KAZAKHSTAN COMMUNITY-PRIVATE PLANTATIONS:

ANALYSIS TO BETTER UNDERSTAND THE POTENTIAL FOR DEVELOPING FOREST PLANTATIONS

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ACRONYMS

Akimat	Oblast level government
BISAM	Business Information, Social and Marketing Research Centre
CGT	Capital Gains Tax
ECA	Europe and Central Asia
ERR	Economic Rate of Return
FAO	Food and Agriculture Organization
FPRP	Forest Protection and Reforestation Project
FWC	Forestry and Wildlife Committee
FY	Fiscal Year
ha	hectare
GHG	Greenhouse Gases
GIS	Geographic Information System
IHT	Inheritance Tax
INDC	Intended Nationally Determined Contribution
IRR	Internal Rate of Return
KETS	Kazakhstan Emission Trading System
KZT	Kazakhstani Tenge
LULUCF	Land use, land-use change and forestry
MoA	Ministry of Agriculture
MRV	Monitoring, Reporting and Verification
NFI	National Forest Inventory
NPV	Net Present Value
PFF	Private Forest Fund
PFM	Participatory Forest Management
PROFOR	The Program on Forests
PU	Public Union
SA	State Agency
SFF	State Forest Fund
SFM	Sustainable Forest Management
SPNT	Specially Protected Natural Territories
SSF	State Silvicultural Fund
RoK	Republic of Kazakhstan
VAT	Value Added Tax

All dollar amounts are U.S. dollars unless otherwise indicated.

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EXECUTIVE SUMMARY

1.   This synthesis report, prepared by the World Bank (WB), examines Kazakhstan's potential for developing community-private forestry plantations and identifies opportunities for consideration in the continued development of private forest plantations. The synthesis report is based on research and analysis conducted by two technical consultant firms[1] as part of the PROFOR-funded study on "Kazakhstan Community-Private Plantations: Analysis to better understand the potential for developing forest plantations" and draws on economic analysis conducted for this report by the Food and Agriculture Organization (FAO) as part of the World Bank FAO Cooperative Program. The reasons for this study emanate from the existing, limited involvement of the private sector and local communities in the establishment of plantations in Kazakhstan, despite government policy to encourage participation of local communities and private businesses in afforestation.

2.   Kazakhstan's scarce forest resources are concentrated mostly along the northern border with Russia, the foothills and slopes along the eastern and southeastern borders and along the Syr-Darya and other main rivers in the southern deserts. Forests cover only 4.7 % of the total country area; nearly 90 % of the land is made up of steppe, desert and semi-desert. 29.4 million hectares are designated as forest estate (i.e. the State Forest Fund), but less than half of this is covered with forest (12.7 million hectares). The State Silvicultural Fund (SSF), composed of unforested lands[2], non-forest lands[3], and areas transferred from the lands of agricultural producers to create protective stands in the green zone of Astana, comprises around 6.1 million hectares. Nearly all forests are state-owned and managed by the regional governments (79%) and the Forest and Wildlife Committee (FWC) under the Ministry of Agriculture (20%).. Currently, the privately-owned forest area is insignificant at less than 700 hectares. The low forest cover is reflected in the sectors' contribution to GDP being 0.1%; its contribution to the agricultural and manufacturing GDP is also relatively small at just 0.6%. In 2011, the value of forest products exports (forestry, wood, pulp and paper and wooden furniture) was USD35 million, compared to a peak of USD94 million in 2001 (at 2011 prices and exchange rates). Forest sector employment was around 11,000 people, representing around 1% of the total labor force (2011, latest available data).

3.   Wood-based industries cover a limited range of downstream activities, including woodworking industries, paper and paper products manufacturing and converting industries, and the furniture industry. In 2016, Kazakhstan's production of roundwood was about 342.7 thousand cubic meters. The volume of harvested commercial timber was 127.9 thousand cubic meters, with the rest of the wood used as firewood. The volume of Kazakhstan's timber production exceeds the volume of domestic wood harvesting, with the balance being met through imports of round timber from Russia and Belarus. For wood and wood products, including processed products, imports have dominated over exports over the past five years. This is in large part due to the existing ban on the export of wood from Kazakhstan, the proximity to the Russian timber market, and a lack of local suppliers. Kazakhstan's domestic demand for forest products is largely driven by the need for planting material and trees for landscape design as well

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[1] Business Information, Sociological and Marketing Research Centre "BISAM Central Asia" (www.bisam.kz) and Center for Remote Sensing and GIS "Terra" LLP (www.gis-terra.kz).
[2] The term unforested land refers to land not covered with forest including fellings, burnt-out forests, dead stands, cut-over lands, forest clearings, sparse stands, glades.
[3] The term non-forest land refers to arable land, deposits, hayfields, pastures, roads, quarter clearings, fire brakes, estates, water, marshes, sands, glaciers, and other lands that has been assigned for planting forest crops.

as processed wood products. Demand for planting material is mostly determined by the state policy of creating green zones and relaxation zones around cities as well as increasing forest cover (estimated at about 100 thousand hectares per year or USD200 million). The wood processing market is driven by the demand for fuel wood (that is declining due to the gradual switch to gas and alternative fuels), the individual housing (construction) market, and the furniture industry. The majority of domestic production is focused on low-value commodities rather than deep timber processing, which would require significant capital investments.

4.   The Government of Kazakhstan attaches a high priority to retaining and restoring the country's forest resources, which play an important role in providing environmental (e.g. soil and sand retention, protection of watersheds, carbon sequestration), social (e.g. access to forest and non-timber forest products, provision of firewood) and economic (e.g. employment, value generated from the processing and trade of forest products) services. Despite special provisions in the 2003 Forest Code for the establishment of private timber plantations, these opportunities have not been sufficiently taken up by the private sector due to a number of issues and key challenges: varying stakeholder views about the role of forestry particularly regarding the balance between commercial use and ecosystem preservation; lack of suitable land within the State Forest Fund; limited attractiveness of the forestry sector due to low wages, lack of skilled personnel; legal and regulatory uncertainty; weak financial incentives and macroeconomic factors.

5.   Within the SSF around 717 thousand hectares are designated for the creation of forest crops, but it is unclear how much of this area is truly suitable for planting. There are some areas in Kazakhstan where forest inventory work has not been conducted for almost 25 years, which poses a significant impediment in determining available land for forest plantations. Based on new forest inventory data available for three Oblasts (Almaty, East Kazakhstan and Pavlodar), this study identified some suitable land that could provide around 2,357 hectares for community and/or private forest plantations. However, there is a need to update national forest inventory data more widely to enable a comprehensive assessment of key areas suitable for afforestation. This should look at whether available land is scattered across Kazakhstan or clustered together, which would provide valuable information on the scale of afforestation needs and opportunities for private plantations in the country. A much larger potential for planting areas seems to lie outside of the SFF, on bare lands and naturally afforested lands within the agricultural land category (under pasture or straw-cutting lands). While this was outside of the scope of this study, it is recommended to conduct additional analysis to explore this premise.

6.   Kazakhstan is fully committed to international efforts to combat climate change and a sustainable low carbon future. In its Intended Nationally Determined Contribution (INDC[4]) under the Paris Agreement[5], the government pledged to pursue mitigation actions and policies that cover several sectors (energy, agriculture, waste, transport, buildings) including LULUCF[6]. Kazakhstan's national concept for transition to a green economy (approved by Presidential Decree on May 30, 2013) envisions

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[4] Intended Nationally Determined Contributions (INDCs) identify the post-2020 voluntary national climate targets, including mitigation and adaptation, which countries committed to and which become binding Nationally Determined Contributions (NDC) when a country ratifies the Paris Agreement.

