Food and Agriculture Organization of the United Nations

UN environment programme

TOWARDS ZERO POLLUTION

4 June 2021

Launch of the **Global Assessment of Soil Pollution Report**

itps
INTERGOVERNMENTAL TECHNICAL PANEL ON SOILS

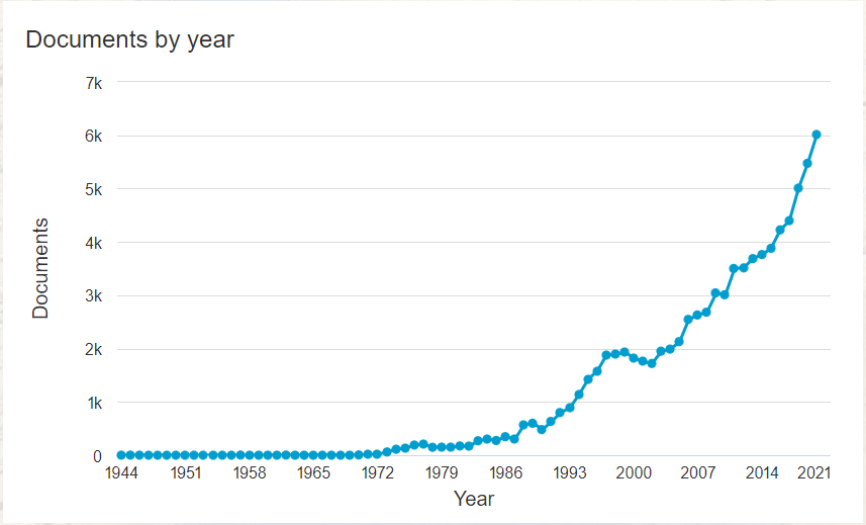
GLOBAL SOIL PARTNERSHIP

02

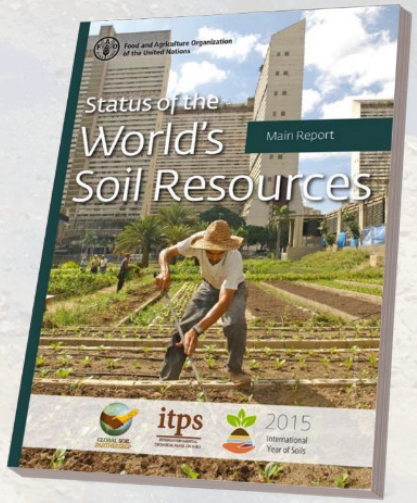
Baseline global assessment

Soil pollution is one of the major 10 soil threats to soil functioning.

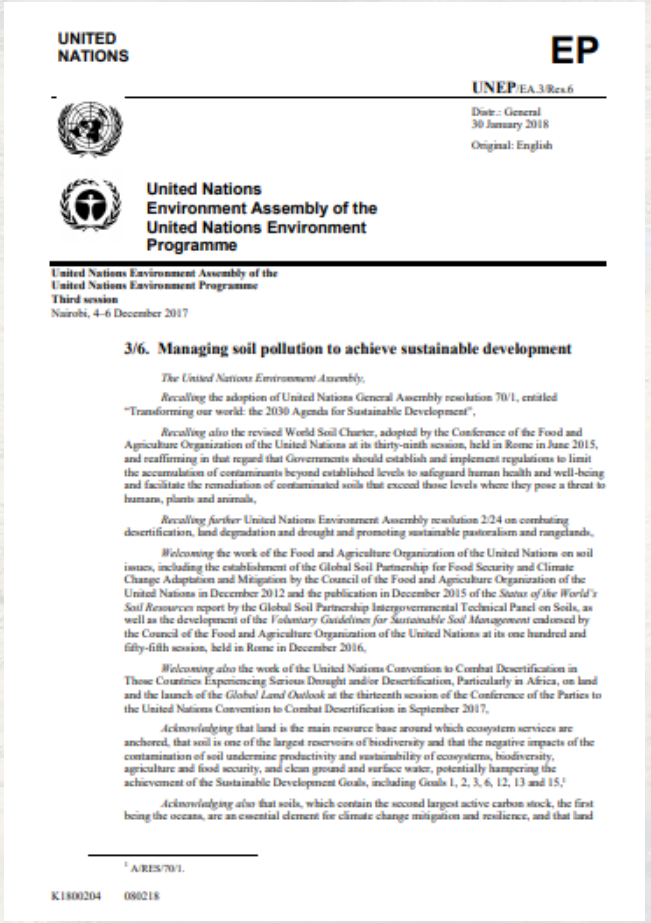
There is a significant lack of information compared to the information available for other threats.



