

**Zentrum für internationale Entwicklungs- und Umweltforschung der
Justus-Liebig-Universität Gießen**

Forests in the context of climate change in Kazakhstan

by

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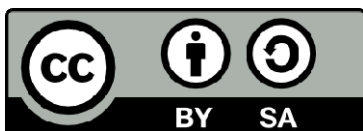
No. 60

Gießen, June 2012

Keywords: climate change, forestry, Kazakhstan

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The discussion paper is an outcome of a research stay at the German-Kazakh University (DKU) in Almaty in December 2011 in the framework of the CliNCA programme (Climate Change Network in Central Asia) funded by the German Department of Foreign Affairs and DAAD. The author thanks the ZEU and the DKU for their institutional support.



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ABSTRACT. Being a country with very low forest cover, forests are usually not in the focus of research and strategies of natural resource management in Kazakhstan. Nevertheless, forests play an important ecological role, especially in maintaining conditions for agriculture and hydrological regimes. The paper gives a description of the state of the resource and the administrative regulations on forestry in Kazakhstan. It outlines the impacts of climate change on forestry and the potential role of forests in adaption and mitigation are described. Finally, it takes stock of current forest policies, which are less based on climate change considerations but on the country's green growth strategy.

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“In the far future, the symbol of our country should not be deserts, but forests and gardens.”

*Nursultan Nazarbayev,
President of the Republic of Kazakhstan, 1997*

1. Introduction

Kazakhstan, like whole Central Asia, belongs to the least forested areas in the world. In all five states of the region – Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan – forests cover less than 10% of the territory (FAO 2007, 2010). Kazakhstan possesses many other natural resources of much more economic importance – especially hydrocarbons – that receive more political attention. Traditionally, for the nomadic people in the wide water-scarce steppes of today's Kazakhstan, trees and forests were not given as much awareness and value as, for example, water. As a consequence, no systematic forest management existed until the mid of the 20th century (Meshkov et al. 2009: 99). Nevertheless, the role forests play for the ecological balance and therefore also for the socio-economic development in the region should not be undervalued.

With regard to climate change, the International Panel on Climate Change (IPCC) stated in its fourth assessment report, that "in the long term, sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber fibre or energy from the forest, will generate the largest sustained mitigation benefit" (Nabuurs et al. 2007: 549). Thus, forests play a critical role for all mitigation efforts. Though their significance as a carbon sink is restricted in Central Asia due to the low area and wood stock mass, this paper wants to take a look on the role of forests for mitigation in Central Asia.

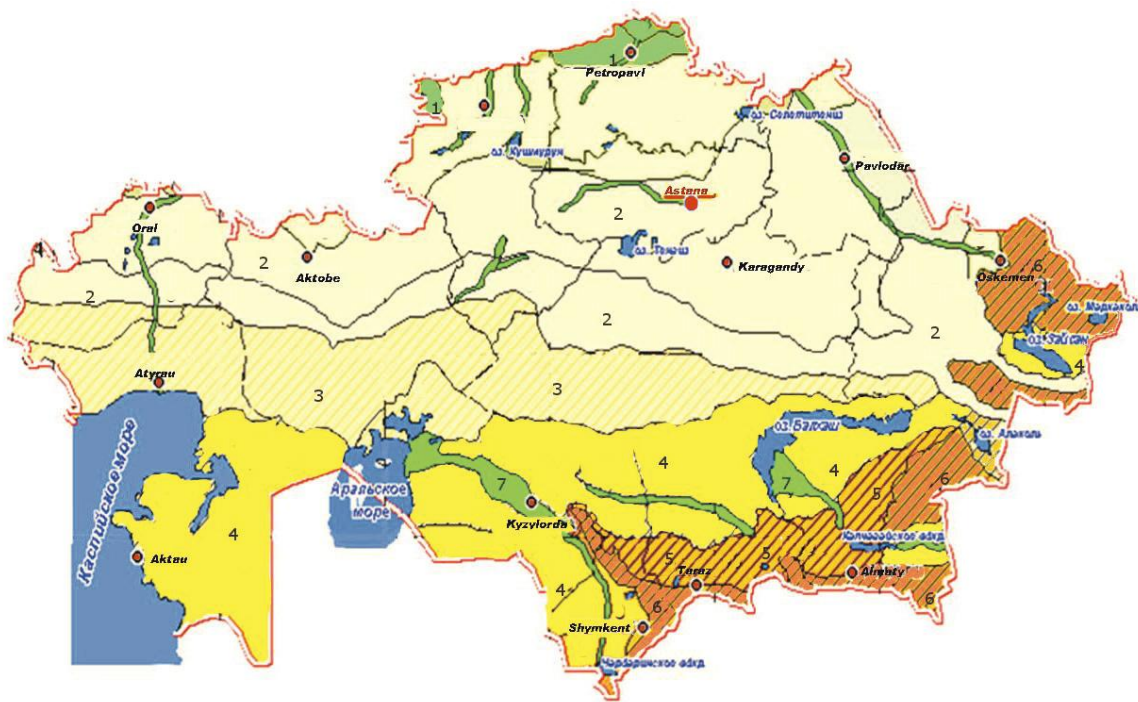
Much more apparent is the supportive role sustainable forest management can play for climate change adaptation in Central Asia, like prevention of erosion, desertification, and protection of water formation areas. Also these aspects will be considered in the paper.

