

GEF-8 PROJECT IDENTIFICATION FORM (PIF)

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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 ID

N/A

Executing Partner

Ministry of Environment

Executing Partner Type

Government

GEF Focal Area (s)

Climate Change

Submission Date

4/5/2023

Project Sector (CCM Only)

Technology Transfer/Innovative Low-Carbon Technologies

Taxonomy

Climate Change, Focal Areas, Climate Change Mitigation, Renewable Energy, Influencing models, Demonstrate innovative approaches, Deploy innovative financial instruments, Transform policy and regulatory environments, Stakeholders, Civil Society, Non-Governmental Organization, Community Based Organization, Academia, Private Sector, Capital providers, Individuals/Entrepreneurs, Financial intermediaries and market facilitators, SMEs, Gender Equality, Gender results areas, Gender Mainstreaming, Sex-disaggregated indicators, Capacity, Knowledge and Research, Capacity Development

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

20,200,000.00

PPG Amount: (e)

50,000.00

PPG Agency Fee(s): (f)

4,750.00

PPG total amount: (e+f)

54,750.00

Total GEF Resources: (a+b+c+d+e+f)

3,300,000.00

Project Tags

CBIT: No NGI: No SGP: No Innovation: Yes

Project 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. The explanation and justification of the project should be in section B “project description”. (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]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, totalling 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]², [3]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]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]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. A lack of evidence and awareness of the benefits and overall feasibility of low-carbon, circular construction;
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- III. The absence of business models and insufficient financing for innovation and scaling-up low-emission circular construction;
 - IV. Insufficient knowledge management and capacity to support the transition to a low-carbon, circular construction.

This project aims to address the aforementioned 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 regulations to accelerate the adoption of low-carbon and circular principles in the construction and demolition sector.
2. Demonstrating the economic, social and environmental feasibility of low-emission circular construction. The expected outcome of this component is that private and public stakeholders in Chile gain confidence in such.
3. Financing for a sustainable transformation to circular production and consumption models. The expected outcome of this 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 350,000 tonnes of CO₂eq.

[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.

Indicative Project 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

1. Policies and regulations

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
422,175.00	1,059,059.00

Outcome:

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

Output:

1.1 A 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

1.2 A quality infrastructure system for implementing low-carbon and circular economy principles in construction and demolition is developed for application by the National Normalization Institute and the private sector

1.3 Modalities, procedures and guidelines (MPGs) of the National Investment System are updated for promoting the use of low-carbon and circular economy principles in public investments on construction and demolition

1.4 Guidelines for developing local strategies on low-carbon and circular economy principles in construction and demolition, aligned with the Chilean long-term climate strategy (and other relevant policies), are developed for application by regional and municipal governments

1.5 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. Demonstration of feasibility

Component Type	Trust Fund
Investment	GET
GEF Project Financing (\$)	Co-financing (\$)
1,222,241.00	5,295,297.00

Outcome:

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

Output:

2.1 Participative pilots (considering, inter alia, materials, building design, and demolition) demonstrate the feasibility of low-carbon and circular economy principles in construction and demolition to national, regional and local stakeholders

2.2 A monitoring and evaluation system is established for measuring the pilot impacts and benefits on emission reductions, energy usage, cost, environmental and social impact, and comfort

3. Financial mechanisms for scaling up

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
430,641.00	12,024,109.00

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 (from MINVU, MOP, the Production Development Corporation (CORFO), and others) are strengthened to integrate low-carbon and circular economy principles

3.3 Business models for low-carbon and circular construction are developed for adoption and application by the private sector

3.4 A national innovation network on low-carbon and circular economy building materials, designs and technologies is created to support entrepreneurs and other innovation stakeholders in the construction and demolition sector

4. Data, learning and knowledge management

Component Type	Trust Fund
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Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
592,740.00	783,980.00

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 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 An open-source platform on low-carbon and circular economy principles (including a catalogue of certified materials, indicators, benefits, and cost savings), is made available for public officials, architects, engineers and companies in the construction and demolition sector

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 (including MOP, MINVU, the National Institute of Statistics (INE) and the National Customs Service)

4.4 Gender-sensitive tools and trainings to incorporate circular economy approaches and reduce energy usage, water consumption and GHG emissions in material production processes are made available to cement, steel, wood and other construction material manufacturers and importers

4.5 Gender-sensitive tools and trainings to incorporate low-carbon and circular economy principles in construction and demolition are made available for application by service suppliers and demand-side stakeholders

M&E

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
154,774.00	75,647.00

Outcome:

The GEF project is effectively monitored and evaluated

Output:

Monitoring and evaluation products are delivered

Component Balances

Project Components	GEF Project Financing (\$)	Co-financing (\$)
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1. Policies and regulations	422,175.00	1,059,059.00
2. Demonstration of feasibility	1,222,241.00	5,295,297.00
3. Financial mechanisms for scaling up	430,641.00	12,024,109.00
4. Data, learning and knowledge management	592,740.00	783,980.00
M&E	154,774.00	75,647.00
Subtotal	2,822,571.00	19,238,092.00
Project Management Cost	141,128.00	961,908.00
Total Project Cost (\$)	2,963,699.00	20,200,000.00

Please provide justification

PROJECT OUTLINE

A. PROJECT RATIONALE

Briefly 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

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.

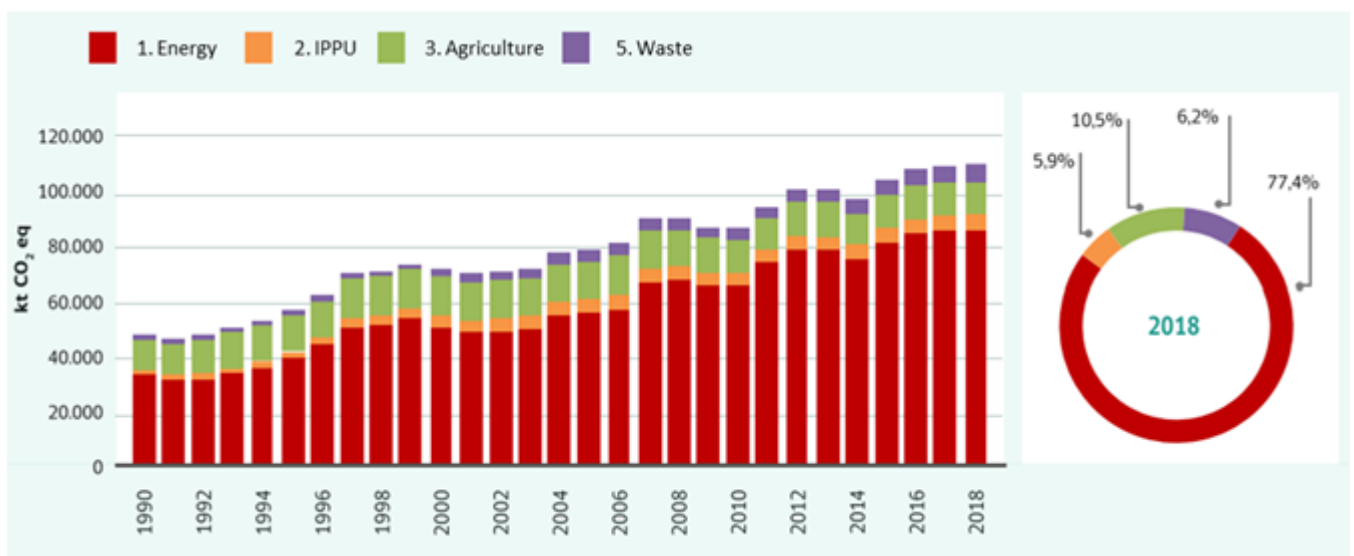
GHG emissions from construction and demolition in Chile: drivers and trends of the baseline scenario

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] This 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.

Estimation of GHG emissions in the construction value chain are not straight forward, as GHG inventories are not broken down by activity. 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% 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. This situation is critical considering that currently nine regions in Chile lack authorized sites for its adequate disposal, nor planned investments to solve the problem.^[16]

Box 1. Housing crisis in Chile: gender aspects^[17]

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.

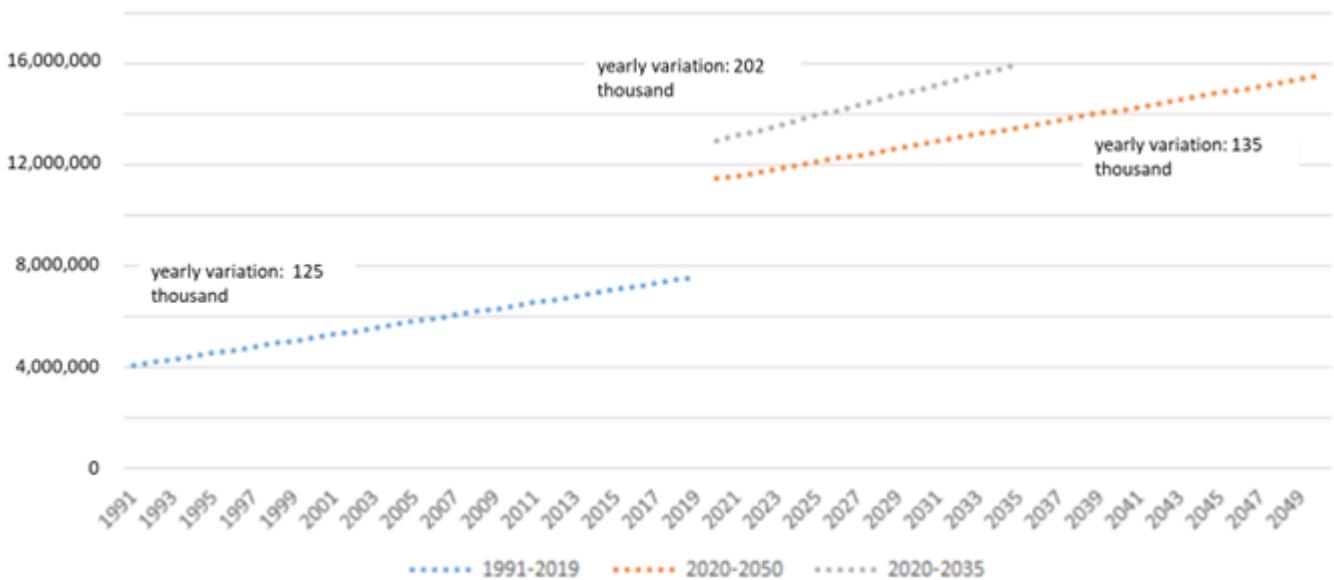
However, this emergency does not affect the entire population or the entire territory equally. Thus, for example, in the northern regions, indigenous peoples and migrant households present greater difficulties in accessing housing. However, the need for housing that is adapted to the needs of households, 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 cadastre 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, 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 (including mass wasting and fires) and increasing vulnerability to natural disasters.[18] 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.[19]

Figure 2. Estimation of waste generated from construction of buildings[20]



Key system elements: policy, legislation, and stakeholders

The primary coordination body on sustainable construction is the Inter-Ministerial Table for Sustainable Construction (MICS) an initiative led by the Ministry of Housing and Urban Planning created in 2012, when a collaboration agreement was signed with the Ministries of Public Works, Energy and Environment, 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. These are the Ministry of Housing and Urbanism (MINVU, in charge of housing and construction), the Ministry of Public Works (MOP, main responsible for infrastructure), the Ministry of Environment (lead on national decarbonization and circular economy), the Ministry of Energy (ME, responsible for the implementation of energy efficiency policies), the Ministry of Social Development (social aspects of construction and housing shortage, responsible for the National Investment System) and the Ministry of Economy, Development and Tourism. The Ministry of Health (MH, mainly regarding the impact

of waste on public health) and the Ministry of Finance (MF, responsible for setting a financial strategy for national decarbonization) also play key roles.

