construction and retrofit programs.
[35] Construye2025 (2020)
[36] Most notably, the National Plan on Energy Efficiency (2022 - 2026) aligned with the Energy Efficiency Law (in force since February 2021). The National Plan on Energy Efficiency foresees a set of measures to reduce building operating emissions by 50% by 2050.

[37] Most notably, the adoption of the *General Framework for the management of residues, extended producer's responsibility and promotion of recycling* (Law 20.920). Auxiliary norms have also been issued, for example, NCh3562 (*Guidelines for the preparation of construction and demolition waste CDW management plans*) which aims at promoting recycling of CDW.
[38] https://www.statista.com/statistics/370381/ratio-of-government-expenditure-to-gross-domestic-product-gdp-in-chile/
[39] Cámara Chilena de la Construcción (CChC), *El sector de la construcción ante el desafío climático global* (Santiago de Chile, 2019), p. 12.
[40] Available here (original text in Spanish).
[41] MOP Supreme Decree Nº 900.
[42] Cámara Chilena de la Construcción (CChC), *Introducción a la Economía Circular: diagnóstico y oportunidades en Chile* (Santiago de Chile, 2022); see case studies in pp. 43-48.
[43] Heisel, F., Hebel, D., Webster, K. *Circular construction and circular economy* (Birkhäuser Basel, 2022), p. 63.
[44] See for example: Aguilar, C., Muñoz, M., Loyola, O. *Utilización del hormigón reciclado como material de reemplazo de árido grueso para la fabricación de hormigones* (Revista Ingeniería de Construcción, 20 (1), 2011), pp. 35-44; Chauvenic, J.A. *Estudio experimental de propiedades mecánicas de hormigones con árido reciclado mediante la modificación del método de mezclado del hormigón* (Santiago de Chile, Universidad de Chile, 2011).
[45] See e.g. Ministry of Environment *Informe sobre Economía circular en construcción y residuos de construcción y demolición. Estimación y proyección de RCD* (Santiago, Chile, 2020) p. 6.
[46] Construye2025, *Hoja de ruta RCD – economía circular en construcción 2035* (Santiago de Chile, 2020) p. 102.
[47] Construye2025 (2020), pp. 108-109.
[48] Cámara Chilena de la Construcción (CChC), *Introducción a la Economía Circular: diagnóstico y oportunidades en Chile* (Santiago de Chile, 2022), pp. 75-78.
[49] CChC (2019), p. 59.
[50] The project will contribute towards the achievement of (or altogether achieve) 20 out a total of 56 ECLP targets related to housing; and 7 out of a total of 16 targets in the ECLP related to infrastructure.
[51] Construye2025 (2020).

B. PROJECT DESCRIPTION

This section asks for a theory of change as part of a joined-up description of the project as a whole. The project description is expected to cover the key elements of good project design in an integrated way. It is also expected to meet the GEF's policy requirements on gender, stakeholders, private sector, and knowledge management and learning (see section D). This section should be a narrative that reads like a joined-up story and not independent elements that answer the guiding questions contained in the guidance document. (Approximately 3-5 pages) see guidance here

This section asks for a theory of change as part of a joined-up description of the project as a whole. The project description is expected to cover the key elements[1] of good project design in an integrated way. It is also expected to meet the GEF's policy requirements on gender, stakeholders, private sector, and knowledge management and learning (see section D). This section should be a narrative that reads like a joined-up story and not independent elements that answer the guiding questions contained in the guidance document. (Approximately 3-5 pages). See guidance here*

B1. Overview

This project will be designed to address the increase in the main drivers described in the previous section, i.e. the increase in the speed of construction and generation of waste and GHG emissions as a result of increased population, urbanization and income levels by introducing a paradigm change in the sector.

The project builds upon barriers and interventions previously identified by the country, ensuring its alignment with national policies, mainly, Chile's NDC, the long-term decarbonization strategy (ECLP) and the sectoral roadmap for a circular construction. The proposed project has been structured in four components, one for each of the key barriers identified in the previous section:

1. Interventions in **component 1** will bring together public and private sectors to prepare the enabling legislative framework required for a circular construction. These actions will lead to the internalization of the linear model's environmental costs, the lack of which currently results in artificially low virgin material prices. Moreover, by mainstreaming the mandate for circularity throughout the public sector and all its procurement processes the project will spur demand for circular solutions.
2. Interventions in **component 2** will strengthen Chile's quality infrastructure system, developing norms, standards and testing capacity to bring confidence and acceptance towards circular construction materials that integrate wastes from different industrial, agricultural and forestry processes, creating awareness and bringing

sustainability improvements across multiple value chains. It will thus target the root causes of the 'status quo bias', i.e. the comfort of operating in a known and trusted linear system versus the discomfort of a new circular world.

3. Interventions in **component 3** will support key enablers for the acceleration of the circular transition, i.e. financing, associative business models and innovation networks that will allow for the scaling-up of circular solutions.
4. Lastly, **component 4** will provide cross-cutting data and capacity building to support behavioral change, targeting both public (national, regional and municipal) and private actors (material manufacturers, construction firms, real state developers, designers and architects, financiers, recyclers and waste facilities).

B2. Theory of change

The project theory of change ("TOC", presented below in Figure 4) illustrates the causal pathway that starts with the proposed outputs (themselves resulting as a response to the barriers identified in the problem tree, Figure 3 above), results in outcomes, and evolves through intermediate states all the way to the ultimate intended impact. The TOC also helps to identify the underlying assumptions and risks that will be vital to understand and revisit throughout the process to ensure the approach will contribute to the desired change.

The project is projected to achieve greenhouse gas emission reductions during the project lifetime, as global environmental benefits which would not have accrued without project interventions. These emission reductions will result from the project-supported policies and interventions. The quantity of GHG emission reductions expected to be achieved is indicated in the core indicators section.

The project is expected to be transformational by levering the following key levers of change:

TABLE 2. LEVERS OF CHANGE

Common language to understand, measure and track circularity in the construction sector	Providing a coherent and consistent definition of circularity and its attributes. This is done mainly through: - Work on basic legislation (output 1.1); - Strengthening of the quality infrastructure system and integration with Chile's Sustainable Taxonomy efforts (see output 2.1)
Alignment of incentives and policy coherence	Circular options must become cost-competitive, convenient and dependable in addition to any environmental benefits. This will be achieved mainly through: - Legislative reform providing the mandate to consider the full costs of linear construction models (output 1.1); - Strengthening surveillance and penalization capacities to enhance compliance with existing and future regulations (output 4.5)
Momentum for change	- Better understanding of the sector's impacts (see e.g. material and flow balance in output 4.1) and creation of awareness (output 2.4) - Spur demand and lead by example (see e.g. mandate for circular public procurement and circular appraisal of public investment projects in output 1.2) - Confidence (demonstrative work in output 2.2 and 2.3) and predictability (normalization action plan in 2.1; financial strategy in 3.1) to support existing roadmaps.
Enablers of change & scaling-up	- Support to regional and municipal governments (1.3 and 4.3). - Adjustment of funds and financial credit lines (output 3.2) - Associative networks and innovative business models (output 3.3) - Data and methodologies for life-cycle assessments (LCAs) and proper cost accounting (outputs 4.1, 4.2) - Capacity building (public sector – output 4.3, private sector, output 4.4) - Regional level playing field (see e.g. regional workshops and associativity deliverables in output 1.3).

Adaptive M&E and results-based management	Component 5

As described earlier, the main drivers behind the increase of embedded GHG emissions are the same ones driving the construction sector itself, i.e. population growth, increased urbanization, and increased income levels. While these drivers are largely outside the control of this project, the approach followed in this proposal is to decouple GHG emissions from construction as much as possible, increasing material efficiency, prolonging the life of existing constructions and reducing the sector's environmental footprint. This objective can and should be achieved even under different assumptions regarding the future behavior of the identified drivers, i.e. under different assumptions for the speed of population growth, urbanization, and income levels.

Innovativeness

Innovation is at the heart of this project, as the shift to circularity will demand novel views and methods regarding **product design (**e.g. through reduction of overspecification of materials such as concrete and steel, and the introduction of design for extended lifetime and disassembly), **production processes (**e.g. innovative cement types with a lower clinker content), **consumption models** (e.g. optimized use of space through an increased intensity in building use) and **waste management** (e.g. recycling of building materials). In turn, these will require a revision of existing legislation, incentive structures, financing mechanisms, and even a common language that allows for a homogenous understanding of circular construction. Through these root interventions, the project is expected to achieve outcomes that are resilient to different future scenarios.

The project is ambitious in terms of the changes it intends to mobilize in the construction sector, by setting the conditions for a paradigm change in business-as-usual operations. The core of the project is innovative, in focusing on the adoption of circular economy principles in a sector entirely dominated by linear material production practices of 'take-make-waste'. Thus, the project will also be innovative in terms of:

- The circular regulatory framework, which is unprecedented in the country and the region.
- The use of the quality infrastructure system as a bridge between Chile's sustainable taxonomy and sectoral action, creating confidence and acceptance forcircularity actions that demonstrate a shift in material production processes and the development of circular value chains, bringing together universities, researchers, manufacturers, policy makers and investors, thus improving the development of patents and new, low-carbon, circular products.
- The business models that will emerge as a result of the shift from production of new goods towards the provision of services applied to existent materials throughout a longer useful lifetime.

Potential for scaling up and exit-strategy

The volume of operations using financial instruments designed for green housing is still extremely low: considering that MINVU alone builds between 30,000 – 70,000 social houses per year, and that green construction represented only 0.43% - 1.00% of this total (even less when including private construction), the potential for scaling up is significant. By addressing the economic distortions that stimulate traditional, linear construction models, and through the development and implementation of technical norms and standards that promote replication of circular practices and materials, this project is conceptually conceived to be the first out of several efforts that will lead to the decarbonization of the construction sector in Chile.

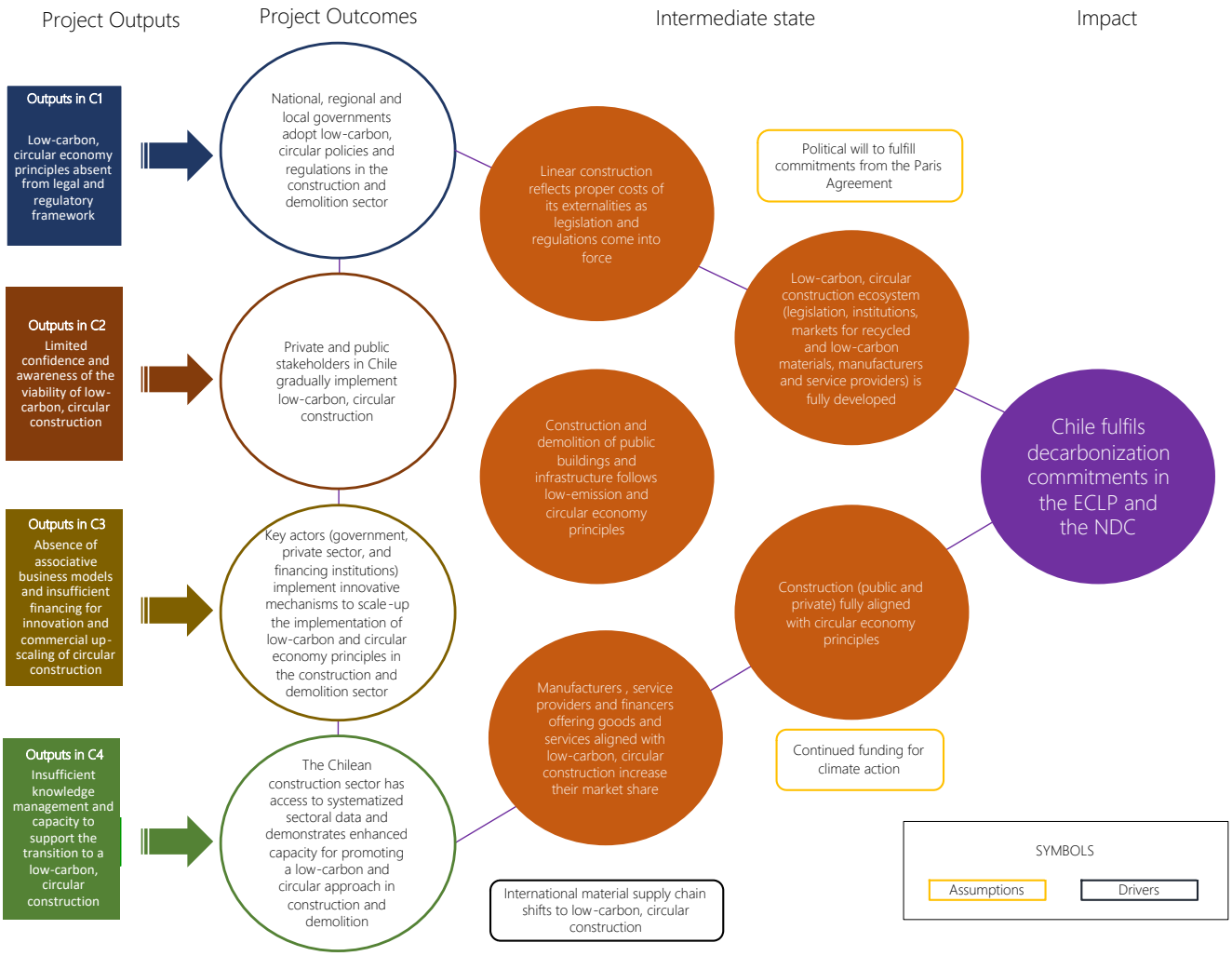
The project has been designed to ensure continuity of all of its interventions:

- In terms of legislation, the project is expected to result in novel legislation that will set the required institutional structures and capacities to carry forward the benefits delivered by the project. This legislation can be replicated to enhance circularity, material efficiency and decarbonization of other sectors of the economy, and serve as an example to other countries in the region.
- The project has been conceived and design to support, integrate and scale-up different networks and other associative efforts. In fact, the project's own implementation will bring together numerous actors from

government agencies, the private sector, banks, academy, and civil society organizations. Further examples include the network of municipalities for circularity (output 1.3) and the creation of networks of small-to-medium enterprises (SMEs) for the identification and gainful symbioses across industries (output 3.3). The latter will be materialized through Clean Production Agreements (APL) between the public and private sector, all of which will go beyond the duration of the GEF project.

- Transfer of knowledge is at the heart of the project, as insufficient capacity was identified as a key barrier slowing down the uptake of circular practices. The project will prepare learning material that will be integrated into the curricula of learning institutions, where it will serve to strengthen capacities in the public and private sector way beyond the duration of the execution phase.
- As a knowledge-management strategy, the project will document all interventions, starting from the design phase. Each output in the execution phase has been designed to identify and document lessons learned and outstanding gaps, needs and actions - even when those are not necessarily meant to be addressed by the project itself. This information will be used to develop a 'phase 2' version of the project, that will bring continuity to all of its actions.

Figure 4. Project theory of change



B3. Project elements

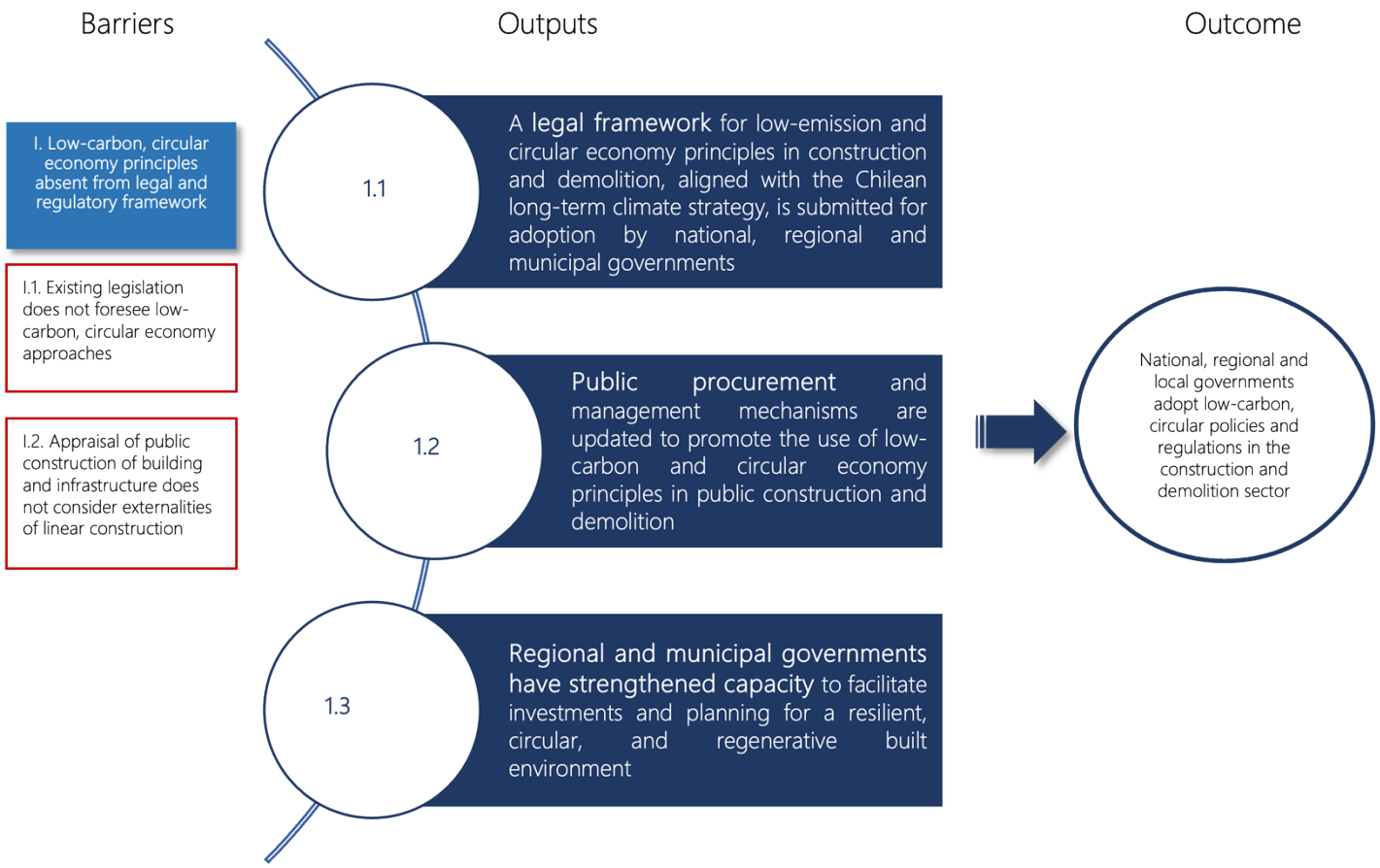
- As discussed in the previous section, this project has been structured into four technical components, plus a cross-cutting component in charge of the project's M&E.
- Each component addresses at least one of the barriers in the problem tree and is conducive to one of the key outcomes that will trigger the change in the construction sector.
- Components are divided into a series of outputs. In turn, each output includes a series of deliverables and activities.

- Each output in the technical components (i.e. components 1-4) include a series of "standard" deliverables and activities, e.g. preparation of technical documents for procurement processes, technical supervision, adoption support and compilation of lessons learned and recommendations. These deliverables will be assigned to the project's base team (PBT).
- Additional output-specific deliverables and activities are also included and presented below. These are mostly assigned to external consultancies, supervised by members of the project's base team. The distribution of deliverables among external consultancies and implementing partners is available in Annex J (project workplan). Overall coordination will be responsibility of the project's management unit (PMU).
- This approach ensures that:
    - Every single action of relevance to the project (technical, administrative, supervision, M&E, and knowledge management) is included within a unique, coherent workplan.
    - Each deliverable and activity in the workplan are linked to the project's budget and procurement plan, simplifying supervision, monitoring, and reporting processes.
    - Deliverables are assigned to concrete consultancies, under the supervision of one single member of the base team. This allows for an easy identification of roles and responsibilities, avoiding duplication of efforts and facilitating coordination.

Component 1: Policies and regulations

This component will support Chile in preparing the enabling regulatory framework required for a circular construction. These actions will lead to the internalization of the linear model's environmental costs, the lack of which currently results in artificially low virgin material prices. Moreover, by mainstreaming the mandate for circularity throughout the public sector and all its procurement processes the project will spur demand for circular solutions.

Barrier addressed: I. Low-carbon, circular economy principles absent from legal and regulatory framework.
Outcome: National, regional and local governments adopt low-carbon, circular policies and regulations in the construction and demolition sector



Output 1.1. A gender-responsive legal framework for low-emission and circular economy principles in construction and demolition, aligned with the Chilean long-term climate strategy, is submitted for adoption by national, regional and municipal governments

Outline:

- This output establishes the basic legal framework required for the transition to a low-carbon, circular construction. The regulatory proposal aims to simplify, unify, and ensure policy coherence across the entire sector, aligning incentives and allowing for a proper internalization of the environmental costs arising from a linear construction model.
- More specifically, this output will result in: i) a circular construction bill and ii) a harmonization package for existing regulations.
- This output also covers both the legislative and pre-legislative work required for the adoption of the bill.

Key stakeholders:

- **MMA**, as the lead ministry proposing the legislative package.
- **MOP** and **MINVU**, as key ministries involved in the construction sector (public infrastructure and housing, respectively).
- Other ministries with relevant competencies include **MINSAL** (regulations on hazardous waste) and **MTT** (transport of waste).
- Chile's Congress, including both Chambers, were the legislative discussion will take place.

Deliverables

Code	Deliverable title	Tentative content and required activities
1.1.1	Output 1.1 planning and follow-up meetings	Covers planning and supervision work in the context of this output, bringing together the base team and the Project Management Unit (i.e. supervisors from the Ministry of Environment and the executing and implementing agencies). These meetings will be held at least quarterly, and include a revision of targets, plans, actions, and key stakeholders. It will also serve to identify additional sources of cofinancing of relevance to this output. A meeting log (deliverable 5.1.11) will be held as part of the project's Knowledge Management System.
1.1.2	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes and any contractual agreements with relevant implementing partners. This includes identification of minimum requirements and technical specifications, detailed scope of work, responses to any technical inquiries from participating entities and evaluation of submissions and proposals. Terms of Reference (including scope of work, key deliverables, team composition and minimum specifications) will be developed based on the indicative TORs presented in Annex I of this document. The procurement process itself is to be conducted by the EA's procurement unit.
1.1.3	Adoption strategy and workplan	This strategy and workplan refer to the legislative, regulatory, and ministerial processes required to adopt the reforms to be prepared by the project (i.e. see deliverables below). - The adoption strategy and workplan will be of an executive nature to allow for immediate action as soon as the bills and other regulatory drafts become available. It will cover all the steps in the adoption process, both pre-legislative (e.g. early citizen participation, regional involvement and

		public consultation) and legislative work once the proposal reaches Congress. - The goal of the strategy is to identify the approach with the highest likelihood of approval for the reform packages, and in the shortest possible period. - Survey of potential positive, negative, and undecided votes in each chamber, providing recommendations to secure the required votes in alignment with the stakeholder engagement campaign (output 2.2). - The workplan will identify actions, timelines, and roles & responsibilities to support the debate and tailored to the hierarchy of each type of proposal (laws, resolutions, and lower hierarchy instruments). For bills, it will cover support throughout all three potential stages of the legislative process (first, second, and third constitutional stages / readings).[2] Work required for lower hierarchy reforms (e.g. direct engagement with relevant ministries) will also be identified and established, including details on the scope of the support to be provided by the project team to each responsible ministry.
1.1.4	Legislative proposal	This deliverable is intended mainly for pre-legislative discussion. It presents an overview of the proposed legislative framework and its rationale, together with a list of primary (i.e. laws and equivalent) and secondary (i.e. regulations) legislation to be updated, how and why. The proposal will be of an executive nature and based on existing assessments,[3] following guidance from the project's leading ministries, and inform the drafting of the circular construction bill and legislation harmonization package (see more details in deliverables below).
1.1.5	Circular construction bill	The bill will include: - A general definitions section covering key circularity principles, linkages with sustainable taxonomy and Chile's quality infrastructure system; governance, policy instruments, competencies, among other matters. - Adjustments to key legislation, inter alia: ○ General Law on Urbanism and Construction (LGUC), e.g. in terms of competences, mandates for sustainable procurement, planning for sustainable management of construction and demolition waste, resilience, among others. ○ Sanitary Code (Law-ranking decree 725), e.g. to enable and fund CDW supervision and enforcement of legal requirements, among others. ○ Public procurement law (Law 19.886), to establish the mandate for sustainable procurement. ○ Competencies and mandates of key ministries, including inter-alia the MMA, MOP, MINVU, MDSF, MTT and MH.[4] This will include precisions on the role of each ministry in terms of the Quality Infrastructure System (see output 1.2 below).

		○ Law 21.074 Law for Strengthening Regionalization, e.g. to set mandates for planning for CDW sorting and handling under natural disasters and catastrophes. ○ Law 20.879 – establishes sanctions to the transport of waste to clandestine dumping sites ○ Others, to be identified by the leading ministries and the project's legal team. - Key considerations regarding the extraction and mining of raw materials (e.g. aggregates, metal, wood, others). This section can include definitions and requirements in terms of recycled content, procedures for authorization, registry, delimitation of competencies according to the type and site of the extraction, control and inspection processes, penalties for non-compliance, prohibitions, gradualness of implementation, among others.[5] - Key considerations regarding the marketing of construction products (e.g. declarations of performance, branding, obligations of manufacturers, importers and distributors, linkages with the quality infrastructure system, definitions and requirements in terms of recycled content and provisions for tracking and controlling chemicals of concern).[6] - Mandate to disclose key information to enable circularity.[7] This will include requirement to manufacturers and importers (e.g. to register information about the properties and uses of their chemical substances, ensuring transparency along the supply chain) but also to municipalities (e.g. construction and demolition permitting) and service providers (e.g. demolition audits). - Gender considerations. This can include provisions to boost female education and employment in the construction sector. The bill shall include all relevant annexes, as well as any background documents required for kicking-off the legislative process. These documents will take the form of a Presidential Message ("*Mensaje Presidencial*"), if originated by the President, or a Motion ("*Moción*") if signed by a member of the Congress, and include a discussion on the relevant background, rationale, and objectives of the bill, as well as an overview of its contents.
1.1.6	Ministerial decrees and resolutions harmonization package	The circular construction framework introduced through this output will require alignment of a series of lower hierarchy regulations (i.e. ministry level, not requiring congress approval). Revised texts that are coherent with the newly introduced framework will be prepared through this deliverable. The reforms will also provide further resolution to the principles and goals laid out in the main legislation, including further details on competencies, reporting and data sharing obligations, surveillance, etc. The following decrees will be revised and adjusted: • Decree Nº1, Registry of Emissions and Pollutant Transfers "RETC" (MMA) • R1139 RETC regulatory resolution (MMA) • Decree Nº 40, Environmental Evaluation System "SEIA" (MMA)

		• D.S. Nº 47, General Ordinance on Urbanism and Construction "OGUC" (MINVU) • Executive Decree Nº 57, Classification, labelling and reporting of hazardous chemicals and mixtures (MINSAL) • Decree Nº 148, Hazardous waste management (MINSAL) • R5081, Declaration and tracing of industrial solid waste (MINSAL) • Decree Nº 594, Basic sanitary and environmental conditions in the workplace (MINSAL) • Decree Nº 189, Sanitary and safety conditions in landfills (MINSAL) • Decree Nº 75, Conditions for cargo transport (MTT). • Others to be identified during project execution
1.1.7	Support in adoption process	This deliverable captures the support from the base team to the adoption process, i.e. the implementation of the strategy and the workplan in 1.1.3 from behalf of the project team. Other forms of support include the mobilization of additional cofinance to support the interventions in this output (e.g. revision of ministerial decrees) Targets in terms of adoption are set in the indicators in Annex C.
1.1.8	Lessons learned and recommendations	This report will capture the main conclusions, challenges and lessons learned from this output. In particular, the report will capture the legislative work done by the project for each type of regulatory element (law, regulation, resolution, etc.), discussing approach, challenges, lessons learned, outstanding gaps, and recommendations for future projects. All lessons learned from each output will be compiled into a book / Project Memoir, as part of the project's Knowledge Management Strategy (see deliverable 5.1.5).