The paper will start with a description of the state of the resource and the administrative regulations on forestry. Then the impacts of climate change on forestry and the potential role of forests in adaption and mitigation are described. Finally, it takes stock of current forest policies.

2. Overview on forests in Kazakhstan

Kazakhstan belongs to the largest countries of the world. With a territory of 2,724,900km², it has about the same size as Western Europe. Correspondingly, it covers various natural vegetation zones and landscapes depending on geography, climate, and precipitation. More than two-thirds is covered by deserts and semi-deserts; the rest is mainly steppes and low hills, with some high mountain ranges at the eastern and south-eastern borders. The figure below shows the main natural vegetation zones of Kazakhstan, with the green marked areas being forest steppes.

Figure 1: Natural vegetation zones of Kazakhstan



Legend: 1 Forest Steppe, 2 Steppe, 3 Semi-Desert, 4 Desert

5 Zone of Foothill Plains, 6 Mountain Zone, 7 Lowland Forest

Source: Meshkov et al.: 91.

State of the resource

Kazakhstan is a very low forested country. Two thirds of its territory are belonging to arid and semi-arid zones and the climate is rather unfavourable to tree growth.

Forests are concentrated in the Northern, Eastern and South-eastern regions (see figure 1).

In the Forest Code of the Republic of Kazakhstan, forests are defined as “a natural complex formed on a certain territory based on the aggregate of trees and shrubs vegetation and other wildlife components interacting with environment and having environmental, economic and social importance” (Article 4). This definition of forests differs from international definitions, which usually do not include shrubs and refer to a certain percentage of canopy closure and minimum area. It mirrors the nature of forested lands in the country: There is hardly any closed canopy cover, rather many “forest islands” with open fields in between, which together comprise the forest fund. Due to these different classifications used by international organisations and national agencies in Kazakhstan, there are some discrepancies in forest statistics.

According to Article 6 of the Forest Code, “the Forest Fund of the Republic of Kazakhstan (hereinafter the Forest Fund) comprises all the forests growing on lands of all land categories as well as non-stocked lands of the Forest Fund meant for forestry needs.” The Forest Fund is thus bigger than the forest area as it comprises also grazing land, open forest stands, hayfields and other lands (Meshkov et al 2009: 89).

Every five years an inventory of forests is undertaken, the most actual data are from 2008. According to national data, forests cover 4.5% of the country (Yesserkepova 2010: 65). This is one of the lowest numbers of the world. More than half of these forests (about 66%) are *Haloxylon spp.* (saxaul), which in other classifications does not account as forest but as other wooded land or bushlands. Forests in the strict sense account only for 1.2%, which is also the number used by international assessments (FAO 2007: 8, Yesserkepova 2010: 70). In general, data have to be used with some caution. There is no independent monitoring of forests and some experts raise doubts about the official data.

Table 1 shows that, while the total area of the Forest Fund are 27.8 million ha, in fact only 12.8 million ha are land covered by forests according to the Kazakh definition (including saxaul and bushes). About 6 million ha of the Forest Fund are land intended to become forested land, and about 9 million ha are fields, water bodies, roads, settlements (expert information).

Table 1: Forest areas in Kazakhstan (as of 01 January 2009)

<i>Oblast</i> (province)	Total area of the State Forest Fund (in 10 ⁶ ha)	Forest lands (in 10 ⁶ ha)	Standing timber stock as of 01 July 2003 (10 ⁶ ha)	Land cover (%)
Akmolinskaya	1.0	0.4	42.7	2.6
Aktobe	1.0	0.1	1.0	0.2
Almaty	5.0	1.8	38.7	8.0
Atyrau	0.1	0.01	0.5	0.1
West-Kazakhstan	0.2	0.1	8.0	0.7
Zhambyl	4.2	2.2	3.4	15.3
Karaganda	0.3	0.2	4.6	0.3
Kostanai	0.6	0.2	16.5	1.1
Kyzylorda	6.7	3.1	6.0	13.6
Mangystau	0.5	0.1	0.1	0.7
South-Kazakhstan	3.4	1.6	3.1	13.6
Pavlodar	0.5	0.2	26.6	1.9
North-Kazakhstan	0.7	0.5	54.4	5.4
East-Kazakhstan	3.6	1.8	175.1	6.4
Republic of Kazakhstan (total)	27.8	12.8	380.7	4.5

Source: Yesserkepova 2010: 65.