Source: Scopus, 2021
(soil pollution, soil contamination, contaminated soil, polluted soil)



03 International recognition of soil pollution as a global threat



UNITED NATIONS

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Programme

United Nations Environment Assembly of the
United Nations Environment Programme
Third session
Nairobi, 4–6 December 2017

3/6. Managing soil pollution to achieve sustainable development

The United Nations Environment Assembly,

Recalling the adoption of United Nations General Assembly resolution 70/1, entitled "Transforming our world: the 2030 Agenda for Sustainable Development",

Recalling also the revised World Soil Charter, adopted by the Conference of the Food and Agriculture Organization of the United Nations at its thirty-ninth session, held in Rome in June 2015, and reaffirming in that regard that Governments should establish and implement regulations to limit the accumulation of contaminants beyond established levels to safeguard human health and well-being and facilitate the remediation of contaminated soils that exceed those levels where they pose a threat to humans, plants and animals,

Recalling further United Nations Environment Assembly resolution 2/24 on combating desertification, land degradation and drought and promoting sustainable pastoralism and rangelands,

Welcoming the work of the Food and Agriculture Organization of the United Nations on soil issues, including the establishment of the Global Soil Partnership for Food Security and Climate Change Adaptation and Mitigation by the Council of the Food and Agriculture Organization of the United Nations in December 2012 and the publication in December 2015 of the *Status of the World's Soil Resources* report by the Global Soil Partnership Intergovernmental Technical Panel on Soils, as well as the development of the *Voluntary Guidelines for Sustainable Soil Management* endorsed by the Council of the Food and Agriculture Organization of the United Nations at its one hundred and fifty-fifth session, held in Rome in December 2016,

Welcoming also the work of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, on land and the launch of the *Global Land Outlook* at the thirteenth session of the Conference of the Parties to the United Nations Convention to Combat Desertification in September 2017,

Acknowledging that land is the main resource base around which ecosystem services are anchored, that soil is one of the largest reservoirs of biodiversity and that the negative impacts of the contamination of soil undermine productivity and sustainability of ecosystems, biodiversity, agriculture and food security, and clean ground and surface water, potentially hampering the achievement of the Sustainable Development Goals, including Goals 1, 2, 3, 6, 12, 13 and 15,[1]

Acknowledging also that soils, which contain the second largest active carbon stock, the first being the oceans, are an essential element for climate change mitigation and resilience, and that land

[1] A/RES/70/1.

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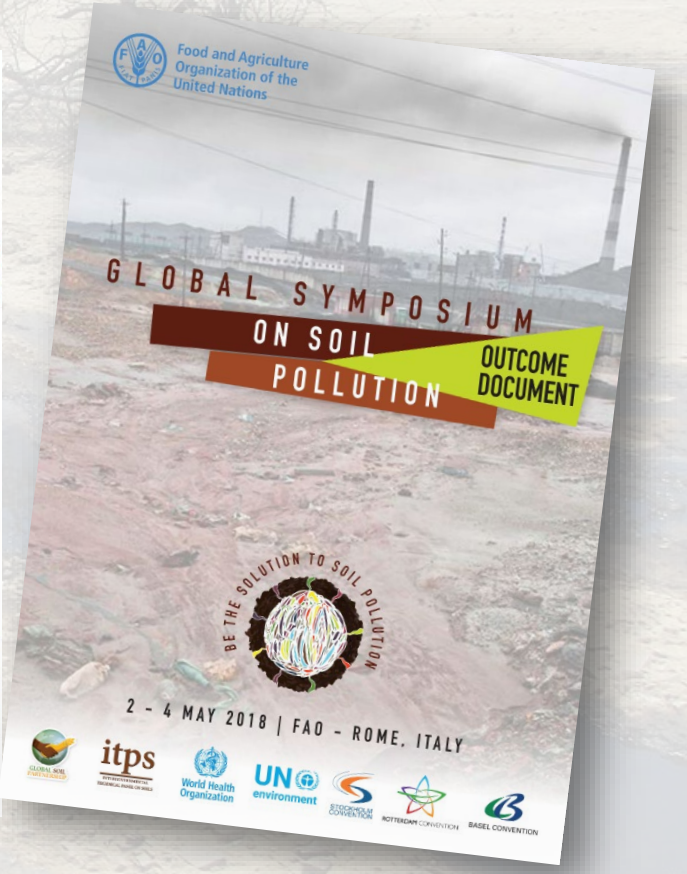