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.

Chile's climate change framework is mainly comprised of three elements:

1. 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.
2. Long-term Climate Strategy^[21] (ECLP, from its acronym in Spanish): 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.
3. 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).

The following elements summarize the institutional framework relevant to the construction sector in general, and for this project in particular:

Table 1. Key policies and legislation for the project

Element	Description
Law N° 16391 (issued: 1965, last updated: May 2022)	Creates and sets the attributions of MINVU
Law N° 20417 (issued: 2010, last updated: 2022)	Creates and sets the attributions of MMA. Creates the Superintendency of the Environment (SMA).
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 ^[22]	The Technical Norms set the technical characteristics of projects, materials, and construction systems, according to the general requirements established by the General Ordinance.
Law-ranking Decree N° 850 (consolidates several existing legislation; issued: 1997, last update: August 2022)	Establishes the attributions of the MOP
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)

<p>National Investment System (“SNI,” regulated by the Organic Law for the Financial Administration of the State)</p>	<p>The SNI comprises the procedures and criteria for the appraisal of public investment projects. Any investment project (including on construction of buildings and infrastructure) requires a positive evaluation from the SNI. The SNI is run by the Ministry of Social Development and Family (MDSF), and includes technical, environmental, social (including gender) criteria.</p>
<p>General basis of the Environment Law (Law 19300, issued: 1994, latest update: June 2022)</p>	<p>Basic legislation on environment, establishes main roles and responsibilities in the sector</p>
<p>Climate change framework (NDC, ECLP and Law 21455)</p>	<p>Described above. The ECLP sets a number of indicators and targets for (among other sectors) housing, infrastructure and waste; as such, this is one of the key policy elements informing project design.</p>
<p>National Energy Efficiency Law (issued: 2021);</p> <p>Regulatory Decree of the National Energy Efficiency Law (issued: 2022);</p> <p>National Energy Efficiency Plan 2022 – 2026 (issued: 2022)</p>	<p>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.</p>
<p>Roadmap for a Circular Chile by 2040 (issued: 2021)</p>	<p>Roadmap for a national shift to a circular economy; one of the reference documents used in this project.</p>
<p>Roadmap for a Circular Construction (issued: 2020)</p>	<p>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.</p>
<p>National policy on territorial planning (2021)</p>	<p>Relevant in the context of the location of sites for the disposal of CDW.</p>
<p>Law 20.920 (General Framework for Waste Management, Extended Producer Responsibility and Recycling) (issued: 2016)</p>	<p>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.</p>

National Waste Policy 2018-2030 (published in 2017)	The policy (aligned with the legislation) establishes further actions for a sustainable management of waste.
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.
Decree N° 148 (Hazardous waste management) (issued: 2004)	Relevant for the safe disposal of CDW
Executive Decree N° 57 (Classification, labelling and reporting of hazardous chemicals and mixtures) (issued: 2021)	Relevant for the safe disposal of CDW
Decree N° 594 (Basic sanitary and environmental conditions in the workplace) (issued: 1999; last-updated: 2019)	Relevant for the safe disposal of CDW
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.
Gender policies, legislation and international agreements	Chile is a signatory to several international conventions and agreements in support of women's rights. Noteworthy are the Convention on the Elimination of All Forms of Discrimination against Women - CEDAW (1979), the Inter-American Convention to Prevent, Punish and Eradicate Violence Against Women - “Convention of Belém do Pará” (1994), IV World Conference on Women (Beijing, 1995) and Agenda 2030 and the United Nations Sustainable Development Goals (2015). At the national level, 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. More details are provided in Attachment 2. to this PIF (“Preliminary Gender Analysis”)

As for the financing of Chile’s NDC, the country published its first Climate Change Financing Strategy in 2019.^[23] 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.^[24] 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.^[25] 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).^[26]

Other relevant stakeholders in the construction sector include:

Public sector:

- Ministry of Economy, Development and Tourism
- Ministry of Transport and Telecommunications
- National Institute of Statistics
- National Disaster Prevention Service
- 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
- Guild of hopper drivers
- Chilean Association of Municipalities
- 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)
- Construction Normalization Council (CNC)

Financing sector (banks working with sustainable construction)

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

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Civil society

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

Academia

- 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

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	2012- hoy	0.24 per year (approx.)	Scaling up and development of regulations.
Sustainable Home Certification (Certificación)	MINVU, CTEC, several public and	Voluntary environmental certification system that evaluates the performance	2020 to present	0.12 per year (not including	Reference mechanism aligned with

Vivienda Sustentable - CVS)	private organizations	of residential projects nationwide.		contribution from the private sector)	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 on line	MINVU (leads)	On-line platform for administrative procedures with the municipalities' public work departments. Once the platform is fully implemented, permissions, authorizations, receptions and certificates can be requested, managed and granted online.	2019	0.12 per year (approx.)	Modernization of municipal administrative procedures
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	2019- hoy	n.a	Works on circularity topics with plastics

		Foundation in the United Kingdom.			
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Key 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, discussed later in this PIF.

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.^[27] 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.^[28] 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. 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. On the waste front, MINVU and MMA have made some progress;^[29] 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.

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 adequately reflect the benefits of circular construction and the full cost of traditional linear approaches. 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 materials and waste generated at the construction and demolition phases.

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^[30] 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.^[31] 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)^[32], that establishes a mechanism for public-private financing of housing projects executed by municipalities, or the Law for the Concession of Public Works,^[33] does not include any provisions for the usage of low-carbon materials or the consideration of circular economy principles. 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.

II. Limited awareness of the benefits and overall feasibility of low-carbon, circular construction

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.^[34] 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.^[35] 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),^[36] but this remained mostly within the orbit of researchers and universities.

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.^[37] 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.^[38] 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.

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

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 behaviour.

Thus, to abandon traditional linear construction, new business models 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.

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.

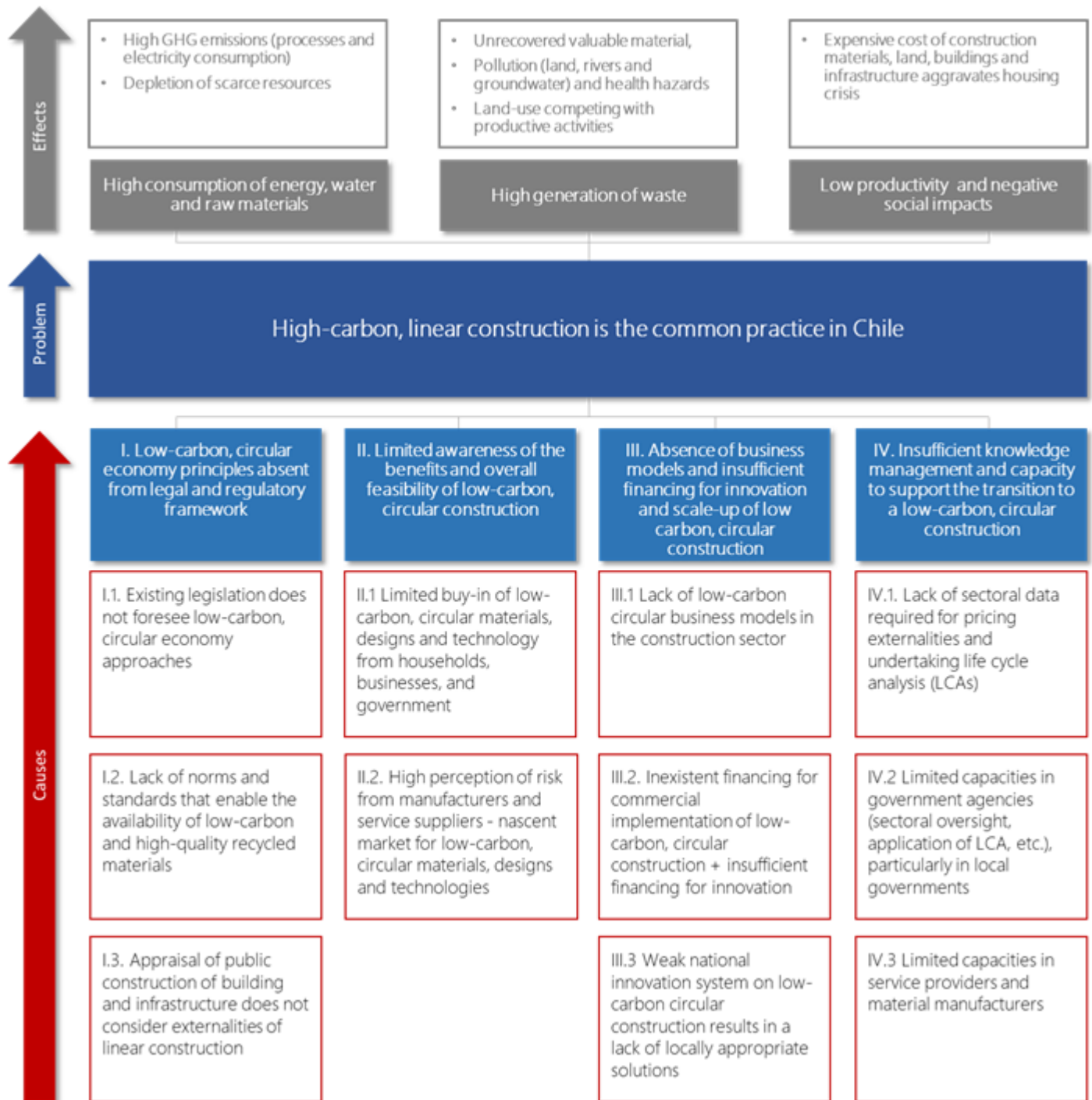
To understand material flows and enable their incorporation into closed cycles, circular construction requires detailed data sets – including information on quantities, qualities, emission-intensity, dimensions, and positions of all materials used in buildings and infrastructure, but also on any significant waste streams generated and transported during their construction and demolition. In Chile, none of this information is currently available.^[39] 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.^[40] 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.^[41]

As mentioned, another important challenge is in terms of capacities, as circularity in construction is still a novel approach in the country. 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.

Figure 3. Project problem tree



Project objective, outcomes, and intended impact

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, for supporting Chile in contributing to achievement of the Paris Agreement goals.^[42] For this purpose, the project will create an enabling framework and address gaps identified in sectoral strategies, mainly, the “Roadmap for a Circular Construction”,^[43] thus contributing towards the shift to a low-carbon, circular construction.

