



UN
environment
programme



50
1972-2022




SCIENCE
POLICY
BUSINESS
FORUM



UN Science–Policy–Business Forum on the Environment

Transformers @ Stockholm+50



**Celebrating Sustainability,
Innovation and Excellence**

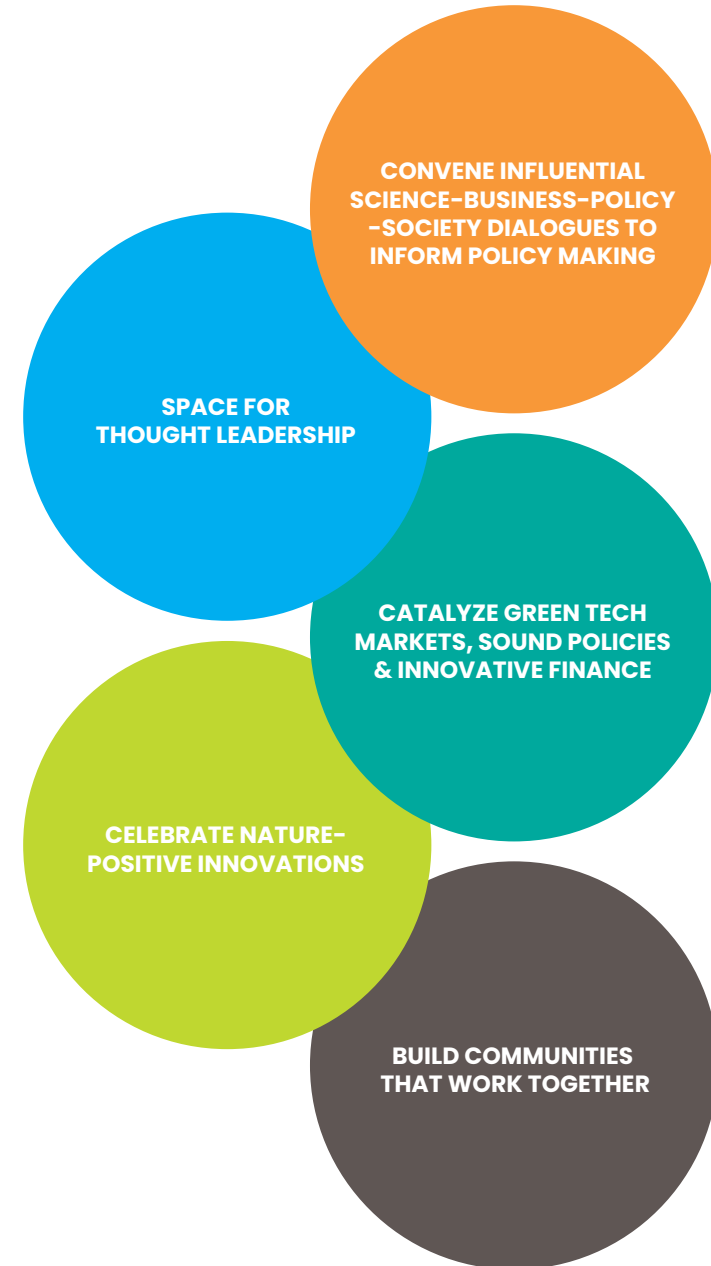
31 MAY – 4 JUNE 2022 & BEYOND

Celebrating Sustainability, Innovation & Excellence

The world is set to commemorate 50 years of multi-lateral action on the environment this summer at the UN Stockholm+ 50 Conference and associated events.

The **UN Science–Policy–Business Forum on the Environment**, the UN’s fastest-growing specialized SCIENCE–POLICY–BUSINESS platform, is organizing a suite of high-visibility, high-level events in support of the Stockholm+50 process.

The work of **UN–SPBF** towards and during Stockholm+50 focuses on the transformative actions required to put the world on track to meet multilateral environmental goals; the technologies and innovations to power greener and more equitable transitions; and the enabling conditions to pave the way. The principles of equity, inclusion and justice are at the heart of this work.



At a Glance



Tuesday, 31 May – Wednesday, 1 June 2022

UN Science–Policy–Business Forum Stockholm+50 High-Level Global Session

Berns Hotel Stockholm

Wednesday, 1 June 2022 – 14:15 – 16:15 (CET)

Stockholm+100: Shaping our Common Future

High Level Leadership Dialogue

Chinateatern – The China Theatre, Stockholm

Wednesday, 1 June 2022 – 17:00 (CET)

Concert For Peace and the Planet

On the Eve of Stockholm+50 and Kickstarting World Environment Day

Ricky Kej, Multiple Grammy Award Winning Composer

Kungsträdgården Stockholm

Wednesday, 1 June 2022 to Friday, 3 June 2022

Transformers Exhibition

@ Kungsträdgården

Special Events by: Startups | Civil Society | Youth

Kungsträdgården, Stockholm

Thursday, 2 June 2022 – 2:00–3:00 PM (CET)

Friday, 3 June 2022 – 2:15–3:15 PM (CET)

Action Hub @ UN Stockholm+50 Conference

Transformers Impact Stage

Stockholmsmässan, the Stockholm+50 venue

Saturday, 4 June 2022

The Iconic Stockholm Marathon

World Environment Day Edition in Partnership with the UN SPBF

Win the race against Climate, Nature & Pollution Crisis

Stockholm Olympic Stadium



Fourth High Level Global Session

Berns Ballroom

31 MAY – 1 JUNE 2022
BY INVITATION ONLY

The **UN Science–Policy–Business Forum on the Environment** (UN-SPBF) will convene its Fourth High-Level Global Session in Stockholm from 31 May– 1 June 2022, in support of the iconic UN Stockholm+50 meeting.

The event will bring together influential partners from business, industry, finance, science, policy and civil society, to tackle some of the planet's most pressing environmental challenges.