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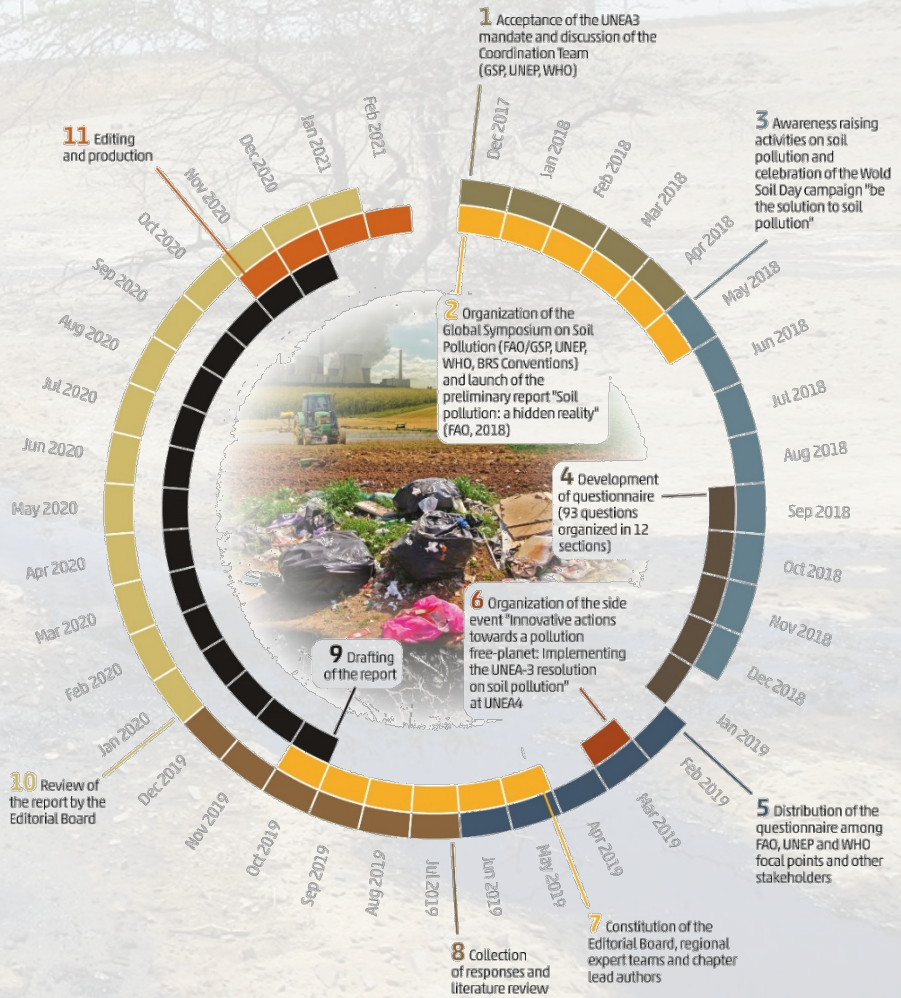
International mobilisation to tackle soil pollution

1 **106** responses from **75** countries

2 **53** contributors **17** companies

3 **40** members of the Editorial Board



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Global assessment of soil pollution report

14 chapters, 900 pages, over one thousand references reviewed

- Information about major soil contaminants and their fate in the soil matrix
- Description of main sources of soil pollution: natural and anthropogenic
- Principal human and environmental health impacts and routes of exposure
- Regional status: from identification and assessment to legal frameworks, management and remediation
- Summary of some of the best available techniques for management and remediation, including nature-based solutions

Food and Agriculture Organization of the United Nations

SUSTAINABLE DEVELOPMENT GOALS

Soil pollution jeopardizes the achievement of most of the SDGs

The prevention, control, and remediation of soil pollution are fundamental if we want to implement the 2030 Agenda for Sustainable Development.

1.1. About 79 per cent of people living in extreme poverty live in rural areas and depend heavily on agriculture for their livelihoods. Soil pollution reduces crop yields and quality, leading to reduced incomes for rural populations.

1 NO POVERTY

2.4. Soil pollution affects food security by reducing crop yields, hampering the quantity and the quality of the food produced.

2 ZERO HUNGER

3.4.-3.9. WHO estimates that about 16% of total global mortality is attributed to environmental pollution-related diseases (including water, air and soil pollution).
The burden of disease attributed solely to soil pollution and soil-borne diseases remains largely unknown and may be greatly underestimated.

3 GOOD HEALTH AND WELL-BEING

5.5. Around 45 per cent of the world's women work in vulnerable jobs, many in marginal agricultural areas, or as scavengers, and they tend to have less access to education and therefore have fewer resources and solutions to reduce their exposure to soil pollution.