The intended transformational impact is summarized in the following table:

Current and future baseline context	Desired transformation after the project
<p>I. Low-carbon, circular economy principles absent from legal and regulatory framework</p>	<p>This barrier has been addressed mainly through the project’s component 1. In particular:</p> <ul style="list-style-type: none"> - 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. - A quality infrastructure system sets standards for the production and certification of reliable, innovative construction materials that use recycled aggregate and other innovative solutions in line with (revised) technical norms for the production of low-carbon concrete, steel and other construction materials (e.g. wood). A market for recycled aggregates emerges as this is no longer perceived as waste, but as a valuable good. - 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 project’s interventions, and actively engaged 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 a clear

	<p>understanding of any income distribution impacts allowed for the implementation of timely mitigation measures to ensure a just-transition to circular construction.</p>
<p>II. Limited awareness of the benefits and overall feasibility of low-carbon, circular construction</p>	<p>This barrier has been addressed mainly through component 2. Competitive, participative pilots on low-emission circular housing solutions, innovative materials and demolition have raised the public's interest in circular construction. An aggressive communication campaign and strong incentives for participation resulted in a large number of project proposals. All finalist projects were registered in the National Institute of Industrial Property (INAPI), and winner projects were implemented with high visibility from the project's communication campaign.</p> <p>-</p>
<p>III. Absence of business models and insufficient financing for innovation and commercial up-scaling of circular construction</p>	<p>This barrier has been addressed mainly through component 3. In particular:</p> <ul style="list-style-type: none"> - 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 establish new business models and low-carbon materials that are now mainstream in the construction sector, also accelerating the market-readiness of new products identified through the project's innovation network and the competitive pilots in Component 2. - Following the sectoral financing strategy prepared by the project, newly developed or strengthened existing financial instruments are now available and offered by CORFO, MINVU, 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, procurement models now introduce circularity certifications (developed in Component 1) as an eligibility requirement.
<p>IV. Insufficient knowledge management and capacity to support the transition to a low-carbon, circular construction</p>	<p>This barrier has been addressed mainly through component 4. In particular:</p> <ul style="list-style-type: none"> - Transparent, organized information required for sectoral decision making is now widely available in a platform created by the GEF project. This information supports the internalization of linear construction costs and includes the entire project's institutional memory and knowledge deliverables, all properly indexed and searchable. - 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)

A fifth component is included to undertake GEF project monitoring and evaluation in accordance with GEF and UNEP policies.

Socio-economic benefits

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.^[44] 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%.^[45]

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, 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] 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] Construye2025, *Hoja de ruta RCD – economía circular en construcción 2035* (Santiago de Chile, 2020) p. 37.
- [17] 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](#).

[18] Construye2025, *Hoja de ruta RCD – economía circular en construcción 2035* (Santiago de Chile, 2020) p. 38.

[19] 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

[20] 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

[21] 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)

[22] The set of norms are publicly available in [MINVU's website](#).

[23] Now under revision to align with the ECLP.

[24] Ministry of Finance *Estrategia financiera frente al cambio climático* (Santiago, Chile, 2019) p. 20-22

[25] Ministry of Finance (2019), op cit.

[26] More information on the sustainable bond framework is available [here](#).

[27] Construye2025 (2020)

[28] 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.

[29] 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.

[30] <https://www.statista.com/statistics/370381/ratio-of-government-expenditure-to-gross-domestic-product-gdp-in-chile/>

[31] Cámara Chilena de la Construcción (CChC), *El sector de la construcción ante el desafío climático global* (Santiago de Chile, 2019), p. 12.

[32] Available [here](#) (original text in Spanish).

[33] MOP Supreme Decree N° 900.

[34] 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.

[35] Heisel, F., Hebel, D., Webster, K. *Circular construction and circular economy* (Birkhäuser Basel, 2022), p. 63.

[36] 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).

[37] Cámara Chilena de la Construcción (CChC), *Introducción a la Economía Circular: diagnóstico y oportunidades en Chile* (Santiago de Chile, 2022), pp. 75-78.

[38] CChC (2019), p. 59.

[39] 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.

[40] Construye2025, *Hoja de ruta RCD – economía circular en construcción 2035* (Santiago de Chile, 2020) p. 102.

[41] Construye2025 (2020), pp. 108-109.

[42] 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.

[43] Construye2025 (2020).

[44] MMA *Hoja de ruta para un Chile circular al 2040* (Santiago, Chile, 2021)

[45] Construye2025 (2020), p. 37.

B. PROJECT DESCRIPTION

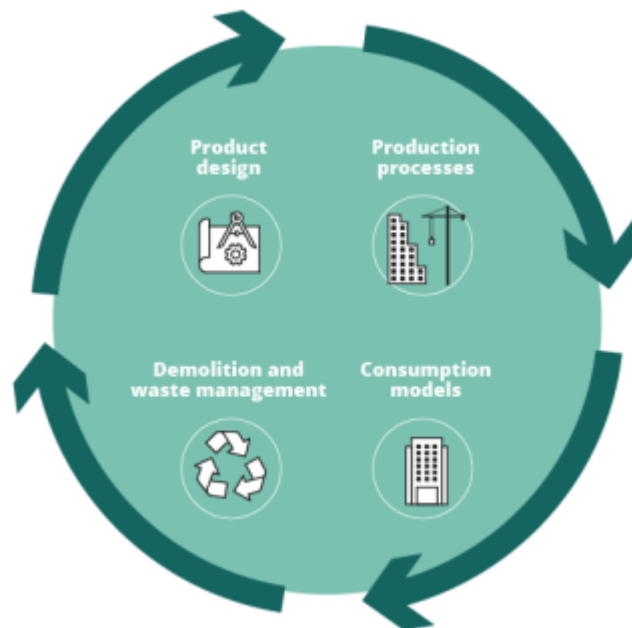
Project description

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 PIF guidance document. (Approximately 3-5 pages) see guidance here

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. This will include innovations in **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). Resilience of the project outcomes will be ensured through the implementation of a revised legislative and normative framework, the alignment of incentives, and behavioural change.

Figure 4. Project approach: GHG emission reductions through circular construction [\[1\]](#)



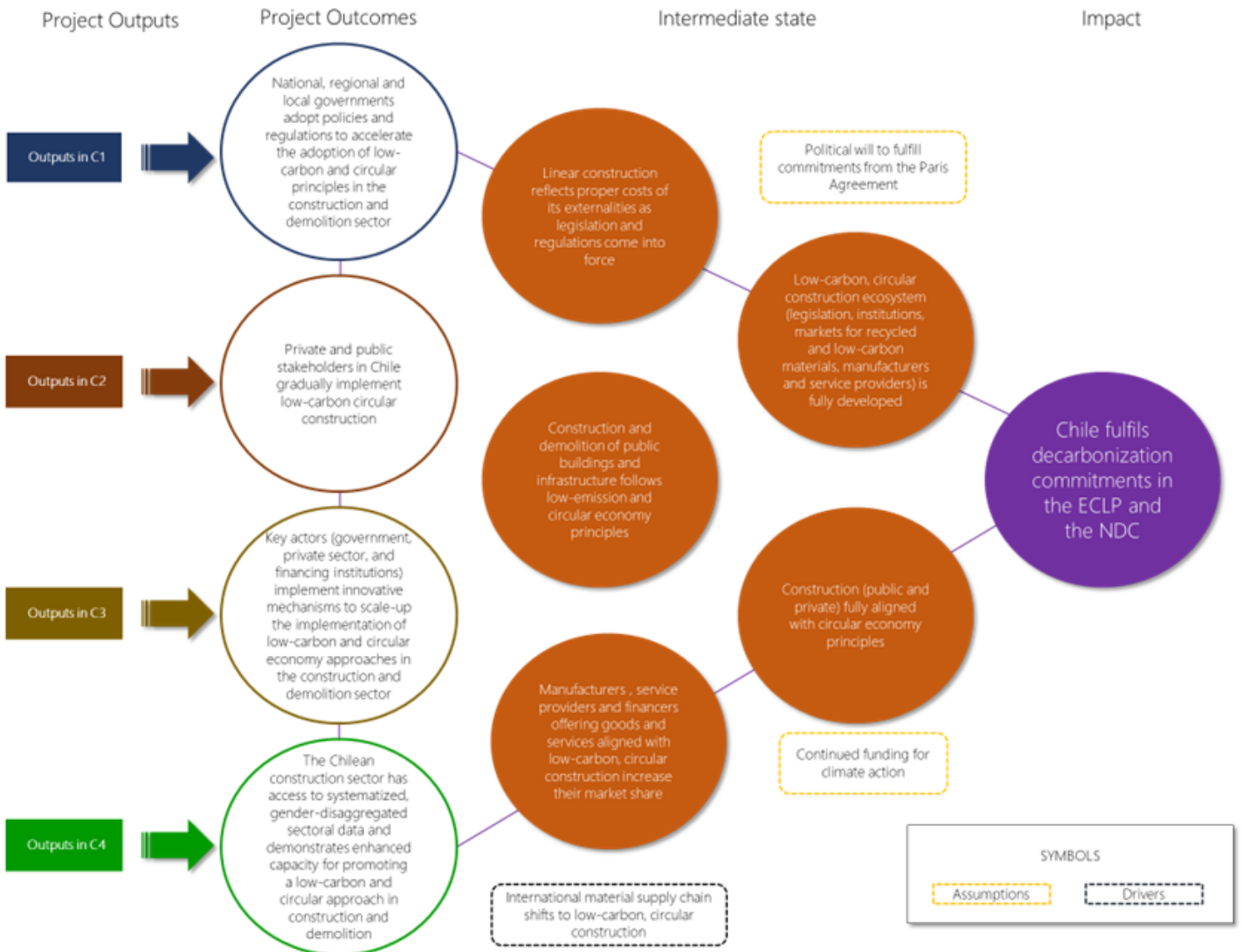
The proposed project has been structured in four components, one for each of the key barriers identified in the previous section. Thus, component 1 addresses the lack of a regulatory framework compatible with low-carbon, circular construction; through demonstrative pilots, component 2 provides tangible evidence of the feasibility of the proposed measures; component 3 tackles the lack of financing and business models, and component 4 focuses on knowledge and capacity building gaps. The proposed 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 project is innovative in that by bringing in innovative technology for the production of raw materials and aligning incentives through regulatory change, the project is expected to have a significant impact in terms of material productivity.

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 pilots. The quantity of GHG emission reductions expected to be achieved is indicated in the core indicators section.

Further details on the expected output for each of the project's components are presented further below. All of these will be further developed at the PPG stage, where an in-depth analysis will be undertaken.

