SDC Network Climate, DRR & Environment

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CDE Spotlight - SDC Network Climate, DRR & Environment

Low-carbon and resilient buildings: Capitalising on nearly two decades of experience

Dear members of the Climate, DRR and Environment network,

As buildings and construction account for a third of global CO_2 emissions and building floor space is expected to double by 2050 (UNEP), decarbonising the sector is crucial to slow down global warming. At the same time, climate change is increasing the exposure of buildings to natural hazards including extreme heat, making resilience ever more important.

For the SDC, addressing these challenges has been a long-standing priority. Since 2008, the SDC has developed a broad portfolio of initiatives for a low-carbon and resilient built environment, working with partners across Asia, Africa and Latin America to advance energy efficiency, emission reduction and (climate) resilience in the building sector. To take stock of its experience and to capture key insights and lessons learned over nearly two decades, the SDC has undertaken a capitalisation of its portfolio in the building sector. The results of this exercise can be explored here.

The topic will also be presented at the Sustainable Buildings & Construction Summit 2026, held from 20–22 April 2026 at the EPFL (École polytechnique fédé rale de Lausanne) campus in Lausanne, where the SDC is a co-sponsor. Policymakers, industry leaders, practitioners, researchers and development partners will come together to exchange insights and data, build partnerships and identify pathways to future-proof the built environment.

This newsletter shares selected insights from the SDC's capitalisation process and highlights how the engagement has contributed to tangible progress in many partner countries, reducing CO_2 emissions while improving living conditions – from the development of an energy efficiency building code in India to healthier learning environments for children through the refurbishment of public buildings in Mongolia.

Enjoy the reading!

Mirjam Macchi
Head of Section Climate, DRR and Environment

The built environment engagement at a glance

Across developing and emerging economies, rapid urbanisation, population growth and rising incomes

are driving an unprecedented construction boom. Without a shift towards low-carbon design and construction, this expansion risks locking in high energy demand and emissions for decades. Meanwhile, natural hazards such as heatwaves, floods and storms – many intensified by climate change – are raising the physical stresses that buildings must withstand. Poorly designed buildings and unreliable energy supply can leave homes dangerously overheated, exposing vulnerable populations to serious health and productivity risks.

Energy efficient hospital in Pune, India.

SDC engagement in promoting low-carbon and resilient buildings is guided by its three core principles of international cooperation. It responds to local needs by pr otecting people and livelihoods from natural hazard risks, while drawing on Swiss expertise in sustainable construction and advancing Swiss interests by contributing to global climate goals.

SELECTED HIGHLIGHTS OF SDC ENGAGEMENT

Eco-Niwas Samhita, India's first energy efficiency code for new residential buildings, is expected to mitigate at least 100 million tonnes of CO_2 over the next decade. The SDC supported its development and nationwide adoption. Further information

The market uptake of low-carbon cement in India, Cuba and other countries, has mobilised CHF 180 million in private sector investment, and has been used in infrastructure such as the Noida International Airport. Further information

The refurbishment of selected kindergartens in Mongolia has provided warmer indoor temperatures during winter and has reduced sickness-related absence days among children by 65%. Further information

Structure of the SDC approach

SDC engagement in the built environment spans four key thematic areas:

- **New buildings:** Applying low-carbon and resilience principles in new buildings through adapted building codes and integrated design processes that incorporate sustainability considerations from the outset.
- **Existing buildings:** Increasing energy efficiency and reducing CO_2 emissions in the existing building stock through refurbishment and improved building operation.
- **Building materials:** Reducing embodied carbon inbuilding materials and construction processes through more efficient material use and the market uptake of low-carbon alternatives.
- **Resilience and reconstruction:** Reducing heat exposure through passive design and nature-based solutions, while strengthening resilience to other natural hazards through vernacular construction practices in post-disaster reconstruction.

"SDC's engagement in the building sector in key geographies has supported global emissions mitigation while also enabling more environmentally sensitive contributions to other development goals such as disaster resilience and improved livelihoods."

