

SEPTEMBER 2015

# GEO MATTERS



## GEO Once Again

UNEP has embarked on the sixth flagship edition of the Global Environment Outlook (GEO 6). The assessment will create a comprehensive picture of the environmental factors contributing to human well-being. Expected to be launched in 2018, GEO 6 will provide the first integrative baseline in light of global megatrends, supported by open access to data. The enhanced interaction between science and policy and the critical analysis in GEO 6 will assist member states to position themselves on the most effective pathways for transitions towards a sustainable future. GEO 6 has one of the largest multi-stakeholder networks ever assembled for any GEO assessment along with regional cooperation and government support to identify and assess key priority environmental issues emerging from regional and national levels.

In addition to the global GEO-6 assessment, six ongoing regional assessments are expected to be completed in 2016. Informed by the regional assessments, GEO 6 will report on the state and trends of the global environment and progress towards meeting internationally agreed goals.

## Emerging Regional Priorities

Between April and May 2015 UNEP convened six Regional Environmental Information Network (REIN) Conferences in each of the UNEP regions to consult with relevant stakeholders. The conferences saw the participation of more than 400 experts and representatives from 85 countries that identified priority issues, environmental trends and emerging issues. During the REIN Conferences, regional outlooks were drafted, priority issues and trend agree, and emerging issues identified.

Experts from the **Africa** region recognized the region is richly endowed with natural resources which are under threat from competing uses and that Africa's economic growth hinges on the sustainable management of those resources. Key priorities include management of land use and its associated biodiversity at a time when disasters, wastes and impacts of climate change are being felt.

The expert team from **Asia Pacific** region noted that the region is experiencing a growing awareness of the importance of a healthy environment for a prosperous, resource efficient and resilient society. However, the acceleration of environmental

degradation and the loss of natural resources is undermining the region's potential to achieve this ambition. The experts acknowledged that the region can and is addressing these problems to build resilience and create prosperity for today's populations and future generations.

Experts and stakeholders in the **Pan-European** conference identified climate change, air pollution, chemicals and waste, biodiversity and freshwater as the five key priorities for a healthy environment. A key objective of the region will be to re-conceptualise "wellbeing" as the ultimate goal of development and recognize the importance of critical thresholds and limits in the context of planetary boundaries and climate change.

Experts from **Latin America and the Caribbean** region identified that the region contains significant amounts of the planet's natural wealth. However, population growth, unsustainable consumption patterns, urbanization processes, the extraction and transformation of raw materials and the elimination of its products have degraded ecosystems, impacted biodiversity, soils, water and air through pollution and toxic emissions and created conflicts over resources and land use. Experts affirmed that environmental governance will be critical in reversing the observed trends and address the impacts of climate change.

Experts from **North America** identified that the region has a history of using data leadership in environmental data and analytics to address environmental issues. Cities have been used as living laboratories to learn more about complex linkages and the strong governance partnerships on the environment. The region faces the challenges of sustainable consumption and production and high per capita greenhouse gas emissions and emerging contaminants.

Experts from **West Asia** acknowledged that peace and improved environmental governance are key factors in achieving prosperity and resilience in the region. The region prioritised the need for the sustainable development of natural resources, diversification of energy sources and the need to deal with climate change and desertification.



West Asia Regional Environmental Information Network Conference



## Regional Emerging Issues

- Management of low-concentration compounds including pharmaceuticals, nanoparticles, new household products ("down the drain chemicals") – currently not being measured; no dose response, concentration response, toxicology. Contaminants of emerging concern: nanoparticles, micro-plastics, endocrine disruptors, pharmaceuticals
- Impacts of climate change and expanded Arctic industrialization on Indigenous people
- Emerging opportunity to help address fragmentation: Natural capital accounting, ecosystem services
- Geoengineering, (e.g. dumping iron filings, west coast of Canada (currently no regulations))
- Advances in battery technology – potential to boost renewables
- NH<sub>3</sub> emissions are increasing (agriculture, fertilizer)
- Emerging health issues (humans, animal, vegetation): Antibiotic resistance (agriculture, livestock, fisheries); harmful algal blooms
- Impacts of unconventional oil and gas extraction (e.g., fracking and tar sands)
- Species redistribution in response to climate change linked to habitat loss and populations shifts (New species invading ecosystems/ linked to climate change)
- The need for distributed energy systems and the move towards re-municipalisation
- Alternative metrics for GDP that include environmental health
- Innovation in media and engagement tools – (e.g., Apps and the environment: emerging potential for public engagement and to promote behavioural change) - Opportunity for citizens to produce knowledge (e.g. citizen science)