5 GENDER EQUALITY

6.3. Soil pollution leads to groundwater pollution through contaminant leaching, and polluted soil erosion and runoff contribute to surface water pollution.

6 CLEAN WATER AND SANITATION

7.2. Around 65 percent of the world's energy production comes from the combustion of fossil fuels (coal, natural gas and oil), which are a major source of environmental contaminants.

7 AFFORDABLE AND CLEAN ENERGY

8.4. Poorly managed stockpiles and diffusion of chemicals into the environment resulting from industrial activities are major sources of soil pollution, both on the industrial site, and also more widely through the transport of particles via air and water.

8 DECENT WORK AND ECONOMIC GROWTH

10 REDUCED INEQUALITIES

10.1. Soil pollution disproportionately affects the poorest and most vulnerable populations, causing serious health impacts and reducing their ability to improve their economic circumstances.

11 SUSTAINABLE CITIES AND COMMUNITIES

11.2.-11.6. Urban soil pollution poses a health risk to 55% of the world's population. Increased transport and waste production and mismanagement are two of the main causes of soil pollution in urban areas.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

12.2.-12.4.-12.5. The world produces more than 2 billion tonnes of solid waste per year, exacerbated by modern production and consumption patterns based on rapid product obsolescence and over-extraction of raw materials. Industrial, activities, mining and unsustainable waste management represent the main sources of soil pollution in some countries, especially in the Global South.

13 CLIMATE ACTION

13.1. Soil pollution contributes to exacerbating climate change. The misuse of nitrogen fertilisers in agriculture contributes to the release of N_2O into the atmosphere, a potent greenhouse gas, leading to emissions of 700 000 CO^2 equivalents.

14 LIFE BELOW WATER

14.1. About 80 percent of marine pollution comes from land-based activities. Erosion of polluted soils contributes plastics, nutrients and organic chemicals which are contaminants of concern in marine ecosystems.

15 LIFE ON LAND

15.3. Soil pollution causes a chain reaction of degradation of terrestrial ecosystems. Contaminants in soil are taken up by plants and ingested by soil organisms and pass into the food chain, affecting the health and functioning of all terrestrial communities.

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

16.3.-16.7 Ethnic minority groups and the poorest and most vulnerable are the most affected by soil pollution. Environmental inequalities exist in both developing and developed countries and are fostered by a lack of information and data on the state of the environment, which limits the ability of affected populations to react, act and decide.

17 PARTNERSHIPS FOR THE GOALS

17.7.-17.9. Developed countries are more advanced in the development of technologies to detect emerging contaminants, innovative environmentally friendly industrial production and soil pollution remediation technologies, and therefore need to actively collaborate in the transfer of knowledge.

GLOBAL SOIL PARTNERSHIP

Soil pollution reduces crop yields, safety and quality, leading to reduced incomes for rural populations and hitting the most vulnerable hardest

+79%

of the poorest live in rural areas

15-40%

loss in agricultural productivity

+16%

total global deaths, worth of billions of USD/year

Industrial, activities, mining and unsustainable waste management represent the main sources of soil pollution in some countries, especially in the Global South

billions of USD/year

groundwater and freshwater pollution and eutrophication

55%

global urban population at risk

+2 billion tons/year

solid waste worldwide, 30% not managed

Soil pollution causes a chain reaction of degradation of terrestrial and aquatic ecosystems and contributes to exacerbating the effects of climate change

