

# UNEP YEAR BOOK

EMERGING ISSUES  
IN OUR GLOBAL ENVIRONMENT

# 2012



UNEP

United Nations Environment Programme



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# In Memoriam



*Credit: Harvey Croze*



## Professor Wangari Maathai



*Credit: Brigitte Lacombe*

Professor Wangari Maathai passed away on 25 September 2011 in Nairobi, Kenya. Professor Maathai was a champion for the environment, human rights and the empowerment of women. Her Green Belt Movement encouraged rural Kenyan women to plant trees in order to improve their livelihoods and curb the effects of deforestation.

Professor Maathai was the first African woman and first environmentalist to receive the Nobel Peace Prize. Honoured for her commitment to women's empowerment and environmental sustainability, she also served in Kenya's Parliament and was appointed assistant minister for environment and natural resources. Wangari Maathai received her doctoral degree from the University of Nairobi in 1971, making her the first woman in Central and East Africa to receive such a degree.

1940-2011

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# Preface



The 2012 UNEP Year Book spotlights two emerging issues that underline the challenges but also the choices nations need to consider to deliver a sustainable 21st century—urgently improved management of the world's soils and the decommissioning of nuclear reactors.

Superficially they may seem separate and unconnected issues. But both go to the heart of several fundamental questions: how the world will feed and fuel itself while combating climate change and handling hazardous wastes.

The thin skin of soil on the Earth's surface is often one of those forgotten ecosystems but it is among the most important to the future survival of humanity.

The top one metre of soil sustains agriculture, supports forests, grasslands and meadows which in turn generate the conditions for the health and viability of many of the globe's plant and animal species. The top one metre also stores three times more carbon than is contained in the atmosphere. Yet land use change is triggering dramatic losses of soils and the nutrients and carbon stored. The Year Book notes that in some places, soil erosion is occurring at rates 100 times faster than soil is naturally made. More intelligent and integrated policies are needed to reverse these trends.

The Year Book cites no-till policies being pursued in some countries, using illustrative case studies from Argentina and Brazil, that are assisting to store soil carbon with other wide-ranging benefits. It also highlights a pioneering form of agriculture called 'paludiculture' that allows farmers to cultivate rather than degrade peatlands in ways that maintain their enormous carbon stocks while producing crops for sustainable biofuels.

Decommissioning of nuclear power stations is spotlighted as an emerging issue because of the large number of reactors that have ended or are nearing the end of their lives. Close to 140 nuclear power reactors in nearly 20 countries have been closed but only around 17 have been decommissioned and more closures of older plants are scheduled over the coming years and decades. Meanwhile the tsunami that hit the Fukushima nuclear plant in Japan in 2011 has prompted some countries to review their nuclear power programmes.

The Year Book looks at the options and the complexities of decommissioning. It also analyzes another issue for which there remains sparse information, namely the price of making the plants and associated radioactive materials safe for current and future generations. By some estimates decommissioning of a nuclear power plant may cost between 10 per cent and 60 per cent of the initial construction costs—an issue that perhaps needs to be more clearly factored in when energy choices are made along with environmental and social parameters.

This year's Year Book comes in advance of the Rio+20 Summit where governments will reconvene to debate and devise more decisive and accelerated action towards implementing sustainable development and realizing an inclusive Green Economy.

Sound and impartial science is at the core of UNEP's work across all its sub-programmes from climate change and ecosystems to resource efficiency and disasters and conflicts. It will be the foundation upon which nations can act to realize their post Rio+20 aims and aspirations as it has been increasingly for nearly 20 years.



**Achim Steiner**

United Nations Under-Secretary-General and Executive Director,  
United Nations Environment Programme



# Acronyms

A/R	afforestation and reforestation
CBD	Convention on Biological Diversity
CFC	chlorofluorocarbon
CH <sub>4</sub>	methane
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on Migratory Species
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	carbon dioxide equivalent
DOE	United States Department of Energy
EIA	environmental impact assessment
EIS	environmental impact statement
FAO	Food and Agriculture Organization of the United Nations
FSC	Forest Stewardship Council
GEO	Global Environment Outlook
GFCFS	Global Framework for Climate Services
Gt	gigatonne
ha	hectare
HCFC	hydrochlorofluorocarbon
HFC	hydrofluorocarbon
HLW	high level waste
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiological Protection
ILW	intermediate level waste
IPBES	Intergovernmental Panel on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
IUCN	International Union for Conservation of Nature
LLW	low level waste
LULUCF	land use, land-use change and forestry
MARPOL	International Convention for the Prevention of Pollution from Ships

MDG	Millennium Development Goal
MEA	Multilateral Environmental Agreement
MRV	measuring, reporting and verifying
N <sub>2</sub> O	nitrous oxide
NASA	United States National Aeronautics and Space Administration
NEA-OECD	Nuclear Energy Agency of the Organisation for Economic Co-operation and Development
NOAA	United States National Oceanic and Atmospheric Administration
ODP	ozone depletion potential
ODS	ozone-depleting substance
OECD	Organisation for Economic Co-operation and Development
PEFC	Programme for Endorsement of Forest Certification
ppm	parts per million
REDD	Reducing Emissions from Deforestation and forest Degradation
RLI	Red List Index
SEPA	Scottish Environment Protection Agency
SOC	soil organic carbon
SOM	soil organic matter
UNCCD	United Nations Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNCSD	United Nations Conference on Sustainable Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNSD	United Nations Statistics Division
VLLW	very low level waste
WMO	World Meteorological Organization

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