- Green economy
- Air quality
- Climate change
- Accelerating technological developments: nano, e-devices, biotech, 3-D printing and manufacturing, new mining/extraction methods and geographic areas (shale gas, oceans, polar and glacier zones)
- Population growth, migration between the states (income and shelter) and towards urban areas (comfort and services, consumption), education/awareness/motivation of population to care about the environment and the Planet
- Continuous or growing competition for resources, primarily water and oil-gas and minerals
- Fluctuating regional (in)stability, (in)security, geopolitical challenges, various impacts on the environment and well-being: rapidly changing policy priorities – self-reliance, limited cooperation, slow tech. transfer, environment is not a priority, new energy, trade, transport routes
- Changing/transforming regional energy markets and priorities: EU energy imports reduction and diversification (closely linked with EU climate policies), coal to stay or even increase to provide energy security in some countries; demand in China and South Asia
- Changing/transforming land use and land ownership: land conflicts (mining vs. protected areas, mountain-valley or cross-border pastures), fragmentation and monocultures, etc.
- Reduction in species, loss of genetic resources, decline in natural soil fertility; Risk of epidemics, diseases, dangerous mutations – reduction and limitations in vaccination, bio-technologies, mass migration and climate conditions

- Sustainable consumption and production (consumption patterns of emerging middle class, local knowledge)
- Shifting regime of extreme climate and disasters
- Transboundary issues: competition, transport, common market, eco footprint, air pollution
- Environmental governance: collaborative, natural capital, mobile devices and big data
- Urbanization (lifestyle, inter-connection, green transportation and construction, urban green)

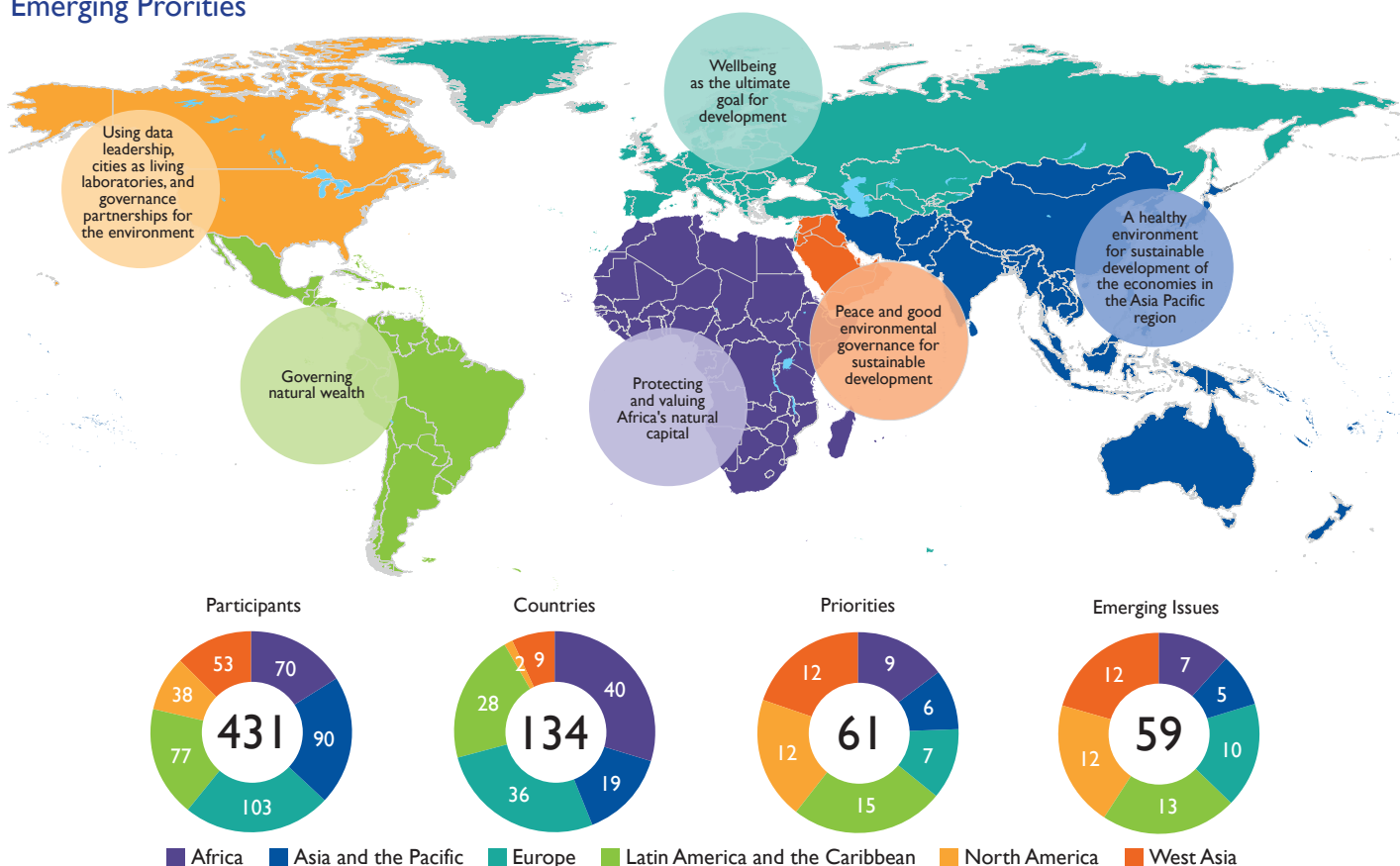
- Widespread availability and use of mobile technologies and social networks
- Environmental monitoring based on citizen science
- Participation of the private sector in the implementation of sustainable development strategies through the framework of corporate social responsibility
- Increased public interest and awareness on sustainability, including awareness on environmental rights and responsibilities
- New approaches to socio-ecological systems and ecological economics
- Synergistic actions of impacts and environmental changes
- Growing uncertainty on future scenarios
- Fracking and other new oil industry technologies
- Negative impacts from infrastructure used as an adaptive measure to climate change
- Environmental hazards that could have global effects
- Vulnerability associated to urban densification
- Land grabbing
- Downgrading of conservation policies

