

SPECIAL FEATURE

A brief history about Global Movements and Compelling Challenges of Sustainable Development.

The theme of this year's report 'The Shifting Normal' brings to focus the above emerging trends that are steadily but surely changing our natural environment and the society that we live in. As a part of the report this year, we have a special feature which walks us through a brief historical narrative of the global movements of the last fifty years. These global movements have tried to engage with the compelling challenges of sustainable development. Starting with 'World Earth Day' in 1970 and the Stockholm conference of 1972, the world has seen several important movements that seek to make our planet a better place to live in. The year 2015 will go down in history as when two significant global agreements were signed. The first for example is the 'Sustainable Development Goals', the successor to the Millennium Development Goals. The second is the Paris agreement on climate change or COP-21 which seeks to establish a binding agreement that seeks to keep our planet's average temperature rise within 2° C as compared to the 18th century. Together, these agreement frameworks represent humanity's collective effort to make our society and the planet a vastly better place to live in. As a part of this brief historical narrative of global movements, we have tried to engage with the compelling challenges of sustainable development, structured over four themes – climate change, sustainable development, biodiversity and ozone.

CLIMATE CHANGE

As the impact of climate change gains presence in our everyday lives, many countries have engaged in efforts to mitigate the emission of global greenhouse gases (GHGs) in innovative and cost-effective ways to scale up emissions reductions and foster financial flows.

This section helps present the impact of Climate Change, and Global Actions that have taken place to better understand the issue and help drive better impact.

SUSTAINABLE DEVELOPMENT

The most common definition for a Sustainable Future comes from 1987's Brundtland Report: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

This section provides a brief history of Sustainable Development in the United Nations and the transformational goals leading up to 2030 that are essential to affect a sustainable future 2030.

BIODIVERSITY

Biodiversity has declined by more than a quarter in the last 35 years. Population growth and our consumption are the reasons for this enormous loss. Specifically, habitat destruction and wildlife trade are the major causes of population decline in species.

This section shares a series of facts to outline the outcomes of development on biodiversity and the key initiatives that are protecting it.

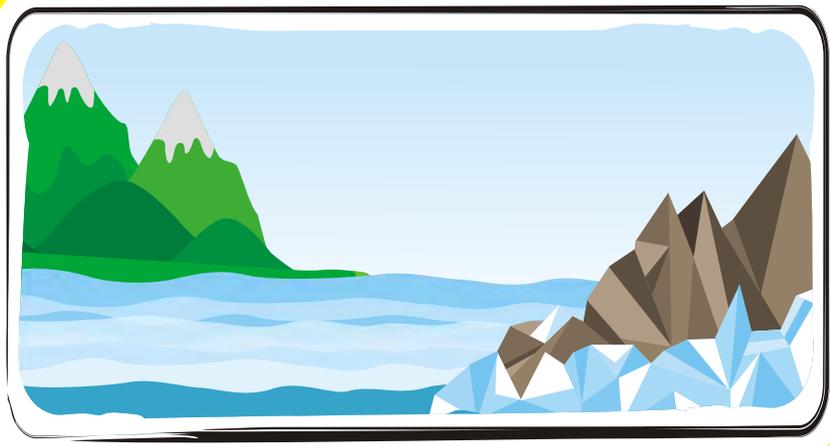
OZONE

Today the ozone hole, which was first spotted 25 years ago, appears headed for a happy ending, thanks to unprecedented international action. Some scientists project that by between 2050 and 2070 global ozone will return to 1980 levels.

This section traces global actions taken post the discovery of the impact CFCs on the Ozone Layer that have been instrumental in reining in the problem.



CLIMATE CHANGE



At its core, global climate change should not be just about economic theory or political platforms, nor about partisan advantage or interest group pressures. It is about protecting both the human environment and the natural environment. So, is the climate changing? Global average temperature is one of the most-cited indicators of global climate change, and shows an increase of approximately 0.78°C since the early 20th Century.