700 000 CO_2 eq

misuse of N fertilisers in agriculture

80%

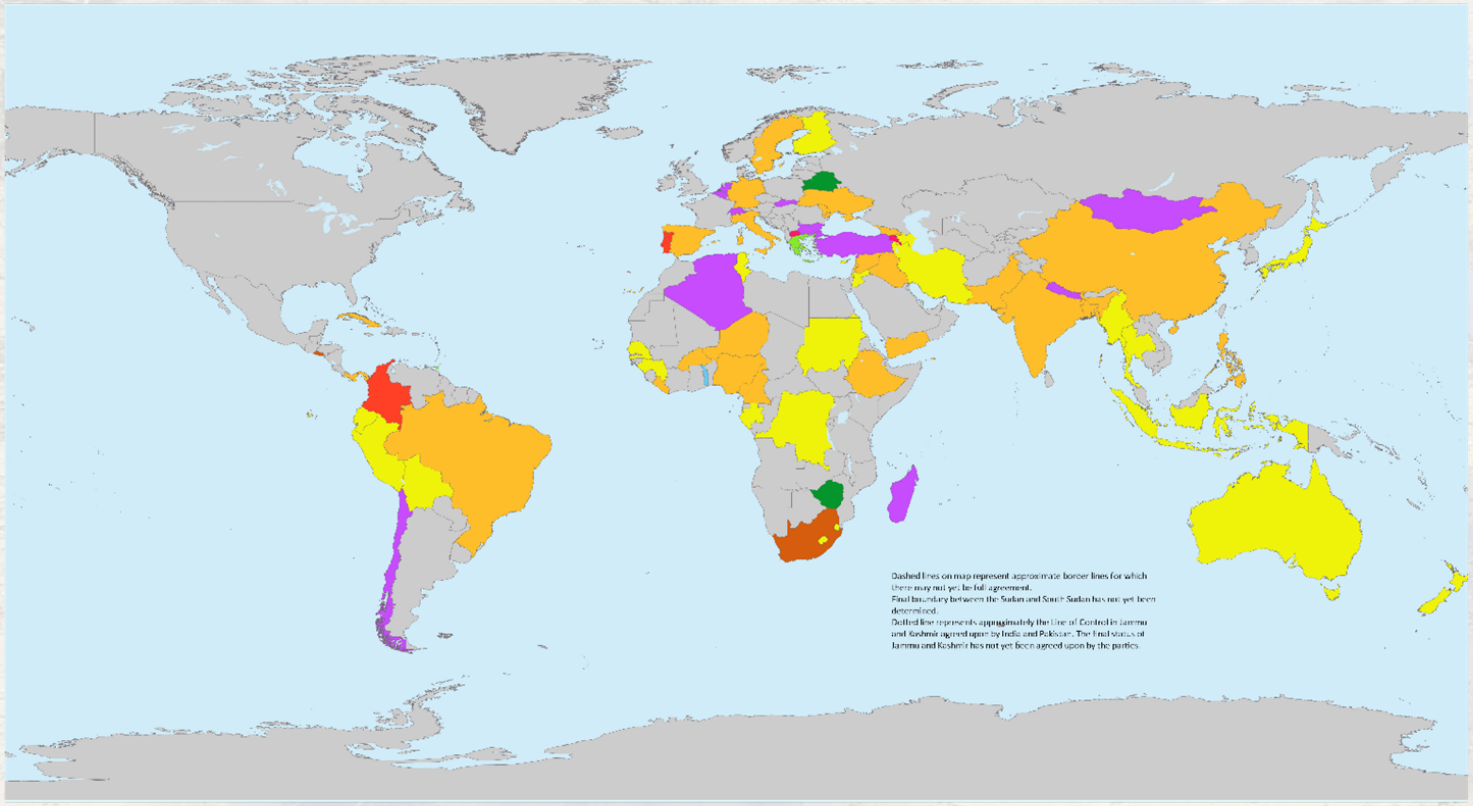
marine pollution from land-based activities

10-80%

reduction of leaf litter decomposition

Conclusions

Responses to the GSP questionnaire on soil pollution



There are still significant gaps in knowledge and uncertainty about the extent of the affected areas and the magnitude of the impact, which is compounded by the emergence of new contaminants.

