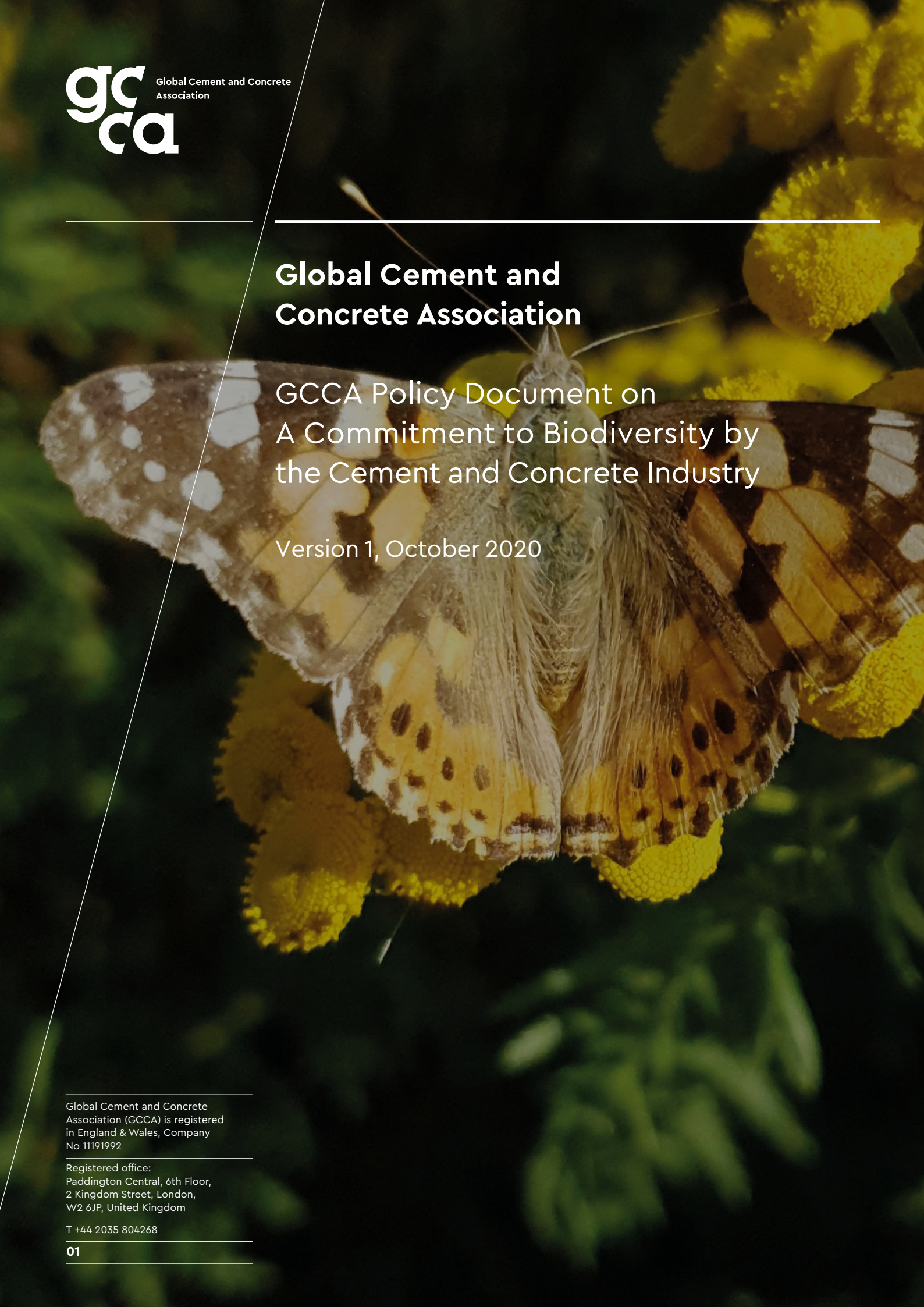


Global Cement and Concrete Association

Global Cement and Concrete Association

GCCA Policy Document on A Commitment to Biodiversity by the Cement and Concrete Industry

Version 1, October 2020

Global Cement and Concrete Association (GCCA) is registered in England & Wales, Company No 11191992

Registered office:
Paddington Central, 6th Floor,
2 Kingdom Street, London,
W2 6JP, United Kingdom

T +44 2035 804268

Global Cement and Concrete Association

GCCA members recognise the essential importance of Natural Capital (see box out) to a sustainable world. To this end we have incorporated good practices on land stewardship and biodiversity into our Sustainability Charter and the principles of the Sustainable Development Goals into our actions. We have also declared a climate ambition to deliver society with carbon neutral concrete by 2050.