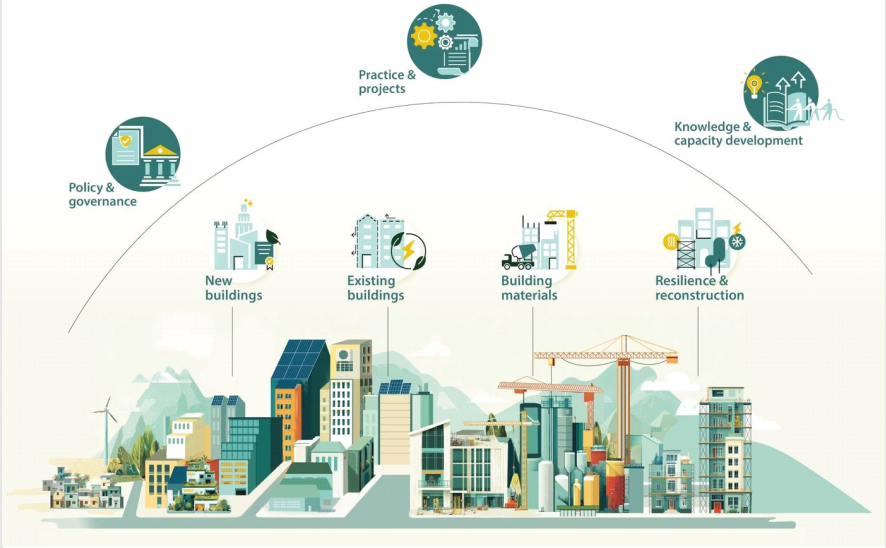
André Ullal
Senior advisor, building and settlements, Skat Consulting Ltd.

Across these thematic areas, the SDC has acted along its three lines of action:

- **Policy and governance:** Supporting the development of global

frameworks, national policies and building regulations that enable and promote low-carbon and resilient buildings.

- **Practice and projects:** Testing, demonstrating and scaling technologies, business models and approaches that reduce emissions and strengthen resilience in the building sector.
- **Knowledge and capacity development:** Strengthening the knowledge, skills and awareness of public authorities, professionals, practitioners and students in the building sector.



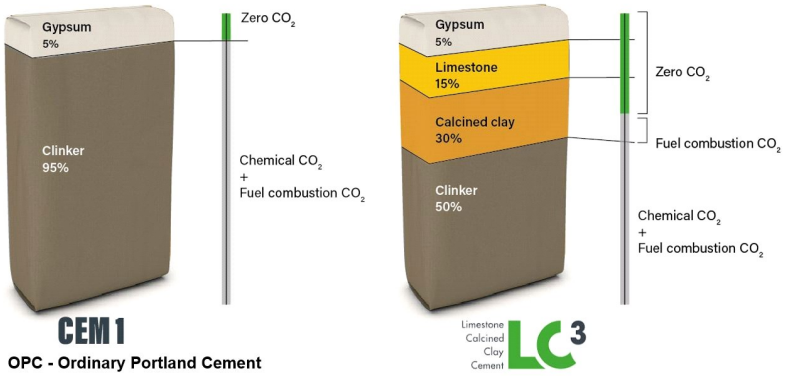
Lines of action and themes in SDC engagement in the low-carbon and resilient built environment.

Impact in practice: selected examples

A low-carbon alternative for the cement industry

Cement production accounts for around 7% of global energy-related CO_2 emissions. Much of this comes from clinker – a key ingredient of cement. Producing clinker releases CO_2 both from the fuel needed to heat kilns to high temperatures and from the chemical decomposition of limestone. Reducing the amount of clinker in cement therefore offers one of the most effective ways to cut emissions in the construction sector.

Limestone calcined clay cement (LC3) provides such a solution. By replacing a large share of clinker with calcined clay and limestone, LC3 can reduce cement-related CO_2 emissions by around 40% compared to conventional cement using widely available raw materials while maintaining comparable performance.



Climate impact of LC3 compared to conventional cement.

From 2013 to 2022, the SDC supported the development and global uptake of LC3. The project backed laboratory research, pilot production and demonstration structures in countries such as India and Cuba, while technical resource centres assisted cement producers in adopting the technology. A key milestone was the integration of LC3 into cement standards in India, Europe and several countries in Latin America and Africa. This enabled large-scale market uptake and contributed to mobilising around CHF 180 million in private-sector investment by the end of the project.

