REVISED STAP SCREENING TEMPLATE

GEF ID	**11071**
Project title	**Supporting the shift to a low-emission, circular construction in Chile**
Date of screen	**16 June 2023**
STAP Panel Member	**Ngonidzashe Chirinda**
STAP Secretariat	**Sunday Leonard**

1. Summary of STAP's views of the project

This project seeks to catalyze change in the built environment sector in Chile by focusing on reducing embodied carbon and moving towards a low-emission circular construction. The proposal provided a detailed description of the issues and barriers and a baseline of existing policies in the country. It also noted some drivers of change but did not adequately discuss them.

The theory of change captures relevant information on how the project intends to achieve its objective but needs to be improved to provide a clearer understanding of the causal pathways and the underlying assumptions. The project approach addressing different stages of buildings is sound, and STAP encourages the proponent to ensure that each project component applies life cycle and circular economy principles to each element of the project approach (i.e., develop a circular economy solution for product design, production process, consumption model, and demolition and waste management).

The proposal will benefit from considering how the drivers of change outside the influence of the project could affect project outcomes and developing robust interventions that can withstand plausible futures. Further, a policy coherence analysis will be helpful to ensure that policies across all sectors in the country are supportive and consistent. The calculations of the expected GHG emissions reduction from the project need more clarification, and the proponent needs to consider other GEBs possible from the project beyond GHG emissions reduction, including reducing harmful chemicals in the sector and minimizing the impacts of the industry on land and biodiversity. Also, the local environmental and socioeconomic benefits possible from the project should be accounted for when designing and implementing the project.

STAP's assessment*

Concur - STAP acknowledges that the concept has scientific and technical merit.

✓ **Minor - STAP has identified some scientific and technical points to be addressed in project design**

Major - STAP has identified significant concerns to be addressed in project design

Please contact the STAP Secretariat if you would like to discuss.

2. Project rationale, and project description – are they sound?

The proposal presents the challenges to decarbonizing the construction sector, focusing on embodied carbon which had less focus than building operation emissions. The proposal presented trends in emissions from the sector, including projected greenhouse gas emissions and increasing volume of demolition waste. The proposal makes a good case for interventions to decouple construction expansion from increased construction waste and GHG emissions through an improved regulatory framework and strategic investments.

The PIF also discusses the barriers to transitioning to a low-emission building and construction sector. It identifies three main drivers of change: increasing population, urbanization, and income levels, but these were only presented in passing instead of being discussed in detail. Also, the proposal missed identifying resource scarcity and climate change as critical drivers of change in the sector (changing climate affecting construction, including material use - e.g., Oxford Economics, 2021; Verichev et al., 2018; WBCSD, 2021).

As noted above, the proposal needed to adequately discuss how trends and interactions among these system drivers (outside the control of the project) and their uncertainties could unfold and affect project objectives. For example, the project does not have complete control over the increasing population, changing climate, or rising income levels, but their trends affect the issues the project seeks to address. Hence, the project needs to consider plausible narratives of how these drivers (and their interactions) may unfold and test proposed interventions against these futures to ensure they will work.

The theory of change needs to be improved as follows:

- The causal pathway to achieving project impact is not clear. Not all of the intermediate states are connected to the impact. It is essential to show how the activities lead to outputs, then outcomes, intermediate state, and then impact.
- Insufficient assumptions – there is always an underlying assumption for each step moving from activities to outcomes, outcomes to the intermediate state, and from the intermediate state to impact.

The proposed project approach is welcomed. The proponent should ensure that each project component addresses all of the elements in the project approach (i.e., develop circular economy solutions for product design, production process, consumption model, and demolition and waste management). When developing the solutions, it is also essential to consider the entire life cycle of buildings (raw material extraction; manufacturing; construction; operation and maintenance; demolition; and end-of-life disposal, reuse, or recycling).