- Data revolution and the knowledge economy – Internet of Things, open access to data, electromagnetic fields/radiofrequency, capacity building in technology and climate change mitigation/adaptation
- Changing demography – youth, entrepreneurship, gender
- Industrialization – resource efficiency, recycling of waste, clean production
- Climate change – diseases and wildlife migration, broader stakeholder participation in adaptation/mitigation
- Environmental governance – land acquisition, payment for ecosystem services and resources, financing of terrorism
- Consumer preferences – shifting values and social norms, organic farming, green pathways to sustainable development and poverty reduction
- Migration and conflicts – impacts on tourism, impacts on natural resources

- Sustainable cities (green technology, knowledge), transportation issues, traditional architecture "green buildings", as well as air quality linked to transport
- Non-traditional wastes (e-waste, construction and demolition debris, illegal dumping)
- Green economy, eco-tourism, green accounting, natural capital valuation
- Coastal erosion, coastal urbanization (esp. Gulf Cooperation Council countries)
- Wars and conflict residuals and debris (mines, unexploded ordinance), impact of land refugees (infrastructure will be required), rise of non-state actors
- Expansion of populations (donkeys, wild pigs, monkeys, mina birds, carp) and widespread invasive species – Gwaif trees, "Prosopis juliflora" (Oman, UAE, Saudi Arabia) (Indian experience is a good example on how to treat this kind of tree and Harmful Algae Blooms)
- Over exploitation of fish stocks, threatening collapse of fish stocks and negative impacts on livelihoods
- Poor capacity to respond to chemical and radiological (nuclear, medical, industry) accidents
- Rapid increase in unsegregated household waste including a large share of organic waste
- Opportunities to use new technologies for monitoring and data sharing, citizen science, GIS, satellite, open data; use of social media - for environmental monitoring and increased sharing of information between the Arab region countries (lack of ability to monitor ocean acidification)
- Food safety threatened due to increased use of pesticides and unregulated chemicals
- Shale gas extraction (fracking) and associated water use and pollution, as well as seismic effects linked to earthquakes



## Emerging Priorities



## National Participation in REIN Conferences

### Africa

The meeting of the Africa REIN was held from 20-24 April in Pretoria, South Africa. It was attended by 58 participants including representatives of governments (Angola, Benin, Botswana, Burundi, Burkina Faso, Cameroon, Central African Republic, Republic of Congo, Comoros, DRC, Djibouti, Egypt, Eritrea, Ethiopia, Liberia, Gabon, Gambia, Ghana, Lesotho, Madagascar, Mauritania, Mauritius, Morocco, Niger, Nigeria, Sao Tome and Principe, Seychelles, South Africa, South Sudan, Sudan, Swaziland, Tanzania, Tunisia, Uganda, Zambia, Zimbabwe), regional partners (CEDARE, SARDA/IMERSCA, IOC, IUCN, WLCR, COMIFAC, IGAD, GRID Arendal, CSIR, Alliance for a Green Revolution Africa) UNEP and GEO experts.