Figure 5. Project theory of change

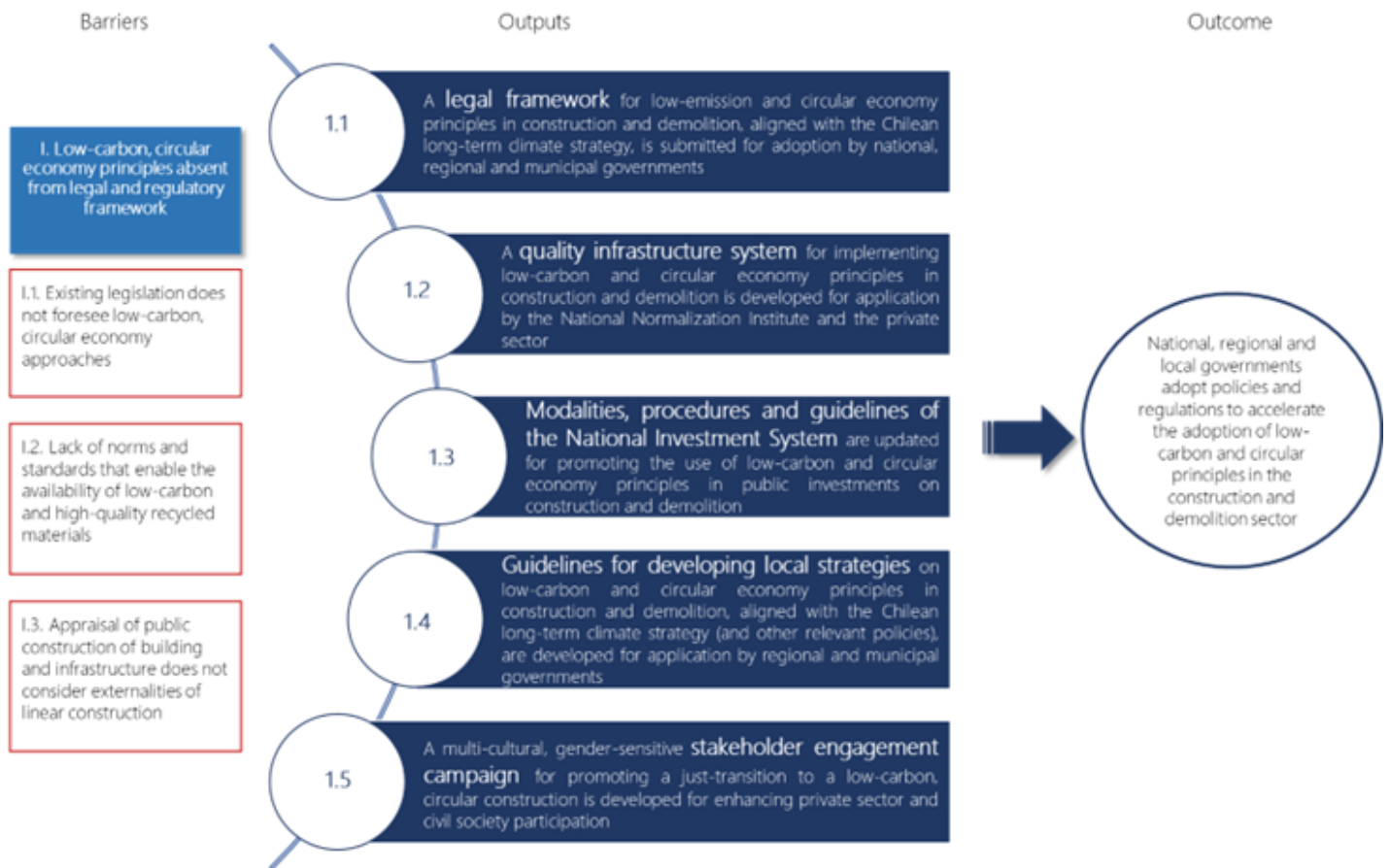


Component 1: Policies and regulations

This component will support Chile in establishing a regulatory framework compatible with low-carbon, circular construction. A systematic pricing-in of various environmental damages related to linear activities will boost circular economy by means of appropriate price signals. Therefore, adjusting existing frameworks to better internalise environmental costs (e.g., via regulation and industry standards) is crucial for creating a level playing field and for overcoming market failures and barriers so far identified.

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

Outcome: 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.

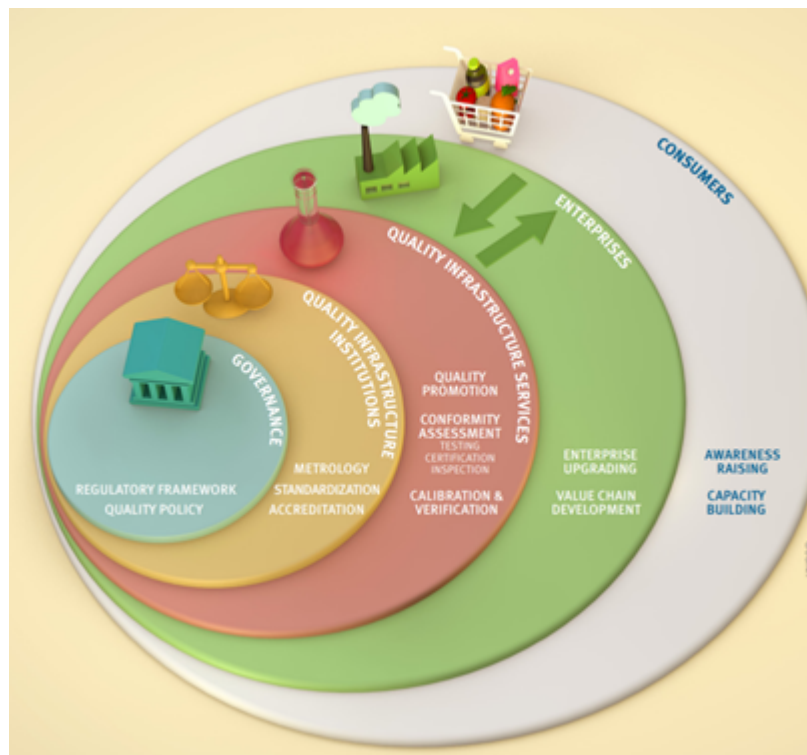


Through **output 1.1**, the project will update existing legislation to create a regulatory framework that fosters low-carbon, circular construction and deters business-as-usual, linear production and consumption methods in the sector. Changes will aim mainly at setting the provisions for the internalization of costs resulting from linear construction methods, and lay the ground for the adoption of innovative low-carbon materials, designs, technologies and services. For this purpose, the project will focus on the General Law on Urbanism and Construction (“LGUC”) and the General Ordinance on Urbanism and Construction (“OGUC”), the two pieces of legislation that organize construction and urban planning. Other relevant legislation includes the Shared Urban Financing Law (Law 19865) that establishes a mechanism for public-private financing of housing projects executed by municipalities, and the Law for the Concession of Public Works, neither of which has any provisions for the usage of low-carbon materials or the consideration of circular economy principles. The

regulatory framework will build upon and be aligned with the ELCP and also the National Plan for Sustainable Construction by 2050 currently under development by the MICS.

Output 1.2 will build upon the regulatory framework developed in 1.1 to create a quality infrastructure system (QIS) for circular construction (Figure 5). This will be achieved by adapting existent elements, mainly technical norms (issued by MINVU), protocols, standards, and certification schemes -such as the Certificate of Sustainable House (CVS) and the Certificate of Sustainable Building (CES)- to include considerations on embodied carbon and waste management during construction and demolition. Creation of new certification schemes for innovative products will also fall under this output’s scope, as well as sectoral Clean Production Agreements (APL, from its Spanish acronym).^[2] A roadmap for the implementation of the QIS will be included as part of the deliverables, to set a clear timeline with roles, responsibilities and funds required. The QIS will involve a complex ecosystem of actors and elements, including legislation and norms (mainly covered through output 1.1), as well QI institutions (existent, but requiring capacity building, which can be provided through component 4), standards for products and services, and QI service providers (e.g. conformity assessment). The exact level of development that the QIS will achieve by the end of the GEF project will be determined during the project design phase, and made explicit in the CEO ER.

Figure 6. Elements of Quality infrastructure system^[3]



Through **output 1.3**, the project will adapt modalities, procedures and guidelines of the National Investment System (SNI) to incorporate low-carbon and circular economy principles. The SNI comprises the procedures and criteria for the appraisal of public investment projects, and as such plays an essential role in defining which projects are eligible for public funding and which ones are not. Adapting the SNI is crucial so that the

appraisal of projects that follow a linear approach to construction reflects the costs they impose in terms of carbon emissions, water consumption, energy usage and waste generation.

Chile is divided into 16 *regions* (first level administrative division), in turn divided into provinces (second-level) and communes (third and smaller level, also referred to as municipalities), with the latter being in charge of the provision of several services, including waste disposal, and, as such, are of the utmost relevance for this project. In this context, **output 1.4** focuses on regional and municipal governments and supports them in aligning their planning instruments with the Circular Construction Roadmap, the ECLP (in turn aligned with their own regional climate change action plans (PARCCs)), the National Plan for Sustainable Construction by 2050 and disaster risk management plans (the last two currently under development). This support will consist of the development of and training in preparing basic strategies and roadmaps, so that municipalities can be trained, acquire machinery, optimize their construction and demolition practices, and develop capacities for the specification of (circular) construction projects, from simple interventions (e.g. sidewalks) to more complex infrastructure works involving the MOP and SERVIU. Special consideration will be given to simple guidelines for accessing public resources, e.g. financing through the Undersecretariat of Regional Development (Subdere) and public-private financing systems (Law N° 19865: Law on joint urban financing, discussed in the baseline section).

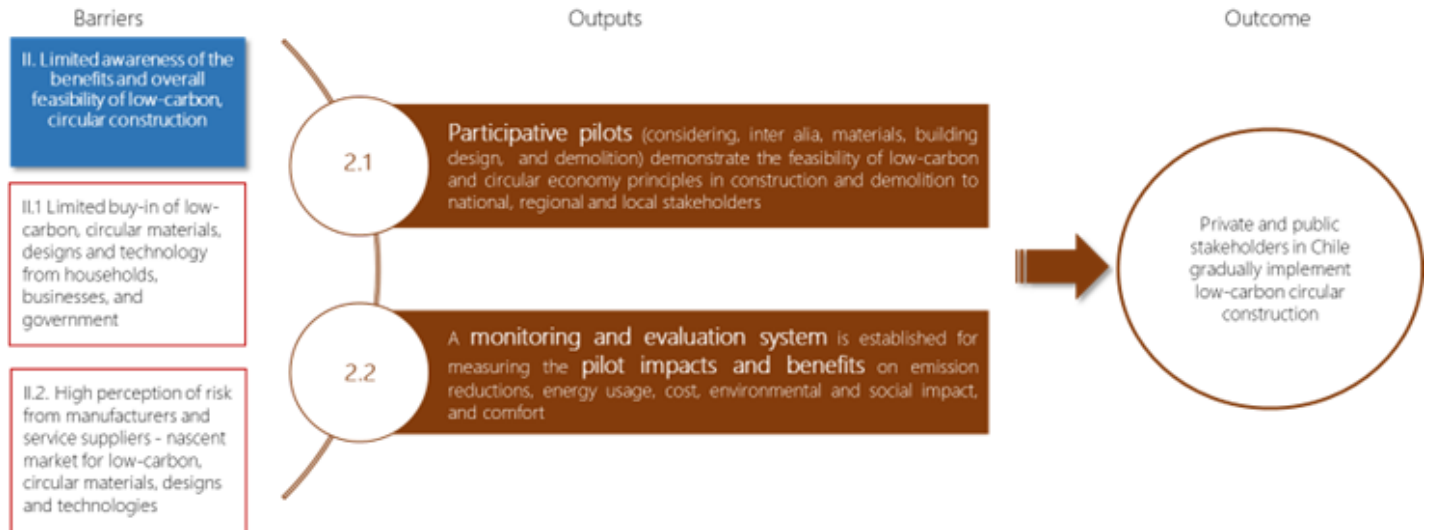
Political buy-in from the public is an essential element to enable the changes required in Chile's regulatory framework for the construction sector. **Output 1.5** will design and implement a multi-cultural, gender-sensitive stakeholder engagement campaign that facilitates the incorporation of broad public, private and civil society views regarding the shift to a circular construction, and including the actors listed in Attachment 3 to this PIF. 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. The 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). Moreover, this output will assess and address potential impacts in terms of income distribution that the shift to a low-carbon circular construction sector may bring, ensuring a just-transition aligned with the principles of Chile's ECLP.