GCCA members apply the mitigation hierarchy[I] and the management of biodiversity risks and opportunities towards the achievement of Net Positive Impact[II] in cement, concrete and aggregates operations. This means we can commit to ensuring ecosystem services (see box out) are maintained in our direct operations, supply chain and for people and ecosystems who depend on them.

We have four specific actions:

1. **Formulate and execute** effective and progressive **Quarry Rehabilitation Plans[III] (QRP) and Biodiversity Management Plans** (see GCCA Sustainability Guidelines for Quarry Rehabilitation and Biodiversity Management[1]). These deliver significant environmental and social benefits to the environment around our operations.
2. **Track, monitor, report**, and establish assurance of information through Key Performance Indicators that provide valuable, reliable, easy-to-understand and verifiable information. This allows comparison and measurement of progress (see GCCA Sustainability Guidelines for Quarry Rehabilitation and Biodiversity Management[1]).
3. **Highlight concrete's strong sustainability characteristics**, such as high versatility with infinite mixes and shapes, which enables utilisation in the most material efficient manner aligned with Nature Based Solution initiatives (see box out).
4. **Work in partnership** to scale up efforts, building close ties with civil society organisations including national, regional and local governments, NGOs, local communities, academia, peers of the cement, concrete and aggregate sector, as well as other industry sectors, to ensure measures are appropriate and deliver the best outcomes.

What is Natural Capital?
Natural Capital is a way of describing our relationship with nature, in order to measure and assess the role that it has and can be included in decision-making. Natural Capital underpins our societies, economies, institutions and regulates the environmental conditions that enable human life. It is not an interchangeable economic asset in the same way as it happens with financial capital.

The Natural Capital is constituted by the stock of renewable and non-renewable natural resources (e.g. plants, animals, air, water, soil, minerals) which, when combined, confer the character to the different ecosystems, generating a flow of benefits for people, companies and society commonly known as ecosystem services.[1]

I The mitigation hierarchy provides the cornerstone for shaping a structured biodiversity management approach, to avoid unacceptable impacts, minimise any impacts that may occur and finally mitigate for any residual impacts to the local biodiversity through rehabilitation, compensation projects or offsets.
II Net Positive Impact (NPI) on biodiversity is a target for project outcomes in which the impacts on biodiversity (i.e. the variety of ecosystems and living things) caused by the project are outweighed by the actions taken to avoid and reduce such impacts, rehabilitate affected species/landscapes and offset any residual impacts (IUCN, 2015).
III A practical site-specific document developed and used by the site management team for organising the rehabilitation works.

Global Cement and Concrete Association (GCCA) is registered in England & Wales, Company No 11191992

Registered office:
Paddington Central, 6th Floor,
2 Kingdom Street, London,
W2 6JP, United Kingdom

T +44 2035 804268

Global Cement and Concrete Association

What are ecosystem services?
An ecosystem is a dynamic complex of plants, animals, and microorganisms, and their non-living environment interacting as a functional unit. Some examples include deserts, coral reefs, wetlands, and rainforest, ecosystems are part of Natural Capital. Ecosystem services are the benefits people obtain from ecosystems[3].

These services are categorised in the following four categories:

- Provisioning: Goods produced or provided by nature, like food, freshwater, timber, fiber, biochemical, and pharmaceuticals, genetic resources etc.
- Regulating: Natural processes regulated and maintained by ecosystems, including air quality regulation, climate regulation, water purification and flow regulation, erosion regulation, crop pollination, protection against storms etc.
- Cultural: Non-material benefits from nature, including spiritual and religious values, recreational, aesthetic, ecotourism, educational etc.
- Supporting: Functions that maintain all other services, including nutrient cycling, primary production, soil formation, photosynthesis etc.

Concrete's essential role in the modern world

Population growth will increase pressure on land and Natural Capital, and lead to a growing global requirement for infrastructure that supports crucial amenities such as housing, clean water and sanitation. Concrete is vital to meeting these challenges and for enabling sustainable development, because it has the necessary engineering properties, it is fire, weather and flood resilient and it offers designers the opportunity to reduce energy demand by users of buildings and roads. Critically, it is also widely available and at the scale required by society to meet its needs. However, as the most used man-made material the use of concrete has enormous scope to shape the natural environment in both positive and negative ways. Our sector, in partnership with the design and construction industry is working to maximise the positive benefits and mitigate the negative impacts that the built environment has on the natural environment.