Output 1.2. Public procurement and management mechanisms are updated to promote the use of gender responsive low-carbon and circular economy principles in public construction and demolition

Outline

- This output will produce methodologies, procedures, and recommendations to integrate circular criteria in public investments, procurement, and management processes. It will work on three fronts:
    1. Assessment of publicly funded investment projects: In Chile, all investments involving the use of national public resources must go through the National Investment System (*Sistema Nacional de Inversiones*, **SNI**). The SNI encompasses the methodologies, norms, and procedures that guide the formulation, execution, and evaluation of Inversion Initiatives (IDI) that seek public funds. For an IDI to go forward, it needs to receive a positive evaluation from the SNI. The project will revise SNI methodologies so that the appraisal of projects that follow a linear approach to construction reflects the true costs they impose in terms of carbon emissions, water consumption, energy usage and waste generation.
    2. Procurement processes: Chile's public investment is mainly channeled through public concessions. These are mainly regulated through the Organic Law of the Ministry of Public Works (Law-ranking Decree 850/1997) and the Public Works Concessions Law (Supreme Decree 900/1996). Municipalities also have a simpler instrument, 'Shared Urban Financing' (*Financiamiento Urbano Compartido,* **FUC**) that allows the Housing and Urban Planning Services (SERVIU) and municipalities to partner with the private sector to finance and develop urban infrastructure projects. Through the FUC, smaller-scale initiatives (health centers, schools, kindergartens, sidewalks, among others), where the Concessions Law is not the most

appropriate instrument, can be built. The project will prepare guidelines and methodologies to ensure that public construction funded through these mechanisms follows a circular approach.

3. Day-to-day management: The Management Improvement Program (*Programa de Mejoramiento de Gestión*, PMG) is an incentive program that aims to enhance the efficiency, effectiveness, and quality of public services, by rewarding the institutions (ministries, government agencies, public universities, schools, hospitals, and other public entities) that fulfil a series of yearly defined goals and targets. Targets are established through an interministerial committee led by the Ministry of Finance. The project will support the MF in integrating circular considerations in the setting of PMG goals and targets.

- The aim of this output's interventions is that public investments in Chile prioritize construction projects that demonstrate adherence to the newly integrated low-carbon and circular economy principles, thus positioning the Chilean government as a driving force in the transition to sustainable construction.
- Methodologies in this output will be coherent with those in output 4.1. Training of public officials for the usage of all tools and methodologies prepared through this output will be undertaken as part of output 4.3.
- The improvements in the SNI will also facilitate the approval of the regional/municipal programs to be prepared and submitted to the SNI under output 1.4 (see below).
- All work under this output will serve to inform legislative reforms in output 1.1.

Key stakeholders

- **MDSF**, as lead ministry responsible for the SNI and its methodologies.
- **MOP** and **MINVU**, as leaders in public construction works (infrastructure and housing, respectively).
- **DIPRES**, as lead institution in the "Management Improvement Program" (*Programa de Mejoramiento de Gestión,* PMG).

Deliverables

Code	Deliverable title	Tentative content and required activities
1.2.1	Output 1.2 planning and follow-up meetings	Covers planning and supervision work in the context of this output, bringing together the base team and the Project Management Unit (i.e. supervisors from the Ministry of Environment and the executing and implementing agencies). These meetings will be held at least quarterly, and include a revision of targets, plans, actions, and key stakeholders. It will also serve to identify additional sources of cofinancing of relevance to this output. A meeting log (deliverable 5.1.11) will be held as part of the project's Knowledge Management System.
1.2.2	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes and any contractual agreements with relevant implementing partners. This includes identification of minimum requirements and technical specifications, detailed scope of work, responses to any technical inquiries from participating entities and evaluation of submissions and proposals. Terms of Reference (including scope of work, key deliverables, team composition and minimum specifications) will be developed based on the indicative TORs presented in Annex I of this document. The procurement process itself is to be conducted by the EA's procurement unit.
1.2.3	Technical proposal for assessing circular construction initiatives in the SNI	This document will include: - Identification of entry points for the inclusion of circularity in the National Investment System (SNI). - Technical alternatives for the development of a methodology to assess construction initiatives in the public sector following a circular approach. The proposal(s) shall adapt the methodologies developed in 4.1 for using in the

		SNI. The proposal shall result in a life-cycle assessment methodology that allows for a proper quantification of: 1. true social cost (shadow price) of raw material extraction; 2. true social cost (shadow price) of waste generation (including loss of material and costs for waste management). 3. embedded and operating carbon resulting from construction of buildings and infrastructure. This aims at quantifying the amount of GHG emissions generated by construction; these quantities can then be priced using Chile's social cost of carbon. 4. Social cost for ecosystem services affected by material extraction and inadequate disposal of CDW. 5. Valuation of co-benefits resulting from the use of a low-carbon, circular economy approach. - The proposal will include provisions to differentiate between a) housing and public building projects; b) infrastructure and roads; and c) sectoral development policies and programs. - The technical proposal(s) shall include a detailed rationale and be retroactively applied to at least 3 case studies of projects that were evaluated through the SNI in the recent past (i.e. one for each project type), comparing how the analysis changes in comparison to the traditional, linear appraisal, highlighting main differences, key methodological choices and results. - Lastly, the proposal will assess how the proposed methodologies will facilitate the preparation of the SNI programs in output 1.4 (see below).
1.2.4	SNI methodologies for circular construction projects	This deliverable captures the methodology itself, based on the approach resulting from the previous deliverable. Includes two sets of methodologies, i.e. one for infrastructure and one for buildings. The set of methodologies shall: - follow format and style conventions used by the MDSF, and include details on the type of analysis, methodological foundations, point of view adopted (i.e. from whose perspective the analysis is undertaken), project boundaries, relevant timeline, project optimization, identification of benefits and costs throughout the project's life span (distinctly identifying private and public costs and benefits of social and environmental nature), forecasting methods and criteria, indicators to be estimated, and any other relevant elements. - Include all relevant templates (e.g. sectoral information requirement, RIS) and spreadsheets that allow users to input basic information and automatically retrieve the assessment results required to prepare circular investment initiatives[8] in the construction sector, either directly (i.e. projects involving actual construction) or indirectly (i.e. public initiatives and programs to support the construction sector). The respective tools will include an input tab for the entry of basic project data and assumptions; and provide the following results from a life-cycle perspective: ○ embedded energy and carbon module, including a monetary valuation of each; ○ estimation of environmental, health and social costs resulting from different CDW management strategies;

		○ economic and financial indicators; ○ Sensitivity analysis of key results ○ Any other key results as suggested by the country and/or the institution preparing the methodology. - Include a detailed instruction manual that integrates and expands on the requirements and criteria used in the methodology, the tools and templates. The instruction manual will include at least 3 examples / case studies that illustrate different real-life scenarios. This instruction manual will inform the training of public officials and users, to be undertaken as part of output 4.3.
1.2.5	Proposal: integrating low-carbon, circular criteria into public procurement	This document will include: - Identification of entry points for the inclusion of circularity in the projects prepared under the Public Works Concessions Law and the FUC. - Adaptation of general methodologies developed in 4.1 for the specific usage under concessions and the FUC. This shall include a proposal for the quantification of i) environmental impacts relevant for a life-cycle assessment of public investment projects, including shadow price per ton of CDW generated, embedded carbon, chemicals of concern and other relevant pollutants / environmental impacts and ii) co-benefits resulting from the use of a low-carbon, circular economy approach. - Integration of sustainable and circular principles (reduction of waste, adequate waste management, reuse, recycle, and green procurement clauses in public contracts involving construction. - Integration of gender principles to ensure that procurement criteria favor companies that adhere to gender considerations (e.g. adherence to NCh 3262:2021[28]1 - The technical proposal(s) shall include a detailed rationale and be retroactively applied to at least 3 case studies of projects that were developed under each legislative framework (i.e. concessions and FUC), comparing how the analysis changes in comparison to the traditional, linear appraisal, highlighting main differences, key methodological choices and results.
1.2.6	Proposal: integrating low-carbon, circular criteria into the PMG	This document will include: - Identification of entry points for the inclusion of circularity in the Framework Programme for the PMG (*Programa Marco de los Programas de Mejoramiento de la Gestión*).[9] - Integration of circularity criteria under the “Green Government” (“Estado Verde”) indicator under the institutional efficiency objective of the PMG. - Adaptation of general methodologies developed in 4.1 for the specific usage under the PMG. This shall include a proposal for the quantification of i) environmental impacts relevant for a life-cycle assessment of public investment projects, including shadow price per ton of CDW generated, embedded carbon, chemicals of concern and other relevant pollutants /

		environmental impacts and ii) co-benefits resulting from the use of a low-carbon, circular economy approach. The technical proposal(s) shall include a detailed rationale and be retroactively applied to at least 3 case studies, comparing how the analysis changes in comparison to the traditional, linear appraisal, highlighting main differences, key methodological choices and results.
1.2.7	Inputs for legislative work, financial strategy and capacity building	This deliverable will compile, assess, and summarize all recommendations for: - changes in key legislation (e.g. Law-ranking Decree 850/1997, Supreme Decree 900/1996, Shared Urban Financing - Law 19865) to facilitate the adoption of the methodologies produced throughout this output. This will serve as input for the legislative framework in output 1.1. - Financial implications of relevance to the financial strategy in output 3.1 - Information and data gaps (for output 4.1) Capacity building recommendations for the public sector (output 4.3)
1.2.8	Support in the adoption process – output 1.2	This deliverable captures the support from the base team to the adoption process. This includes work with and support to the MDSF (SNI), MOP (concessions), MINVU/SERVIU (FUC) and MF (PMG). Other forms of support include the mobilization of additional cofinance to support the interventions in this output (e.g. funding for proposals that integrate low carbon and circular criteria, development of methodologies, studies, and comparison of analysis). Targets in terms of adoption are set in the indicators in Annex C.
1.2.9	Lessons learned and recommendations	The project team will capture the main conclusions, challenges, lessons learned, and future lines of work related to the adoption of low-carbon, circular economy principles in public projects and public procurement processes.

Output 1.3. Regional and municipal governments are strengthened to facilitate investments and planning for a resilient, circular, and regenerative built environment

Outline

- By working together, municipalities can undertake joint procurement and pool resources, knowledge, and expertise to develop and implement effective policies and programs for promoting circularity practices. This collective approach allows them to achieve greater impact than individual municipalities acting alone. Municipalities can also learn from each other's experiences and successes, sharing best practices in areas like waste management, urban planning, incentive programs, and public engagement strategies. For this purpose, this output creates a networkof municipalities for circularity.
- - For this purpose, this output will design and implement a public call for municipalities aiming to improve the circularity of their construction activities as well as the circular management of their construction and demolition wastes. Participating municipalities will be required to prepare proposals demonstrating their commitment and alignment to circular economy principles, existing projects, initiatives and capacities, as well as gaps and opportunities. The best / most ambitious proposals will be selected to receive targeted project support (see below). All municipalities participating in the selection process will be included in the network of municipalities, irrespective of the outcome of their submission.
- Support will take the following forms:
    - The project will prepare and secure approval for a series of pre-designed investment programs at the National Investment System (SNI), so that these become readily available to municipalities interested in improving resilience of their built environment and management and valorization of their CDW. The

investment programs will include i) a set of standard infrastructure investments and ii) funds to support planning and local regulations for resilience and circularity in their territories. The design of these programs will make use of the SNI methodologies developed through output 1.3.

  - Detailed design studies and project preparation will be funded to adapt the pre-approved model to the specific context of the municipalities that win the call for proposals under this output.

- Guidelines, protocols, and best practices for planning and managing resilient, sustainable construction at the local level will be readily available to all municipalities in Chile.
- Work with regional governments and municipalities will be supported by the stakeholder engagement and communication action plan (output 2.4) and capacity building (output 4.3), to create momentum and provide further support for these activities, ensuring buy-in at the local level. Standard infrastructure investments will be aligned with the project pipeline in output 3.1.

Key stakeholders

- **Regional and municipal governments**, as the main beneficiaries of this output's interventions. Municipalities will be engaged through the Chilean Association of Municipalities (*Asociación Chilena de Municipalidades,* AChM) and the Chilean Association of Municipalities for Sustainability (*Asociación de municipalidades por la sustentabilidad*, AMUSA).
- **MDSF**, in charge of the National Investment System (SNI), where the investment programs will be submitted to become eligible to receive funding.
- **SUBDERE**, part of Ministry of Interior and Public Security, which serves as a link between the national government and regional/municipal levels. SUBDERE will also provide cofinancing for this output.
- **SENAPRED,** the National Service for Prevention and Response to Disasters, key in implementing Chile's National Policy for Disaster Risk Reduction (*Política Nacional para la Reducción del Riesgo de Desastres*, PNRRD), with territorial presence throughout Chile. SENAPRED is one of the project's key partners, providing inputs regarding the resilience of territories and the built environment.

Deliverables

Code	Deliverable title	Tentative content and required activities
1.3.1	Output 1.3 planning and follow-up meetings	Covers planning and supervision work in the context of this output, bringing together the base team and the Project Management Unit (i.e. supervisors from the Ministry of Environment and the executing and implementing agencies). These meetings will be held at least quarterly, and include a revision of targets, plans, actions, and key stakeholders. It will also serve to identify additional sources of cofinancing of relevance to this output. A meeting log (deliverable 5.1.11) will be held as part of the project's Knowledge Management System.
1.3.2	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes and any contractual agreements with relevant implementing partners. This includes identification of minimum requirements and technical specifications, detailed scope of work, responses to any technical inquiries from participating entities and evaluation of submissions and proposals. Terms of Reference (including scope of work, key deliverables, team composition and minimum specifications) will be developed based on the indicative TORs presented in Annex I of this document. The procurement process itself is to be conducted by the EA's procurement unit. Agreements with beneficiary municipalities are included as a separate deliverable (see 1.3.6 below)
1.3.3	Design: network of municipalities for circularity (M4C)	This deliverable will conceptualize the initial layout of the network, and include objectives, rationale for municipal involvement, scope of work and focus areas (e.g. basic circular economy, construction and demolition waste management, planning, regulations (construction and raw material extraction), governance for circularity, project development and implementation, public procurement, demolition, refurbishments and extension of building lifetime, resilience and disaster management; creation of secondary markets, work with SMEs, formal and informal inter-municipal support mechanisms, data creation and management, among others). Includes details on the proposed governance structure for the network itself.
1.3.4	M4C yearly workplan	Yearly workplan and agenda.
1.3.5	M4C call for proposals	Call for proposals and terms of reference published in key media according to the design. Municipalities will submit a proposal indicating their willingness to become an implementing partner for the project, appetite for regulatory reform and overall ambition in terms of circularity, focusing on urban planning, public construction, and CDW management. A selection panel (including a focal point from SUBDERE and other key partners) will select the winners. All participating municipalities will be integrated in the M4C network, irrespective of the outcome of their submission.

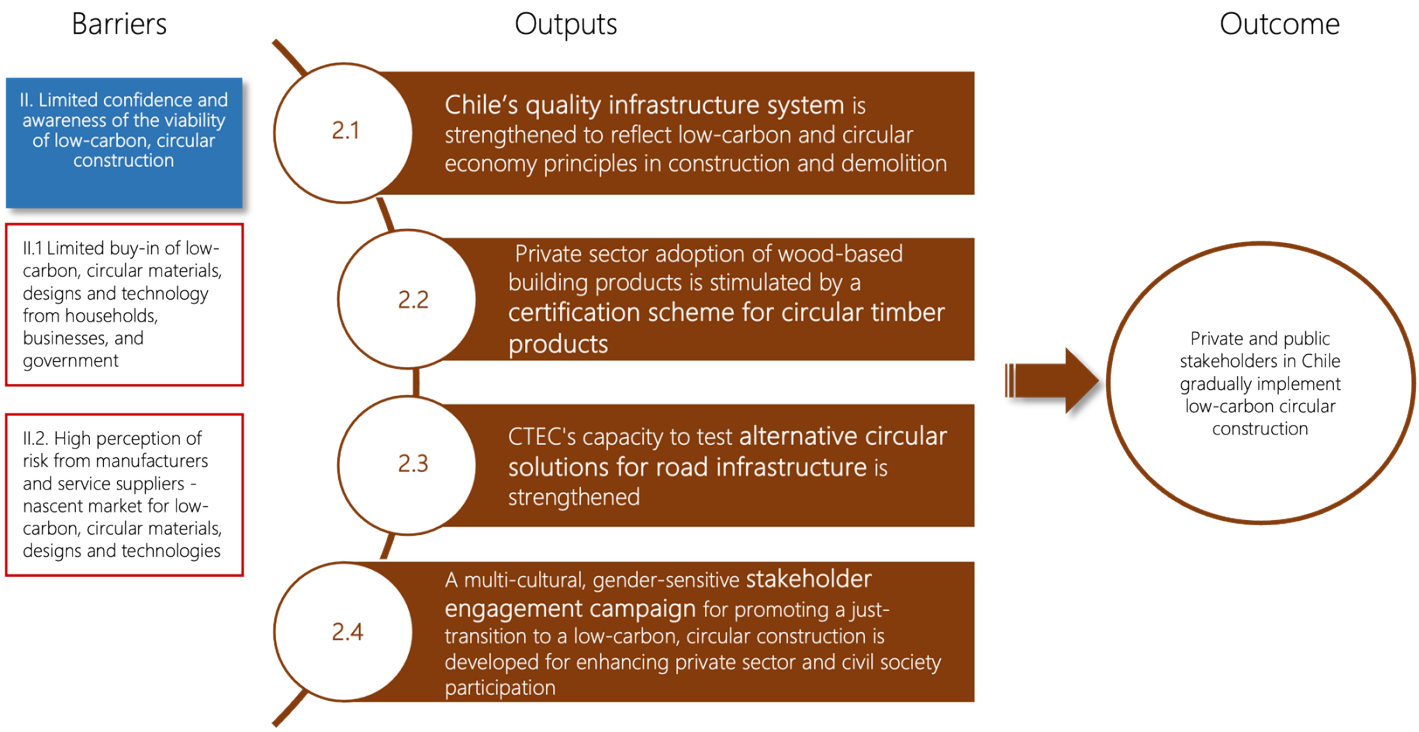
1.3.6	Cooperation agreement with partner municipalities	This deliverable captures the identification, selection and contractual arrangements with the municipalities that present the best proposals under the previous deliverable. These municipalities will receive project support as detailed in the next deliverables.
1.3.7	Network of municipalities for circularity	Formalization of the M4C network.
1.3.8	SNI investment project and programme: local infrastructure (design)	- This deliverable consists of the design and structuring of standard investment project (or programme) that can be pre-approved in the SNI, allowing municipalities to implement the investment in their territory. This deliverable consists of the set of standard projects, covering waste processing and valorization facilities to handle construction and demolition waste efficiently. This will include sorting machinery, crushing equipment, and infrastructure for recycling various materials like concrete, steel, and wood. - This program is intended to be funded by the National Regional Development Fund (FNDR). SUBDERE will provide cofinancing from the "*Programa Mejoramiento de Barrios*" to facilitate the acquisition of land. Alternative / additional sources of funding can be identified in the project's execution phase. - Guidelines and didactic material for municipalities are to be prepared as part of this deliverable (and serve as basis for trainings in output 4.3). - Support for the approval of this programme is to be provided by the project team as part of this same output (see deliverables below).
1.3.9	SNI programme: local planning for resilient, circular, and regenerative construction	This deliverable consists of the design and structuring of a project to support planning and resilience work at the region level. The project will establish simplified and clear requirements and eligibility conditions to regions in need of national funding (i.e. from Chile's national budget) to develop or revise planning instruments and strategies that incorporate the mandates of the ECLP (e.g. Chile net-zero plan, including goals and targets for the built environment), the Circular Construction Roadmap and/or the (upcoming) Sustainable Construction Strategy. Guidelines and didactic material for municipalities are to be prepared as part of this deliverable (and serve as basis for trainings in output 4.3). Support for the approval of this programme is to be provided by the project team as part of this same output (see deliverables below).
1.3.10	Municipality investment plan and project pipeline	The municipality that is awarded with the FPR challenge (see output 3.2 below) will also receive support for preparing its own investment plan and infrastructure project pipeline, including the adjustment of the pre-approved SNI infrastructure program to its own specific context. This will serve to demonstrate the implementation of the SNI program in the context of specific municipalities.

1.3.11	Standard municipal and regional strategy and guidelines	Document including standard measures, guidelines, recommendations, and strategies at the municipality level to align with the national policies, i.e. the ECLP, federal and regional planning instruments, the Circular Construction Roadmap and the upcoming Sustainable Construction Strategy. This deliverable will also include recommendations for: - integrating low-carbon, circular and resilient construction into local planning, - directions for circular procurement for local infrastructure works - Protocol for circular management of natural disasters (in cooperation with SENAPRED)
1.3.12	Support in the adoption process – output 1.3	This deliverable captures the work from the base team to support the adoption process. In the context of this output, *adoption* is defined as the two SNI programs receiving a positive evaluation ("RS").[10] Support will also include any relevant support to any of the key stakeholders listed within this output's scope, i.e. MDSF, DIPRES, SUBDERE, SENAPRED and the beneficiary municipalities resulting from the challenge organized as part of this output. Other forms of support include the mobilization of additional cofinance to support the interventions in this output (e.g. additional funding for SNI programs, investment plans for other municipalities, local projects from pipelines, studies, and guidelines). Targets in terms of adoption are set in the indicators in Annex C.
1.3.13	Lessons learned and recommendations	The project team will capture the main conclusions, challenges, lessons learned, and future lines of work related to the implementation of low-carbon, circular economy strategies at the sub-national level (regional and municipal governments).

Component 2: Advancing acceptance of circular construction[MR2]

Component 2 will strengthen Chile's quality infrastructure system, developing norms, standards and laboratory capacity to bring confidence and acceptance towards circular construction materials that integrate wastes from different industrial, agricultural and forestry processes, thus creating awareness and bringing sustainability improvements across multiple value chains. This component also includes a stakeholder engagement and communication campaign, which will provide cross-cutting support to all of the project's interventions.

Barrier addressed: II. Limited confidence and awareness of the viability of low-carbon, circular construction
Outcome: Private and public stakeholders in Chile gradually implement low-carbon, circular construction

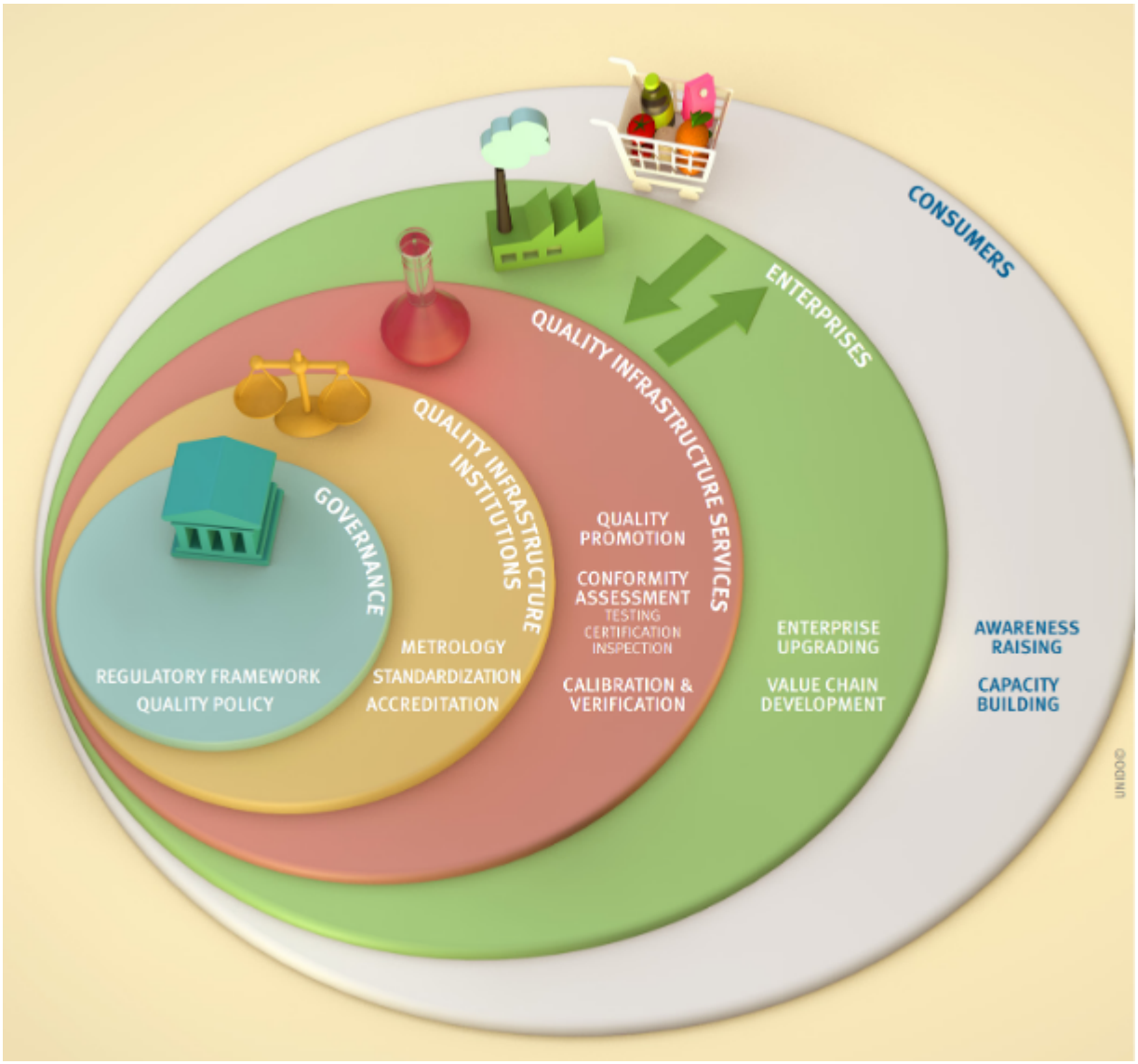


Output 2.1. Chile's quality infrastructure system is strengthened to reflect low-carbon and circular economy principles in construction and demolition

Outline

- A quality infrastructure system (Figure 5) is a network of interconnected elements that establish and ensure the consistent application of standards, technical regulations, and conformity assessment procedures (certification and accreditation) across the economy. This system aims to promote the **quality, safety, and environmental soundness of products, services, and processes**. It typically comprises norms, standards, third-party certification, and accreditation; it also involves laboratory capacity to assess product compliance with relevant attributes defined in its norms and standards.
- This output will design a comprehensive governance structure for an integrated quality infrastructure system ("IQIS") that promotes low-carbon, circular construction in Chile. The IQIS will play a fundamental part in enhancing the resolution of sustainable taxonomies in relation to the construction sector, ensuring that all parties (manufacturers, service providers, financers, and regulators) have a common understanding of desired circular attributes and sustainable features.
- This output will also identify and prioritize gaps in the existent system, creating a normalization action plan aligned with low-carbon, circular principles.
- The project will fund a fraction of the proposals in the normalization action plan and design mechanisms to promote and facilitate private funding for others.

Figure 5. Elements of Quality infrastructure system[11]



Key stakeholders

- **MMA**, as lead stakeholder for environmental norms and regulations. The MMA also has regulatory competencies in Chile's quality infrastructure system.
- Other key ministries with stakes in the IQIS include **MINVU** (standards and certifications linked to urbanism and housing, including the CVS standard); **MOP** (design, construction, and maintenance of public infrastructure projects – including use of secondary materials and the CES standard) and **MINSAL** (norms related to hazardous waste), among others.
- The National Institute for Standardization (Instituto Nacional de Normalización - **INN**), which develops and promotes technical standards in Chile.
- The Chilean Chamber of Construction (**CChC**), which collaborates with the INN in the development of technical standards in the construction sector.
- Key sectoral actors with strong participation in the development of standards include **Construye2025,** Chile's **Green Building Council**, as well as the local office of the Programme for the Endorsement of Forest Certification (**PEFC**), among others.
- Other entities include standardization and certification bodies (SGS, Bureau Veritas, others), as well as technology centers (**CTEC**, **CIM**, **CIPYCS**) and laboratories that provide testing and calibration services to support conformity assessment activities.

Deliverables

Code	Deliverable title	Tentative content and required activities
2.1.1	Output 2.1 planning and follow-up meetings	Covers planning and supervision work in the context of this output, bringing together the base team and the Project Management Unit (i.e. supervisors from the Ministry of Environment and the executing and implementing agencies). These meetings will be held at least quarterly, and include a revision of targets, plans, actions, and key stakeholders. It will also serve to identify additional sources of cofinancing of relevance to this output. A meeting log (deliverable 5.1.11) will be held as part of the project's Knowledge Management System.
2.1.2	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes and any contractual agreements with relevant implementing partners. This includes identification of minimum requirements and technical specifications, detailed scope of work, responses to any technical inquiries from participating entities and evaluation of submissions and proposals. Terms of Reference (including scope of work, key deliverables, team composition and minimum specifications) will be developed based on the indicative TORs presented in Annex I of this document. The procurement process itself is to be conducted by the EA's procurement unit.
2.1.3	Proposal: IQIS for Circular Construction	Proposal for an Integrated Quality Infrastructure System for Circular Construction. The proposal shall include: - Characterization of the system in its current status, including a detailed account of all relevant actors and institutions, competencies and mandates, policy targets, metrology capacity and a collection and systematization of existent norms, standards and data. The assessment should include estimations / measurements of the current uptake of key voluntary norms and certification schemes. - Proposal of an integrated QIS, describing objectives, principles (simplicity, coherence, efficiency), definitions, key policies (e.g. ECLP, Circular Economy Strategy, Roadmap for Circular Construction, etc.), proposed governance (identifying actors capable of undertaking the relevant roles), instruments (existent, e.g. environmental product declarations – EPD and Clean Production Agreements – APLs, or others), data and data platforms (e.g. Ciclodata) and sub-systems (certification of buildings, structural components, building components and coverings, fasteners, equipment & furniture, materials, etc.)[12]. **The IQIS will cover all the stages in the construction life cycle, from the extraction of raw materials to the preparation of construction products, construction, and demolition / disassembly.** - The proposal will identify a five-year improvement plan, including a prioritization of new norms, reforms of existing ones, laboratory and metrology capacity, standards, certifications, and accreditation. A part of this plan will be implemented through the GEF project, as captured with greater resolution in deliverable 1.2.4 below.