Most forests are characterized by low density. The main forest-forming species are conifers – Scots pine (*Pinus silvestris*), Schrenk's spruce (*Picea Schrenkiana*), Siberian spruce (*Picea obovata*), Siberian fir (*Abies sibirica*), Siberian larch (*Larix sibirica*), Siberian pine (*Pinus sibirica*); softwood broad-leaved – white birch (*Betula pubescens*), European birch (*Betula verrucosa*), aspen (*Populus tremula*); hardwood broad-leaved – English oak (*Quercus robur*), European white elm (*Ulmus laevis*), Pinnate-branch elm (*Ulmus pinnato-ramosa*), oleaster (*Elaeagnus angustifolia*); black saxaul (*Haloxylon aphyllum*), white saxaul (*Haloxylon persicum*). Saxaul forests grow for example in the deserts Kyzylkum along the Syrdaiya River, Muyunkum along the Chu River, Saryishukitau along the banks of Balkhash or around the (former) Aral Sea. Saxaul forests are traditionally used as pastures and saxaul wood is serving as fuel (Meshkov et al. 2009: 91).

While saxaul cover much of the forest area, they account only for 3.8% of the total standing wood stock in the country (2008). 91% of the wood stock is formed by coniferous and softwood deciduous trees like pine, cedar, fir, juniper, birch, aspen, poplar and others. 80% of the wood stock is in the northern and north-eastern areas of the country, which are characterized by birch separated forest stands, island pine forests, pinewoods (Meshkov et al. 2009: 91, Yesserkepova 2010: 66).

Table 2: Area and standing wood stock of the main woodland classes in Kazakhstan

Year	Coniferous		Deciduous softwood		Deciduous hardwood		Haloxylon spp.		Other wood		Bushes	
	area ('000 ha)	stock (mln m ³)	area ('000 ha)	stock (mln m ³)	area ('000 ha)	stock (mln m ³)	area ('000 ha)	stock (mln m ³)	area ('000 ha)	stock (mln m ³)	area ('000 ha)	stock (mln m ³)
1988	1737.5	221.1	1303.3	115.6	86.5	2.3	481.2	9.7	43.9	1.0	1410.0	6.5
1993	1800.2	240.4	1406.1	123.3	95.3	2.8	5091.4	10.7	80.8	1.4	2068.8	7.0
1998	1719.0	236.6	1430.5	126.0	98.1	2.9	5421.4	10.2	82.5	1.5	2675.6	9.3
2003	1650.8	228.6	1415.6	131.1	100.0	3.1	6252.8	15.2	137.0	2.6	3094.5	11.0
2008	1606.0	235.4	1378.0	127.2	98.9	3.2	6088.0	14.9	140.1	2.7	2963.2	10.9

Source: Yesserkepova 2010: 67.

Table 2 gives an overview over the area and stock of different wood types in Kazakhstan. The data are however questioned by some experts. According to these data, the overall stock of forests in Kazakhstan increased slightly between 1988 and 1993, and those of saxaul and bushes even exorbitantly. However, this increase is owed to a change of categories and definition. De facto the area and stock has decreased in the first years after independence (see also figure 3). In the following years, the area remained more or less stable with no significant decrease.

Though being small in size and of low economic importance, forests have a significant protective function: for soil protection, climate and water regulation, water protection, bio-diversity as well as for recreation (FAO 2007: 1, Yesserkepova 2010: 70). The Forest Code mentions the following benefits of forests: oxygen production, carbon dioxide absorption, water and wind erosion prevention, transformation of surface water flow into subsurface water flow, and balneological and climate-regulation functions. Since a long time, forest plantings are used as protection from winds, sandbanks and sand dunes. Approximately 10% of the country's forest

resources (1 mln. ha) are artificially planted. In order to preserve the benefits of forests, 97% of the forests are in the protected forest category and two thirds of the forest fund are totally excluded from the commercial exploitation (Second NC 2009: 119).

Economic role of forestry

The economic significance of forests is limited. In 1990, the forest sector contributed 2.7% to the GNP, newer data are not available. But it is estimated that forests are an important source of income for approximately 2.5 million people that live near forest areas and earn a living as field users, hunters, herb collectors and shepherds (Second NC 2009: 119). Meshkov et al. (2009: 90) estimate that about 300,000 people depend directly on the forest sector, for example those residing in forest areas or using forests harvesting of fuel wood, cattle forage and other forest products. Indirectly, even up to 4-5 million people (40% of the population) are estimated to depend on these resources for their livelihood. In addition, forests of Kazakhstan are providing important environmental services such as climate regulation, soil and water protection, and sanitary and hygienic functions. (Eco)tourism is gaining popularity, for example in forested national parks, providing income for local communities. On the other hand, tourism can also be a threat to forest ecosystems, for example when ski resorts are constructed in protected areas, which is currently a much-debated issue (see Green Salvation 2011).