Component 2: Demonstration of feasibility

The aim of component 2 is to support the execution of a set of exemplary low-carbon circular construction projects in Chile, demonstrating that affordable, reliable, and low-carbon solutions can be delivered in a way which is socially, economically and environmentally viable. Through this component, Chilean stakeholders will develop awareness of and confidence in innovative technologies and solutions, adapted to the national context, for designing, constructing and operating buildings using low-carbon, circular principles.

Barrier addressed: II. Limited awareness of the benefits and overall feasibility of low-carbon, circular construction

Outcome: Private and public stakeholders in Chile gradually implement low-carbon circular construction



This component will build upon co-financing contributed by the Chilean Economic Development Agency (CORFO) and the Technology Center for Innovation in Construction (CTEC) for the implementation of a series of demonstrative pilots. **Output 2.1** will cover innovations showing the largest potential in terms of efficiency improvements and GHG emission reductions, namely: **building 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). [4] The output will thus include the detail design, public call for proposals, selection, and execution of a series of interventions around the following topics:

Pilot scope	Objective
Design and construction of circular housing solutions (including emergency housing and social housing)	Design and construction of housing prototypes that include low-carbon materials and provisions for disassembly, and can be used for emergency and social housing projects (i.e. rapid construction and suitable for use in case of natural disasters and extreme events)
Circular materials	Design and construction of innovative materials that lead to a reduced energy usage, water consumption and GHG emissions.
Selective demolition	Aimed at demolition companies. Proposals will include pre-demolition audits for 3 previously identified buildings, application of technical norm 3727,[5] traceability and valuation of waste. The project that is capable of salvaging the largest share of materials in proportion to existent volume/mass will be declared the winner and used as the basis for the preparation of good practices / standards.

The call for proposals will be based on three fundamental principles (preserve the value of inputs, optimize resources, and the achievement of systemic effectiveness) and the “nine Rs” of circularity.[6] Eligible

participants will be professionals and firms in the construction sector, with incentives to vulnerable population (including considerations on gender, immigrants and indigenous populations). All participating proposals will be pre-evaluated; those complying with minimum requirements will be registered in the National Institute of Industrial Property (INAPI), included in a catalogue of circular proposals, and incorporated into the pipeline of circular investments, services and products to be developed as part of the national financial strategy for the scaling up of low-carbon, circular principles in construction (output 3.1). In each case, a number of the best ranking proposals^[7] will be built using project and co-financing funds; the selection criteria will consider circularity, embodied energy, CO₂ balance, scalability and commercial potential of the proposal.^[8] The entire process will be supported by the stakeholder engagement campaign (output 1.5) and the national innovation network to be established through output 3.4.

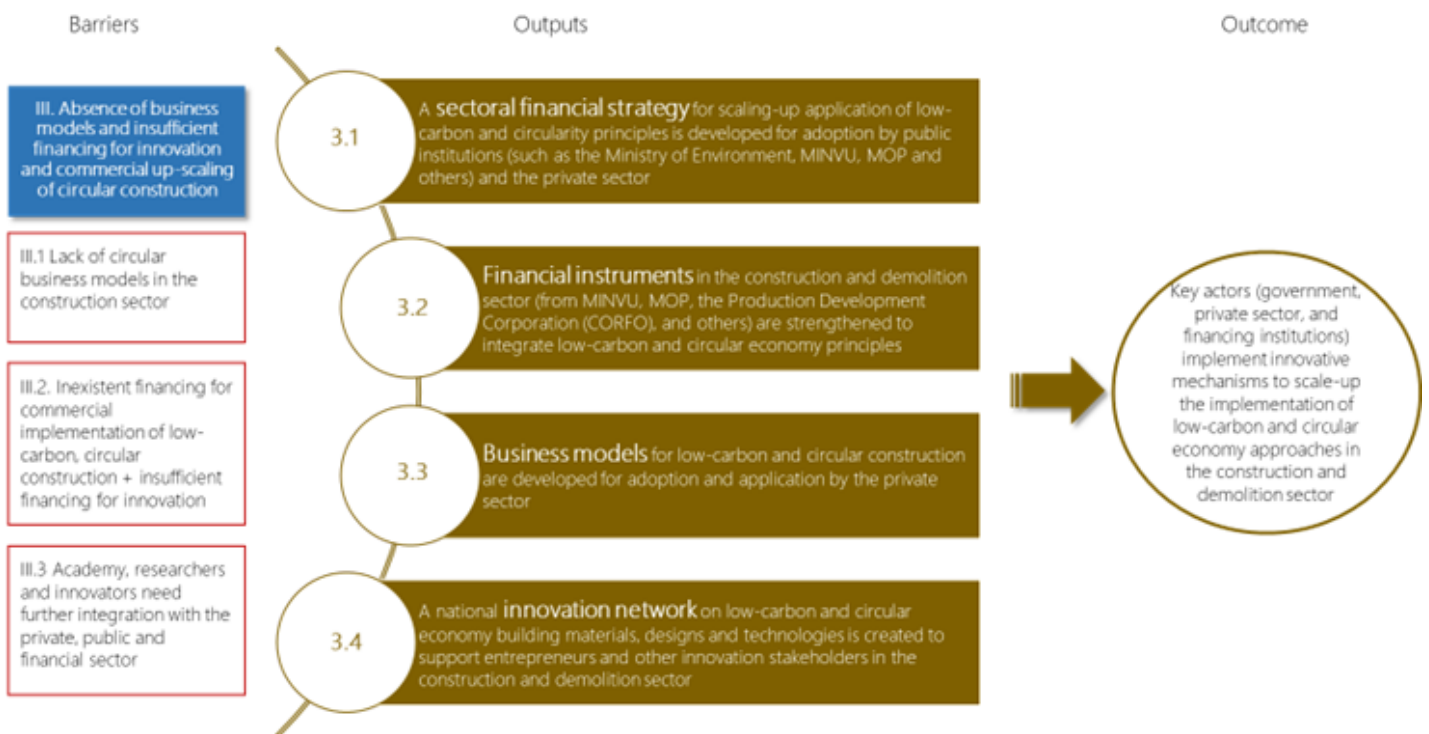
The pilots will be tracked through a dedicated baseline and monitoring methodology, established through **output 2.2**. The methodology will identify criteria for the establishment of baseline levels in each of the three pilot categories (design, materials and demolition) and collect data relevant to assess pilot performance in terms of mounting and disassembly time, material resistance, energy usage, CO₂ emissions, traceability of waste, costs and comfort. Data collection will be performed by the project team in coordination with local actors and connected to the circular economy platform (output 4.2); and quarterly performance reports will be prepared and shared with key policy-makers at the local, regional and national level. The results will be used as feedback to processes being undertaken in parallel in the development of technical norms and certification standards (output 1.2), as well as the design of financial instruments to be established through output 3.2.

Component 3: Financial mechanisms for scaling-up

This component addresses one of the key elements required as part of an enabling environment for circularity. Through these outputs, the project will strengthen financial mechanisms and create business models that will facilitate the scaling up of low-emission circularity construction and demolition, through services and products such as the ones demonstrated through the pilots in component 2.

Barrier addressed: III. Absence of business models and insufficient financing for innovation and scaling-up low-emission 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 approaches in the construction and demolition sector



Existing market imperfections reduce the profitability of circular activities either via a reduced return of investments or via increased risks associated with the investment for investors. Consequently, this leads 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. Access to adapted finance for circular construction will demand loan finance, equity injections, leasing agreements as well as risk mitigation instruments. In this sense, “aligning finance” includes a) leveraging existing supply for more availability as well as b) developing new financial instruments in considering demand patterns of circular business models as well as capacities of financial institutions. **Output 3.1** will support the Ministry of Finance (and other actors) in preparing a sector-specific strategy and roadmap that identifies, key actors, levers and entry points to address these barriers and strengthen low-emission circular economy approaches in the financing of the construction sector.^[9] The strategy will consider the stage of development (or level of bankability) of the different segments in the low-emission circular construction value chain, identifying those that require varying degrees of concessionality, and the extent to which they do. Thus, this output will cover the financial aspects of a broad scope of interventions, from the development of innovative materials and services to the recovery of land affected by illegal disposal of CDW – always aiming for the leveraging potential of private capital. A pipeline of circular interventions is also expected to be included as part of this output. The strategy will be aligned with the ECLP, the roadmap for a Circular Construction, and the National Plan for Sustainable Construction by 2050 currently under development. Moreover, the financing strategy will be aligned to and serve in the instrumentation of the circular quality infrastructure system (QIS) designed as part of output 1.2.

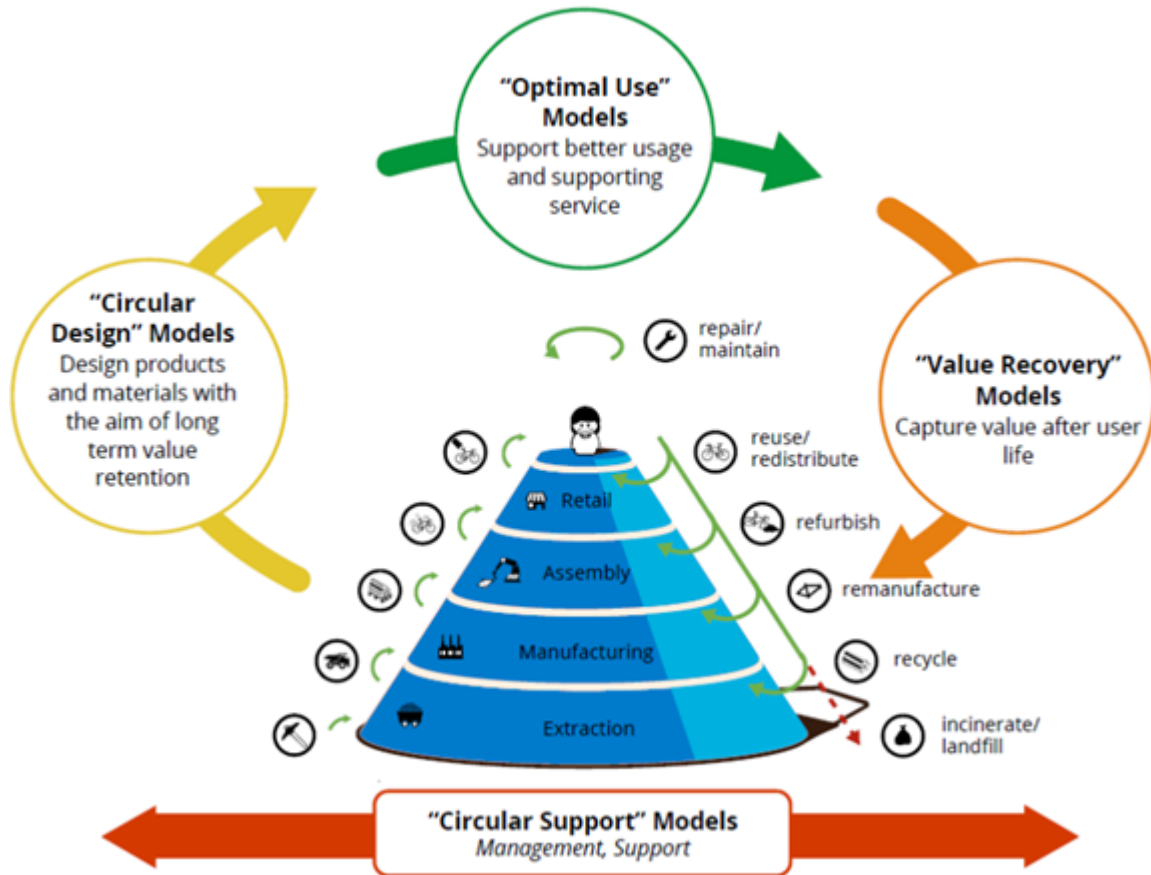
Output 3.2 will take the first steps in the implementation of the sectoral financing strategy (i.e. the previous output) by supporting Chile in making available innovative financial instruments. In particular, the project will support CORFO, MOP, MINVU, Banco Estado and private banks in strengthening credit lines for investment at the proof-of-concept level (i.e. for innovative products and services, R&D, new technologies, typically involving grants and venture capital) and at the commercialization stage (requiring decreasing levels of blended finance). Technical assistance provided may include with regards to supporting such financiers 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. More specifically, the project will focus on adapting existing loans in Banco Estado (specific credit line for eco-housing), CORFO (grants and insurance instruments such as the Green Credit program successfully used in energy), the Ministry of Finance’s Sustainable Bonds, and financing instruments from the private sector (including sector-specific loans and guidelines for the inclusion of circular construction criteria in the issuance of green bonds). Thus, financing instruments will mainly include bonds, loans, and guarantees of varying degrees of concessionality, and from both the public and the private sector. Use of leasing instruments (currently unavailable for the construction sector) will also be explored during the project’s design phase.

