

Overview of Nature-based Solutions and Their Potential to Support Improved Air Quality and Healthy Cities in Tajikistan and Dushanbe

Nature-based solutions supporting healthy urban living in Dushanbe

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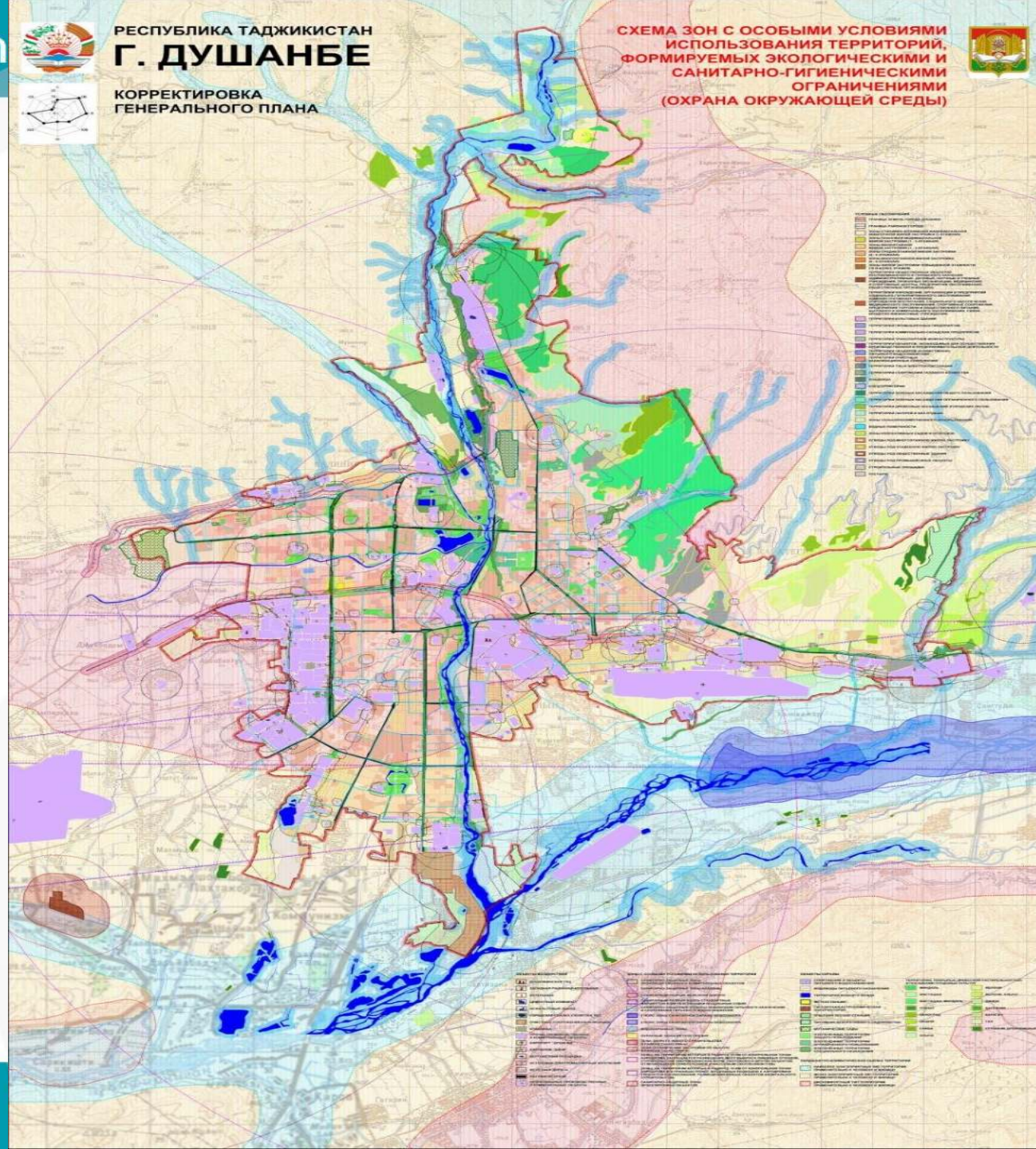
Presentation outline

- Geographic and topographic context
- Nature-based solutions supporting healthy urban living
- Relevant stakeholders for promotion of NbS at the city level in Tajikistan
- Potential for integrating NbS into urban planning to improve air quality and healthy lifestyle in Dushanbe
- Review and Inventory of the NbS and projects implemented in Dushanbe and Tajikistan
- Recommendations for the nature-based solutions to improve air quality and healthy lifestyle in Dushanbe