Climate Change action

1988

IPCC established

1992

World leaders meet for the first time to discuss climate change at the Rio Earth Summit.

1995

COP 1, Berlin
Agreed that commitments were "inadequate" - reached the Berlin Mandate, to establish a process to negotiate strengthened commitments for developed countries.

1996

COP 2, Geneva
The Geneva Ministerial Declaration noted. Discussed Quantified Emissions Limitation and Reduction Objectives (QELROs) and acceleration of the Berlin Mandate.

2001

COP 7, Marrakech
Ensured compliance with commitments to land-use change and forestry (LULUCF).

2000

COP 6, The Hague
Bonn Agreements Consensus including capacity-building for developing countries and countries with economies in transition.

1999

COP 5, Bonn
Focused on adoption and guidelines for preparation of national communications, capacity building, transfer of technology and flexible mechanisms.

1998

COP 4, Buenos Aires
Buenos Aires Plan of Action, focused on financial mechanisms, development & transfer of technologies and maintaining the momentum in relation to the Kyoto Protocol.

1997

COP3, Kyoto
Kyoto Protocol, first international agreement with binding emissions reductions targets for developed countries accepted.

2002

COP 8, New Delhi
Reiterated the need to build on the outcomes of the 2001 World Summit.

2003

COP 9, Milan
Special Climate Change Fund and Least Developed Countries Fund adopted to support technology transfer, adaptation projects and other activities.

2004

COP 10, Buenos Aires
Policy on development and transfer of technologies, LULUCF; and UNFCCC Article 6 on education, training and public awareness.

2005

COP 11, Montreal
Kyoto Protocol enters into force.

2006

COP 12, Nairobi
Adopted rules for procedure for the Kyoto Protocol's Compliance Committee.

2010

COP 16, Cancun
Green Climate Fund created to support developing countries.

2009

COP 15, Copenhagen
The Copenhagen Summit recognizes the 2°C scientific goal, but fails to reach a new global climate deal.

2008

COP 14, Poznan
Adaptation Fund under the Kyoto Protocol, to be filled by a 2% levy on projects under the Clean Development Mechanism.

2007

COP 13, Bali
Adopted the Bali Road Map as a two-year process towards a strengthened international climate change agreement.

2011

COP 17, Durban
Decided to adopt a universal climate agreement by 2015; work begins under the Ad Hoc working Group on the Durban Platform for Enhanced Action (ADP).

2012

COP 18, Doha
Timetable to adopt a universal climate agreement by 2015, to come into effect in 2020.

2013

COP19, Warsaw
Rulebook for reducing emissions from deforestation and forest degradation, together with measures to bolster forest preservation with a results-based payment system.

2014

COP20, Lima
Pledges made by developed and developing countries prior to and during the COP took the capitalization of the new Green Climate Fund (GCF) past an initial \$10 billion target.

2015

COP21, Paris
Earth's warmest year on record.



The Paris climate agreement: key points A historic pact, approved by 195 countries to take effect from 2020



TEMPERATURES

2100

Keep warming "well below 2 degree Celsius". Continue efforts to limit the rise in temperatures to 1.5 degrees Celsius.



FINANCE

2020-2025

Developed countries to provide US\$100 billion from 2020, as a "floor" Amount to be updated by 2025.



DIFFERENTIATION

Developed countries must continue to "take the lead" in the reduction of greenhouse gases. Developing nations are encouraged to "enhance their efforts" and move over time cuts.



EMISSIONS OBJECTIVES

2050

Aim for greenhouse gases emissions to peak "as soon as possible" From 2050: rapid reductions to achieve a balance between emissions from human activity and the amount that can be captured by CO₂ "sinks".



BURDEN-SHARING

Developed countries must provide financial resources to help developing countries. Other countries are invited to provide support on a voluntary basis.



REVIEW MECHANISM

2023

A review every 5 years - First world review: 2023. Each review will inform countries in "updating and enhancing" their pledges.



CLIMATE DAMAGE

Vulnerable countries have won recognition of the need for "averting, minimising and addressing" losses suffered due to climate change.