### Asia Pacific

The inaugural meeting of the Asia-Pacific REIN was held from 27-28 April 2015 in Bangkok, Thailand. It was co-hosted by the United Nations Environment Programme and the Ministry of Natural Resources and Environment of Thailand. It was attended by 90 participants including representatives of governments (Bangladesh, Bhutan, Islamic Republic of Iran, Maldives, Nepal, Pakistan, Sri Lanka, China, Republic of Korea, Mongolia, Indonesia, Lao PDR, Myanmar, Philippines, Singapore, Timor Leste, Thailand, Tonga and Viet Nam), regional partners (UNESCAP, ADPC, DA, IGES, IUCN, SEI, Water and Environment International) and GEO experts.

### Europe

The meeting of the European REIN conference was held from 13-17 April in Istanbul, Turkey. It was attended by 94 participants including representatives of governments (Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Croatia, Czech Republic, Denmark, Finland, France, Georgia, Germany, Hungary, Italy, Iran, Kazakhstan, Kyrgyzstan, Lithuania, Republic of Moldova, Norway, Poland, Portugal, Romania, Russian Federation, Serbia, Slovakia, Spain, Sweden, Switzerland, Tajikistan, Turkey, Turkmenistan, Ukraine, United Kingdom, Uzbekistan), regional partners (EEA, SEI, CEU, CAREC, ZOI, ICTA-UAB, GRID Warsaw, ECO-UEST), UNECE, UNEP and GEO experts.

### Latin America and Caribbean

The inaugural meeting of the Latin America and Caribbean REIN conference was held on 4-6 May 2015 in Panama City, Panama. It was attended by 67 participants including representatives of governments (Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Brazil, Bolivia, Chile, Columbia, Costa Rica, Cuba, Dominica, Ecuador, El Salvador, Grenada, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, St Lucia, Suriname, Trinidad and Tobago, Uruguay), regional partners (CAF, CCAD, CEPAL, FAO, UNDP, OPS, GeoSUR, USEPA, Waitt Institute and UNISDR), UNEP and GEO experts.

### North America

The inaugural meeting of the North American REIN conference was held from 27-28 May 2015 in Ottawa-Gatineau, Canada, and co-hosted by the United Nations Environment Programme and Environment Canada. The meeting was attended by 38 participants including senior representatives of the Canadian and US government, regional partners (CIESIN, IISD, CEC) and GEO-6 experts.

### West Asia

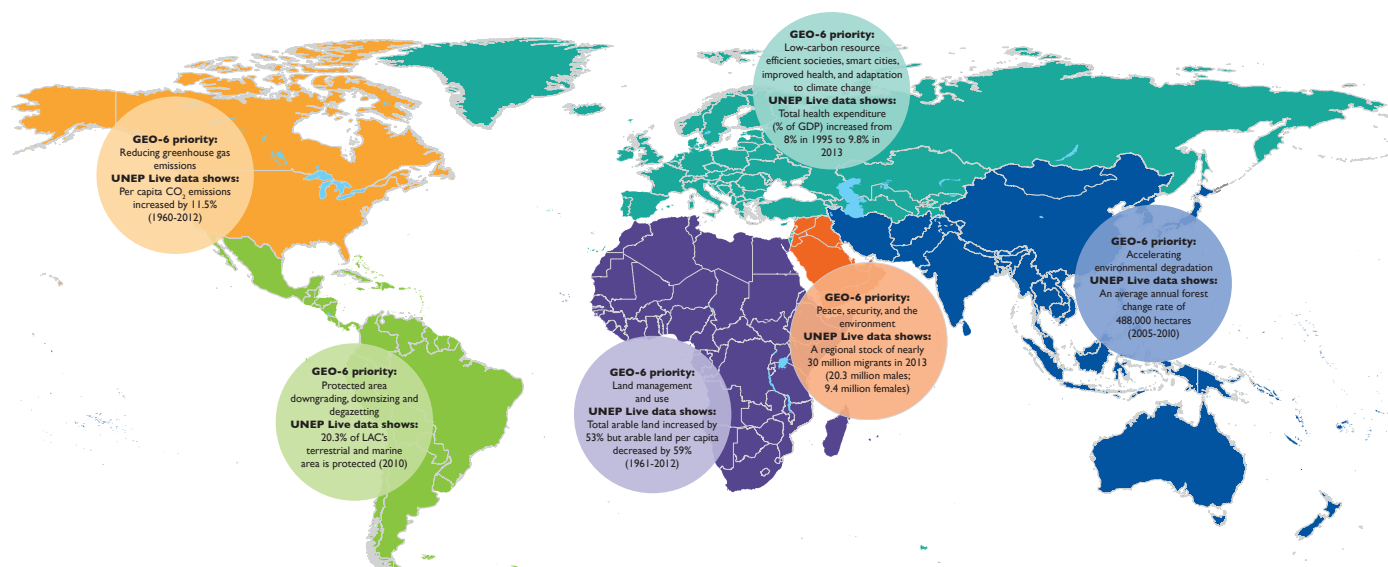
The inaugural meeting of the West Asia REIN conference was held from 10-14 May 2015 in Amman, and hosted by the United Nations Environment Programme. It was attended by 53 participants including representatives of governments (Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, Saudi Arabia, UAE), regional partners (ACSAD, AFED, AGEDI, CEDARE, IUCN, PERSGA, ROPME), WHO, UNDP, UNEP and GEO experts.