Code	Deliverable title	Tentative content and required activities
		- The prioritization in the previous item shall consider the full suite of circular economy solutions available in the building and construction sector. Examples include biobased alternative materials or materials that can sequester carbon to displace cement (e.g. using bioproducts such as straw bales for structural elements -combined with wood- and as building insulation), modular design for ease of disassembly, offsite industrial production, architectural design that reduces material use, nature-based solutions such as green roofs, deploying digital technologies to optimize resource use and management, 3D printing, etc. - Specific chapter on the normalization efforts required for the tracking and control of chemicals of concern along the construction value chains. - Identification of any legislation gaps to inform the text in the circular construction bill (output 1.1) - Financial sustainability of the system, including identification of costs and sources of funding for its operation beyond the execution phase of the GEF project. - Just-transition considerations of the proposed IQIS. In particular, this section of the proposal shall assess IQIS's impact for social housing and social infrastructure needs (e.g. income distribution effect and equity considerations of the burden of any additional costs introduced by the system) and provide relevant mitigation measures. - All actions must be duly prioritized based on their potential for decarbonization and other criteria decided by the lead ministries and defining strategic normalization needs (e.g. for chemicals of concern). - The proposal will identify entry points for private sector engagement, including in terms of governance, funding, capacity building, etc. It will also identify instruments for the materialization of these recommendations, such as voluntary clean production agreements (APLs – see output 3.3).
2.1.4	Normalization action plan	Short-term action plan to be undertaken by the GEF project's base team, aligned with the prioritization criteria included in the previous deliverable. Includes timelines, budget, list of norms and standards to be developed / updated through the GEF project.
2.1.5	Draft norms (new and revised)	In accordance with the priorities identified in the previous deliverable, the project will fund the revision of a set of technical norms. This set of norms may tentatively consider products (including those with chemicals of concern)[13] and services (e.g. design guidelines, recycling and waste management protocols, others). The set of norms may also include product category rules (RCPs) required for type-III ecolabeling and the preparation of Environmental Product Declarations (DAPs).[14] Other eligible actions include the purchase of existing / new norms from the INN, to be made publicly available.

Code	Deliverable title	Tentative content and required activities
2.1.6	Publicly available circular construction technical norms	This output will also cover the purchase of existing / new norms from the INN, to be made publicly available, in alignment with the normalization action plan.
2.1.7	Draft revision of standards	This deliverable will propose concrete revisions to the main construction standards used in Chile, i.e. CVS and CES, to harmonize and bring coherence with the IQIS and its body of circular construction norms. This product will be prepared in close consultation with MINVU, MOP and other relevant stakeholders such as the local office of the Green Building Council and technology centers and sectoral representatives (CChC, CTEC, CIM, CENAMAD, CIPYCS, others). In terms of scope, the revisions will aim at introducing embodied carbon considerations, low-carbon / circular practices, traceability, reduction of chemicals of concern, prevention and handling of waste during construction, among others.
2.1.8	Regional peer exchange workshop	The project will organize a peer exchange workshop with other countries that are investing in their quality infrastructure systems, including ICONTEC (Colombia), ABNT (Brazil), UNIT (Uruguay) and other countries in the region working on circularity. Besides the exchange of experiences and lessons learned, this workshop will aim at the development of partnerships for joint preparation of technical norms and homologation of standards.
2.1.9	Support in the adoption process – output 2.1	This deliverable captures the support from the base team to the adoption process for the norms and standards in this output. For norms, “adoption” will be understood as the approval and publication by the INN, including support during the public consultation phase and discussions in the technical committee and INN’s council. For the revised standards (CVS and CES, both in deliverable 1.2.4), this will include the publishing of a new version of the certification manuals of each standard, and application of these standards by new projects. **Updating these standards is a pre-requisite for achieving the targets set for indicator 2.(a) in Annex C.** Other forms of support include support to public and private actors in the use of the norms (see capacity building actions in component 4), as well as work conducive to the mobilization of additional cofinance to support the interventions in this output (e.g. preparation and publication of technical norms, funding for the regional peer exchange workshop, others). Targets in terms of adoption are set in the indicators in Annex C.
2.1.10	Lessons learned and recommendations	This report will capture the main conclusions, challenges and lessons learned from this output. In particular, the report will capture the work undertaken in terms of normalization and standardization, identifying key challenges, outstanding gaps and recommendations for subsequent projects.

Output 2.2 Private sector adoption of wood-based building products is stimulated by a certification scheme for circular timber products

Outline

- If managed responsibly, renewable bio-based building materials have a unique capacity to drive reductions in atmospheric carbon, [15] including:
    - Sustainably-sourced wood products can displace materials that have a larger carbon footprint. For example, cross-laminated timber – a wood product made from the crosswise layering and lamination of structural grade timber – has become an attractive alternative to concrete and steel, due to its potential for scalability, sustainability, strength, and flexibility, as well as its suitability for incorporation into fast, modular off-site construction techniques.
    - Likewise, the development and use of reconstituted wood products from non-timber lignocellulosic residues from forestry, agricultural and food "waste" can result in increased material efficiency, while addressing environmental problems such as GHG emissions, the risk of wildfires from abandoned biomass, and the costs of landfilling.
    - The thermal properties of timber can result in reduced cooling and heating energy demand in the operational phase of buildings;
    - Timber products can be designed for disassembly, reuse and repurposing, thus reducing the demand (and the environmental footprint) of new products.
    - Other actions that can lead to a reduction in GHG emissions include improvements in production and planting, mixed plantation schemes, evaluation of harvest rotation times, prevention of forest fires, minimization of energy consumption and restoration of degraded areas with native species.
- While there is a growing interest in Chile to use wood in construction, both in public and private works, conditions need to be developed to facilitate a circular use.[16] While existing certification schemes (such as the Forest Stewardship Council, FSC) focus on the sustainable management of forests, less attention is paid to other relevant aspects related to circularity across the wood value chain, e.g. disassembly, reuse and repurposing properties of wood products, and the gainful use of non-timber lignocellulosic biomass by the industry.
- This output will **design and pilot a certification scheme that combines sustainable and circular management of forests with the manufacturing of circular construction parts for the provision of bio-based materials for building and infrastructure works**, in accordance with commitments, goals, legislation, country agreements and in accordance with best practices and world standards.
- More specifically, the proposed scheme will integrate both sustainability and circularity, bringing together new and existing certifications in Chile related to sustainable management of forests, as well as technical norms to support material recovery from forestry by-products and wood-product manufacturing, replacement of petrochemical-based glues, chemicals and coatings, etc. Thus, this output will not only contribute to global decarbonization but also enhance the forest sector's role in landscape regeneration and biodiversity.
- This output will also:
    - define parameters and criteria for public sector demand for wood certified as circular (in coordination with efforts in output 1.2), mainly from MOP and MINVU;
    - support the creation of consortiums or associations to participate in committees, access public tender processes and public support, including innovation support schemes (in coordination with efforts in output 3.3).

<u>Key stakeholders</u>

- The Ministry of Public Works (MOP), as the entity with the mandate to incorporate circularity criteria into its procurement processes, and co-financer for this GEF project.
- MINVU, as the leading ministry in urban construction, also providing co-finance for the project.
- The Ministry of Agriculture (MINAGRI), more specifically, the National Forestry Corporation (*Corporación Nacional Forestal*, CONAF) and the Forestry Institute (*Instituto Forestal*, INFOR).
- Interventions in this output will be led by the Innovation Center for Wood (*Centro de Innovación en Madera*, CIM), which gathers expertise and knowledge from six different schools and faculties from the Catholic University, as well as private sector representatives. The National Center for Wood Industry (CENAMAD) will also take part of this output.
- Local technology center InnovaCiclo will provide LCA analyses.
- Sectoral representatives, mainly through CChC and Construye2025.

- Representatives from existing certification schemes in the forestry sector (e.g. Forest Stewardship Council - FSC and the Programme for the Endorsement of Forest Certification - PEFC).
- Funding institutions, i.e. CORFO, ANID, as well as public and private banks (Banco Estado, Santander, Banca Ética). Forestry sector funds (e.g. the Fund for the Conservation and Sustainable Management of the Native Forest).
- Institutions in the quality infrastructure system (IQIS), mainly, the National Institute for Standardization (INN).

Deliverables

Code	Deliverable title	Tentative content and required activities
2.2.1	Output 2.2 planning and follow-up meetings	Covers planning and supervision work in the context of this output, bringing together the base team and the Project Management Unit (i.e. supervisors from the Ministry of Environment and the executing and implementing agencies). These meetings will be held at least quarterly, and include a revision of targets, plans, actions, and key stakeholders. It will also serve to identify additional sources of cofinancing of relevance to this output. A meeting log (deliverable 5.1.11) will be held as part of the project's Knowledge Management System.
2.2.2	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes and any contractual agreements with relevant implementing partners. This includes identification of minimum requirements and technical specifications, detailed scope of work, responses to any technical inquiries from participating entities and evaluation of submissions and proposals. Terms of Reference (including scope of work, key deliverables, team composition and minimum specifications) will be developed based on the indicative TORs presented in Annex I of this document. The procurement process itself is to be conducted by the EA's procurement unit.
2.2.3	LCA methodology and case studies for circular timber	This deliverable will adapt a Life Cycle Assessment (LCA) to be used in the context of this output. The methodology will include: - goal and scope definition, i.e. purpose, definition of product, process, or service being assessed, functional unit of the analysis, system boundaries, specification of life cycle stages to be included (e.g., cradle-to-grave or cradle-to-cradle), variables and impacts to be assed (e.g. climate change, human health, and resource depletion, others); - methods and procedures for gathering data on all the inputs (materials, energy), outputs (emissions, waste) and indicators (e.g. embodied energy, feed stock energy, embodied carbon) associated with the product, process, or service throughout its life cycle; - benchmarking analyses to be performed; - specify any limitations of the study. The methodological proposal will include at least 3 case studies, to be presented as examples.

2.2.4	Report: assessment of timber circularity in Chile	This report will: - compile evidence and provide an assessment of the level of circularity and sustainability of current (baseline) practices in Chile. - Identify analyses of critical processes in the timber production chain to ensure its circularity. - Provide a comparison of sectoral production scenarios against national and international standards and best practices. - Analysis of current certification schemes in Chile at the forest and wood-product level, their level of integration, and the adoption by the industry.
2.2.5	Proposed concept: certification standard for circular timber	The concept shall include all key aspects of the standard manual as well as a governance proposal for its implementation. This document will also serve to stimulate discussion with and receive feedback from relevant stakeholders. The full proposal is described in the deliverable below.
2.2.6	Standard manual	Standard manual, considering all comments received from the concept proposal. To include: - Introduction: Overview of the standard, its purpose, scope, and target audience. - Definitions: Clear explanations of key terms and concepts used throughout the manual. - Requirements: Detailed criteria and performance indicators for organizations to meet. - Guidelines: Recommendations and best practices for implementing the standard. - Verification and Certification: Procedures for assessing compliance and obtaining certification. - Monitoring and Evaluation: Requirements for tracking performance and making improvements. - Reporting: Guidelines for communicating sustainability performance to stakeholders. - Grievance and dispute Resolution: Procedures for addressing complaints and resolving conflicts. - - Annexes: Additional information, such as case studies, technical specifications, or reference documents. Additional Sections may include requirements for managing environmental and social impacts throughout the supply chain, stakeholder engagement, procedures for identifying, assessing, and mitigating sustainability risks, among others.

		- The LCA methodology prepared under this same output shall also be included as an annex.
2.2.7	Guidelines for the provision of circular timber in public procurement	These guidelines will facilitate the use of the standard to certify the circularity of wood products used for key public procurement, including infrastructure projects from MOP and housing projects from MINVU.
2.2.8	Support in the adoption process – output 2.2	This deliverable captures the work from the base team to support the adoption process. In the context of this output, *adoption* is defined as: - any work required to support the implementation of the circular timber standard; - any work required to support the adoption from MOP and MINVU, as well as any efforts for scaling up, financing, networking, negotiations conducting to relevant instruments (such as an APL – also see output 3.3). Other forms of support include the mobilization of additional cofinance to support the interventions in this output (e.g. additional funding for other synergic developments, additional pilots and studies, etc.) Targets in terms of adoption are set in the indicators in Annex C.
2.2.9	Lessons learned and recommendations	The project team will capture the main conclusions, challenges, lessons learned and future lines of work related to the implementation of the circular timber certification scheme and the wide-spread adoption by key stakeholders in the public and private sector.

Output 2.3. CTEC's capacity to test alternative circular solutions for road infrastructure is strengthened

Outline

- *Industrial symbiosis* is a collaborative approach where different industries or companies work together to share and utilize resources more efficiently, transforming waste or by-products from one company into valuable raw materials for another.
- While the use of bio-based materials has been identified as one of the key actions in reducing the sector's carbon footprint,[17] the use of secondary aggregates -although with a smaller GHG mitigation potential- can reduce land use need, exhaustion of mineral and water resources, and human toxicity.[18]
- The utilization of waste from various industries to improve road infrastructure (pavement in highways, secondary and minor roads) is gaining momentum in Chile, and some waste materials (e.g. rubber granules, rubber powder, steel and copper slag, plastics) have already undergone preliminary testing, bringing them closer to practical use. However, the lack of defined environmental standards for the different types of products and materials that could be used hinders their integration into public works projects, which require special attention due to their scale. This poses a challenge as the use of virgin materials leads to the depletion of natural resources and various other environmental and social impacts.
- **Through this output, the project will strengthen local testing capacities for the assessment of potentially usable waste streams in road infrastructure,** accelerating the adoption of innovative products. More specifically, **this output will team-up with a local technology center to develop an off-road testing mechanism for innovative materials, technologies, and applications that incorporate diverse waste streams and/or by-products, assessing their environmental performance in various infrastructure uses.**

- The use of different waste materials, industrial by-products, or new technologies will be compared based on environmental parameters such as leaching, air emissions, friability (release of substances, whether macro or microelements), material health (toxicity, ecotoxicity, and other variables), embodied carbon, water footprint and waste generation, among others. **The scope of this output includes both the design of the testing mechanism, as well as its piloting.** Additional tests will be conducted using private resources (co-financing).
- This system will provide an off-road mechanism for public and private agents to test innovative solutions, reducing the cost of piloting, accelerating processes, and channeling private resources into the active testing of materials. Additionally, it will generate relevant information to parameterize the uses of the tested materials and develop inputs for the creation of technical norms.

Key stakeholders

- This output will be led by the Technological Center for Innovation, Productivity and Sustainability in Construction (*Centro Tecnológico para la Innovación en Productividad y Sustentabilidad en la Construcción*, CTEC), one of the project co-financers and implementing partner. The testing mechanism will be hosted in CTEC's innovation park, with local technology center InnovaCiclo providing LCA analyses.
- The Ministry of Public Works (MOP), as the entity with the mandate to incorporate circularity criteria into its procurement processes, and co-financer for this GEF project.
- Sectoral representatives, mainly through CChC and Construye2025, as well as CTEC's partners from the private sector.
- Funding institutions, i.e. CORFO, ANID, as well as private banks (Banco Estado, Santander).
- Institutions in the quality infrastructure system (IQIS), mainly, the National Institute for Standardization (INN).

Deliverables

Code	Deliverable title	Tentative content and required activities
2.3.1	Output 2.3 planning and follow-up meetings	Covers planning and supervision work in the context of this output, bringing together the base team and the Project Management Unit (i.e. supervisors from the Ministry of Environment and the executing and implementing agencies). These meetings will be held at least quarterly, and include a revision of targets, plans, actions, and key stakeholders. It will also serve to identify additional sources of cofinancing of relevance to this output. A meeting log (deliverable 5.1.11) will be held as part of the project's Knowledge Management System.
2.3.2	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes and any contractual agreements with relevant implementing partners. This includes identification of minimum requirements and technical specifications, detailed scope of work, responses to any technical inquiries from participating entities and evaluation of submissions and proposals. Terms of Reference (including scope of work, key deliverables, team composition and minimum specifications) will be developed based on the indicative TORs presented in Annex I of this document. The procurement process itself is to be conducted by the EA's procurement unit.
2.3.3	Road infrastructure testing laboratory proposal	Definition of required equipment (for sample preparation, bitumen, aggregates, asphalt mixtures and environmental testing), laboratory facilities, safety equipment, quality control. The proposal will be used for approval by the project's management and for requesting inputs from stakeholders.

2.3.4	Road infrastructure testing laboratory full design	Full design based on approved proposal.
2.3.5	Pilot testing: design, workplan, and monitoring plan	The project will fund a pilot test for the laboratory. During the PPG test, the MMA has defined the test use of industrial waste (slags) as artificial aggregates; other tests may be defined with MOP and the project's Steering Committee. As a minimum, the pilot test will include: - Experimental prototyping - Testing and monitoring of performances, including all relevant standards (mix design studies, physical tests, recyclability, others). - Environmental impact analysis through LCA (see 2.3.7 and 2.3.8 below). - Definition of the industrial supply chain and market analysis to assess the availability and feasibility of the reuse of the selected industrial by-product - Monitoring plan (including progress reports). **Testing of additional solutions / alternative uses will be funded through private resources.** In the context of this deliverable, each alternative is defined as the combination of a given material used for a specific purpose (subbase, base, binder course, surface course, concrete slab, etc.). Thus, for example, 3 materials tested for 4 possible uses yield 3 x 4 = 12 alternative solutions.
2.3.6	Pilots testing results	Results from the pilot testing. This report shall include conclusions on the materials and possible used tested, including a comparison of the results and recommendations.
2.3.7	LCA methodology for the road infrastructure testing system	This methodology will be developed to be used in all tests provided by the lab. The methodology will include: - goal and scope definition, i.e. purpose, definition of product, process, or service being assessed, functional unit of the analysis, system boundaries, specification of life cycle stages to be included (e.g., cradle-to-grave or cradle-to-cradle), variables and impacts to be assed (e.g. climate change, human health, and resource depletion, others); - methods and procedures for gathering data on all the inputs (materials, energy), outputs (emissions, waste) and indicators (e.g. embodied energy, feed stock energy, embodied carbon) associated with the product, process, or service throughout its life cycle; - benchmarking analyses to be performed;
2.3.8	LCA pilot results	Application of the general methodology to the specific case-study of the pilot. Included as part of the pilot testing results (2.3.6 above).

2.3.9	Support in the adoption process – output 2.3	This deliverable captures the work from the base team to support the adoption process. In the context of this output, *adoption* is defined as: - support CTEC in the mobilization of additional resources from the private sector to conduct additional testing (i.e. different materials and uses integrating wastes / by-products from other industrial processes). - any work required to support the preparation and approval of technical norms and standards based on the recommendations from the demonstrative pilots in this output; - any work required to support the scaling up, financing, networking, negotiations conducting to relevant instruments (such as an APL – also see output 3.3). Other forms of support include the mobilization of additional cofinance to support the interventions in this output (e.g. additional funding for other synergic developments, additional testing and pilots, etc.) Targets in terms of adoption are set in the indicators in Annex C.
2.3.10	Lessons learned and recommendations	The project team will capture the main conclusions, challenges, lessons learned and future lines of work related to the implementation of low-carbon, circular economy processes and materials.

Output 2.4. A multi-cultural, gender-responsive stakeholder engagement campaign for promoting a just-transition to a low-carbon, circular construction is developed for enhancing private sector and civil society participation

Outline

- This output will design and implement a multi-cultural, gender-sensitive **stakeholder engagement campaign.** The strategy will ensure effective participation of all relevant stakeholders, including economically vulnerable groups, and ensuring that all of the project's recommendations fit along well with the public's needs.
- Engagement actions will include a **communication strategy and campaign** to support the execution of the project, i.e. for outreach, awareness raising and dissemination of outputs/results. Thus, the engagement campaign is considered a two-way communication (from the project to stakeholders and vice-versa), while communication actions are considered unidirectional (from the project to the stakeholders).
- Engagement and communication will serve to:
    - incorporate broad public, private and civil society views regarding the shift to a circular construction.
    - disseminate the project's plans, actions and results;
    - improve policy awareness (i.e. regarding laws and regulations already in force).
    - support the identification of additional sources of cofinancing relevant to the project's objectives.
    - spread the role of women in the sector, as well as raise awareness on the outstanding inequalities
- This output also includes **yearly inter-agency coordination workshops** with other ministries, multilaterals and cooperation agencies that are working on synergetic projects.

Key stakeholders

- All government agencies and sectoral representatives in the project's steering committee and its Advisory Body are strategic for the preparation of the deliverables in this output.

- The municipalities selected to receive support from the Recycling Fund (output 3.2) will also host face-to-face communication and stakeholder engagement actions.
- Multilateral and cooperation agencies, with whom the project will coordinate on-going and planned efforts (see dedicated deliverable in this output) to identify synergies and avoid duplication of efforts. Includes (inter alia) CAF, GIZ, AFD, IDB, WB, CIF, GBC and any other relevant agency.

Deliverables

Code	Deliverable title	Tentative content and required activities
2.4.1	Output 2.4 planning and follow-up meetings	Covers planning and supervision work in the context of this output, bringing together the base team and the Project Management Unit (i.e. supervisors from the Ministry of Environment and the executing and implementing agencies). These meetings will be held at least quarterly, and include a revision of targets, plans, actions, and key stakeholders. It will also serve to identify additional sources of cofinancing of relevance to this output. A meeting log (deliverable 5.1.11) will be held as part of the project's Knowledge Management System.
2.4.2	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes and any contractual agreements with relevant implementing partners. This includes identification of minimum requirements and technical specifications, detailed scope of work, responses to any technical inquiries from participating entities and evaluation of submissions and proposals. Terms of Reference (including scope of work, key deliverables, team composition and minimum specifications) will be developed based on the indicative TORs presented in Annex I of this document. The procurement process itself is to be conducted by the EA's procurement unit.

2.4.3	Gender-responsive multi-stakeholder communication campaign and engagement strategy	The strategy should include the following elements regarding communication: - Design of a communication campaign, including scope, products, timing, intended outcomes, key messages, appropriate media for each communication product. - Detailed workplan for its implementation. - Adapt existing Visual identity RDC strategy and brand to the project, with user manual - Customer Relations Manager (CRM) mailing. - Project presentation video - Templates (presentations, e-mail signatures, promotional materials). - The communication campaign will include specific actions for each output in each component of the project, aligned with the adoption targets and intended outcomes of each. The strategy should include the following elements regarding consultation and engagement: - Objectives of the strategy, broken down by output. - Identification of relevant stakeholders from the public and private sector, academia and others, with focus on data providers and system users. The map of relevant stakeholders should build upon the list included in this project (section "Stakeholders"), identifying new beneficiaries and his relation to the project, location, entities represented by each stakeholder, interests, actual and desired roles, and risks in relation, to the development and execution of the system. - Representatives from vulnerable groups (based on gender, race, proximity to areas of high risk, or any other relevant considerations) should likewise be identified and invited to participate in the project; in particular grassroots recyclers, entrepreneurs, and organized groups of workers who can access the benefits of the project. - Stakeholders will be categorized using a power-interest matrix.[19] - Calendar and means of participation of each actor; work plan for participation and capture of interested parties for training processes, training, and calls for activities in each of the project topics. - Assignment of responsibilities within the project team. - Metrics for tracking engagement level. - Specific section on gender/ethnicity and socioeconomic level considerations for consultation, participation and training campaigns. - Specific module in the communication campaign that promotes visibility of women in the construction sector. The module will include participation of local NGOs (e.g. Women in Construction) and could include interviews, videos, podcasts, and other actions.
2.4.4	Project website	Institutional website, including project description, news, publications and contact details.

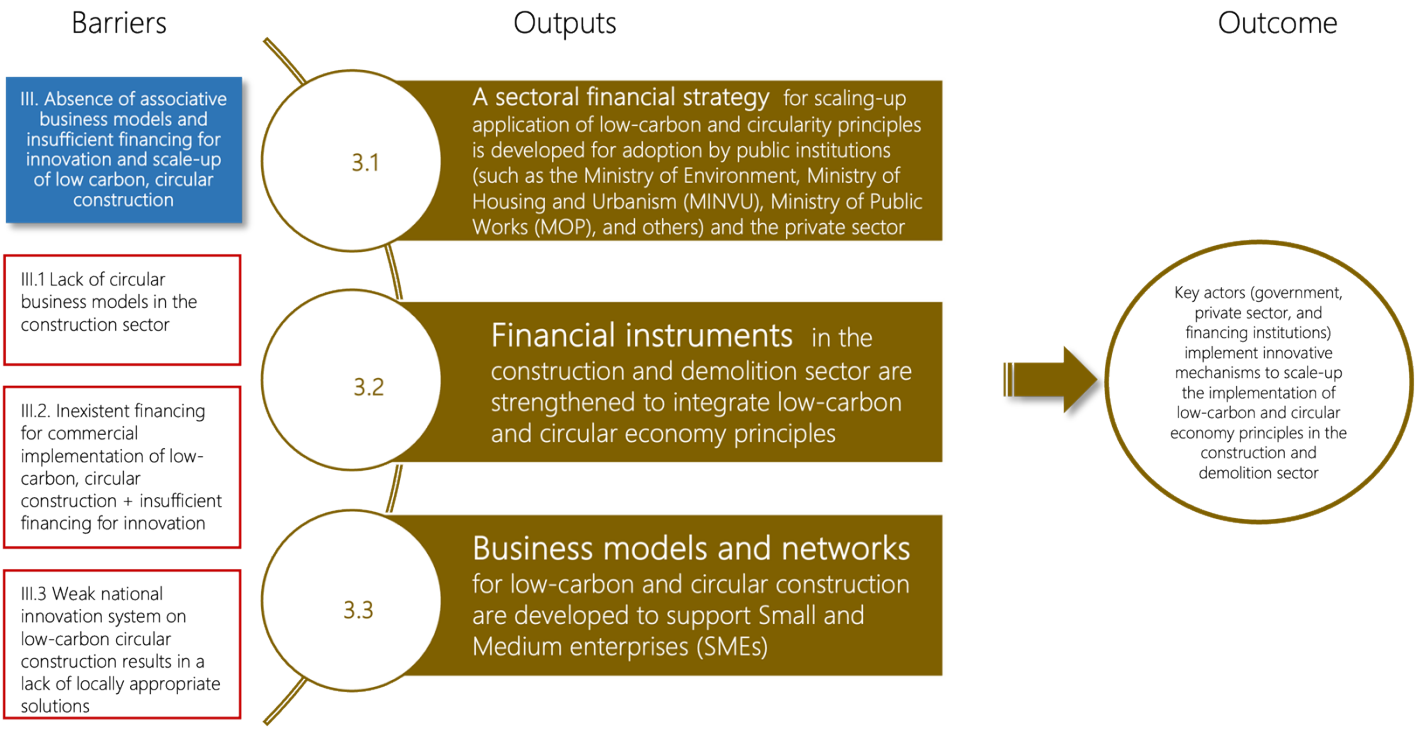
2.4.5	Communication products	Consultation and engagement activities are to be kept in dedicated reports that include scope, participants, and main outcomes. Frequency of reporting is half-yearly. Campaigns to collect signatures to present legal or regulatory modification projects must comply with national procedures. This deliverable also includes actions in the municipalities that win the recycling fund (FPR) challenge in output 3.2.
2.4.6	Project communication events	The purpose of this activity is to present the key results of the project at the national level. This includes one event in each of the municipalities awarded through output 1.3, and three events in Santiago (mid-execution and final year). Events will take the form of workshops, conferences, seminars, product launch, etc.). All events will include at least one slot allocated to discuss gender issues relevant to the construction sector.
2.4.7	Multilaterals and cooperation coordination workshop	The project will organize a yearly coordination workshop with all multilaterals, development agencies and leading ministries to present current lines of work, identify synergies and collaboration opportunities, and avoid duplication of efforts. Sectoral or regional representatives (e.g. CChC, National Association of Municipalities, others) can also be invited to participate.
2.4.8	Project surveys	This deliverable captures all surveys funded through this output to obtain sectoral data relevant for any of the outputs in this project. At least one sectoral survey should serve to provide sectoral information on gender (including but not limited to participation in the workforce, roles, salary gap, others to be indicated by the gender expert or the project team).
2.4.9	Lessons learned and recommendations	The project team will capture the main conclusions, challenges, lessons learned and future lines of work related to the engagement of stakeholders in the construction sector.