We are looking at how to turn the needle the next 50 years, the technologies that will take us there, and the regulatory frameworks, financing and incentives required.

The **UN Science–Policy–Business Forum on the Environment** (UN-SPBF) is the UN's fastest-growing specialized POLICY-BUSINESS-SOCIETY platform on the environment. The Forum is a co-financed UN initiative that is designed to fill an important gap in multi-sector, multi-stakeholder collaboration for the planet – built on science, innovation, equity and ethics. www.un-spbf.org

The session will be closed by the High Level Leadership Dialogue: **Stockholm+100: Shaping Our Common Future** @ Chinateatern (14:15–16:15)

Full programme attached at the end of the booklet and here: <https://un-spbf.org/4th-global-session-stockhom50/#agenda>



Programme

Berns Hotel, Ballroom Stockholm

Tuesday, 31 May 2022

08:30 – 09:30

Arrival and Registration

08:45 – 09:30

Breakfast Served

09:30 – 10:00

High Level Opening

Introduction by the Secretariat



Shereen Zorba
Head of the Global Secretariat,
UN Science–Policy–Business Forum
on the Environment

Meet our Moderators



Axel Threlfall
Editor-at-Large,
Thomson Reuters



Tim Nixon
Fmr Chief Sustainability Editor, Reuters
& CEO of Signal Climate Analytics

Welcoming Remarks & Opening Statements



Sonja Leighton Kone
Acting Deputy Director,
UN Environment Programme (UNEP)



H.E. Abdulla Shahid
President, UN General
Assembly



H.E. Collen Vixen Kelapile
President, UN Economic and
Social Commission (ECOSOC)

Vision Setting



Johan Rockström
Director, Potsdam Institute
for Climate Impact Research

10:05 – 11:00

Reimagining Multilateralism and Bridging the Implementation Gap

Co-convened in cooperation with the Institute for Sustainable Development and International Relations (IDDRI), France

The world will mark half a century of multilateral action for the planet this June in Stockholm, bringing us full circle from 1972 when consensus was first reached that international cooperation and commitment are required to overcome environmental degradation.

50 years on, it is evident the world is not on track to meet any of the environmental goals.

This session will explore:

- The extent of the reforms required across sectors, disciplines and systems to put the world on track to save the planet;
- The technologies and innovation that offer transformational capacities;
- The financing systems to get us there and how to address inequalities;
- Accountabilities, roles, and the conditions for more impactful action across the board. [Read more](#)

Reference document: Planetary governance for a sustainable recovery: Are we ready to move towards a next generation multilateralism? IDDRI – 20 years.

Vision Setting



Sébastien Treyer
Director, Institute for Sustainable Development and International Relations (IDDRI)

The Conversation:

Multilateralism Visionaries



Professor Maria Ivanova
University of Massachusetts Boston



Astrid Schomaker
Director for Global Sustainable Development, European Commission



Alain Le Roy
French Association for the United Nations & Former UN Under-Secretary-General for Peacekeeping Operations

Industry Visionaries



Dr. Biao Yang
Secretary General, SEE Foundation



Harry Verhaar
Head of Global Public & Government Affairs, Signify



Steven Kukoda
Executive Director, International Copper Association



Dominic Waughray
Senior Advisor to CEO, World Business Council on Sustainable Development

11:05 – 12:00

Vision Setting



Christopher Hurst
Director General,
European Investment Bank

Future Economy

Beyond GDP • Ending Harmful Subsidies • Financing the SDGs

Earth's ecosystems have massive value, but that value is hard to measure and often gets ignored – with alarming consequences for the environment. This lack of focus on environmental degradation has steered economic policy and investment in harmful directions, including a reliance on fossil fuels and growing inequality, and away from the fair and sustainable use of the planet's finite resources.

This session will examine:

- The latest insight on the shortcomings of GDP, new yardsticks for sustainability
- Who must lead on reducing subsidies;
- The role of public and private finance needed to substantially achieve the SDGs. [Read more](#)



Prof. Paul Ekins
Director of the Institute for
Sustainable Resources,
University College London



Romina Boarini
Director for Well-being,
Inclusion, Sustainability and
Equal Opportunity, OECD



Carlos Manuel Rodriguez
CEO, GEF



Lina Maria Montoya
Social Impact & Innovation
Manager, Bancocolombia
Group



Eric Usher
Head,
UNEP Finance Initiative



Nicola Villa
Executive Vice President,
Strategic Growth and Global
Lead, Mastercard



Babs Ogundeyi
Founder & CEO,
Kuda Bank

12:05 – 12:10

Welcoming Note – Stockholm Business Region



Staffan Ingvarsson
CEO Stockholm
Business Region

12:10 – 12:15

Announcing the Stockholm Marathon



David Fridell
CEO, Stockholm Marathon

12:15– 13:15

Lunch

13:20 – 13:25

Big Tech for the Planet

Vision Setting: Why Africa is the Future?



Tshepo Tsheko
CEO, Botswana Digital and
Innovation Hub

13:30 – 14:10

Technology & Transformation



Hendrik Hamman
Distinguished
Researcher, IBM



Christina Shim
VP Head of Strategy and Sustainability,
AI Applications, IBM

14:15 – 14:55

Big Data Big DEAL

For 68 per cent of the environment-related SDG indicators there is not enough data to assess progress, according to UNEP studies which also found that towards all 12 of the SDGs targets related to the state of the environment, there is either no data or no progress made.

To achieve the environmental dimension of the SDGs, it is essential to scale up environmental action that is backed by adequate knowledge. A task that is only achievable through the deployment of the latest technologies, including earth observations, Artificial Intelligence, Machine Learning and the Internet of Things.

