

Introduction to environmentalism and (international) environmental law

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Microbiome Immunity and
Ecology Lab

Week 1 – Introduction | 18/02/2025

Copernicus Sentinel (2016), ESA

Laboratory of Microbiome Immunity and Ecology

We use computational and sequencing approaches to study microbiomes — from the ocean to the human gut.

We aim to characterise the biosynthetic and immune potential of microbes to better understand their ecology.

Early environmentalism*: XVIIIth century to WWII

Jean-Jacques ROUSSEAU: 1712 (Geneva) – 1778 (Ermenonville, FR)

Nature vs Culture — Exaltation of Nature (Les Rêveries du promeneur solitaire)

Henry David THOREAU: 1817– 1862 (MA, USA)

Walden; or, Life in the Woods (1854)

I went to the woods because I wished to live deliberately, to front only the essential facts of life, [...] and not, when I came to die, discover that I had not lived. [...] I wanted to live deep and suck out all the marrow of life, [...], to drive life into a corner, and reduce it to its lowest terms, and, if it proved to be mean, why then to get the whole and genuine meanness of it, and publish its meanness to the world; or if it were sublime, to know it by experience, and be able to give a true account of it in my next excursion.

*In Europe and North America

Early environmentalism: protecting landscapes

Yellowstone National Park, 1872

*“AN ACT to set apart a certain tract of land lying near the headwaters of the Yellowstone River **as a public park**. Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the tract of land in the Territories of Montana and Wyoming ... is hereby **reserved and withdrawn from settlement, occupancy, or sale under the laws of the United States, and dedicated and set apart as a public park or pleasuring ground for the benefit and enjoyment of the people**; and all persons who shall locate, or settle upon, or occupy the same or any part thereof, except as hereinafter provided, shall be considered trespassers and removed there from”*



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Yosemite National Park, 1890

Founded in 1892: “To explore, enjoy, and protect the wild places of the earth; To practice and promote the responsible use of the earth's ecosystems and resources; To educate and enlist humanity to protect and restore the quality of the natural and human environment; and to use all lawful means to carry out these objectives.”



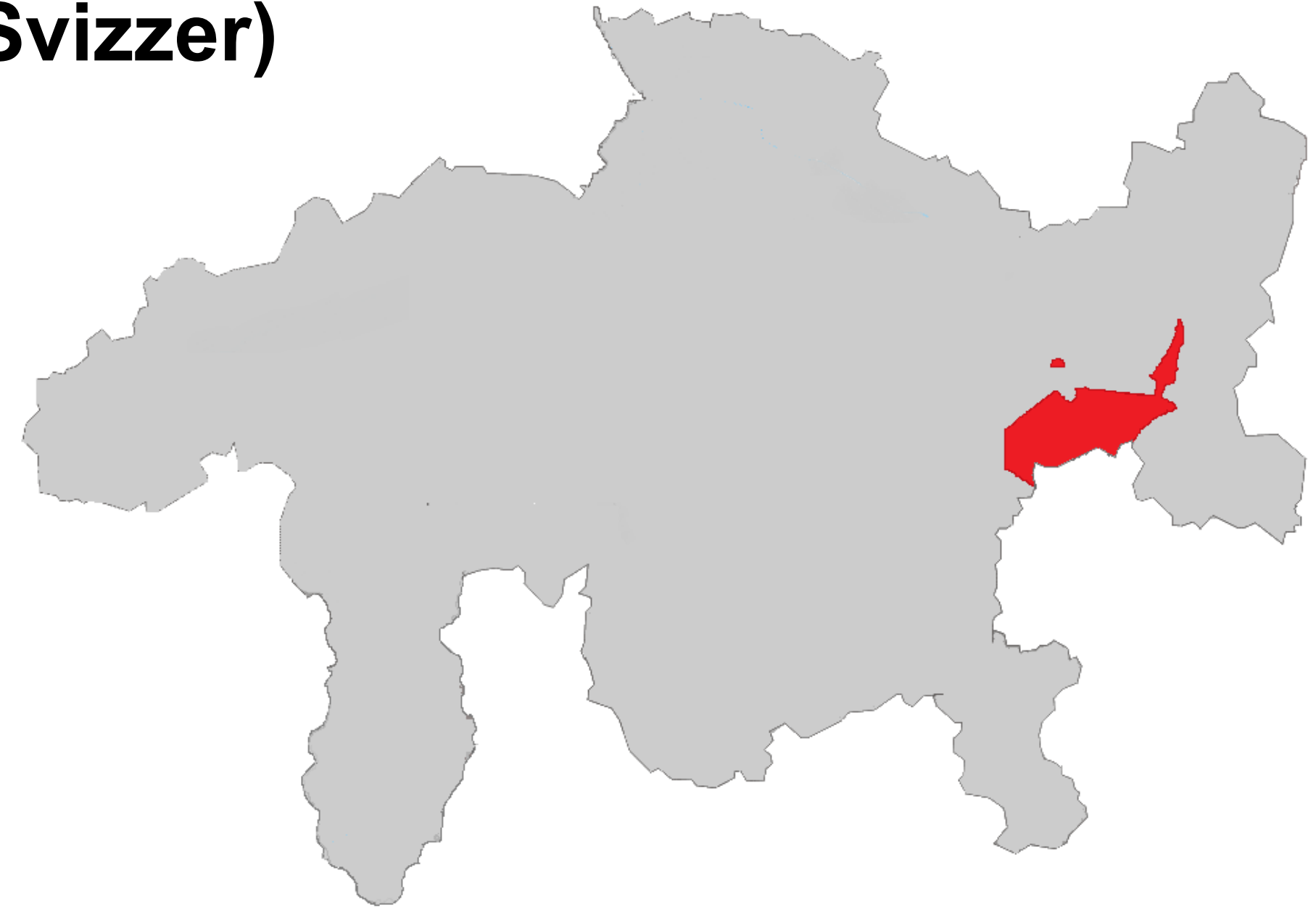
U.S. President Theodore Roosevelt (left) and nature preservationist John Muir, founder of the Sierra Club, on Glacier Point in Yosemite National Park. In the background: Upper and lower Yosemite Falls.