Component 3: Financing and business models for scaling up

Existing market imperfections reduce the profitability of circular activities either via a reduced return of investments or via increased risks for investors, leading to underinvestment in low-emission circular activities. While a financial strategy for the implementation of the ECLP as a whole is currently underway, the shift to a low-emission circular construction will demand finer-scale provisions at the sectoral level.
-Interventions in component 3 will support key enablers for the acceleration of the circular transition, i.e. financing, associative business models and innovation networks that will allow for the scaling-up of circular solutions.

Barrier addressed: III. Absence of associative business models and insufficient financing for innovation and scaling-up low-carbon, circular construction

Outcome: Key actors (government, private sector, and financing institutions) implement innovative mechanisms to scale-up the implementation of low-carbon and circular economy principles in the construction and demolition sector



Output 3.1. A sectoral financial strategy for scaling-up application of low-carbon and circularity principles is developed for adoption by public institutions (such as the Ministry of Environment, Ministry of Housing and Urbanism (MINVU), Ministry of Public Works (MOP), and others) and the private sector

Outline

- This output will develop a comprehensive **financial strategy** for the adoption of low-emission, circular construction practices. This strategy will serve to identify, quantify and prioritize actions and investments required for the sector's transition to circularity, resulting in bankable **pipeline of investment projects**.
- It will also support in enhancing the resolution in Chile's Sustainable Taxonomy with regards to the construction sector, providing a bridge between the taxonomy and the system of norms and standards in Chile's quality infrastructure system (IQIS - output 2.1), which define what constitutes circular, low-carbon and sustainable construction.
- Lastly, this output will also support Chile in identifying additional sources of sectoral funding, resulting in a concept note that is ready for submission to one or more green funds.

Key stakeholders

- Key ministries involved in the construction sector, i.e. MMA, MOP, and MINVU.
- The Ministry of Finance (MH), as responsible for the development of Chile's sustainable taxonomy.

Deliverables

Code	Deliverable title	Tentative content and required activities
3.1.1	Output 3.1 planning and follow-up meetings	Covers planning and supervision work in the context of this output, bringing together the base team and the Project Management Unit (i.e. supervisors from the Ministry of Environment and the executing and implementing agencies). These meetings will be held at least quarterly, and include a revision of targets, plans, actions, and key stakeholders. It will also serve to identify additional sources of cofinancing of relevance to this output.

		A meeting log (deliverable 5.1.11) will be held as part of the project's Knowledge Management System.
3.1.2	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes and any contractual agreements with relevant implementing partners. This includes identification of minimum requirements and technical specifications, detailed scope of work, responses to any technical inquiries from participating entities and evaluation of submissions and proposals. Terms of Reference (including scope of work, key deliverables, team composition and minimum specifications) will be developed based on the indicative TORs presented in Annex I of this document. The procurement process itself is to be conducted by the EA's procurement unit.
3.1.3	Proposal: financial categorization of circular construction projects	This categorization will establish what constitutes a circular construction project, which is a pre-requisite for the financing system to be able to channel funds in this direction. It will help establish which are eligible projects[20] and set thresholds in terms of material, energy and water use; waste generation, GHG emissions as well as any exclusion criteria for a construction project to be deemed circular (and therefore eligible for the mechanisms to be developed through this component). The proposal will take the form of a Technical Norm to be included as part of the project's IQIS (see output 1.2).
3.1.4	Financial strategy, sectoral infrastructure and project pipeline	This 10-year strategy will: - identify, quantify and prioritize the infrastructure investments required for the operation of a circular construction sector in Chile, including e.g. waste recycling facilities, green infrastructure, laboratories, surveillance facilities and any other physical assets required to implement the general framework established in output 1.1, the IQIS improvement plan in output 1.2 and all regional strategies in output 1.4. - The strategy will also cover remediation of sites previously used for illegal extraction or dumping of waste. - It will also assess the contractual instruments available for the financing of each of the investments according to the government level that would be responsible for its implementation (e.g. concessions and public-private partnerships, joint urban financing[21], financing through Subdere, etc.). This should be aligned with the proposals for Chile's procurement systems in output 1.3 and include gender considerations aligned with the project's gender action plan.
3.1.5	Concept for environmental funds	Concept note for a green finance project to provide continuity to the work undertaken through this GEF project. To be channeled through one or more green funds (e.g. GEF, GCF, Adaptation Fund, Mitigation Action Facility, others) and multilaterals, e.g. the World Bank, the Inter-American Development Bank (IDB), CAF, and others.
3.1.6	Support in the adoption process – output 3.1	This activity captures the support from the base team for the adoption process of the deliverables in this output. In the context of 3.1, *adoption* is defined as: a) publication of 3.1.3 as a Chilean technical norm by INN

		b) publication of the strategy and project pipeline (3.1.4) in Construye2025 website (or superseding entity); c) approval of the concept note in 3.1.5. Other forms of support include the mobilization of additional cofinance to support the interventions in this output (e.g. funding for the financial strategy, funding for projects identified in the pipeline, financial studies, etc.). Targets in terms of adoption are set in the indicators in Annex C.
3.1.7	Lessons learned and recommendations	The project team will capture the main conclusions, challenges, lessons learned, and future lines of work related to the financing of circular construction infrastructure and firms and projects across the circular construction value chain.

Output 3.2. Financial instruments in the construction and demolition sector are strengthened to integrate low-carbon and circular economy principles

Outline

- This output will prepare recommendations to adapt existing funds and financial mechanisms of relevance to the construction sector.
- Funds included under the scope of this output are, as a minimum, the ones listed in the baseline section of this project, for the integration of circular criteria into existing funds for environmental and infrastructure projects.
- Regarding credit lines, this output will encompass credit to end-users (e.g. house mortgages), municipalities (infrastructure but also planning and management), businesses, property developers and service providers, and manufacturers and product developers, from concessional proof-of-concept level grants (i.e. for innovative products and services, R&D, and new technologies) to commercial credit lines.
- This output will also serve as a bridge between on-going efforts in terms of sustainable taxonomy and Chile's quality infrastructure system to be strengthened through output 2.1.
- Recommendations will be brought to practice by adapting specific credit lines and funds in relation to circular construction, demonstrating how circular construction principles can be embedded into existing mechanisms.
    - The project will work with partner banks (Banco Estado and Santander) to integrate circular criteria in credit lines for eco-housing (Banco Estado's ´**Ecovivienda**' and Santander's '**Crédito Hipotecario Verde**'), which currently focuses on energy efficiency (i.e. operating carbon), without considering embedded carbon emissions in materials, nor its sustainable sourcing. This will bring a better understanding of how to integrate circular economy and low-carbon principles into the private funding of construction projects.
    - The project will also adapt two funds run by the MMA, namely, the **Environmental Protection Fund** (*Fondo de Protección Ambiental,* FPA, aimed at citizen action) and the **Recycling Fund** (*Fondo para el reciclaje*, FPR, aimed at municipalities), both of which have been described in the baseline section. The project will support one competitive call for proposals that integrate circular criteria in each of these funds.

- Capacity building actions in output 4.4 will provide further support for project financiers, e.g. to develop a greater understanding of low-emission circular economy processes, materials, and technologies, to support de-risking of such investment and the inclusion of related criteria in financing and insurance instrument lines.

Key stakeholders

- Project partners for this project involve **MMA's staff assigned to the FPA and the FPR.**

- **Banco Santander** and **Banco Estado**, which will work with the project team to assess the proposal for the integration of embedded carbon and circularity requirements in their portfolio. Other financial entities (e.g. Banca Ética) may also be invited to participate.
- All other entities in the financial / fund ecosystem, from private banks to research support entities (e.g. CORFO, ANID) for sharing results and lessons learned. A detailed list of entities in this ecosystem is provided in the stakeholder engagement plan (to be further elaborated under output 2.2).

Deliverables

Code	Deliverable title	Tentative content and required activities
3.2.1	Output 3.2 planning and follow-up meetings	Covers planning and supervision work in the context of this output, bringing together the base team and the Project Management Unit (i.e. supervisors from the Ministry of Environment and the executing and implementing agencies). These meetings will be held at least quarterly, and include a revision of targets, plans, actions, and key stakeholders. It will also serve to identify additional sources of cofinancing of relevance to this output. A meeting log (deliverable 5.1.11) will be held as part of the project's Knowledge Management System.
3.2.2	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes and any contractual agreements with relevant implementing partners. This includes identification of minimum requirements and technical specifications, detailed scope of work, responses to any technical inquiries from participating entities and evaluation of submissions and proposals. Terms of Reference (including scope of work, key deliverables, team composition and minimum specifications) will be developed based on the indicative TORs presented in Annex I of this document. The procurement process itself is to be conducted by the EA's procurement unit.

3.2.3	Proposal: integrating circular construction criteria in existing funds and credit lines	This study will assess al main financial mechanisms in the construction sector to discuss how they can include low-carbon, circular considerations and align with the financial strategy prepared under output 3.1. The technical proposal for the revision of funds and credit lines will be aligned with the taxonomy under development and apply the system of technical norms (IQIS, see output 1.2) through simple, measurable and coherent indicators. This will cover at least all key funds and mechanisms listed in the baseline section of this document, with others to be included upon request by the ministries in the PSC. Funds and mechanisms can be arranged by type, addressing questions such as: - for credits to end-users (e.g. house mortgages), such as Banco Estado's Ecovivienda, Banco Santander's green mortgages, others. Suggested scope includes impacts in terms of the loan's cost, administrative procedures, information required, as well as on affordability and relevant commercial indicators (e.g. impact on the rate of non-performing loans). - regions and municipalities: to support the refurbishment of public buildings, infrastructure required for circular handling of CDW, capacity building for sectoral surveillance, policy alignment and planning. Recommendations will include the National Regional Development Fund, Recycling fund, and others (e.g. the creation of a dedicated fund). - businesses, property developers and service providers: recommendations for mainstreaming circular construction considerations across the Clean Production Fund used to subscribe Clean Production Agreements (APLs) with the private sector. Recommendations for commercial bank's lines targeting businesses, property developers and service providers. Risks and guarantee mechanisms. - manufacturers and product developers: from mainly concessional proof-of-concept level grants (i.e. for innovative products and services, R&D, and new technologies) to commercial credit lines. Includes recommendations to CORFO, ANID, the Regional Innovation and Competitiveness Fund, the Regional Local Initiative Fund, and other mechanisms. - Bonds: mainstreaming embedded carbon considerations into green bonds. - Cross-cutting gender dimension to ensure that the revised mechanisms are gender-responsive. This may include provisions for increasing access to finance for female entrepreneurs and women-led enterprises related to the circular economy in the construction sector.

3.2.4	Addressing embedded carbon in green mortgage loans	As a concrete case study, the project will take a deep-dive into Banco Estado's Ecovivienda and Santander's Green Mortgage lines, which currently focus on operational carbon and energy efficiency considerations. The project will provide concrete mechanisms to integrate circularity criteria and assess the embedded carbon in materials used in the construction and demolition phases. Recommendations resulting from this deliverable should include an assessment on: - Loan alignment with Chile's green taxonomy: i.e. use of the IQIS to evaluate technical selection requirements to quantify contribution to environmental targets in the taxonomy, including climate change mitigation, adaptation, circular economy and pollution. - Alignment with Chile's net-zero roadmap (i.e. the ECLP) - Operationalization: o Information requirements (e.g. materials and processes used during construction) o Impact on administrative and supervision costs - Impact on key indicators (e.g. loan rate, demand, morosity and non-performance rates, etc.) - Impact on emission reductions.
3.2.5	FPA and FPR re-design and recommendations	Recommendations to include circular criteria in the Environmental Protection Fund (*Fondo de Protección Ambiental*, FPA) and the inclusion of construction and demolition waste streams into the Recycling Fund (*Fondo para el Reciclaje,* FPR), which supports sustainable management of wastes at the municipal level. Estimation of eligible activities, costs, sources of funds and design of the competitive mechanism to assign funds. The design will cover: - Best international practices. - Procedural design. - Scope (types of activities covered, competition lots, health, safety and environmental considerations, exclusions). - Eligibility requirements for different project types. - Timetable. - Review process and appointment of a selection committee, and criteria for selection of proposals. - Identification of financial sources to cover the incremental costs. - Integration of donations and other external sources of funds.

3.2.6	Support in the adoption process – output 3.2	This activity captures the support from the base team for the adoption process of the deliverables in this output. In the context of 3.2, *adoption* implies all efforts required for the actual implementation of the reforms proposed through this output (regarding loan mechanisms from banks and funding schemes from MMA). This output also includes funding to support one call for proposals (either FPA or FPR) that incorporates circular management of CDW. Other forms of support include the mobilization of additional cofinance to support the interventions in this output (e.g. funding for additional studies for financial mechanisms, for the FPA and FPR, or other proposals) Targets in terms of adoption are set in the indicators in Annex C.
3.2.7	Lessons learned and recommendations	The project team will capture the main conclusions, challenges, lessons learned, and future lines of work (i.e. outstanding gaps) related to the creation of sector-specific financing instruments that integrate low-carbon, circular approaches.

Output 3.3. Business models and networks for low-carbon and circular construction are developed to support small and medium enterprises (SMEs)

Outline

- Many projects of relevance to the circular economy in the construction sector come from initiatives of individuals or isolated small businesses, which due to this fragmentary nature are unable to move from investigation to innovation by means of new, commercially viable products.
- - Through this output, the project will **support SMEs in the construction sector in designing specific action plans to facilitate their transition to the circular economy**, allowing them to create value and gain a competitive advantage in the market through innovative business models, associativity and networking. In the context of this output, 'innovative business models' and 'innovative products' are those that are based on dematerialization, longevity, refurbishment, remanufacturing, capacity sharing, and increased reuse and recycling of construction materials, products and/or services.
- The actions identified through this output's support will be the basis for the subscription of sectoral voluntary clean production agreements (APLs, described earlier in the baseline section of this document), ensuring that the measures are effectively implemented in a measurable, verifiable way.
- The project will also liaise with funding institutions for innovation, including Banco Estado, CORFO, ANID, the Clean Production Fund, the Environmental Protection Fund, the Recycling Fund and the Regional Innovation and Competitiveness Fund.

Key stakeholders

- Sectoral representatives, including the Chilean Chamber of Construction (CChC), the Corporation of Small and Medium Enterprises (CORPYME), the Chilean Waterproofing Association, the Glass, Aluminum and PVC association (ACHIVAL), the Association of Real Estate Developers (ADI), the National Association of Social Housing Constructors (ANACON), the Bioconstructors Guild, the Cement Industry Guild, the formworkers (*tolveros*) Guild, the Guild of Construction Managers, among others (to be identified through the stakeholder engagement plan in output 2.2).
- Recyclers, e.g. the National Association of Recyclers of Chile (ANARCH) and the National Recycling Industry Associations (ANIR), among others.
- The Chilean Agency for Sustainability and Climate Change (ASCC), responsible for the implementation of the APL framework.
- Research and financing institutions supporting innovation (CORFO, ANID, Banco Estado, Banco Santander, national funds described in the baseline section)

- MOP and MINVU, as key ministries involved in the construction sector, and potential demand for products, services, and materials to emerge from this output.

Deliverables

Code	Deliverable title	Tentative content and required activities
3.3.1	Output 3.3 planning and follow-up meetings	Covers planning and supervision work in the context of this output, bringing together the base team and the Project Management Unit (i.e. supervisors from the Ministry of Environment and the executing and implementing agencies). These meetings will be held at least quarterly, and include a revision of targets, plans, actions, and key stakeholders. It will also serve to identify additional sources of cofinancing of relevance to this output. A meeting log (deliverable 5.1.11) will be held as part of the project's Knowledge Management System.
3.3.2	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes and any contractual agreements with relevant implementing partners. This includes identification of minimum requirements and technical specifications, detailed scope of work, responses to any technical inquiries from participating entities and evaluation of submissions and proposals. Terms of Reference (including scope of work, key deliverables, team composition and minimum specifications) will be developed based on the indicative TORs presented in Annex I of this document. The procurement process itself is to be conducted by the EA's procurement unit.
3.3.3	SME scouting and circular economy roundtable	This process will serve to identify potential SMEs working in innovations in the construction sector, conducting to the creation of a circular economy roundtable. Includes: - SME scouting process design and implementation: defining the innovation focus (e.g. new materials, construction processes, project management tools, or sustainability solutions), SMEs characteristics (e.g. size range by employee count or revenue), types of circular business models and scouting channels, in alignment with the stakeholder engagement and communication strategy in output 2.2. The latter may include through calls for proposals, industry publications and events, online platforms and partnerships (e.g. universities, technology centers, venture capital firms focused on cleantech or construction sectors, and innovation hubs), and -where relevant- direct engagement. The design will also establish all relevant filtering and evaluation criteria. - The scouting process will conduct to the creation of a circular economy roundtable for SMEs, including all SMEs identified through the previous process. Additional participants may include other construction companies, material suppliers, waste management companies, representatives from Construye2025, CChC, SOFOFA Hub, and academia. - The selection process will give priority to women-led SMEs.
3.3.4	Proposal for the strengthening of circular value chains	Detailed workplan to support the SMEs identified through the scouting process.

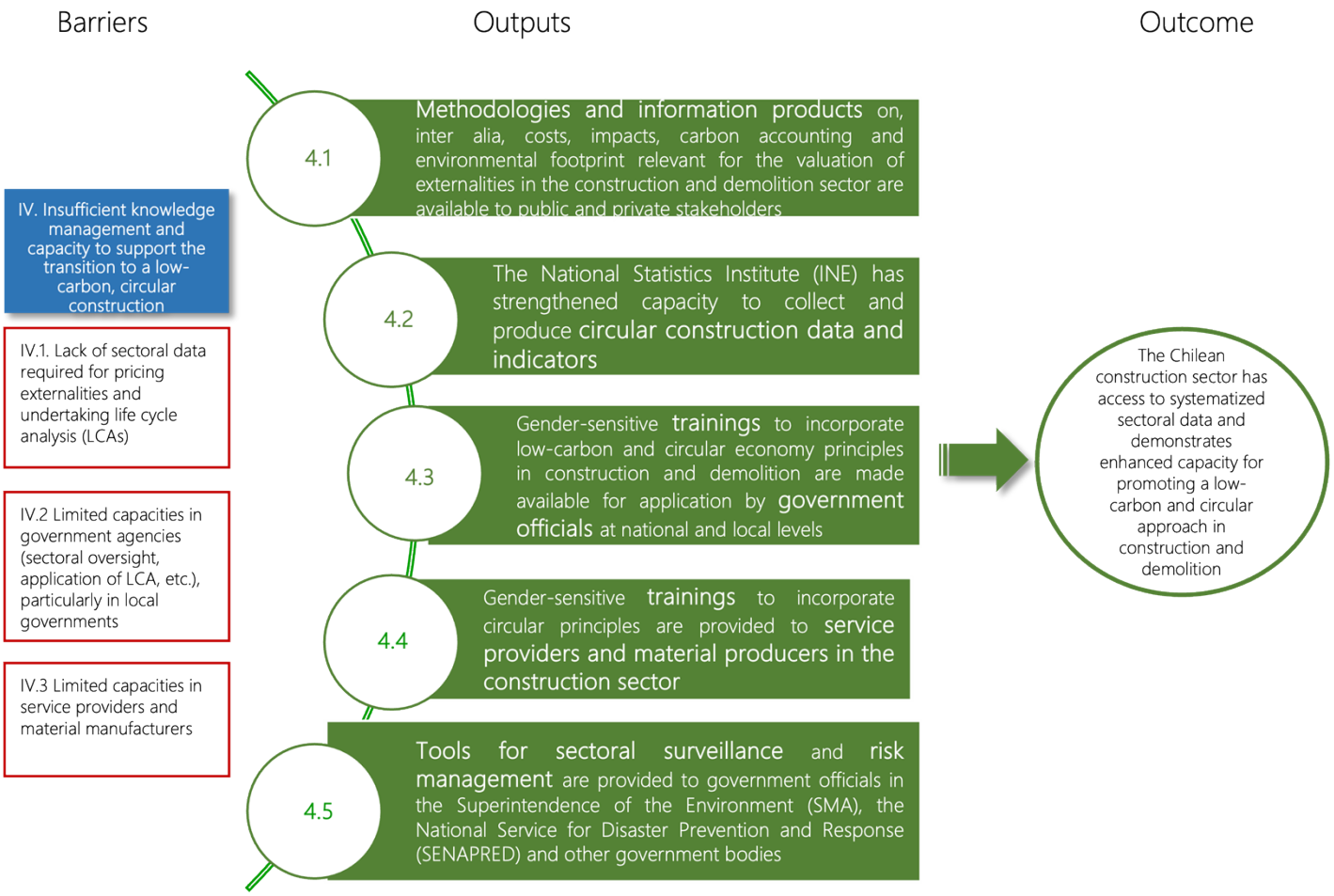
3.3.5	Support in the adoption process – output 3.3	This deliverable captures the work from the base team to support the adoption process. In the context of this output, *adoption* is defined as: - Any work conducive to the structuring of sectoral Clean Production Agreements (APL). This is established as one of the primary targets for this component (as detailed in Annex C – indicator 3.(b)). - Work conducive to the creation of sectoral guilds and associations that support the adoption of innovative products and their scaling up and funding. - Work conducive to support strategic networks, e.g. Construye2025. Other forms of support include the mobilization of additional cofinance to support the interventions in this output (e.g. additional funding for innovation networks, associativity of SMEs, etc.). Targets in terms of adoption are set in the indicators in Annex C.
3.3.6	Lessons learned and recommendations	The project team will capture the main conclusions, challenges, lessons learned, and future lines of work related to the flourishing of circular businesses in the construction sector.

Component 4: Data, learning and knowledge management

This component focuses on knowledge (outputs 4.1 and 4.2) and capacity building (outputs 4.3 – 4.5) to support the shift to a low-carbon, circular construction sector.

Barrier addressed: IV. Insufficient knowledge management and capacity to support the transition to low-carbon, circular construction.

Outcome: the Chilean construction sector has access to systematized sectoral data and demonstrates enhanced capacity for promoting a low-carbon and circular approach in construction and demolition.



Output 4.1. Methodologies and information products on, inter alia, costs, impacts, carbon accounting and environmental footprint relevant for the valuation of externalities in the construction and demolition sector are available to public and private stakeholders

Outline

- This output aims at **filling key information gaps** and **designing methodologies** required for the quantification of sectoral impacts, both from the linear and the circular consumption models in construction. This will allow for science-based, consistent and comparable estimations of each of the consumption models' true costs and benefits.
- In terms of information, this output will fill two key information gaps required for a proper accounting of the benefits of a transition to a circular economy.
- The first is a **sectoral mass and energy balance** that provides an aggregated view on the sector's true environmental impacts and material efficiency. The construction sector mass and energy balance will be the first systematic approach at quantifying the natural resources used, along with the wastes and emissions produced by this activity. This information will be fundamental to gain a holistic view on how the resource sustainability of the industry can be improved.
- The second one is a study to assess and quantify the occurrence of **material overspecification** in Chilean construction, along with its causes. Reducing material overspecification has been deemed as one of the actions with largest reduction potential in terms of embedded emissions.[22]
- This output will also develop two key methodologies: one for the **estimation of embedded carbon in building and construction**, and one to estimate the difference between **social and private costs for different CDW management methods**. These methodologies will be publicly available and adapted and integrated into the SNI's own methodological toolkit (output 1.3).

- Due to budget limitations, the results and methodologies under this output will need to rely on default values and expert assumptions. An **uncertainty analysis** will be undertaken to prioritize data gaps with the largest impacts in the results. This will inform the statistical work with INE (output 4.2).

Key stakeholders

- The Chilean Chamber of Construction (CChC) and the Construya2025 program, as the key sectorial representatives with access to previous studies and estimations of relevance for this output. These institutions are also key stakeholders both as providers of inputs and as users of the study's results.
- The national statistic's institute (INE), also as provider of data and key institution to address outstanding data gaps (also as part of output 4.2 below).

Deliverables

Code	Deliverable title	Tentative content and required activities
4.1.1	Output 4.1 planning and follow-up meetings	Covers planning and supervision work in the context of this output, bringing together the base team and the Project Management Unit (i.e. supervisors from the Ministry of Environment and the executing and implementing agencies). These meetings will be held at least quarterly, and include a revision of targets, plans, actions, and key stakeholders. It will also serve to identify additional sources of cofinancing of relevance to this output. A meeting log (deliverable 5.1.11) will be held as part of the project's Knowledge Management System.
4.1.2	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes and any contractual agreements with relevant implementing partners. This includes identification of minimum requirements and technical specifications, detailed scope of work, responses to any technical inquiries from participating entities and evaluation of submissions and proposals. Terms of Reference (including scope of work, key deliverables, team composition and minimum specifications) will be developed based on the indicative TORs presented in Annex I of this document. The procurement process itself is to be conducted by the EA's procurement unit.
4.1.3	Construction and demolition sector mass and energy balance	This document will perform a country level, one-year mass and energy balance for the construction sector in Chile. 'Construction' is to be understood in a broad sense, from raw material extraction, through construction product manufacture, material and product transport, construction, and demolition site activities, to waste transport, treatment and disposal.[23] For the assessed year, it will provide estimates for: - Addition to the built environment stock (in tonnes of material) - Required material required for the addition to the stock in the previous line. Fraction of primary (i.e. raw) and secondary (recycling, industrial by-products, reuse) materials - Waste (difference between mass of resources used and resources added to the stock)

		- Energy used - Emissions to the air (including CO_2, CH_4, N_2O, HFCs, PFCs, SF6 emissions) - The balance will also provide estimates of 'problematic materials' and chemicals of concern[24] [25] - Data and uncertainty analysis: the report will include a detailed discussion on data gaps, need for expert estimates and/or default values. An uncertainty analysis will measure the relevance of each missing data in terms of the final results. This will aid in the prioritization of statistic needs (relevant for output 4.2)
4.1.4	Report: overspecification in Chilean buildings	This study will assess and quantify the occurrence of overspecification in different types of buildings (offices and housing) of varying ages. The objective is to provide a local estimation of the potential reduction in embedded carbon from reduced overspecification in concrete, steel and other key material usage. This in turn will serve to calibrate and inform design norms for increased material efficiency in building design. The study will also provide a deep-dive on the causes of overspecification, through surveys or interviews with sectoral experts, particularly regarding legal responsibilities and resilience concerns. Recommendations from this deliverable shall include proposals for legislation (output 1.1), technical norms (output 1.2), light / alternative construction methods (to be captured by output 4.4), protocols, and missing data (output 4.2).
4.1.5	Global platform capacity building report (chemicals of concern)	This deliverable captures the participation in UNEP/GEF project "Global replication to eliminate hazardous chemicals from supply chains" (Id. 11177) on addressing chemicals of concern in the construction value chain. Covers travel costs for one person in the project team and two in the government (MMA and/or other institutions to be determined by the Project Management Unit).
4.1.6	Methodology: estimation of environmental impacts in chemicals of concern in the built environment	This deliverable will adapt the methodologies produced through the UNEP/GEF project "Global replication to eliminate hazardous chemicals from supply chains" (Id. 11177) for the context of Chile. This will include provisions to estimate relevant variables (persistent organic pollutants, mercury, hydrochlorofluorocarbons, others) in the production of construction materials as well as CDW A consistent approach will be used to revise the project's estimate of its global environmental benefits (see output 5.1).
4.1.7	Methodology: estimating embedded carbon in buildings and construction works (LCA)	The methodology should cover the following elements: <u>System Boundary Definition:</u> Clearly define the scope and approach, e.g. to consider cradle-to-gate (extraction of raw materials to factory gate), cradle-to-site (includes transportation), or cradle-to-grave (includes end-of-life) stages of a material's lifecycle. Specify any limitations or exclusions (e.g., focusing on structural elements only). <u>Data Collection:</u>

		- Material Inventory: Create a detailed list of all building materials, including quantities and their technical specifications. Links with building information modeling (BIM) software. - Embodied Carbon Factors: Assign embodied carbon emission factors to each material. These factors represent the CO_2 emissions associated with each stage of the material's lifecycle and can be obtained from databases like EPDs (Environmental Product Declarations) or industry-specific resources (e.g. Ciclodata). Calculation details: including all relevant steps and equations Data quality and uncertainty of the results: identify data limitations, and use uncertainty ranges to prioritize potential improvements. This deliverable tackles target 1.1 and 1.3 in objective 1 of Chile's objectives for the 'cities and the built environment' section of its NDC strategy (the ECLP). It will also serve as basis for the methodological toolkit for the SNI (output 1.3)
4.1.8	Methodology: social and private cost for different CDW management methods / options	This methodology is key for the internalization of linear management of CDW waste. The objective of this methodology is to estimate and allocate true social and environmental costs into the costing of private and public projects involving construction. This could include: - Environmental costs and risks in terms of resilience. - Community health impacts (dust generation, noise pollution, potential exposure to hazardous materials during processing or disposal). - Social equity considerations (distribution of these impacts across different communities) This deliverable tackles target 5.7 in objective 5 of Chile's objectives for the 'cities and the built environment' section of its NDC strategy (the ECLP). It will also serve as basis for the methodological toolkit for the SNI (output 1.3)
4.1.9	Support in the adoption process - output 4.1	This activity captures the support from the base team for the adoption process of the deliverables in this output. In the context of 4.1, *adoption* implies all efforts required for the dissemination of the methodologies and studies through the GEF project, including by key partners (Construya2025, CChC) and the SNI. Other forms of support include the mobilization of additional cofinance to support the interventions in this output (e.g. expand methodologies, reports, and studies under this output). Targets in terms of adoption are set in the indicators in Annex C.
4.1.10	Lessons learned and recommendations	The project team will capture the main conclusions, challenges, lessons learned, and future lines of work related to the proper accounting of GHG emissions and environmental footprint from the construction sector, as well as its impact in terms of Chile's ECLP.