[5] The Paris Agreement (entered into force in November 2016) builds upon the UNFCCC and aims to "strengthen the global response to the threat of climate change in the context of sustainable development and efforts to eradicate poverty" by keeping global temperature rise this century to below 2°C and aim for 1.5°C above pre-industrial levels. Kazakhstan signed and ratified the Agreement on August 2, 2016 and December 6, 2016, respectively.

[6] Land use, land-use change and forestry.

sustainable development of the agriculture sector while preserving and improving the environment, including enhancement of forest cover through planting permanent crops, such as agro-forestry, tree crops, perennial crops, and permanent cover crops that capture carbon dioxide and are resistant to soil salinity, as well as enable adaptation to climate change. In addition, Kazakhstan was the first country in Asia to implement an economy-wide Emissions Trading System (KTES) in 2013 that allows for the trading of carbon credits, including domestic offsets from the forestry sector. Forestry plantations present an important opportunity for Kazakhstan to contribute to meeting its international commitments under the United Nations Framework Convention on Climate Change and national efforts to pursue a path of low-carbon economic growth.

7.   From the economic perspective, the financial returns from investments in plantation are not sufficiently attractive for the private sector given the initial establishment costs, long production cycles (e.g. 20 years of growing period for poplar plantations) and regulatory uncertainties. The most viable models from the financial and private sector view are forest nurseries (pine, birch, spruce) to raise seedlings for sale for ornamental and landscaping purposes, and fruit, nut and berry plantations. For energy plantations (poplar, saxaul, pine), the incentives for the private sector to invest are weak, even with a government subsidy of 50%, as currently allowed for under the Forest Code[7]. However, once carbon values are factored in, especially assuming a high shadow price of carbon[8], the economic returns and thus the benefits for the economy as a whole are quite high. This provides good justification for the government to support the private sector in developing forest plantations. This could be in the form of taking on the initial costs and risks of establishing fast growing plantations or providing payments for the global carbon benefits generated by plantations to motivate the private sector to invest as it would improve the profitability of plantations.

8.   Kazakhstan has had some positive experience with community plantations[9], which offer opportunities for local populations to participate in forest management and benefit from forest-related economic and environmental protection activities. In 2012, the Forest Code was amended to introduce Participatory Forest Management (PFM), which was an important start in building more constructive relationships between communities and forestry enterprise officials. Local communities were keen to participate in forest management and take respective responsibilities, but only if such partnerships offered concrete benefits reflected in clear and secure use rights to forest resources. Availability of funding has become a key impediment in ensuring the sustainability of the PFM mechanism, after external financial support ceased. There is a need to provide additional grant funding to revive the PFM mechanism and to foster communities' interest in private plantations through developing an equitable and transparent benefit-sharing mechanism that responds to communities' needs and enables communities to improve their local livelihoods.

9.   Based on the findings in this report, there are key areas where state policies and incentives can encourage private sector investment in forestry to support afforestation efforts. It is recommended to:

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[7] Although the general parameters of the subsidy scheme for private afforestation exist under the Forest Code, clear framework conditions and the specific mechanism (e.g. approval process for subsidies, eligibility criteria) have not been developed yet and no state budget funds have been allocated in recent years.

[8] The economic analysis of the models was based on the WB's Guidance Note on shadow price of carbon (September 2017).

[9] With financial support from the Kazakhstan Forest Protection and Reforestation Project (closed 2015).

10.   *Build consensus among stakeholders for private forestry*: A concerted effort should be undertaken to build consensus for reconfirming the overarching vision and goals for the role of private forestry in Kazakhstan with the participation and buy-in of all stakeholders (professional foresters from the state forestry institutions, private sector, local communities, and relevant environmental and civil society organizations). This process should include an action plan to implement this vision and take on board the views and ideas of the private sector on how the sector needs to develop and a robust monitoring framework. This in turn can feed into the drafting of necessary documents, programs, and subsidiary legislation. The scale of afforestation and investment needs should be determined so that government responses can be in line with the desired goals and outcomes: i.e. attracting private investors for the development of large-scale commercial size plantations will require a different set of policies and incentives, with more government support across ministries, than encouraging smaller community-owned forest plantations.

11.   *Leverage carbon benefits provided by forest plantations*: The multiple benefits provided by forests need to be better recognized and integrated in national policy and forest management considerations. Specifically, the role of forests in the context of climate change needs to be maximized. This will require appropriate incentives for private investors to stimulate investments, justified by the carbon sequestration benefits of forest plantations. The government should consider launching a planting program to generate demand for developing private plantations on SFF and other available lands. The existing green belt of Astana program, although state-led, has successfully established forest areas around Astana, showcasing how with the government's commitment it was possible to reconstruct green spaces and create forest plantations, including through specific allocation of land plots for afforestation. In 2017, the area of green plantations surrounding the capital has exceeded 14.8 thousand hectares, providing multiple global benefits in addition to more direct and localized values (e.g. biodiversity, recreation, creating demand for planting material). The government should also explore options to develop a mechanism for including carbon offsets from forest plantations under the existing emissions trading scheme. Although the KETS was temporarily suspended in 2016, it restarted operation on January 1, 2018 (after amendments to the Environmental Code to improve monitoring, reporting and verification, among others). While no domestic forestry offsets have been issued to date, this could provide opportunities for private enterprises to trade carbon credits, and receive payments for carbon values, on the active commodity exchange.

12.   *Develop a mechanism for benefit sharing with communities*: There are opportunities to build on the experience with PFM in Kazakhstan and strengthen its effectiveness and financial sustainability. The government should establish sources of funding and support the development of a benefit sharing mechanism that is designed to be transparent and built on an interactive process of participation (rather than informative/passive), including all stakeholders. This should take into account the different values people attach to forest and the pre-existing socio-economic inequalities and power relations among the stakeholders. Further consideration should be given to allowing for an equitable distribution of the risks and benefits among stakeholders. The grant program that existed under the Kazakhstan Forest Protection and Reforestation Project is a good mechanism to motivate the community, but should be re-designed with a clear purpose (including a clear set of functions and responsibilities for PFM entities) to spread benefits widely in the community. This in turn requires much stronger measures for transparency in decisions about the use of grants, allocation of funds, execution of contracts, and use of built assets.

Enhancing the practical value and economic benefits for community participants (e.g. through grants for economic and legal advisory services for small forestry entrepreneurs) is of key importance.

13.   *Improve upon the method of long term leasing with the private sector:* Kazakhstan should consider refining the method of long term leasing with the private sector to create a more secure and stable investment environment for the private sector, which could go hand in hand with the planting program proposed above. Specifically, the FWC should consider bearing the initial risks and investment costs of establishing plantations, thereby removing one of the entry barriers faced by some private investors. Through long term leases with the government, the private sector could come in at a later stage (e.g. when the crop is ready for first thinning) to then harvest and maintain the plantations until final felling, with the obligation to restock the sites. This would create a win-win situation for the government as it would protect the important public goods function of forests and increase the forest sector's potential to contribute to international commitments on climate change and the private sector as it would improve the financial returns and profitability of plantations, and provide raw materials for new wood processing and or fuelwood.