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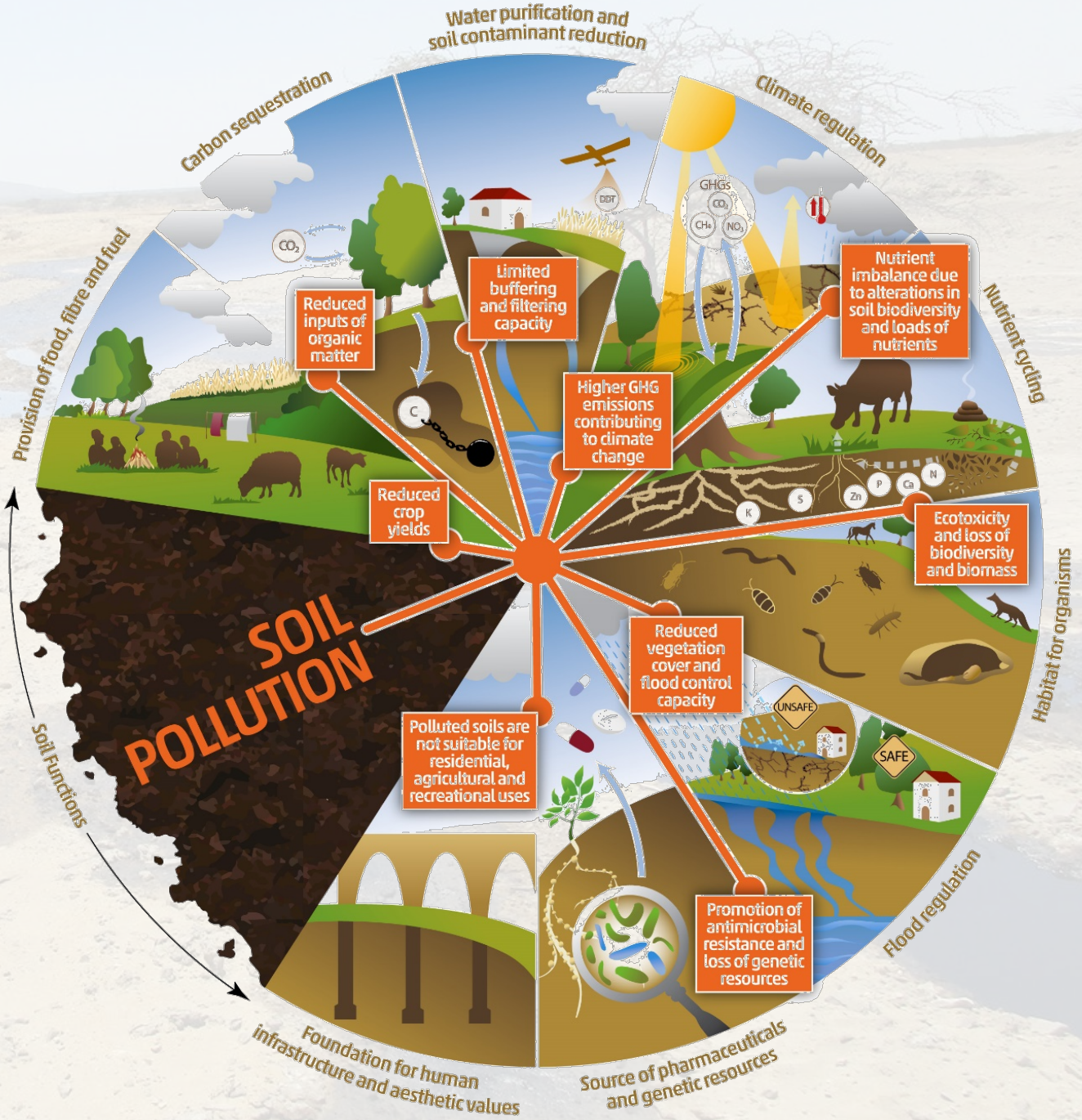
Conclusions

Soil pollution can result in the loss of ecosystem services, and jeopardizes the achievement of the 2030 Agenda on Sustainable Development