Output 4.2. The National Statistics Institute (INE) is strengthened to collect and produce circular construction data and indicators

Outline

- This output will work with the National Statistics Institute (INE) to collect and process information required to produce indicators related to the circularity of the construction sector, including on material use and resource efficiency, waste generation and waste management. More specifically, the project will work with the INE to identify which indicators are needed, from which data sources they can be obtained at the minimum possible cost and in timely manner.
- For this purpose, this output will prepare a data master plan for circular construction, including:
    - a prioritized list of all essential indicators that are required to keep track of Chile's transition to a circular economy in the construction sector. This will include all relevant indicators required to monitor and steer the deployment of the sectoral circular economy roadmap.
    - Identification of potential sources of data, including existing sample surveys, administrative sources (e.g. municipal construction permits),[26] geospatial data, and big data. New sample surveys can be proposed in the absence of existing ones, where needed and deemed cost-effective.
    - Data gaps will be prioritized according to their relevance and balancing costs and benefits. The project will prepare a 5-year data improvement action plan.
- As a demonstrative intervention, the project will also provide funding for the adaptation of the "Unique Edification Statistics Form" (FUEE, from its Spanish acronym), to test the inclusion of information requirements of relevance for a circular construction sector. While the exact scope of the adaptation will result from the data master plan, the new requirements will include information on waste generation, handling and additional details on the type of materials used.

Key stakeholders

- **INE**, in charge of statistical system in the country is the main stakeholder in this output.
- **MINVU**, as the ministry with the legal competence for the requirement of construction information.
- **Regional and municipal governments** (*Direcciones de Obras Municipales*, **DOM)**, as the main users of the FUEE and providers of information to INE.

Deliverables

Code	Deliverable title	Tentative content and required activities
4.2.1	Output 4.2 planning and follow-up meetings	Covers planning and supervision work in the context of this output, bringing together the base team and the Project Management Unit (i.e. supervisors from the Ministry of Environment and the executing and implementing agencies). These meetings will be held at least quarterly, and include a revision of targets, plans, actions, and key stakeholders. It will also serve to identify additional sources of cofinancing of relevance to this output. A meeting log (deliverable 5.1.11) will be held as part of the project's Knowledge Management System.
4.2.2	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes and any contractual agreements with relevant implementing partners. This includes identification of minimum requirements and technical specifications, detailed scope of work, responses to any technical inquiries from participating entities and evaluation of submissions and proposals. Terms of Reference (including scope of work, key deliverables, team composition and minimum specifications) will be developed based on the

		indicative TORs presented in Annex I of this document. The procurement process itself is to be conducted by the EA's procurement unit.
4.2.3	Circularity Data Master Plan and collection strategy	Data Master Plan include: **Baseline data analysis (data inventory + gap analysis report):** • Develop a detailed data inventory listing all relevant data for the construction sector (wood, plastics, waste, concrete, glass, other materials). • Review existing data collected by INE, ministries, other relevant agencies, and sources. • Include metadata: definitions, units, level of resolution, methodology, geography, categories, time series, etc. • Identify data collection instruments already used and its processes (e.g. surveys and registers by INE, collection of data from ministries, etc.). • Analyze data availability and unavailability (missing information and its root causes). • The master plan will also include gender criteria in the data collection. **Data collection plan (with methodology, timelines and responsibilities):** • Design a proposal for a plan to collect information ("data assets") that is currently unavailable, inaccurate, or not received on time. This will include a detailed workplan that clearly states the priorities for any missing improvements beyond the duration of this GEF project. • Prioritize data collection based on environmental impacts analysis, such as emissions, and the associated costs for each data collection efforts.
4.2.4	Draft statistic initiative for INE	As a demonstrative intervention, the project will also provide funding for the adaptation of the "Unique Edification Statistics Form" (FUEE, from its Spanish acronym), to test the inclusion of information requirements of relevance for a circular construction sector. The scope of the adaptation will include information on waste generation, handling and/or additional details on the type of materials used, based on the prioritization in the previous deliverable, and linked to circular technical norms (e.g. NCh 3727 on demolition, NCh 3562 on waste, others). The requested adaptation will be submitted through the Statistical Initiatives System and request support and execution from the institute. It consists of: -Design of the proposal. -Entry of the proposal in the INE system, providing the necessary documentation and information for the proposal based on the Statistical Initiatives System User's Manual. -Working jointly with INE and following up on the different evaluation stages of the process, coordinating and participating in the required meetings. -Provide information required by INE to evaluate the technical, operational, technological, and budgetary feasibility of the statistical initiative.
4.2.5	Support in the adoption process - output 4.2	This activity captures the support from the base team for the adoption process of the deliverables in this output. In the context of 4.2, *adoption* includes all efforts required for the approval of the draft statistic initiative (see previous deliverable), as well as any support required by INE to produce the data master plan.

		Other forms of support include the mobilization of additional cofinance to support the interventions in this output (e.g. funding for the data master plan, strategy, and collection of data) Targets in terms of adoption are set in the indicators in Annex C.
4.2.6	Lessons learned and recommendations	The project team will capture the main conclusions, challenges, lessons learned, and future lines of work related to the implementation of the circular construction platform (including, inter alia, usage by intended actors, pending features, outstanding information gaps, etc.).

Output 4.3. Gender-sensitive trainings to incorporate low-carbon and circular economy principles in construction and demolition are made available for application by government officials at national and local levels

Outline

- This output will design and implement capacity building instances for public officials, including at the national, regional, and municipal levels.
- For this purpose, this output will i) design a capacity building strategy for the public sector (national, regional, and municipal), ii) prepare educational modules to be used as part of the training programs; iii) deliver targeted training (in the form of workshops) to key officials and trainers; and iv) subscribe agreements with educational institutions responsible for disseminating the training modules to public officials.

Key stakeholders

- Beneficiaries of training modules and in-person:
    - municipalities (e.g. through the association of municipalities, AMUCH) and regional governments.
    - Officials at MOP, MINVU, SMA, SENAPRED.
- High-level education institutions for the public sector:
    - Adriana Hoffmann Environmental Training Academy
    - Centro de Estudios de la Administración del Estado (CEA) (Contraloría General de la República, CGR)
    - Others to be identified through the capacity building strategy.

Deliverables

Code	Deliverable title	Tentative content and required activities
4.3.1	Output 4.3 planning and follow-up meetings	Covers planning and supervision work in the context of this output, bringing together the base team and the Project Management Unit (i.e. supervisors from the Ministry of Environment and the executing and implementing agencies). These meetings will be held at least quarterly, and include a revision of targets, plans, actions, and key stakeholders. It will also serve to identify additional sources of cofinancing of relevance to this output. A meeting log (deliverable 5.1.11) will be held as part of the project's Knowledge Management System.
4.3.2	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes and any contractual agreements with relevant implementing partners. This includes identification of minimum requirements and technical specifications, detailed scope of work, responses to any technical inquiries from participating entities and evaluation of submissions and proposals.

		Terms of Reference (including scope of work, key deliverables, team composition and minimum specifications) will be developed based on the indicative TORs presented in Annex I of this document. The procurement process itself is to be conducted by the EA's procurement unit.
4.3.3	Capacity building strategy: circularity in public construction	This deliverable consists of: - a detailed capacity needs assessment at the institution level, grouped in national, regional, and municipal, and in line with the competencies and mandate of each. - A list of educational modules will be established (see deliverable below). Modules can be combined into training programs; the strategy will result in at least two: i) national, and ii) sub-national training programs. - The strategy will identify actions, timelines, specific beneficiaries, key partners and budgets required for each program. Needs and actions identified can go beyond the duration of the GEF project. The project team has the mandate to seek and secure funding for this strategy (see "adoption" deliverable below).
4.3.4	Training modules	The modules will be identified according to the capacity needs assessment in the previous deliverable. Material will include both a video and a text version of the course. Tentative modules to include: - preparation of circular investment initiatives for the SNI (including training on the methodologies developed in component 1 and 4 of the project), - integration of circular considerations for public procurement, - regulatory compliance manual for public officials and sectoral surveillance instruments and methods (including training for the tool developed under output 4.5), - urban planning for a circular construction, - identification, management, and remediation of contaminated sites, - preparation and implementation of waste management plans in public construction. - Others to be proposed by the project team, consultants, or PSC.
4.3.5	Workshop: implications of the new circular and resilient construction framework for the public sector	This workshop will train public officials on the new roles and responsibilities that will result from the shift to a circular construction, the IQIS and its improvement plan (output 1.2). All learning material is to be recorded and made available in the project's website.
4.3.6	Workshop: designing, executing, and supervising	This workshop will provide basic training on: - design of circular public construction projects;

	low-carbon circular and resilient construction projects	- preparation of SNI investment initiatives using the methodological tools (GHG estimation and valuation; life-cycle analysis for housing and infrastructure, others) and pre-approved projects; - incorporation and use of IQIS technical norms in public projects involving construction and demolition; - increasing the share of recycled material in public construction; - ensuring adequate sourcing of raw material; - managing and tracing CDW; - preparation of Economic and Social Impact Assessments (AGIES) for the introduction of mandatory norms - other best practices and recommendations. All learning material is to be recorded and made available in the project's website.
4.3.7	Workshop: integrating circularity into regional and municipal planning and oversight	This workshop will provide training to GOREs and municipal officials to develop or revise planning instruments and strategies that incorporate the mandates of the ECLP (e.g. Chile net-zero plan, including goals and targets for the built environment), the Circular Construction Roadmap and the (upcoming) Sustainable Construction Strategy. This workshop will also provide detailed instructions on how to access the pre-approved SNI programme: local planning for resilient, circular construction (see output 1.4). All learning material is to be recorded and made available in the project's website.
4.3.8	Targeted support to selected municipalities (workplan and implementation)	This deliverable captures the project team's support to the municipalities selected through output 1.3, comprising work on SNI project preparation and planning for circularity. A six-month workplan will be prepared and executed based on the needs identified in the awarded proposal.
4.3.9	Support in the adoption process – output 4.3	In the context of this output, *adoption* is defined as an agreement with one or more academic entities for the integration in their curricula of the modules prepared through this output. During the design phase, the Adriana Hoffmann Environmental Training Academy (MMA) and the Center for State Studies (*Centro de Estudios de la Administración del Estado*, CEA, belonging to the Office of the Comptroller General of the Republic, *Contraloría General de la República*, CGR) have been identified as strategic partners, as these institutions can adapt the modules designed through this project and include them in their regular training programme. Other forms of support include the mobilization of additional cofinance to support the interventions in this output (e.g. expand capacity building activities, expand the reach of workshops and trainings, funding for workplan and implementation in municipalities) Other entities will be identified through the capacity building strategy in this same output. Targets in terms of adoption are set in the indicators in Annex C.

4.3.10	Lessons learned and recommendations	The project team will capture the main conclusions, challenges, lessons learned, and any outstanding gaps related to the capacities of public officials for the shift to a circular construction.

Output 4.4. Gender-sensitive trainings to incorporate circular principles are designed for service providers and material producers in the construction sector

Outline

- This output designs and implements a training program for the private sector, including developers, manufacturers, contractors, and designers; and financers).
- The program will take the form of on-line modules that will be freely available, as well as a series of workshops to take place during project execution. The scope will include all main elements developed through the project, as well as efforts conducive to increase policy awareness. Other topics of relevance (BIM, modular construction, leasing, standard contracting, e.g. NEC version 4) may also be included in the training programme.
- This output will also work with The National Certification System of Labor Competencies (Sistema Nacional de Certificación de Competencias Laborales, SNCCL, also known as ChileValora, described in the baseline section) to recognize and certify the skills and abilities of workers of relevance to a circular economy. The project will support the identification of labor skills ('*competencias laborales*'), the creation of occupational profiles ('*perfiles ocupacionales*'), career development paths ('*planes formativos*') and liaise with evaluation and certification centers (OTECs and OTICs). [27]

Key stakeholders

- Capacity building work will be coordinated with the CChC and Construye2025. Other sectoral representatives include SMEs identified through output 3.3 and, more broadly, all private entities in the stakeholder engagement plan (output 2.2).
- The National Training and Employment Service (SENCE), as the entity in charge of the SNCCL.
- Training centers: OTECs (*Organismos Técnicos de Capacitación*) and OTICs (*Organismos Técnicos Intermedios para Capacitación*).

Deliverables

Code	Deliverable title	Tentative content and required activities
4.4.1	Output 4.4 planning and follow-up meetings	Covers planning and supervision work in the context of this output, bringing together the base team and the Project Management Unit (i.e. supervisors from the Ministry of Environment and the executing and implementing agencies). These meetings will be held at least quarterly, and include a revision of targets, plans, actions, and key stakeholders. It will also serve to identify additional sources of cofinancing of relevance to this output. A meeting log (deliverable 5.1.11) will be held as part of the project's Knowledge Management System.
4.4.2	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes and any contractual agreements with relevant implementing partners. This includes identification of minimum requirements and technical specifications,

Code	Deliverable title	Tentative content and required activities
		detailed scope of work, responses to any technical inquiries from participating entities and evaluation of submissions and proposals. Terms of Reference (including scope of work, key deliverables, team composition and minimum specifications) will be developed based on the indicative TORs presented in Annex I of this document. The procurement process itself is to be conducted by the EA's procurement unit.
4.4.3	Capacity building strategy: circularity in private construction	This deliverable consists of: - a detailed capacity needs assessment per type of private stakeholder (i.e. developers, manufacturers, contractors and designers; and financers). - A list of educational modules will be established (see deliverable below). Modules can be combined into training programs; the strategy will result in at least two: i) developers, contractors, designers and financiers; ii) manufacturers. - Identification of CDW-related work profiles and actions to be supported in partnership with SENCE. - The strategy will identify actions, timelines, specific beneficiaries, key partners and budgets required for each program. Needs and actions identified can go beyond the duration of the GEF project. The project team has the mandate to seek and secure funding for this strategy (see "adoption" deliverable below).
4.4.4	Training modules	The modules will be identified and prioritized according to the capacity needs assessment in the previous deliverable. Material will include both a video and a text version of the course. Tentative modules to include: - Circular design: avoiding overspecification, design for longevity, disassembly and demolition; innovative materials and wood products; increasing the share of recycled material - Waste: minimizing generation and safe handling and disposal. Safe handling of hazardous waste in construction. - BIM as a tool for enhancing sustainability & reducing material overspecification - Circular business models for the construction sector - Life-cycle assessment of construction products and the CicloData platform. Establish LCA as a first order consideration within initial site development appraisals and decision-making and prioritize refurbishment / extension over demolition and new build. - Establish energy intensity and embodied carbon targets in project briefs for all projects in line with the targets in the ECLP. - Norms for carbon management: EPDs and PCRs, PAS 2030/2035, PAS 2080, ISO14064 and local norms, standards and labels, e.g. CVS, CES, NCh 3562 (waste), NCh 3727 (demolition), NCh 3262 (gender), others. Work with contractors to set operational and embodied carbon reduction targets, procure materials with EPDs,

Code	Deliverable title	Tentative content and required activities
		require mandatory disclosure of supply chain data, and track construction site emissions. - Review and establish internal carbon pricing mechanisms (as suitable) to embed climate risks within investment evaluations and corporate KPI, ensuring carbon is evaluated alongside cost in all value engineering exercises. - Module for financial institutions. Usage of taxonomy and technical norms to assess impact of the bank's portfolio; life-cycle assessments in the context of loans. This will support the deployment of component 3. - Financing circular construction projects for project developers - Engaging with local authorities to support city-level second-hand materials markets to drive circularity and material re-use - Training on modular construction - Others to be proposed by the project team, consultants, or PSC.
4.4.5	Workshop: designing, executing, and supervising low-carbon circular construction projects	This workshop will provide basic training on: - design of circular construction projects; - sourcing of circular, low-carbon material (primary and secondary); - Using LCA to estimate embedded carbon and other environmental impacts; - incorporation and use of IQIS technical norms in private projects involving construction and demolition; - managing and tracing CDW; - other best practices and recommendations. All learning material is to be recorded and made available in the project's website.
4.4.6	Construction sector labor competencies concepts	Drafts for: - identification of labor skills ('*competencias laborales*'), - the creation of occupational profiles ('*perfiles ocupacionales*'), - career development paths ('*planes formativos*'). Tentative profiles/plans include: - Foundation recycler specializing in CDW - Foundation recycler specializing in scrap metal management - CDW manager - waste recovery from construction and demolition works - Demolition segregator of non-structural elements - Aggregate recovery plant operator - Waste auditor for demolition companies

Code	Deliverable title	Tentative content and required activities
		- CDW transporter Note: the plans to be funded by the project will be identified in the Capacity building strategy in 4.4.3.
4.4.7	Support in the adoption process – output 4.4	In the context of this output, *adoption* is defined as the inclusion of the programs prepared by the project in educational organizations. During the design phase, IUSLatam and InnovaCiclo were identified as potential partners. Other forms of support include the mobilization of additional cofinance to support the interventions in this output (e.g. expand capacity building activities, expand the reach of workshops and trainings, etc.) and overall liaison with evaluation and certification centers (OTECs and OTICs). Other entities will be identified through the capacity building strategy in this same output. Targets in terms of adoption are set in the indicators in Annex C.
4.4.8	Lessons learned and recommendations	The project team will capture the main conclusions, challenges, lessons learned and any outstanding gaps related to the capacities of the private sector for the shift to a circular construction.

Output 4.5. Tools for sectoral surveillance and risk management are provided to government officials in the Superintendence of the Environment (SMA), the National Service for Disaster Prevention and Response (SENAPRED) and other government bodies

Outline

- This output will design and pilot a remote sensing tool to support the detection of illegal aggregate extraction and disposal of CDW. This will be a key tool to support the Environmental Superintendence (SMA), responsible for overseeing the enforcement of environmental regulations.
- A LCA will be conducted to provide an estimate of the economic and environmental impact of illegal extraction and disposal activities.
- The remote sensing software will also be used by the National Disaster Prevention and Response Service (SENAPRED) to identify and prioritize risks derived from illegal activities, integrating this information with existing warning systems.
- The objective is to strengthen the monitoring of the construction and demolition sector to improve the inspection on the disposal of aggregates and waste dumping. To achieve the objective of this output, a remote sensing tool will be developed to keep different users informed.

Key stakeholders

- Interdisciplinary Center for Productivity and Sustainable Construction **(CIPYCS)** as the implementing partner for the development of the surveillance tool.
- The technology center **InnovaCiclo** will undertake the LCA analysis for illegal extraction / disposal.
- The Environmental Superintendence (*Superintendencia del Medio Ambiente*, **SMA**) and the National Disaster Prevention and Response Service (**SENAPRED)**, as main users of the surveillance tool.
- The Aerial Photogrammetric Service (**SAF**), as provider of remote sensing technologies and images required for the tool.

- Other ministries (e.g. MOP, which oversees infrastructure impacts and coordinate with roadworks and bridge maintenance teams).

Deliverables

Code	Deliverable title	Tentative content and required activities
4.5.1	Output 4.5 planning and follow-up meetings	Covers planning and supervision work in the context of this output, bringing together the base team and the Project Management Unit (i.e. supervisors from the Ministry of Environment and the executing and implementing agencies). These meetings will be held at least quarterly, and include a revision of targets, plans, actions, and key stakeholders. It will also serve to identify additional sources of cofinancing of relevance to this output. A meeting log (deliverable 5.1.11) will be held as part of the project's Knowledge Management System.
4.5.2	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes and any contractual agreements with relevant implementing partners. This includes identification of minimum requirements and technical specifications, detailed scope of work, responses to any technical inquiries from participating entities and evaluation of submissions and proposals. Terms of Reference (including scope of work, key deliverables, team composition and minimum specifications) will be developed based on the indicative TORs presented in Annex I of this document. The procurement process itself is to be conducted by the EA's procurement unit.
4.5.3	LCA of illegality – assessment and recommendations for sectoral surveillance	This deliverable will conduct a LCA to provide estimates of the costs resulting from illegal activities in the sector, mainly illegal extraction of raw material and illegal disposition of waste. These estimations and recommendations will provide the rationale for the tool to be developed under this output, as well as other interventions that seek to improve compliance with existing and future regulations.
4.5.4	Surveillance tool (concept)	Design of a proposal for a surveillance tool based on the integration of advanced technologies and inter-agency collaboration: • Define functional and technical requirements, including the resolution of images, flight scheduling, mapping tool and pattern analysis through a software system. • Specify the frequency and responsibilities for tool functionality. • Verification of the proposal with the users.
4.5.5	Surveillance tool (pilot)	Implementation of a pilot: • Pilot testing in selected areas • Deployment of satellites and drones for data collection. • Development of integration and analysis software. • Implementation of interactive dashboard and alert systems. • Review and adjustments based on user feedback. • Validation of tool accuracy and effectiveness.

4.5.6	Surveillance tool (scale up proposal)	Proposal to scale the surveillance tool: • Perform cost estimation of scale to each region. • Analyze problem severity at the regional level. • Prioritize regions based on the above analysis and resource availability. • Conduct a study of possible funding sources (national and international funds). • Establish data resolution levels (high, medium, low) according to the characteristics and needs of each region. • Procurement plan to acquire more drones and contract additional satellite imaging services. • Expand the capacity of the data management and analysis system. • Establish regional technical support teams to ensure continuous operation of the system. • Carry out continuous monitoring plan and adjustments based on data collected and user feedback. • Evaluate the impact of the tool on reducing illegal dumping and improving regulation.
4.5.7	Support in the adoption process – output 4.5	In the context of this output, *adoption* is defined as support to include the effective adoption of the surveillance tool by users, developing capacitation and trainings. Also, other forms to support are to seek funding for the tool long-term sustainability. Targets in terms of adoption are set in the indicators in Annex C.
4.5.8	Lessons learned and recommendations	The project team will capture the main conclusions, challenges, lessons learned, and any outstanding gaps related to the capacities of the private sector for the shift to a circular construction.

Component 5: Monitoring and Evaluation (M&E)

Barrier addressed: All – cross cutting output to support the entire project.

Outcome: The GEF project is effectively monitored and evaluated

This component includes one single output, through which the project will produce all relevant monitoring and reporting.

Output 5.1. Monitoring and evaluation products are delivered
Outline

- This output specifies the project's M&E framework.
- Project execution will be monitored through regular meetings between the Implementation Agency focal point, the Chief Technical Advisor, and the National Director (refer to section B4 "Institutional arrangements and coordination" for a discussion on each of these roles).

- A series of reports will be prepared in alignment with GEF and UNEP policies and guidelines.

Key stakeholders

- The project base team, its management unit and the steering committee, as the project's key executive and decision-making instances – refer to section B4 "Institutional arrangements and coordination".
- UNEP, as the implementing agency, in charge of overall project supervision.
- The GEF, as the project donor.
- The general public and all key stakeholders identified throughout this proposal (as well as output 2.4).

Deliverables

Code	Deliverable title	Tentative content and required activities
5.1.1	Technical specifications and procurement processes	This deliverable captures the technical inputs and work to be provided by the project team for the procurement processes required for this output. This includes activities such as identification of minimum requirements, scope of work, response of technical inquiries from participating entities and evaluation of submissions. Terms of Reference (including scope of work, key deliverables, team composition and minimum requirements) will be developed based on the indicative TORs presented in Annex H of this document. The procurement process itself is to be conducted by the EA's procurement unit.
5.1.2	Project file storing and archiving plan	The file storing and archiving plan outlines the process for systematically storing and managing all relevant files, ensuring these files are preserved for future reference, legal compliance, knowledge management, M&E or historical purposes. Includes: - File selection and identification - Archiving process and procedures (format, cloud storage, access controls, etc.) - Security and disaster recovery (data security, disaster recovery plan) - Review and maintenance actions
5.1.3	Yearly planning, risk management and contingency plan	The objective of this deliverable is to support yearly planning and facilitate project supervision. An executive document (max. 10 slides) will be prepared by the project's CTA at the beginning of each calendar year, including: 1. Yearly knowledge management planning (including internal repositories, references, manuals, cloud storage, access to files, etc.) 2. For each component, overview of outputs that are going to be active during the year; 3. For each active output, key goals, actions, and deliverables in alignment with the project's workplan, the intended outcomes and the indicators in Annex C. 4. Key actions on gender (by component). 5. Key procurement processes (by component).