14.   *Encourage processing from fast growing plantations through government support:* The absence of clear rules regarding state support available for private plantations has contributed to the limited commercial attractiveness of private forestry plantations. International experience shows that tax benefits and targeted subsidies can play an important role in incentivizing private sector investment in forestry. Currently, Kazakhstan's timber processing enterprises are mainly situated in Almaty oblast and the city of Almaty, the largest economic clusters of Kazakhstan. Given that more than half of forest harvesting enterprises are concentrated in three oblasts in East Kazakhstan, Pavlodar and North Kazakhstan, this creates significant costs associated with transportation of raw timber. Demand for wood chipboards, wood fiber boards, plywood, as well as pulp and paper is largely met through imports, but there is potential to supply these products domestically. The government should explore options to create incentives for developing processing industries closer to the forest resources and consider subsidies to encourage processing from fast growing plantations. Depending on the sustainable level of production from the plantation base this could start with relatively small scale investments and eventually rise to fairly large scale processing. This would support Kazakhstan in strengthening its domestic processing market and producing value-added forest products. Any subsidy scheme should be based on further analysis on the most promising wood-based industries for support considering trends in domestic productions, foreign trade, and consumption and demand patterns. Current trends suggest that there is untapped potential in the wooden housing construction sector (estimated to have a potential market value of five billion US dollars, about half of which in rural areas, and half in urban areas[10]) and the furniture industry, where only 30% of the market is produced domestically.

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[10] Based on 2016 data from the Statistics Committee of Kazakhstan on construction of residential buildings and individual housing in rural and urban areas.

1. INTRODUCTION

15.   This synthesis report provides some strategic advice for the development of community-private forestry plantations in Kazakhstan and identifies opportunities for consideration in the continued development of private sector engagement in forest plantations. It also examines constraints faced by Kazakhstan in increasing the active participation of local communities and private businesses in national efforts to enhance forest coverage through afforestation.

16.   The impetus for this study results from the existing, limited involvement of the private sector in the establishment of plantations in Kazakhstan, despite changes to the 2003 Forest Code that first introduced opportunities to increase forest coverage through active participation of local communities and private businesses in afforestation. Still, the private forest fund comprises less than 700 hectares, mostly concentrated in the green zone of Astana, while the total area designated as forest fund is 29.4 million hectares (10.8 % of the territory of the country). This study focuses on State Forest Fund[11] lands; greater potential for establishing private plantations may exist outside of forest fund resources, e.g. on degraded agricultural land or abandoned land. It is proposed to carry out additional analysis to explore this premise.

17.   The WB Country Partnership Strategy (CPS) for Kazakhstan (2012 – 2017) recognizes that the forestry sector plays an important role in ensuring development is environmentally sustainable and that forest protection and reforestation contribute to Kazakhstan's development goal to fight climate change with a cleaner environment. The new Kazakhstan Country Partnership Framework (CPF) for the period 2019-2023[12] aims to support the Government of Kazakhstan in substantially improving the competitiveness of the economy, through interventions that help create the preconditions for a modern, efficient, climate smart and entrepreneurial society. It is informed by the preceding Systematic Country Diagnostic for Kazakhstan and includes three focus areas: (i) improving macroeconomic policy and the management of public sector resources; (ii) creating an environment more supportive of private sector development and economic diversification, and (iii) building more productive and sustainable human and natural capital.

18.   The report represents a continuation of dialog between the Government of Kazakhstan and the WB and builds on the Forest Protection and Reforestation Project (closed in 2015), designed to develop cost effective and sustainable environmental rehabilitation and management of forest lands and associated rangelands. It aims to inform the forestry sector by highlighting the main challenges facing the development of private forestry and identifying possible actions. The findings of the report can serve as input to the design of future support to Kazakhstan's forestry sector by the WB or other development partners.

Economic snapshot

19.   Kazakhstan has a land area equal to that of Western Europe (2,699,700 km^2, 2017) but one of the lowest population densities globally (7 people per km^2, 2016). Strategically, it links the large and fast-growing markets of China and South Asia and those of Russia and Western Europe by road, rail, and

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[11] The State Forest Fund (SFF) includes forests of natural origin, artificial forests created from budgetary funds, and non-forested land (forest and non-forest lands) allocated to permanent land use by state organizations conducting forestry.
[12] At the time of this report, the consultation phase soliciting public feedback for the new CPF is ongoing.

a port on the Caspian Sea. The population of Kazakhstan was 18 million in 2017 with around 47 % living in rural areas.

20.   Kazakhstan has transitioned from lower-middle-income to upper-middle-income status in less than two decades. The country moved to the upper-middle-income group in 2006. Since 2002, GDP per capita has risen sixfold and poverty incidence has fallen sharply. Recent economic developments show that real GDP grew by 4.2% in the first half of 2017 (compared to 0.1% in the same period in 2016) with the oil sector as the main economic driver. In 2017, GDP was US$158.2 billion, with a GDP per capita of US$8,792. The poverty rate (using the US$5.5/day international poverty line) rose from 5.6% in 2013 to a peak of 7.9% in 2016; it is estimated to have fallen to 6.9% in 2017. The incidence of poverty increased in all regions of Kazakhstan between 2014 and 2015, the last year for which data is available. Poverty rates in the most vulnerable southern regions more than doubled during this period.

21.   The economy's vulnerability to external shocks remains the main challenge to achieving stable and sustainable development. Economic management needs to enable the shift to tradables. External demand from China and the Russian Federation, Kazakhstan's main trading partners, as well as global oil demand and prices, will continue to be the key external factors impacting Kazakhstan's economic performance. Domestic factors include the pace of implementation of structural and institutional reforms. As oil output growth stabilizes from 2018 onward, real GDP growth is expected to moderate to an average annual rate of 3% through 2020. The poverty rate is projected to decline to 5% by 2020.

Climate change snapshot

22.   Major climate risks and natural hazards that are likely to affect Kazakhstan include extreme precipitation, droughts and earthquakes. Unusually warm days and heavy rains in February 2008 resulted in the inundation of 48 settlements in southern Kazakhstan, forcing 13,000 people from their homes. Increased mudflows from heavy rains and glacial melting present a danger to residents of rural and urban areas. The combination of climate change along with other ecological stresses and human activity poses threats of extinction of the existing ecosystems, especially in the arid regions of the majority of Kazakhstan. Redistribution of precipitation, increased frequency and intensity of droughts, increased soil erosion, surface runoff and high air temperatures impact agriculture and management of water resources in Kazakhstan. The arid steep continental climate of Kazakhstan creates environmental threats to the forest ecosystem from desertification, fires (the natural and anthropogenic) and pest attacks.

23.   Kazakhstan is at an important stage, in that it has communicated its intention to achieve an economy-wide reduction in greenhouse gas emissions (GHG) of 15-25% by 2030 (compared to the base year, 1990) as part of its Intended Nationally Determined Contribution (INDC[13]) under the Paris Agreement[14]. The more ambitious target is conditional upon additional international investments, access to low carbon technologies transfer mechanism, green climate funds and flexible mechanism for country with economy in transition. Mitigation actions and policies cover several sectors (energy, agriculture, waste, transport, buildings) including LULUCF and the enhancement of forest cover.

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[13] Intended Nationally Determined Contributions (INDCs) identify the post-2020 voluntary national climate targets, including mitigation and adaptation, which countries committed to and which will become a binding Nationally Determined Contributions (NDC) when a country ratifies the Paris Agreement.

[14] Kazakhstan signed the Paris Agreement on August 2, 2016 and ratified the agreement on December 6, 2016.

24.   As part of Kazakhstan's long-term objective to become one of the 30 most developed countries in the world by 2050, the country is committed to follow a path of low carbon economic growth and has adopted a concept for transition to a green economy (approved by Presidential Decree on May 30, 2013). Implementation of the concept envisions sustainable development of the agriculture sector while preserving and improving the environment, including enhancement of forest cover through planting permanent crops, such as agro-forestry, tree crops, perennial crops, and permanent cover crops that capture carbon dioxide and are resistant to soil salinity, as well as enable adaptation to climate change.