Climate Change IS HAPPENING NOW

Scientists have known for decades. They've warned us and changes are well underway.

Time  Care

SNOW COVER

The average **Northern Hemisphere** snow cover extent **decreased 1.6% per decade** from **1967-2012**.

TEMPERATURE

Global surface temperature - risen 1.6°C over past 50 years - Each of the last three decades has been warmer than the preceding decades.

SHIFTING SEASONS

Impacts the entire ecosystems - flowers emerge earlier while frost is a risk, resulting in fewer **wildflowers and butterflies**, affecting **migration patterns** and causing melt to begin earlier.

OCEAN ACIDIFICATION

Over **90% of the warming on Earth** over the **past 50 years** has occurred in the ocean. Heat already stored in the ocean will eventually be released, locking in additional warming in the future.

SEA LEVEL RISE

Global average has risen 7.5 inches over the past century, with the rate of **rise accelerating over the last two decades**. **Sea levels rose twice as fast from 1993 to 2010** as they did from **1901 to 2010**.

WATER VAPOR

As we warmed-up, water vapor increased by roughly **4% since the 1970s**, making most regions vulnerable to increases and decreases of precipitation.

GLACIERS & ICE SHEETS

Shrinking and losing mass - faster melt rate in the **past 20 years**, prior to **1993** - Greenland and Antarctic ice sheets have lost over **four trillion metric tons** in **20 years**.

PERMAFROST

Since early **1980s**, increased temperatures have led to shrinking, resulting in **trapped methane** and **carbon dioxide release into the atmosphere**, vulnerability of coastlines to **erosion** and **ecosystem changes**.

SEA ICE

Reflects **incoming radiation from the Sun** - **Arctic sea ice** has been **decreasing 3.5 to 4.1% per decade** (1979-2012). **Multi-year ice** that lasts throughout the year, has **decreased 11% per decade**.

OCEAN HEAT CONTENT

Oceans absorb a large amount of **CO₂** that react with ocean water to form carbonic acid, lowering the **ocean's pH by 0.1** since the beginning of the **industrial era** making the ocean **26% more acidic**. Ocean acidification impacts the survival of **marine organisms**.

SEA SURFACE TEMPERATURES

Increasing greenhouse gases not only warming the atmosphere - it's warming the oceans. Water expands as it warms, **contributing to sea level rise**. From **1901 to 2012**, sea surface temperatures **rose at an average rate of 0.13 degrees per decade**.

What Countries are doing to TACKLE Climate Change

CANADA

intends to achieve an economy-wide target to reduce its greenhouse gas emissions by **30%** below 2005 levels by 2030

RUSSIA

has pledged to limiting anthropogenic greenhouse gases to **70%-75%** of 1990 levels by the year 2030

CHINA

has determined its actions by 2030 to lower carbon dioxide emissions per unit of GDP by **60%-65%** from the 2005 level and to increase non-fossil fuels in primary energy consumption

THE EU

and its 28 member states are committed to a binding target of at least **40%** domestic reduction in greenhouse gas emissions by 2030 compared to 1990

THE U.S.

intends to achieve an economy-wide target of reducing its greenhouse gas emissions by **26%-28%** below its 2005 level in 2025 and to make best efforts to reduce its emissions by 28%

JAPAN

post-2020 GHG emission reductions is at **26.0% by 2030** compared to 2013 at **25.4%** reduction compared to FY 2005

INDIA

intends to reduce the emissions intensity of its GDP by **33%-35%** by 2030 from 2005 and has undertaken to set up a USD 55.6 million National Adaptation Fund

BRAZIL

intends to commit to reduce greenhouse gas emissions by 37% below 2005 levels in 2025 and to reduce greenhouse gas emissions by **43%** below 2005 levels in 2030

INDONESIA

has committed to reduce unconditionally **26%** of its greenhouse gases against the business as usual scenario by the year 2020

AUSTRALIA

will implement an economy-wide target to reduce greenhouse gas emissions by **26-28%** below 2005 levels by 2030

SUSTAINABLE DEVELOPMENT



The concept of sustainability and sustainable development, have become part of the political rhetoric in the 1980s, due to the publication of the Brundtland Commission report - Our Common Future, and Leading thinkers and writers drawing attention to the relationship between economic growth and development and environmental degradation.