		6. Key communication actions. 7. Key partners and stakeholder engagement actions. 8. Yearly project calendar, including dates of: o key procurement processes and call for proposals; o expected Project Steering Committee meetings. o key communication and stakeholder engagement events; o travel; o other relevant dates (e.g. election processes, national holidays, etc.) 9. Key risks and challenges, updating the list of risks in section B.6 of this document. Contingency plans for risks identified as moderate or higher. 10. Date of planned Project Steering Committee meetings. 11. Expected cash-advance requests. 12. Details on travel and participation in external events 13. Expected budget or project revisions 14. Any other key actions or information of relevance for yearly planning.
5.1.4	Inception workshop & report	The Inception Workshop will consist of 1 event for 100 participants, to take place after the appointment of the Chief Technical Advisor. Its primary objective is to create momentum for the upcoming activities and the engagement of stakeholders. This workshop will: - present the project's vision, objectives, outcomes and outputs; - present and discuss the project workplan; - provide an overview of the project's implementation arrangements and base project team, together with their roles and responsibilities; and - highlight the relevance of stakeholder engagement and establish main communication channels, to be further refined through the Stakeholder engagement and communication strategy and action plan (output 2.2).
5.1.5	Project database	- The project database is meant as a tool to inform the project base team (and any other relevant stakeholders) of any on-going initiatives of relevance to the project. This deliverable consists of a yearly update to the project database created during the PPG phase. - The inventory of projects will include all work aimed at supporting sustainable construction in Chile, i.e. the circular construction roadmap, the sustainable construction strategy, and more broadly, the ECLP. Details include title, leading ministry / national agency, supporting entities (inc. funding), duration, scope, estimated value, and relevance for the project.
5.1.6	Lessons learned and recommendations template and support	Standardized template for the "Lessons learned and recommendations" deliverable to be included as the last deliverable in every output of the project. Includes support required by the rest of the project unit. The template should be adjusted to cover all elements described in the next deliverable.
5.1.7	Project memoir: compilation of lessons learned and recommendations	This deliverable consists of an e-book compiling all the lessons learned and recommendations produced throughout the project (i.e. final deliverable of each output). This deliverable captures the editing work required for converting individual reports prepared by different professionals into a coherent, consistent body of knowledge, structured to inform a wide

		audience (policymakers, funders, stakeholders, and the general public). The e-book will include: - Executive Summary - Overview of the project's goals, objectives, and scope. - Summary of key findings, achievements, and recommendations. Analysis of project achievements against stated goals and objectives. - Highlight the project's overall impact and contribution towards the shift to circular, low-carbon construction. - Description of the regulatory changes proposed by the project; analysis of the regulatory reform process, including challenges and lessons learned. Evaluation of the impact of the new regulations on the environment and stakeholders. - Analysis of the scalability and replicability of the interventions in C2 and C3. - Overview of capacity building activities undertaken. Evaluation of the effectiveness of capacity building programs. Assessment of the capacity building needs that remain unmet. Recommendations for future capacity building initiatives. - Highlight key outstanding information gaps and needs for a circular construction sector. - Overview of stakeholder engagement activities. Assessment of stakeholder satisfaction with the project. Identification of key stakeholder concerns and recommendations. - Recommendations for future projects supporting the shift to a circular construction sector.
5.1.8	Review and adjustment of the project's socio-environmental benefits	The project will provide an updated estimate of all its socio-environmental benefits and core indicators based on the methodological developments to be introduced by the project, including all relevant LCA methodologies as well as the adaptation of methodologies from the GEF 8 Integrated Programme (IP) “Eliminating hazardous chemicals from supply chains” (see deliverable in output 4.1). This activity's results will also serve to obtain robust data that will strengthen the climate rationale for future projects to catalyze climate finance for Chile’s construction sector and circularity efforts.
5.1.9	Meeting log	Consolidated meeting log. Includes minutes from all meetings held over the course of the project, including as part of stakeholder engagement but also planning and supervision (first deliverable in each output). Maintenance of this record will be the responsibility of the M&E and knowledge management specialist (component 4 coordinator); all the project unit to provide the respective inputs.
5.1.10	PIRs	Progress will be reviewed yearly through the Project Implementation Report (PIR), which is the tool foreseen in the GEF’s Project and Program Cycle Policy. The purpose of the PIR is to assess project performance, to analyze whether the project is on track, what problems and challenges it

		encountered, and which corrective actions are required so that the project can achieve its intended outcomes by project completion in the most efficient and sustainable way. It is the responsibility of the UNEP Task Manager to monitor whether the agreed recommendations are being implemented.
5.1.11	Half-yearly reports	In between PIRs, the project team shall prepare and present intermediate internal progress reports (the "Half Yearly Progress Reports") to update project data and facilitate management.
5.1.12	Environmental and Social Management Framework and Plan (ESMF/P)	The ESMF/P describes the social and environmental impacts and related safeguards requirements for the project. As further described below (Annex F), this project can be categorized as moderate risk, triggering safeguard standard SS4 (community health, safety and security). The ESMF/P will provide an operational and control framework to ensure that the pilot projects in C2 and C3 are assessed and that appropriate management measures are in place prior to their implementation.
5.1.13	GAP progress reports	The gender specialist will be responsible for the activities and the indicators in the project's Gender Action Plan, and report on a half-yearly basis to the CTA. The GAP progress reports will be submitted as an annex to the project's own technical reporting, i.e. the PIRs and half-yearly progress reports.
5.1.14	Mid-term review/evaluation	In line with the GEF Evaluation requirements and UNEP's Evaluation Policy, GEF Full-Sized Projects and any project with a duration of 4 years or more will be subject to an independent Mid-Term Evaluation or management-led Mid-Term Review at mid-point.
5.1.15	Terminal review/evaluation	All GEF funded projects are subject to a performance assessment when they reach operational completion. This performance assessment will be either an independent Terminal Evaluation or a management-led Terminal Review. In case a Review is required, the UNEP Evaluation Office will provide tools, templates, and guidelines to support the Review consultant. For all Terminal Reviews, the UNEP Evaluation Office will perform a quality assessment of the Terminal Review report and validate the Review's performance ratings. This quality assessment will be attached as an Annex to the Terminal Review report, validated performance ratings will be captured in the main report. If an independent Terminal Evaluation (TE) of the project is required, the Evaluation Office will be responsible for the entire evaluation process and will liaise with the Task Manager and the project implementing partners at key points during the evaluation. The TE will provide an independent assessment of project performance (in terms of relevance, effectiveness, and efficiency), and determine the likelihood of impact and sustainability. It will have two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote learning, feedback, and knowledge sharing through results and lessons learned among UNEP staff and implementing partners. The direct costs of the evaluation (or the management-led review) will be charged against the project evaluation budget. The TE will typically be initiated after the project's operational completion. If a follow-on phase of the project is envisaged, the timing of the evaluation will be discussed with the Evaluation Office in relation to the submission of the follow-on proposal. The draft TE report will be sent by the Evaluation Office to project stakeholders for comment. Formal comments on the report will be shared by the Evaluation Office in an open and transparent manner. The project performance will be assessed against standard evaluation criteria using a six-

		point rating scheme. The final determination of project ratings will be made by the Evaluation Office when the report is finalized. The evaluation report will be publicly disclosed and will be followed by a recommendation compliance process. The evaluation recommendations will be entered into a Recommendations Implementation Plan template by the Evaluation Office. Formal submission of the completed Recommendations Implementation Plan by the Chief Technical Advisor is required within one month of its delivery to the project team. The Evaluation Office will monitor compliance with this plan every six months for a total period of 12 months from the finalization of the Recommendations Implementation Plan. The compliance performance against the recommendations is then reported to senior management on a six-monthly basis and to member States in the Biennial Evaluation Synthesis Report.
5.1.16	Expenditure reports	Quarterly expenditure reports using UNEP's templates and guidelines. The financial report shall contain information that forms the basis of a periodic financial review, and its timely submission is a prerequisite to the continuing funding of the project.
5.1.17	Co-finance reports	Within 1 month of the PIR reporting period, i.e. on or before 31 July, the Executing Agency shall submit to UNEP, an annual co-financing report for the project as at 30 June showing amount of cash and in-kind co- financing realized and compared to the amount of co-financing committed to at the time of the project approval, using templates and guidelines to be provided by UNEP.
5.1.18	Audit reports	The total expenditures incurred by 31st December, wherein GEF funding is clearly identified, shall be endorsed by a duly authorized official of the Executing Agency, and audited by an independent audit authority or by a government auditor and dispatched to UNEP within 180 days, i.e. on or before 30th June. The audit report and recommendations shall include such comments as the auditor may deem appropriate in respect of GEF funded operations and, in particular, shall clearly indicate that in their opinion: - GEF funds were covered by the scope of the audit; - Proper books of account have been maintained; - All project expenditures are supported by vouchers and adequate documentation; - Expenditures have been incurred in accordance with the objectives outlined in the project document; - The expenditure reports provide a true and fair view of the financial condition and performance of the project. - On operational completion of the project, a final audited statement of account containing signatures and audit opinion as required above, shall be dispatched to UNEP within 6 months. General guidelines for the audit will be provided by UNEP.
5.1.19	PSC minutes	Minutes of each PSC meeting.
5.1.20	Final report	The final report will serve to communicate the project's achievements, challenges, and overall impact. The final report will compile and summarize all technical evidence required for the Terminal Evaluation, particularly, all information required to assess the achievement of targets set in Annex C.

[1] *Enabling Elements for Good Project Design: A synthesis of STAP guidance for GEF project investment: https://stapgef.org/resources/advisory-documents/enabling-elements-good-project-design-synthesis-stap-guidance-gef*

[2] In Spanish, "*primero, segundo y tercer trámite constitucional*".

[3] See for example Canals de la Puente, J.; Estenssoro Soriano, J. '*Propuesta para un Marco Regulatorio Integrado y Fomento a la valorización de los residuos de la construcción y demolición, RCD*', (Construye2025). Santiago, September 2022.

[4] A summary of each piece of legislation (and their relevance to the project) is provided in the baseline section of this document.

[5] Also refer to output 4.5 on sectoral surveillance.

[6] The Regulation (EU) No 305/2011 – harmonized conditions for the marketing of construction products may be used as a reference.

[7] Also refer to output 4.2 on the generation of official sectoral statistics.

[8] In Spanish, "iniciativa de inversión", i.e. the name assigned to the project candidate once it enters the SNI platform.

[9] The Framework Programme for the PMG (Programa Marco de los Programas de Mejoramiento de la Gestión) is a yearly set of instructions for the PMG. It includes a list of objectives, targets and indicators. In its 2024 version, environmental targets and indicators are included under objective 2 ("institutional efficiency").

[10] RS: Spanish acronym for recommendation to implement ("*recomendación satisfactoria*").

[11] Adapted from: UNIDO *Quality Infrastructure – Building trust for trade* (2016). Available here.

[12] See for example the discussion in chapter 2.7 of DIN e.V. *Standardization roadmap for a Circular Economy* (2023). Available here.

[13] E.g. concrete and precast; cements, mortars, gypsum-based, long-steel products, electrical and electronic products and systems (electrical materials such as panels, junction box, insulators, etc.); windows and doors; wood and wood derivatives (parquet and floors); ceramic coatings (floor and wall tiles), fired clay products, ceramic tiles, vaults, bricks and blocks, cobblestones.

[14] In alignment with NCh3423:2017 (Chilean norm for the preparation of Environmental Product Declarations).

[15] UNEP (2023), *Building materials and the climate: constructing a new future*. Nairobi. pp. 26 - 39. Available here.

[16] For instance, the Ministry of Public Works (MOP) has set goals for the incorporation of materials with circularity attributes that could be covered, at least in part, with the provision of national wood, stimulating the market for best practices in the sector, above current regulatory standards. See e.g. objectives 2 and 3 in chapter 5 of the ECLP.

[17] UNEP (2023), *Building materials and the climate: constructing a new future*. Nairobi. pp. 26 – 39. Available here.

[18] Nußholz J L K, Nygaard F, Whalen K and Plepys A (2020) *Material reuse in buildings: Implications of a circular business model for sustainable value creation*. J. Clean. Prod. 245 118546. Available here.

[19] Mendelow, A. (1991). *Stakeholder mapping*. Proceedings of the 2nd International Conference on Information Systems, Cambridge, MA.

[20] Eligible project types will be determined based on the assessment in output 3.3.

[21] In Spanish, "*financiamiento urbano compartido*" (Law 19865)

[22] Ramboll, *The decarbonisation benefits of sectoral circular economy actions* (2020). Available here.

[23] For a reference, refer to Smith, R.A, Kersey, J.R., Griffiths, P.J. *The construction industry mass balance: resource use, wastes and emissions* (2003). Available here.

[24] 'Problematic materials' are those that pose challenges in terms of circularity. This may include:

- Composite Materials: These materials combine different elements (e.g., wood and plastic, concrete and metal) to achieve specific properties. Separation of the components for reuse or recycling can be difficult or even impossible, limiting their circularity. Existing recycling technologies might not be suitable for complex composites.
- Mixed-Material Assemblies: buildings often incorporate various materials like drywall, insulation, and cladding fastened together. Deconstruction and separation of these materials for individual reuse can be time-consuming and labor-intensive, reducing the economic viability of their circular application. Specialization in dismantling techniques and innovative separation technologies are needed.
- Hazardous Materials: certain materials like asbestos, lead paint, and some treated wood contain toxic components. Safe handling, removal, and disposal of these materials add complexity and cost to deconstruction projects.
- Short-Lived Materials: Some materials like carpets, vinyl flooring, or low-quality fixtures have a short lifespan and are often replaced during renovations. These materials may not be suitable for reuse due to wear and tear, limiting their circularity potential.
- Contaminated Materials: During a building's lifespan, materials can become contaminated with mold, mildew, or other pollutants. Deciding whether such materials can be decontaminated for reuse or need to be disposed of safely adds complexity to the deconstruction process.

[25] UNEP, *Chemicals of Concern in the Building and Construction Sector* (2021). Available here.

[26] E.g. data collected by a government ministry, department or agency primarily for administrative (not research or statistical) purposes. These administrative purposes are related to the corresponding executive or lawful functions such as authorizations, registrations, permits, payments, sanctions, control etc. Administrative data may include both data in administrative registers and data in other administrative sources.

[27] OTECs (*Organismos Técnicos de Capacitación*) directly deliver training programs and are validated by SENCE (National Service for Training and Employment) to offer occupational training through courses or actions. OTICs (*Organismos Técnicos Intermedios para Capacitación*) act as intermediaries between companies, SENCE, OTECs, and evaluation centers. They support companies through tax breaks to implement training programs, group companies to optimize resources and training efforts and facilitate knowledge sharing among member companies.

[28] NCh 3262:2021 – Norm for gender equality and conciliation of work, family and personal life balance.

[29] European Investment Bank (EIB) *The EIB circular economy guide: supporting the circular transition* (Kirchberg, Luxembourg, 2020)

Institutional Arrangement and Coordination with Ongoing Initiatives and Project.

Please describe the Institutional Arrangements for the execution of this project, including financial management and procurement. If possible, please summarize the flow of funds (diagram), accountabilities for project management and financial reporting (organogram), including audit, and staffing plans. (max. 500 words, approximately 1 page)

The **United Nations Environment Programme (UNEP)** is the Implementing Agency for this Project. The **Ministry of Environment** (MMA) is the project's executing Agencies, delegating responsibility for day-to-day action and fund management to a co-executing partner, **Fundación Chile.** The Project Governance structure will be organized as follows: a Project Steering Committee (PSC), Technical Advisory Body (TAB), a Project Management Unit (PMU), and a Project Base Team (PBT), as described below.

FIGURE 6. INSTITUTIONAL ARRANGEMENTS

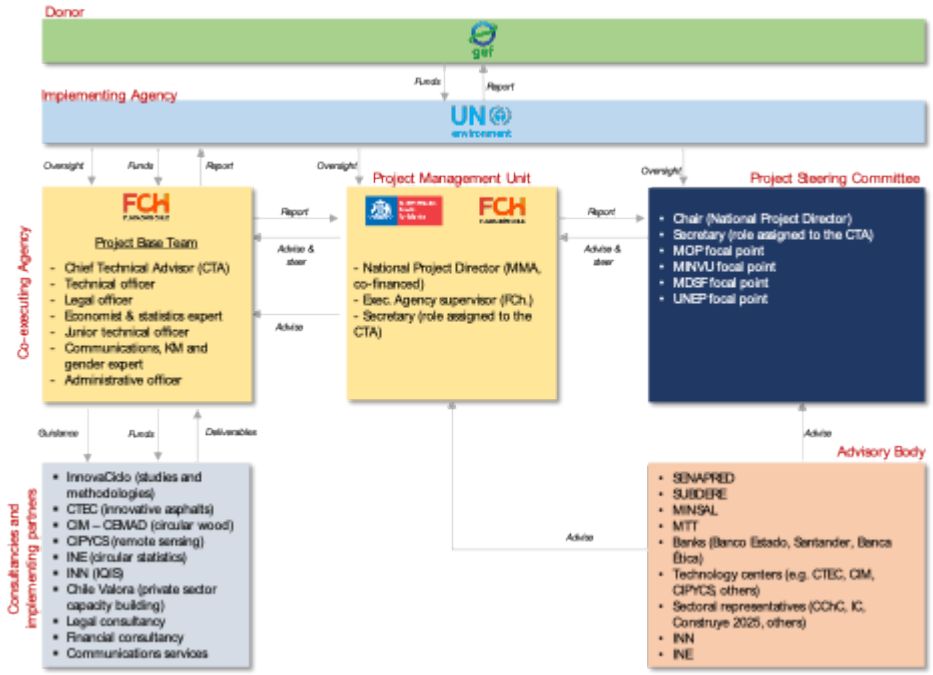


TABLE 3. ROLES AND RESPONSIBILITIES

Body	Constitution and role
Implementing agency (IA)	UNEP is the Implementing Agency (IA) for this project and will provide overall supervision and guidance in line with GEF and internal requirements. As IA, UNEP will coordinate and communicate with the executing agencies (EA) and co-executing agencies (CEA), i.e. MMA and FCh. GEF implementing agencies are responsible for the implementation of the project, which entails oversight of project execution to ensure that the project is being carried out in accordance with agreed standards and requirements. GEF implementing agencies are accountable to the GEF Council for their GEF-financed activities and are responsible for project cycle management services and corporate activities. GEF Agency Fees cover Agency costs for providing these services. GEF Agencies perform Project Cycle Management Services that involve project approval and start-up, risk management and mitigation, project supervision and oversight, and project completion and evaluation. Each GEF Agency implements projects according to its internal guidelines and rules after approval of GEF-funded projects by its governing body, following GEF CEO Endorsement/Approval[1]. UNEP will oversee and provide technical guidance for the overall project implementation, in accordance with this project document, as follows: • UNEP will lead the delivery of outcome and outputs of all four technical components, as well as M&E (component 5). • Participate in the planning of contracting and technical selection processes. UNEP will coordinate fund transfers to the co-executing agency as per provisions, terms, and conditions of the signed Project Cooperation Agreement (PCA) with FCh.

	• Monitor and oversee the CEA's compliance with the respective Execution Agreement and project implementation in accordance with the project document, annual work plans and budgets, co-financing agreements and UNEP's rules and procedures in terms of efficiency and transparency. • Review and approve, together with the Project Steering Committee, the project progress and financial reports, as detailed in the PCA and their annexes; undertake and complete monitoring, assessment and control activities, evaluations and project oversight. • Liaise on an ongoing basis, as needed, with the relevant Government agency, other members of the United Nations Country Team, other GEF projects in Chile and the region, Resource Partners and other stakeholders. • Provide overall guidance, oversight, technical assistance, and leadership. • Report to the GEF Secretariat and the Evaluation Office through the annual Project Implementation Review (PIR), on project progress and provide consolidated financial reports to the GEF Trustee. In the development of the PIR, UNEP will coordinate the provision of inputs from the GEF Operational Focal Point and other key stakeholders. • Conduct at least one supervision mission per year. • UNEP will lead the Mid-Term Review, the project base team and the project management unit. • UNEP Evaluation Office will lead the project independent Terminal Evaluation. • Monitor the implementation of the Environmental and Social Risk Management Plan and the Gender Action Plan.
Executing agency (EA)	The project executing agency will be the Ministry of Environment (MMA), which will lead the Project Management Unit and preside the Project Steering Committee (both of which are described below).
Co-executing agency (CEA)	The MMA has selected Fundación Chile to co-execute the project activities, as well as the fund administrator. The co-executing agency (CEA) will act as the Project sub-executing agency and will abide by GEF and UNEP rules and regulations on implementation of projects, and be accountable to UNEP for the appropriate administration and management of the project financial resources. The CEA will conduct all the procurement required by the project, including selection and appointment of the project base team (PBT), contracting of consultancies and implementing partners, and purchase of goods and services specified in the Project Document. The CEA will manage the budget in full compliance with the terms and conditions of the execution agreements to be signed between the CEA and UNEP, and be responsible for day-to-day management and execution of administrative and financial activities, in close coordination with the Project Management Unit (see below).
Project Steering committee (PSC)	The project steering committee will supervise and provide overall guidance to the executing agency and its management team for project execution. This will include as related to political alignment, technical quality, procurement, and financial management of the project. The steering committee will consist of focal points from the following entities: • MMA (represented by the National Project Director – see below under PMU) • MINVU • MOP • MDSF • UNEP GEF Mitigation Unit
Technical advisory body (TAB)	The technical advisory committee will serve to support the project on a upon request basis with regards to any technical questions that the Project Steering Committee and/or the Project Management Unit desires assistance on. Depending on the issue requiring technical consultation, the steering committee may draw upon the support of the following actors: • SENAPRED • SUBDERE • Other ministries (MINSAL, MTT, Ministry of Finance,...) • Banks (Banco Estado, Banco Santander, Banca Ética) • Technology centers (e.g. CTEC, CIM, CIPYCS, others) • Sectoral representatives (CChC, IC, Construye2025) • Association of municipalities (e.g. AChM) • INN • INE

	The TAB will be organized into thematic tables, according to the work conducted in each of the project's outputs. Other actors may be invited to participate.
Project Management Unit (PMU)	Managerial body responsible for project oversight and coordination. Includes the following members: • A National Project Director, pertaining to and to be appointed by MMA (co-financed). • A supervisor from the CEA (Fundación Chile) • The project's Chief Technical Advisor (CTA – see below under "Project Unit") acts as Secretary to the PMU. Functions of the National Project Director include: - Ensure the implementation of the Project, in accordance with the provisions of the Project Document and management instruments. - Assess and submit proposed adjustments to the Project Steering Committee. - Supervise the project implementation, in alignment with the project outcomes and budget, the annual work plan(s), and the submission of quarterly, six-monthly and annual reports, in coordination with the CEA. - Oversee the programming and technical and financial execution of the Project. - Provide reports to the Project Steering Committee, in accordance with the M&E plan. - Support the Project Base Team (PBT) in the coordination of Project activities at national and local levels. - Supervise, through the Chief Technical Advisor, the compliance of Project consultants and staff with their responsibilities as stated in their TORs, within the agreed timeframes. - Call for meetings of the Project Steering Committee, with support from the PBT. - Ensure that the project outcomes and outputs are achieved and delivered with effectiveness and efficiency and that appropriate measures are taken to generate desired impacts and sustainability. - Facilitate and coordinate with the Operational Partner the flow of information from the field to UNEP and the GEF. - Engage in mid-term review and terminal evaluation.
Project base team (PBT)	A project base team consisting of a small group of professionals led by a Chief Technical Advisor (CTA) and reporting directly to the PMU. Its main function, following the guidelines of the PSC and the PMU, is to ensure the effective implementation of the annual work plans and budgets. The project workplan was built in a way that each deliverable from consultancies is supervised by a specific member in the PBT, according to their profile. Members of the PBT will also be responsible for the provision of specific deliverables (i.e. without external consultants), as well as for the integration of the deliverables into outputs and for their materialization into outcomes. In particular, the PBT will make their best efforts to achieve all the targets set as goals in Annex C, which go beyond the deliverables described in each of the components. This way, each action and deliverable in the workplan has a specific responsible and no activities or deliverables are duplicated. The PBT will be hired by the co-executing agency and consist of a Chief Technical Advisor, technical experts in various fields (environment, law, construction, communications and gender) and an administrative assistant. ANNEX I mentions the functions of each position and the TORs, detailing profile, experience, necessary skills and the tasks and functions of each position.
Project service providers	Project-financed goods and services provided by consultants and consultancies to prepare project deliverables and support the achieving of project outputs.

[1] GEF/C.59/Inf.03

Will the GEF Agency play an execution role on this project?

If so, please describe that role here and the justification.

Also, please add a short explanation to describe cooperation with ongoing initiatives and projects, including potential for co-location and/or sharing of expertise/staffing (max. 500 words, approximately 1 page)

Coordination with other projects and programs

A number of synergic initiatives take place every year in Chile. To ensure that all work to support key circular policies in Chile remains synergetic, avoids duplication of efforts and takes into account relevant lessons learned, this GEF project will organize periodic coordination workshops with all cooperation agencies (see output 4.1). Specific synergies have been identified with the following projects and institutions:

TABLE 4. COORDINATION WITH OTHER INITIATIVES[1]

Project/Initiatives	Objectives and relevance to this project	Intended coordination and synergies
Update of the Sustainable Construction Strategy (MINVU)[2]	The initiative to update the National Strategy for Sustainable Construction, based on intersectoral work, has initially defined the general objective: to lead the construction sector in Chile towards the incorporation of environmental and sustainability criteria in all new and existing buildings and infrastructure that merit it, by the year 2050. This will be achieved through the definition of goals and indicators aligned with national and international commitments in these matters.	The GEF project will propose the incorporation of environmental criteria in buildings and infrastructure (output 1.3 and 1.4).
Taxonomy of Environmentally Sustainable Economic Activities for Chile[3]	To encourage the alignment of investments towards environmentally sustainable activities, a project in Chile has been launched to establish classification systems or so-called taxonomies.	The GEF project has the objective of reinforcing Chile's Sustainable Taxonomy efforts by integrating them with the quality infrastructure system (output 1.2). Furthermore, the project will develop a financial strategy that enhance the resolution of Chile's Taxonomy (output 3.1).
Accelerating the transition to a net-zero, nature-positive economy in Chile (GEF-8)	The project, which is part of the GEF-8 Net Zero Nature Positive Accelerator Integrated Programme, aims to facilitate the implementation of Chile's Long Term Climate Strategy across the economy in general, and in the energy sector in particular.	The circular economy project can be interpreted as a finer-scale / sectorial application of the NZNPA project. The MMA will lead the upstream part of the NZNPA project, facilitating coordination.
Clean Production Agreements[4]	The Clean Production Agreements are a voluntary public-private agreement between a business sector and the State administration bodies, which seek to contribute to the sustainable development of companies through the definition of specific goals and actions, not required by the legal system.	One of the aims of GEF project is support the design, creation and subscription of APLs agreements in construction sector (output 1.2, 3.3 and 3.4).
ECOVIVIENDA (*Banco Estado*)[5]	Through this programme, the Banco Estado seeks to finance at a preferential rate the purchase of new homes in real estate projects that have a certain Energy Efficiency Rating validated by MINVU.	The GEF project seeks to propose a modification to credit lines that only focuses on energy efficiency without considering emissions in materials, and other phases of housing construction (output 3.2).
Green Loans for Housing and Projects (Santander Bank) [6]	Preferential rate credit programme for housing construction or projects containing certifications such as CVS, LEED, and CEV.	The GEF project seeks to propose a modification to credit lines that only focuses on energy efficiency without considering emissions in materials, and other phases of housing construction (output 3.2).
Sustainable Building Certification (CES)[7]	Voluntary certification that evaluates, qualify, and certify the environmental performance of new and existing public buildings in Chile, without differentiating between public or private administration or ownership.	One of the actions of the project is the revision and updating of building standards, with the aim of harmonising them in the country. In addition, the adoption of such standards, including CES (output 1.2), will be supported.
Sustainable Home Certification (CVS) [8]	Voluntary environmental certification system that assesses the performance of residential projects nationwide. It is applicable to any type of new housing, whether public or private.	One of the actions of the project is the revision and updating of building standards, with the aim of harmonising them in the country. In addition, the adoption of such

Project/Initiatives	Objectives and relevance to this project	Intended coordination and synergies
		standards, including CVS (output 1.2), will be supported.
Programme for the Strengthening of Regional Governments, Metropolitan Areas, and Municipalities in Solid Waste Management (BID and SUBDERE)	Loan that seeks to strengthen the technical capacities of the GOREs through the management and execution of infrastructure services projects of metropolitan scale; and, to strengthen the institutional capacity of the GOREs.	The GEF project aims to improve waste management practices, and to support municipalities and regional governments in adopting these best practices (output 3.2).
Circular Economy Strategy for the Textile Industry (MMA)	The aim is to promote profound changes regarding responsible consumption, encourage local initiatives for the circularity of textiles, promote the development and strengthening of a regulatory framework to promote the circular economy, and encourage innovation and transparency in the textile production sector.	Collaborating with projects that embrace circularity in different sectors is crucial to integrate and share ideas. These ideas will be discussed at the annual coordination workshop with multilateral organisations, ministries and other stakeholders (output 2.2).
Sustainability Policy (MOP)	The objective of the new MOP Sustainability Policy is to contribute to the development of Chile, with benefits in efficiency and operational effectiveness, including criteria of equity, gender and transparency, in line with the challenges of the climate and biodiversity crisis.	The policy connects with core areas of the project which are climate change, biodiversity, and gender issues is crucial. This policy is led by Ministry of Public Works, that influences the construction sector. Discussions about the project and this policy will take place in the annual coordination workshops (output 2.2).
CicoData (ECOED)	Project to develop an easily accessible digital platform that will make available a complete database for the elaboration of Life Cycle Analyses applicable to productive sectors such as commerce, manufacturing, construction, mining, electricity, waste management, agriculture, and forestry.	The project will collaborate with CicloData to gather information on the construction sector for developing the quality infrastructure system (output 1.2) and to conduct studies estimating the carbon footprint of construction products and processes (output 4.2).
Accelerating investment in efficient and renewable district energy systems in Chile (GEF ID 10087)	Accelerate the decarbonization of the heating sector in Chile by fostering the deployment of district energy systems	Integrate recommendations, lessons learned and results from this earlier GEF project into the circular construction interventions.
UNEP/GEF “Global replication to eliminate hazardous chemicals from supply chains” (Id. 11177)	To accelerate multi-stakeholder engagement in eliminating hazardous chemicals from fashion and construction value chains and to replicate the successes of in-country child projects regionally and globally.	The circular construction project will closely monitor developments from this project. Budget has been allocated for participating in activities relevant to the construction sector, and it is expected that the Chile project will adapt methodologies resulting from this global IP.
Strengthening the Housing Emergency Plan and Containment of the Urban Deficit (CH-T1300; IDB and MINVU)	CH-T1300 includes support in baseline studies and methodologies for social housing and urban planning. Relevant for the GEF project’s work on the national quality infrastructure system (output 2.1) and sectoral methodologies (4.1).	Coordination will be ensured through the involvement of MINVU in the project’s Steering Committee.
Acceleration of Investment for Sustainable Development in Chile (CH-T1312; IDB, Ministry of Economy, Development and Tourism)	The specific objectives are: (i) to strengthen the tools for supporting sustainable productive development of the lithium value chain in Chile; and (ii) to improve the permitting processes to facilitate investments.	The GEF circular construction project will closely monitor developments from this project, as procedural improvements suggested for the lithium value chain might be of relevance to the legal output in this GEF project (output 1.1).
Aster: Accelerator of Efficient Technologies in Chile (CH-G1011 and CH-T1309; IDB Lab, Aster)	The project seeks to support the financing of climate innovation startups in Chile by strengthening a local startup accelerator (Aster), building capacity for the assessment of environmental and social risks, creating the positive impact of climate-related technology solutions, and encouraging women’s participation in innovative ventures of this kind. These actions are mainly aligned with the GEF project’s output 3.3 (Business models and networks for low-carbon and circular construction to support small and medium enterprises)	Aster and IDB lab representatives will be invited to participate in the yearly coordination workshops under output 4.1 for coordination and sharing of lessons learned.

