

# CLIMATE INVESTMENT FUNDS

Joint CTF-SCF/TFC.22/4.1/Rev.1

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Agenda Item 4

## ***ACCELERATING LOW-CARBON, CLIMATE-RESILIENT TRANSITION IN INDUSTRY PROGRAM***

# 1. Overview of the sector

## 1.1 Industrial corporates and their increasing share in global GHG emissions

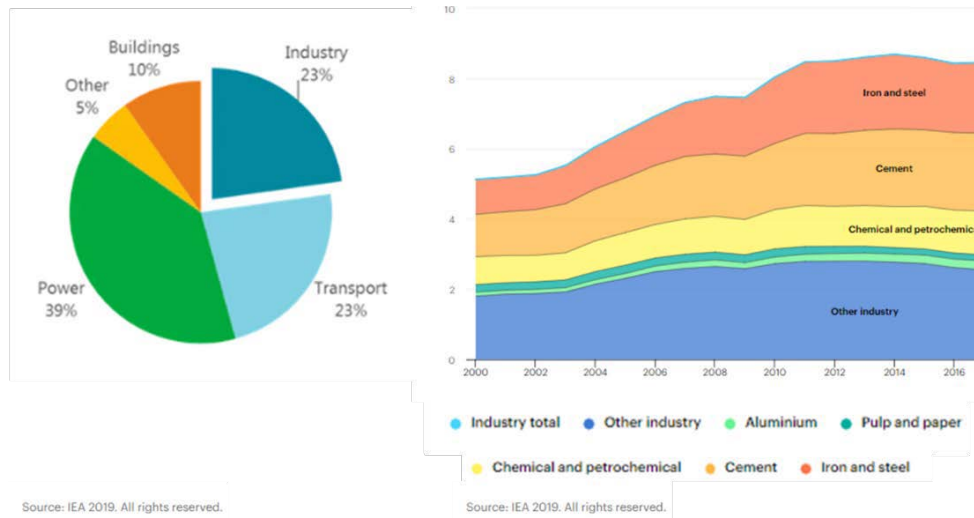
- 1. Industry is one of the leading sources of increases in GHG emissions and may become the single biggest source of GHG emissions in less than a decade.** The growth of industrial GHG emissions is expected to come from non-OECD countries. Tackling industrial GHG emissions should be a high international priority with commensurate international support and is, therefore, proposed for CIF's future programming.
2. Industry is estimated to account for around 23 percent of global GHG emissions, nearly one-quarter (8 GtCO<sub>2</sub>) of direct CO<sub>2</sub> emissions in 2017.<sup>1</sup> If indirect emissions are also taken into account, the industrial sector is responsible for about 40% of CO<sub>2</sub> emissions.<sup>2</sup> According to the IEA, industry is the second-largest source of CO<sub>2</sub> emissions (along with transport and after power sector emissions) and by 2030 the projection is that industrial GHG emissions will represent the biggest share of GHG emissions. Nearly one-quarter of industrial emissions are process emissions. In terms of energy consumption, the industrial sector accounted for 156 exajoules (EJ), or 37 percent of global total final energy consumption (TFEC) in 2017. This represents a 1% annual increase in energy consumption since 2010 and 1.7% growth in 2017.
- 3. Iron and steel, cement, chemicals and petrochemicals, aluminum, pulp and paper are among the high-emitting industries to target** to significantly reduce direct industrial and CO<sub>2</sub> process emissions. Figure 1 shows the relative share of the CO<sub>2</sub> emissions for direct industrial and process emissions for key sectors.
- 4. The relative contribution of developing countries to industrial GHG emissions has been rapidly increasing.** Globally, industrial GHG emissions are dominated by the Asian region, which was also the region with the fastest emission growth between 2005 and 2010. As illustrated in Figure 2, in 2010 over half (52 percent) of global direct GHG emissions from industry and waste/wastewater were from the Asian region, followed by countries member of the OECD in 1990 (25 percent), Economies in Transition (9 percent), Middle East and Africa (8 percent), and Latin America (6 percent). Between 2005 and 2010, GHG emissions from industry grew at an average annual rate of 3.5 percent globally, comprised of 7 percent average annual growth in the Asian region, followed by Middle East and Africa (4.4 percent), Latin America (2 percent), and Economies in Transition countries (0.1 percent), but they declined in the OECD 1990 countries (-1.1 percent).
- 5. The highest growth rate of industrial energy use occurred outside the OECD;** the energy use of non-OECD countries grew 1.9 percent in 2014 compared with 0.2 percent for OECD countries, and continued to gain share of global industrial energy use, reaching 69 percent in 2014, up from 49 percent in 2000. Growth in energy use was strong in China (3.1 percent) and India (4.3 percent) in 2014. The challenges of decoupling industrial output growth and GHG emissions require significant improvements in material and energy efficiency, deployment of best available technologies, shifts to lower-carbon fuels and feedstocks, and rapid deployment of innovative technologies, including carbon capture and storage (CCS).

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<sup>1</sup> IEA (2019), [Tracking Industry](#); IEA (2019), [Transforming Industry through CCUS](#).

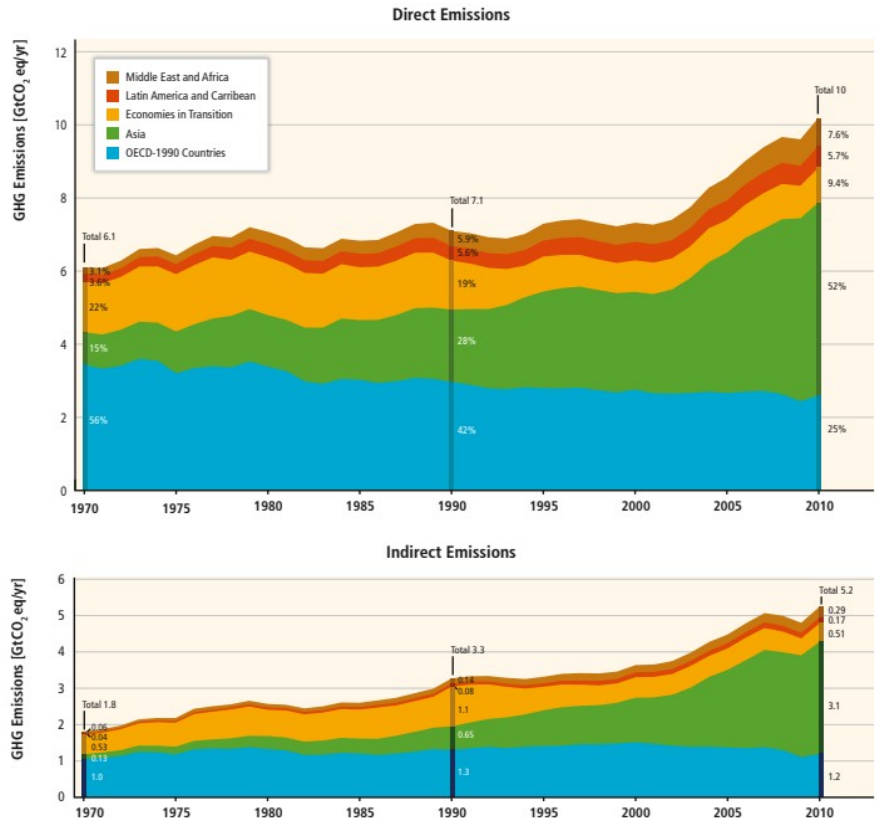
<sup>2</sup> IEA (2019), [Tracking Industry](#); IEA (2019), [Transforming Industry through CCUS](#).