The world is in need of an economic system, that is sustainable and capable of satisfying the basic material requirements of its people based on today's ecological system with its limited pools of resources.

HISTORY OF SUSTAINABLE DEVELOPMENT IN The United Nations



1972

The **United Nations Conference on the Human Environment** held in **Stockholm** brought the industrialized and developing nations together to delineate the 'rights' of the human family to a healthy and productive environment. The **recognition to revitalize humanity's connection with Nature**, led to the creation of global institutions within the UN system.

1980

The **International Union for the Conservation of Natural Resources (IUCN)** published the **World Conservation Strategy (WCS)** which provided a precursor to the concept of sustainable development. The strategy asserted that **conservation of nature cannot be achieved without development to alleviate poverty** and stressed the interdependence of conservation and development which depends on caring for the Earth. **Unless the fertility and productivity of the planet are safeguarded, the human future is at risk.**

1982

At the 48th plenary of the General Assembly, the **WCS initiative** culminated with the approval of the **World Charter for Nature**. The Charter stated that **"mankind is a part of nature and life depends on the uninterrupted functioning of natural systems"**.



The **World Commission on Environment and Development (WCED)** was created. In 1984, it was constituted as an independent body by the United Nations General Assembly. WCED was asked to formulate 'A global agenda for change'. In 1987, in its report **Our Common Future** also known as the **Brundtland Report**, the WCED reaffirmed that "the environment does not exist as a sphere separate from human actions, ambitions, and needs, and therefore it should not be considered in isolation from human concerns. The environment is where we all live; and development is what we all do in attempting to improve our lot within that abode. The two are inseparable." The report wove together social, economic, cultural and environmental issues and global solutions.

1983

1992

Rio de Janeiro - the first **UN Conference on Environment and Development (UNCED)** adopted an agenda for environment and development in the 21st Century.

Agenda 21: recognizes each nation's right to pursue social and economic progress and assigned to states the responsibility of adopting a model of sustainable development; and, the Statement of Forest Principles. Agenda 21 reaffirmed that sustainable development was delimited by the integration of the economic, social and environmental pillars.

"Harmony with Nature", captured the spirit of the conference and brought to the fore the first principle of the Rio Declaration: "Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature".



IUCN



UNCED instituted the **Commission on Sustainable Development (CSD)** to follow-up on the implementation of Agenda 21.



The **World Summit on Sustainable Development (WSSD)** was convened in **Johannesburg** to renew the global commitment to sustainable development. The conference agreed on the **Johannesburg Plan of Implementation (JPOI)** and tasked the CSD to follow-up on the implementation of sustainable development.



The **UN General Assembly Resolution A/RES/64/236 - "The Future We Want"** agrees to hold the United Nations Conference on Sustainable Development (UNCSD) in 2012 - referred to as 'Rio+20'. The **Member States agreed on two themes for Rio+20**: green economy within the context of sustainable development & poverty eradication, and institutional framework for sustainable development



The **United Nations Conference on Sustainable Development (Rio+20)** Rio de Janeiro, Brazil, is considered to be the largest conferences in the history of the United Nations, **establishes The Division for Sustainable Development (DSD)** to provide leadership in promoting and coordinating implementation of the sustainable development agenda of the United Nations. The work of the Division translates into five core functions: (1) Support to UN intergovernmental processes on sustainable development; (2) Analysis and policy development; (3) Capacity development at the country level; (4) Inter-agency coordination; and (5) Knowledge management, communication and outreach.

UNGASS

The General Assembly dedicated its **19th Special Session (UNGASS-19)** to design a **"Programme for the Further Implementation of Agenda 21"**.