Project/Initiatives	Objectives and relevance to this project	Intended coordination and synergies
Global Subnational Climate Fund (FP152; GCF, Pegasus Capital Advisors)	FP152 is an impact equity fund to provide equity investments for climate projects ranging from USD 5 to 75 million, at the sub-national level. The USD 750 million fund is anchored by a GCF investment of USD 150 million, providing first-loss coverage to crowd-in private institutional investors in particular.	The GEF circular construction project will closely monitor developments from this project. Potential synergies and coordination is required mainly in the context of the financial strategy, including work on sustainable taxonomies, (output 3.1).
Green Climate Financing Facility for Local Financial Institutions in Latin-America (FP149; Chile, Panama, Ecuador, and Peru - GCF)	The Programme will provide LFIs with access to a green finance credit line. It will also implement four grant-funded sub-components with a focus on education, awareness raising and technical support.	The GEF circular construction project will closely monitor developments from this project. Potential synergies and coordination is required mainly in the context of the financial strategy, including work on sustainable taxonomies, (output 3.1).

Besides the yearly coordination workshops organized by the GEF project (component 4.1), cooperation with ongoing initiatives and the work of other ministries will be undertaken by the existing strong coordination mechanism that Chile has on sustainable construction, the Inter-Ministerial Table for Sustainable Construction (MICS). As noted, this body coordinates the work on sustainable construction between the six primary line ministries working on different aspects of such. Furthermore, through Construye 2025 (and its successor, Construye Circular 2050, to be supported by this project), the MMA will work together with other ministries and public institutions (MINVU, MOP, CORFO) and sectoral representatives from the private sector (e.g. the Chilean Chamber of Construction), building upon lessons learned, gaps and opportunities previously identified and captured in the Roadmap for a Circular Chile by 2040 and the Roadmap for a Circular Construction by 2035.

As the project will be led by MMA and executed by Fundación Chile, as well as draw on the participation of the actors mentioned above, it has potential to co-locate and share existing expertise and staffing. For instance, Fundación Chile has executed previous GEF projects with MMA and the Ministry of Energy, and UNEP as the implementing agency, with all staff located on the Fundación Chile premises; a similar execution modality is envisioned here.

UNEP is the project implementing agency. UNEP has significant experience in supporting the promotion of sustainable construction and circular economy policies and initiatives. In implementing this project it will draw upon experiences, good practices and lessons learned in its existing partnerships under the Global Alliance for Buildings and Construction, District Energy in Cities Initiative, Climate and Clean Air Coalition, Partnership on Sustainable and Low Carbon Transport, Sustainable Energy for ALL, the Cool Coalition, REN21, the Energy Efficiency Global Alliance, Share the Road, the Basel Agency for Sustainable Energy, and the Frankfurt School of Finance and Management. It will also draw upon its experience in implementing in Chile GEF projects (such as the GEF-7 district energy and electric mobility projects and the GEF-6 CBIT and energy efficiency projects). At the international level, this project will coordinate with the Global Alliance for Buildings and Construction. Launched at COP-21 in Paris, the GlobalABC is a voluntary partnership of national and local governments, inter-governmental organisations, businesses, associations, networks and think thanks committed to a common vision: A zero-emission, efficient and resilient buildings and construction sector. UNEP, as the alliance's secretary and this GEF project's proposed implementing agency, will ensure that this national project draws upon experiences, good practices and lessons learned during the project preparation grant phase and project execution.

[1] This table revisits the projects listed under the 'on-going initiatives in the sector' table in the baseline.
[2] Further details about the Update of Sustainable Construction Strategy are available here.
[3] Further details about the Taxonomy are available here.
[4] Further details about the Clean Production Agreements are available here.
[5] Further details about ECOVIVIENDA programme is available here.
[6] Further details about Santander Green Loans is available here.
[7] Further information regarding CES Certification is available here.
[8] Further information regarding CVS Certification is available here.

Core Indicators

Indicate expected results in each relevant indicator using methodologies indicated in the GEF-8 Results Measurement Framework Guidelines. There is no need to complete this table for climate adaptation projects financed solely through LDCF and SCCF.

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)	700	0	0	0
Expected metric tons of CO_2e (indirect)	350000	352004	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)				
Expected metric tons of CO_2e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)	700			
Expected metric tons of CO_2e (indirect)	350,000	352,004		
Anticipated start year of accounting	2025	2025		
Duration of accounting	20	20		

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)

Indicator 11 People benefiting from GEF-financed investments

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	100	254		
Male	300	381		
Total	**400**	**635**	0	**0**

Explain the methodological approach and underlying logic to justify target levels for Core and Sub-Indicators (max. 250 words, approximately 1/2 page)

GHG emissions reductions

The project will achieve greenhouse gas emission reductions as global environmental benefits which would not have accrued without its interventions. More specifically, the policy and sectoral reforms introduced by the project will lead to avoided GHG emissions.95 Due to the transformative, long-run nature of the interventions, supporting an entire sector's shift to circularity and involving both the creation of new legislation as well as the adjustment of existing norms and laws, the impact will materialize mainly in the post-project phase (i.e. indirect emission reductions).

The original PIF reported an estimate of 700t of direct emission reductions (representing 700/350,000 = 0.2% of total expected emission reductions) resulting from the interventions in component 2 (at the time of PIF submission, only sketched). However, during the PPG stage it was assessed that the project would not include investments that would lead directly to emission reductions, but instead that emission reductions would result from regulatory interventions, creation of confidence in circular products, financial reform and creation of capacities, all of which correspond to indirect effects according to GEF-8 Results Measurement Framework (GEF/C.62/Inf.12/Rev.01) p.18.

The methodology used for the estimation of GHG emissions reductions can be summarized as follows:

. A baseline for the construction sector is estimated based on Chile's national GHG inventories and existing sectoral footprint estimations.

- The impact of circular economy measures for the construction sector is estimated based on literature review and existing analyses. A "circular economy scenario" is then prepared. The period considered is 20 years post-project, when all reforms should be in place (2029 – 2048).

- Causality factors are estimated for each group of circular economy measures to estimate the project's contribution to the overall shift to circularity in the construction sector. These include:

Regulatory interventions in component 1: development and implementation of a legal framework for circular construction (output 1.1), circular public procurement and investments (output 1.2 and 1.3).

- Confidence enabling activities in component 2, leading to reduced demand of carbon-intensive materials (such as concrete and steel) through substitution with circular bio-based materials.

- Reform of existing financial facilities and circular networks in component 3, leading to improved material efficiency and construction practices.

- Capacity building activities in component 4, leading to reduced material overspecification in construction and adoption of low-carbon materials.

Based on the above, an estimate was made of the project's contribution to reduction of national emissions in the construction sector through the three pillars of embodied carbon emissions: project design (overspecification and building repurposing), making manufacturing processes more efficient, and recycling and switching materials. An estimate was made for the project's lifetime impact (2029 – 2048), with an average causality factor of 0.22% applied. Detailed calculations are available in a separate spreadsheet.

The project expected impact (including all global environmental benefits) will be reassessed at the end of the execution phase, to adjust all estimates to actual project performance. This will be captured through deliverable 5.1.7. The detailed estimation is presented in Annex M.

Other environmental benefits

The interventions included in this proposal will also lead to additional socio and environmental benefits, e.g. the reduction of harmful chemicals in construction (mainly, through actions throughout component 2) and reducing the impact of construction-related activities on land.

While these are significant benefits that will result from the long-term impact of the project interventions, only direct effects are allowed to be accounted for in GEF core indicators except for Greenhouse Gas emissions mitigated (GEF/C.62/Inf.12/Rev.01), page 6). Therefore, indirect impacts (i.e. occurring after the project's execution phase) on other relevant environmental indicators have not been included among the project's core indicators. Potential benefits are estimated and reported here only for illustrative purposes.

Land and biodiversity

By creating penalties and providing tools against illegal material extraction and illegal disposition of CDW (the specific objective towards which the remote-sensing tool in output 4.5 will be contributing to, besides from regulatory reforms in component 1), the project is expected to have a positive impact on land and associated biodiversity. In Chile, it is estimated that over 1,000 ha are affected by illegal extraction of aggregates, and 3.735 illegal waste disposal sites are operational, from which a minimum of 535 ha have already been identified as affected. Therefore, interventions from this project are expected to contribute towards the restoration and improved management of an environmental problem of an estimated scale of at least 1,000 + 535 = 1,535 ha of land.

Chemicals of concern

The various regulatory reforms to be introduced by the project are expected to lead to a reduction in chemicals of concern contained in products such as insulation materials, flame retardants, wood preservatives, adhesives, paints, lacquers, sealants, varnishes, and other coatings. Key project interventions that will lead to a reduction in chemicals of concern include the circular construction bill (output 1.1), the entire set of measures in Chile's quality infrastructure system (component 2), and the capacity building actions in component 4. As a minimum, the overall improvements in material efficiency will lead to a reduction in the demand for materials responsible for the release of chemicals of concern.

As an example of the project potential contribution towards the reduction of harmful chemicals -and following the same methodological approach as with GHG emission reductions- it is estimated that project interventions (e.g. those targeting overspecification and fostering the recycling and switching of materials) will lead to an indirect reduction in mercury emissions associated to the production of cement of 2,365 kg over the impact period (2029 – 2048). Other impacts will be assessed ex-post at the end of the execution phase, through deliverable 5.1.7. The detailed methodology and calculation are presented in Annex M.

Project beneficiaries

It is estimated that the project will have a total of 5 hybrid (i.e. on-line and in-person) technical workshops, each targeting specific stakeholders. Assuming 127 unique attendants to each, the project will reach out to 635 direct beneficiaries, including staff of Chilean ministries, national and subnational decision-makers, the private sector, civil society organizations (CSOs) and other relevant stakeholders. The project's direct beneficiaries are those whose capacity is strengthened in the project's capacity building

sessions under output 2.1,4.3, and 4.4. The assumption is that the direct beneficiaries will be split 60/40 (men/women), which is ambitious considering the percentage of women in the construction sector (10.9%). Note that this includes only direct beneficiaries (i.e. the capacity building programs will be hosted by academic institutions, where they'll reach other beneficiaries after project completion).

Key Risks

	Rating	Explanation of risk and mitigation measures
CONTEXT		
Climate	Low	Risk: Project activities disrupted by extreme climate events Project execution mitigation strategy: Most project outputs in this project are primarily desk activities and will not be overly affected by extreme weather events. For the execution of pilots in component 2, the respective designs will include a climate change risk assessment and contingency plan. Moreover, physical testing to understand the resilience of circular materials to various hazards is included in the design of the pilots. Capacity building activities throughout the project can be done in a remote way in case of need. As an additional measure, the project management unit (PMU) will monitor the climatic situation closely and take remedial action, if necessary.
Environmental and Social	Moderate	Risk: This project can be categorized as moderate risk, triggering safeguard standard SS4 (community health, safety and security). Project execution mitigation strategy: Project interventions aimed at demonstrating the feasibility of using low-carbon materials and circular approaches will require the conducting of ESIAs and ESMPs to mitigate pollution risks prior to their implementation. Additionally, appropriate due diligence regarding community safety and working conditions must be observed. Attention should also be paid to UNEP's Guiding Principles– leave-no-one behind; human rights and gender equality and women's empowerment; accountability; sustainability and resilience, which are applicable to all UNEP projects.
Political and Governance	Moderate	Risk: Lack of political buy-in and support for a transition to circularity leads to reduced support for the project and a lack of adoption of project outputs. Project execution mitigation strategy: Chile has made consistent efforts towards circularity, including the Roadmap for a Circular Chile, the Roadmap for a Circular Construction, and the Strategy for Circular Economy in the Textile Sector, as well as with regards to overall sustainability in the construction sector (e.g. the National Strategy for Sustainable Construction, currently under development at the time of writing this proposal). Moreover, the transition to circularity is also embedded in Chile's NDC, its NDC strategy (i.e. the Long-term Climate Strategy, ECLP), and the Framework Law on

		Climate Change (Law 21455). Thus, the mandate and political will for this transition is consistently embedded in national policies and institutions. The project is highly ambitious regarding the quantity and scope of the reform package it expects to set in motion through component 1. The approach to mitigate the adoption risk is through participation of relevant ministries (and stakeholders) in the project's governance structure. In particular, the project will involve key adopting ministries (including MOP, MINVU and MDSF) as members of the PSC to guarantee ownership of any regulatory proposals. For the circular bill (to be submitted for congress approval) the project will prepare and implement and approval strategy that includes support from key stakeholders in the project's extended governance (i.e. the PSC and the institutions in the Technical Advisory Body).
INNOVATION		
Institutional and Policy	Low	Same as the "political and governance" category above.
Technological	Moderate	Risk: This category relates to the uncertainty of success from the development or application of technological innovations applied by the project; in this case, this category could apply to output 2.3 (road solutions circular solutions) and output 4.5 (remote sensing tool for environmental surveillance). Project execution mitigation strategy: For the specific case of the testing capacity in output 2.3, the lab capacity itself can be seen as a risk mitigation strategy, i.e. by demonstrating the environmental feasibility of alternative materials in controlled settings. For output 4.5, the project will create and test a prototype tool that will help gain a better understanding of the technical feasibility of the proposed solution. In both cases, the project is teaming up with local technology centers with a known record in handling similar assignments (e.g. CTEC for the testing of innovative materials for road construction; CIPYCS for designing the remote sensing tool).
Financial and Business Model	Low	Risk: This category captures risk carried by any financing mechanism that helps mobilize financing by tapping new funding sources or by engaging new financing partners to support solutions promoted by the project or program. Project execution mitigation strategy: The approach has been to partner up with financial institutions that are already offering similar products (i.e. Banco Estado, Banco Santander and Banca Ética), all of which will participate in the project's advisory board. Moreover, the project will liaise with national efforts in terms of taxonomy, contributing to its implementation in a specific sector.
EXECUTION		
Capacity	Low	Risk: Low institutional capacity for execution of activities in the workplan. Project execution mitigation strategy: The institution foreseen as the co-executing agency for this project (Fundación Chile) has demonstrated high institutional capacity for managing GEF projects. Likewise, the MMA (as the lead government ministry) has considerable experience in the design and implementation of GEF projects. This risk was further addressed through the following actions: Engagement of all key stakeholders that are to be involved

		in the execution of each of the outputs, to confirm that the proposed interventions are relevant, feasible, and sustainable. Inclusion of proposals for post-project operation of key deliverables and outputs that are to supersede the duration of this project. Assessment of the Executing Agency's expertise in the execution of projects of similar size and scope.
Fiduciary	Low	Risk: Low institutional capacity for execution of funds. Project execution mitigation strategy: Thorough capacity assessment of the entity that will act as the project's Executing Agency. Fundación Chile has significant experience in developing and managing medium-large development projects (including GEF projects).
Stakeholder	Moderate	Risk: Lack of buy-in from the private sector and other stakeholders leads to reduced support for the project and a lack of adoption of its outputs. The downscaling of concrete mitigation actions might generate opposition from stakeholders that perceive themselves as adversely affected by the transition. Project execution mitigation strategy: Close work with stakeholders was given a fundamental weight in this project's design as a mitigation measure for this risk. During execution, yearly output-scale engagement plans have been included among the project deliverables (output 2.2) to provide tailor-made support to each relevant actor to understand the importance of the transition, their role and contribution. This covers all the spectrum of stakeholders, including government, private sector, academia, and civil society.
Other	Low	Macro-economic risks Risk: Inflation, exchange and other macroeconomic risks affect the project's procurement processes Project execution mitigation strategy: This risk is deemed low given Chile's macroeconomic stability.98 Note that only partial fund disbursements are given to the executing agency, which reduces exposure to country risks. Project funds to be held in USD accounts (where possible) to reduce exchange rate risks. The project team will provide yearly updates of all procurement processes (see yearly planning deliverable on output 5.1), including a risk assessment and risk mitigation plans whenever a moderate risk (or higher) is identified.
Overall Risk Rating	Low	The majority of risks faced by the project are low. Risk categories with moderate ratings (Environment and Social, Political and Governance, Stakeholder Engagement) have been addressed through mitigation measures embedded in project design and will remain under close monitoring during project execution.

C. ALIGNMENT WITH GEF-8 PROGRAMMING STRATEGIES AND COUNTRY/REGIONAL PRIORITIES

Explain how the proposed interventions are aligned with GEF- 8 programming strategies and country and regional priorities, including how these country strategies and plans relate to the multilateral environmental agreements.

For projects aiming to generate biodiversity benefits (regardless of what the source of the resources is - i.e., BD, CC or LD), please identify which of the 23 targets of the Kunming-Montreal Global Biodiversity Framework the project contributes to and explain how.

Confirm if any country policies that might contradict with intended outcomes of the project have been identified, and how the project will address this. (max. 500 words, approximately 1 page)

GEF-8 alignment
This project is aligned with the GEF-8 programming directions climate change focal area strategy, Pilar I: promote innovation, technology development and transfer, and enabling policies for mitigation options with systemic impacts; Objective 1.1: Accelerate the efficient use of energy and materials. In particular, the project is aligned with paragraphs 474, 475, 477 and 479 of Objective 1.1.[1]

Country alignment
This project is fully aligned with national priorities. In its NDC, Chile commits to begin a downward pathway to decarbonization starting in 2025, aiming to achieve carbon neutrality by 2050 and establishes the need for a shift from linear to circular principles as a cross-cutting element for the achievement of both mitigation and adaptation goals. Moreover, in 2021 Chile has issued a Long-term Climate Strategy (*Estrategia Climática de Largo Plazo*, ECLP), which sets the path to achieve the objectives laid out in the NDC, including net decarbonization by 2050, and further emphasizes the importance of applying circular economy principles as a fundamental element in achieving NDC goals. Chile's Framework Law on Climate Change (Law 21455, in force since June 2022) formally adopted the targets in the NDC and recognized the ECLP as an official climate management instrument.

Beyond its contribution towards sectoral decarbonization, this project directly supports Chile in achieving 20 out of a total of 56 ECLP targets related to housing, and 7 out of a total of 16 targets in the ECLP related to infrastructure.[2] Moreover, the activities and interventions included in this proposal have all been derived from the sectoral roadmap for a circular construction. [3]

This project is part of UNEP's Decarbonization Programme Coordination Project (PCP), which is a logical link between the higher-level structuring of the mitigation parts of UNEP's 2022-2025 Medium-Term Strategy and Programme of Work and UNEP's individual projects (such as this one). In particular, will directly support UNEP in implementing its Programme of Work outcomes 1.4, 1.6, 1.7, 1.8 and indicators i, ii and v. This proposal is also aligned with the five pillars of the United Nations Framework Agreement for Sustainable Development (UNSDPF) with Chile, particularly, strategic priorities 1 (institutional development), 2 (economic development) 3 (social development) and 4 (environmental development).[4] UNEP will facilitate coordination with the UN Country Team and Resident Coordinator, ensuring they are informed of the project's progress and that it aligns with the Chilean UNSDPF. During the consultations and analysis undertaken in preparing this proposal, no country policies were identified which might be in conflict with the project's objective and outcomes.

Alignment with the Kumming-Montreal Biodiversity Framework
The project will also support the achievement of the Kunming-Montreal Global Biodiversity Framework, particularly its targets 2 and 16. By reducing illegal material extraction and the illegal disposal of construction and demolition waste (CDW)—the specific objective of the remote-sensing tool in Output 4.5, along with regulatory reforms in Component 1—the project is expected to have a positive impact on land and its associated biodiversity. Additionally, the project is expected to introduce regulatory changes that will promote more sustainable consumption choices and reduce waste generation in the construction sector.

[1] Available here.
[2] Refer to section 5.6 (Buildings and cities) and 5.7 (Infrastructure) in the ECLP (Gob. of Chile, 2021).
[3] Construye2025 (2020).
[4] UNSDPF Chile 2019 – 2022. At the time of preparing this PIF, the subsequent UNSDPF is being discussed.

D. POLICY REQUIREMENTS

Gender Equality and Women's Empowerment

We confirm that gender dimensions relevant to the project have been addressed during Project Preparation as per GEF Policy and are clearly articulated in the Project Description (Section B).

Yes

1) Does the project expect to include any gender-responsive-measures to address gender gaps or promote gender equality and women's empowerment?

Yes

If the project expects to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment, please indicate in which results area(s) the project is expected to contribute to gender equality:

Closing gender gaps in access to and control over natural resources;

Yes

Improving women's participation and decision-making; and/or

Yes

Generating socio-economic benefits or services for women.

Yes

2) Does the project's results framework or logical framework include gender-sensitive indicators?

No

Stakeholder Engagement

We confirm that key stakeholders were consulted during Project Preparation as required per GEF policy, their relevant roles to project outcomes has been clearly articulated in the Project Description (Section B) and that a Stakeholder Engagement Plan has been developed before CEO endorsement.

Yes

Select what role civil society will play in the Project

Consulted only; Yes

Member of Advisory Body; Contractor; Yes

Co-financier; No

Member of project steering committee or equivalent decision-making body ; No

Executor or co-executor; Yes

Other (Please explain)

Private Sector

Will there be private sector engagement in the project?

Yes

And if so, has its role been described and justified in section B project description?

Yes

Environmental and Social Safeguards

We confirm that we have provided information regarding Environmental and Social risks associated with the proposed project or program, including risk screenings/ assessments and, if applicable, management plans or other measures to address identified risks and impacts (this information should be presented in Annex E).

Yes

Please provide overall Project/Program Risk Classification

Overall Project/Program Risk Classification

PIF	CEO Endorsement/Approval	MTR	TE
Low	Medium/Moderate		

E. OTHER REQUIREMENTS

Knowledge management

We confirm that an approach to Knowledge Management and Learning has been clearly described during Project Preparation in the Project Description and that these activities have been budgeted and an anticipated timeline for delivery of relevant outputs has been provided.

Yes

Socio-economic Benefits

We confirm that the project design has considered socio-economic benefits to be delivered by the project and these have been clearly described in the Project Description and will be monitored and reported on during project implementation (at MTR and TER).

Circular economy offers ways to overcome the trade-off between economic development and environmental protection, creating synergies between both objectives, as it emphasizes the importance of material productivity, i.e. how much value the economy generates per unit of mass of input material. Currently, Chile has the lowest material productivity of all OECD countries, generating US$ 0.56 for each kilogram of material used by the economy, while the OECD average was US$ 2.88, and a leading country like the Netherlands generated US$ 5.75 per kilogram.[1] Improving material productivity will be one of the key benefits from this project.

While no specific figures exist for the specific case of Chile, the potential benefit of a transition to a circular construction has been supported by various studies. Together with mobility and food, it is estimated that the shift to a circular built environment would enable Europe to increase resource productivity by 3% per year, and other estimates report positive impacts on GDP growth (0.8 to 7.0%) and employment, adding 0.2 to 3.0% of jobs while reducing sectoral carbon emissions by 8 to 70%.[2]

While the key benefit of this project arises from emission reductions linked to zero-emitting buildings, through the introduction of lifecycle and circular economy approaches the project will generate other environmental benefits, e.g. related to eliminating the use of materials containing harmful chemicals in buildings and reducing the impact of buildings and construction on land and associated biodiversity.

Thus, promoting technological advances and decarbonization considering the entire life cycle of buildings represents an opportunity to (i) reduce household, business and government spending on energy and waste management, (ii) optimize the use of natural resources, reducing impact on health, land and biodiversity; and (iii) enhance the productivity of the workforce involved in the construction industry through capacity building measures, contributing towards a just transition to a net-zero, circular economy in Chile.

[1] MMA *Hoja de ruta para un Chile circular al 2040* (Santiago, Chile, 2021)
[2] Construye2025 (2020), p. 37.

ANNEX A: FINANCING TABLES

GEF Financing Table

Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non-Grant	GEF Project Grant($)	Agency Fee($)	Total GEF Financing ($)
UNEP	GET	Chile	Climate Change	CC STAR Allocation: CCM-1-1	Grant	2,963,699.00	281,551.00	3,245,250.00
Total GEF Resources ($)						**2,963,699.00**	**281,551.00**	**3,245,250.00**

Project Preparation Grant (PPG)

Was a Project Preparation Grant requested?

true

PPG Amount ($)

50000

PPG Agency Fee ($)

4750

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	PPG($)	Agency Fee($)	Total PPG Funding($)

UNEP	GET	Chile	Climate Change	CC STAR Allocation: CCM-1-1	50,000.00	4,750.00	54,750.00
Total PPG Amount ($)					**50,000.00**	**4,750.00**	**54,750.00**

Please provide Justification

Sources of Funds for Country Star Allocation

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Sources of Funds	Total($)
UNEP	GET	Chile	Climate Change	CC STAR Allocation	1,045,250.00
UNEP	GET	Chile	Biodiversity	BD STAR Allocation	2,200,000.00
Total GEF Resources					**3,245,250.00**

Focal Area Elements

Programming Directions	Trust Fund	GEF Project Financing($)	Co-financing($)
CCM-1-1	GET	2,963,699.00	31922703
Total Project Cost		**2,963,699.00**	**31,922,703.00**

Confirmed Co-financing for the project, by name and type

Please include evidence for each co-financing source for this project in the tab of the portal

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Recipient Country Government	Ministry of Environment Chile	In-kind	Recurrent expenditures	1134069
Recipient Country Government	Ministry of Environment Chile	Public Investment	Recurrent expenditures	910430
Recipient Country Government	National Service for Disaster Prevention and Response of Chile	In-kind	Recurrent expenditures	160000
Recipient Country Government	Interdisciplinary Center for Productivity and Sustainable Construction (CIPYCS)	Public Investment	Investment mobilized	1065000

Recipient Country Government	Interdisciplinary Center for Productivity and Sustainable Construction (CIPYCS)	Public Investment	Recurrent expenditures	500000
Recipient Country Government	Agency for Sustainability and Climate Change (ASCC)	Public Investment	Recurrent expenditures	603409
Private Sector	ECOEd	In-kind	Recurrent expenditures	229000
Civil Society Organization	Fundación Chile	In-kind	Recurrent expenditures	100000
Recipient Country Government	C2025	Public Investment	Recurrent expenditures	1061461
Recipient Country Government	Technology Center for Innovation in Construction (CTEC)	In-kind	Recurrent expenditures	3335754
Private Sector	Santander Bank	Loans	Investment mobilized	20000000
Recipient Country Government	Ministry of Public Works	Public Investment	Investment mobilized	231680
Recipient Country Government	CORFO	Grant	Investment mobilized	2591900
Total Co-financing				**31,922,703.00**

Please describe the investment mobilized portion of the co-financing

- MMA cofinancing includes resources for eligible municipalities for the introduction of circular measures, from the Sustainable heating programme (all of which are to be applied to C1)

- CIPYCS includes resources from various applied research projects (USD 220,000 as part of project FONDEF ID23I10156; USD 115.000 as part of project FONDECYT 11241027; USD 220.000 as part of project FONDEF ID23I10364; USD 290.000 as part of project FONDECYT 1240450; USD 220.000 USD as part of project FONDEF ID23I10318). All these resources will support activities in component 2.

- CTEC cofinance includes resources from the “Construye zero” program, including a total of nine Climate Change Adaptation Technologies (TACC) sub-programmes (material passports, construction materials lab, digital twins, energy efficiency and sustainable construction platform; net-zero multipurpose module, hybrid wind-solar tower, industrialized steel facades, pro-zero industrialized buildings, and eco-concrete. These support all project components.

- Santander co-financing includes funds from their ‘Green Mortgage’ loan line.

- MOP investment mobilized includes resources from:

o Bridge replacement projects with a requirement for recycled steel in their structures

o Basic Study for the Development of CES (Sustainable Building Certification) Airports

o Study on the ""Identification of circular economy criteria for MOP works""

o Other human resources

ANNEX B: ENDORSEMENTS

GEF Agency(ies) Certification

GEF Agency Type	Date	Project Contact Person	Phone	Email
GEF Agency Coordinator	8/21/2024	Ersin Esen		ersin.esen@un.org
Project Coordinator	8/21/2024	Asher Lessels		asher.lessels@un.org

Record of Endorsement of GEF Operational Focal Point (s) on Behalf of the Government(s):

Please attach the Operational Focal Point endorsement letter(s) with this template.

Name of GEF OFP	Position	Ministry	Date (MM/DD/YYYY)
Miguel Stutzin	Officer	Ministry of Environment	3/31/2023

ANNEX C: PROJECT RESULTS FRAMEWORK

Please indicate the page number in the Project Document where the project results and M&E frameworks can be found. Please also paste below the Project Results Framework from the Agency document.