Degradation

The Second National Communication (2009: 40) mentions that during the previous ten years the area of linear forests in East Kazakhstan decreased by almost 0.16 million ha, which is 20% of its total area. East Kazakhstan is important as almost half of the resource stock is located there, mainly coniferous forests. Between 2000 and 2006, 6415 forest fire cases were recorded; resulting in 160.000 ha burnt (Second NC 2009: 119).

Main reason for forest degradation in Kazakhstan is clear cutting, illegal logging and forest fires. In the forest steppe zones, forests suffered from the extension of agricultural cultivation. Especially alarming was the degradation of forests along the Irtys river in North-Eastern Kazakhstan. The elimination of trees had sensitive

effects on hydrological regime and soil stability. Riparian woodlands suffered from also from agricultural extension, connected with increased river control and water usage. Saxaul forests are, apart from illegal logging, threatened by excessive cattle grazing as the saxaul areas are used as rangelands (Meshkov et al. 2009: 107f).

Administrative regulations

All forests are under state ownership. After independence, the Ministry of Forestry was dissolved and the responsibility of the forestry sector was several times transferred between the Ministries of Environment and of Agriculture (Krylov 2004: 11). Since 2005, the Kazakh Forest Management Enterprise under the Forestry and Hunting Committee (FHC) (*komitet lesnogo i okhotnogo khosaystva, Klok*) of the Ministry of Agriculture is the responsible government agency for maintenance and rational use of forest resources, reproduction and protection. The agency is also in charge for the accounting of the overall wood stock, which takes place every five years, as well as annual accounts of the forest area (Yesserkepova 2010: 73). The FHC is financed by the state budget. The staff number of the Committee consists of 29 people, nine of which are forest specialists (expert interview), which is by most experts considered as insufficient. On the other hand, the FHC can concentrate on its coordinating functions, with other tasks being delegated to subordinated bodies. For the development of policy documents, often scientific committees are charged.

In 2002, 81% of the forest fund was transferred into the responsibility of the local authorities (*akimat*) (Turumbaev 2010: 2). 17% of the state forest fund stayed under the direct responsibility of the FHC, mainly forests in protected areas (Meshkov et al. 2009: 91f). For the other forests, forest management enterprises at the local authorities are responsible, financed by the budget of the provinces. In total, in the 14 provinces (*oblasts*), there are 120 entities for forest management. In all provinces, there are also so-called "territorial inspections" (*tekhinspektii*), so that management and control functions are separated (expert interview). The administrative splitting among fourteen provinces with different priorities and the central level is considered a hindrance to consistent policy making.

As already said, the Forests and Hunting Committee was since its establishment transferred three times between the Ministry of Ecology and the Ministry of Agriculture, last time in 2005. Unsurprisingly, the FHC was hardly able to follow an effective forest policy during these years and was considered rather weak, some

even compared it to “a ship without a rudder or sails, which on the stormy ocean of ambition is knocked against first one shore, then the other” (Krylov 2004: 11). The discussion is still ongoing whether the FHC wouldn't be better placed at the Ministry of Environment. Given the choice between Agricultural or Environmental Ministry, experts suggested that the Environmental Ministry would be more “logical”, though it is politically weaker, so that the connection to the Ministry of Agriculture might be strategically better. Content-wise, some criticized that the Agricultural Ministry set targets on production and not for protective functions, while others said that the FHC's actual subordination did not make much difference in effective policies.

All experts spoken with agreed that the Committee is not very strong. The subordination and dependence on the Vice-Minister for Agriculture was several times mentioned as a constraint. Most specialists would prefer an independent agency. This would increase its decision-making power and was expected to guarantee a more consistent policy and more attention to forest-related activities