This session will explore:

- The progress made in the development of UNEP's Big Data Strategy and the World Environment Situation Room – including support and data integrations and analysis at the national level.
- Gaps, priorities and opportunities for action.
- Elements related to legislation, equity, democracy and transparency related to the technology use and the equitable sharing of Big Data products and services.
- How the work of the Data for the Environment Alliance (DEAL) is shaping up and the opportunities it presents.
- How technologies are transforming our understanding of and actions for the planet.



Prof. Paul Ekins
Director of the Institute for
Sustainable Resources,
University College London



Alexandre Caldas
Chief Country Outreach,
Technology, Innovation and
Big Data, UN Environment
Programme (UNEP)



Frederic Bretar
Head of Projects, Space
Climate Observatory (SCO)



Kaja Tael
Ambassador at Large for Climate
and Energy Policy, Estonia



Martin Brocklehurst
Chair, Interim Board
Citizen Science Global Partnership



Edan Dionne
VP Corporate
Environmental Affairs, IBM

15:00 – 15:05

The Power of Digital Art of the Planet



Jonathan Lett
Director, Lett
Holdings Ltd



Tommy Lexen
Managing Director,
Immersive International



John Munro
Artist

15:10 – 15:25

**Innovation: Powering Change for a
More Sustainable Planet**



Anna Williams
Solutions Lead Europe & MENA,
Google Environmental Insights Explorer

15:30 – 15:50

Gaming: Playing for the Planet



Trista Patterson
Director of Gaming Sustainability,
Microsoft

15:55 – 16:10

Coffee

16:15 – 16:40

From Corporate Responsibility to Creating Impact



Margaret O'Toole
Worldwide Tech Leader
Sustainability, Amazon
Web Services (AWS)



Dr. Ana Pinheiro Privette
Global Lead Amazon
Sustainability Data
Initiative



Sandra Karlsson
Head of Public Policy,
Sweden, Amazon Web
Services (AWS)

16:45 – 17:45

The Future of Energy

Co-convended with IRENA and the Norwegian University of Science and Technology

Transforming global energy systems is essential to mitigating climate change and improving air quality and ecosystem health. In 2019, 35% of total anthropogenic greenhouse gases came from the energy supply sector, particularly through the unabated combustion of coal, oil, and natural gas.

As estimates suggest that hydrogen could account for up to 12% of global energy use by 2050, this session will explore:

- Technologies and innovations to develop green hydrogen as a flexible energy vector;
- Opportunities and challenges for developing countries for the production and use of green hydrogen;
- The complementarity of renewables and green hydrogen;
- Policies and financing required to fast track solutions and boost demand. [Read more](#)

Part 1: Renewables



Rana Adib
Executive Director
Ren21



Howard Bevan
Director of Energy
Al-Attiyah Foundation



Gulnara Abdullina
Vice President Europe,
Longi Solar

Part 2: Green Hydrogen



H.E. Espen Barth Eide
Minister of Climate
and the Environment
of Norway,



Prof Asgeir Tomasgard
Director, Norwegian
University of Science
and Technology Energy
Transition Initiative



Per Sandberg
Senior Advisor,
Equinor



Prof. Zhang Cunman
Professor, Tongji
University



James Mnyupe
Presidential Economic
Advisor, Namibian
Presidency



Bjørn Simonsen
CEO, Saga Pure



Barbara Jinks
Programme Manager
Green Gas and
Delivery Use, IRENA

17:50–18:00

Insights of the Day



Jurgen Weichenberger
Vice President
Schneider Electric

18:05–18:45

Open Dialogue & Policy Insights

Wednesday, 1 June 2022

08:00 – 08:45

Arrival and Registration

08:15 – 09:15

Breakfast Served

09:10 – 09:15

Opening of Day 2



Sonja Leighton Kone
Acting Deputy Director,
UN Environment Programme (UNEP)

09:20 – 10:40

Nature-Positive Sector Transitions: Doubling the Speed of Progress

Vision Setting



Harry Verhaar
Head of Global Public &
Government Affairs, Signify

09:30–10:00

In Fashion: Turning the Needle on the Industry 'Planetary Footprint

The fashion industry accounts for a staggering 8–10 per cent of global carbon dioxide-equivalent emissions – more than all international flights and maritime shipping combined. This session will explore:

- Innovative business models tailored to a sustainable fashion industry;
- The opportunity to use technology to improve product offerings and for communicating sustainability parameters across a circular fashion value chain;
- Opportunities to reclaim value while introducing resource and energy efficiencies into the value chain

[Read more](#)



Kenneth Pucker
Sustainability and
ESG Professor, Tufts
University



Alexandre Capelli
Environmental Deputy
Director, LVMH Group



Cecilia Brännsten
Head of Resource Use
and Circular Impact,
H&M Group



Sindiso Khumalo
Designer

10:00–10:40

Vision Setting



Steven Kukoda
Executive Director,
International Copper
Association

Extractives, Mining, Tailing: The Full Cycle:

Co-convended by UNEP, UNDP and UNECE

The session would focus on the topic of transforming extractive industries for sustainable development, addressing the call for action in the Secretary General's Policy Brief on Extractives Industries

This session will explore:

- Setting global decarbonization roadmap for each sector of the extractive industries;
- Policy environments that will reward clean extraction and recycling;
- Improving permitting processes to ensure social equity while not delaying projects essential to the delivery of raw resources critical to the net-zero transition;
- Pathways to highly circular metals and minerals economies. [Read more](#)



Sonja Leighton Kone
Acting Deputy Director,
UN Environment Programme
(UNEP)



John Howchin
Co-convener of the
Investor Mining and
Tailings Safety Initiative



Bruno Oberle
Director General,
International Union for
Conservation of Nature
(IUCN)

10:45 – 10:55

Coffee

11:00– 12:00

Accountability and Public Finance: Fast Tracking Sustainable Public Procurement

Co-convended with UNEP Sustainable Public Procurement Unit

Public procurement represents between 12 and 25% of GDP. The public sector can use procurement to boost jobs, growth and investment, and to create an economy that is more innovative, resource and energy efficient, and socially-inclusive.