Concrete as a material can be reused and at end of life it can be fully recycled. However even with 100% recycling, virgin limestone is still required to make cement as are virgin aggregates for concrete production. We recognise that, if not properly managed, the extraction of these resources means the cement and concrete industry can have a negative impact on Natural Capital and biodiversity. To ensure we continue to meet society's needs and support biodiversity, the global cement and concrete industry is committed to contributing to net positive and ultimately recovery of biodiversity.

Global Cement and Concrete Association

Net Positive

In simple terms, net positive (or net gain) in biodiversity is an approach to development and land management that leaves biodiversity in a measurably better state than before, after first avoiding and then minimising harm.

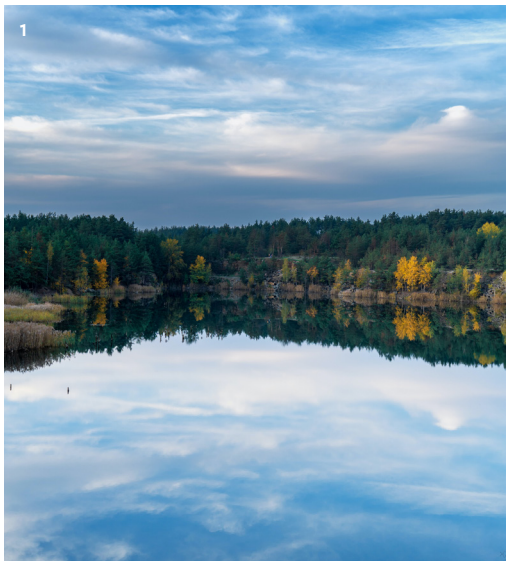
This approach is increasingly recognised as best practice, and in some countries is being introduced into land-use policy and law.

Tools are being developed to enable measurement of biodiversity value before and after development of all types, using metrics that put a value on habitats based on their area and quality (based on distinctiveness, condition, strategic significance and connectivity).

Cement-sector specific guidance is available from the World Business Council for Sustainable Development[5] (WBCSD-CSI), which provides a methodology to measure positive and negative impacts of site development, operation, and rehabilitation, and use of a 'balance sheet' to show net loss or net positive impact in terms of biodiversity value. Biodiversity value is measured reflecting the area and quality (importance and condition) of habitats, and species-related criteria, before (baseline) and after ('moment of analysis') rehabilitation. The approach can be applied to active and inactive sites.

What is biodiversity?
Biodiversity is the variability among living organisms from all sources including, inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems[2].

Biodiversity is critical to the health and stability of Natural Capital (see Breakout box 1) and flows of ecosystem services (see Breakout box 2) as it provides resilience to shocks like floods and droughts, and it supports fundamental processes such as the carbon and water cycles as well as soil formation. Species build and sustain the terrestrial, marine, and atmospheric elements of a living, breathing Earth to support human life.


1


2


3

1 Vladimir Yelizarov, Unsplash
2 Claude Loréa, GCCA
3 Jaromír Kavan, Unsplash

Global Cement and Concrete Association (GCCA) is registered in England & Wales, Company No 11191992

Registered office:
Paddington Central, 6th Floor,
2 Kingdom Street, London,
W2 6JP, United Kingdom

T +44 2035 804268

Global Cement and Concrete Association

How can Net Positive be Achieved by the Cement and Concrete Industry?

The cement and aggregates industries both depend on and have an impact upon biodiversity and ecosystems. The first step in cement and aggregates production – the extraction of raw materials from the earth's crust – inevitably has an impact on the surrounding natural and social environment. In particular, the removal of soil and minerals and the associated changes in topography of the area are likely to affect local ecosystems and watersheds. Minimising and mitigating environmental impact are therefore a fundamental requirement for sustainable operation in the cement and aggregate sector. Impacts can be successfully addressed and mitigated, and benefits achieved, through the development and implementation of an effective Quarry Rehabilitation Plan and a Biodiversity Management Plan, especially in areas of high biodiversity value.