**Figure 1: Direct CO<sub>2</sub> emissions by sector, 2017 (left); Direct CO<sub>2</sub> emissions from key industrial sectors, 2017 (right).**

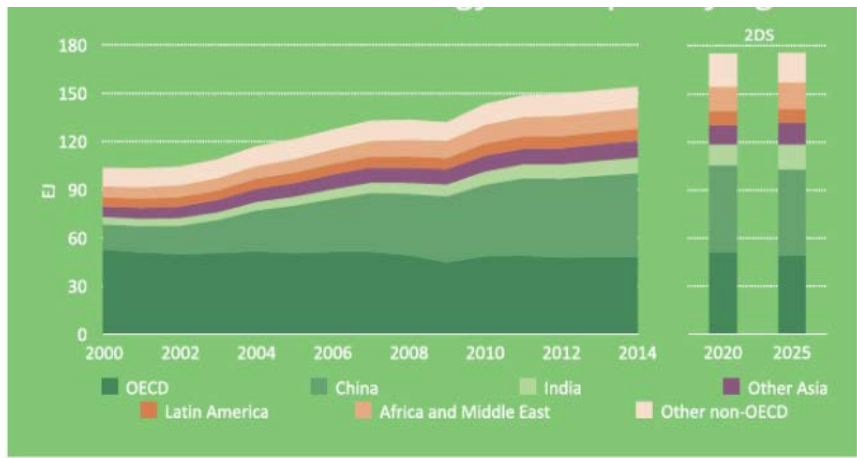


6. Scenario pathway consistent with reaching internationally agreed climate goals requires collaborative efforts across industrial sectors and regions to decrease energy consumption and related CO<sub>2</sub> emissions impacts. While OECD countries have a relevant role to play in deploying and transferring innovative technologies for low-emission industries, a significant portion of the global cumulative direct CO<sub>2</sub> emissions reductions would need to come from non-OECD countries. This is because it is in non-OECD countries that faster-growing material demand is expected, and where new capacity installations and growing importance in world markets increase the potential to widely deploy innovative industrial process technologies. As Figure 3 shows, even as industrial GHG emissions fall in OECD countries, globally they are expected to continue rising.
7. The investment needed to accelerate the low-carbon and climate-resilient transition are significant – ranging between USD 6.3 trillion to USD 8.3 trillion according to different IEA’s scenarios. Early and accelerated action will prevent the locking-in of inefficient technologies in industrial capacity additions and avoid additional investments in low-carbon process technologies in the long-term.

**Figure 2: Substantial increase of industrial GHG emissions in developing countries, versus declining trend for the OECD countries <sup>3</sup>**



**Figure 3: Total final industrial energy consumption by region<sup>4</sup>**



<sup>3</sup> Source: IPCC (2014). Industry. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

<sup>4</sup> Source: IEA (2017), Energy Technology Perspectives, 2017.

## 2. Climate change context faced by industry in developing countries

### 2.1 Technical solutions exist, and energy efficiency is a key measure

8. **While the industrial sector is broad and complex, especially when also considering supply chains, there are mitigation opportunities to seize.** Opportunities exist to improve manufacturing efficiency, maximize the use of locally available resources, and optimize materials use. An illustrative overview of high-level technology (in a broad definition) mitigation approaches includes:

- Energy and materials efficiency measures through deployment of best available technologies can contribute around half of the cumulative emissions reductions in industry before 2030, underscoring the importance of early action.
- Increasing postconsumer scrap recycling rates and using this scrap to offset primary production of materials can significantly reduce the energy and emissions intensity of production, and thus should be promoted.
- All sectors should consider possibilities for sustainable use of industrial wastes and by-products as well as recovering excess energy flows. Implementation of these existing solutions, especially the low-cost, low-risk commercially available processes and technologies, will be a critical driver of the early phase of the transition.
- Large-scale deployment of innovative and proven technologies is needed at both pilot and commercial scale. Carbon capture, utilization and storage technologies are one of the options to explore.

9. **The potential for industrial energy efficiency is significant for developing countries.** New industrial development opens the opportunity for the installation of new plants with highly efficient energy and material technologies and processes (UNIDO, 2011). It is also vital to work across entire industry value chains to identify opportunities to reduce waste, promote circular economy opportunities, ensure gender and social co-benefits, and ultimately reduce GHG emissions. The following are the most relevant industrial sectors:

- **Chemicals and petrochemicals:** This is the most energy intensive industry. There are multiple effective ways to reduce energy intensity in this sector, the most promising in the long-term is the shifting to a production based on bio-based feedstocks, which would also need a relevant supply chain change. Significant potential improvements can also be achieved by implementing process energy efficiency measures in existing production facilities such as waste heat recovery and combined heat and power or switching to lower carbon fuels and feedstocks.<sup>5</sup> From the regulatory side, improvements in plastic recycling should be pursued to potentially offset a significant share of virgin plastic production. In addition, production of synthetic fertilizers (petrochemicals) is particularly energy intensive industry. As population grows and global demand for food increases the use of fertilizers is expected to continue to grow. Thus, it would be valuable to work with integrated fertilizer companies to improve the efficiency of ammonia manufacturing as well as increase the downstream efficiency and effectiveness of fertilizer use to reduce carbon and N<sub>2</sub>O emissions. Overall, the potential for investments in this sector is exceptionally relevant for CIF.
- **Iron and steel and aluminum manufacturing:** Investments to lower energy and carbon intensity should focus in the short term on energy efficiency improvements and on expanding collection and recycling routes. In the long term, effort should be placed on developing alternative and

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<sup>5</sup> For example, particularly interesting pathways are represented by production of ammonia using hydrogen from low-carbon electricity and production of methanol, olefins and BTX from hydrogen and CO<sub>2</sub>

innovative production processes. Due to the sectors high reliance on electricity, particularly for aluminum, decarbonization of the electric supply will also play a major role.