This session will explore:

- How to improve sustainable public procurement globally
- Accountability and monitoring tools
- Improved products classifications and standards. [Read More](#)

**Accountability and
Public Finance**



Paulo Magina
Head of Public
Procurement
Unit, OECD



Pierre Francois Thaler
Co-Founder & Co-CEO,
Eco Vadis



Sébastien Postic
Project Manager
industry, Energy and
Climate, I4CE

Fast Tracking Sustainable Public Procurement



Farid Yaker
Programme Manager
Sustainable Public
Procurement, UNEP



Sanjay Kumar
President, Asia Roundtable
on Sustainable
Consumption and
Production



Annie Stalberg
Head of Sustainability
Procurement, Swedish
National Agency for
Public Procurement



Caroline Nguyen
Director, Council on
Environmental Quality,
The White House



Isa Maria Bergman
Director Circular
Economy and Sustainable
Procurement, Motiva



**Dr. Carsten
Hansen**, Chief,
Global Procurement
Services, UNDP

12:05–12:50

The Next Climate COP: From Pledges to Action

In the lead up to and during COP26 in November 2021, a broad range of nations, industries and private sector entities announced new pledges for greenhouse gas emissions reductions.

This session will explore:

- Lessons from the countries that have already enacted legislation – how industry and the economy has responded.
- How industry is following on the Glasgow commitments.
- Creating the conditions to attract private investment in adaptation measures in developing countries, and to encourage climate resilient development. [Read More](#)



Irene Feige
Head of Climate Strategy
& Circular Economy,
BMW Group



Dr. Li Zhang
Director, Green Inclusive
Carbon Neutrality
Promotion Center



Nina Ekelund
Executive Director,
The Haga Initiative



Vanessa Butani
VP Sustainability,
Electrolux



Annika Ramsköld
Head of Sustainability,
Vattenfall

Closing Remarks



H.E. Collen Vixen Kelapile
President, UN Economic and
Social Commission (ECOSOC)

13:00 – 14:00

Lunch

14:15 – 16:15

Stockholm +100: Shaping our Common Future

High Level Leadership Dialogue @Chinateatern, Berzelii Park



H.E. Collen Vixen Kelapile
President, UN Economic and Social Commission (ECOSOC)



Pernilla Halldin
Group Head of Public Affairs, H&M



Bertrand Piccard
Chairman, Solar impulse Foundation



Niklas Gustafsson
VP & Head of Public Policy & Regulatory Affairs, Volvo Group



John Streur
President & CEO, Calvert Research and Management



Dr. Lee George Lam
Chairman, Hong Kong Cyberport



Hilde Røed
Senior Vice President Climate & Sustainability, Equinor



Li Zhenguo
Founder and President, LONGi



Steven Kukoda
Executive Director, International Copper Association



James Mnyupe
Presidential Economic Advisor, Namibian Presidency



Kaja Tael
Ambassador at Large for Climate and Energy Policy, Estonia



Maria Ivanova
University of Massachusetts Boston



Jakob Kiefer
Group Head Public Affairs, ABB



Ricky Kej
Multi-Grammy Award-winning Musical Composer

17:00

Opening of Concert for Peace and the Planet at Kungsträdgården

Our other events

1-3 June 2022

Transformers Exhibition @ Kungsträdgården

TRANSFORMERS is an immersive digital experience that will bring the heart of the jungle, wildlife and nature to the heart of Stockholm.

New immersive 360 film and art will provide for an unmatched experience and appreciation of the one Earth we have, which we need to protect and better manage.

Against this innovative backdrop, TRANSFORMERS will celebrate nature- positive innovations that have the potential to transform the world towards a more sustainable path.

The TRANSFORMERS exhibition will also showcase a screen-based art installation by experiential artist John Munro. This '50/50' Digital Art Installation illustrates datasets from the UN as abstract forms in and on digital landscapes, to tell the story of the positive impact of 50 years of climate action on the Earth's BIOMES



1 June 2022

Concert For Peace and the Planet @ Kungsträdgården

Ricky Kej Multiple Grammy Award-winning Indian Composer
1 June 2022 – 17:00 (CET)

On the eve of Stockholm+50 Conference and to kick start World Environment Day celebrations.