On the project components:

- The focus on upstream (policies, finance, etc.) and downstream (pilot demonstration) issues is good. With the many policies and regulations already in the country (p13-17), the proponent should consider undertaking a policy coherence analysis to identify contradictory policies across relevant sectors and align them appropriately where necessary. In addition, more efforts should be put in place to increase policy awareness. A survey on p23 revealed that over 70% of companies in the Chilean construction value chain were unaware of laws and regulations already in force.
- Important to consider the full suite of circular economy solutions applicable to addressing emissions in the building and construction sector when designing the interventions. Examples include using biobased alternative materials or materials that can sequester carbon to displace cement, modular design for ease of disassembly, offsite production, architectural design that reduces material use, nature-based solutions such as green roofs, deploying digital technologies to optimize resource use and management, 3D printing, etc. (see Ali and Leonard, 2021; Carra and Magdani, 2018; ARUP, 2016; Mackenbach et al., 2020; WBCSD, 2021).
- Regarding selective demolition pilot, it is essential to note that "being a winner among the three trialed demolition doesn't necessarily mean it should be the standard for good practice. First, there should be sound criteria for selecting projects so that only those that will lead to desired outcomes are the starting point. Then, the results need to be compared with state-of-the-art and existing standards elsewhere on material recovery from demolition. See Purchase et al., 2022; Ruiz et al., 2020; EEA, 2020; Wu et al., 2022; Salleh et al., 2022; Mikhno et al., 2023; EU Construction and Demolition Waste Management Protocol; Guidelines for the waste audits before Demolition and Renovation works of Buildings, for helpful knowledge and existing guidance.
- Beyond the examples of business models listed in the second paragraph of p42, the proponent should consider the relevance and applicability of other types of circular business models to the building and construction sector in Chile, e.g., sell and buy-back, lifetime extension, sharing platforms, circular supplies; etc. See Carra and Magdani 2018; WBCSD 2021; Peters 2017; Munaro et al. 2021 for discussions on different circular business models applicable to building and construction.
- It is remarkable that the project seeks to establish a national innovation network for the building and construction sector. This is important given that the different actors must play their roles to transition to circularity in the sector. We encourage the proponent to review ARUP/Ellen MacArthur Foundation's

publication on "first steps towards a circular built environment," which highlights the enablers of a circular built environment and the role of various stakeholders.

The main GEBs are emission reductions linked to zero-emitting buildings, but if well-designed using a lifecycle and circular economy approach (as the proposal indicates), the project could generate other GEBs, related to eliminating the use of materials containing harmful chemicals in buildings and reducing the impact of buildings and construction on land (indeed, the PIF noted the illegal extraction in desert and riverbanks) and associated biodiversity. The proponent should explore and include these other GEBs, especially because not addressing the chemicals could mean locking in harmful chemicals in new and future buildings. Please see UNEP 2021 for an analysis of potential chemicals of concern across the building life cycle.

Also, the project will achieve other local environmental and socioeconomic benefits, including improved natural resources management, job creation, cost savings, and increased resilience. The proposal needs to adequately capture these co-benefits. These co-benefits should be accounted for as the project is implemented.

The GHG GEB calculations needed more details to clarify the estimation methodology, assumptions, and the scientific basis for the direct and indirect emission reductions, including the selected causality factor of 0.2%.

The project could be innovative and transformational if adequately designed and implemented. There are opportunities for deploying policy, technological, financing, and business model innovations across the various components. And if these innovations are successful, replicated, and scaled, this could lead to a transformation of the building and construction sector in the country. The proponent should endeavor to document the innovations in the project to capture knowledge, learn and disseminate. Also, the proponent may want to develop a separate theory of change for scaling and transformation (i.e., to create a logic chain of how scaling and transformation can be achieved.

3. Specific points to be addressed, and suggestions

Based on the comments in Section 2 above, STAP recommends the following to strengthen the project:

1. Develop a narrative of plausible futures that considers the potential effects drivers of change and their associated uncertainties on achieving the project's goal and use this to inform intervention options. See STAP's primer on future narratives for more guidance.
2. Improve the theory of change based on recommendations in Section 2.
3. Ensure that each project component applies life cycle and circular economy principles to each element of the project approach (i.e., develop a circular economy solution for product design, production process, consumption model, and demolition and waste management).
4. Undertake policy coherence analysis to identify contradictory policies and align them where necessary. See STAP's paper on policy coherence for more guidance.
5. Develop criteria for selecting demolition projects and apply state-of-the-art knowledge and existing guidances in developing circular demolition standards for Chile.
6. Explore relevant circular business models pertinent to buildings and construction and how they could be applied in this project.
7. Explore how to ensure the project achieves the multiple GEBs possible (chemicals and waste, land degradation, and biodiversity) by appropriately using the life cycle and circular economy approach to design each intervention.
8. Clarify how the GHG GEB was calculated, including the scientific basis and underlying assumptions.
9. Reflect on how to facilitate innovation and ensure scale-up and transformation. Consider developing a theory of change for this.
10. Recognize all possible local environmental and socioeconomic co-benefits from the project and make provisions for measuring, tracking, and reporting them. See STAP's recent paper on incorporating co-benefits in GEF's investments for guidance.

