NATIONAL ACTION PLAN FOR THE MANAGEMENT AND MITIGATION OF SAND AND DUST STORMS IN THE REPUBLIC OF UZBEKISTAN FOR 2021-2024

STRATEGIC CONCLUSIONS

Photo credit: Ussen Kapar

MAIN TASKS:

- Increase the use and implementation of modern technologies and methods for the management of SDS processes;
- Strengthen the strategic and institutional frameworks for governance and individual country capacities in the fight against SDS;
- Improve interaction between government bodies and agencies, research institutes, universities, NGOs through human resource development;
- Increase influence on systemic decision-making mechanisms and legislation for the sustainable management of SDS processes in the country;
- Strengthen the cooperation among Central Asian countries and international cooperation for the exchange of successful practices and modern technologies;
- Identify specialised education and training needs.

MAIN OBJECTIVE

The National Action Plan (NAP) on management and mitigation of sand and dust storms (SDS) in the Republic of Uzbekistan aims to develop an understanding of the long-term impacts of SDS, mitigate their impact and ensure a comprehensive and consistent implementation of Uzbekistan's SDS response policy.

The NAP contains a comprehensive analysis of the impact of SDS processes on the well-being of Uzbekistan, a comprehensive description of sand and dust transport and accumulation development, a listing of existing national strategies and priorities for SDS management, GIS maps of the main SDS hotspots in Uzbekistan, and scientific recommendations for mitigation of SDS impacts.

WHAT IS SDS?

Sand and dust storms are common meteorological phenomena in arid and semi-arid regions of the world. The sharply continental climate of Central Asia (CA), characterized by long hot summers, cold winters, large amplitudes of daily temperatures, dry air, low cloudiness and sparse precipitation with extremely irregular distribution throughout the year, creates conditions for the formation of SDS in the countries of the region, including Uzbekistan.

Sandstorms occur when wind blows over dry bare ground at a speed of more than 1 m/s and lifts loose soil particles into the atmosphere. Sandstorms travel relatively close to the ground, while dust storms can rise to heights of many kilometers and transport particles hundreds to thousands of kilometers away.

Experts estimate global dust emissions from these natural phenomena at 1 to 3 Gt per year. As the CA region is highly susceptible to the impact of SDS, the Secretariat of the UN Convention to Combat

Desertification (UNCCD) works closely with governments of the region, NGOs, experts and local communities to build capacity to reduce the risks of SDS and mitigate its effects.

According to the UN, drylands, which occupy 30% of the planet's surface, are home to more than 2 billion people in 100 countries. If the rate of desertification is not reduced, by 2025, one in five people on Earth will live in an area prone to drought. In Central Asia experts estimate that 4-10% of crop area, 27-68% of pastureland and 1-8% of forest is significantly degraded.

Overgrazing, secondary salinization of soils, depletion of water resources and irrational use of natural resources lead to more frequent and severe manifestations of SDS in CA. All these and other anthropogenic factors aggravate the processes of desertification, land degradation and drought (DLDD). The only way to slow down DLDD and achieve Land Degradation Neutrality (LND) is to strengthen regional cooperation. The formulation and implementation of country and regional strategies for counteracting SDS processes will have a direct positive impact on the environment of all Central Asian countries and enhance the pace of sustainable development of the region as a whole.

ADVERSE IMPACT OF SDS

According to the World Meteorological Organization, inhaling dust particles **led to 400,000 premature deaths from** cardiovascular disease among those over 30 in 2014.

The impact of SDS on health:

Development of asthma, bronchitis, obstructive airway disease, coughing and wheezing

Cardiovascular disease (CVD), deep vein thrombosis and pulmonary embolism, cerebrovascular disease

viral, bacterial, and fungal infections of the lower respiratory tract

Indirect damage from SDS:

Sand drifts of irrigation canals, and deterioration of surface water quality

Reducing the output capacity of solar power plants

of transport routes, reduced visibility due to dust

FORMATION OF SAND AND DUST STORMS IN UZBEKISTAN

70% of the territory of the Republic of Uzbekistan consists of arid and semi-arid lands subject to natural salinization, spread of mobile sands, dust storms and dry winds. On the territory of Uzbekistan, there are major natural sources of dust emissions into the atmosphere - poorly fixed sandy soils and saline surfaces of the Karakum, Kyzylkum and Aralkum deserts.