3. Forests and climate change in Kazakhstan

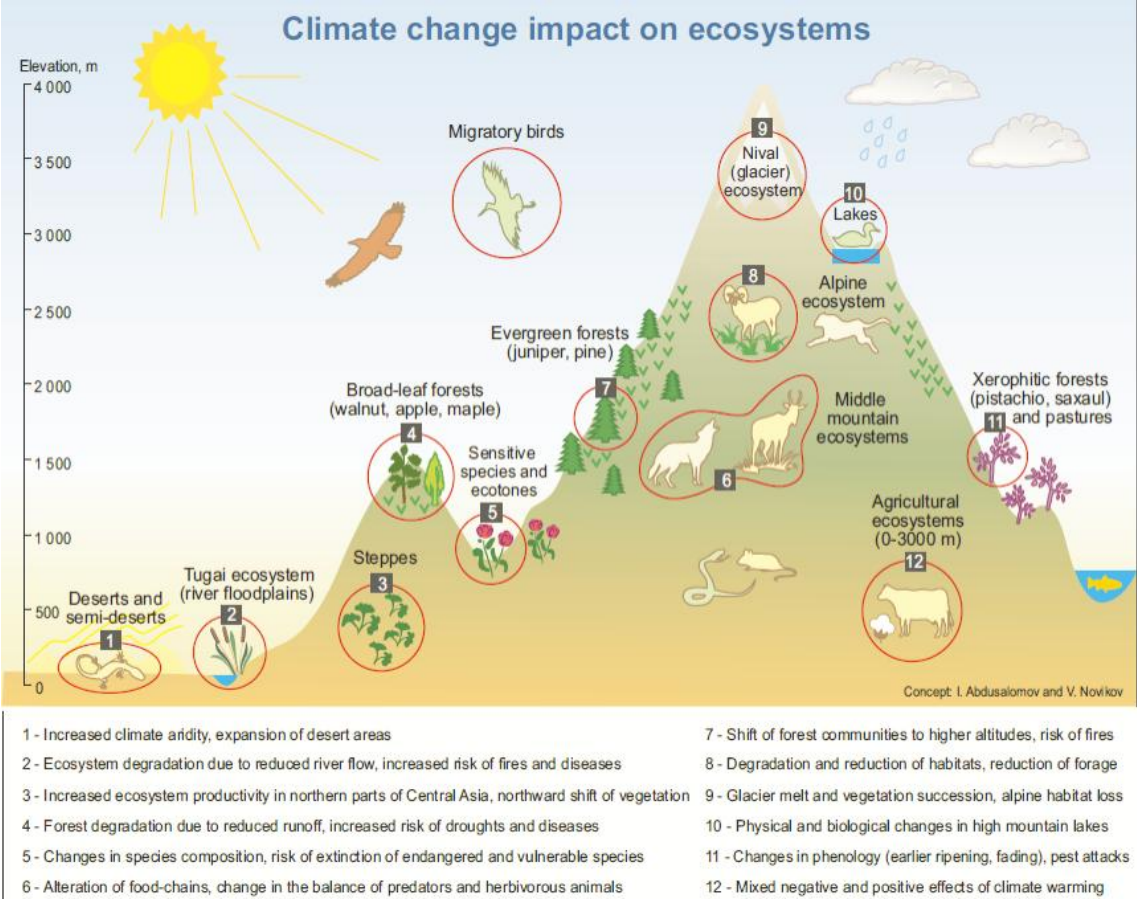
General climate change impacts on Kazakhstan

Kazakhstan is characterized by an arid and continental climate. During the last decades, global warming has led to a raise of the surface temperature. The increase in temperature differs with the regions and with the seasons: In general, climate warming in the winter months is stronger than in other seasons. However, peak temperatures in summer have also been rising. Climate change scenarios for Central Asia expect a 1° to 3°C increase in temperature by 2030-50. By the end of the century, temperatures could increase by up to 6°C if emissions are unmitigated and greenhouse gas continues to accumulate. Climate change also changed precipitation patterns. It caused more precipitation in many parts of Kazakhstan, in particular in the North, while some face a decrease in rainfall. But the most disturbing effect of global warming in Central Asia is the melting of glaciers. Since about 1950, between 14% to 30% of the Tien Shan and Pamir glaciers have melted. In the short term, discharge in some glacier-fed rivers is expected to continue to increase slightly during the summer months due to the intensified glacier and permafrost melting. In the long term, however, discharge will decrease and some glaciers will disappear. Experts estimate that the flow of the Syr Darya might be reduced by 5% by 2050, as a result of the loss

of glaciers and permafrost, higher temperatures, increased evaporation and reduced surface runoff. In smaller rivers fed by small glaciers, this reduction will be much stronger up to total drying-up within some decades. This is exacerbated by the fact that the demand for water will increase due to population growth, higher temperatures and decrease in precipitation in some parts of Kazakhstan (Diebold and Sehring 2012, ZOI 2009).

Given the dry climate of Kazakhstan, water security and agriculture are especially vulnerable to climate change. Also extreme weather events, floods, mudflows, etc. are expected to increase, threatening among others the city of Almaty. This will be exacerbated with a climate warming of 2-3 C, which will transform the steppe climate of the piedmont step into desert climate. As a consequence, the forest covering is expected to disappear and practically all rainfalls will lead to mudflow formation, sediments of which will destroy the productive lands in the valleys (Second NC 2009: 116f). The following figure shows the effects of climate change on different forest types in Central Asia.

Figure 2: Climate change impacts on ecosystems in Central Asia



Source: CAREC 2011: 44.

