

**Position paper
April 2022**



Hackbridge Primary School. Image credit: Architype / Jack Hobhouse

ABOUT SUSTAINABLE DEVELOPMENT FOUNDATION

The Sustainable Development Foundation (SDF) is a non-profit organisation whose vision is to create a built environment that better meets the needs of sustainable communities by driving the property and construction industry towards exemplary sustainability practices.

We aim to:

- Gather together pioneers of advanced sustainable buildings
- Deliver pioneering change on built environment projects
- Represent the pioneers within the sustainable buildings movement



OUR MISSION

To help tackle the climate and ecological emergency by driving the adoption of exemplary sustainability practices in buildings NOW

TAKE ACTION

Support our mission - find out how:
www.sdfoundation.org.uk/contact-us

CONTEXT

The construction, operation and maintenance of buildings is one of the most important challenges in tackling the climate and ecological emergencies.

Improving buildings is central to the global sustainability challenge, because they consume 40% of primary energy, use 40% of all raw materials and emit 40% of greenhouse gases.

New and existing homes and commercial buildings all face different challenges to reduce impact and help the UK reach its climate change goals.

In the UK, most of today's buildings will still be in use by 2050; it's estimated that 80% of homes we'll be occupying in 2050 have already been built. The focus for the built environment cannot simply be on improving regulations to reduce the impact of new buildings, it must also be on upgrading those we already have.

Our housing stock is especially problematic as it wasn't until 1984's Building Act that 'conservation of fuel' was even considered. Even new homes being built today are not being constructed to net zero standards, meaning they too will need to be retrofitted.

In England and Wales more than a million people are on social-housing waiting lists, but there is an ongoing shortfall in development. The impacts of this shortfall mean more people living in overcrowded, low-quality housing, which has a knock-on effect on health outcomes.



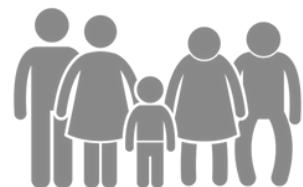
40%

**CONTRIBUTION OF
BUILDINGS TO
GLOBAL GHG
EMISSIONS**



80%

**OF UK HOMES BY
2050 HAVE ALREADY
BEEN BUILT**



1 MILLION

**PEOPLE IN THE UK ON
SOCIAL HOUSING
WAITING LISTS**

THERE ARE MANY CHALLENGES FACING THE BUILT ENVIRONMENT INDUSTRY TO MEET NET ZERO AND SUSTAINABILITY TARGETS:

- How many new buildings will be built
- How well homes and commercial spaces will perform compared to regulations and design intent
- How well adapted they are to future climate change
- The requirement for nearly all existing buildings to be retrofitted to improve energy performance
- Carbon and other environmental impacts of the materials used in construction and retrofit
- The impact of buildings on the health and wellbeing of occupants
- The challenges of social equity and sustainable urban development
- The impact of buildings on nature and biodiversity

TO MEET NET ZERO GOALS, THE UK MUST INCREASE THE RATE OF RETROFITTING AND RADICALLY IMPROVE NEW BUILD STANDARDS



Marmalade Lane. Image credit: Mole Architects / David Butler

THERE IS AN URGENT NEED TO TRANSFORM THE WAY WE PLAN, DESIGN, BUILD AND RETROFIT BUILDINGS, TO MAKE THEM **FIT FOR THE FUTURE, NOW**

At the Sustainable Development Foundation (SDF), we help tackle the climate and ecological emergencies by driving the adoption of exemplary sustainability practices in buildings NOW.

We take a holistic approach to all aspects of buildings' sustainability. Our exemplar projects demonstrate how high performance sustainable buildings:

- Enable sustainable communities
- Promote occupant health and wellbeing
- Deliver whole-life net zero

We want all buildings to adopt exemplary sustainability practices across whole-life net zero, health & wellbeing and sustainable communities. Our work demonstrates that this is possible NOW: achieving sustainable, net zero outcomes for housing and other buildings.

We have defined ten indicators that distinguish high performance, sustainable buildings. The indicators are grouped into three cross-cutting themes, with an overarching goal of achieving positive outcomes for people, planet and place.



PEOPLE: HEALTH & WELLBEING
PLANET: WHOLE-LIFE NET ZERO
PLACE: SUSTAINABLE COMMUNITIES



THE SDF'S TEN SUSTAINABILITY INDICATORS

HEALTH & WELLBEING

- **Natural materials** have lower environmental impacts in their production and create healthier indoor environments by reducing the impact of VOCs on occupants
- **Summer & winter comfort** can be provided through site-specific design strategies including: appropriate construction & insulation, window and shading design, and effective air-tightness and ventilation strategies
- **Healthy indoor environments** derive from healthy materials, careful design to mitigate risks of damp and mould growth, and adequate passive or mechanical ventilation to ensure air quality