- **Cement:** Research has shown that in the cement sector efforts to reduce GHG emissions should focus on an effective combination of different technical actions, such as lowering the clinker content in cement, improving thermal energy efficiency, using alternative fuels and raw materials, reducing by-pass dust and cement kiln dust, implementing waste heat recovery systems. These when combined with an appropriate regulatory framework and financial and market-based incentives have the potential to be more effective. Equally important are nationally-driven efforts to develop monitoring, reporting and verification (MRV) systems, balance clinker and cement production capacity with long-term domestic market demand, and build capacity and enhance dialogue between stakeholders.
  - **Pulp and paper:** Sector reduction in energy consumptions and CO<sub>2</sub> emissions can be achieved by investing in combined heat-and-power generation, fuel switch and by improving energy efficiency and process optimization. The development of new bio-based products is also expected to play a relevant role. Moreover, from a policy side, strong efforts need to be put in place to increase recovered fiber usage by promoting paper recycling, and to maintain commitment to water quality standards and clean production.
  - **Glass manufacturing:** There are several possibilities to reduce energy consumption, either by improving energy efficiency (e.g. improved process control, increased use of cullet, increased furnace size, use of regenerative heating, oxy-fuel technology, batch and cullet pre-heating and reduction of reject rates) or from a market/policy side - increasing recycling reduces energy consumption, as both energy for the chemical reactions and related emissions can be saved. For instance, most local authorities take different approaches to recycling. If all involved parties (authorities and industry) could work together to implement a strategic approach that could incorporate the needs (i.e. supply, quality of recycled glass) of the glass sector, that would increase the availability of recycled material and would make substantial advances in reducing energy requirements a decarbonizing the sector.
  - **Mining:** While the growing demand for minerals and metals provides economic opportunities for resource-rich developing countries and private sector entities alike, significant challenges will likely emerge if the climate-driven clean energy transition is not managed responsibly and sustainably. Minimizing the negative social, environmental and climate footprint through the value chain of raw materials, while maximizing socio-economic co-benefits is at the forefront of a climate-smart and gender-responsive mining approach. This includes, where needed, attention to processes in artisanal mining, where women often predominate and face environmental health risks in particular. In addition, mining companies are across the biggest consumers of energy in several developing economies and their capacity to influence environmental markets and energy transition is yet to be developed.
10. **Climate resilience measures need to be taken alongside mitigation investments and operations.** In addition to the approaches mentioned above, there is an emerging appreciation of and need for enhancing the climate resilience of business production facilities and their supply chains. In a world where supply chains are interconnected, climate change may affect, for example, the supply of agricultural feed-stock for the agri-food corporates or the supply of water in water intensive industries such as pulp and paper.

## 2.2 Climate challenges facing industry in developing countries

11. **While the potential of energy efficiency measures exists, the industrial sector has proven to be hard to abate.** Compared with renewable energy where the reduction of risks and costs are increasingly

driving scaled-up deployment, industry faces challenges that prevented it from shifting investments towards low-carbon, climate-resilient alternatives.

12. The Transition Pathway Initiative found out that the manufacturing and other basic materials industries such as steel, paper, cement and aluminum are the worst-performing sectors on management quality and climate change.<sup>6</sup> Companies in these sectors tend to be especially weak at acknowledging climate change as a business risk / opportunity, at board oversight and responsibility, and at incorporating environmental, social and governance factors. Given that these are some of the largest emitters, it suggests that few companies are properly managing the risks or opportunities associated with the transition to a low-carbon economy.
13. Furthermore, as noted by the IEA, many industrial processes require high-temperature heat as high as 1,600 degrees Celsius. Switching from fossil to alternative fuels for processes that require high-temperature heat is difficult and costly, necessitating modifications to facilities and electricity requirements that may be prohibitively expensive.<sup>7</sup>

**14. Challenges that industries face in developing countries include the following:**

- **Corporate governance may not adequately address the risks of climate change or opportunities** of proactive, inclusive and informed decision-making and disclosure, including the participation of women in firms' senior management and on corporate boards.
- **Policy unpredictability does not, in many cases, provide the long term signals by which industries can plan their investments**, which could be due to the fact that nationally-driven climate-related plans have not been translated into actionable sector level plans; further, there is a lack of support for policy development relevant to the decarbonization of the industrial sector due to concerns relating to loss of productivity or competitiveness and a lack of facilitated inter-country or regional exchange of such strategies;
- **Low-carbon technologies may not be prioritized in corporate investment planning due to inadequate risk-adjusted returns**, particularly when compared with existing investment alternatives;
- **High perceived technology risk** stemming in part from a lack of relevant demonstration projects, and underdeveloped supply chains that do not facilitate technology transfer;
- **Financial-related barriers to investments**, which include inadequate access to finance, inflated risk perceptions, technology cost mark-ups, and a lack of local commercial bank experience appraising novel low-carbon projects.
- **Inadequate capacity and skills**. There is a need to develop skills in identifying, prioritizing, developing, implementing and monitoring low-carbon projects, and the gender and social impacts of such mitigation investments, particularly those that relate to energy efficiency, and understanding and adopting responses to climate change risks;
- **Inadequate policy frameworks**: existing low-carbon related incentives may not adequately support the target since the mechanisms defined in the regulation do not efficiently apply or the eligibility criteria do not comply with the sectoral capacity;

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<sup>6</sup> Source: Transition Pathway Initiative (2019), [State of Transition Report 2019](#).

<sup>7</sup> Source: IEA (2019), [Transforming Industry through CCUS](#)

15. Increasing and leveraging concessional resources into the corporate industrial sector to address these challenges and barriers is therefore urgent and critical to accelerate the low-carbon and climate-resilient transition.