Quarrying and associated land use, for the purposes of sourcing raw materials for cement manufacture and aggregates for concrete production, represent the most significant risks and opportunities for the cement and concrete industry to positively impact Natural Capital and biodiversity. Whilst less significant, it is noted that other opportunities to enhance biodiversity and deliver net positive outcomes are in the management of non-operational land, existing sites and operations, and development of new manufacturing facilities. In some situations, off-site biodiversity enhancement measures may be appropriate to offset impacts and enable an overall net positive outcome.

Rehabilitation of quarries, progressively during extraction and on completion of operations, offers significant opportunities for enhancement of biodiversity through creating more enhanced, thriving and connected habitats than were present before operations began. This can and does result in net positive impacts for biodiversity, as well as other components of Natural Capital (e.g., recreation, water storage, and landscape enhancement), and the industry has a long track-record of delivery on this. However, the net has not been measured routinely.

Net positive can be delivered, and measured, through ensuring that the biodiversity value of a site is assessed prior to development proceeding, and then the relative losses (through soil removal and mineral extraction) and gains (through on or off-site management, and progressive and final rehabilitation) can be calculated.

Application of the net positive/net gain approach and use of metrics to cement and wider minerals development, needs to reflect the characteristics of the sector:

- Extraction development is temporary
- Site development and operation may occur over a long period
- Habitat creation and rehabilitation can occur progressively on- and off-site over the lifetime of the development
- Large-scale net positive biodiversity is often achieved at final rehabilitation
- Where the net positive or biodiversity gain over the life of the site is very large, any loss in biodiversity as site working is started should not be penalised

The net positive approach encourages selection of land with lower biodiversity value for development. This should reinforce and not replace the 'mitigation hierarchy' which still applies – whereby development on valuable and protected habitats and sites is avoided where possible, and where necessary mitigation and compensation for harm is provided.

Global Cement and Concrete Association (GCCA) is registered in England & Wales, Company No 11191992

Registered office:
Paddington Central, 6th Floor,
2 Kingdom Street, London,
W2 6JP, United Kingdom

T +44 2035 804268

Global Cement and Concrete Association

Biodiversity and Concrete Use in the Built Environment

Any use of any construction material will have an impact on biodiversity. The most significant contribution to redress this is through rehabilitation at sites of raw material sourcing, which in the case of concrete are quarries. However, it is also important to develop the built environment in ways that will maximise retention of Natural Capital and biodiversity and minimises its loss wherever possible. This is a responsibility of our cement and concrete industry as well as urban planners, designers and other key custodians of the built environment.

In concrete, one of the ways this can be achieved is by research and innovation in new sustainable concrete uses and applications that respect the natural environment.

Green Infrastructure and Nature Based Solutions

Green Infrastructure[6] is a key method of reducing the impact on biodiversity and protecting Natural Capital during urban development. It is based on the principle of "protecting and enhancing nature and natural processes, and the many benefits human society gets from nature, (being) consciously integrated into spatial planning and territorial development"[7]. This approach strategically embeds nature within the built environment and enables land to perform multiple functions at the same time; providing ecological, social and economic benefits.

Examples of Nature Based solutions that contribute to Green Infrastructure include green walls and roofs, wildlife overpasses, meadows and hedgerows, as well as aquatic ecosystems (blue infrastructure) and other physical features in terrestrial (including coastal) and marine areas. These ultimately provide environmental benefits such as improved air quality and climate change mitigation and adaptation while preserving natural ecosystems.

What are Nature Based Solutions?

Nature Based Solutions are actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits[4]. The IUCN Global Standard for Nature Based Solutions provides clear parameters defining Nature Based Solutions and a common framework from which to work.

Concrete and biodiversity

Concrete has an important role to play, as many parts of Green Infrastructure will also require a hard infrastructure element. The concrete industry is therefore committed to developing sustainable products that enable and contribute to Nature Based Solutions to mitigate the loss of biodiversity caused by the built environment.

The inherent properties of concrete mean that it does not release toxic substances into the environment, nor does it require treatments and coatings that release substances. This makes it suitable for integration directly into green space including parks, playgrounds and gardens, with limited impact on biodiversity.

Concrete can also be used to limit biodiversity loss, specifically in soil and water management. Porous concrete or permeable concrete block paving can be used in surface applications such as car parks, pavements and plazas, which allows rainwater to filter directly into the ground and recharge ground water supplies in a way that mimics natural processes. By facilitating the natural water cycle and the flow of water and oxygen to the soil, life conditions can be maintained, and biodiversity can be preserved.