Early environmentalism: protecting landscapes

The Swiss Natural Parc (Parc Naziunal Svizzer)

Graubünden

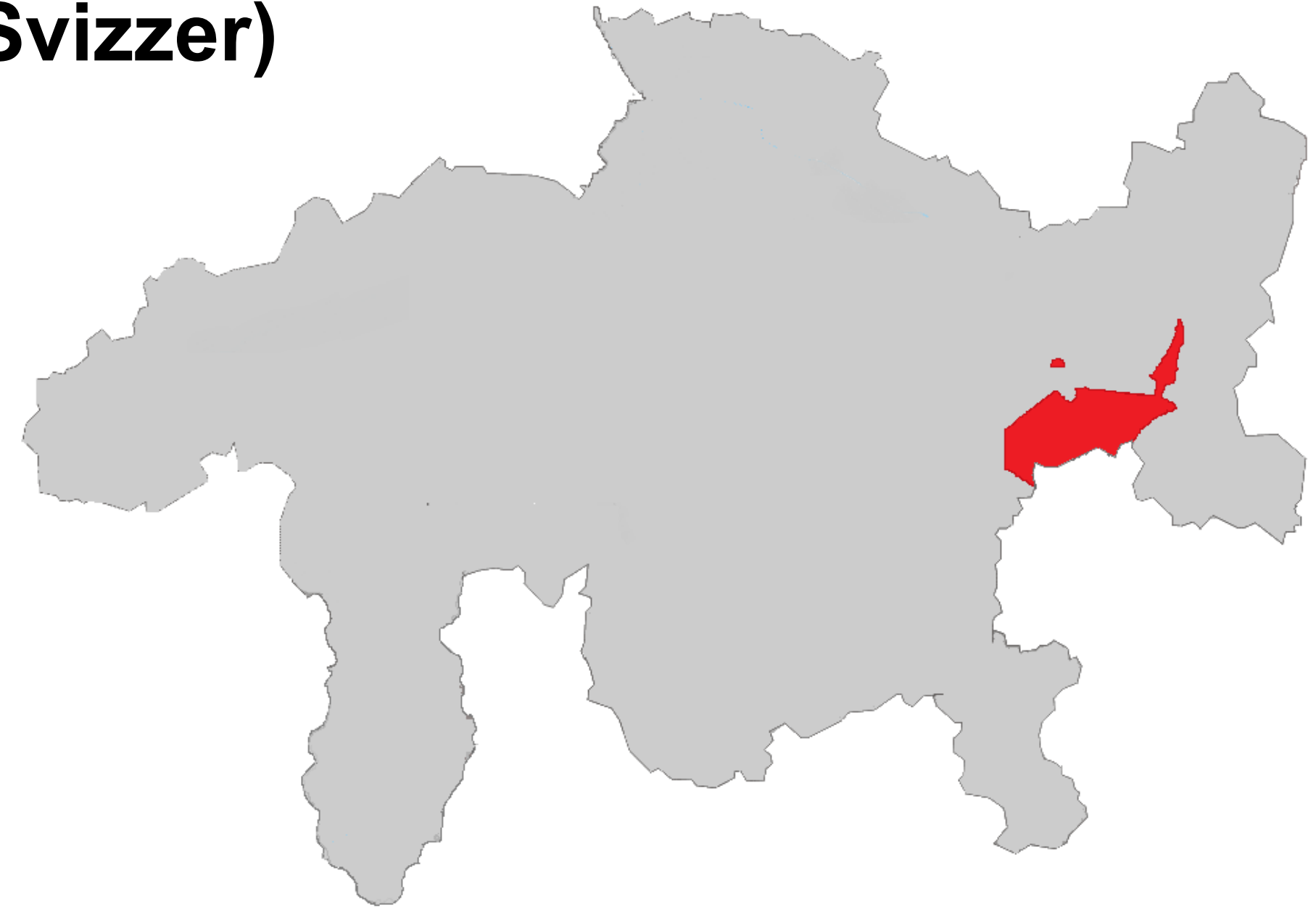


Early environmentalism: protecting landscapes

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1914



Early environmentalism: protecting nature

Fur Seals Convention, 1911

Convention between the USA, UK, Japan, and Russia providing for the preservation and protection of the Fur Seals

Early environmentalism: protecting nature

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But nature as a resource!