25.   Kazakhstan has also developed an Emissions Trading System (KETS), launched in 2013, which could provide opportunities for forest plantation owners to trade carbon credits[15] on the commodity exchange.[16] Although the KETS was temporarily suspended in 2016, it restarted operation on January 1, 2018 after amendments to the Environmental Code were passed to improve the monitoring, reporting and verification (MRV) system, as well as the overall greenhouse gas emissions regulation and KETS operation. This option should be explored further as it could provide additional financial incentives to investors.

26.   Overall, the forest sector, in particular through the development of private forest plantations, presents opportunities for Kazakhstan's future sustainable development in areas such as: afforestation and enhancement of forest cover to help mitigate against climate change; the planting of fast growing forest energy crops to support emissions targets; the establishment of fruit, nut and berry plantations as a source of income for local populations; and creating improved capacity for value-added forestry products.

2. METHODOLOGY

27.   This synthesis report is based on the findings of the research and analysis conducted by the technical consultant firms Business Information, Sociological and Marketing Research Centre "BISAM Central Asia" (www.bisam.kz) and Center for Remote Sensing and GIS "Terra" LLP (www.gis-terra.kz) as part of the PROFOR-funded study on "Kazakhstan Community-Private Plantations: Analysis to better understand the potential for developing forest plantations". It also draws on the economic analysis conducted by FAO and previous World Bank engagement in Kazakhstan's forest sector. A Study Workshop, held in Astana on February 15, 2018 to discuss the findings of the research with key experts and representatives of the forestry sector, served as valuable material for this report. The source reports are available at www.profor.info.

28.   The following methods of data collection were used by BISAM and Terra:
- secondary data review;
- sociological study based on in-depth interviews;
- institutional assessment
- market study, and
- economic analysis.

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[15] Current market prices for carbon credits were not available at the time of this study. In early August 2015, prices varied between 50 KZT and 1,650 KZT.
[16] The Kazakhstan Commodity Exchange (Caspy) has been appointed to host the country's ETS.

Secondary data review

29.   The initial stage of the research consisted in gathering and analyzing an extensive amount of materials and documents, laws and regulations to obtain general and specific information on the forestry sector in Kazakhstan. Among the official legislation referenced are: the Kazakhstan Forest Code; The Kazakhstan Land Code; the Kazakhstan Tax Code; the Law of Kazakhstan on Specially Protected Natural Territories; the Law of Kazakhstan on Pastures; and a number of other legislative and regulatory documents, including international conventions (UN Framework Convention on Climate Change, Kyoto Protocol).

30.   This study also used information obtained from the state agencies for forestry and wildlife at the Oblast Akimats in all administrative oblasts having forest lands, the Oblast Territorial Forestry Inspectorates and the Forest and Wildlife Committee (FWC) under the Ministry of Agriculture. This included data on the availability of lands suitable for establishing forest plantations with the private sector and/or local communities on lands of the State Forest Fund and information on the availability of nurseries and experience of afforestation in the Specially Protected Natural Territories (SPNTs) of Kazakhstan. Materials and literature regarding international experience with private plantations were also reviewed.

31.   The analysis of data focused on the following oblasts: Almaty, Aktyubinsk, West Kazakhstan, Zhambyl, Kostanai, Kyzylorda, South Kazakhstan, North Kazakhstan and East Kazakhstan. The study did not cover Atyrau, Mangistau and Karaganda oblasts given the severe desert and dry steppe conditions with practically no forest fund.

Sociological study based on in-depth interviews

32.   A sociological study was carried out based on sixty-nine in-depth expert interviews. The in-depth interviews were conducted based on pre-designed guidelines, and structured around major subjects to assess key issues of the study. The questions explored in the in-depth interviews were related to the attitudes of the private sector and local communities about the creation of plantations. Five target oblasts were the focus of the interviews:

- *Akmola Oblast* – chosen to study the experience of enterprises and farms that use forest products growing in the forest-steppe zone of Northern Kazakhstan and providing raw materials for the production of commercial timber;
- *Kostanay Oblast* – chosen for the same reason as Akmola Oblast;
- *East-Kazakhstan Oblast* – chosen to collect information on the activities of enterprises that process timber of rich forests that grow near the Altai Mountains and to study the experience of Participatory Forest Management;
- *Almaty Oblast* – chosen to study characteristics of forest management in the mountainous area as well as the experience of large-scale gardening; and
- *South-Kazakhstan Oblast* – chosen for the same reason as Almaty Oblast.

33.   Respondents from the following organizations took part in the in-depth interviews:
- Oblast Territorial Inspectorates of the FWC;
- Oblast Agricultural Departments;
- Oblast Departments / Departments of Entrepreneurship;
- National Chamber of Entrepreneurs and Entrepreneurs' Associations;

- Heads of the Forest Management Institutions;
- Akims of Rayons and Rural Districts;

34.   In addition, respondents included representatives of local communities, farm representatives and private individuals with experience of private afforestation or those who attempted to implement afforestation projects, representatives of the local population, individuals and representatives of legal entities, scientists and researchers specializing in forestry, entrepreneurs, and NGO representatives.

Institutional assessment

35.   An institutional assessment of the Public Councils for Participatory Forest Management (PFM) was undertaken in the areas where PFM Councils were created under the previous Forest Protection and Reforestation Project. A case study method was used to gather information from a variety of sources and participants in PFM activities on key issues and topics to review the experience with PFM Councils to date.

Market study

36.   A marketing analysis was carried out mainly through desk research to collect information on the dynamics of production, consumption, export, import, and processing of forest products in Kazakhstan, and a number of other relevant parameters (e.g. wholesale and retail prices for forest products). The study used statistical information, available publications including internet resources, materials from previous BISAM studies, and data obtained during the interviews.

Economic analysis

37.   As part of this study, FAO developed and assessed several economic and technological models of forest plantations based on aspects such as: availability of a market, availability of suitable land resources and climatic conditions, availability of necessary investments, availability of suitable production infrastructure and related industries, possibility to manufacture products that are price and quality competitive, approximate estimation of cost of sales and its comparison with the most probable sales prices, etc. Special attention was paid to the potential commercial attractiveness for the private sector.

38.   The primary analysis was largely based on the marketing and technological analysis, as well as on the financial calculations provided in the reports of the technical consultant firms. Based on this primary analysis and assessment, the following models of forest plantations and nurseries were selected for financial and economic analysis: energy forest plantations (poplar, saxaul), coniferous forest plantations (pine), private nursery plantations, fruit, nut and berry plantations. In the economic analysis of all models, all costs and prices were transferred to economic values taking into account carbon sequestration benefits (using the shadow price of carbon[17]).

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[17] The economic analysis of the models was based on the World Bank's Guidance note on shadow price of carbon in economic analysis (September 2017).

3. FOREST RESOURCES

39.   Kazakhstan is a forest-scare country with forests covering only 4.7 % of the total territory. Nearly 90 % of the land in Kazakhstan is in the arid zone represented by steppe (vast territory in the North of the country), semi-desert (arid steppes occupying central Kazakhstan) and desert landscapes (occupying most of the country's plain). The temperature regime is subject to sharp fluctuations, freezing can occur in both late spring and early autumn. Kazakhstan's remoteness from the ocean creates a sharp continental climate with a lack of rainfall nearly everywhere. The foothill areas receive 500 to 1,600 mm precipitation per year, 200 to 500 mm in the steppe and 100 to 200 mm in the desert. Soils are lean (lacking in much organic material) and mostly saline, except for the northern slopes of mountains.