WHOLE-LIFE NET-ZERO

- **Operational energy** for heating can be reduced to practically zero by high-performance building fabric and air-tightness. Energy for other end-uses can be reduced by energy-efficient services and systems, and by utilising renewable energy
- **Performance in use** monitoring is crucial to understand whether a building is performing as intended, to correct if it is not, and to learn for future projects

Enterprise Centre.
Image credit: Architype / Denis Gilbert

- **Embodied carbon** is the emissions associated with construction materials and processes, maintenance and end-of-life. It can be minimised by material choices, design optimisation and understanding likely future adaptation of the building once complete
- **Resource efficiency** considers the careful specification of materials and construction typology, to minimise waste and prolong the use and re-use of materials throughout the building's life-cycle and beyond

SUSTAINABLE COMMUNITIES

- **Social value** means making sure the needs of individuals and communities are considered and met. Encouraging community participation in developments ensures buildings deliver socially equitable, safe, positive places that ensure the wellbeing of occupants
- **Ownership models** including custom-build, self-build, co-housing, mixed-tenure, and community-led development help create engagement and deliver sustainable homes and communities
- **Nature connectedness** helps tackle the impacts of the ecological emergency. By considering nature and biodiversity in developments, there are many opportunities to create positive outcomes for both people and planet



Harris Academy, Sutton.
Image credit: Architype / Jack Hobhouse



EXEMPLARS LIBRARY

The SDF website hosts a library of exemplar projects, demonstrating what can be delivered NOW

Each building or development has been chosen to demonstrate multiple sustainability indicators. Featured projects include both new build and retrofit, demonstrating what can be achieved NOW to deliver a sustainable built environment that performs in line with the targets and challenges we face. The library is dynamic and will be updated as new projects are commenced and completed - see our website for the latest collection of exemplars:

www.sdfoundation.org.uk

Collaborative | Holistic | Exemplary | Supportive | Transformative

SDF Alliance organisations demonstrate that the necessary solutions are buildable NOW, and perform in-use

Across our SDF Alliance organisations, we demonstrate how to deliver all ten sustainability indicators, with exemplar buildings covering multiple themes and indicators showing what can be built NOW, and evidencing proven performance in-use.

Each of the six SDF Alliance organisations tackles a specific ‘grand challenge’ across the three cross-cutting themes of health & wellbeing, whole-life net zero and sustainable communities:



The Alliance for Sustainable Building Products focuses on whole-life net zero, promoting the use of healthy and natural products in place of high-impact construction materials, to reduce the carbon footprint of construction.



The Building Performance Network aims to increase the adoption of measured, in-use performance for buildings. Understanding how buildings work when occupied tells us whether the impact of buildings is actually reduced and carbon emissions targets met.



Good Homes Alliance aims to promote and encourage the building of quality sustainable homes and communities, and to transform the whole of mainstream UK house building into a sustainable endeavour.



Passivhaus Trust focuses on energy efficiency and net zero to meet climate change targets. Buildings meeting the Passivhaus standard can achieve net zero operational energy consumption with the use of renewables, whilst delivering healthy indoor environments with high levels of occupant comfort.



SuperHomes

SuperHomes - delivered by the National Energy Foundation - supports homeowners and social landlords with retrofitting homes, with a target of supporting one million retrofits by 2030.



Retrofitting buildings is the biggest climate change challenge the UK faces, and the SDF's Sustainable Traditional Buildings Alliance focuses on the specialist knowledge required for traditional buildings

The United Nations has recognised the SDF as an International Centre of Excellence (ICE) for High Performance Buildings

The mission of these Centres of Excellence is the rapid transition to high performance buildings locally and around the world, in support of the United Nations Sustainable Development Goals and Paris Climate Accord. At the same time, they want to foster a thriving building industry that creates healthy, comfortable and sustainable buildings, everywhere for everyone.

Their objectives are to:

- Align building codes and their deployment with high performance targets; ensure new buildings are certified compliant
- Use tried and tested techniques to reduce the average energy requirement per square metre in both new and existing buildings
- Reduce CO2 emissions associated with meeting buildings' energy needs and increase the amount of carbon 'stored' in buildings
- Improve indoor air quality and reduce pollution-linked health issues
- Improve the global supply chain for the construction business; reduce embedded carbon in buildings and building products and reduce waste; recover materials at the end of a building's life

One of just 26 such centres in the world, SDF is fighting to turn the tide of the current climate and ecological emergency by transforming the way we plan, design, build and retrofit buildings, to make them fit for the future, NOW.

Collaboration, sharing knowledge and best practice, research and innovation will all have a crucial role to play in making all of our buildings, new and old, high performance. Today we have a large number of real-world examples that help to inspire the transformation needed to create a new era of exemplary sustainable buildings. The need to act has never been more urgent.

Part of our role is to work with our partners in the industry to map out how to achieve widespread implementation of leading-edge sustainability practices and back this up with real-world examples that demonstrate what is possible. The UN Centre of Excellence status will help us to achieve the transformation needed.