Early environmentalism: natural resources

Ernst FISCHER: 1888 – 1915 (Germany)

“Der Mensch als geologischer Faktor”, in *Zeitschrift der Deutschen Geologischen*, 1915

Discusses environmental balances, availability of natural resources, humankind disrupting this balance with potential for autodestruction.

Treaty between the USA and Mexico concerning the equitable distribution of the waters of the Rio Grande, 1906

And many other bilateral agreements to manage natural resources of watercourses.

Early environmentalism: limiting pollution

Trail Smelter Arbitration (USA v. Canada) – March 1941

Sulphur dioxide emissions from a Canadian-based smelter caused damages to crops and lands in the state of Washington.

No State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.

Early environmentalism*: XVIIIth century to WWII

Growing environmental awareness around three main topics

Protection of nature and landscapes

Depletion of natural resources

Preventing pollution

Localised in space and time

Visible and accessible to human senses

Clearly established causes

Unilateral solutions that do not question development and industrialisation

Second half of the XXth century

Shift in the 1960s-1970s

A new ecological perspective:

From individual environmental issues and policies

To a planetary approach to global challenges

Second half of the XXth century

Rachel CARSON: *Silent Spring*, 1962

The use of pesticides (DDT) have adverse consequences on the environment (and biodiversity)

Meadows report: *The limits to growth*, 1972 (Club of Rome)

1. *If the present growth trends in world population, industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next one hundred years. The most probable result will be a rather sudden and uncontrollable decline in both population and industrial capacity.*
2. *It is possible to alter these growth trends and to establish a condition of ecological and economic stability that is sustainable far into the future. The state of global equilibrium could be designed so that the basic material needs of each person on earth are satisfied and each person has an equal opportunity to realize his individual human potential.*
3. *If the world's people decide to strive for this second outcome rather than the first, the sooner they begin working to attain it, the greater will be their chances of success.*

Second half of the XXth century

Earth from Space, Apollo 8: 1968 - Earthrise



Source: NASA/Johnson Space Center. https://www.nasa.gov/history/afi/ap08fi/16day4_orbit4.html
Accessed 10.12.24

Second half of the XXth century

Environmental NGOs



1948



1961

GREENPEACE

1971

Second half of the XXth century

UN General Assembly: December 1968

Resolution 2398 (XXIII): 'Problems on the Human Environment'

Convenes a 'United Nations Conference on the Human Environment', which will take place in 1972 in Stockholm.

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United Nations Conference on the Human Environment in Stockholm, 1972

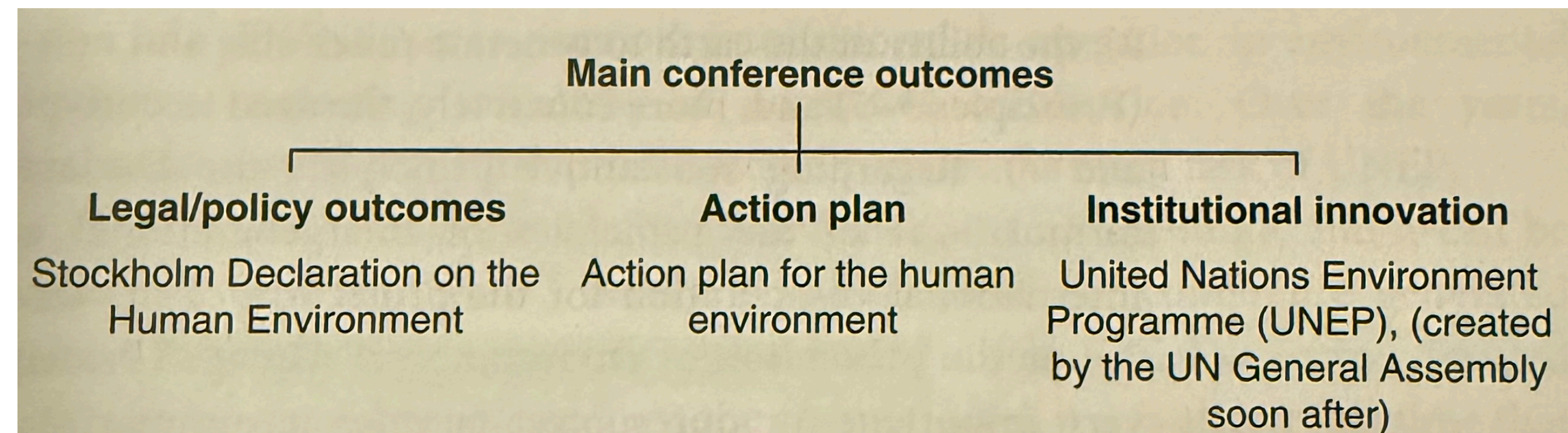
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Principle 1 of the Declaration affirms the fundamental human right to *"adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being"*