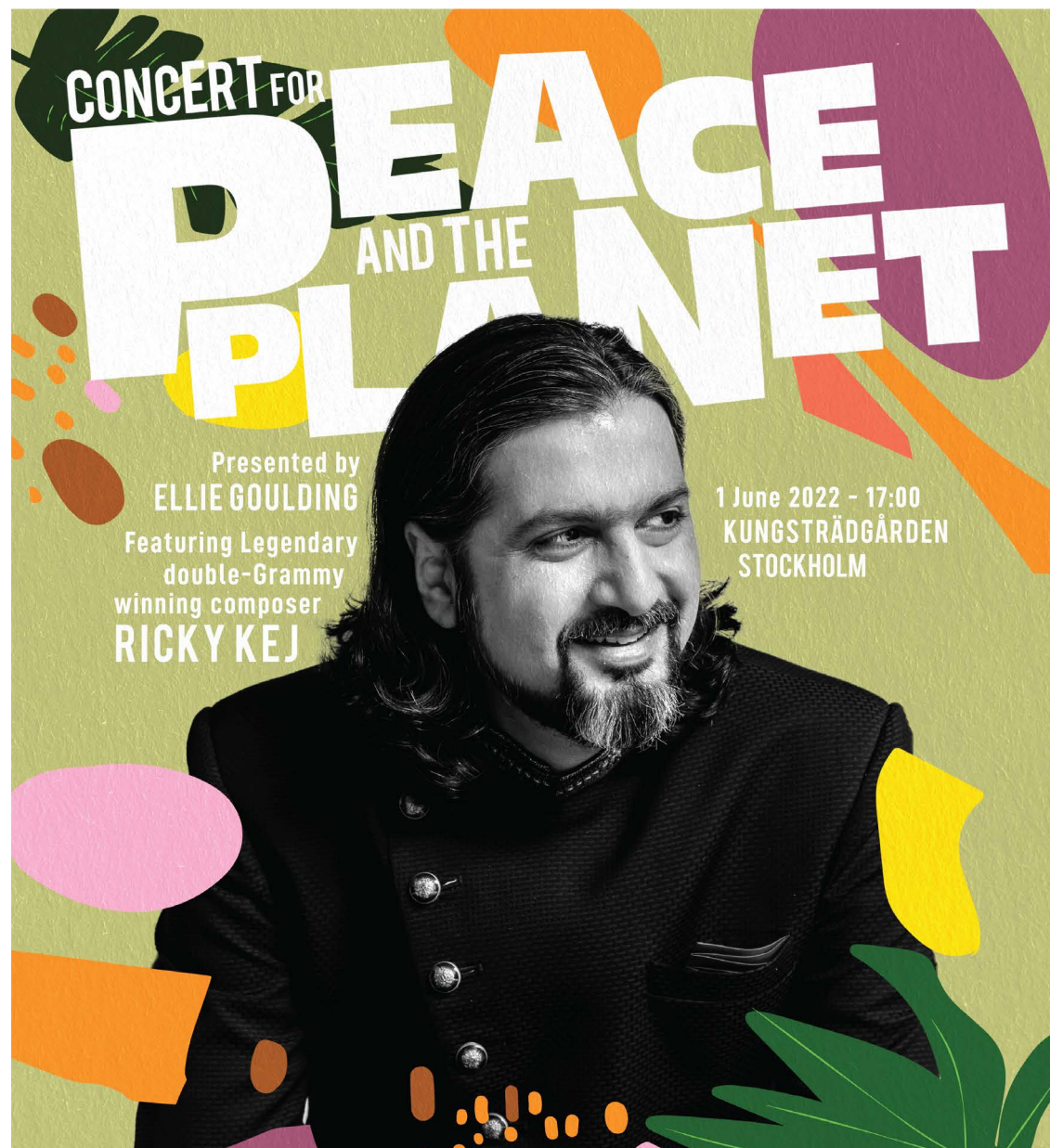
The Concert for Peace and the Planet will ring in the start of World Environment Day worldwide and the launch of TRANSFORMERS innovation exhibition.

The concert will be presented by the famous singer **Ellie Goulding**.

Performing will be renowned multiple Grammy Award-winning composer **Ricky Kej**

Listen to Ricky Kej -

https://www.youtube.com/watch?v=s2PRJHgZufg&ab_channel=RickyKej



2-3 June 2022

Action Hub at Stockholmsmässan

Transformers 1: The Stockholm+100 Journey Starts Now Trailblazing Nature-Positive Sector Transitions to Save the World

2 June 14:00-15:00

By putting a multi-sectoral and intergenerational lens on how the future is shaped by today's actions, the session will present robust actions by trailblazers who are transforming entire sectors towards a more sustainable path.

The session will explore the extent to which the actions – taken today – have the potential to create a better future for all; the solutions and innovations to power transitions; and the enabling conditions to pave the way, and how accountability, equity, inclusion and justice are the backbone of any transformation.

Transformers 2: The Stockholm+100 Journey Starts Now Breaking Barriers

3 June 14:15-15:15

The journey from 'business as usual' to authentic innovation and positive change requires the breaking of barriers and overcoming obstacles that may seem at time unsurmountable to make way to positive Stockholm+100 scenarios.

This session is divided into 3 diverse segments, that converge to eloquently deliver this message. It will leave you inspired and motivated.

Segment 1: Accelerating Value Chain Innovation and Doubling the Speed of Progress.

Segment 2: Women in Green Tech: Smashing Glass Ceilings for the Planet.

Segment 3: Our World – what young people really think.



4 June 2022

World Environment Day Edition of the Stockholm Marathon

4 JUNE 2022 12:05 – 12:10 CET @STOCKHOLM OLYMPIC STADIUM

The Stockholm Marathon comes at a very special time this year, marking 50 years of environmental action. This year's World Environment Day Edition of the Stockholm Marathon is in partnership with the United Nations Science Policy Business Forum.



Climate

Nature

Pollution

Win the Race against the crisis.



UN environment programme

50 1972-2022

SCIENCE POLICY BUSINESS FORUM



#OnlyOneEarth

Our sessions in details



Reimagining Multilateralism and Bridging the Implementation Gap

Co-convoked with the Institute for Sustainable Development and International Relations (IDDRI)



The world will mark half a century of multilateral action for the planet this June in Stockholm, bringing us full circle from 1972 when consensus was first reached that international cooperation and commitment are required to overcome environmental degradation.

50 years on, it is evident the world is not on track to meet any of the environmental goals.

While we made progress in providing scientific knowledge for evidence-based decision making, and crafted essential legally binding or voluntary environmental treaties, yet, the implementation gap remains dangerously wide.

In cooperation with the Institute for Sustainable Development and International Relations (IDDRI), and based on extensive research and consultations, this session will explore the extent of the reforms required across sectors, disciplines and systems to put the world on track to save the planet; the technologies and innovation that offer transformational capacities, the financing systems to get us there and how to address inequalities.

The session will explore accountabilities, roles, and the conditions for more impactful action across the board.

It will also attempt to identify the weaknesses and gaps in the current multilateral system. And what it will take to do things better, faster and more effectively.

This session will explore:

- The extent of the reforms required across sectors, disciplines and systems to put
- the world on track to save the planet;
- The technologies and innovation that offer transformational capacities;
- The financing systems to get us there and how to address inequalities;
- Accountabilities, roles, and the conditions for more impactful action across the board.