Forests are vulnerable and directly affected by climate change. Negative impacts include an increased number of forest fires, shifting climatic zones and insect pests as threats to forest ecosystems. Especially coniferous species like pine, fir, larch and cedar are sensitive to changing temperature and humidity regimes and may be replaced by less carbon-absorbing shrubs and deciduous trees. The juniper, growing in the North, is also susceptible to changing climate conditions. The black saxaul is affected by the drop in groundwater levels caused by the drying out of the Aral Sea (Second NC 2009: 119, Yesserkepova 2010: 68, 70). Beside the awareness of these general implications, “the study of climate change influences on Kazakhstan’s forests has been insufficient”, as the Second National Communication notes (Second NC 2009: 125). Further applied research on climate change impacts on forestry is urgently needed.

Forests and adaptation to climate change in Kazakhstan

Climate change will increase the need to protect agricultural land against desertification and land degradation, with shelterbelts and windbreaks. In mountain regions, forests can play a significant role for the prevention of erosion and landslides. Nevertheless, in the First National Communication of 1998, forestry is only mentioned among the activities for climate change mitigation, while proposed adaptation measures confined to agriculture and water resources. These measures included the implementation of nature conservation measures, but no details are given whether these would include activities in forest protection or sustainable forest management (First NC 1998: 53).

The Second National Communication identifies two priorities for forest adaptation measures: On the one hand, the resilience of forests themselves to climate change impacts should be strengthened, and on the other hand, the adaptive support of forests to other sectors should be reinforced.

- 1) Reduction of climate change risks for forestry
Activities in this area include measures to prevent forest fires and pests, increase efficiency of firefighting, as well as forest planting.
- 2) Strengthening the adaptive capacity of forests as a means to reduce negative impacts of climate change on other ecosystems and economic sectors
In this area fall activities like the planting or preservation of forest belts in order to improve sustainable farming, enhancing the biodiversity, protection of

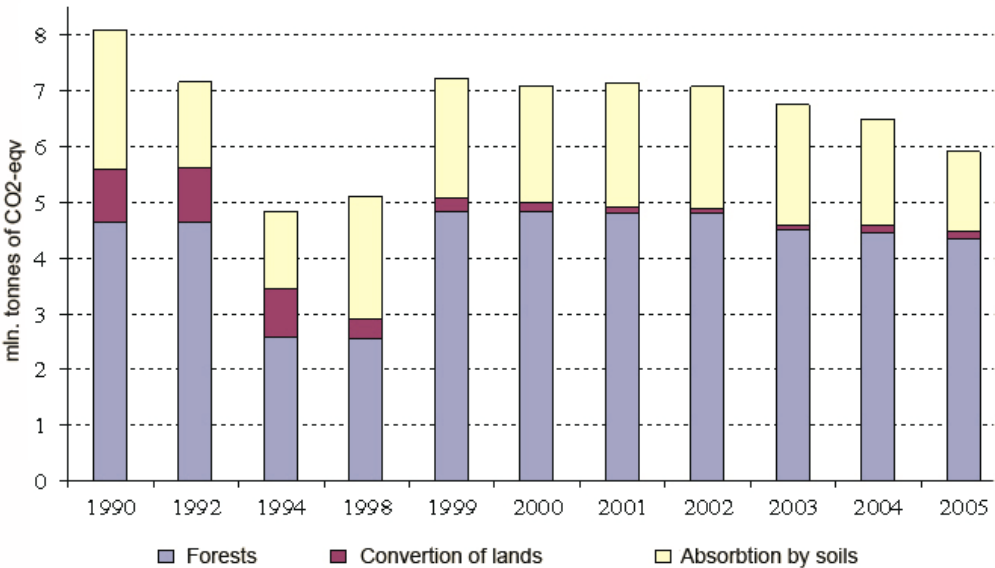
mountain forests in order to strengthen and protect the water function and reduce flood risks, Planting and conservation of saxaul forests in order to reduce wind erosion on sandy soils (for example on the dried Aral Sea bed), and forests as an alternative source of income for farmers due to the wood and not wood forests products, tourism activity and recreational business (Second NC 2009: 125, CAREC 2011: 44)

Forests and climate change mitigation in Kazakhstan

The Republic of Kazakhstan became a party to the UNFCCC in 1997 and signed the Kyoto Protocol in 1999. It was ratified in 2009. The overall coordinating body for all activities for mitigating climate change is the Ministry of Environment, at which a special department of the Kyoto Protocol was established. It is supported by the Kazakh Scientific Research Institute for Ecology and Climate (KAZNIEK), which is subordinated to the Ministry, and the NGO Climate Change Coordination Centre (CAREC 2011: 11).