As economies switch from linear to circular flows, focus shifts from production of new goods towards the provision of services applied to existent materials throughout a longer useful lifetime. Thus, the shift to a circular economy requires companies to rethink not only their use of resources, but also to adopt new business models based on dematerialization, longevity, refurbishment, remanufacturing, capacity sharing, and increased reuse and recycling.^[10] **Output 3.3** aims to support government and private sector to identify and implement innovative business models that are aligned with low-emission circular construction. These may include circular design, optimal use, value recovery, circular support models, or a combination of two or more (see figure 6 below).^[11] In particular, this output will support professionals, companies, and start-ups identified through the competitive processes in component 2 and the innovation network in output 3.4 (discussed below) in the assessment and mitigation of risks for the establishment of low-carbon, circular business models.

Lastly, **output 3.4** will build upon work undertaken by the Construye2025 program^[12] to establish a national innovation network to support entrepreneurs and other innovation stakeholders in developing and commercializing low-carbon and circular economy building materials, designs and technologies in the construction and demolition sector. The network will be implemented as a public – private program (“Construye Circular 2050”), with the objective of bringing together universities, researchers, manufacturers, policy makers and investors, thus closing the gap between applied research and financiers in the construction sector.

Figure 7. Types of circular business models^[13]



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 development of a low-carbon, circular construction.

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

The first two outputs in this component tackle knowledge management on two levels. **Output 4.1** fills in information gaps for the quantification of externalities from linear consumption - a basic input for several

other elements in the project, e.g. the quality infrastructure system (output 1.2), the appraisal of public construction projects in the National Investment System (output 1.3), and the consolidation of markets for recycling services and other circular businesses (output 3.2). Other information products will include catalogues of standard circular solutions, details on the location, size and condition of existing waste dumping sites and illegal extraction of aggregates, as well as information on waste profiles generated on demolitions (e.g. depending on the type of infrastructure, the type of demolition process, etc.) and other data relevant for the estimation of impacts. Finally, this output may also contribute to the development of Core Product Category Rules (PCR)[\[14\]](#) and Product Environment Declarations (EPDs)[\[15\]](#) required to provide adequate price signals to the market. Guidelines for updating information products will also be included under the scope of this output.

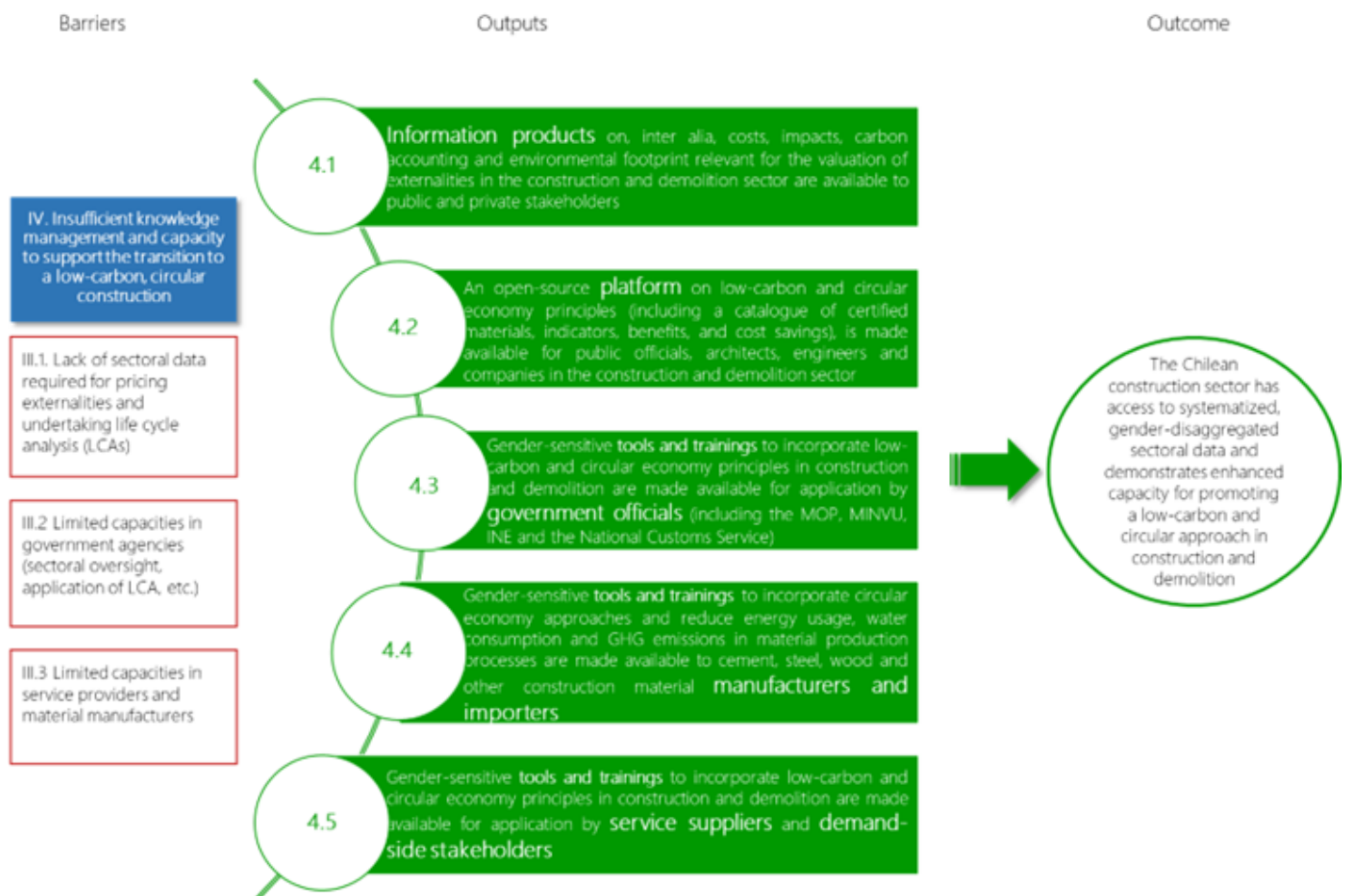
As mentioned earlier, circularity requires detailed data sets – some of which will be compiled through output 4.1 and others that are (or will be) already available through different means. Establishing arrangements for the periodic collection, organization, indexing, storing and display of this data is another crosscutting element required for the shift to a circular construction. Thus, through **output 4.2** the project will establish an IT platform that will undertake and centralize all these functions, ensuring that information needed is always readily available to actors across the construction value chain. The platform will house a catalogue of certified materials, construction techniques, architectural designs, transport, valuation and recycling facilities, information to support traceability of waste and sectoral oversight, and be linked to existent systems such as (among others) SINADER,[\[16\]](#) SIDREP,[\[17\]](#) and SII.[\[18\]](#) It will also house all information products developed by the project.

The remaining outputs will design and execute capacity-building programs for different key stakeholders: government officials at the national and municipal level (**output 4.3**), construction material manufacturers and importers (**output 4.4**); and service suppliers (including architects, designers, engineers, waste operators) and demand-side stakeholders (real estate firms, building owners and managers, tenants) (**output 4.5**). While the specific contents and tools will be developed during the PPG stage, each training program will include a set of tools and educational material relevant for each different stakeholder. For example, modules for public officials (e.g. MOP, MINVU, INE and the National Customs Service) will focus on building capacity related to elements such as the inclusion of low-carbon and circular elements in investment projects, the application of newly developed methodologies for the internalization of costs in linear construction, monitoring energy savings and emission reductions, aspects related to planning and sectoral oversight, and detection of potentially polluted areas. Capacity building for manufacturers will focus on developing understanding related to, for example, the design and manufacturing of innovative products (e.g. innovative cement types), adoption of efficient industrial processes, environmental certification. Lastly, training and tools for service providers (architects, designers, engineers and waste operators, among others) will be oriented towards developing knowledge on, inter alia, the reduction of material overspecification, circular design, product certification, development of CDW management plans for construction sites.

These training programs will be developed in partnership with the Adriana Hoffmann Environmental Training Academy,[\[19\]](#) the Chilean Chamber of Construction and local universities. Through the project's support, these programs will be integrated into the partner's institutional structure to ensure that capacities are retained by the training institution. Other potential partners will be identified during the PPG phase of the project.

For the project’s knowledge management (outputs 4.1 and 4.2) and capacity-building (outputs 4.3-4.5) outputs, a gender-sensitive approach will be adopted, following principles such as:

- Taking into account the different needs of women, men and transgender people in the development of project information and engagement schedules;
- Drawing upon the participation of female and male practitioners in the development and review of project products;
- Using gender-sensitive language and gender-balanced images;
- Disaggregating data by gender where possible.



Component 5: Monitoring and evaluation

In this component, project monitoring and evaluation will be undertaken in accordance with GEF and UNEP policies.

Innovativeness and potential for scaling-up

Innovativeness

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:

- o The circular regulatory framework, including laws, norms, standards, procedures, and guidelines, which is unprecedented in the country and the region.
- o The pilots, which will focus on the circularity actions that have been demonstrated to result in the largest amount of GHG emissions reductions, namely: building design, material production processes, consumption models, and waste management.
- o 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.
- o The national innovation network, that will bring together universities, researchers, manufacturers, policy makers and investors, thus improving the development of patents and new, low-carbon, circular products.