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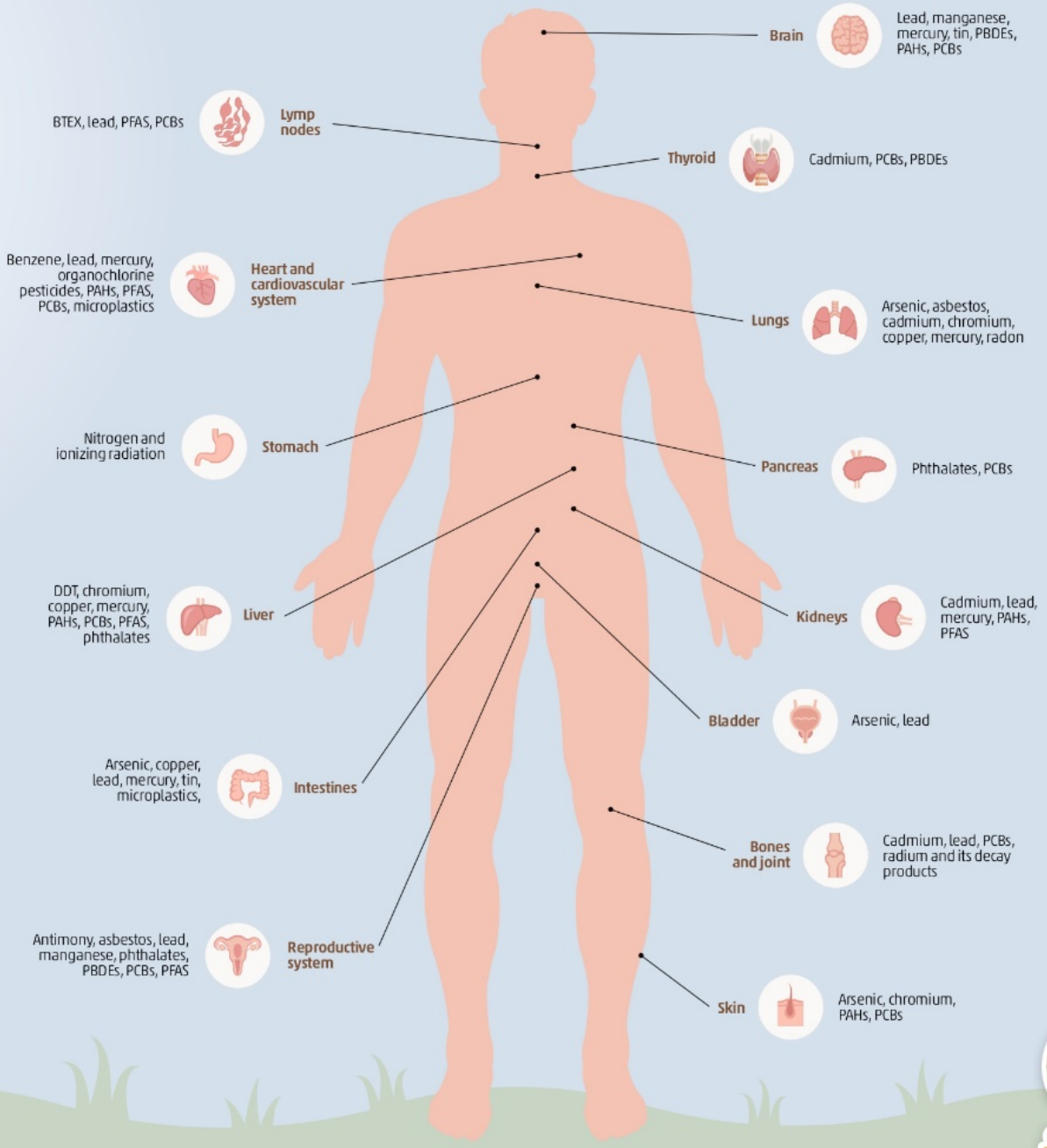
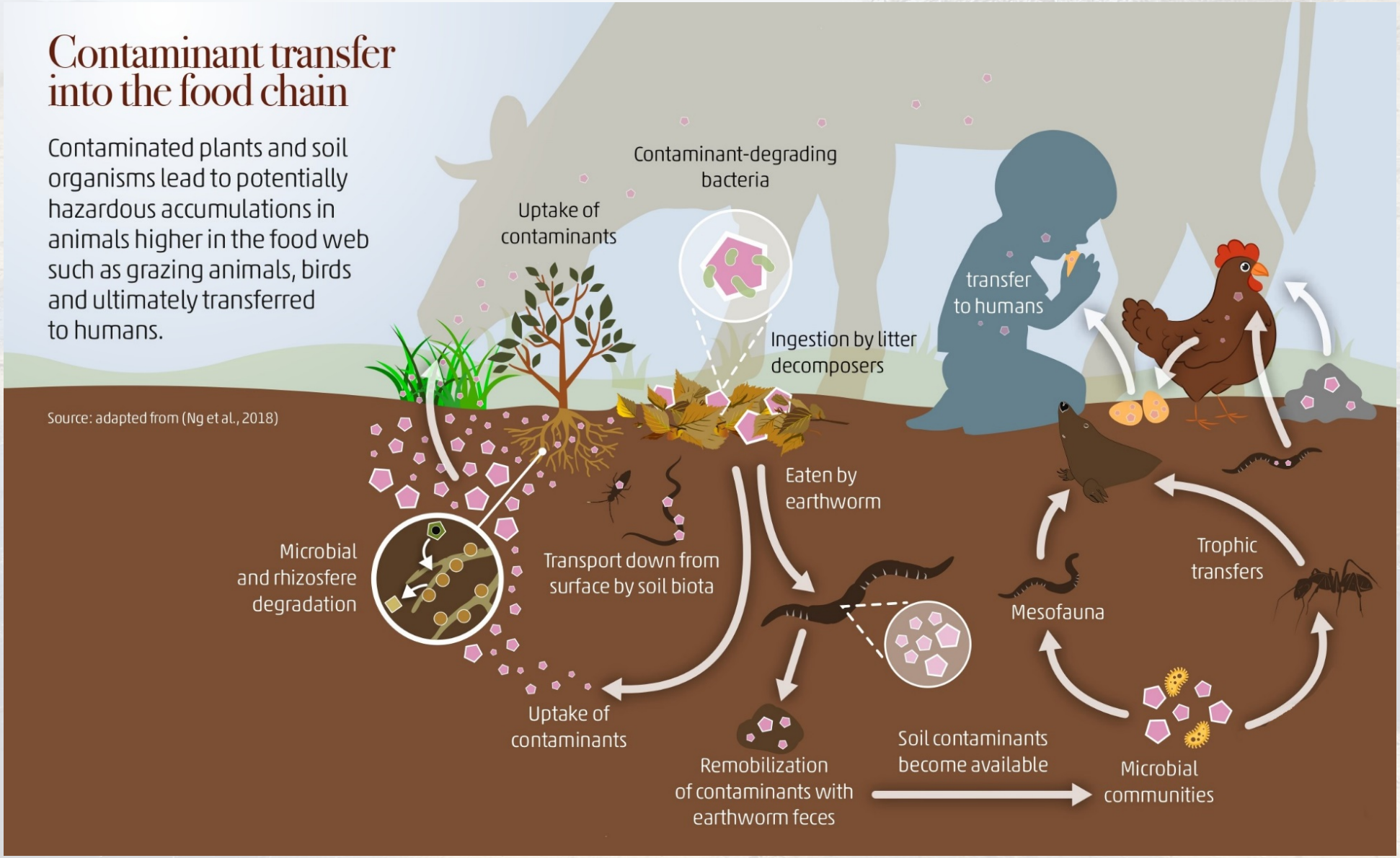
Impact of soil contaminants on human health