40.   The main concentrations of forests in Kazakhstan are in the fertile forest-steppe zone extending from Russia along the northern border, at the foothills and slopes of the Altay, Alatau and Tien Shan mountains along the eastern and southeastern borders, and along the Syr-Darya and other main rivers in the southern deserts. Forests can be grouped into four distinct domains: the Altay Mountains, home to unique Siberian biodiversity and also a concentration of 75 % of commercial-grade spruce and fir timber in Kazakhstan; the northern forest-steppe with birch, aspen and pine forest islands including the relic Irtysh pine belts fragmented amidst farmland; the Tien-Shan and Ile-Alatau Mountains, a globally unique habitat in terms of agrobiodiversity, wild nut and fruit production and a critical water source for the Aral Sea and Lake Balkhash; and the saxaul scrub forest of the southern desert, a source of high-quality fuelwood and a critical habitat for livestock grazing and sand dune control near the Aral seabed. In addition, there are riparian forests along major rivers (e.g. tugay forest in the southern floodplains, which constitute almost the only type of forest in the oil-rich but treeless Western Kazakhstan).

41.   About 300,000 people are directly dependent on the sector, while an estimated 2.5 million live in or rely on the forests for fuelwood, fodder and other forest products, and an even greater number uses forests for shelter and construction materials, recreation, wind and soil control (shelterbelts for agricultural land productivity). Women are actively involved in the forestry sector including in forest management and nursery development, but the share of women is still low. According to the Statistics Committee of the Republic of Kazakhstan, women leaders represent 13 % in the agriculture, forestry, and fisheries sector, compared to 30 % in all sectors of Kazakhstan.

3.1.   Forest Fund of Kazakhstan

State Forest Fund

42.   The total area designated as forest estate (i.e. the State Forest Fund) is 29.4 million hectares and occupies 10.8 % of the territory of the country. Less than half (43.19 %) is actually covered with forest[18] (12.7 million hectares, based on national definition). According to FAO, the total standing timber stock is 383.7 million cubic meters (Global Forest Resource Assessment, 2010), which ranks low compared to other countries in Europe and Central Asia (ECA). The country's limited forest production is partly a result of low temperatures and low precipitation.

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[18] Based on 2010 data from Global Forest Watch (www.globalforestwatch.org), Kazakhstan's tree cover extent (>30% tree canopy) is 3.67 million hectares with the majority of tree cover located in East Kazakhstan (1.51 million hectares).

43.   Most of the State Forest Fund (SFF) is under the supervision of the Oblast Akimats (77.4 %) and the Forest and Wildlife Committee (FWC) under the Ministry of Agriculture (21.8 %). The share of private forest lands is negligible (695 hectares). The ownership of forest fund lands is presented in Table 1.

Table 1: Area of Forest Fund by Institution

State Agencies and Private Forest Owners	Area of Forest Fund (thousand, hectares)			
	Total	*%*	**forest lands**	**forested land**
Forestry and Wildlife Committee (MoA)	6,427.45	*21.8%*	1,949.60	1,418.94
Oblast Akimats	22,785.65	*77.4%*	16,943.61	11,158.33
Department of Presidential Affairs of the Republic of Kazakhstan	129.30	*0.4%*	90.84	79.13
Republic of Kazakhstan Ministry of Agriculture	0.01	*0%*	0.01	0
Ministry of Investments and Development	79.99	*0.3%*	69.06	50.38
Private Forest Fund	0.70	*0%*	0.14	0
Total	**29,423.11**	*100%*	**19,053.261**	**12,706.78**

44.   Forest fund resources vary widely across Kazakhstan's 14 administrative oblasts. In terms of total forest fund resources, the majority lies within Kyzylorda Oblast (6,667.7 thousand hectares), followed by Almaty Oblast (5,339.6 thousand hectares), Zhambyl Oblast (4,447 thousand hectares), East Kazakhstan Oblast (3,705.6 thousand hectares), and South Kazakhstan Oblast (3,440 thousand hectares). North Kazakhstan Oblast has the highest share of forest fund area covered with forest (77.76%), while Aktobe Oblast has the lowest (5.23%). A summary of forest fund resources and area covered with forest by administrative oblasts is presented in Table 2. A visual presentation of the Forest Fund in Kazakhstan's regions is provided in Map 1.

Table 2: Forest Fund area, including lands covered with forest, by Administrative Oblast

Administrative Oblasts	Forest Fund area, total	of which, covered with forest	
	thousand, hectares		*%*
Severo-Kazahstanskaya (North Kazakhstan)	689.6	535.6	77.67
Vostochno-Kazahstanskaya (East Kazakhstan)	3,705.6	2,010.3	54.25
Pavlodarskaya (Pavlodar)	478.7	257.1	53.71
Jambyilskaya (Zhambyl)	4,447.0	2,240.7	50.39
Zapadno-Kazahstanskaya (West Kazakhstan)	219.9	106	48.20
Yujno-Kazahstanskaya (South Kazakhstan)	3,440.0	1,630.1	47.39
Kizyilordinskaya (Kyzylorda)	6,667.7	3,080.3	46.20
Akmolinskaya (Akmola)	1,057.9	382.1	36.12
Almatinskaya (Almaty)	5,339.6	1,882.3	35.25
Mangistauskaya (Mangystau)*	464.9	122.4	26.33
Karagandinskaya (Karagandy)*	614.9	153.3	24.93
Kostanayskaya (Kostanay)	1,144.0	238.2	20.82
Atyirauskaya (Atyrau)*	165.4	16.5	9.98
Aktubinskaya (Aktobe)	987.8	51.7	5.23
Total	**29,423**	**12,707**	**43.19**
* not included in the detailed analysis due to the severe natural and climatic conditions in these oblasts			

Map 1: Forest Fund within Administrative Oblasts of Kazakhstan

State Silvicultural Fund

45.   The State Silvicultural Fund (SSF) of Kazakhstan is composed of unforested lands[19], non-forest lands[20] assigned for planting forest crops, and areas transferred from the lands of agricultural producers to create protective stands in the green zone of Astana. It can be forested only through artificial cultivation of forests. Based on data from 2015-2016, the total area of the Silvicultural Fund of Kazakhstan is 6,065,022 hectares, including 145,232 hectares of cut-over land (forest areas where a stand was cut down and the new forest generation has not yet formed), 413,791 hectares of burnt-out forest (including dead stands), 1,993,459 hectares of forest clearings (forest land devoid of vegetation but with some vegetation elements retained), and 3,542,540 hectares of sparse stands (naturally formed stands with a density of 0.1-0.2).

46.   Within the SSF, the total area of land designated for the creation of forest crops is 717,613 hectares or 11.8 % of the total area of unforested lands (Table 3). These areas are potentially suitable for creating plantations with the private sector and/or local communities. In determining this area, the following were excluded: uncharted small (up to 1 hectare) and complex (up to 3 hectares)

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[19] The term *unforested land* refers to land not covered with forest including fellings, burnt-out forests, dead stands, cut-over lands, forest clearings, sparse stands, glades.
[20] The term *non-forest land* refers to arable land, deposits, hayfields, pastures, roads, quarter clearings, fire brakes, estates, water, marshes, sands, glaciers, and other lands.

areas; clearings not examined for forest use; inaccessible areas such as wet forest and very dry forest; areas with rock outcrop of more than 30 %; and zones under a protected regime.

