



# Land Degradation, Desertification “Most Critical Challenges” in West Asia, as Rolling Conflicts Damage Environment, Human Health

## Land degradation and desertification

The spread of land degradation and desertification and its economic and environmental consequences are the "most critical challenges" facing West Asian countries. The scarcity of the region's renewable water resources also poses a major challenge, denting the region's ability to produce enough food to meet the growing population's needs.

### *Drivers*

- Arable land degradation is caused by mismanagement, climate change and water scarcity.
- Climate scenarios project changes in the region's temperature, rainfall and sea level, which will have impacts on both the availability and use of water resources.
- High population growth and continuous conflicts and wars mean that the carrying capacity of the land has become too low to support people with freshwater and food.
- Shrinking of agricultural lands is caused by population growth, urbanization, land degradation and desertification.
- Increasing water demand has exacerbated the region's serious water scarcity and exerted pressure on groundwater extractions rates.
- West Asia has been recognized as one of the major regions where sand and dust storms originate causing environmental, social and economic impacts.

### *Impacts*

- Food security in the region will be increasingly at risk, especially in the Mashriq countries and Yemen.
- Land degradation has accelerated the rise of soil salinity, increased the rate of soil erosion and converted wetland to dryland.
- Overexploitation of groundwater resources has resulted in a deterioration of water quality, seawater intrusion, depletion and salinization of aquifers, and rising pumping costs.
- A prevalence of climate extremes and forecasted climate change may exacerbate the extent of land degradation and water scarcity in the region.

- Water demand in West Asia has been increasing, resulting in a diminishing per-person availability of water. Only 4 out of 12 countries in West Asia are above the water scarcity limit of 1,000 cubic metres per person per year.
- Due to its aridity and water scarcity, the region has already surpassed its natural capacity to meet its own food and water demand.

#### *Examples*

- 97 per cent of Iraq's total area is arid, about 50 per cent of which is desert. Desertification affects 39 per cent of the country's surface area with an additional 54 per cent under threat.
- Although Iraq has the largest area of available farmland in the region, it suffers the most from soil salinity and wind erosion.
- Rangeland in Jordan covers more than 80 per cent of the country's total area, mainly used for pastoralism and agriculture. Conflicts over land-use and general mismanagement have led to overgrazing, land degradation and ultimately desertification. Livestock overgrazing is, possibly, the main cause of land deterioration and means that the land is no longer able to support the livestock that used to graze there.

#### *Responses*

- Reuse domestic wastewater and recycle agricultural drainage water, groundwater inter-basin transfer, seawater and brackish water desalination.
- Use of brackish and sea water for bio-saline and halophyte agriculture desalination can enhance the water availability throughout the region.
- Integrated monitoring is essential to understanding the causes and consequences of desertification.
- Efforts to combat land degradation and desertification in the region should capitalize on advances in science and technology for devising and up-scaling remedial and preventive measures.
- Regional cooperation is key for combatting desertification, drought and dust storms.

## **Displacement, conflict and the environment**

The mass displacement of people across the Middle East is having severe environmental impacts that are endangering the health of millions of people in the region. Heavy metals from explosive munitions and radiation from missiles have leached into the environment as a result of rolling war. Large swathes of Syria's forests have been destroyed by shelling and wood cutting and several wildlife reserves have been destroyed during the conflict.

The majority of refugees from the conflicts in Iraq and Syria will not be able to return home without clearance of mines and unexploded ordnance. Experience shows that the clearing of mines and rebuilding of infrastructure might take decades. West Asia will face a daunting task to remove the debris of war and reconstruct whole new cities and towns.

#### *Impacts*

- Due to the Palestinian-Israeli conflict, groundwater in both the West Bank and Gaza is being overexploited due to scarcity and is contaminated by unsafe wastewater disposal
- As a result of conflict, the region has witnessed considerable displacement of people, leading to numerous environmental stresses to which refugees themselves are the most vulnerable.

- The influx of refugees is greatly intensified by the refusal of governments to acknowledge informal settlements and, subsequently, to provide adequate stabilization solutions.
- Current conflicts and human displacement have a major impact on the waste sector.
- West Asia has suffered from ongoing wars and political conflicts. As a result, major environmental health issues now exist, including radioactive health impacts from missiles and soil and water contaminated with hazardous chemical residues from explosives. These impacts are considered to be serious causes of death for children, women and older people.