Second half of the XXth century

National agencies

OFEV/BAFU – CH

Second half of the XXth century

National agencies

OFEV/BAFU – CH – 1971

Environmental Protection Agency – USA – 1970

Ministère de la Protection de la nature et de l'environnement – FR – 1971

Ministerium für Umweltschutz und Wasserwirtschaft der DDR – DE – 1972

A global perspective

United Nations Conference on the Human Environment in Stockholm, 1972

Ramsar convention, WHC, CITES, UNCLOS, etc

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The Earth Summit in Nairobi, 1982

Failure – disinterest from Reagan

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The United Nations Conference on Environment and Development in Rio, 1992

CBD, UNCCC, UNCCD, Agenda 21, Millenium Development Goals (2000)

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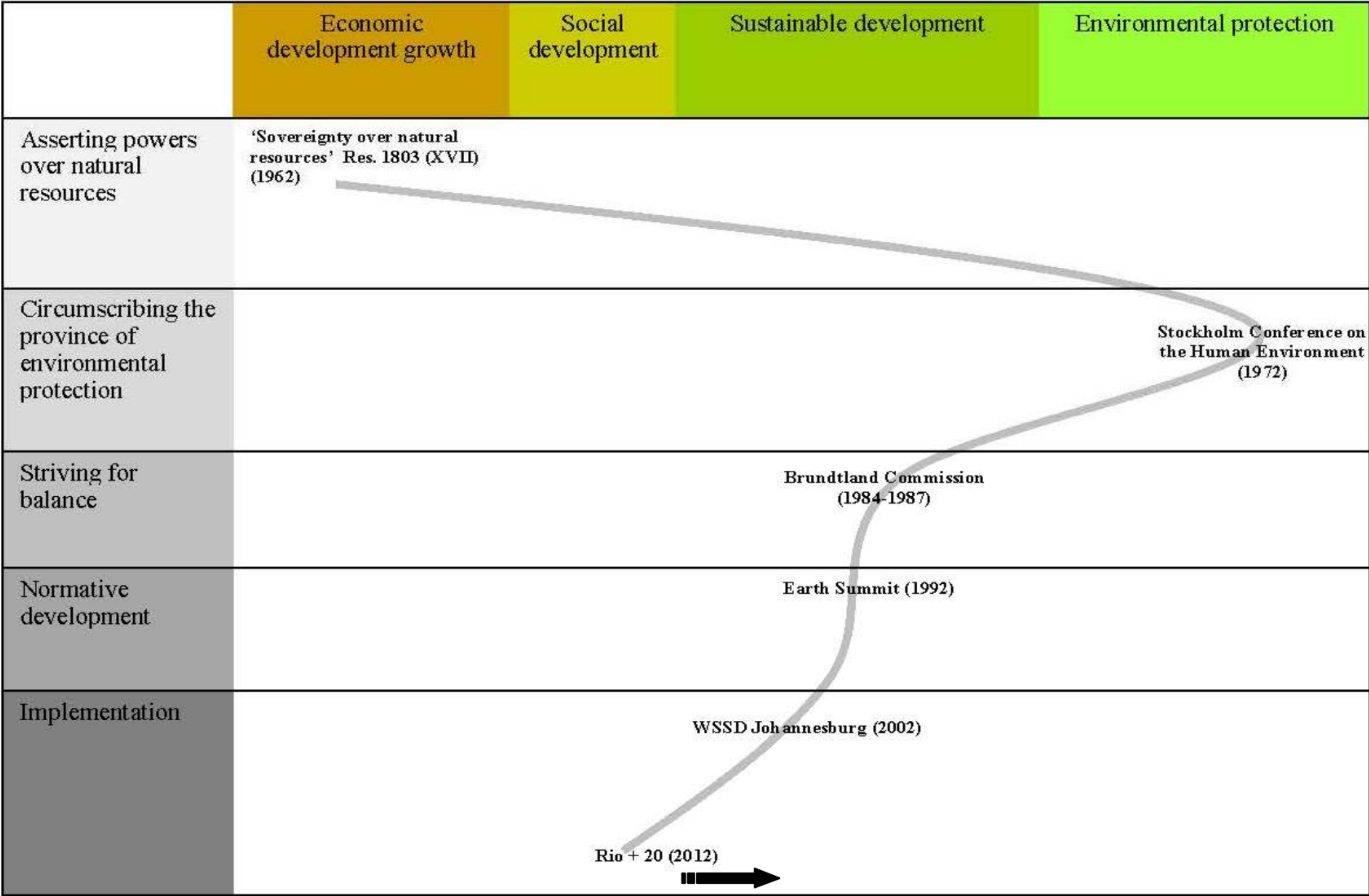
World Summit on Sustainable Development in Johannesburg, 2002