1. Geographic and topographic context

- Dushanbe is located at 38° north latitude and 68° east longitude in the densely populated and fertile Hissar valley, at an altitude of 750-930 meters above sea level. The area is 125 km²
- The Varzob (Dushanbinka or Dushanbe-Darya) river runs through the city from north to south, feeding an artificial lake in the downtown, and the Kafirnigan river runs from east to west.
- To the north of the city is Varzob gorge - there are numerous recreation centers.
- From the north and north-east and north-west, Dushanbe is bounded by the Hissar mountain ridge, from the south and south-west by the systems Karshitau and Babatag ridges, and from the south and south-east by the Rangon mountain range.
- Wind direction is mainly north-south along the Varzob River valley.
- Wind immobility is about 38%. For these reasons, the degree of dispersion of toxic substances in the atmosphere of Dushanbe is low, most of them settle within the city. Even with small emissions, harmful substances can accumulate in the air to high concentrations.

Master Plan of Dushanbe



2. Nature-based solutions supporting healthy urban living

To drastically improve the ecological situation, both on the earth as a whole and in a particular country or city, it is necessary to implement the following measures:

- **Legal.** They include the creation of environmental protection laws. International treaties are also important.
- **Technological.** The use of new technologies in the mining, metallurgical and transport industries will minimize environmental pollution. The main objective is to create environmentally friendly energy sources.
- **Organizational.** They consist in an even distribution of traffic streams to avoid its long accumulation in one place. Widening of streets for better ventilation. Creation of green parks and public water bodies. Creation of green areas in the city will help reduce the air temperature by 2-8°C in the hot summer season - this is especially important for Dushanbe, where the summer temperature does not drop below 40°C.
- Trees help purify water and air from pollution, prevent flooding and soil erosion, fence off houses from nearby roads and industrial areas, and trees reduce noise levels. Research confirms that green spaces and trees in cities not only improve the quality of citizens' life, but also seriously affect their state of mind and well-being. They make people happier and healthier, because green spaces are a favorite place for relaxation and inspiration.
- **Architectural.** It is advisable to plant greenery in large and small settlements, to divide their territory into zones using plantations. Planting around enterprises and along roads is also important.

3. Relevant stakeholders for promotion of NbS at the city level in Tajikistan

- Executive Office President of the Republic of Tajikistan
- Majlisi Oli (Parliament)
- Local executive bodies
- Environmental Protection Committee under the Government of the Republic of Tajikistan
- State Agency for Hydrometeorology under the Environmental Protection Committee.
- Ministry of Health and Social Protection of the Republic of Tajikistan
- Ministry of Industry and New Technologies of the Republic of Tajikistan.
- Ministry of Internal Affairs of the Republic of Tajikistan
- Committee for Emergency Situations and Civil Defense under the Government of the Republic of Tajikistan.
- Statistics Agency under President of the Republic of Tajikistan
- National Academy of Sciences of Tajikistan
- Environmental services, centers and organizations in Dushanbe, Khujand and other settlements.

4. Potential for integrating NbS into urban planning to improve air quality and healthy lifestyle in Dushanbe

- One of the important documents that could increase the potential for integrating the NbS into urban planning to improve air quality and a healthy lifestyle in Dushanbe is the **“Revised Master Plan of Dushanbe City (Concept of Socio-Economic and Territorial Development of Dushanbe) of 2010”**
 - 57% (7,415 ha) - territories within which new housing construction, the placement of health care facilities and the organization of recreational functions are prohibited.
 - 28% (3,605 ha) - make the natural and ecological frame of the city, within which no capital construction is recommended .
 - Given the overlap of these two zones, 75% (9,758 ha) of the city is currently unfavorable for residence, treatment and recreation of the population.
 - Territorial resources of capital construction within the modern boundaries of the city are practically exhausted:
 - northern direction is “blocked” by - cement plant
 - eastern direction - sanitary and hygienic requirements for the protection of the city water intake
 - western direction - by the clear zone along the standard take-off and landing airline routes of Aini airfield
 - southwest direction - by the protected zones of the Hissar Astronomical Observatory
- Thus, Dushanbe has almost exhausted all its possible potential of integrating nature-based solutions in the city planning to improve air quality and healthy lifestyle in Dushanbe. Only further territorial development of Dushanbe city in a southern direction will increase the potential for integrating nature-based solutions into the city planning to improve air quality and a healthy lifestyle in Dushanbe.