1. Core Indicators

GEF core indicator	Indicator	Baseline	Mid-term target	End of project target	Means of verification	Risks (see section B6)
6	Metric tonnes of greenhouse gas emissions avoided during the project lifetime (20 years).	0	-	352,004 tCO_2e (2029 – 2048)	Output 5.1 (see deliverable 5.1.7) will provide an updated estimate of all project core indicators based on the methodological developments to be introduced by the project, including all relevant LCA methodologies as well as the adaptation of methodologies from the GEF 8 Integrated Programme (IP) "Eliminating hazardous chemicals from supply chains" (see deliverable in output 4.1), which may result in additional indicators for this section.	- Political and Governance - Strategies and Policies - Stakeholder Engagement
11	Number of direct beneficiaries	0	Women: 25 Men: 75	Women: 254 Men: 381	- Workshop reports, capacity-building reports.	- Environment and Social - Institutional capacity for

GEF core indicator	Indicator	Baseline	Mid-term target	End of project target	Means of verification	Risks (see section B6)
	disaggregated by gender.		Total: 100	Total 635		implementation and sustainability - Stakeholder Engagement

2. Outcome Indicators

Objective	Indicator	Baseline	Mid-term target	End of project target	Means of verification	Risks (see section B6)
Outcome 1: National, regional and local governments adopt low-carbon, circular policies and regulations in the construction and demolition sector	1. (a) % of circular construction framework regulations (bill, regulations and programmes) submitted for approval/adoption by relevant authorities.	n.a.	The regulatory package has been drafted and adopting entities for each identified. 100% of the proposals have been submitted and approved by the PSC and relevant entities in the advisory body	At least 70% of the package (i.e. all bills, regulations and programmes in C1) has initiated adoption process in the relevant institution	The project base team will keep an updated list of items in the regulatory package together with the adoption status by each relevant entity (e.g. congress, ministries, municipalities), as well as relevant evidence for each.	- Political and Governance - Strategies and Policies - Stakeholder Engagement
Outcome 2: Private and public stakeholders in Chile gradually implement low-carbon, circular construction	2. (a) Number of certification schemes (CVS, CES, LEED, others proposed by the project) and/or regulatory requirements[1] that include circular criteria / requirements	0	By mid-term, the project should have identified and conversations should be underway to revise relevant certification schemes (or create new ones). Draft regulations in C1 should also be available.	At least 3 elements are in full force by the end of the execution phase.	Official government publications, policy documents and desk research (see e.g. CVS website; CES website).	- Climate - Environment and Social - Political and Governance - Macro-economic - Strategies and Policies - Technical design of project or program - Institutional capacity for implementation and sustainability - Fiduciary: Financial Management and Procurement - Stakeholder Engagement
Outcome 3: Key actors (government, private sector, and financing institutions) implement	3. (a) # of financial mechanisms (funds, credit lines) explicitly incorporating circular and gender responsive criteria as eligibility requirements	0	0. By mid-term, work on C3 should have already started according to the workplan.	At least one credit line and one national fund has been revised to	Publicly available information from relevant institution (e.g. Banco Estado, Santander,	- Climate - Environment and Social - Political and Governance - Macro-economic

Objective	Indicator	Baseline	Mid-term target	End of project target	Means of verification	Risks (see section B6)
innovative mechanisms to scale-up the implementation of low-carbon and circular economy principles in the construction and demolition sector				include circular criteria.	CORFO, Banca Ética, MMA environmental funds, others depending on the mechanism updated)	- Strategies and Policies - Technical design of project or program - Institutional capacity for implementation and sustainability - Fiduciary: Financial Management and Procurement - Stakeholder Engagement
Outcome 4: The Chilean construction sector has access to systematized sectoral data and demonstrates enhanced capacity for promoting a low-carbon and circular approach in construction and demolition	# of persons enrolled in one or more of the project's capacity building mechanisms	0	0. By mid-term actions in C4 (specifically, 4.3 and 4.4, as the outputs relevant for strengthening of capacities) should be underway. Institutions hosting the training modules should be identified.	At least 50 persons are enrolled for courses in the public sector, and 200 for courses in the private sector. As a minimum, 60/40 male / female participation is expected.[2]	Documentation provided by partner institutions hosting the modules (ministries and/or training institutions). The base team will provide a list of which module has been hosted by which institution, and documented evidence of enrolment of each type of actor.	- Institutional capacity for implementation and sustainability - Stakeholder Engagement

3. Output Indicators

Objective	Indicator	Baseline	Mid-term target	End of project target	Means of verification	Risks (see section B6)
Output 1.1: A gender responsive legal framework for low-emission and circular economy principles in construction and demolition,	1.(i) # of regulatory reform presentations given to executive and legislative authorities (minister, under-secretary	0	10	20	Minutes of meetings	- Political and Governance - Strategies and Policies - Institutional capacity for implementation and sustainability - Stakeholder Engagement

aligned with the Chilean long-term climate strategy, is submitted for adoption by the national government	and/or congress representatives)					
Output 1.2: Public procurement and management mechanisms are updated to promote the use of gender responsive low-carbon and circular economy principles in public construction and demolition	1.(ii) # of methodologies (new/revised) approved by the MDSF	0	0. Note however that by MTR, the set of methodologies should be identified and work with MDSF should be underway	1 set that allows internalization of costs from the linear consumption model is approved	SNI website	- Political and Governance - Stakeholder Engagement
Output 1.3: Regional and municipal governments have strengthened capacity to facilitate investments and planning for a resilient, circular, and regenerative built environment	1.(iii a) % of municipalities participating in the network	0	50% of Chile's municipalities included in the network	50% of Chile's municipalities included in the network	Results and evidence from the public call for proposals in this output.	- Political and Governance - Stakeholder Engagement
	1.(iii b) Number of SNI programs and investment projects for regional / municipal support submitted by the project that receive a positive evaluation (RS)	0	0. Beneficiary municipalities have been identified and agreement(s) are underway.	2 programs / projects supported by the project receive RS qualification[3] in the SNI	Agreement(s) with municipalities.	- Political and Governance - Stakeholder Engagement
Output 2.1: Chile's quality infrastructure system is strengthened to reflect low-carbon and circular economy principles in construction and demolition	2.(i) # of technical norms under approval process by INN	0	5 draft norm ('anteproyecto') listed in INN's website	At least 15 approved and/or draft norm ('anteproyecto') listed in INN's website	INN's website	- Institutional capacity for implementation and sustainability - Stakeholder Engagement
Output 2.2: Private sector adoption of wood-based building products is fostered through a certification	2.(ii) # of standards for circular wood recognized by MOP, MINVU and/or MMA	0	0. By mid-term, the approach should be defined and endorsement process by adopting ministries underway.0. By mid-term, the	At least 1 system of standards providing criteria, parameters and other requisites for wood-products to be certified as circular officially	MOP, MINVU and MMA resolutions (publicly available).	- Political and Governance - Strategies and Policies - Technical design of project or program

scheme for circular timber products				endorsed by MOP, MINVU and/or MMA.		- Institutional capacity for implementation and sustainability - Fiduciary: Financial Management and Procurement - Stakeholder Engagement
Output 2.3: CTEC's capacity to test alternative circular solutions for road infrastructure is strengthened	2.(iii) # of innovative road solutions tested	0	5 alternative solutions / possible uses tested[4]	20 alternative solutions / possible uses tested and comparative results documented	CTEC progress reports	- Political and Governance - Strategies and Policies - Technical design of project or program - Institutional capacity for implementation and sustainability - Fiduciary: Financial Management and Procurement - Stakeholder Engagement
Output 2.4: A multi-cultural, gender-sensitive stakeholder engagement campaign for promoting a just-transition to a low-carbon, circular construction is developed for enhancing private sector and civil society participation	2.(iv) # of attendants at events organized by the project (by gender)	0	At least 700 (from institutions in the stakeholder map) between on-line and in-person events.	At least 2000 (from institutions in the stakeholder map) between on-line and in-person events. As a minimum, 60/40 male / female proportion is expected.	Attendance minutes and other records (e.g. metrics and views from social platforms)	- Stakeholder Engagement
Output 3.1: A sectoral financial strategy for scaling-up application of low-carbon and circularity principles is developed for adoption by public institutions (such as the Ministry of Environment, Ministry of	3.(i) # of concept notes for identified institutions	0	0. By mid-term, procurement processes for this output should have been concluded according to the workplan.	At least 2 have been structured and submitted (min. 20 MM USD in total)		- Political and Governance - Strategies and Policies - Technical design of project or program - Institutional capacity for implementation and sustainability - Fiduciary: Financial Management

Housing and Urbanism (MINVU), Ministry of Public Works (MOP), and others) and the private sector						and Procurement - Stakeholder Engagement
Output 3.2: Financial instruments in the construction and demolition sector are strengthened to integrate low-carbon and circular economy principles	3.(ii) % of instruments covered	0	0. By mid-term, procurement processes for this output should have been concluded according to the workplan.	100% of the financial instruments (including funds and credit lines) relevant for the construction sector in Chile have been assessed and received recommendations for integrating circularity criteria.	Deliverable 3.2.3. The baseline section of this project document includes a preliminary identification of relevant funds and credit lines.	- Political and Governance - Strategies and Policies - Technical design of project or program - Institutional capacity for implementation and sustainability - Fiduciary: Financial Management and Procurement - Stakeholder Engagement
Output 3.3: Business models and networks for low-carbon and circular construction are developed to support Small and Medium enterprises (SMEs)	3.(iii) # of clean production agreements (APLs) introducing circular attributes from SMEs networks supported by the project	0	0. By mid-term, scouting of SMEs should be underway according to the workplan.	At least 5 APLs involving SMEs identified and supported by the project, with at least one SME being woman-led. Eligible industries: steel, cement, asphalt, insulation materials (polystyrene and mineral wools), gypsum and plaster, plastics, others identified by the project team.	ASCC website	- Political and Governance - Institutional capacity for implementation and sustainability - Fiduciary: Financial Management and Procurement - Stakeholder Engagement
Output 4.1: Methodologies and information products on, inter alia, costs, impacts, carbon accounting and environmental footprint relevant for the valuation of externalities in the construction and demolition sector are available to	4.(i) # of methodologies and information products available to public and private stakeholders	0	Key inputs for the methodologies and information products have been developed: • Construction and demolition sector mass and energy balance • Report: overspecification in Chilean buildings Global platform capacity building report (chemicals of concern)	Three methodologies (environmental impacts in chemicals of concern, carbon footprint, costs for different CDW management methods) developed and made available to the public and private sector	Evidence to be provided by the project team in the final report.	- Institutional capacity for implementation and sustainability - Stakeholder Engagement

public and private stakeholders						
Output 4.2: The National Statistics Institute (INE) has strengthened capacity to collect and produce circular construction data and indicators	4.(ii) % of data assets in the data collection plan ("Circularity data master plan and collection strategy" – output 4.2) covered within data sharing agreements (DSAs) or equivalent instrument	n.a.	0. By mid-term, key deliverables in this output (most notably, the Circularity data master plan and collection strategy) should be completed.	50% of the data assets in the data collection plan fall within the scope of a data sharing agreement (or equivalent) with the respective data provider.	Data collection plan and signed agreements with data providers	- Institutional capacity for implementation and sustainability - Stakeholder Engagement
Output 4.3: Gender-sensitive trainings to incorporate low-carbon and circular economy principles in construction and demolition are made available for application by government officials at national and local levels	4.(iii) # of high-level institutions (ministries, public services and/or academic institutions) adopting modules prepared by the project	n.a.	0. By mid-term, a preliminary list of public-sector institutions hosting the training modules should be identified.	At least 4 institutions have adopted the modules for the public sector	Evidence shall be provided in the final report. Modules should be available through the partner's website.	- Institutional capacity for implementation and sustainability - Stakeholder Engagement
Output 4.4: Gender-sensitive trainings to incorporate circular principles are provided to service providers and material producers in the construction sector	4.(iv) # of institutions (universities and/or professional training centers, OTECs, OTIC, others) adopting modules and/or labor competencies prepared by the project	n.a.	0. By mid-term, institutions hosting the training modules should have been identified and modules for the private sector under development.	At least 10 institutions have adopted the modules for the private sector	Evidence shall be provided in the final report. Modules should be available through the partner's website.	- Institutional capacity for implementation and sustainability - Stakeholder Engagement
Output 4.5: Tools for sectoral surveillance and risk management are provided to government officials in the Superintendence of the Environment (SMA), the National Service for	4.(v) Tool prototype approved by the MMA, the SMA and SENAPRED + funding and governance (including responsible entities, users and beneficiaries, their roles and responsibilities	n.a.	By mid-term, the prototype must have been approved by the MMA, the SMA and SENAPRED.	By the end of the project, funding and governance for the implementation of the tool (including responsible entities, users and beneficiaries, their roles and responsibilities) should have been identified	The tool should be available online. Additional evidence may come from direct engagement with implementing partners (SMA, SENAPRED, CIPYCS)	- Institutional capacity for implementation and sustainability - Stakeholder Engagement

Disaster Prevention and Response (SENAPRED) and other government bodies	) identified and confirmed for up-scaling			and confirmed for up-scaling.		

[1] Including but not limited to the regulatory package in C1.
[2] This proportion is ambitious considering the percentage of women in the construction sector (10.9%).
[3] RS means "recommended without observations", i.e. positive evaluation by the SNI.
[4] Each alternative is defined as the combination of a given material used for a specific purpose. Thus, for example, 3 materials tested for 4 possible uses yield in 3 x 4 = 12 alternative solutions.

ANNEX D: STATUS OF UTILIZATION OF PROJECT PREPARATION GRANT (PPG)

Provide detailed funding amount of the PPG activities financing status in the table below:

Project Preparation Activities Implemented	GETF/LDCF/SCCF Amount ($)		
	Budgeted Amount	Amount Spent To date	Amount Committed
GEF Project Developer (stakeholder engagement, preparation of project documents, including technical design, work and financial plan, gender analysis and action plan, terms of references, among others)	27,775.00		27,775.00
National consultant for stakeholder engagement and data collection	15,000.00		15,000.00
Travel for consultants	3,000.00	1,809.00	1,830.00
Unused funds	4,225.00		
Total	**50,000.00**	**1,809.00**	**44,605.00**

ANNEX E: PROJECT MAP AND COORDINATES

Please provide geo-referenced information and map where the project interventions will take place

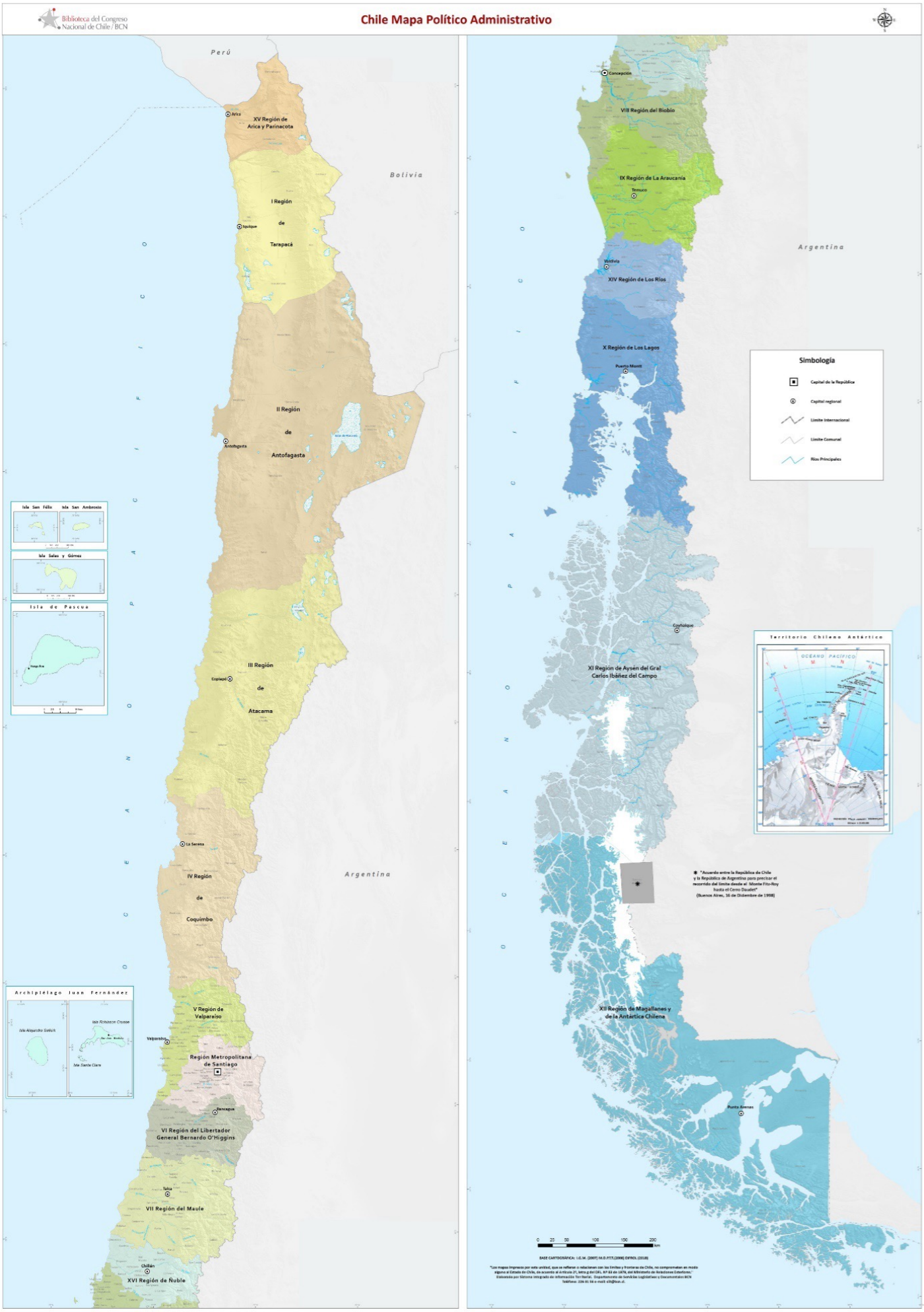
Location Name	Latitude	Longitude	GeoName ID
Santiago	-33.45694	-70.64827	3,895,114

Location Description:

Capital of Chile, location of most institutions at the national level (ministries and other public entities) and of the project's co-executing agency, Fundación Chile.

Activity Description:

Please provide any further geo-referenced information and map where project interventions are taking place as appropriate.


Biblioteca del Congreso Nacional de Chile / BCN
Chile Mapa Político Administrativo
Perú
Bolivia
Argentina
Argentina
Océano Pacífico
Arica
XV Región de Arica y Parinacota
I Región de Tarapacá
Iquique
II Región de Antofagasta
Antofagasta
III Región de Atacama
Copiapó
IV Región de Coquimbo
La Serena
V Región de Valparaíso
Valparaíso
Región Metropolitana de Santiago
VI Región del Libertador General Bernardo O'Higgins
Rancagua
VII Región del Maule
Talca
Chillán
XVI Región de Ñuble
VIII Región del Biobío
Concepción
IX Región de La Araucanía
Temuco
XIV Región de Los Ríos
Valdivia
X Región de Los Lagos
Puerto Montt
XI Región de Aysén del Gral Carlos Ibáñez del Campo
Coyhaique
XII Región de Magallanes y de la Antártica Chilena
Punta Arenas
Isla San Félix
Isla San Ambrosio
Isla Salas y Gómez
Isla de Pascua
Hanga Roa
Archipiélago Juan Fernández
Isla Alejandro Selkirk
Isla Robinson Crusoe
Isla Santa Clara
Simbología
Capital de la República
Capital regional
Límite internacional
Límite Comunal
Ríos Principales
Territorio Chileno Antártico
OCEANO PACIFICO
* "Acuerdo entre la República de Chile y la República de Argentina para precisar el recorrido del límite desde el Monte Fitz-Roy hasta el Cerro Daudet"
(Buenos Aires, 16 de Diciembre de 1998)
0 25 50 100 150 200 km
BASE CARTOGRÁFICA: I.G.M. (2007) N0.D.ITT/(2006) DIFROL (2018)
"Los mapas impresos por esta unidad, que se refieran o relacionen con los límites y fronteras de Chile, no comprometen en modo alguno al Estado de Chile, de acuerdo al artículo 2°, letra g del DFL. N° 83 de 1979, del Ministerio de Relaciones Exteriores."
Elaborado por Sistema Integrado de Información Territorial, Departamento de Servicios Legislativos y Documentales BCN
Teléfono: 226 01 94 e-mail: sit@bcn.cl

ANNEX F: ENVIRONMENTAL AND SOCIAL SAFEGUARDS SCREEN AND RATING

Attach agency safeguard datasheet/assessment report(s), including ratings of risk types and overall project/program risk classification as well as any management plans or measures to address identified risks and impacts (as applicable).

Title

11071_Chile_SRIF

ANNEX G: BUDGET TABLE

Please upload the budget table here.

Annex G: GEF Format Budget

	Component 1	Component 2	Component 3	Component 4		M&E	PMC		
GEF budget category & detailed description	**Outcome 1**	**Outcome 2**	**Outcome 3**	**Outcome 4**	**Subtotal**	**M&E**	**PMC**	**Total**	**Responsible entity**
02. Goods							**$ 4.500**	**$ 4.500**	
Laptops							$ 4.500	$ 4.500	FCh
04. Grants/Subgrants			**$ 100.000**		**$ 100.000**			**$ 100.000**	
FPA/FPR support grant			$ 100.000		$ 100.000			$ 100.000	FCh
06. Sub-contract to executing partner/entity	**$ 90.828**	**$ 703.379**		**$ 405.794**	**$ 1.200.001**	**$ 3.589**		**$ 1.203.590**	
CIM - CENAMAD (circular wood)		$ 169.399			$ 169.399			$ 169.399	FCh
CTEC (innovative asphalts)		$ 392.156			$ 392.156			$ 392.156	FCh
CIPYCS (remote sensing)				$ 76.329	$ 76.329			$ 76.329	FCh
INE (circular statistics)				$ 77.272	$ 77.272			$ 77.272	FCh
InnovaCiclo (studies and methodologies)	$ 90.828	$ 20.396		$ 232.192	$ 343.417	$ 3.589		$ 347.006	FCh
INN (IQIS)		$ 121.428			$ 121.428			$ 121.428	FCh
ChileValora (work profiles)				$ 20.000	$ 20.000			$ 20.000	FCh
07. Contractual services (company)	**$ 284.989**	**$ 47.129**	**$ 82.304**	**$ 48.249**	**$ 462.671**	**$ 75.216**	**$ 53.146**	**$ 591.033**	
Mid-term & Terminal Evaluation						$ 70.000		$ 70.000	UNEP
Legal Consultancy	$ 98.078				$ 98.078			$ 98.078	FCh
Financial Consultancy	$ 136.054		$ 47.096		$ 183.149			$ 183.149	FCh
Communications services		$ 11.920			$ 11.920			$ 11.920	FCh
Technical supervision and coordination	$ 50.857	$ 35.209	$ 35.209	$ 48.249	$ 169.524	$ 5.216		$ 174.740	FCh
Audit							$ 20.000	$ 20.000	FCh
Software licenses							$ 6.000	$ 6.000	FCh
Procurement, HR, legal, record keeping and other operational support costs							$ 27.146	$ 27.146	FCh
11. Salary and benefits/Staff Costs	**$ 290.995**	**$ 222.713**	**$ 130.593**	**$ 209.014**	**$ 853.316**	**$ 51.522**	**$ 82.282**	**$ 987.120**	
Chief Technical Advisor	$ 37.579	$ 93.486	$ 23.456	$ 64.433	$ 218.953	$ 13.055	$ 16.392	$ 248.400	FCh
Technical Officer	$ 30.250	$ 46.092	$ 53.209	$ 56.749	$ 186.300			$ 186.300	FCh
Legal expert	$ 106.920				$ 106.920			$ 106.920	FCh
Project economist & statistics expert	$ 104.085		$ 40.635	$ 5.130	$ 149.850			$ 149.850	FCh
Junior Technical Officer	$ 5.785	$ 4.469	$ 7.574	$ 68.297	$ 86.124	$ 7.026		$ 93.150	FCh
Communications, KM and gender expert	$ 6.377	$ 78.667	$ 5.720	$ 14.405	$ 105.169	$ 4.181		$ 109.350	FCh
Administrative Officer						$ 27.260	$ 65.890	$ 93.150	FCh
12. Training, Workshops, Meetings		**$ 8.000**		**$ 3.200**	**$ 11.200**	**$ 800**		**$ 12.000**	
Venue & catering services		$ 8.000		$ 3.200	$ 11.200	$ 800		$ 12.000	FCh
13. Travel	**$ 10.757**	**$ 19.908**	**$ 12.908**	**$ 20.683**	**$ 64.256**			**$ 64.256**	
International travel		$ 17.040		$ 11.360	$ 28.400			$ 28.400	FCh
Local travel	$ 10.757	$ 2.868	$ 12.908	$ 9.323	$ 35.856			$ 35.856	FCh
14. Office supplies							**$ 1.200**	**$ 1.200**	
Grand Total	**$ 677.569**	**$ 1.001.129**	**$ 325.806**	**$ 686.939**	**$ 2.691.443**	**$ 131.128**	**$ 141.128**	**$ 2.963.699**	

Please explain any aspects of the budget as needed here

The unspent balance will be used during the project's first year (counting since CEO Approval) to undertake activities aligned with GEF/C.59/Inf.03, Annex 2, table 1. Any remaining funds will be duly returned to the GEF. Primarily, the funds will be used for:

1. Organizing a local consultation workshop to:

- Further inform national and local stakeholders on GEF purposes and procedures;

- Develop in greater detail the execution arrangements (based on the agreed structure);

- Discuss in greater detail to ensure environmental and social safeguard standards are met

2. Travel costs for stakeholders to participate in the local consultation workshop

ANNEX I: RESPONSES TO PROJECT REVIEWS

From GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF.

Response to GEF Sec Project PIF/PFD Reviews

(This applicable to projects which had PIF/PFD GEF Sec review comments requiring to be addressed at the CEO Endorsement/ Approval development stage.)
Additional Comments to be considered by the Agency at the time of CEO Endorsement/ Approval stage.

GEF Secretariat's Comments at PIF stage	Agency's Response Comments
No outstanding comments from the PIF stage.	

Responses to GEF Council and STAP Comments

(This applicable to projects which had GEF Council and STAP comments requiring to be addressed at the CEO Endorsement/ Approval development stage).

GEF Council and STAP Comments	Agency's Response Comments
Germany comments	
Germany asks to check whether the issue of corruption can be more strongly. Worldwide, corruption, illegal mining/extraction or sale of materials or improper disposal to avoid recycling or disposal costs are common hurdles and stand in the way of the success of such a project. These issues are only briefly mentioned in the proposal. A deeper examination of these would strengthen the successful implementation of the project	Illegal mining of aggregates and disposition of waste is the main focus of the sectoral surveillance tool to be developed through output 4.5.
STAP comments	
1. Develop a narrative of plausible futures that considers the potential effects drivers of change and their associated uncertainties on achieving the project's goal and use this to inform intervention options. See STAP's primer on future narratives for more guidance.	The project's theory of change has been developed further as suggested by STAP.
2. Improve the theory of change based on recommendations in Section 2.	The project's theory of change has been developed further as suggested by STAP.
3. Ensure that each project component applies life cycle and circular economy principles to each element of the project approach (i.e., develop a circular economy solution for product design, production process, consumption model, and demolition and waste management).	LCA is a cross-sectional element throughout the proposal. A technology center specialized in this type of analysis (InnovaCiclo) has been identified as a key implementing partner and will provide support to integrate this into each of the project's outputs.

GEF Council and STAP Comments	Agency's Response Comments
4. Undertake policy coherence analysis to identify contradictory policies and align them where necessary. See STAP's paper on policy coherence for more guidance.	Included as a requirement, mainly through regulatory reform in output 1.1 (see deliverables 1.1.5 and 1.1.6).
5. Develop criteria for selecting demolition projects and apply state-of-the-art knowledge and existing guidances in developing circular demolition standards for Chile.	Pilots of demolition practices have not been included in the final proposal (which focuses on improvements to the quality infrastructure system)
6. Explore relevant circular business models pertinent to buildings and construction and how they could be applied in this project.	This will be the focus of output 3.3.
7. Explore how to ensure the project achieves the multiple GEBs possible (chemicals and waste, land degradation, and biodiversity) by appropriately using the life cycle and circular economy approach to design each intervention.	Other GEBs beyond mitigation are discussed in section B.5.
8. Clarify how the GHG GEB was calculated, including the scientific basis and underlying assumptions.	The estimation is presented in section B5. A detailed spreadsheet with all relevant assumptions and data sources is presented separately.
9. Reflect on how to facilitate innovation and ensure scale-up and transformation. Consider developing a theory of change for this.	Section B2 (theory of change) now includes an in-depth discussion on innovation and potential for scaling up.
10. Recognize all possible local environmental and socioeconomic co-benefits from the project and make provisions for measuring, tracking, and reporting them. See STAP's recent paper on incorporating cobenefits in GEF's investments for guidance.	Other GEBs beyond mitigation are discussed in section B.5. An ex-post evaluation of all benefits (environmental and social) will be included as part of deliverable 5.1.8 and included in an e-book that will include an assessment of all of the project's impacts, together with lessons learned and recommendations (deliverable 5.1.7).
11. In developing the stakeholder engagement plan, consider including activities to raise policy awareness among key stakeholders in the construction industry.	This recommendation was included for the development of output 2.4 (stakeholder engagement and communication campaign).