The Kazakh Scientific Research Institute for Ecology and Climate (KAZNIEK) provides yearly data on the CO₂ emission-absorption balance of the forestry sector. The latest published data are from the Second National Communication of 2009 and shown in the following figure.

Figure 3: CO₂ absorption by LULUCF in Kazakhstan, Tg CO₂



Source: Second NC 2009: 51.

In 1990, CO₂ uptake by forests amounted to 4.6 million tonnes, which is about 2% of total GHG emissions in Kazakhstan. In the following years until 1998, CO₂-absorption decreased due to large forest chopping. Then GHG absorption by forests increased as the wood harvest decreased while the forest area remained constant. By 2005, absorption decreased again a little due to the change in land use practices (Second NC 2009: 50f). For 2005, the CO₂ absorption in forestry and land usage is indicated with 5.9 million tons, or 2.5% of the overall GHG emissions of Kazakhstan (Second NC 2009: 13, 16). Figure 3 shows clearly that forests contribute the main part of the LULUCF absorption capacity. About 80% of the forests' carbon uptake is done by coniferous and softwood deciduous trees (Yesserkepova 2010: 67).

Consequently, the First National Communication mentions among the priority sectors and measures for mitigation forestry with the enhancement of forested areas (First NC: 52). In this line, Kazakhstan's National Climate Change Action Plan (NCCAP) suggested several forest mitigation measures, including among others:

- Encouraging agroforestry activities to contribute to sustainable development;
- Promoting forest expansion through tax policy to encourage forest management that reflects the long-term nature of forest investment;
- Promoting an improved legal and policy framework to control deforestation, encourage development and climate change mitigation, and improved environmental planning;
- Providing financial incentives for new afforestation activities on private lands,.

However, the NCCP was not implemented due to a lack of funding (Yesserkepova 2010: 63f).

4. Forest policies

A government's forest policy defines the long-term objectives and priorities for the development of forestry with regard to the economic, ecologic, social and cultural needs of the population in the use of forests (Bayzakov 2011). The most important pillars of Kazakhstan's forest policy are the Forest Code of 2003, and the strategies for reforestation under the Zhasyl EI (Green Country) and Zhasyl Damu (Green Bridge) programmes.

The Forest Code

In 2003, a new Forest Code of the Republic of Kazakhstan replaced the old one of 1993. It regulates ownership and use of the forestry fund and provides the legal foundation for the protection, rehabilitation and improvement of forests.

In contrast to all other Central Asian countries, Kazakhstan's Forest Code provides for private ownership of forest lands. This is restricted to planted forests by a private person. Forests can be rented to forest land owners for 10-49 years, if they have the necessary financial means and professional qualification (Turumbaev 2010: 4). As of 01 January 2010, in total 1,724,000 ha forests were rented by 394 forest landowners. 1,373,000 ha of this were used for timber production, 326,000 ha for accessory forest management and 25,000 ha for cultural, recreational and sport purposes. In 2009, private forest landowners have produced 675,000 m³ timber, which presents 44% of the overall cutting in Kazakhstan. From 2004 to 2009, these private forest landowners have planted 3,300 ha of forest, invested in measures against forest fires, and paid almost 1 million USD for timber to the state budget (Turumbaev 2010: 5).

Nevertheless, some implementation mechanisms are still due by the Parliament. Apart from legal obstacles, experts call also for economic programmes to stimulate private forestry, e.g. credit schemes. In addition, market opportunities are limited due to the ban on timber export until 2014. The Forest Code rules that for each hectare cleared, two hectares have to be planted with new forests. This is by some experts considered as a good measure to ensure sustainable forest management, while other criticise that it makes commercial forest management unlikely due to the high investment costs, thus does not provide an economic mechanism for rational forest use (Krylov 2004: 15f). By the end of 2011, the Parliament approved several legislative changes in order to foster private forest growing. Measures include among others subsidies for private tree nurseries of up to 50% of the costs (Turumbaev 2011).

With the new Forest Code, forest programmes and new funding, reforestation and forest rehabilitation regained momentum and measures were undertaken. This is a valuable achievement, as in the first ten years after independence, forest planting and rehabilitation almost stopped due to a lack of funds (Meshkov et al. 2009: 120).

The Forest Code also prohibits the cutting of mature trees (article 24). By many experts, this is seen as a major achievement of the Forest Code. It was a reaction to

increased private cutting without effective control. Krylov (2004: 15f), however, criticises that commercial logging of mature trees is totally blocked, while vaguely defined “sanitary cuttings” by the forest managers are allowed, which could loophole for irregular cuttings and corruption instead of clear rules. This prohibition is complemented by of the Water Code of the same year, 2003, that bans the felling of trees in water protection zones and shore protection zones and regulates permissions for temporary tree cutting and other forestry measures that serve the protection of water bodies (chapter 23, article 166). In addition, the Government ruled in April 2004 the prohibition of felling and use of coniferous and saxaul stands at the state forest fund and measures for their conservation (Second NC 2009: 40). As a consequence, cutting decreased from about 2.8-3 million m³ per year during Soviet times to 1.7-1.8 million m³ per year today (expert interview).