Potential for scaling up

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 a feasible financing strategy, this project is conceptually conceived to be the first out of several efforts that will lead to a massive decarbonization of the construction sector in Chile.

[1] Adapted from Ramboll, *Benefits of sectoral circular economy actions - Quantification methodology for, and analysis of, the decarbonization benefits of sectoral circular economy actions - final report* (Copenhagen, 2020)

[2] A Clean Production Agreement is an agreement subscribed between a business sector and public bodies with competence in the matters of the agreement, whose objective is to set provisions for a clean production through specific goals and actions. It is characterized because it is signed by a business association

representative of the sector and by each company individually, as well as by each public institution competent in the matters committed in the agreement; it establishes a specific deadline to meet the goals and actions.

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

[4] Ramboll (2020), *op cit*.

[5] INN NCh3727: *Waste management – Considerations for waste management on demolition sites and pre-demolition audits* (2021)

[6] Refuse, rethink, reduce – reuse, repair, refurbish, remanufacture, repurpose – recycle, recover.

[7] The exact number will be established in the PPG phase.

[8] Other criteria may include impacts on biodiversity, political and social feasibility, capacity to mobilize stakeholders, alignment with the project objectives, additionality, gender, co-finance, among others.

[9] Other outputs in this project will also contribute to the alleviation of barriers and market imperfections, for example, by facilitating the pricing of positive and negative externalities (component 1) and filling information gaps and capacity building needs (component 4).

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

[11] Circle Economy *The Value Hill Business Model Tool: identifying gaps and opportunities in a circular network* Available [here](#).

[12] The Construye2025 Program or "National Strategic Program in Productivity and Sustainable Construction" is promoted by CORFO and was born in 2015, seeking to transform the construction sector from productivity and sustainability, to achieve national development impacting positively in the social, economic, and environmental fields.

[13] Adapted from EIB (2020).

[14] Product category rules (PCRs) are a set of rules and requirements that aim to create a level playing field when comparing and assessing the environmental impact of different types of products that perform similar functions. For example in terms of building products, they might be used to compare different insulation materials or types of flooring, the intention being to make comparisons between different products easier and fairer. PCRs provide the rules, requirements, and guidelines for developing an EPD for a specific product category.

[15] An environmental product declaration (EPD) is a document which may be used in different countries to quantifiably demonstrate the environmental performance of a product.

[16] National System for the Declaration of Waste (SINADER)

[17] National System for the Declaration of Hazardous Waste (SIDREP)

[18] Chile's Internal Revenue Service (Servicio de Impuestos Internos, SII)

[19] Original title in Spanish: *Academia de Formación Ambiental Adriana Hoffman*.

Coordination and Cooperation with Ongoing Initiatives and Project.

Does the GEF Agency expect to play an execution role on this project?

If so, please describe that role here. 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

Fundacion Chile will execute the project on behalf of the Ministry of Environment (MMA). Thus, Fundacion Chile will be in charge of procurement activities, reporting, and fund management. The Ministry will be in charge of overall leadership through the provision of a National Project Director, to whom the project team will report. Moreover, the MMA will chair the Project Steering Committee (PSC), which will be the leading project authority, providing overall guidance and strategic direction and responsible for the oversight of the project progress and implementation of outputs, approval of annual work plans and budget, coordination and alignment with national priorities, etc. Fundacion Chile is also expected to act as the Secretary to the PSC. A similar institutional arrangement was used successfully in two previous GEF projects in Chile: 5150 (Delivering the transition to energy efficient lighting in Chile) and 9496 (Leapfrogging Chilean's markets to more efficient refrigerator and freezers). A detailed division of roles and responsibilities will be established during the project design phase.

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 Global ABC is a voluntary partnership of national and local governments, inter-governmental organizations, businesses, associations, networks and think tanks 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.

Core Indicators

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO₂e (direct)	700	0	0	0
Expected metric tons of CO₂e (indirect)	350000	0	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 CO₂e (direct)				
Expected metric tons of CO₂e (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 CO₂e (direct)	700			
Expected metric tons of CO₂e (indirect)	350,000			
Anticipated start year of accounting	2025			
Duration of accounting	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)
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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			
Male	300			
Total	400	0	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 emission reductions

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, as follows, in accordance with Guidelines on the Implementation of the GEF-8 Results Measurement Framework (GEF/C.62/Inf.12/Rev.01), page 17:

- Lifetime direct emission reductions, supervised implementation period of four years. GHG emission reductions obtained through low-emission circular economy pilots and their subsequent operation, as per component 2;
- Lifetime direct emission reductions, post supervised implementation (period of 20 years):
 - o Regulatory interventions: development and execution of a legal framework (output 1.1), guidelines for developing local strategies (output 1.4) and national financing strategy (output 3.1).
 - o Financial facilities: enhancement of CORFO, MOP, MINVU and other financial entity credit instruments (output 3.2) and the development and execution of business models (output 3.3).
- Lifetime indirect emission reductions, post supervised implementation (period of 20 years):
 - o Capacity building under output 4.3-4.5;
 - o Innovation under output 3.4.

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 2025-2045, with a causality factor of 0.2% applied.

Project beneficiaries

It is estimated that the project will have a total of 20 technical workshops, each targeting specific stakeholders. Assuming 20 unique attendants to each, the project will reach out to 400 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 4.3-4.5. In-person and online training sessions are planned for key stakeholders under each of those outputs. The assumption is that the direct beneficiaries will be split 75/25 (men/women), which is ambitious considering the percentage of women in the construction sector (10.9%). Note that this includes only direct beneficiaries.

Risks to Project Preparation and Implementation

Summarize risks that might affect the project preparation and implementation phases and what are the mitigation strategies the project preparation process will undertake to address these (e.g. what alternatives may be considered during project preparation—such as in terms of consultations, role and choice of counterparts, delivery mechanisms, locations in country, flexible design elements, etc.). Identify any of the risks listed below that would call in question the viability of the project during its implementation. Please describe any possible mitigation measures needed. (The risks associated with project design and Theory of Change should be described in the “Project description” section above). The risk rating should reflect the overall risk to project outcomes considering the country setting and ambition of the project. The rating scale is: High, Substantial, Moderate, Low.

Risk Categories	Rating	Comments
Climate	Low	Risk: Extreme climate events (particularly extreme wind and rain events) and disasters (earthquakes)

		<p>delay execution of the project activities. PPG mitigation strategy: Identify activities at risk (e.g. pilots) and incorporate buffers in the workplan to account for possible delays and budget buffers to account for minor damage to work materials. Require Executing Agency to include contingency plans for earthquakes and extreme weather events Project execution mitigation strategy: Proceed as per approved contingency plans. Adjust workplan as needed to avoid construction during heavy weather events. If needed, postpone construction or change pilot locations if extreme weather events impede progress.</p>
Environment and Social	Moderate	<p>Risk: COVID or pandemic outbreak, or civil unrest affects project activities. PPG mitigation strategy: Depending on the severity of the issue, design activities as hybrid or 100% remote meetings and stakeholder engagement events (i.e. workshops and consultation rounds). Allocate time buffers in the workplan considering that response time from key stakeholders might be increased in case of lock-down or civil unrest. Project execution mitigation strategy: The project base team will be responsible for the preparation of an “execution contingency plan” which will include, among other provisions, specific protocols to address this risk. The contingency plan will assess the likelihood of events impeding the normal development of the project (including its impact on the workplan and procurement plan) and be included in the agenda of the project’s Steering Committee to assess the need for changes.</p>

Political and Governance	Low	<p>Risk: elections temporarily shift focus away from project design / project execution. PPG mitigation strategy: The country mission (approximately 80% of the consultation meetings in the design phase) will be scheduled to take place away from the 2023 election processes. A data room with all relevant information will be established at the very beginning of the design process to ensure that the majority of the information required is available from the start. Execution mitigation strategy: The execution contingency plan will identify and include provisions for mitigating the impact of main election processes on the project (e.g. procurement processes, steering committee meetings, capacity building activities, workshops, pilots, others).</p>
Macro-economic	Low	<p>Risk: inflation, exchange rate fluctuations, bank runs, or other macro-economic crises disrupt activities during project design / execution. PPG mitigation strategy: PPG expenditures are managed directly by the implementing agency to accelerate procurement and contracting processes required to deliver the project package within the allocated schedule foreseen according to GEF regulations. Execution mitigation strategy: 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.</p>
Strategies and Policies	Low	<p>No specific risks identified. Policies required are already in place (namely, the ECLP and the construction roadmap). While the</p>

		project will provide support in the adoption of municipal level strategies aligned with the ECLP, these are not a pre-requisite for undertaking the project workplan.
Technical design of project or program	Low	No specific risks identified. Extended external consultations have already been undertaken with MMA, and the interventions included in the project were identified as a result of extensive consultation processes. Furthermore, UNEP has also undertaken significant internal consultations on the project, including with its team which acts as the secretary to the Global ABC alliance.
Institutional capacity for implementation and sustainability	Low	No specific risks identified. The institution foreseen as the executing agency for this project (Fundación Chile) has demonstrated high institutional capacity for managing the execution of GEF projects. Likewise, the MMA as the lead government ministry) has considerable experience in the design and implementation of GEF projects.
Fiduciary: Financial Management and Procurement	Low	Risk: delays in availability of funds and/or complex procurement processes. PPG mitigation strategy: PPG expenditures are managed directly by the implementing agency, which has diligent procedures for speeding up procurement and contracting processes required to prepare GEF proposals within the allocated schedule. Number of required transactions is kept low and professionals are identified swiftly using UNEP's roster of GEF experts. Project execution mitigation strategy: UNEP has established clear guidelines and procedures to track usage of funds by the Executing Agency, ensuring that the latter

		always has funds required to cover 6 months of expenditures. Regarding usage of funds once they are in the EA's side, UNEP follows up closely on the project's procurement plan to identify key procurement processes and ensure that a) the EA has the available funds in advance, and b) that the time required for the procurement process is factored in the project's workplan.
Stakeholder Engagement	Low	Risk: Insufficient stakeholder engagement leads to a lack of buy-in, reducing project effectiveness. PPG mitigation strategy: Undertake deep and broad stakeholder consultations to ensure a co-design of project deliverables for achieving ownership of project activities. Project execution mitigation strategy: Develop a project steering committee and a multistakeholder consultation group that meet regularly to ensure ongoing ownership of project activities.
Other		
Financial Risks for NGI projects		
Overall Risk Rating	Low	

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

Describe 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.

Confirm if any country policies that might contradict with intended outcomes of the project have been identified, and how the project will address this.

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. (max. 500 words, approximately 1 page)

GEF-8 alignment

This project is aligned with the GEF-8 programming directions climate change focal area strategy, Pillar 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, 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 PIF, no country policies were identified which might contradict with the project's objective and outcomes.

^[1] Available [here](#).

^[2] Refer to section 5.6 (Buildings and cities) and 5.7 (Infrastructure) in the ECLP (Gov. 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 as per GEF Policy and are clearly articulated in the Project Description (Section B).