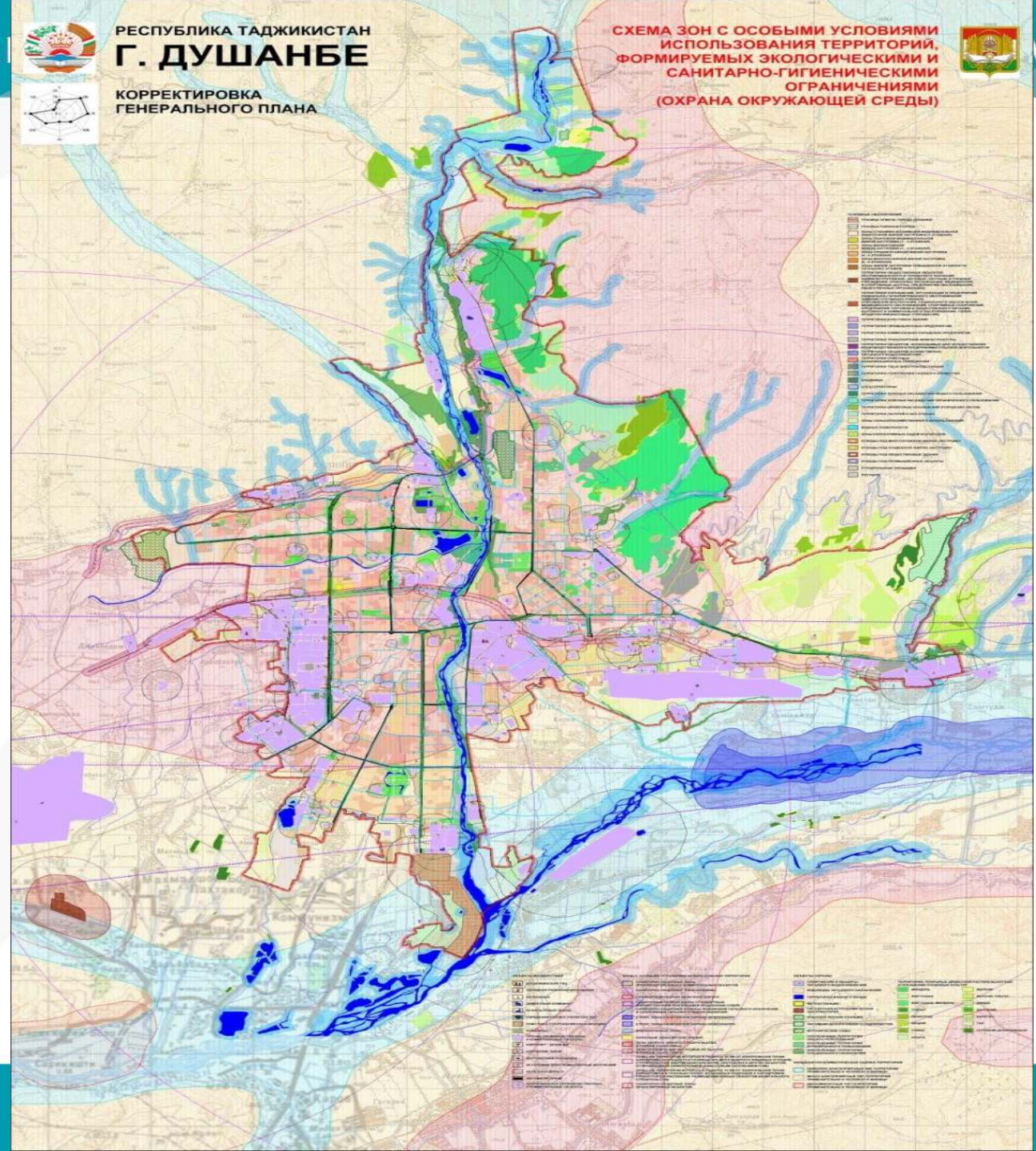
РЕСПУБЛИКА ТАДЖИКИСТАН
Г. ДУШАНБЕ
КОРРЕКТИРОВКА
ГЕНЕРАЛЬНОГО ПЛАНА

СХЕМА ЗОН С ОСОБЫМИ УСЛОВИЯМИ
ИСПОЛЬЗОВАНИЯ ТЕРРИТОРИЙ,
ФОРМИРУЕМЫХ ЭКОЛОГИЧЕСКИМИ И
САНИТАРНО-ГИГИЕНИЧЕСКИМИ
ОГРАНИЧЕНИЯМИ
(ОХРАНА ОКРУЖАЮЩЕЙ СРЕДЫ)