The formation of SDS is substantially contributing to desertification processes caused by the interaction of natural and anthropogenic factors. High temperature and air dryness, low precipitation in arid areas, uneven distribution of precipitation during the year and extremely high intra- and inter-annual variability of precipitation - all this creates favorable conditions for desertification. Such anthropogenic influences as intensive land cultivation, construction of main highways and railways, construction of various engineering objects aggravate the processes of desertification.

The anthropogenic impact is particularly noticeable in the Aral region, where as a result of a drastic drop in the sea level, the average annual air temperature has risen considerably and relative humidity has fallen by 20-28% since 1990, compared to the 1960s.

As a result of the drying up of the Aral Sea, there is an increase in annual dust emissions into the atmosphere. During severe dust storms the amount of dust carried out is 1.5-6.5 t/ha,

depending on the distance from the sea shore. They contain from 260 to 1000 kg/ha of toxic salts

Dust storms in Central Asian countries have become more frequent and intense in recent years because the long-term reduction in precipitation contributes to a decrease in soil moisture and vegetation cover. Dust storms can have a negative impact on the climate, exacerbating desertification.

AGRICULTURAL RISKS OF SDS

SDS is a source of great socio-economic damage. This damage is particularly acute for people involved in agriculture. This is associated with disease in livestock, reduced crop yields, damage to engineering facilities, and reduced transport efficiency.

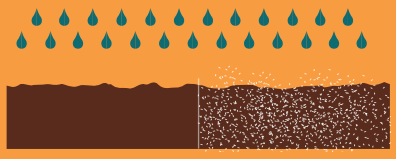
The economic losses from a single storm can be in the hundreds of millions of dollars. Long-term costs include soil erosion, contamination of ecosystems, chronic health problems and desertification.

The layer of dust deposited on seedlings as a result of SDS leads to loss of plant tissue, reduced photosynthetic activity of plants and increased soil erosion.

This, together with other consequences of SDS, reduces the average income of the population engaged in agriculture and has a negative impact on the overall standard of living in the country.

Increased desertification and frequent SDS in the Aral Sea region have resulted in land degradation to the extent that people can no longer engage in productive agriculture and generate income. This has negatively affected the economy and increased poverty. Many inhabitants of these areas are moving to cities or emigrating in search of work. According to a study by the Institute of Social Research under the Cabinet of Ministers of the Republic of Uzbekistan, almost a fifth of households in the region have labour emigrants among their family members.

SOIL SALINISATION IN UZBEKISTAN



50% of the country's irrigated land is subject to varying degrees of salinity

19%
of land is threatened by soil erosion

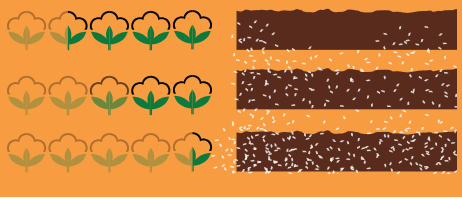
incorrect irrigation

Insufficient funding for the maintenance of the drainage system

high groundwater table

Increase salinity levels, negatively affecting crop yields

Salinity reduces cotton yields



by **20-30%** on slightly saline soils

by **40-60%** on moderately saline soils

by **80%** or more on highly saline soils

HEALTH RISKS OF SDS

Airborne dust is a serious threat to human health, especially when it contains toxic particles. Fine dust particles can carry a wide range of pollutants, spores, bacteria, viruses, fungi and allergens. Dust particles carried by winds many kilometres away from the source can contribute to a wide range of illnesses. People with lung or heart disease, the elderly and children are particularly vulnerable.