Yes

Stakeholder Engagement

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

Yes

Were the following stakeholders consulted during project identification phase:

Indigenous Peoples and Local Communities:

Civil Society Organizations: Yes

Private Sector:

Provide a brief summary and list of names and dates of consultations

Table 2. Summary of stakeholder consultations during the PIF stage

Institutions	Description	Names of contact	Consultations
Ministry of Environment	Lead government entity responsible for the project. Weekly meetings to co-create the project concept and document sections.	Tomás Saieg Páez, Ruben Gonzalez Aguayo	November 2022 – April 2023
Ministry of Public Works (MOP)	Its function is to recover, strengthen and advance in the provision and management of infrastructure works and services for connectivity, protection of territory and people, public building and optimal use of water resources; ensuring the provision and care of water resources and the environment, to contribute to economic, social and cultural development, promoting equity, quality of life and equal opportunities for people.	Evelyn Medel, Liliana Calzada	March 2022, March 2023

<p>Ministry of Housing and Urbanism (MINVU)</p>	<p>The mission of the MINVU is to guarantee the right to the city and to decent and adequate housing, recovering the role of the State through territorial planning and management that considers the participation of communities, delivering timely, quality, sustainable, relevant and safe housing and urban solutions for people, with a gender perspective and focus on special attention groups.</p>	<p>Macarena Ortiz Arrieta</p>	<p>March 2022, March 2023</p>
<p>Ministry of Social Development and Family (MDSF)</p>	<p>Contribute to the design and implementation of policies, plans and programs in the field of social development, especially those aimed at eradicating poverty and providing social protection to vulnerable individuals or groups, promoting mobility and social integration. It should also ensure the coordination, consistency and coherence of policies, plans and programmes in the field of social development, at the national and regional levels. In his capacity as administrator of the national investment system (SNI), he evaluates the pre-investment studies of investment projects that request financing from the State to determine their social profitability so that they respond to the strategies and policies of growth and economic and social development that are determined for the country.</p>	<p>Orietta Valdes</p>	<p>March 2022</p>
<p>Ministry of Health (MINSAL)</p>	<p>The mission of this ministry is to build a health model based on strengthened and integrated primary care, which puts the patient at the center, with emphasis on the care of populations throughout the life cycle, and also stimulates health promotion and prevention, as well as monitoring, traceability and financial coverage.</p> <p>It contains an environmental health unit that in Chile regulates and supervises waste management in a complementary way to the MMA.</p>	<p>Gonzalo Aguilar</p>	<p>March 2023</p>
<p>National Service for Prevention and</p>	<p>Technical agency of the State in charge of planning and coordinating public and private resources for the prevention</p>	<p>Giovana Elena Gómez Amigo, Dafne Nuñez</p>	<p>March 2022, March 2023</p>

Response to Disasters (SENAPRED)	and attention of emergencies and disasters of natural origin or caused by human action, providing ministries, delegations, regional governorates, municipalities and Civil Protection agencies at the national, regional, provincial and communal levels, models and permanent management plans for the prevention and management of emergencies, disasters and catastrophes.		
National Institute of Statistics (INE)	State agency whose purpose is to carry out general population and housing censuses, and to produce, compile and publish the official statistics of the country, in addition to other specific tasks entrusted to it by law.	Claudia Iturra Medina, Jenny Nuñez Hormazabal	March 2022
Construye2025	Construye2025 is a program promoted by CORFO that seeks to transform the construction sector from productivity and sustainability, to achieve national development by positively impacting the social, economic and environmental spheres.	Alejandra Tapia	January and March 2023
Technology Center for Innovation in Productivity and Sustainability in Construction (CTEC)	Center promoted by the "Program for Strengthening and Creation of Technological Capacities Enabling Innovation" of Corfo, which combines national knowledge and global expertise, with the purpose of contributing to the process of transformation of the sector, towards a more productive, competitive and sustainable industry, promoting the development of an ecosystem of technological innovation.	Carolina Briones Lazo, Natalia Reyes Barbato	March 2023
Fundación Chile	Entity in charge of project execution on behalf of the MMA. Multi consultations, working meetings, co-drafting of the PIF and co-creation of the project.	Karien Volker, Florencia Delgado Vidal	November 2022 – April 2023
National Construction Normalization Council (Consejo de Normalización en Construcción)	Civil society organization, hosted as a committee of the Institute of Construction, of an independent nature, with the function of articulating the demand for the sectoral technical regulations of construction and convening the participation of various sectors and public and private institutions to develop strategies on	Rodrigo Narvaez	March 2023 – april 2023.

	standardization for the construction sector.		
Engineers College (Colegio de Ingenieros de Chile)	Trade union institution that brings together engineers whose function is to promote the development of the discipline of engineering in the country, support its members in the development of innovation, knowledge and technical application of engineering to contribute to the country in the technical, ethical, economic, social and environmental fields from the promotion of excellence in engineering.	Marlena Murillo	March 2023.
Council of the Circular Construction Strategy (Consejo de la Estrategia de Construcción Circular)	Public-private and trade union council formed under an agreement between the Chilean Chamber of Construction (CChC), the Construction Institute and the Construye2025 program of CORFO, whose function is to implement actions of the Circular Economy Strategy in Construction (private), giving impetus to coordinated initiatives between the public, private, academic and citizen validation sectors.	Paola Molina O.	November 2022; March 2023; April 2023

Stakeholder engagement during project design phase

A core group has been established during the PIF stage, consisting of representatives from the Ministry of Environment, Fundación Chile, and UNEP. This core group (which can be further expanded to include additional actors, depending on the design of the institutional arrangements) will lead the design phase, including the consultation rounds. A country mission will take place shortly after PIF approval, during which the team of consultants will undertake multiple stakeholder meetings and work together with ministry officials to discuss project design.

The core group prepared a map of the main stakeholders for consultation during the PPG phase (presented as Attachment 3). These actors will be engaged to present and discuss the project's scope, approach, activities and expected outcomes, as well as to receive inputs on the key sections of the project (i.e. problem tree, baseline scenario and project interventions, including the project pilots). A broad stakeholder workshop will be organized during the country mission, following which bilateral and group follow-up meetings (hybrid or in-person) will be organized throughout the remainder of the design phase. The possibility of remote meetings will result in a more flexible agenda, ensuring participation and gender balance. A summary of the meetings held will be captured in the project stakeholder report, to be included as part of the CEO Endorsement Request package.

Engagement foreseen during project execution

Due to its importance for the project's overall success and impact, a specific output for a stakeholder engagement strategy and campaign has been included as part of the project log-frame (i.e. output 1.5). This output will also include a communication campaign that will strengthen the engagement activities throughout the implementation phase. Details on the engagement and communication activities will be recorded as part of the project's knowledge management. The preliminary list of stakeholders included in attachment 3 (to be further expanded during the design and the execution phases) includes actors from the public sector, private firms, banks and financiers, civil society organizations and academia.

(Please upload to the portal documents tab any stakeholder engagement plan or assessments that have been done during the PIF development phase.)

Private Sector

Will there be private sector engagement in the project?

Yes

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

Yes

Environmental and Social Safeguard (ESS) Risks

We confirm that we have provided indicative information regarding Environmental and Social risks associated with the proposed project or program and any measures to address such risks and impacts (this information should be presented in Annex D).

Yes

Overall Project/Program Risk Classification

PIF	CEO Endorsement/Approval	MTR	TE
Low			

E. OTHER REQUIREMENTS

Knowledge management

We confirm that an approach to Knowledge Management and Learning has been clearly described in the Project Description (Section B)

Yes

ANNEX A: FINANCING TABLES

GEF Financing Table

Indicative 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)

Is Project Preparation Grant requested?

true

PPG Amount (\$)

50000

PPG Agency Fee (\$)

4750

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non- Grant	PPG(\$)	Agency Fee(\$)	Total PPG Funding(\$)
UNEP	GET	Chile	Climate Change	CC STAR Allocation: CCM-1-1	Grant	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	1,100,000.00
UNEP	GET	Chile	Biodiversity	BD STAR Allocation	2,200,000.00
Total GEF Resources					3,300,000.00

Indicative Focal Area Elements

Programming Directions	Trust Fund	GEF Project Financing(\$)	Co-financing(\$)
CCM-1-1	GET	2,963,699.00	20200000
Total Project Cost		2,963,699.00	20,200,000.00

Indicative Co-financing

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Recipient Country Government	Ministry of Environment	In-kind	Recurrent expenditures	450000
Recipient Country Government	Ministry of Housing and Urbanism	In-kind	Recurrent expenditures	150000
Recipient Country Government	Ministry of Housing and Urbanism	Public Investment	Investment mobilized	5600000
Recipient Country Government	Ministry of Public Works	In-kind	Recurrent expenditures	150000
Recipient Country Government	Ministry of Public Works	Public Investment	Investment mobilized	5600000
Recipient Country Government	Fundación Chile	In-kind	Recurrent expenditures	200000
Recipient Country Government	Production Development Corporation (CORFO)	Loans	Investment mobilized	7000000
Recipient Country Government	Banco Estado	Loans	Investment mobilized	1000000
Recipient Country Government	Chilean Chamber of Construction	In-kind	Recurrent expenditures	50000
Total Co-financing				20,200,000.00

Describe how any "Investment Mobilized" was identified

Investment mobilized was identified through an initial analysis of baseline investments and key stakeholders, and consultations with the Ministry of Environment. Investment mobilized will be identified in greater detail during the project preparation grant phase.

ANNEX B: ENDORSEMENTS

GEF Agency(ies) Certification

GEF Agency Type	Name	Date	Project Contact Person	Phone	Email
GEF Agency Coordinator	Victoria Luque Panadero				victoria.luque@un.org
Project Coordinator	Asher Lessels				asher.lessels@un.org

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

Name	Position	Ministry	Date (MM/DD/YYYY)
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Miguel Stutzin	Operational Focal Point since 2015-09-30	Ministry of the Environment	4/6/2023
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ANNEX C: PROJECT LOCATION

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



Latitude: -36.739055;

Longitude: -71.0574941

ANNEX D: ENVIRONMENTAL AND SOCIAL SAFEGUARDS SCREEN AND RATING

(PIF level) Attach agency safeguard screen form including rating of risk types and overall risk rating.

ANNEX E: RIO MARKERS

Climate Change Mitigation	Climate Change Adaptation	Biodiversity	Land Degradation
Principal Objective 2	Significant Objective 1	No Contribution 0	No Contribution 0

ANNEX F: TAXONOMY WORKSHEET

Level 1	Level 2	Level 3	Level 4
Influencing Models	Demonstrate innovative approaches	-	-
	Transform policy and regulatory environments	-	-
	Deploy innovative financial instruments	-	-
Stakeholders	Private sector	Capital providers Financial intermediaries and market facilitators SMEs Individuals/Entrepreneurs	-
	Civil society	Community Based Organization Academia Non-Governmental Organization	-
	Stakeholder engagement	-	-
Capacity, Knowledge and Research	Capacity Development	-	-
Gender Equality	Gender mainstreaming	Sex-disaggregated indicators	-
	Gender results areas	-	-
Focal Area / Theme	Climate change	Climate change mitigation	Renewable Energy
		Climate finance (Rio markers)	Climate Change Mitigation 2 Climate Change Adaptation 1