(REC)

Dushanbe Master Plan



4. Potential for integrating NbS into urban planning to improve air quality and healthy lifestyle in Dushanbe (cont.)

- The main steps and actions of the Government to implement the nature-based solutions and actions are included in the **National Program for the Formation of Healthy Lifestyle in the Republic of Tajikistan for 2011 - 2020** (Resolution of the Republic of Tajikistan Government dated 30 October 2010 No.560) and the **Draft National Program for the Formation of Healthy Lifestyle in the Republic of Tajikistan for 2021-2025**.
- The documents stipulate development of measures aimed at improving the mechanism of disease prevention and promoting a healthy lifestyle among the population, integrating nature-based solutions into the city planning to improve air quality and healthy lifestyle in Dushanbe and other cities.
- As part of the Program, a number of significant activities in the area of landscaping and gardening have been completed.
- In particular, for the purpose of green planting and landscaping the avenues, cultural and entertainment parks, villages and makhallas, enterprises and organizations in Dushanbe city, 226.3 thousand seedlings and shrubs, and 14.2 million perennial seasonal flowers and lawns were planted on an area of 254.4 thousand square meters .

5. Review and Inventory of the NbS and projects implemented in Dushanbe and Tajikistan

- In Dushanbe, significant efforts are being made to improve the urban ecology.
- The State Environmental Program for 2009-2019 was one of the first strategic documents of its kind and its implementation proved to be quite effective thanks to the support of donors, public efforts, and private and public initiative.
- More than 15 parks and squares in Dushanbe city:
 - Botanic Garden of the National Academy of Sciences of Tajikistan
 - City Garden “Bogi Rudaki”
 - Park for Recreation and Leisure named after S. Aini
 - City Park of Shokhmansur District
 - “Javoni” Park “Buston” square
 - “Victory” Park
 - City Entertainment Park “Bogi Poytakht”
 - “Dolphin” Aquapark
 - Other hundreds of other sports complexes, some of which are green

5. Review and Inventory of the NbS and projects implemented in Dushanbe and Tajikistan (cont.)

Public green areas within the modern city line - 284 ha (2.2%);

- limited use green areas - 90 ha (0.7%),
 - special green areas - 340 ha (2.6%).
 - specially protected natural areas within the city makes 78 ha (0.6%) - two botanical gardens;
 - ornamental gardening nursery - 98 ha
 - experimental forest station - 4 ha
- At the same time, a very significant positive environmental effect has a long-standing practice of planting almond, pistachio, apple, and other tree crops on adyr slopes, organizing parks and squares, landscaping streets and neighborhoods.

6. Recommendations for the nature-based solutions to improve air quality and healthy lifestyle in Dushanbe

- Planting of new trees and roof gardens. All greening activities should be implemented in accordance with the revised Master Plan of Dushanbe city;
- In accordance with the procedure established by the RT legislation, approve the boundaries of all public green spaces: city parks, gardens, public gardens, groves, boulevards and other landscaped areas.
- In the design of new construction projects, it is mandatory to provide for landscaping and irrigation system, and where necessary, to provide an alternative method of irrigation.

6. Recommendations for the nature-based solutions to improve air quality and healthy lifestyle in Dushanbe

- Develop standards for street gardening, a plan for the development of an irrigation system, introduction of the new landscaping methods.
- Adopt a new procedure for planting trees and shrubs in the city, including in yards of the apartment buildings, according to which annually, the district administrations will collect proposals from local residents, and form a public opinion on the landscaping of specific areas.
- Develop the Program to overhaul main canals, restore and expand the urban irrigation network, restore and build new artesian wells and irrigation water pipelines, introduce “drip irrigation” and “sprinkling” to reduce the share of auto irrigation in the served green areas.

6. Recommendations for the nature-based solutions to improve air quality and healthy lifestyle in Dushanbe

- Formation of protected zones outside and within Dushanbe, constituting a single whole and developing a system of special protected areas of the natural complex;
- Organization and improvement of water protection strips of the Dushanbinka, Luchob, and Kafirnigan rivers, carrying out activities to restore floodplains as elements of the city ecosystem;
- Preservation of all existing water bodies; construction of new water bodies in suitable areas of natural complexes and mixed purpose areas with a high proportion of landscaping.



Thank you for your attention!

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