Tackling rising urban heat with sustainable cooling

Extreme heat is increasingly recognised as a major environmental hazard, affecting health, productivity and living conditions in rapidly growing cities. In many regions, rising temperatures are also driving higher demand for air conditioning, which can increase CO_2 emissions if cooling relies on conventional technologies.

Roof painted white to increase solar reflectivity and reduce indoor heat in New Delhi, India.

The BeCool project, supported by the SDC from 2023 to 2028 and implemented by the United Nations Environment Programme (UNEP), promotes climate-resilient and low-carbon cooling solutions for the built environment in India. The initiative focuses on passive and nature-based cooling approaches, such as shading, cool roofs and urban greenery. BeCool supports national and local governments in integrating sustainable cooling measures into policies, building codes and urban planning. Demonstration projects and targeted capacity building help translate these policies into practice and mobilise investment, particularly for affordable worker housing. The initiative builds on UNEP's India Cooling Programme and is already attracting interest from other countries, including Somalia, to replicate the approach.

"SDC's buildings program in India uniquely demonstrates that long-term and flexible engagement - centered on strong partnerships, adaptive strategies, and knowledge-sharing - can drive scalable impact."

Anand Shukla
Senior Advisor, SDC India

Key lessons for future projects

A capitalisation exercise, commissioned by SDC's Climate, DRR and Environment (CDE) section and carried out by INFRAS between September 2025 and March 2026, captured key insights from the SDC's long-standing engagement in the building sector. To inform future interventions, project documentation was reviewed, and interviews were conducted with project implementers. The most important lessons are summarised below, while a more detailed overview can be found in the full capitalisation on the SDC website.

- **Transform building markets through regulation.** As the building sector is highly regulated, building codes and standards are among the most effective tools for driving change. Incorporating low-carbon principles into these frameworks has the potential to transform entire markets. However, regulatory reform requires sustained political support at the highest levels

and an in-depth knowledge of country-specific legislative processes.

- **Enable market uptake through robust business models.** The building sector is a mass market, meaning that the commercial viability of new technologies and approaches is essential. In addition, the fragmented stakeholder landscape requires robust business models that align the incentives of developers, investors and users. When sustainable solutions are commercially viable and incentives are aligned, they can scale.
- **Adapt knowledge to the local context.** Climatic conditions, building materials, construction techniques and enforcement capacities often differ significantly between countries. Building standards, for example, can therefore rarely be transferred from one country to another. Effective interventions adapt sustainable building knowledge to local conditions and actively involve local stakeholders.
- **Recognise that transformation in the building sector takes time.** The building sector is inherently conservative in both industrialised economies and development cooperation contexts. For some projects, the SDC has been involved for more than a decade.

Thermally comfortable and energy-efficient affordable housing in Rajkot, India.

Looking ahead

While the CDE section is shifting its building-sector activities towards a focus on cooling, the broader topic of low-carbon and resilient buildings will remain relevant across the SDC's international cooperation portfolio. SDC country offices may continue to support sustainable buildings and infrastructure in contexts where there is a clear local need and where Swiss expertise can add value. Additionally, the renewable energy, energy and resource efficiency promotion in international cooperation (REPIC) programme – jointly run and financed by the SDC and other Swiss federal agencies – will continue to support projects, including in the building sector.

It is hoped that future initiatives in the built environment by the SDC and partners across the CDE network will build on the insights generated through the capitalisation, translating them into tangible impact.

Announcements

Capitalisation on low carbon and resilient built environment initiatives available on the SDC website. Explore it now!

Sustainable Buildings & Construction Summit 2026. Taking place in Lausanne from 20–22 April, the summit – convened by EPFL in collaboration with UNEP and sponsored by the SDC – brings together a diverse coalition of stakeholders to reimagine the built environment. More information here.

CONTACT

Visit our webpage: SDC's Network on Climate, DRR & Environment

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All photos were provided by SDC. Infographics were produced by Zoï Environment Network. Header image: A renovated school in Mongolia.