### 2.3 Climate policy for industrial sectors

16. In the design of the low-carbon and climate-resilient pathways and policy frameworks incentivizing the transition while securing growth and productivity, the following aspects may be considered and subject to further stakeholder consultations:
  - The relationship with the nationally-driven climate-related plans to which the pathways would be applicable.
  - MRV systems for tracking of progress by encouraging benchmarking initiatives at the industry subsector level to overcome confidentiality challenges, set stable long-term targets and indicators appropriate to track progress towards those goals.
  - Performance standards for energy-efficient equipment and process integration measures should be put in place regardless of the scale of decarbonization required.
  - Regulatory and policy measures to encourage climate action in the industry sector.
  - Supply chain and material efficiency strategies offer an important opportunity for emissions reduction. Development of life-cycle assessments for industrial materials and consumer products are options to consider for capturing such opportunity.
  - Policy actions can be effective to remove barriers for material efficiency, raise awareness, and encourage shared responsibility among consumers and producers for collection and valorization of recycled materials.
  - Energy resource audits and integrated assessments that map resources and demand patterns are needed. Strategic planning for heating and cooling can help to identify cost-effective opportunities for the recovery of industrial excess heat and its productive use.
  - Access to innovation and low-carbon technologies.
  - Support for inclusive stakeholder consultation and social audit processes that take into account health and other impacts on diverse gender, occupational, and socio-geographic groups (such as upstream and downstream users of water and soil resources in industrial production zones).
17. Advanced economies have seen an increase of policies and regulations that affect industrial investments and operations. These developments include approaches and standards for climate governance, particularly in the financial and capital markets. These developments provide both opportunities and threats for the industrial corporates.
18. In the longer-term, deeper cuts in industrial CO<sub>2</sub> emissions will require innovative new low-carbon process routes and products. To ensure the future availability of those processes and technologies, the sector should focus research and development on low-carbon production and mitigation options. This deployment will require collaboration across companies, sectors and national borders. Existing efforts should be accelerated, and policy frameworks put in place to incentivize low-carbon innovation.

### 3. Concept proposal

19. **CIF's Accelerating Low-Carbon, Climate-Resilient Transition in Industry Program seeks to catalyze deep behavioral changes and sustainable impact in high-emitting industries.** It seeks to do so by intervening at multiple levels—industrial facility/technology, corporate, sectoral and national — to



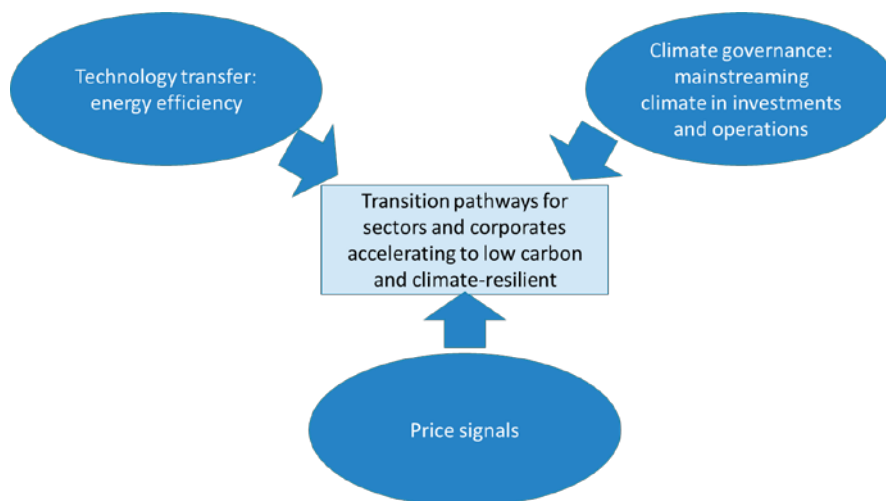
tackle through the target use of CIF's concessional finance the system-wide barriers and challenges hindering the transition. In particular, the Program seeks to:

- i. Corporate / sectors levels: supporting in a demand-driven manner i) climate governance and strategies through policy dialogue, capacity building and technical assistance, ii) the integration of climate change risks and opportunities into corporate's decision-making processes and practices iii) the deployment of innovative and/or proven climate technologies across the supply chains of targeted industries;
- ii. National / regional level: facilitating in a demand-driven manner sectoral and national dialogue on low-/zero-emissions and climate-resilient pathways for industry, and the expected socioeconomic distributional impacts of these choices – including implementing policy considerations such as energy efficient regulation and climate governance standards for financing;
- iii. Monitoring, Reporting and Verification: improving current practices and organizing sector participation in national and internal policies, including by accessing green financial markets (e.g. green bonds) and internal domestic and international climate markets (e.g., CORSIA).

### 3.1 Programming approach

20. **CIF's Accelerating Low-Carbon, Climate-Resilient Transition in Industry Program's approach aims to facilitate the shift of the industrial sector to sustainable business practices, and unlock the investment needed to move it onto a low-carbon, climate-resilient investment pathway.** The transition pathways are central in the Program's approach – summarized in Figure 4 – at sector and corporate levels, as these will guide decisions that will affect the allocation of resources, capital and operations. Climate governance is important to ensure the mainstreaming of the climate agenda in sector and corporates. The work on price signals and/or other environmental markets (such as green certificates) are equally important. Further, increasing technology transfer is needed to accelerate the realization of GHG emission reductions.

**Figure 4: Transition pathways at industrial, sector and corporate levels**



21. **CIF's Accelerating Low-Carbon, Climate-Resilient Transition in Industry Program's investment strategy would enable the creation of a space for national level, multi-stakeholder approaches to**

**drive deep behavioral change in the sector while supporting countries in meeting their climate goals.**

Such an approach would necessarily include project-affected peoples, such as female and male workers of different skill tiers, local residents, and other). This recognizes that the barriers to investment in low climate impact technologies in the sector are both non-financial and financial, requiring a coordinated approach if they are to be tackled effectively. Such a space would draw on one of the CIF's comparative advantages in the climate finance landscape, which is to foster multi-stakeholder coordination at the national level to address climate change in a holistic way, supported by predictable funding for capacity building, technical assistance and investment support.

22. An investment strategy focused on industry under the CIF would support both private and state-owned industry enterprises through interventions at multiple levels: technology, corporate, sectoral and national. These would be integrated within an overarching country programming approach, like the one used in the existing CIF's operating model (see Figure 5).

**Facility/technology level**

23. CIF's concessional finance for the provision of targeted technical assistance can help corporates to evaluate the carbon footprint of their overall operations and assess and apprise technology options that deliver maximum emissions reductions at lowest marginal cost.
24. CIF's concessional finance can provide investment support for corporates to facilitate the adoption of scalable and proven GHG mitigation technologies with low market penetration, such as heat recovery, absorption chillers, variable speed drives, and fuel/feedstock switching. Such facility-wide planning approaches can also highlight the other benefits associated with investment in low-carbon, climate-resilient technologies, such as improving overall productivity and resilience of business operations to climate change risks.