Table 3: Areas within the Silvicultural Fund of Kazakhstan

Name of Oblast	Unforested lands	Designated area of forest crops	% (%) of total area
North Kazakhstan	62,295	12,459	20
Kostanay	57,276	8,942	20
Akmola	60,537	13,318	22
Pavlodar	40,540	5,145	16
State Nature Reserve "Ertis Ormany"	60,890	41,405	68
Karagandy	26,790	4,978	19
East Kazakhstan Mountains	212,888	7,107	3
State Nature Reserve "Semei Ormany"	187,829	127,263	68
South Kazakhstan Mountains	41,843	3,204	9
Desert part	798,972	79,897	10
Kyzylorda	2,569,897	256,990	10
Zhambyl	1,033,705	103,371	10
Almaty Mountains	261,142	4,394	2
Desert part	544,441	19,399	4
West Kazakhstan	52,935	11,646	22
Aktyubinsk	56,016	13,954	25
Atyrau	8,786	1,405	16
Mangystau	18,240	2,736	15
Total	**6,095,022**	**717,613**	**Around 12%**

Private Forest Fund

47.   The Private Forest Fund (PFF) is newly emerging and includes reserve lands[21] designated by local authorities for afforestation. These lands are occupied by: artificial stands, natural stands emerged through seed and/or vegetative propagation, private forest nurseries, plantation stands of special purpose, agroforest melioration stands, and protective stands on privately-owned highways. The right of private forest tenure arises on the lands of individuals and non-governmental legal entities granted as private property or long-term land use in accordance with the Land Code of the Republic of Kazakhstan. No state control is exercised over forestry activities of the private forest fund; they are run at the discretion of the forest owners. However, the right of private forest ownership can be terminated in accordance with Article 28 of the Forest Code of the Republic of Kazakhstan.

The total area of the PFF is 695 hectares, which is concentrated in Akmola Oblast (green zone of Astana) and owned by seven forest owners with plots varying in size between 6 hectares and 250 hectares. Out of the total area of the PFF, plantations for industrial purposes account for 2 hectares; freely growing forest crops 5 hectares; forest nurseries 17 hectares; forest clearings 111 hectares; sparse stands 1 hectare; arable land 140 hectares; pastures 417 hectares; and water 2 hectares. In the forest nurseries, planting stock is grown for selling. Pastures and forest clearings are leased for cattle grazing. The process of formalizing land acquisition for private businesses as part of the PFF is lengthy; according

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[21] The concept of "reserve lands" is absent in the Forest Code, but is included as a category in the Land Code of Kazakhstan.

to some accounts it can take up to three years. This, together with the uncertainty of the right to private ownership, has been a major impediment to the development of the PFF.

3.2.   Areas of land suitable for forest plantations

48.   Up to date forest inventory data is essential for all aspects of forest management. While the Republican State Treasury Enterprise "Kazakh Forest Inventory" is responsible for conducting a forest inventory every 5 years (since the early 2000s), there are some areas in Kazakhstan where forest inventory work has not been conducted for almost 25 years. In addition, this inventory work is not linked with a Geographic Information System (GIS) that would combine forestry data with other information such as land use and tenure data. Due to the lack of a comprehensive up-to-date forestry data, it is unclear how much of the silvicultural fund is truly available for plantations with the private sector and/or local communities. It is estimated that there are limitations in almost all regions for establishing plantations on silvicultural fund lands:

- **Northern region** (North Kazakhstan, Kostanai, partly Akmola and Pavlodar oblasts): there is almost no forest fund available due to intensive farming for growing grains and oilseeds. Forest areas are small and interspersed among large areas of steppe or arable land.
- **Southern region** (Zhambyl, South Kazakhstan, partly Almaty oblasts): there are limited possibilities as almost all suitable lands are already used by private businesses for creating intensive orchards.
- **Western region** (Aktyubinsk, West Kazakhstan, Atyrau, Mangystau oblasts): there are practically no suitable resources as most of the territory lies within semi-deserts and deserts with harsh natural and climatic conditions.
- **Eastern region** (East Kazakhstan oblast): nearly all areas are already covered by forest.

49.   Some suitable land has been identified using new forest inventory data available for three Oblasts including Almaty, East Kazakhstan and Pavlodar, which together could provide around 2,357 hectares for community / private forest plantations (Table 4). Anecdotal information suggests that there may be additional, burnt areas in East Kazakhstan (up to 3,000 hectares per year) that could be afforested with the help of the private sector. A much larger potential for suitable areas seems to lie outside of the State Forest Fund altogether, on bare lands and naturally afforested lands within the agricultural land category (under pasture or straw-cutting lands).

Table 4: Available Land plots based on new forest inventory

Oblast	Category of lands, ha				Total, ha
	Burnt area	Clearing	Cut-over	Dead stands	
Almaty Oblast					
Kaskelen FW SA, Kyzyltan forest district			4.5	424.4	428.9
East Kazakhstan Oblast					
Begenev Branch of Semei Ormany SNR, Begenev forest district	493.8	67	78.7		639.5
Asubulak FW SA, Central forest district	101.1	517.9			619
Pavlodar Oblast					
Pavlodar Oblast Branch of SFNR "Ertis Ormany" Baurtal forest district	669.6				669.6
Total	**1,264.5**	**589.47**	**78.7**	**424.4**	**2,357**

50.	There is an urgent need to update national forest inventory data to enable the identification of suitable land for planting. If linked with a GIS to combine with land use and tenure data, this can provide information on truly available lands within the silvicultural fund (and areas outside the SFF). The government should clarify the institutional responsibilities for carrying out this work, and ensure the necessary resources are budgeted for. The results of the forest inventory and analytical work can serve as a decision-making tool for forest policy and forest management and further guide strategic thinking of the sector, particularly about the role of private plantations.

4. INSTITUTIONAL AND LEGISLATIVE FRAMEWORK

## 4.1.	Forest Institutions

51.	Forests in Kazakhstan are almost entirely state owned. The main government authority responsible for forestry in Kazakhstan is the Forestry and Wildlife Committee (FWC) under the Ministry of Agriculture. At the oblast level, there are fourteen regional governments (Akimats) – existing forests and bare lands within the forest fund are managed wither by State Forest Enterprises that serve as territorial forestry authorities or Protected Area entities (Ormandar). These organizations actively manage the natural forests and undertake afforestation in the bare areas to the extent feasible given the limited budgetary funding. The overall structure of the sector is presented in Figure 1.

52.	The forestry management system has two major sources of financing forestry expenditures: the state and local budgets. There is a concentration of state financed afforestation on restoring degraded areas or on the establishment of vegetative cover in the dry Aral seabed. Given the extent of the bare land inside the forest fund there is the need to encourage more external investment in the establishment of plantations.