Reference document: Planetary governance for a sustainable recovery: Are we ready to move towards a next generation multilateralism? IDDRI – 20 years

Future Economy

Beyond GDP
Ending Harmful Subsidies
Financing the SDGs

Earth's ecosystems have massive value. But that value is hard to measure and often gets ignored – with alarming consequences for the environment.

This lack of focus on environmental degradation has steered economic policy and investment in harmful directions, including a reliance on fossil fuels and growing inequality, and away from the fair and sustainable use of the planet's finite resources.

UNEP's report *Becoming #Generation Restoration* (June 2021) found that half of the world's GDP is dependent on nature, and every dollar invested in restoration creates up to 30 dollars in economic benefits. Meanwhile, environmentally harmful subsidies are causing catastrophic damage to our global ecosystems and widespread sickness and death in human communities.

Fossil fuels alone, (coal, oil, and natural gas) received \$5.9 trillion in subsidies in 2020 – or roughly \$11 million every minute – according to a new analysis (Sept. 2021) from the International Monetary Fund. Five countries – China, the United States, Russia, India, and Japan – account for two-thirds of subsidies globally. All five countries belong to the G20, which in 2009 agreed to phase out "inefficient" fossil fuel subsidies "over the medium term."

Helping development is a worthy investment with potentially high returns for all. These objectives were anchored by the Millennium Development Goals and 15 years later by the Sustainable Development Goals set out for 2030. The latter represent a shared blueprint for peace and prosperity, for people and

the planet, now and into the future. They require significant investments in both human and physical capital.

Until recently, development progressed steadily, albeit unevenly, with measurable success in reducing poverty and child mortality. But even before the pandemic, many countries were not on track to meet the Sustainable Development Goals by 2030, and then COVID-19 hit the development agenda hard (IMF June 2021), followed by the war in Ukraine.

How can we hope to make meaningful progress toward the Sustainable Development Goals under these new even more difficult circumstances?

This session will examine:

- The latest insight on the shortcomings of GDP, new yardsticks for sustainability, natural capital accounting, and how going "beyond GDP" is creating more sustainable, measurable economic opportunities while at the same time reducing risk to natural and human ecosystems.
- Who must lead on reducing subsidies, the pathways to success, and the consequences for the current push for even more fossil fuels to power the global economy.
- The role of public and private finance needed to substantially achieve the SDGs. Where will the money come from, what incentives are there for investors now, what is the role of the business community, and how must we adapt to overcome the acute near-term challenges to increasing global prosperity without environmental degradation?



The Future of Energy

Co-convener with IRENA and the Norwegian University of Science and Technology

Transforming global energy systems is essential to mitigating climate change and improving air quality and ecosystem health.

In 2019, 35% of total anthropogenic greenhouse gases came from the energy supply sector, particularly through the unabated combustion of coal, oil, and natural gas. A further 15% came from the transport sector, also principally from the burning of fossil fuels. Renewable energies such as wind and solar power are driving electricity systems in various countries to lower emissions, but the intermittency of such technologies can risk power grid stability at high levels of deployment. On the other hand, large non-dispatchable power generation capacity can cause an opposite problem: that of too much electricity generation during periods of moderate demand and high sunshine and/or high wind.

Means of long-term energy storage are thus needed to help balance the peaks and troughs of solar and wind power generation in order to support their widespread deployment and heavily reduce greenhouse gas emissions, along with emissions of other air pollutants such as NO_x, SO_x, mercury and particulate matter.

The green energy vector complementing solar and wind

While battery storage is emerging as a useful short-term means of energy storage, hydrogen is a more promising form of long-term energy storage where other means such as pumped hydro are not available due to geographical constraints. Per unit of volume, hydrogen stores more energy than batteries, making it also a good candidate for heavy transport, including shipping, aviation and rail, especially as when combusted, it produces only heat and steam.

In addition, it can be mixed with natural gas to be transported via existing gas delivery infrastructure, and used as a feedstock for the production of even more energy-dense fuels such as green methanol and green ammonia. Estimates suggest that hydrogen could account for up to 12% of global energy use by 2050.

Green hydrogen is made using renewable energy, usually through the process of electrolysis – the splitting apart of water molecules using electricity. It will therefore be a key component of the deep decarbonisation of energy systems, as it can be produced during periods of excess renewable electricity production and consumed when renewables output does not meet demand, and in non-electrified heavy transport.

Looked at from a different point of view, countries which are currently economically dependent on the extraction of fossil fuels tend to be those that have favourable conditions for the production of green hydrogen, providing a pathway to sustainably transition their economies.

The production and use of green hydrogen is not without challenges, however. Principle among them are that:

- Production costs are high, as electrolyser technology is not at a mature stage and currently not mass produced.
- The efficiency of energy conversion when producing green hydrogen is relatively low, meaning energy more energy is lost than would be ideal.
- For use of hydrogen as a pure fuel (not mixed with natural gas), storage and transport infrastructure will need to be adapted, and for consumers, it will need to be built from scratch.
- The hydrogen shipping industry needs to be developed.
- Uses of green hydrogen, including as an intermediary to the production of other green fuels, needs to be spurred to further stimulate demand and improve technology.
- Policies and regulations need to be set to provide conducive environments for the development of the green hydrogen industry at both the national and international levels.

This session will explore:

- Technologies and innovations to develop green hydrogen as a flexible energy vector.
- Opportunities and challenges for developing countries for the production and use of green hydrogen.
- The use of green hydrogen and associated green fuels for transport.
- The complementarity of renewables and green hydrogen.
- Policies and financing required to fast track solutions and boost demand.



Nature Positive Sector Transitions

Extractives, Mining, Tailing: The Full Cycle

The extractive industries are some of the headwaters of the global economy, but it comes with a considerable footprint, including water resource stresses, greenhouse gas emissions, habitat destruction and ecosystem pollution.

