



Building the Future: Chemicals and Innovation in Construction and Electronics

Date: Thursday, September 28th, 2023

Time: 18:15 – 19:45 pm

Location: In-Person, Addis Ababa Room, World Conference Center Bonn, Platz der Vereinten Nationen 2, 53113 Bonn, Germany

Description

Amidst the rise of globalisation, construction supply chains have become progressively long and complex – and highly degrading. The industry is responsible for a third of the world's waste, as much as 40 per cent of global GHG emissions and relies on hazardous chemicals to make materials flame retardant, insulated and water repellent.

While e-waste makes up only a part of construction waste, over 60 million tonnes of electronic waste are discarded every year, with only 28 per cent collected, treated and recycled properly. The absence of environmentally sound recycling infrastructure and e-waste legislation globally demands our attention.

As such, this session organised by the United Nations Environment Programme (UNEP) and the International Sustainable Chemistry Collaborative Centre (ISC3) seeks to highlight the need for accelerated action on construction and electronics supply chains, examining the role of global public institutions and funding in working with the private sector to improve design, the availability of material alternatives, pollution-free production, sustainable procurement and circularity in the industry.

The discussion will generate new ideas to establish pollution free, nature positive and net-zero supply chains, informing the newly approved Integrated Programme (IP) on “Eliminating Hazardous Chemicals from Supply Chains” moving forward.

Agenda

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| 18:15—18:25 | Welcome and Opening Remarks |
| 18:25—18:35 | Keynote – Building the Future |
| 18:35—19:30 | Panel Discussion on: <ul style="list-style-type: none">• Green Design• Sourcing Material Alternatives• Pollution-free production• Sustainable Procurement• Circularity and Post-use Collection |
| 19:30—19:40 | Q&A |
| 19:40—19:45 | Conclusion |

Moderator

Anil Sookdeo – Coordinator for Chemicals and Waste at the GEF.

Opening Remarks

Thomas Wanner – Managing Director of ISC3.

Panellists

Anastasia Adhigbe – E-Waste Officer at the National Environmental Standards and Regulations Enforcement Agency, Nigeria. Anastasia is an expert on Extended Producer Responsibility.

Johan Breukelaar – Director General of the European Federation for Construction Chemicals. Johan has over 30 years of experience in chemicals management, formerly working at Shell and Maersk amongst others.

Esteban Cervantes – Technical Advisor at Green Building Council Costa Rica. Esteban has over a decade of experience in green building practices and is attached to the IP's Costa Rica project.

Markus Silfverberg – Founder, Chairman and former CEO of Block Solutions Oy. Markus specialises in affordable and sustainable housing, seeking to empower local communities through biocomposite modular design.

Eloise Touni – Technical Lead for UNEP's GEF Chemicals and Waste Unit. Eloise heads up the Chemicals IP and is working to expand on this in GEF8.

Format:

The event will run more so as a discussion, rather than a set of pre-prepared presentations. Following the keynote, the moderator will guide the discussion to cover design, sourcing, production, procurement and post use collection. Panellists are encouraged to respond to one another and provide practical examples from their work.

The next section provides a guide; however, flexibility remains regarding follow-up questions and who will be asked depending on how the discussion evolves.

Run of Show

Welcome and Opening Remarks – (10mins)

Anil Sookdeo, GEF

Thomas Wanner, ISC3

Keynote – (10mins)

Markus Silfverberg, Block Solutions

Design – (10mins)

- How are advancements in technology shaping the future of construction design?
- What are some innovative sustainable materials that could potentially replace traditional materials in the construction industry?
 - Esteban Cervantes, Green Building Council Costa Rica

Follow-up:

- How can global public sector institutions collaborate with the private sector to mobilize financing for sustainable material fibres and products?
 - Eloise Touni, UNEP
- What financial incentives exist for electronics suppliers to use sustainable materials in their products?
 - Anastasia Adhigbe, NESREA

Sourcing – (10mins)

- What is the opportunity for construction companies to incorporate nature into their sourcing decisions?
- What specific strategies does Block Solutions employ to ensure responsible sourcing of materials, and how do you work with suppliers and manufacturers to ensure consistent adherence to your sustainability standards?
 - Markus Silfverberg, Block Solutions

Follow-up:

- What are the advantages and disadvantages of locally sourcing materials in construction?
 - Esteban Cervantes, Green Building Council Costa Rica
 - Markus Silfverberg, Block Solutions

- What regulatory challenges or standards need to be addressed when incorporating electronics into building designs, and how can these challenges be navigated effectively?
 - Markus Silfverberg, Block Solutions

Production – (10mins)

- How can the EU's experience serve as a blueprint for other countries or regions looking to eliminate hazardous chemicals, such as POPs, PBTs, VPVTs, in production?
- What drove the elimination of the most perilous chemicals, and how can these lessons be disseminated with audiences globally.
 - Johan Breukelaar, EFCC

Follow-up:

- How can governments and the global public sector support the construction industry's efforts to reduce energy use, water use and embodied carbon in materials and promote safer practices?
 - Esteban Cervantes, Green Building Council Costa Rica
- How has Block Solutions funded it's work to establish nature-positive supply chains?
 - Markus Silfverberg, Block Solutions

Procurement – (10mins)

- How can construction companies and suppliers be incentivised to adopt sustainable procurement practices?
- What role does supply chain transparency play in ensuring sustainable procurement practices?
 - Eloise Touni, UNEP

Follow-up:

- What role do certifications and standards (e.g. LEED) play in promoting sustainable procurement?
 - Esteban Cervantes, Green Building Council Costa Rica

Post-use Collection – (10mins)

- What role does regulation play in driving the shift towards sustainable practices?
- How did the Nigeria Circular Electronics project encourage companies to take account of their waste?
 - Anastasia Adhigbe, NESREA

Follow-up:

- How can UNEP’s “Building Materials and the Climate: Constructing a New Future” report help align action in the construction industry and be integrated in policy making?
 - Eloise Touni, UNEP
- What strategies can be employed to reduce construction waste and promote recycling and upcycling of materials?
 - Markus Silfverberg, Block Solutions
 - Johan Breukelaar, EFCC

Looking forward – (5mins)

- What are some future trends and opportunities for enhancing the cooperation between global public sector institutions and the private sector to drive positive change in the construction industry's sustainability efforts?
 - Eloise Touni, UNEP

Q&A – (10mins)

Conclusion – (5mins)

GEF-funded Initiatives

GEF ID 11169 “Eliminating Hazardous Chemicals from Supply Chains”

“Eliminating Hazardous Chemicals from Supply Chains” is a \$45-million Integrated Programme (IP), led by the United Nations Environment Programme, to transform two global industries: fashion and construction. The programme seeks to re-orient action in each supply chain, encouraging regenerative design, the substitution of non-renewable materials, resource-efficient production, better purchasing behaviour and post-use collection, leveraging an additional \$295-million in co-financing.

Projects span eight countries —Costa Rica, Ecuador, Peru, Cambodia, India, Mongolia, Pakistan and Trinidad and Tobago, supported by a global project designed to share best practices and provide technical assistance.

Planned interventions include working with designers to improve material sourcing upstream, scaling alternative material fibres from biowaste, improving the uptake of existing standards and certification schemes, supporting financial incentives for the adoption of sustainable practices and creating reverse logistics systems for repair, reuse and recycling.

Global Environmental Benefits (GEBs) and their corresponding link to the GBF targets include:

- 317,000 hectares of land and ecosystems restored (Target 10)
- 7.9m tons of greenhouse gas (GHG) emissions mitigated (Target 8 and 11)
- 34,589 tons of chemicals of global concern and their waste reduced (Target 7)
- 107 gTeQ emissions of persistent organic pollutants (POPs) into air reduced and or avoided (Target 7)
- 1.5 million beneficiaries globally (Target 22 and 23)

Approach

With action in both industries typically concentrated on climate change and biodiversity, leaving pollution behind, transforming fashion and construction supply chains, and strengthening the enabling environment necessary, requires the need to think differently – an approach designed to be disruptive.