#### *Examples*

- In Syria, due to the ongoing conflict, governmental institutions have been overwhelmed in regions where displaced people have been relocated. As a result, irrigated agricultural land has been abandoned, mainly due to salinization and destruction of irrigation systems, especially in the Euphrates basin.
- The Syrian war's toxic footprint is severe, contaminating the natural environment and affecting human health through the release of heavy metals from munitions and the destruction of infrastructure, including hospitals, schools and community centres.
- Refugees in Lebanon, which has the highest per person concentration of refugees in the world, generate 889 tonnes of waste per day, or about 15.7 per cent of the country's total municipal solid waste.
- At the start of July 2015 there were an estimated 2.97 million refugees in Lebanon, Jordan, Yemen and Iraq, generating an estimated total of about 1,440 tonnes of waste per day or 0.48 kilograms per refugee per day.
- In Gaza, over-extraction of groundwater allows seawater intrusion, which has resulted in salinity in as much as 74.2 per cent of Gaza's wells

## **Health – air pollution and waste management**

The top modifiable risk factors are air pollution; lack of access to safe water and adequate sanitation; climate change; exposure to hazardous chemicals and wastes; emergencies and disasters; and exposure to radiation.

#### *Drivers*

- Nearly 90 per cent of municipal solid waste in West Asia is disposed of in unlined landfill sites and leachate from these is contaminating scarce groundwater resources. Proper integration of municipal solid waste management in West Asia is generally hampered by technical, administrative and financial shortcomings in some countries.
- It is estimated that air pollution alone was responsible for more than 70,000 premature deaths in West Asia in 2010.
- Rising populations, urbanization, economic growth, burning of fossil fuels and conflict all place enormous stress on the environment and harm human health

#### *Impacts*

- In the West Asia region, more than 229,500 people die prematurely each year because of specific environmental risks and 8.24 million healthy life years are being lost because of these risks.

- This means every individual in the West Asia region is losing 17 days of life annually because of modifiable environmental risk factors.
- The level of air pollutants in West Asia has increased progressively over the past two decades.

#### *Responses*

- Efforts have been made by West Asian countries to reduce the level of air pollutants but further controls are required.
- Long-term monitoring of major and minor pollutants should be set up in all West Asian countries. Concurrently, cleaner fuels and the installation of pollution-reducing technologies should be introduced.

## **Climate change**

Recent studies indicate that climate change will exacerbate existing water stress in the region by affecting precipitation, temperature, evaporation and relative humidity, all of which influence water availability and demand. Similarly, the region's high reliance on fossil fuels leads to detrimental impacts on the economy, the environment and public health.

The West Asia region has seen an increase in carbon dioxide emissions over recent decades as a result of growing total energy consumption. This is linked to population size and economic activity, but is also heavily influenced by the energy fuel mix and the efficiency of water and electricity use.

#### *Drivers*

- Energy use per person is currently rising in West Asia, highlighting the need for increasing efforts to promote energy efficiency.

#### *Impacts*

- It is projected that 83 square kilometres, or 11 per cent of the total land area of Bahrain, would be lost by 2050 as a result of a 0.3 metre increase in mean sea level.
- Around 23.89 square kilometres of Syrian beaches and agricultural zones could be lost by 2100 through a 1.3 metre rise in sea level.
- The predicted sea level rise along the Lebanese coastline might increase by 22-45 centimetres by 2050, with severe impacts on economic, agricultural and tourist activities.

#### *Responses*

- Mitigation processes include the review of policies and policy instruments to build a low-carbon economy, such as promoting the efficient use of water and energy, increasing the share of renewable sources in the energy mix, and the use of public transport and cleaner vehicles and fuels.
- There is a strong need to develop regional and national adaptation strategies which consider the cumulative impacts of multiple stressors, rather than considering the potential impacts from climate change alone.

## **Biodiversity**

The region's biodiversity is under threat, and is principally vulnerable to pressure from urban expansion, pollution, overconsumption of biological resources beyond the biocapacity of ecosystems, and changes in habitats. The dual effect of continued anthropogenic activities and climate change will further undermine biodiversity.

### *Drivers*

- Introduction of aquatic invasive species is considered one of the major threats facing the marine environment in West Asia.
- Current conflicts and instability have resulted in environmental impacts that put biological resources at risk, resulting in a number of critical challenges to biodiversity, causing further biodiversity degradation.

### *Impacts*

- The rate of exploitation of living marine resources in the region has increased dramatically. Catches of marine fish in the Gulf Cooperation Council (GCC) countries have doubled over two decades.
- More than 40 per cent of the coasts of GCC countries have been modified, resulting in significant loss of biodiversity and productivity.
- In the Gaza Strip, about 60 per cent of sewage effluents are treated and the remaining 40 per cent are discharged to the sea without treatment due to the limited capacity of wastewater treatment plants.

### *Responses*

- Conservation policies need to be integrated into national and regional planning, implementation and regulatory frameworks. Capacity building in biodiversity planning, information management, and enforcing laws and regulations are key tools for the conservation and sustainable use of biodiversity in the region.
- Conservation of biodiversity needs a collaborative and regional approach. Joint research, information sharing and collaboration between the countries of the region are crucial for developing solutions for better conservation and sustainable use of biodiversity and transboundary resources.