1997

2002

2009

2012

2015



United Nations Sustainable Development Summit 2015, "Time for Global Action", was held in New York between 25 - 27 September. The summit was convened for the adoption of the post-2015 development agenda at a high-level plenary meeting of the General Assembly to table the **Agenda for Sustainable Development 2030: Transforming our World**.

This agenda is a plan of action for people, planet and prosperity; seeks to strengthen universal peace in larger freedom; recognises that eradicating poverty in all forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development.

The goals and targets will stimulate action over the next fifteen years in areas of critical importance for humanity and the planet.



Transforming our World: Goals for 2030

Sustainable development is the pathway to the future we want for all. It offers a framework to generate economic growth, achieve social justice, exercise environmental stewardship and strengthen governance.

Ban Ki-moon
8th Secretary-General of the United Nations



BIODIVERSITY



Biodiversity refers to the variety of life on Earth at all its levels, from genes to ecosystems, and the ecological and evolutionary processes that sustain it.

KNOWN SPECIES THREATENED WITH EXTINCTION

Bird Species



Mammal Species



Amphibians Species



Conifer Species



Marine Turtle Species



THREATS TO BIODIVERSITY



of ocean fisheries are categorized as fully exploited, over exploited or depleted



of the Earth's wetlands have been destroyed in the 20th century

Invasive species - Nile Perch, Zebra Mussels, Water Hyacinth - cost economies annually

\$1.4 trillion



Black-Market Demands for wildlife illegal fishing and illegal logging is valued at

\$70.5 billion per year

The extinction rate today is more than **100X** the level it was before humans walked the Earth.

Species numbers & population have dropped by almost **30%** in the last 100 years.

2 species have gone **extinct** everyday since 2010

75% of the world's known species may face extinction if the world's temperature rises by **more than 3.5C**

90% of the wet lowland forests in western Ecuador have been cleared in the **last 40 years**. These forests used to be home to **10,000 species** of plants, **25%** of which existed only in Ecuador

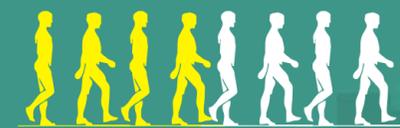
1/3 of reef-building corals around the world are threatened with extinction. **Coral reefs** are home to **innumerable species**

Climate change and **habitat loss** threatens the existence of at least **25%** of all species on land by the year **2050** if the **current trends continue**

Studies suggest that **25%** of all mammal species could be extinct in the **next 20 years**

WHY BIODIVERSITY MATTERS

Biodiversity provides the **raw materials** for the food, medicines and industries that support life.



Humans consume **7,000** plants species as food

1.6 billion of the world's **7 billion people** rely on forests for their livelihood



1/2 of the synthetic drugs have a natural origin

70% of the world's poor live in rural areas and depend directly on biodiversity for survival



PROTECTING THE EARTH'S BIODIVERSITY



International Plant Protection Convention (IPPC), Rome, 1951, aimed to secure coordinated, effective action **to prevent and to control the introduction and spread of pests of plants and plant products.**

The **Ramsar Convention** (formally the Convention on Wetlands of International Importance) - **Iran** - provides the framework for national action and international cooperation for the **conservation and wise use of wetlands and their resources.**

The **World Heritage Convention** was adopted by the United Nations Educational, Scientific and Cultural Organization (UNESCO) General Conference at its 17th session in **Paris** - is a successful global instrument for the **protection of cultural and natural heritage.**

CITES - Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, DC aims to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species in the wild, and accords varying degrees of **protection to more than 35,000 species of animals and plants.**

The **Nagoya Protocol**, the second supplementary agreement to the 1992 Convention on Biological Diversity (CBD) - provides a transparent legal framework for the effective implementation of fair and equitable sharing of benefits arising out of the utilization of genetic resources. The Nagoya Protocol adopted a revised and updated **Strategic Plan for Biodiversity covering the 2011-2020 period.**

The **International Treaty on Plant Genetic Resources for Food and Agriculture** (IT PGRFA) - **Madrid** - popularly known as the International Seed Treaty - in harmony with the Convention on Biological Diversity, aims at **guaranteeing food security** through the conservation, exchange and sustainable use of the world's plant genetic resources for food and agriculture (PGRFA), as well as the fair and equitable benefit sharing arising from its use.