Mining is expected to play an oversized role in the future effort to mitigate climate change and limit global average surface temperature rises in accordance with the aims of the Paris Agreement. Copper is essential to electricity grids, renewable power generation components, electrified mobility, and energy efficiency measures – without it, there can be no clean energy transition, and decarbonization goals will fail.

Lithium, cobalt, nickel, iron, aluminium are also critical metals, while rare earth minerals will also feature heavily in the clean energy transition, and uranium is likely to play a highly important role too, as are platinum and palladium. Meanwhile, coal mining will need to diminish in importance, and a reduction in coal mining would help to reduce greenhouse gas emissions from mining to a large extent.

Mining – the extraction of metals and minerals – currently accounts for some 4-7% of global greenhouse gas emissions, 1% coming from operations, and the other 3-6% from fugitive methane emissions from coal mining. An estimated 30-50% of the production of copper, gold, iron ore, and zinc occurs in areas where water stress is already high.

Mining tailings dam failures have resulted in severe damage to local ecosystems and hundreds of human casualties, for instance from the Brumadinho dam disaster in Brazil in 2019, which released 12 million cubic meters of iron waste and killed at least 134 people.

Continuous improvement in the extractive industries has already been reducing their ecological footprints, but creating a less impactful and more circular mining sector that spurs the transition to net-zero economies carries significant challenges. These include:

- Better integration of sustainable development goals into operations.
- Permitting processes that can take several years, delaying the extraction of essential materials and increasing the cost of the net-zero transition.
- Improved reporting on operations and sustainability performance indicators.
- Devising and implementing practical means of further reducing the ecological footprint of operations, including the use of zero-emissions plant and fleet, and zero emissions electricity, while also improving energy and water efficiency.
- Becoming a key player in recycling as a means of sourcing feedstocks for materials processing.
- Heightening demand for low/zero-carbon extracted resources.
- In coal mining, implementing practices to capture the vast majority of fugitive methane emissions.

This session will explore:

- Setting global decarbonization roadmap for each sector of the extractive industries.
- Policy environments that will reward clean extraction and recycling.
- Improving permitting processes to ensure social equity while not delaying projects essential to the delivery of raw resources critical to the net-zero transition.
- Pathways to highly circular metals and minerals economies.



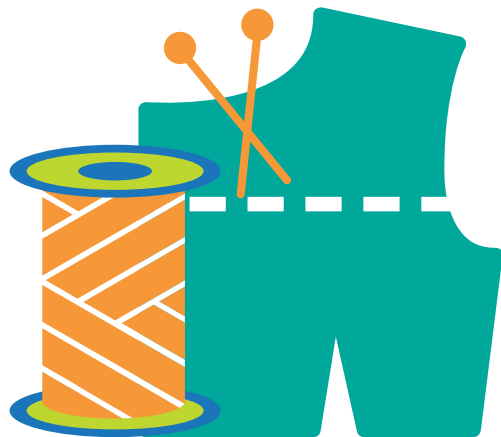
Nature Positive Sector Transitions

In Fashion: Turning the Needle on Fashion's Planetary Footprint

Fashion is an industry of global importance, essential to human welfare, providing sources of foreign exchange for producing countries, and employing over 75 million people. Rates of production and consumption of textiles is higher than ever before, but the industry as it currently operates has a high ecological footprint.

The fashion industry accounts for a staggering 8-10 per cent of global carbon dioxide equivalent emissions – more than all international flights and maritime shipping combined. In growing textile crops, the industry uses an estimated 24% of insecticides and 11% of pesticides, and in the production and processing of fabrics, it is the world's second largest user of water, generating 20% of the world's wastewater. In addition, while the industry is worth an estimated US\$2.4 trillion, it wastes about US\$500 billion due to the lack of recycling and clothes that are thrown into landfill before ever being sold. It is clearly an industry in need of transformation.

The fashion industry currently operates predominantly on an assumption of disposability, including on the part of consumers. Even when garments are fabricated to be long-lasting, recycling and repurposing rates are very low. Much textile and garment production occurs in countries where labour is cheap and environmental and workplace regulation is relatively weak.



Transitioning to an industry with a low ecological footprint brings with it many challenges, including:

- Redefining the fashion value chain to include recycling and repurposing, creating a circular sector, and modifying business models to suit the reconstructed chain.
- Developing technologies and processes for recycling and repurposing textiles, as well as to improve water, energy, and resource consumption over the fashion value chain.
- Innovation to produce more sustainable materials, and to switch to less hazardous substances in processing.
- The need to establish policy and legislation to provide for sustainability in the fashion industry at a national level
- International cooperation on monitoring, accounting, and reporting practices and standards, as well as communication technology, to bring transparency on sustainability across supply chains. Raw resource producers, textile manufacturers, garment makers, and distributors and retailers are typically separate entities. Recycling and repurposing entities will add further length to the fashion value chain. Means of communication between them is vital to sustainability.
- Changing consumer expectations regarding pricing and cycles of fashion.

This session will explore:

- Innovative business models tailored to a sustainable fashion industry.
- Technologies for communicating sustainability parameters across a circular fashion value chain.
- Opportunities to reclaim value while introducing resource and energy efficiencies into the value chain.
- The opportunity to use technology to improve product offerings, reintroducing tailoring as a common feature of garment fabrication, while moving to less waste through garments-on-demand.

Big Data Big DEAL

For 68 per cent of the environment-related SDG indicators there is not enough data to assess progress, according to UNEP studies which also found that towards all 12 of the SDGs targets related to the state of the environment, there is either no data or no progress made.

To achieve the environmental dimension of the SDGs, it is essential to scale up environmental action that is backed by adequate knowledge. A task that is only achievable through the deployment of the latest technologies, including earth observations, Artificial Intelligence, Machine Learning and the Internet of Things.