## Building the evidence base for environmental assessment

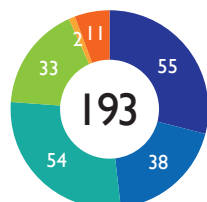
To strengthen the evidence base, and thus the credibility of the global GEO-6 assessment, there is a requirement to strengthen regional assessments by using national official data wherever possible.

UNEP's global knowledge platform – UNEP Live – is a dynamic platform for sharing contextualized national, regional and global data to keep the environment under review. It makes available up-to-date national, regional and global datasets, information and scientific knowledge necessary to support global assessments. GEO-6 global and regional assessments will draw on a variety of data flows made available through UNEP Live. Currently, over 188 countries have data represented in UNEP Live.

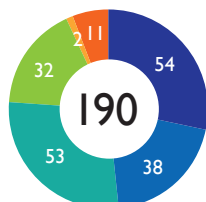
UNEP has developed an online National Reporting System (NRS) to facilitate reporting on national, regional and global environmental priorities. The NRS will enable the regular sharing and updating of data and indicators between ministries/agencies so that the same data can be used to report on different obligations.



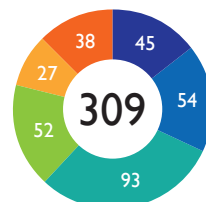
Countries for which UNEP Live lists global reporting obligations



Countries with data flows in UNEP Live



Members of the GEO-6 Regional Assessments Communities of Practice



■ Africa ■ Asia and the Pacific ■ Europe ■ Latin America and the Caribbean ■ North America ■ West Asia

## NATIONAL REPORTING SYSTEM ROLL OUT



## An Eye on Earth

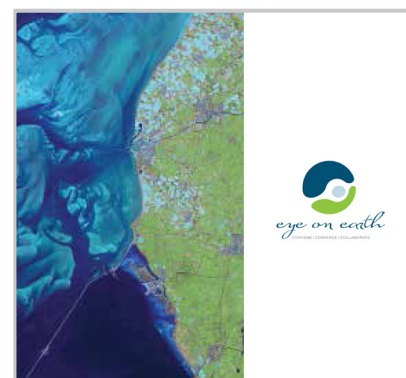
For leaders to make the right decisions on global processes, reliable, ample and timely data is absolutely essential. Despite technological and scientific advancements, decision makers often lack vital data on the state of the world's resources. We have to address the need for evidence-based decision making that can benefit from the available wealth of scientific data, information and knowledge, if they are made more accessible to all.

The existing partnership between UNEP and Eye on Earth provides living proof of the new frontiers in knowledge and data to bridge the information gap policy makers face in designing plans for sustainable development. Eye on Earth is a global movement that aims to improve access to and sharing of environmental, social and economic data, to better inform decision-making for sustainable development.

Eye on Earth is a collaborative effort between the Environment Agency - Abu Dhabi through the Abu Dhabi Global Environmental Data Initiative (AGEDI), and the Eye on Earth Alliance of UNEP, the Group on Earth Observations (GEO), the International Union for Conservation of Nature (IUCN) and the World Resources Institute (WRI).

Over 650 delegates from government, UN bodies, the non-governmental sector, private sector, academia and civil society will gather in Abu Dhabi between 6 and 8 October for the Eye on Earth Summit 2015. The experts will explore solutions and critical actions necessary for greater access to and sharing of environmental and socioeconomic data to support sustainable development. A global audience will participate in the Summit and contribute to the dialogue via online and social media tools.

The work of Eye on Earth is expected to be pivotal in providing the necessary data required to measure the progress and impact of the Sustainable Development Goals (SDG), with current and future Special Initiative (SI) projects aligning closely with them to ensure the provision of relevant, timely and accessible information.



The UNEP Executive Director, Mr.

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