CBD, UNCCC, UNCCD, Agenda 21

United Nations Conference on Sustainable Development in Rio (Rio+20), 2012

UN 2030 Agenda

The sustainable development equation



The sustainable development equation

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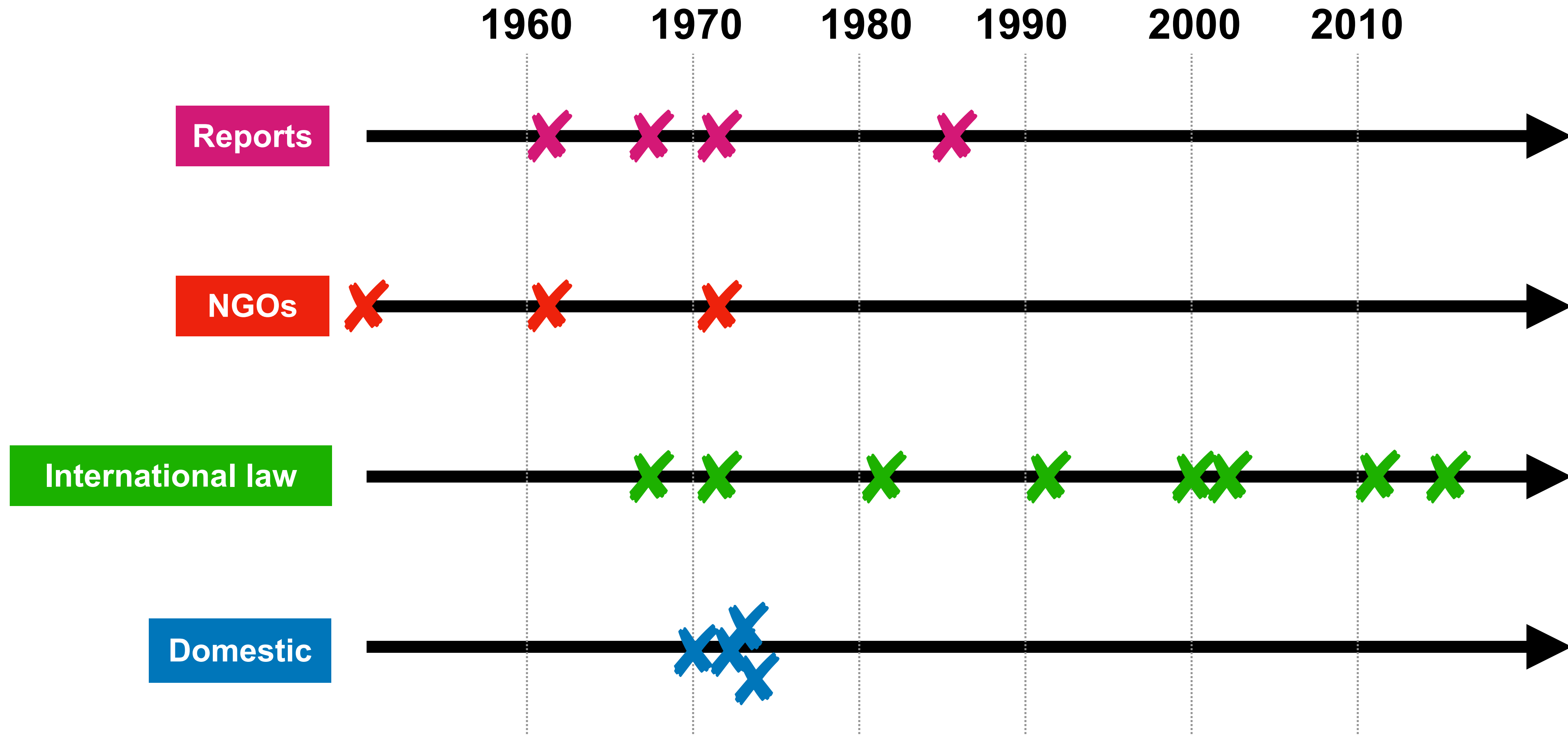
United Nations Conference on Sustainable Development in Rio (Rio+20), 2012

UN 2030 Agenda

Stockholm+50: a healthy planet for the prosperity of all, 2022

UN SDG summit in 2023

Second half of the XXth century



International environmental law

Hard law

1. International conventions

Treaty = Convention = Agreement = Protocol; a contract applied to signatories.