11. In developing the stakeholder engagement plan, consider including activities to raise policy awareness among key stakeholders in the construction industry.

*categories under review, subject to future revision

ANNEX: STAP'S SCREENING GUIDELINES

1. How well does the proposal explain the problem and issues to be addressed in the context of the **system** within which the problem sits and its drivers (e.g., population growth, economic development, climate change, sociocultural and political factors, and technological changes), including how the various components of the system interact?

2. Does the project indicate how **uncertain futures** could unfold (e.g. using simple **narratives)**, based on an understanding of the trends and interactions between the key elements of the system and its drivers?

3. Does the project describe the **baseline** problem and how it may evolve in the future in the absence of the project; and then identify the outcomes that the project seeks to achieve, how these outcomes will change the baseline, and what the key **barriers** and **enablers** are to achieving those outcomes?

4. Are the project's **objectives** well formulated and justified in relation to this system context? Is there a convincing explanation as to **why this particular project** has been selected in preference to other options, in the light of how the future may unfold?

5. How well does the **theory of change** provide an "explicit account of how and why the proposed interventions would achieve their intended outcomes and goal, based on outlining a set of key causal pathways arising from the activities and outputs of the interventions and the assumptions underlying these causal connections".

   - Does the project logic show how the project would ensure that expected outcomes are **enduring** and resilient to possible future changes identified in question 2 above, and to the effects of any conflicting policies (see question 9 below).
   - Is the theory of change grounded on a solid scientific foundation, and is it aligned with current scientific knowledge?
   - Does it explicitly consider how any necessary **institutional and behavioral** changes are to be achieved?
   - Does the theory of change diagram convincingly show the overall project logic, including causal pathways and outcomes?

6. Are the project **components** (interventions and activities) identified in the theory of change each described in sufficient detail to discern the main thrust and basis (including scientific) of the proposed solutions, how they address the problem, their justification as a robust solution, and the critical assumptions and risks to achieving them?

7. How likely is the project to generate global environmental benefits which would not have accrued without the GEF project (**additionality**)?

8. Does the project convincingly identify the relevant **stakeholders**, and their anticipated roles and responsibilities? is there an adequate explanation of how stakeholders will contribute to

the development and implementation of the project, and how they will benefit from the project to ensure enduring global environmental benefits, e.g. through co-benefits?

9. Does the description adequately explain:

   - how the project will build on prior investments and complement current investments, both GEF and non-GEF,
   - how the project incorporates **lessons learned** from previous projects in the country and region, and more widely from projects addressing similar issues elsewhere; and
   - how country policies that are contradictory to the intended outcomes of the project (identified in section C) will be addressed (**policy coherence**)?

10. How adequate is the project's approach to generating, managing and exchanging **knowledge**, and how will lessons learned be captured for adaptive management and for the benefit of future projects?

11. **Innovation and transformation:**
    - If the project is intended to be **innovative:** to what degree is it innovative, how will this ambition be achieved, how will barriers and enablers be addressed, and how might scaling be achieved?
    - If the project is intended to be **transformative:** how well do the project's objectives contribute to transformative change, and are they sufficient to contribute to enduring, transformational change at a sufficient scale to deliver a step improvement in one or more GEBs? Is the proposed logic to achieve the goal credible, addressing necessary changes in institutions, social or cultural norms? Are barriers and enablers to scaling be addressed? And how will enduring scaling be achieved?

12. Have **risks** to the project design and implementation been identified appropriately in the risk table in section B, and have suitable mitigation measures been incorporated? (NB: risks to the durability of project outcomes from future changes in drivers should have been reflected in the theory of change and in project design, not in this table.)