The **Cartagena Protocol**, signed in **Montreal**, on Biosafety to the Convention on Biological Diversity, the first supplementary agreement to the 1992. The Biosafety Protocol seeks to protect biological diversity from the potential **risks posed by genetically modified organisms** resulting from modern biotechnology.

The **United Nations Convention to Combat Desertification, Paris**, is the only internationally legally binding framework set up to address the problem of desertification. The Convention is based on the principles of participation, partnership and decentralization-the backbone of Good Governance and Sustainable Development.

The **Rio de Janeiro Convention** on Biological Diversity (CBD) - has three main objectives: to conserve biological diversity; to use its components in a sustainable way; to share fairly and equitably the benefits arising from the use of genetic resources.

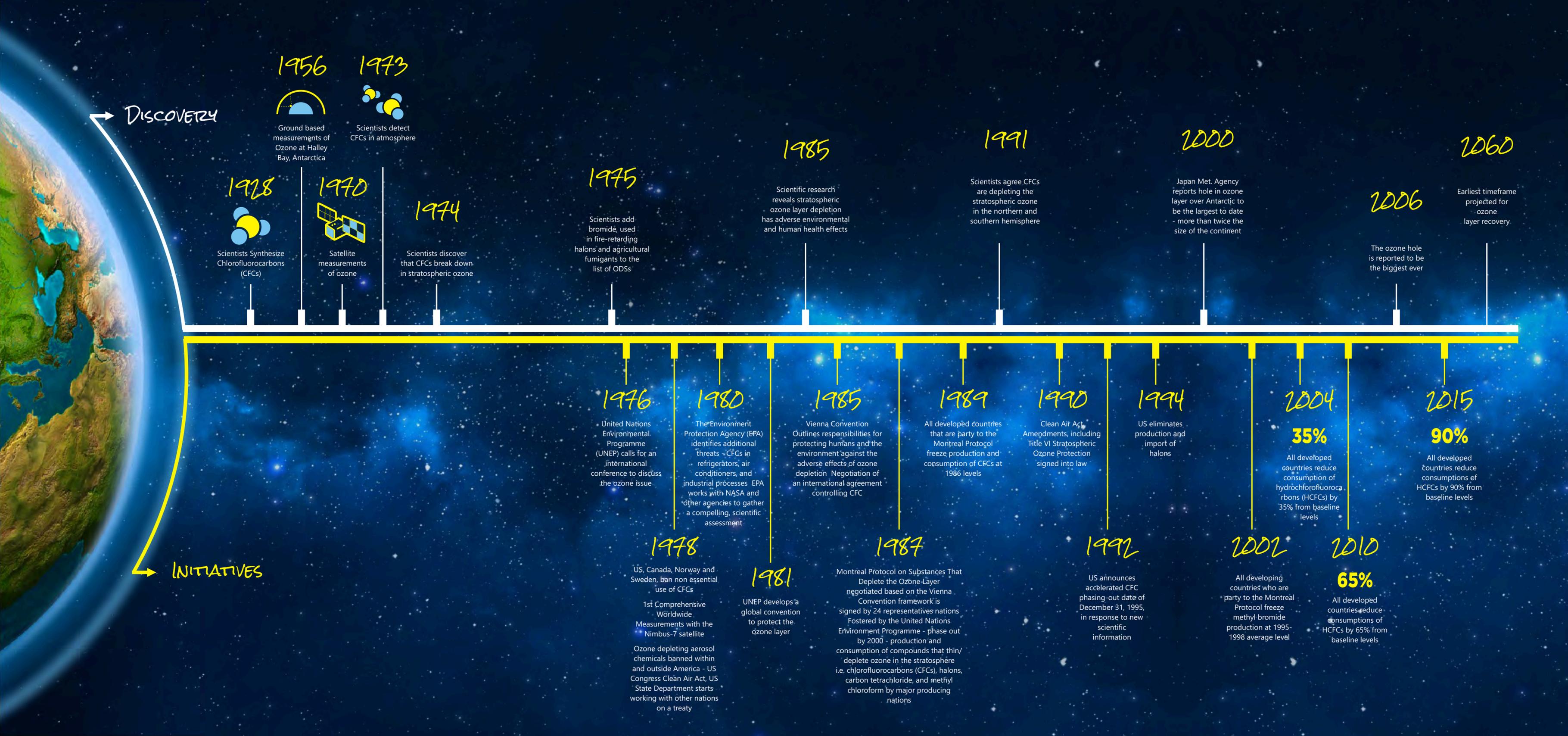
CMS - Convention on the Conservation of Migratory Species of Wild Animals - Bonn - to conserve migratory species and their habitats by providing strict protection for endangered migratory species.