Applied by international courts

2. International customs

No-harm, prevention, co-operation, exchange of information equitable utilization and management of shared natural resources, requirement of environmental impact assessment, and public participation

3. General principles

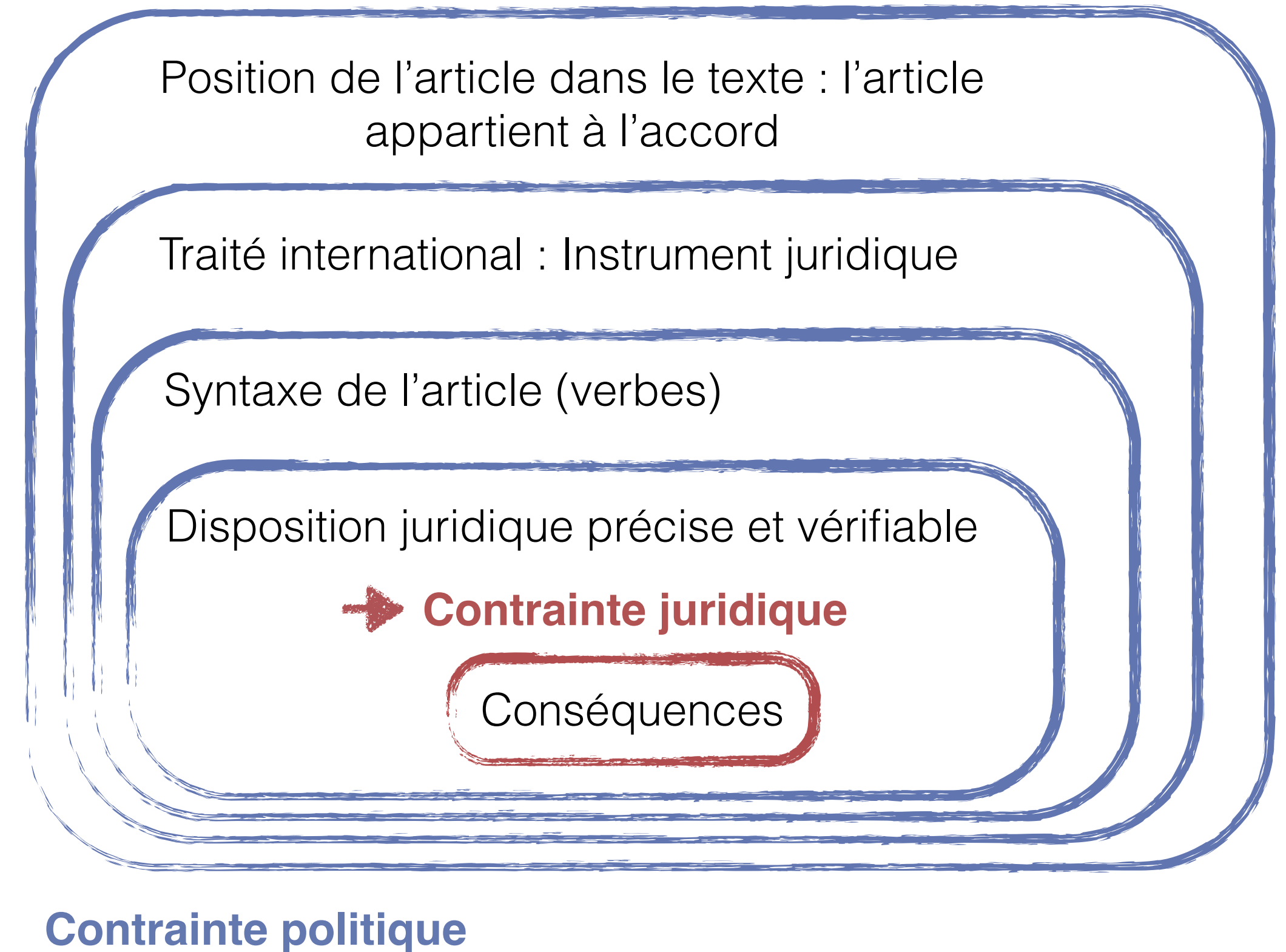
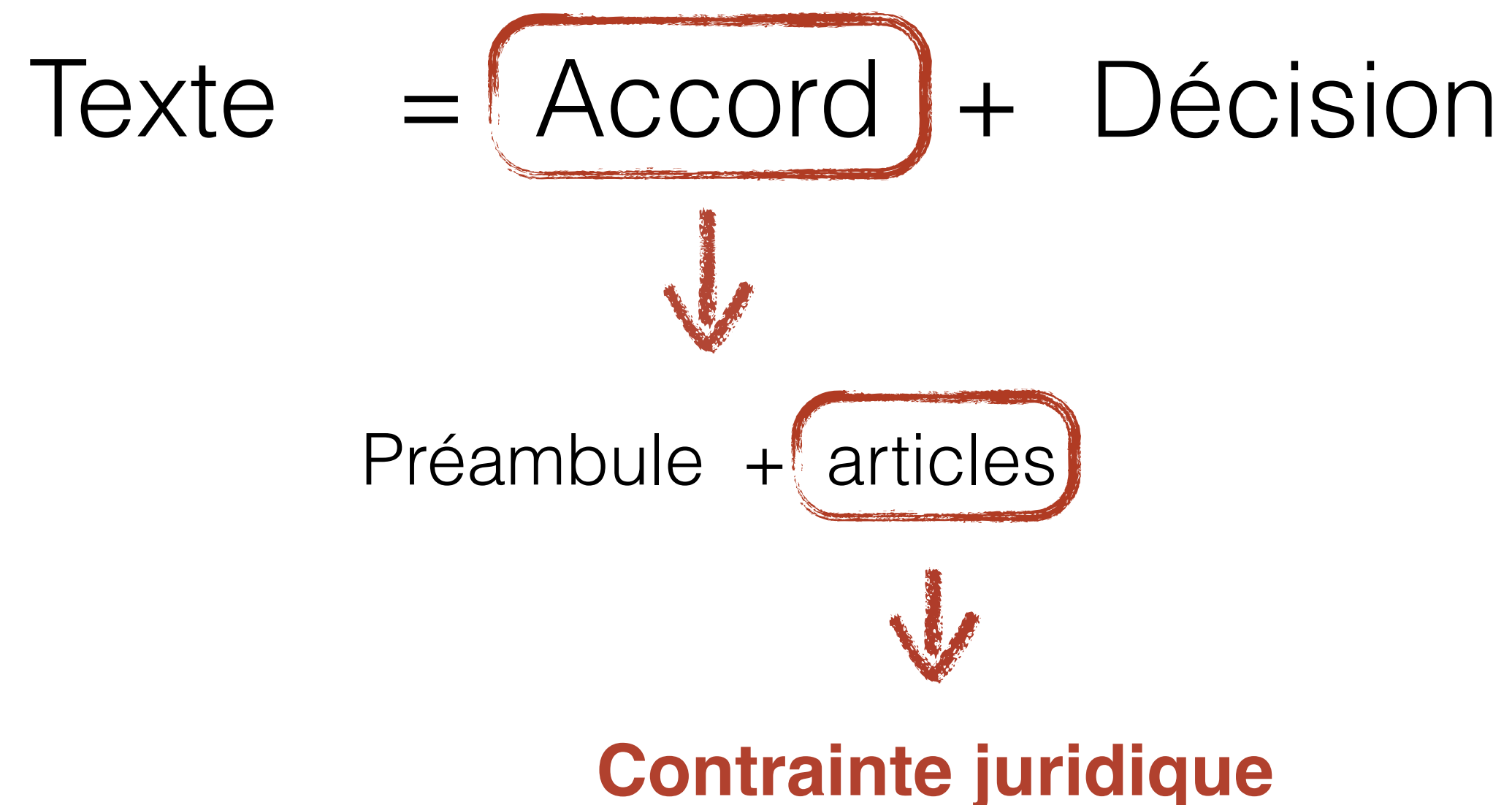
Largely defined by:

- Stockholm 1972
- Rio 1992

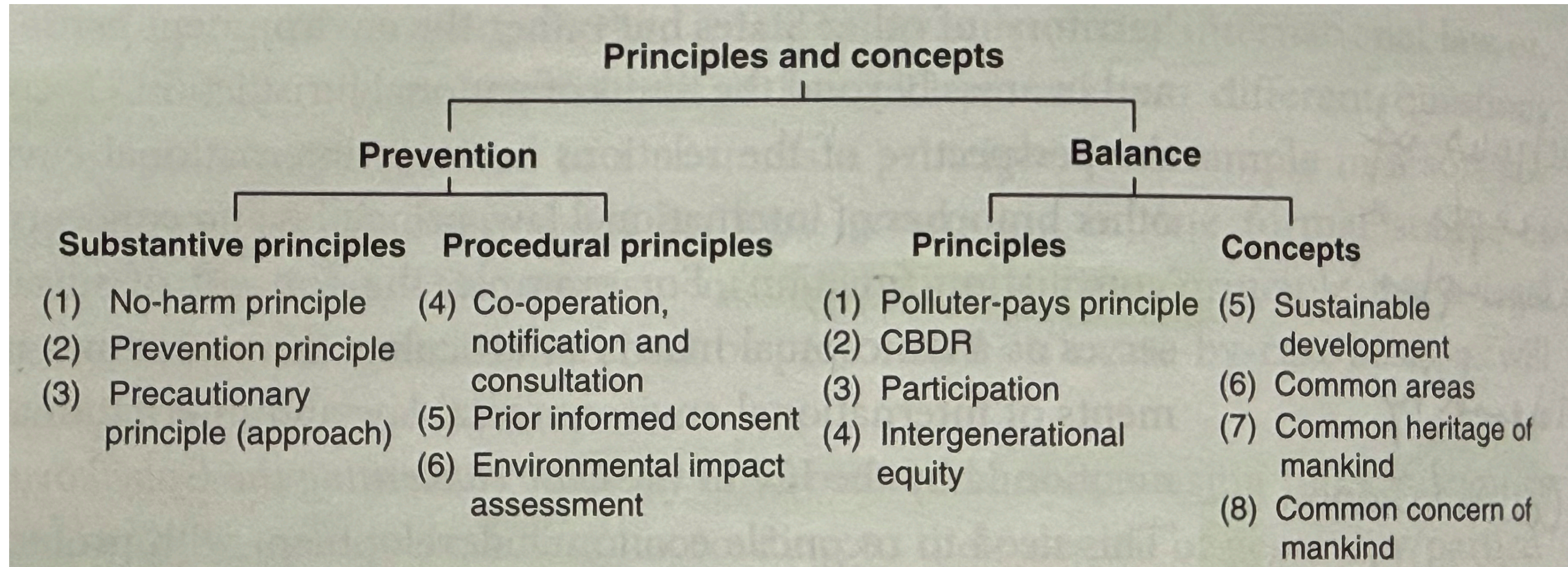
Soft law

4. Declaration and decisions

International environmental law



International environmental law



Norms:

Concept > Principles > Rules

A set of norms defines a legal regime

The climate legal regime

The legal regime of climate change

The United Nations Framework Convention on Climate Change

The climate legal regime

The convention

A convention of 26 articles.

- ▶ The convention's definitions (**art. 1**), objectives (**art. 2**) and principles (**art. 3**)
- ▶ Parties to the convention (Countries) will attempt to reduce GHGs (**art. 4**) and research climate change (**art. 5**)
- ▶ Parties are encouraged to facilitate climate change education, training, public awareness, public participation and public access to information (**art. 6**)
- ▶ How parties will negotiate (**art. 7, 13-26**)
- ▶ The convention sets up the secretariat (**art. 8**), two permanent bodies (SBSTA, **art. 9** and SBI, **art. 10**), financial mechanisms (**art. 11**) and communication channels (**art. 12**)

The climate legal regime

The goal

ARTICLE 2

OBJECTIVE

The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

The climate legal regime

The principles

1. **Common but differentiated responsibilities** and **respective capabilities** (CBDR-RC)
2. Give full consideration to developing countries particularly the ones vulnerable to adverse effects of climate change
3. **Precautionary principle** : lack of full scientific certainty should not be used as a reason for postponing [...] measures to anticipate, prevent or minimise the causes of climate change and mitigates its adverse effects
4. Right to **sustainable development**
5. **Cooperation** principle
6. Climate change **should not** justify **restriction** to **international trade** (Article 3.5, WTO link)

The climate legal regime

The process

COP (Conference of Parties)

- ▶ **Conference of the Parties** : Meeting of all the parties (countries signatories of the convention) each year in November/December
- ▶ **Governments ministers** come together to agree policies negotiated by negotiators, subsequently passed in **international law** under the convention
- ▶ Negotiators earlier in the year at the **subsidiary bodies** (SBI, SBSTA) **meeting** (Bonn, Germany)
- ▶ **Mitigation** of climate change - focus since the beginning
- ▶ **Adaptation** to climate change - grew attention and starting to be as much of a concern as mitigation
- ▶ **Loss and Damage** to its adverse effects - still a controversial topic

History and scientific pillar

BIO-312 Genomic solutions to sustainable development

IPCC

AR 1 1990

AR 2 1995

AR 3 2001

AR 4 2007

AR 5 2014

AR 6 2021

Kyoto Protocole

Enter into force

Start of the period covered

Extension

Paris Agreement

1995	COP1	Berlin, Germany
1996	COP2	Geneva, Switzerland
1997	COP3	Kyoto, Japan
1998	COP4	Buenos Aires, Argentina
1999	COP5	Bonn, Germany
2000	COP6	The Hague, Netherlands / Bonn, Germany
2001	COP7	Marrakech, Morocco
2002	COP8	New Delhi, India
2003	COP9	Milan, Italia
2004	COP10	Buenos Aires, Argentina
2005	COP11/CMP1	Montreal, Canada
2006	COP12/CMP2	Nairobi, Kenya
2007	COP13/CMP3	Bali, Indonesia
2008	COP14/CMP4	Poznań, Poland
2009	COP15/CMP5	Copenhagen, Denmark
2010	COP16/CMP6	Cancún, Mexico
2011	COP17/CMP7	Durban, South Africa
2012	COP18/CMP8	Doha, Qatar
2013	COP19/CMP9	Warsaw, Poland
2014	COP20/CMP10	Lima, Peru
2015	COP21/CMP11	Paris, France
2016	COP22/CMP12/CMA1.1	Marrakech, Morocco
2017	COP23/CMP13/CMA1.2	Bonn, Germany (Fidji)
2018	COP24/CMP14/CMA1.3	Katowice, Poland
2019	COP25/CMP15/CMA2	Brasil; Chile; Madrid
2020	-	-
2021	COP26/CMP16/CMA3	Glasgow, UK
2022	COP27/CMP17/CMA4	Sharm el-Sheikh, Egypt
2023	COP28/CMP18/CMA5	UAE
2024	COP29/CMP19/CMA6	Baku, Azerbaidjan
2025	COP30/CMP20/CMA7	Belem, Brazil

Phase 1

Phase 2