This session will explore:

- The progress made in the development of UNEP's Big Data Strategy and the World Environment Situation Room – including support and data integrations and analysis at the national level.
- Gaps, priorities and opportunities for action.
- Elements related to legislation, equity, democracy and transparency related to the technology use and the equitable sharing of Big Data products and services.
- How the work of the Data for the Environment Alliance (DEAL) is shaping up and the opportunities it presents.
- How technologies are transforming our understanding of and actions for the planet.



Accountability and Public Finance: Fast Tracking Sustainable Public Procurement

Co-convoked with
UNEP Sustainable Public
Procurement Unit

Public procurement represents between 12 and 25% of GDP. In Europe, for example, over 250 000 public authorities spend around 14% of GDP (around €2 trillion per year) on the purchase of services, works and supplies. Across multiple sectors such as energy, transport, waste management, social protection and the provision of health or education services, public authorities are the principal buyers.

The public sector can use procurement to boost jobs, growth and investment, and to create an economy that is more innovative, resource and energy efficient, and socially-inclusive. In the private sector, companies are increasingly placing more emphasis on sustainable procurement.

A global study conducted by EcoVadis revealed that 97% of 120 supply chain professionals are placing a higher level of importance on sustainable procurement than before. In addition, Fortune 500 companies who have taken the lead in sustainable procurement have experienced great returns.

European countries and the United States have put in place regulations that encourages sustainability in a company's operations. Examples of such regulations include the Dodd-Frank Act on Conflict Minerals and the UK Environmental Liability Directive.

Together, B2G purchasing and B2B purchasing, represent 2/3 of the final consumption demand signal in the US economy or 10.1 trillion USD. Institutional purchasers are therefore uniquely positioned to demand transparency into the upstream and downstream impacts of goods and services. They are capable of incorporating sustainability criteria into purchasing decisions at a scale that can shift markets.

However sustainable procurement faces a number of challenges:

- Perception that sustainable products and/or services are more expensive
- Lack of expertise on SP implementation
- Lack of policy commitments/goals/action plans
- Lack of strong political and organizational leadership on SP
- Lack of mandatory SP rules/legislation
- Lack of sustainable products and/or services to purchase
- Insufficient monitoring, evaluation and/or enforcement of SP policies
- Competing procurement priorities

This session will explore:

- How to improve sustainable public procurement globally
- Accountability and monitoring tools
- Improved products classifications and standards



The Next Climate COP: From Pledges to Action

Transforming global energy systems is essential to mitigating climate change and improving air quality and ecosystem health.

In the lead up to and during COP26 in November 2021, a broad range of nations announced new pledges for greenhouse gas emissions reductions. These included Japan, South Korea, the USA, the EU, Canada, South Africa, Vietnam, Brazil, and Australia setting net-zero emissions targets for 2050, China, Russia, and Saudi Arabia for 2060, and India for 2070. Shorter-term pledges – those falling around 2030 – were less conspicuous, largely postponed to COP27 in Egypt in November 2022.

As of November 2021, Climate Action Tracker's central estimate was that current policies would have the world experiencing a 2.7°C average global surface temperature rise by 2100, while the central estimate was 2.1°C if pledges and targets were implemented, and 1.8°C if all announced targets were successfully implemented. To give an indication of the profound differences between these scenarios, the IPCC estimates that a 2.0°C world would experience 1-in-50-year heatwaves 60% more often than a 1.5°C world, and they would be hotter on average.

Though the world is still falling short of the climate action required to meet the goals of the Paris Agreement, national pledges are enormously important. Previous progress against pledges has shown that although there are exceptions, countries (and blocs of countries)

do attempt to honour them, resulting in substantive progress in the development and deployment of clean technology and processes.

To be most effective, pledges need to become legislated. Passing climate change law at the national level acts as a signal of intent, enhances the accountability of governments, and precipitates related legislation or by-laws at national, sub-national and local level. When well crafted, legislation and supporting regulation pushes the public sector to the commissioning of climate-sensitive

infrastructure and the procurement of clean products and services, thus also instigating innovation in the private sector towards their provision. In addition, effective legislation enshrines the provision of transparent monitoring and reporting systems, giving governments an incentive to act on climate change.

To date, 14 countries have legislated net-zero emissions: Sweden, UK, New Zealand, Germany, France, Hungary, Denmark, Luxembourg, Spain, Japan, Canada, Ireland, South Korea, and Portugal (from earliest to most recent).

This leaves the majority of nations still to legislate. There are a number of challenges in enacting such law, including:

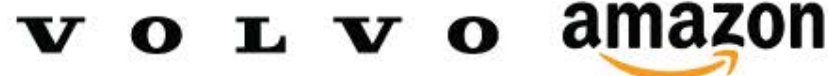
- Lawmakers having access to expertise and being able to draw on international experience while tailoring legislation to meet national circumstances.
- Crafting legislation that allows flexibility to update emissions reductions targets, while being strong enough to propel action to meet existing targets, while harmonising with other national law.
- Implementing supporting legislation, regulations, and processes to enable climate action to be carried out in an efficient manner, and to incentivise business and industry towards clean products and services.
- If necessary, creating the supporting institutions and/or modifying structures of government to adequately focus on climate action.
- Instituting monitoring and accounting practices that meet international standards.
- Maintaining and/or strengthening public support for legislation and climate action.

This session will explore:

- Lessons from the countries that have already enacted legislation – how industry and the economy has responded.
- How industry is following on the Glasgow commitments
- Creating the conditions to attract private investment in adaptation measures in developing countries, and to encourage climate resilient development.
- Scaling up of digital tools to take adaptive capacities to the next level



In partnership with:



The United Nations will commemorate in Stockholm, this summer, 50 years of multilateral environmental action, since the historic 1972 UN Conference on the Human Environment. On this occasion, the UN Science-Policy-Business Forum on the Environment (UN-SPBF) will convene its Fourth High-Level Global Session from 31 May – 4 June 2022.

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