Dust particles have a negative impact on lung development in children, leading, in particular, to impaired lung function and chronically stunted lung growth. Inhalation of dust particles can cause many serious non-communicable respiratory and cardiovascular diseases, cancers and premature death.

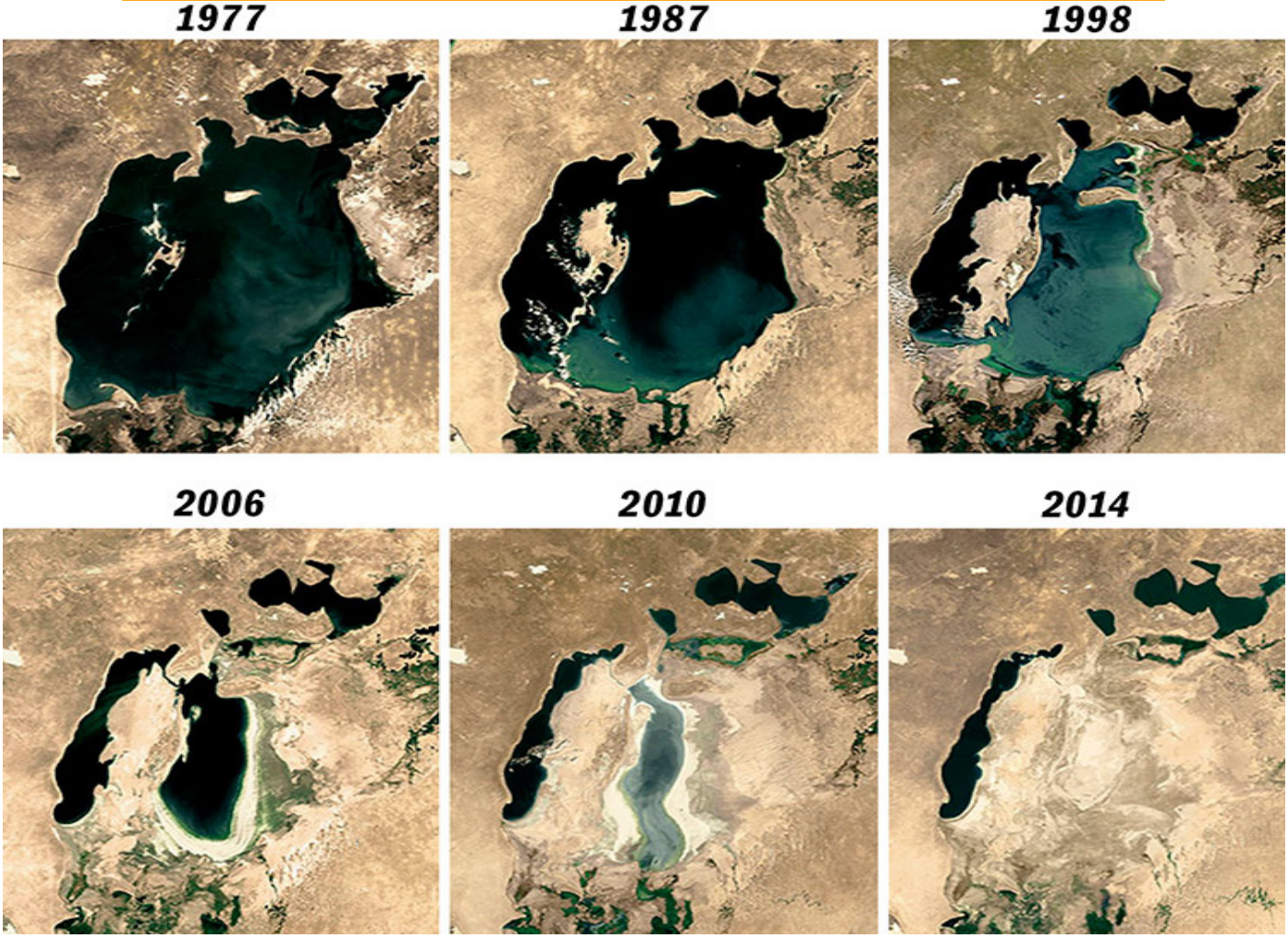
Dust is often the cause of eye disease, skin diseases and infections such as meningitis.