**Corporate level**

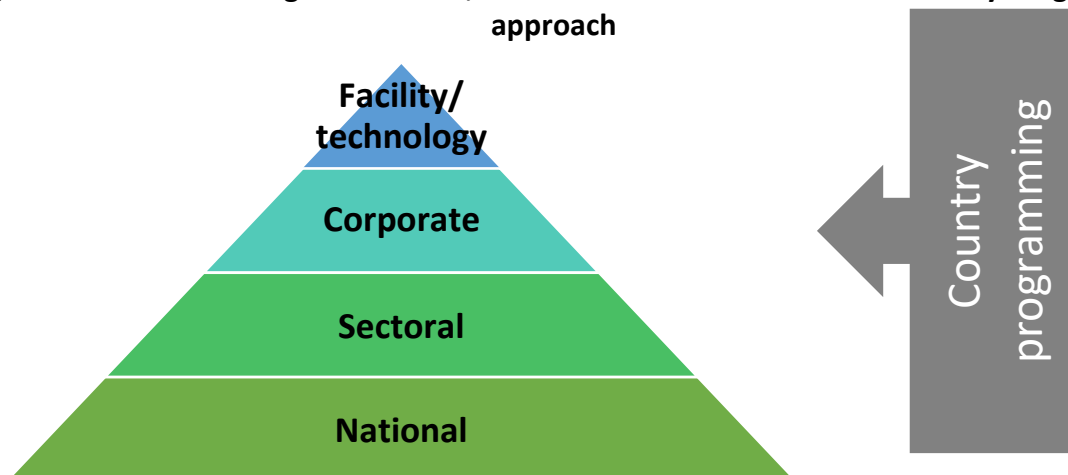
25. The Program will place special emphasis on piloting and accelerating the implementation of governance, strategies and planning processes that systematically take climate change risks and opportunities into consideration. This is relevant because 'business as usual' scenarios do not normally consider this. The proposed Program also aims to focus on managing GHG emissions in supply chains, by promoting lifecycle emissions analyses and scaling-up green procurement approaches. Targeting supply chains is relevant given that they can represent a significant amount of embodied emissions in end-user products and can be exposed and vulnerable to physical climate risks. There are also opportunities in supply chains to reduce waste and adopt circular economy solutions to reduce overall GHG footprint.
26. The Program can also offer targeted support to corporates wishing to build their capacity to issue green and/or climate-resilient bonds. For larger corporates, the growing demand by institutional investors for green bonds offers a new approach for raising finance from debt capital markets. Corporates could also benefit from incentives to decarbonize their energy matrix through concessional financing.

**Sectoral level**

27. Experience shows that industry or national leadership is a decisive factor in driving low-carbon, climate-resilient behavioral change in emerging economies. The idea of a sectoral "roadmap" is therefore a powerful one as it functions as a space for all stakeholders to define a shared vision and targets for shifting to low-carbon, climate-resilient investment planning. Sectoral roadmaps recognize that many stakeholders need to participate collaboratively to address private sector, community, as well as

environmental and regulatory needs.<sup>8</sup>This type of integrated approach has been a feature of the CIF’s business model since its inception; applying it specifically to the industry sector in developing and emerging countries has significant potential to addressing policy, regulatory, social and investment barriers to transition in a holistic way.

**Figure 5: CIF Accelerating Low-Carbon, Climate-Resilient Transition in Industry Program’s approach**



**Inter/National level**

28. The CIF’s programmatic approach and business model can also play an important role in supporting emerging markets in updating their nationally-driven climate-related plans and long-term low-carbon strategies. CIF’s efforts to implement national low-carbon industry programs can feed into and/or complement existing national platforms for nationally-driven climate-related plans. The CIF’s Program can also support the development of GHG MRV and accounting systems under existing nationally-driven climate-related plans, which may also help countries to meet broader sustainability commitments such as the Sustainable Development Goals.

**3.2 Use of CIF’s concessional finance**

29. CIF’s concessional resources would be used to address the barriers to investment identified herein through a combination of technical assistance and investment support. For instance, technical assistance could support project preparation at the technology/facility-level, build corporates’ capacity and procurement initiatives, develop sectoral pathways and national policy reforms. CIF’s investment support could take the form of concessional debt, guarantee products, risk-sharing facilities or other financial instruments to address barriers to investment in low-carbon, climate-resilient industry business models. Given the capital-intensive nature of the industrial sector, and the need to support first-of-a-kind investments in low carbon processes and technologies to ensure that activities funded under the Program achieve immediate and direct GHG mitigation outcomes, it is envisaged that at least 80% of funding under this Program would be deployed in the form of investment support. The remainder is expected to be deployed as grants for technical assistance and capacity building activities.

<sup>8</sup> An example of such a roadmap is the EBRD “Low Carbon Egyptian Cement Industry Roadmap”, which was developed in collaboration with the Government of Egypt to highlight the way towards a low carbon, climate-resilient sector. The Roadmap is available at: <https://www.ebrd.com/documents/climate-finance/egypt-roadmap-cement.pdf>.

30. CIF proceeds would be made to corporates in the sectors of interest, including private, semi-public and public. This may include upstream and downstream linkages of general corporates, industrial producers, agribusinesses and logistics companies that have asked for MDB assistance.

### 3.3 Transformational change

31. **CIF's *Accelerating Low-Carbon, Climate-Resilient Transition in Industry Program* has the potential to transform the carbon emissions pathway of high priority industry sectors within several developing and emerging countries and demonstrate the kind of change that can be replicated in like sectors elsewhere.** This is achievable because CIF's business model is designed to address the systemic barriers to low-carbon and climate-resilient transformation. CIF is uniquely positioned to drive such change because of its deep institutional experience of country-led, cross-stakeholder programming approaches. In the same way that the CIF has been a notably and visible part of the renewable energy transition in many countries supported by its Clean Technology Fund, CIF can establish itself as a leader and magnet for potentially more donor support for the deep decarbonization of the industry sector over the next five or so years.
32. This Program responds to many of the recommendations of the recent CIF's Transformational Change Learning Partnership evaluation studies.<sup>9</sup> The concept of a national low carbon roadmap for a specific industrial sub-sector is an example of a tool to support transformational program design (recommendation #2). It also adopts a "portfolio" or sectoral approach to support discrete industrial sub-sectors and address more complex barriers in a holistic manner (#3) but in a way that differentiates between country contexts to enhance relevance (#9). At a fund level, the Program can build global 'supply side' expertise in selected technology or thematic areas (e.g. process change in specific industrial sub sectors) with a view to addressing issues common to a range of countries and generating replication opportunities beyond the geographical scope of the CIF's initial intervention (#8).