Figure 1: Overall Structure of Forest Institutions in Kazakhstan
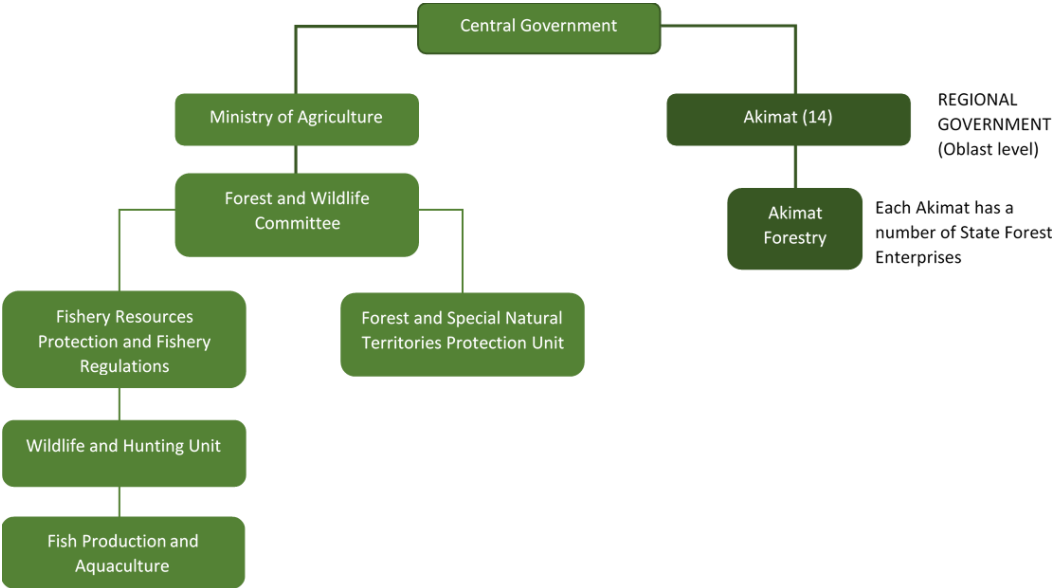
4.2. Forest policy and strategy

53.   Kazakhstan currently lacks an overarching vision and goals for the development of forest plantations, which could guide the operationalization of private forestry with the participation and buy-in of all stakeholders (professional foresters from the state forestry institutions, private sector, local communities, and relevant environmental and civil society organizations). This is a substantial impediment in providing strategic direction for the sector and facilitating the drafting of necessary documents, programs, and subsidiary legislation. In the absence of a vision for the development of forest plantations, it will be difficult to develop a comprehensive approach to increase private sector participation in forest plantations, and efforts in that direction are likely to be fragmented.

4.3. Legislation

54.   The Forest Code of the Republic of Kazakhstan was adopted in 2003 and first introduced the norm of private forests, which provides for opportunities to increase forest coverage through active participation of local communities and private businesses in afforestation, both on the lands of the State Forest Fund (SFF) and on vacant lands not used in agricultural production. According to the Forest Code, private entrepreneurship related to afforestation is allowed in the form of long-term or short-term forest use, as follows:

- **Long-term forest use**: forest resources of SFF lands shall be made available for a period of 10-49 years, based on participation in a tender and followed by a contract between the state forest owner and the forest user who must have the funds and production capacities for implementing authorized activities (Forest Code, Article 31 "Long Term Forest Use on the Lands of the State Forest Fund", amended June 15, 2017)
- **Short-term forest use**: forest resources of SFF land shall be made available for up to one year, based on a forest usage permit issued by the state forest owners; or for a period between one and ten years, on the basis of a short-term forest use agreement signed between the state forest owner and the state forest user (Forest Code, Article 34, amended June 15, 2017).

55.   In the context of long-term forest use, the following types of activities may be carried out on SFF lands: harvesting of wood; procurement of oleoresin and tree sap; use of lands for hunting and research purposes or for cultural activities, recreation, tourism and sports; use of lands for cultivation of planting stock of trees and shrubs and special purpose plantations, and use of non-timber forest products. While this includes a wide variety of activities that can be carried out by the private sector and/or local communities, the requirements imposed on wood harvesting are quite stringent in terms of professionalism, availability of material and technical facilities, etc.

56.   According to the Forest Code, "no alienation of state forest fund lands through sale, pledging and other transaction shall be allowed." This means that even private forest (i.e. forest land leased long-term) is essentially on state land and remains under state control and ownership. There is currently no provision for automatic renewal of the lease, which would provide a degree of certainty to private investors, which is the case in other advanced forest economies (e.g. England).

57.   Private forestry is also regulated by the Law of the Republic of Kazakhstan "On Private Entrepreneurship" (Article 4, item 2), which provides state support for private entrepreneurs engaged in agricultural activities. As per this law, the Forest Code was supplemented with Chapter 18-1 "State

Support for Private Afforestation", which provides support to plantation-based cultivation of fast-growing tree and shrub species for industrial and energy purposes and creation and development of forest nurseries.

58.   Specifically, the Forest Code stipulates state support for private afforestation on agriculture or reserve lands through reimbursement of up to 50 % of the costs for:

- establishing and cultivating fast-growing tree and shrub species for industrial and energy purposes – support provided for no longer than 10 to 15 years;
- creating and developing private forest nurseries - support provided for no longer than 5 to 10 years.

59.   Reimbursement of the costs will be provided using funds from the state budget. However, no budget funds have been allocated in recent years. It should be noted that the Government lacks a sense of the scale of potential private afforestation and the amount of budget needed for the scheme. The focus on agriculture and reserve lands seems to suggest that the FWC wants to incentivize private plantations outside of SFF lands. The development and approval of rules for reimbursement falls within the competence of the Ministry of Agriculture's Committee of Forestry and Fauna and its territorial subdivisions. While the general parameters of the subsidy scheme for private afforestation exist, clear framework conditions and the specific mechanism (e.g. approval process for subsidies, eligibility criteria) have not been developed yet. This environment of uncertainty and lack of clarity on financial incentives has contributed to the lack of uptake by the private sector in plantations.

4.4.   Experience with Participatory Forest Management

60.   Participatory Forest Management (PFM) is a process in which stakeholders influence and share control over the system of priorities, tactics development, allocation of resources and access to public goods and services. It helps define the right of ownership and enhance transparency and accountability in forest management planning and strategy development.

61.   The 2003 Forest Code had no provisions for joint forest management with the participation of the local population at the community level. Public Councils for PFM were first created as part of the Kazakhstan Forest Protection and Reforestation project (which closed in June 2015) and piloted on the territory of the state natural forest reserves "Semey Ormany" (East Kazakhstan Oblast) and "Ertis Ormany" (Pavlodar Oblast). Due to the interest caused by the PFM pilot among policy makers and forestry sector authorities on the need to engage local communities in forestry management, the Forest Code was amended in 2012 to introduce PFM elements, which allows communities to participate in forest-related economic and environmental protection activities.

62.   The assessment of PFM in Kazakhstan revealed a number of lessons learned:

63.   Local communities are keen to participate in forest management and take respective responsibilities, but only if they receive benefits from such partnerships reflected in clear and secure use rights to forest resources. The willingness of villagers to participate in forest-related voluntary work, such as firefighting, forest sanitary cleaning and forest protection, was low.

64.   A diverse range of PFM activities was implemented through grants for the creation of school forestry clubs, the production of charcoal and biogas, and various trainings, although with mixed results.

The establishment of forestry clubs was quite positive as it helped raise awareness of the local population regarding responsible forest management and use (such as avoidance of fires) and increased the interest of young people in the forestry profession. PFM projects focused on the production of charcoal were less successful as they required the purchase of modern equipment and development of appropriate technology, which was more expensive than the traditional ways of local residents to use available woodfuel in nearby forests. While small-scale production of charcoal presented opportunities for entrepreneurs, the projects ultimately proved to be unprofitable. PFM projects for biogas production from manure were not promising given the complexity of the technology and the perceived risks associated with possible gas explosions. Training on developing project proposals, drafting project plans, calculating budgets, drawing up grant applications, and coordinating projects proved valuable to participants.

65. Much of the experience gained under the PFM was informational and educational in character, and lacked true examples of participation of local communities in the management of the forest fund. In addition, experience was not transferred to other regions, and in some cases projects were not even able to reach all members of the target communities. While the intended multiplier effect was not achieved, PFM was nevertheless viewed as an important start in building more constructive relationships between communities and forestry enterprise officials. The role of the Akimats (local governments) was key in mobilizing and representing the interests of the communities in PFM.