Dust can exacerbate chronic diseases.

The Khorezm oblast and the Republic of Karakalpakstan are the most susceptible areas in the Aral Sea region. In Khorezm oblast over 370 thousand people (37% of the number of surveyed people), in the Republic of Karakalpakstan over 550 thousand people (45% of the number of surveyed people) are in the risk group for various diseases.

The incidence of tuberculosis, esophageal cancer, diseases of the blood and blood forming system and diseases of the digestive organs in the Aral Sea region is several times higher than the national average. The unfavourable ecological and hygienic situation prevailing in a number of cities and administrative districts is caused by the complex impact of a number of natural and anthropogenic factors, including SDS.

THE TREND OF THE ARAL SEA DRYING UP



SUSTAINABLE LAND MANAGEMENT AND SDS PROGRAMS

The strategic objectives of the sustainable development of the Republic of Uzbekistan include ensuring a healthy and prosperous life for every citizen, improving the environmental situation, overcoming the Aral Sea crisis, nationalizing and efficiently using land and water and other natural resources, and combating desertification and improving the environment.

In order to combat desertification and land degradation, a Presidential Decree on measures for the efficient use of land and water resources in agriculture was adopted in 2019. The Decree provides for a concept aimed at involving more than 1.1 million hectares of land into agricultural turnover. In addition, it is planned to introduce water-saving technologies of drip irrigation on an area of more than 253 thousand hectares.

The Presidential Decrees "On measures to improve the effectiveness of efforts to combat desertification and drought in the Republic of Uzbekistan" and "On approval of the concept of development of the forestry system of the Republic of Uzbekistan until 2030" also make a significant contribution to solving the problem of drought, desertification and deforestation.

The Presidential Decree on the approval of the Agricultural Development Strategy of the Republic of Uzbekistan for 2020-2030 defines

the following priorities for the development of agriculture sector:

- Ensuring food security for the population;
- Creating a favourable agribusiness climate and value chains;
- Reducing the role of the state in the management of the sector and increasing investment attractiveness;
- Ensuring rational use of natural resources and environmental protection;
- Development of modern public administration systems;
- Development of science, education, information and advisory services systems in agriculture;
- Development of rural areas;
- Creation of a transparent system of sectoral statistics.