### 3.4 Policy alignment

33. CIF's *Accelerating Low-Carbon, Climate-Resilient Transition in Industry Program* will contribute towards the achievement of the Sustainable Development Goals—SDG 7 in particular, by ensuring access to affordable, reliable and modern energy and improvements in industrial energy efficiency, SDG 9 on resilient infrastructure, inclusive and sustainable industrialization and SDG 13 aimed at driving climate action. The importance of accelerating the low-carbon transition in industry is also portrayed by the fact that in 2019 the United Nations General Secretariat (UNSG) has selected this topic as one of the lead themes at the Climate Action Summit 2019. The Climate Action Summit, in fact, featured one of its priority actions tracks to industry (Track #5). This track focuses on creating stronger commitments and actions from the hard-to-abate sectors with the aim to achieve emissions reductions by circa 30% of global emissions. The sectors targeted include: shipping (3% of global emissions), aviation (3% of global emissions), transport (7% of global emissions), petrochemicals including oil and gas (5% of global emissions), iron and steel (7% of global emissions), cement (7% of global emissions) and aluminum (0.4% of global emissions). The objective is the achievement of carbon neutrality by mid-century with the expected outcome of having a significant amount of governments and leading companies announcing policy measures and corporate emissions commitments that will deliver at least 20% of the 30% goal in emissions reductions by 2050.

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<sup>9</sup> For more information, please see CIF's web site [here](#).

### 3.5 Anticipated geographic scope

34. In line with the CIF's mandate to support low carbon investment into countries with significant GHG mitigation potential, candidate countries to benefit from funding under this Program would be those in which the commercial and industrial (C&I) sector is a relatively large contributor to national GDP, and/or represents a larger share of national GHG emissions and/or have critical sectors that are part of the global supply chain. These are typically middle-income countries. However, this should not preclude countries from benefiting from the Program where targeted investment and policy engagement in a particular industrial sub-sector can be demonstrated to unlock substantial GHG reductions.

### 4. Rationale for concessional finance through the Climate Investment Funds

35. **CIF's business model is uniquely placed to deliver on the goals of the *Accelerating Low-Carbon Transition in Industry Program*.** This is particularly because:

- CIF's track record and institutional capabilities will enable the prompt implementation of a coherent strategy for addressing GHG emissions and climate vulnerabilities in the industry sector, an area not yet targeted strategically by any constituents of the climate finance architecture.
- CIF's tested programmatic approach will enable the private-public cooperation required to develop and implement decarbonization roadmaps and support the implementation of country's driven climate strategies.
- MDB collaboration in the delivery of a coherent package of interventions will help generate demonstration effects that go beyond the direct impacts of each MDB's individual investment facility.

#### 4.1 Need for MDB support

36. **Industry is a strategic sector for MDBs.** The proposal focuses on middle-income countries, using large-scale concessional finance to change perceptions of risk among investors around low-carbon technologies to foster environmental and social co-benefits of sustainable development. In these countries, the industrial sector is a major and growing share of overall GHG emissions. In addition, middle-income countries are more oriented toward private sector incentives, risk reduction and competitiveness and have a higher potential for transformational change to occur more quickly.

37. **Frontier/higher risk technologies (tipping points) or business models with transformational potential.** Industrial and corporate energy efficiency and process change is required to achieve carbon neutral economies; however, there has been limited process at scale to decarbonize these sectors. Further, industrial assets are generally long lived, so the cost of inaction is compounded by the lock in effect of failing to invest in low-carbon and climate-resilient assets in the next 5-10 years. The concept is flexible enough to promote both incremental technology improvements with potential for wide uptake, as well as those that drive deep decarbonization in key industrial processes and energy consumption, which is a key element of shifting the industry sector onto a more ambitious mitigation pathway. Technological and financial barriers prevent most industry actors in CIF countries from investing in low-carbon, climate-resilient technologies.

38. **CIF's model of providing flexible, scaled-up, multi-MDB support via a programmatic approach is necessary to catalyze transformational change in industry.** A concerted effort by multiple-MDBs working through the CIF on industrial sectors would establish clear pathways and generate important demonstration effects that go beyond the direct impacts of each MDB's individual investment facilities (e.g. by implementing adequate MRV schemes). The CIF model can offer a range of concessional instruments tailored to country- and/or sector-specific circumstances, including concessional debt,

guarantee products, risk sharing facilities or other financial instruments. The proposal's policy dialogue, including low-carbon and climate-resilient pathways would be developed to integrate the various aspects in a narrative that would receive the industrial stakeholders buy-in, as well as those expected to be directly impacted by proposed pathways.

39. **Ability to set and contribute to robust standards, and global application.** Through this window, CIF in co-operation with the MDBs can establish a community of practice sponsoring / promoting the development of more harmonized international standards of relevance for industry decarbonization.
40. **Pipeline can be delivered in the next few years.** Based on existing industry facilities that MDBs are implementing, some of which are CIF funded, a pipeline of catalytic investments can be delivered in many countries, if donor funding made on suitable terms is available to address the financial and non-financial barriers to investment that exist. From a policy perspective, many countries consider in their 'nationally-driven climate-related plans' a need for support to shift their industry sector onto a low-carbon, climate-resilient pathway.
41. **Current gap in climate finance architecture/limited redundancy.** No other major climate fund has a coherent strategy for addressing GHG emissions in the industry sector and considering the technical, corporate, sectoral, and national challenges in an integrated manner. For example, the Global Environment Facility "Impact Programs" in its seventh replenishment focus on Food Systems, Land Use and Restoration, Sustainable Cities and Sustainable Forest Management. The Green Climate Fund highlights industrial investment opportunities within its "buildings, cities, industries and appliances" impact area, although to date, industrial and corporate sector investments represent a relatively small proportion of its total portfolio of projects to date.

#### **4.2 Need for concessional finance through the Climate Investment Funds**

42. CIF's *Accelerating Low-Carbon, Climate-Resilient Transition in Industry Program* proposes to strategically deploy CIF's concessional resources to build technical and financial capacity, achieve attractive risk-adjusted returns, strengthen regulatory frameworks, and accelerate the implementation of best industry practices and technologies. CIF's concessional resources are also expected to play an important catalytic role in the development and uptake of new bespoke financial instruments such as result-based financing or impact result financing, that would help to prepare industrial corporates for climate related policies and regulations and to access capital for low carbon investments (see section 4.3).
43. **Grants for capacity building and technical assistance will be necessary to provide upfront support to establish sector roadmaps and aligned corporate roadmaps and business models to enable transformation.** The CIF programming model is ideally placed to contribute to the development of national sectoral low-carbon roadmaps, as there is a strong need for private-public cooperation. CIF has the capacity, experience and mandate to fill this gap.
44. **Concessional finance is required to address financial barriers that prevent most industrial corporate actors in CIF countries from investing in low-carbon, climate-resilient technologies.** Advanced technologies with high GHG impact are not usually available in developing / emerging countries due to underdeveloped supply chains which create high transaction costs that discourage their adoption. Local commercial banks generally do not have much experience with appraising low-carbon projects, and the actual and perceived risks of such projects lead to an artificially higher cost of capital that further impacts their bankability. Climate governance standards and other enabling factors are not yet mature enough to become the drivers for investments in climate projects.