OZONE



The ozone layer in the upper atmosphere acts like a shield, protecting life on Earth from the sun's harmful ultraviolet radiation. In 1985, scientists observed a thinning of the ozone layer over Antarctica. Since then, research has shown that ozone depletion occurs over every continent.

In 1987, world leaders signed a landmark environment treaty, the Montreal Protocol on Substances That Deplete the Ozone Layer. Today almost every country in the world has ratified the treaty and is phasing out the production and use of chlorofluorocarbons (CFCs) and other Ozone-Depleting Substances (ODSs).



DISCOVERY

1956



Ground based measurements of Ozone at Halley Bay, Antarctica

1973



Scientists detect CFCs in atmosphere

1928



Scientists Synthesize Chlorofluorocarbons (CFCs)

1970



Satellite measurements of ozone

1974

Scientists discover that CFCs break down in stratospheric ozone

1975

Scientists add bromide, used in fire-retarding halons and agricultural fumigants to the list of ODSs

1985

Scientific research reveals stratospheric ozone layer depletion has adverse environmental and human health effects

1991

Scientists agree CFCs are depleting the stratospheric ozone in the northern and southern hemisphere

2000

Japan Met. Agency reports hole in ozone layer over Antarctic to be the largest to date - more than twice the size of the continent

2006

The ozone hole is reported to be the biggest ever

2060

Earliest timeframe projected for ozone layer recovery

INITIATIVES

1976

United Nations Environmental Programme (UNEP) calls for an international conference to discuss the ozone issue

1980

The Environment Protection Agency (EPA) identifies additional threats - CFCs in refrigerators, air conditioners, and industrial processes. EPA works with NASA and other agencies to gather a compelling, scientific assessment

1985

Vienna Convention Outlines responsibilities for protecting humans and the environment against the adverse effects of ozone depletion. Negotiation of an international agreement controlling CFC

1989

All developed countries that are party to the Montreal Protocol freeze production and consumption of CFCs at 1986 levels

1990

Clean Air Act Amendments, including Title VI Stratospheric Ozone Protection signed into law

1994

US eliminates production and import of halons

2004

35%

All developed countries reduce consumption of hydrochlorofluorocarbons (HCFCs) by 35% from baseline levels

2015

90%

All developed countries reduce consumptions of HCFCs by 90% from baseline levels

1978

US, Canada, Norway and Sweden, ban non essential use of CFCs

1st Comprehensive Worldwide Measurements with the Nimbus-7 satellite

Ozone depleting aerosol chemicals banned within and outside America - US Congress Clean Air Act, US State Department starts working with other nations on a treaty

1981

UNEP develops a global convention to protect the ozone layer

1987

Montreal Protocol on Substances That Deplete the Ozone Layer negotiated based on the Vienna Convention framework is signed by 24 representatives nations. Fostered by the United Nations Environment Programme - phase out by 2000 - production and consumption of compounds that thin/deplete ozone in the stratosphere i.e. chlorofluorocarbons (CFCs), halons, carbon tetrachloride, and methyl chloroform by major producing nations