Contaminants in soil have widespread effects on organs and systems, producing a wide variety of health outcomes, from acute to chronic diseases, leading to severe development issues, changes in bodily functions, and premature death.



GLOBAL SOIL PARTNERSHIP

Conclusions



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Conclusions

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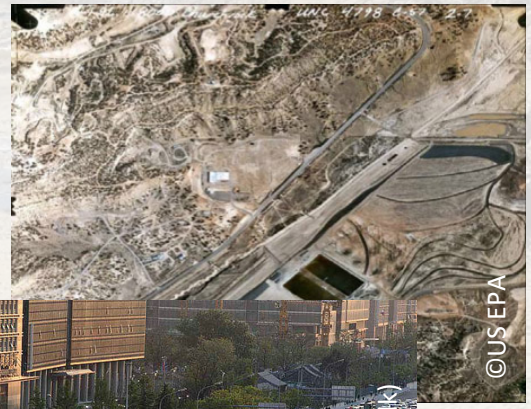
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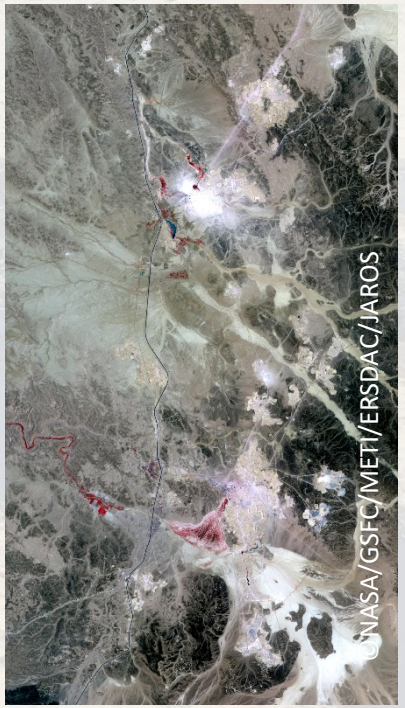
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07

Conclusions

Although many countries have effective processes in place to identify and assess polluted sites, this fundamental step of identifying the liable part (polluter) is still lacking in many states.

07

Conclusions

Communication between academia, policy makers and society needs to be strengthened to ensure that timely, science-based information on the potential threats posed by soil pollution is available for informed decision making.

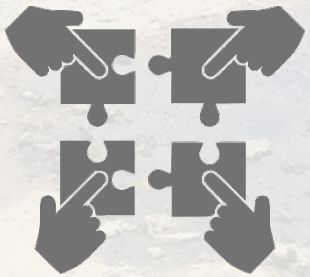
04

Way forward
4 key actions

Fill knowledge gaps
Global Soil Pollution Information and Monitoring System

Strengthen legal frameworks
Global commitment towards preventing, halting and remediating soil pollution in the framework of Zero Pollution/Towards a Pollution Free Planet ambitions

Improve awareness and communication
Promote pollution-free options and incentivise 4R approach



Foster international cooperation
Advocate for technology transfer and cross-capacity building for the whole cycle of soil pollution, from prevention to detection, monitoring, management, and remediation

Food and Agriculture Organization of the United Nations

Thank you!

As we strive to **restore 350 million hectares** of land in the framework of the UN Decade on Ecosystem Restoration, we cannot neglect the role of healthy soils.

To restore world's ecosystems we must **address soil pollution and restore soil health** and the ecosystem services it supports.

UN environment programme

itps INTERGOVERNMENTAL TECHNICAL PANEL ON SOILS

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