45. **CIF concessional finance for a low-carbon corporate industrial window could mobilize a significant volume of funding from private sector corporates for low-carbon technologies and, over time, enable entry of local commercial banks.** In many countries, the private sector accounts for a significant share of industry sector activity. It is therefore expected that a low-carbon industry window could mobilize a significant volume of funding from private sector corporates for low-carbon technologies. Over time, local commercial banks are expected to play a greater role in financing low-carbon, climate-resilient industry projects as they become more familiar with the risk profiles of such investments. Even in the case of state-owned enterprises, supporting arm's length, commercially-operated public industry entities support moving the investment burden for a more ambitious low-carbon and resilient pathway off national public budgets. CIF can also build capacity and offer an opportunity for learning-by-doing in preparation for post-2020 climate and environmental markets.

### 4.3 Innovating how concessional finance is delivered on the ground

46. **CIF's business model holds a proven comparative advantage in enabling innovation.** Over the past ten years CIF has helped MDBs to develop and test new products and learn lessons that were later replicated with their own resources and/or with resources from other partners.<sup>10</sup> CIF has helped MDBs "learn by doing" in relation to blended finance structures,<sup>11</sup> and mitigate risks to the deployment of unproven clean technologies in politically unstable markets. CIF can continue pushing the boundaries in climate finance and tackle areas previously underserved by traditional financial instruments. To this end, it would need to ensure high risk appetite and tolerance.
47. Under the *Accelerating Low-Carbon, Climate-Resilient Transition in Industry* Program CIF will seek to enhance MDBs' ability to innovate how concessional finance is delivered on the ground to drive investments into low-carbon and climate-resilient solutions for high-emitting corporates and industries. It would seek to support them in the design and implementation of innovative bespoke financing instruments and strategies that cater context-specific needs and can accelerate a socially-inclusive transition. Table 1 provides some examples of blended finance structures that could be explored in partnership with MDBs under the Program.<sup>12</sup>
48. Further innovative instruments and approaches could be explored together with MDBs to tackle barriers to private investments in low-carbon and climate-resilient industries that have not yet been addressed and/or that could be addressed more effectively and efficiently. For instance, result-based lending approaches linking financing and concessionality to project/corporates' performance against specific targets e.g. GHG emissions reductions or energy savings.

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<sup>10</sup> ITAD et al., (2019), [Final Evaluation Report - Evaluation of Transformational Change in CIF](#).

<sup>11</sup> ITAD et al., (2019), [Final Evaluation Report - Evaluation of Transformational Change in CIF](#).

<sup>12</sup> These and other innovative instruments were discussed with partner MDBs during a dedicated prototyping workshop that the CIF Administrative Unit organized with Climate Policy Initiative in September 2019.

**Table 1. Examples of innovative blended finance instruments and facilities for the Accelerating Low-Carbon, Climate-Resilient Transition in Industry Program<sup>13</sup>**

Instrument/Facility	Description	Innovative Features
<p><b>Industry Partnership Facility</b>  <b>A multi-pronged approach to overcome investment and capacity barriers to sustainable investments in industry</b></p>	<p>A facility offering an integrated set of high-risk instruments to cover a variety of risks and barriers. The facility could offer e.g.</p> <ul style="list-style-type: none"> <li>a) Concessional finance with conditional lending and pay-for-performance, to support leapfrogging to best-in-market technologies that may have higher costs and organizational behavior change</li> <li>b) Risk mitigation or risk transfer instruments to deal with energy performance variability or support securitization to allow refinancing and free up balance sheet capacity</li> <li>c) Technical support to promote sector partnerships, corporate engagement, strategy and enhanced governance.</li> </ul>	<ul style="list-style-type: none"> <li>▪ A programmatic strategy to address numerous barriers and help companies leapfrog to advanced technologies and approaches</li> <li>▪ Risk transfer instruments can insure the energy savings in case lower than expected due to reduced production or reduced performance of a technology</li> </ul>
<p><b>Energy Savings Insurance</b>  <b>To mitigate the risk and costs linked to longer pay back periods that are typical in energy efficiency interventions</b></p>	<p>Innovative risk-sharing mechanism structure that incentivizes and enables small- and medium-sized enterprises to invest in energy efficiency by paying out if the projected value of energy savings is not met.</p>	<ul style="list-style-type: none"> <li>▪ Provides an insurance product that covers projected energy savings for specifically defined and verifiable energy efficiency measures as agreed upon in a standard contract between small and medium sized enterprises and technology services providers</li> </ul>
<p><b>Cooling as a Service (Caas)</b>  <b>To accelerate uptake of best in class efficient cooling technology to decrease energy consumption and potent HFC emissions</b></p>	<p>Pay-per-service sale and leaseback model with integrated financial tools whereby customers pay per-unit of service used, while technology providers own, operate and maintain the equipment</p>	<ul style="list-style-type: none"> <li>▪ Pay-per-service model applied to cooling incentivizing the design and use/re-use of efficient cooling technologies</li> <li>▪ Includes a ‘sale-and-leaseback’ to engage financial institutions</li> </ul>

#### 4.4 Potential for wider co-benefits

49. The implementation of mitigation measures in industry can create wider socio-economic co-benefits that can be considered alongside with direct benefits when considering different options for investment.

50. Corporates and industries, particularly in countries with a large industrial base, have the potential to contribute to wider socio-economic national goals. Because of its capital- and technologically-intensive

<sup>13</sup> For more information, please see the Global Innovation Lab for Climate Finance [web site](#). These instruments are examples of those that emerged from the work that the CIF Administrative Unit has undertaken with Climate Policy Initiative in Q3 2019.



nature, the C&I sector provides skilled labor opportunities for local communities, both women and men, and supports employment in smaller suppliers and service providers throughout their supply chains. A concerted effort by the CIFs to shift green investment into the C&I sector through the introduction of new technologies and processes can therefore unlock additional high value employment opportunities (SDG 8 Decent work and economic growth). This is particularly the case for new technologies for which local supply chains have not yet been established, but which have significant replication potential in other similar corporates in the same country or region.

51. With energy typically a significant input cost in the industrial sector, supporting energy efficiency and other low carbon measures offer significant potential to reduce the cost of goods sold, improve company competitiveness, and grow market share. Despite this, the barriers set out in Section 2.2 inhibit corporates in the industrial sector from prioritizing such investments. Accelerating the low carbon transition in industry therefore has the potential to enhance the role of industry in achieving SDG #9 (Industry, innovation and infrastructure). Further, in trade exposed industries, investing in low carbon processes and technologies can improve export volumes and thereby generate broader positive macroeconomic impacts within countries.
52. Many mitigation measures that reduce impacts on local ecosystems in excess of regulatory requirements may also have an associated positive spillover on health benefits of local populations (#SDG 15 – Life on Land).
53. Mitigation measures through energy efficiency lead to a reduction in energy demand. This can, in turn, lead to the reduction of imports of energy, reduce exposure to external price shocks and increase energy security and balance of payments in countries that are fossil fuel energy importers.