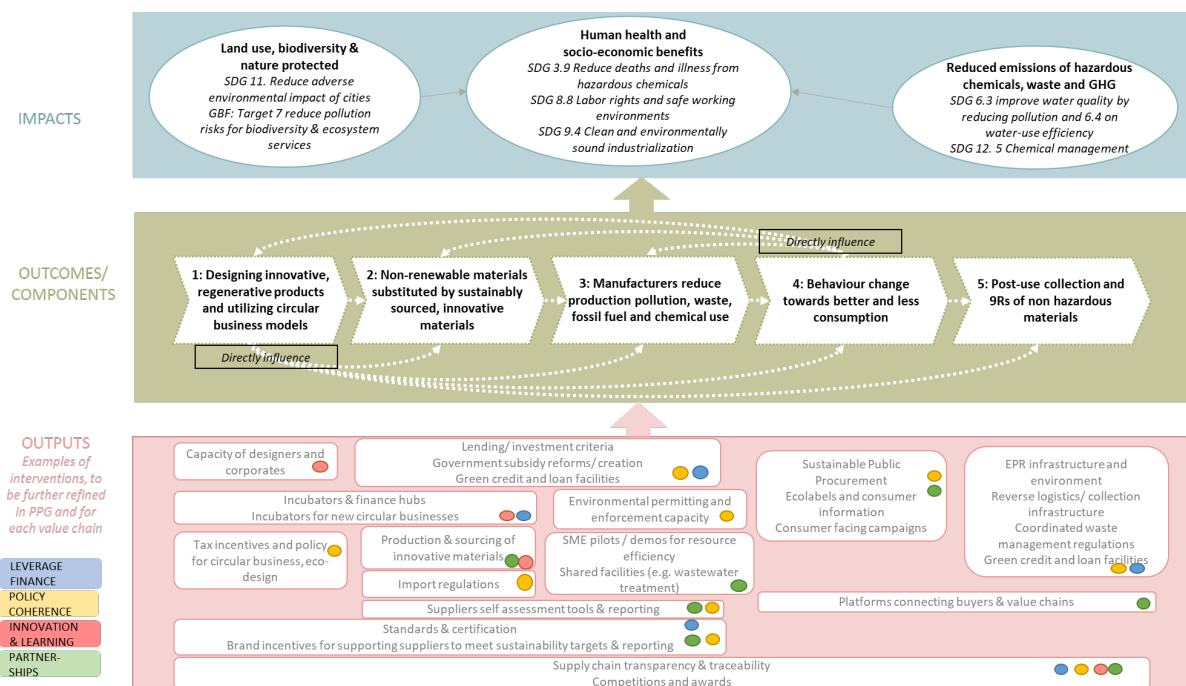
Five outcomes define the change the IP seeks to make:

1. Innovative, regenerative products are available and designed using circular business models.
2. Sustainably sourced, innovative, responsibly managed, recycled and recyclable, regenerative or nature-based materials, are used in products (substituting non-renewable materials).
3. Production and manufacturing processes are transformed to require less water, energy and no hazardous chemicals; produce less pollution and waste; and design for zero waste.
4. Markets for innovative products are created and behaviour shifts favour longevity over unnecessary consumption.

- Reverse logistics processes are implemented which return products and materials back to manufacturers to reuse or recycle.

With each requiring multiple interventions to become a reality, the programme will support targeted improvements in policy, innovation, stakeholder engagement and most importantly access to finance at each stage of the supply chain to enhance South-South, as well as regional cooperation and minimize burden shifting, prioritizing women, youth and local, indigenous knowledge to empower local communities, re-localize economies and identify traditionally used materials, products, and practices. In this way, the IP will enact, real transformative change, going beyond just replacing raw materials.

Figure 1: Overall programme Theory of Change



Delivery and Implementation

From redesigning carnival fashion in Trinidad and Tobago to establishing artisanal brick kilns in Ecuador, the programme will work in each country to improve every stage of the supply chain, aligning finance, policy, stakeholders and innovation to do so.

