Case study // Round Table SDG 15: Sustainable Forest Management and the SDGs

Sustainable forest management for cities: The "green belt" of Astana city

The Republic of Kazakhstan

Level: national, subnational

Summary

The creation of a "green belt" around the city of Astana, the capital of the Republic of Kazakhstan, has been underway since 1997. Among the main aims behind the project is improvement of the environmental situation in the city, specifically reducing wind load and improving air quality and the level of dust pollution in urban areas. In addition, the introduction of a "green belt" around Astana serves to create recreational spaces for residents and guests of the capital, as well as improve livelihoods of the local population through new job creation.

The project is financed by the Government of Kazakhstan and implemented by state enterprise "Zhasyl Aimak".

The creation and gradual expansion of Astana's "green belt" has taken place over a number of stages described in greater detail below. During the development and implementation of the project, various methods and strategies for the creation of green spaces were considered and evaluated, studying the international experience and best practices in afforestation and sustainable forest management (including that of the Russian Federation, the People's Republic of China, Canada and Mongolia). This approach resulted in the selection of the most effective, appropriate and sustainable methods of "greening" the city of Astana.

Strategy

The first stage in the creation of Astana city's "green belt" involves conducting scientific research and the identification of suitable tree planting technologies, along with the development of recommendations on the tree and shrub species to be selected.

Over the next 2-3 years, a number of measures are taken to prepare the soil, including ploughing, harrowing and cultivation, and snow retention. The material to be planted is grown in specialist tree nurseries.

In the five years after the establishment of tree plantations, forest cultures are carefully cared for using techniques such as manual weeding in rows, mechanized cultivation in row-spacing, watering of the plantations in the first year of creation, and artificial shading of trees and shrubs.

Lastly, various measures are taken to prevent forest fires and illegal logging, as well as to combat the spread of harmful diseases and pests. This stage also involves the reintroduction of fauna, specifically resettlement of wild ungulates and the breeding and release of pheasants into Astana's "green belt".

Results and impact

In the last ten years, an area of 78,000 hectares around the city of Astana has been forested. The "green belt" of Astana is expected to reach 100,000 hectares by 2020.

Although the full impact of the "green belt" will not be felt until the forests reach full size and maturity, numerous benefits can already be observed. It is reported that thanks to the introduction of the "green belt", temperatures in Astana have increased by 0.3C since 1997, while average wind speeds have fallen. According to the Kazgidromet national meteorological centre, there has been a threefold drop in the amount of snowstorms and fog in the capital.

In addition, the forest of the "green belt" has been described as a natural oasis inhabited by wild animals and birds, such as foxes, hares and pheasants. Construction of a recreational zone in the "green belt" forest is currently underway.

Challenges and lessons learned

The challenges encountered during the creation of Astana's "green belt" included a high level of soil salinity, close proximity of groundwater to the surface, a severe and sharply continental climate (temperatures ranging from -40C in winter to +40C in the summer), low precipitation (150-250 mm/year) and strong winds.

Initially, extreme weather conditions had meant that few trees were able to survive, leading the authorities to plant trees in test conditions in order to determine in advance whether they would be able to tolerate Astana's harsh climate.

Over the years, invaluable experience was gained in the design of forest plantations, soil cultivation, application of soil desalinization technologies, creation of strip plantations, and successful selection of tree and shrub species, taking into account the natural, climatic and soil conditions of the region.

Potential for replication

Following on from the experience of the "green belt" around Astana city, work has now begun on the creation of green belts around other regional centers of the Republic of Kazakhstan.

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