### **Theory of change and expected outcomes**

54. This proposal for a CIF's Industry targeted Program is ambitious as it tackles a sector whose emissions are among the hardest to abate from both a technical and financial perspective. However, whilst complex, the CIF together with the MDBs can turn this into an advantage.
55. This proposal is innovative in the sense that it connects the dots between already existing approaches and brings in a new focus on corporate's governance and seeks to combine the influence of climate finance. Using CIF as incentive for corporate's senior management to regard climate change as an ongoing concern and from a risk management perspective, the Program is expected to contribute to much swifter action on energy efficiency and, ultimately, more substantive climate-relevant investments in the longer-term.
56. In the process both CIF and MDBs would develop and set tools and standards for global use such as on green financing and best practices as to transition from climate funding to increasing scale and private sector involvement. CIF would help to incentivize and de-risk investments by industry corporates and create a platform of support for policy reforms by recipient countries. Informing and providing greater clarity on the pathways will be an essential element of the approach.
57. This proposal will not lay out an expected investment level for the whole investment strategy, as this is subject to a further conversation with donors on funds availability, recipient countries on content, and MDB on pipelines. To give a notion of scale, a CIF investment in one recipient country of USD 200 million (concessional finance 80 percent and grants 20 percent), could potentially leverage investments of up to USD 1 billion. It may sponsor 10 industrial plants, and their corporates. Such ambition can help to solidify the transformational policy change.
58. The potential size of CIF's concessional resources required is not known, nor are the distributional effects. However, practice indicates that GHG emission reductions due to industrial energy efficiency

measures can be very substantial in terms of volume. The anticipated GHG emissions reductions that the Program can achieve will also depend significantly on the concessionality of the funds that are made available, as this is expected to be a key factor in the decisions of project sponsors to prioritize low carbon investments despite higher capital costs and associated financing charges, and technological or other risks.

59. The Theory of Change of the *Accelerating Low-Carbon and Climate-Resilient Transition in Industry* Program presented in Figure 6 illustrates how the Program will achieve its intended objective and contribute towards the overarching CIF's impact of '*improved low-carbon and climate-resilient development*'. The results pathways developed for this Program's Theory of Change are based on the principle that: "*If we develop sectoral low-carbon and climate-resilient pathways in a participatory and programmatic manner, and provide the necessary climate focused financial and non-financial instruments, then we will be able to increase corporate's contribution towards national climate change targets, integrate climate into corporate decisions, improve energy and resource efficiency, strengthen the enabling environment, increase access to markets for early ventures and increase the uptake of climate smart technologies, which will contribute to CIF's transformative impact*".

60. The Program-specific expected outcomes are:

#### Energy & Technologies

- **Improved energy and resource efficiency:** The Program will improve manufacturing efficiency, maximize the use of locally available resources, and optimize materials use.
- **Increased uptake of low-carbon and climate-resilient technologies:** The program will foster the deployment of innovative and proven climate technologies across the supply chains of targeted industries. Such technologies will yield environmental and social co-benefits of sustainable development.

#### Institutional

- **Increased contribution of the corporate sector in long-term national climate change targets & ambitions:** The program will enhance the deployment of innovative and/or proven climate technologies across the supply chains of targeted industries, which will provide co-benefits such as reduced GHG emissions. This might be reflected in the contribution of the corporate sector towards national climate change targets.
- **Strengthened enabling environment for industry decarbonization, including:**
  - **Conducive demand-driven policy and regulatory frameworks to promote low-carbon, climate-resilient transition in industry:** The Program promotes **demand-driven** climate governance and strategies through policy dialogue, capacity building and technical assistance.
  - **Strengthened knowledge and capacity:** The implementation of climate-smart industry technologies requires expertise and experience including skills in energy and resources efficiency assessment, consultation with stakeholders, mobilizing resources and promoting innovation. This institutional and capacity development is relevant to achieve long-term transformational impacts and ensure the sustainability of the intervention.

#### Management frameworks

- **Greater integration of climate considerations into corporates' management frameworks, strategies & operations**

## Socio-economic

- **Increased access to capital market for green / climate-resilient projects:** Public and private investments are expected to be mobilized to deliver climate resilience and mitigation benefits, setting high emitting industry into a decarbonization pathway. The Program provides a business case, incentives and the tools for investing in a multi-level approach that promotes climate-action at the industry level.
  - **Fostered innovation:** Enhanced support for early-stage ventures, technologies and business models with high impact potential.
61. The Program is expected to achieve the above-mentioned outcomes, through the implementation of the activities under the three components: (i) Component 1: Low Carbon and climate-resilient pathways and policy dialogue for greater private sector engagement in climate action; (ii) Component 2: Climate strategy and governance for industrial corporates; and (iii) Component 3: climate-impact focused financial instruments.
  62. The Theory of Change was developed based on the assumptions that there is enough demand and enough interest in the deployment of innovative and/or proven climate technologies across the supply chains of targeted industries; the services and technologies provided through the Program are of good quality, and represent a good return on the investment; confidence in green financial markets (green bonds) and climate markets is stable or increases; the regulatory environment is favorable to the Program and does not worsen; the adequate enabling conditions remain over the time of Program implementation or improve.
  63. The risks that may have to be taken into consideration include: the choice of Program partners and their ability to deliver; technologies which may not deliver the expected results; lack of interest or engagement from the Program stakeholders; public opinion turning against the solutions promoted by the Program; and any social or environmental damage that may arise from the Program's implementation.

**Figure 6: Theory of change of the Accelerating Low-Carbon Transition in Industry Program**

<p><b>Risks to consider:</b></p> <ul style="list-style-type: none"> <li>• Choice of partners and their ability to deliver</li> <li>• Selection of technologies not leading to expected results</li> <li>• Lack of interest/engagement from key stakeholders</li> <li>• Public opinion turns against the solutions promoted by the Program</li> <li>• Unintended negative social or environmental consequences</li> </ul>	<p><b>Assumptions:</b></p> <ul style="list-style-type: none"> <li>• There is enough demand and interest among stakeholders</li> <li>• Services and technology supported are of good quality and provides a good return on investment</li> <li>• Enhanced awareness of and consideration of climate change</li> <li>• The policy and regulatory environment does not worsen</li> <li>• The enabling conditions remain or improve</li> </ul>
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