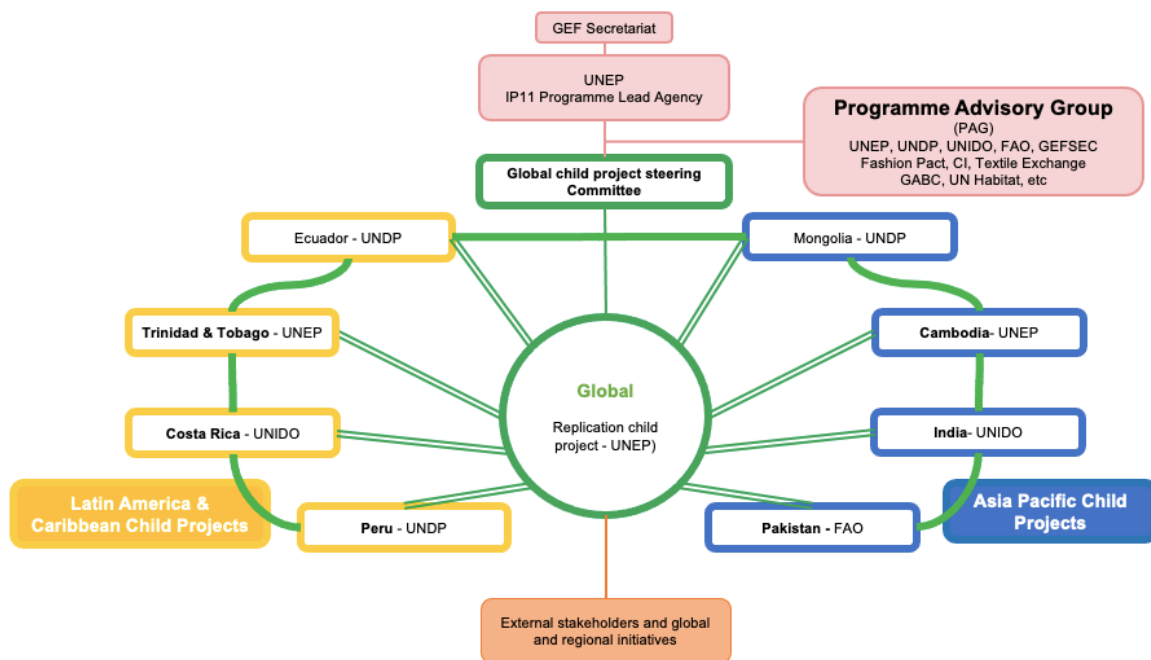
A global platform will manage and coordinate the exchange of knowledge between in-country child projects, link with other relevant initiatives and provide technical assistance, universalize the programme's reach, and engage governments, construction companies and fashion brands, as well as everyday consumers to reorient their behaviour.

Information flows will mirror that of a pendulum: initially, the global project will service in-country child projects to build capacity; then, as the programme becomes more established, the flow of information will shift, as in country child projects feed into a global platform set up by the global child project for distribution among stakeholders.

The IP is funded by the Global Environment Facility (GEF), with partners including the United Nations Development Programme (UNDP), the United Nations Food and Agriculture Organisation (FAO) and the United Nations Industrial Development Organisation (UNIDO).

A global Programme Advisory Group will be established to advise and steer the global programme and to ensure alignment with existing initiatives and partners. This group will include senior representatives of each of the country child projects, as well as external partners who will advise and share knowledge to accelerate the transition to sustainable supply chains.

Figure 2: Programme Governance Structure and Information Flows



ISC3 and Sustainable Construction

Focus Topic

In 2018 and 2019, Sustainable Construction was ISC3's focus topic. Several expert workshops resulted in the following [recommendations](#):

- Develop sustainable solutions specific to each region, based on climate, available raw materials, and other local conditions.
- Support the informal sector in developing and emerging economies through regulations, financial incentives, social programs, and training.
- Incorporate life cycle analysis in the design and planning phase, which helps to estimate the impacts of a material's extraction of natural resources, production, and transportation.
- Deconstruct - not demolish - buildings. This is essential for a closed-circle building economy, together with take-back systems and a market for deconstructed materials.
- Limit the amount of hazardous additives. And for substances of high concern, replace hazardous additives with non-hazardous additives.
- Use materials made from residual biomass or secondary raw materials, which have a low rate of pollution when they are disposed of.

Trainings

The results of our workstream process were bundled in a report and adapted into a training format in collaboration with the National Construction Authority in Kenya. The training was implemented in Kenya.

All materials have also been adapted into a [self-paced training program](#), freely available on our E-learning platform "Atingi".

Startups

Start-ups are a unique source of knowledge and innovation that can contribute to a more sustainable future. In order to help innovators related to Sustainable Chemistry succeed in different stages of development, the ISC3 Innovation Hub launched the Global Start-up Service (GSS), the world's first program providing holistic support to Sustainable Chemistry innovators globally.

There are more than 200 startups in our [database](#), many of them related to sustainable construction. One of them is "Block Solutions", whose CEO is a participant in our panel.