1992

US announces accelerated CFC phasing-out date of December 31, 1995, in response to new scientific information

2002

All developing countries who are party to the Montreal Protocol freeze methyl bromide production at 1995-1998 average level

2010

65%

All developed countries reduce consumptions of HCFCs by 65% from baseline levels

ALL THERE IS BETWEEN U AND UV

OZONE

"PERHAPS THE SINGLE MOST SUCCESSFUL INTERNATIONAL AGREEMENT TO DATE HAS BEEN THE MONTREAL PROTOCOL"

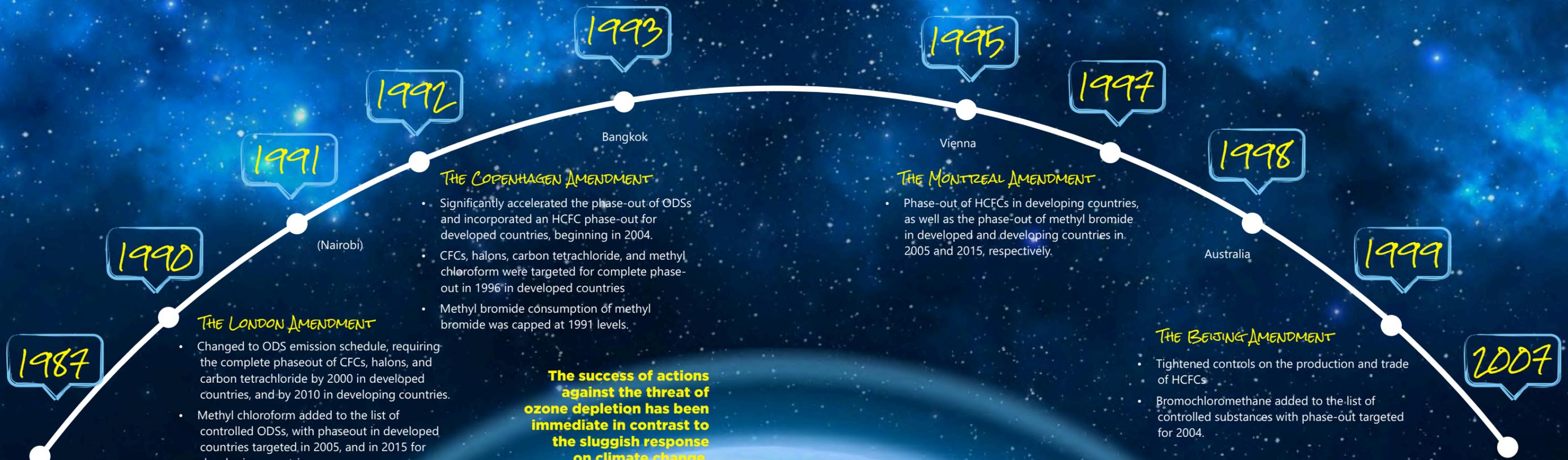
KOFI ANNAN

THE MONTREAL PROTOCOL

- TACKLES CO² and trace-gas induced global warming
- INCLUDES trade sanctions and incentives to ensure compliance
- BANS the import of ozone-depleting substances (ODS) from nonparties
- DISCOURAGES the export of technologies used in producing and utilizing ODS to nonparties

INTRODUCES A STRUCTURED AND DISTINCTION

OZONE LAYER THREATS GROUP I	OZONE LAYER THREATS GROUP II
fully halogenated CFCs Developed countries Production reduction	halons developing countries consumption reductions



The success of actions against the threat of ozone depletion has been immediate in contrast to the sluggish response on climate change.

As a result of international cooperation, the ozone hole over the Antarctica is slowly recovering. Climate projections indicate that the ozone layer will return to 1980 levels between 2050 and 2070.

THE MONTREAL PROTOCOL

Aggressively phase out HCFCs in both developed and developing countries.