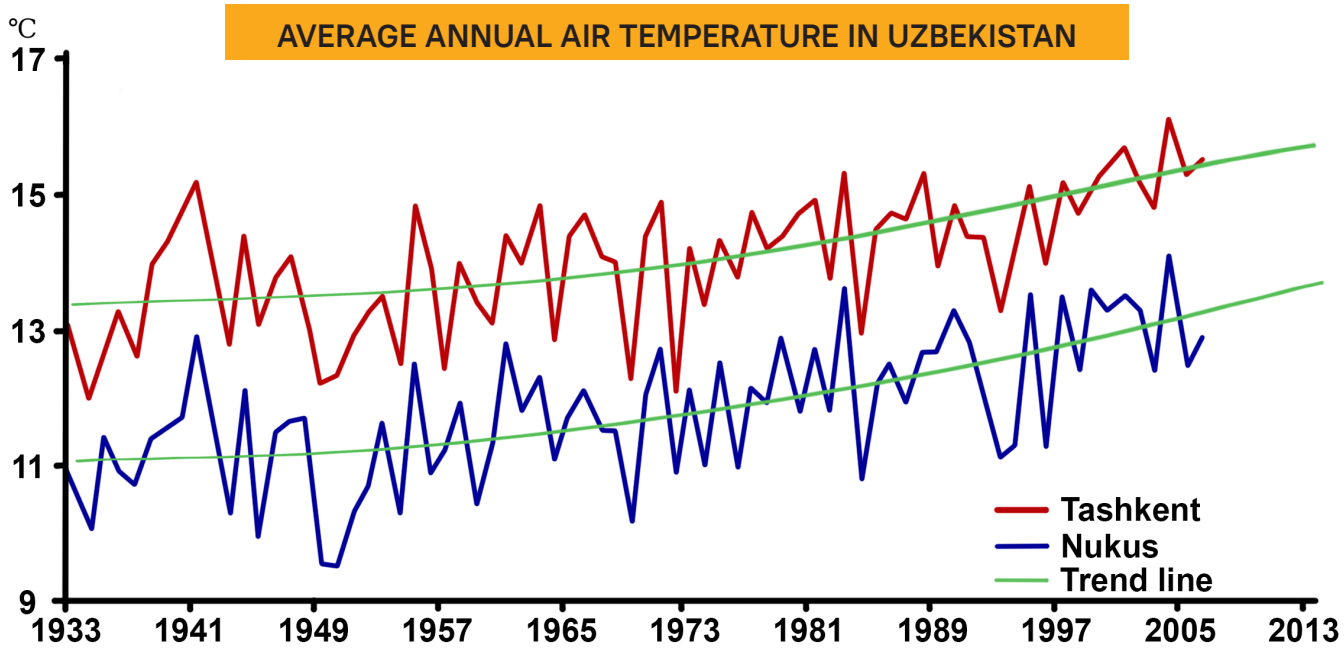
Management and mitigation of the negative impact of SDS is mentioned in a number of laws of the Republic of Uzbekistan, decrees of the President and the Cabinet of Ministers. The main state authority entrusted with responsibilities for combating desertification and drought is the State Forestry Committee, which has planted over 1.6 million ha of protective forest plantations in the last three years to prevent the rise of SDS from the dried seabed of the Aral Sea.

As a Member State of the United Nations, Uzbekistan has supported and adopted 17 Sustainable Development Goals (SDGs). The country is working systematically and purposefully to adapt the global SDGs to the country's conditions and to prepare a state programme for implementing the national SDGs until 2030.

The Republic of Uzbekistan is a party to the following global environmental agreements: the UN Framework Convention on Climate Change, the UN Convention to Combat Desertification, Land Degradation and Drought and the UN Convention on the Conservation of Biodiversity, the Paris Agreement, the RAMSAR Convention, the Bonn, Vienna and Montreal Protocols.

In the Republic of Uzbekistan there is no separate regulation dedicated to SDS and regulating actions and measures to manage their negative consequences. The current legislation only indirectly refers to the nature and consequences of SDS. There is no centrally managed system for monitoring and evaluating the consequences of SDS in the country.

AVERAGE ANNUAL AIR TEMPERATURE IN UZBEKISTAN



DESERTIFICATION IN UZBEKISTAN

- **1 million hectares** of Uzbekistan's territory are occupied by shifting sands;
- **200,000 ha** of shifting sands have recently emerged on the periphery of irrigated areas, posing a serious threat to the intensification of desertification processes;
- Land degradation is also occurring in **irrigated areas involved in agricultural production;**
- **More than 50%** of irrigated land in Uzbekistan is subject to secondary salinisation.

NATIONAL ACTION PLAN FOR THE PREVENTION AND MITIGATION OF THE IMPACT OF SDS IN THE REPUBLIC OF UZBEKISTAN

The objective of the NAP is to improve systemic and institutional capacity to implement effective and sustainable management of sand and dust storms in Uzbekistan. The plan will strengthen cooperation between organisations and local communities to mitigate the negative impact of SDS and will serve as a basis for joint work at the sub-regional level.

In the context of international and regional cooperation, this document will be Uzbekistan's main tool for fulfilling its obligations under the UNCCD and UNFCCC conventions.