Certain applications of concrete can even help preserve biodiversity in the marine environment. 3D printed coral reefs and artificial coastal rock pools have been shown to restore biodiversity in the sea[8]. On land, the construction of deep underground infrastructure (which is only possible using concrete) in place of surface infrastructure such as roads, bridges and railways can contribute to mitigating biodiversity loss. Doing so reduces the negative impacts such as acoustic and atmospheric pollution on the surface, whilst enabling habitats to remain untouched and ecosystems to flourish.

These examples and future innovations will help achieve net positive within the built environment.

Working in Partnership

GCCA strongly believes that to help achieve net positive our sector needs relationships and partnerships with leading NGOs and Civil Society Organisations to co-develop and implement strategies and policies to accomplish set goals and targets, and by participating in cross sectoral initiatives.

GCCA is a collaborative organisation where members continue to accumulate their expertise and vision, to address sector-wide challenges, risks and opportunities, and establish common industry standards, guidelines and commitments related to biodiversity.

Further, GCCA has partnered with the Business for Nature (BfN) coalition, which brings together influential organisations and forward-thinking businesses from across the globe. BfN aims to demonstrate business action and amplify a powerful business voice to inspire global discussion on a new deal for nature now and into the future. The coalition calls on governments to adopt policy recommendations to accelerate business action by aligning policy frameworks and transforming economic and financial systems.

Cooperation with nature conservation organisations (e.g. BirdLife, IUCN etc.) is also sought by members to bring in the required expertise and enhance the credibility and transparency on biodiversity issues.

Last, GCCA will involve other regional cement, aggregates and concrete associations, in order to scale up the role of the sector in the global biodiversity framework and goals.

Global Cement and Concrete Association

Recommendations

Policy makers, construction clients (including governments and their agencies when acting as clients), designers and contractors should require construction materials to be responsibly sourced with respect to biodiversity by using available tools. These tools currently include the GCCA published Sustainability Guidelines for Quarry Rehabilitation and Biodiversity Management and the responsible sourcing certificate scheme operated by the Concrete Sustainability Council, and in the future are likely to include enhanced EPDs that include biodiversity indicators.

Our Commitments

1. Formulate and execute effective and progressive quarry rehabilitation and biodiversity management;
2. Track and monitor performance through Key Performance Indicators to provide valuable, reliable, easy-to-understand and verifiable information[8];
3. Support users of concrete through new products and information to enable utilisation in the most material efficient manner aligned with Nature Based Solutions initiatives;
4. Work in partnership to build close ties with civil society organisations including national, regional and local governments, NGOs, local communities, academia, peers of the cement and concrete sector, as well as other industry sectors, to deliver net positive in our industry operations and ensure concrete is used better in infrastructure and buildings to reduce the impact of the built environment on biodiversity.

References

[1] Global Cement and Concrete Association. (2020) GGCA Sustainability Guidelines for quarry rehabilitation and biodiversity management. https://gccassociation.org/wp-content/uploads/2020/05/GCCA_Guidelines_Sustainability_Biodiversity_Quarry_Rehabilitation_May_2020-1.pdf

[2] UN CBD, 1992

[3] Millennium Ecosystem Assessment, 2005 3 Millennium Ecosystem Assessment, 2005

[4] IUCN, https://www.iucn.org/theme/nature-based-solutions/iucn-global-standard-nbs

[5] World Business Council for Sustainable Development Cement Sustainability Initiative (WBCSD-CSI) (2018). Methodology for the Net Impact Assessment of Biodiversity in the Cement Sector. https://docs.wbcsd.org/2018/12/Methodology-for-the-Net-Impact-Assessment-of-Biodiversity-in-the-Cement-Sector.pdf

[6] European Environmental Agency. (2017) What is Green Infrastructure. https://www.eea.europa.eu/themes/sustainability-transitions/urban-environment/urban-green-infrastructure/what-is-green-infrastructure

[7] European Commission. (2013). [Communication]. https://eur-lex.europa.eu/resource.html?uri=cellar:d41348f2-01d5-4abe-b817-4c73e6f1b2df.0014.03/DOC_1&format=PDF

[8] World's largest 3D printed coral reef installed at Maldives island resort. https://www.3dprintingmedia.network/largest-3d-printed-coral-reef-maldives/

Global Cement and Concrete Association (GCCA) is registered in England & Wales, Company No 11191992

Registered office:
Paddington Central, 6th Floor,
2 Kingdom Street, London,
W2 6JP, United Kingdom

T +44 2035 804268