Zhasyl EI (Green Country) and Zhasyl Damu (Green Bridge)

After independence, new forest planting initially decreased from about 42,000ha during the Soviet Union to 1,000ha in the 1990s. A first step to reverse this trend was the “Forests of Kazakhstan” Programme, which was approved by the Government in 2004. Its objectives are ensuring the preservation of forests, gradually increasing the area of forested land, improving the protection of forests from fires, pests and diseases, and improving the quality of Kazakhstan’s forest stock (Second NC 2009: 40).

In order to more actively foster afforestation, the government programme “Zhasyl EI” (“Green Country”) was set up in 2005. The first phase of Zhasyl EI was from 2005-2007, and the second from 2008-2010. 145.180 ha of new forests were planted in the second phase (Ministry of Agriculture n.d.). According to Bayzakov (2011), the role of Zhasyl EI can hardly be overvalued as it is the most important decision in forest policy since independence. He compares its importance with that of former Soviet programmes like the Plan for the Transformation of Nature.

An integral part of the Zhasyl EI can be considered the programme “Green Belt”. The “Green Belt” had been initiated by President Nazarbayev already in 1996 in order to improve the ecological situation in the new capital Astana and establish a protective belt around the city from the harsh arid climate. Originally planned until 2012, it was prolonged until 2014. In the framework of the “Green Belt” programme, more than 12

million trees and bushes have been planted in and around Astana alone, on an area of 55,000 ha. Today, the city is surrounded by forest steppe with also increased fauna (MFA 2011, Kazinform 2011).

In 2010, the Zhasyl Damu (Green Bridge) Programme started. It was developed by the Ministry of Environment for the years 2010-2014. It is a comprehensive programme, in which Zhasyl EI was integrated. Since 2010, more than 50,000 ha new forests per year have been planted (expert interview). In contrast to Zhasyl EI, it is coordinated not by the Ministry of Agriculture (where the FHC is located), but by the Ministry of Environment. This led to concerns by forestry experts that forestry would not receive the same attention in the broader programme and that the FHC might be better suited to lead forest-related activities than the Ministry of Environment (Bayzakov 2011).

Projects of international donors

Also international donors are active in forest projects. Most often referred to is “Forest Protection & Reforestation Project” of the World Bank. It runs since 2007. Originally designed until 2012, it was prolonged until 2014. Its objective is to develop cost effective and sustainable environmental rehabilitation and management of forest lands and associated rangelands. The two components focus on reforestation and forest management in the pine forest along the Irtysh river, which are under threat by fires and illegal logging; and on saxaul planting and restoration on the dry Aral Seabed and on saxaul rangelands to prevent degradation and improve their usage for sustainable pasturing. It also involves capacity building for the central forest agencies as well as for participatory forest management on local level (World Bank 2011). While the component 1 of the project (Irtysh pine forests) is purely forest-related, component 2 (saxaul planting and restoration) has a link to climate change adaptation, as it is a measure to mitigate its consequences.

5. Conclusion

Climate change is no driving force in the forest policy of Kazakhstan. The Forest Code and related laws do not directly address climate change. Nevertheless, the ecological rather than economic importance of forests in the sensitive arid climate led to a protective forest policy. Most forestry programmes are related to the green growth-agenda of the President, which is realized in the Green Country and Green

Bridge strategies. As President Nazarbayev wishes to establish himself as a global leader in this field, forest rehabilitation measures got on his political agenda. His quote of 1997 was already cited in the beginning of this paper: “In the far future, the symbol of our country should not be deserts, but forests and gardens. When developing persistently year after year the forests areas, we help not only us and our descendants with a better environment, but also the planet.” (cited after Baizakov 2011). This Presidential vision gave impetus to numerous forest programmes, especially planting of new forests. The political significance of the Green Bridge and related programmes provides a window of opportunity and it ensures attention and effective programmes against deforestation and for afforestation.

However, while government officials are eager to enumerate the numbers of trees or ha of new forests planted, there are still some challenges to make these efforts sustainable: Adequate staffing and competencies of the agencies in charge, effective implementation of laws, participatory management. It also needs investments in the education of future foresters. In the Soviet Union, the National Agrarian University in Almaty educated region-wide the forest specialists. Meanwhile, Kazakh experts feel outperformed by their neighbours. Meanwhile, Kyrgyzstan’s forest policy is considered leading in the region. Thus, Nazarbayev’s vision to become reality needs more than forest planting: adequate capacities and institutions for sustainable forest management.

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