66. After the pilot closed in 2015, the heads of PFM councils were unable to find funding for new PFM projects. As a result, none of the PFM projects continued and project managers returned to their previous positions in forestry or other sectors. Limited time and funding scope has become a key impediment in ensuring the sustainability of the PFM mechanism.

67. Clearly there are opportunities to build on the experience with PFM in Kazakhstan taking into account the lessons learned. Further considerations should be given as to how to improve the effectiveness of PFM by establishing a clear set of functions and responsibilities for PFM entities, and strengthen the financial sustainability of PFM. The grant program is a good mechanism to motivate the community, but should be designed with a clear purpose to spread benefits widely in the community and to be technically sound. This in turn requires much stronger measures for transparency in decisions about the use of grants, allocation of funds, execution of contracts, and use of built assets. Consideration should be given to enhancing the practical value and economic benefits of PFM projects for its participants (e.g. through grants for economic and legal advisory services for small forestry entrepreneurs).

5. MARKET ANALYSIS

68. According to the Committee on Statistics of the Ministry of National Economy and the Customs Control Committee of the Ministry of Finance, Kazakhstan's foreign trade turnover was US$61.95 billion in 2016 (a decrease by 19 % from 2015). Exports from Kazakhstan amounted to US$37 billion (80 % of the 2015 level) and exceeded the level of imported goods, which amounted to US$14.8 billion in 2016.

69. Kazakhstan's wood-based industries cover a limited range of downstream activities, including woodworking industries, paper and paper products manufacturing and converting industries, and the

furniture industry. As of July 2017, there were 700 timber processing enterprises and 1,738 furniture sector enterprises.

5.1. Wood products

Timber harvesting and processing

70.   In 2016, Kazakhstan's production of roundwood was about 342.7 thousand cubic meters (compared to 286.4 thousand cubic meters in 2012): North Kazakhstan Oblast 186.8 thousand cubic meters; East Kazakhstan Oblast 69.88 thousand cubic meters; Kostanay Oblast 42.78 thousand cubic meters; Akmola Oblast 40.38 thousand cubic meters; and Pavlodar Oblast 3.18 thousand cubic meters. The volume of harvested commercial timber was only 127.9 thousand cubic meters (37 %), with the rest of the wood used as firewood:

- 127.9 thousand cubic meters of commercial timber:
    - 71.2 thousand cubic meters of conifers (softwood)
    - 56.7 thousand cubic meters of hardwood
- 214.8 thousand cubic meters of fuelwood

71.   While harvesting of conifers has increased more than threefold from 21.2 thousand cubic meters in 2011, a significant decline is expected in 2017 due to the moratorium on cutting. Harvesting of hardwood has increased from 32.6 thousand cubic meters in 2011. There was a sharp decline in harvested volume from 2013 to 2014 (from 71.2 thousand cubic meters to 56.8 thousand cubic meter), as explained by market dynamics with Russia.

72.   Domestic harvesting of woodfuel has slightly decreased compared to 2011 (222.3 thousand cubic meters), a trend that is expected to continue due to the gradual switch to alternative energy sources (charcoal, pellets, gas). Kostanay Oblast, for instance, is implementing measures for connecting rayons to the gas pipeline and has seen a decline in demand for fuelwood. There is an opportunity to use this wood for value-added processing, thereby increasing profitability and the initial return on investment.

73.   More than half of forest harvesting enterprises are concentrated in three oblasts in East Kazakhstan, Pavlodar and North Kazakhstan, where most of the coniferous and hardwood is located. Timber processing enterprises are mainly situated in Almaty oblast and the city of Almaty, the largest economic clusters of Kazakhstan. This creates significant costs associated with transportation of raw timber and would suggest that there are incentives for developing processing industries in East Kazakhstan, Pavlodar and North Kazakhstan, close to the forest resources, as it is more cost-effective to transport value-added products rather than bulky raw materials.

Domestic production

74.   The production of timber has remained relatively stable at about 250 thousand cubic meters per year over the past five years. This covers less than a quarter of the volume of domestic market demand for wood products (longitudinally sawn or chipped) (Figure 2Figure 1).

Figure 2: Market for wood products (thousand, cubic meters), 2013-2017

	2013	2014	2015	2016	I-V 2017
Resources – total	1 091,9	1 575,2	1 395,5	706,0	338,1
Production	244,6	213,8	276,9	216,7	80,2
Import	847,3	1 361,4	1 118,6	489,3	257,9
Usage – total	1 091,9	1 575,2	1 395,5	706,0	338,1
Export	0,2	0,1	6,5	53,9	85,6
Domestic market	1 091,7	1 575,0	1 389,0	652,1	252,5
Ratio of domestic production and volume of domestic usage, %	22%	14%	16%	33%	24%

Data of the Statistics Committee of the Republic of Kazakhstan

75.   According to experts, the dynamics of timber production in Kazakhstan are closely associated with exchange rate fluctuations over the past years: the cost of Russian timber, taking into account all logistics, is lower than the cost of Kazakh timber below an exchange rates of five Tenge per Russian Ruble. The sharp drop below three Tenge per Ruble in 2014-2015 (see Figure 3) has contributed to the bankruptcy of a number of enterprises engaged particularly in the sawmilling industry.

Figure 3: Russian Ruble to Kazakhstan Tenge Historic Exchange Rate (2014-2018)

76.   Overall, the largest volume of domestic production is focused on low-value commodities rather than deep timber processing, which covers less than five percent for any product category on the domestic market. This is partially due to the significant capital investments required to create enterprises for deep processing of timber.

77.   There has been a decrease in the production of wooden products (windows, doors, frames, and other wood materials) for construction from 1,262.8 thousand square meters in 2012 to 794.5 thousand square meters in 2016. This is associated with the appearance of cheaper plastic materials on the market, as well as the general slowdown in construction rates seen in Kazakhstan in recent years. There is untapped potential in the wooden housing construction sector, which has a potential market of five billion US dollars (about half of which in rural areas, and half in urban areas).[22]

78.   Domestic production of wood chipboards covers only a small part of the domestic market (two % as of 2016). Almost all the domestic market is covered by imports of wood chipboards, which

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[22] Based on 2016 data from the Statistics Committee of Kazakhstan on construction of residential buildings and individual housing in rural and urban areas.

amounted to 100 million US dollars in 2016. Similarly, domestic production of wood-fiber boards is not well developed and the needs of the domestic market are covered exclusively through imports. The estimated size of the domestic market, based on the volume of imports in 2016, is 120 million US dollars.

79.   While there was no plywood production in Kazakhstan in 2014-2015, it covered about nine percent of the domestic market in 2016, indicating that there this may be a promising sector for Kazakhstan producers. In 2016, domestic production was valued at 31.8 thousand Tenge; the value of import was 327.5 thousand Tenge.

Foreign Trade

80.   The volume of Kazakhstan's timber production exceeds the volume of wood harvesting, with the balance being met through imports of round timber from Russia and Belarus. For wood and wood products, including processed products, imports have dominated over exports over the past five years. This is in large part due to the ban on the export of wood from Kazakhstan, the proximity to the Russian timber market, and a lack of local suppliers.

81.   In the foreign trade category "living trees and other plants; bulbs, roots, and other similar parts of plants; cut flowers and ornamental foliage", imports exceeded exports to the Economic Customs Union between 2014 and 2016, a reversal from 2013 when exports were nearly three times as high as imports. This suggests that there is now a shortage of domestic planting stock. Interviews with businessmen and government representatives seem to confirm this trend.

Consumption and demand

82.   Demand for forest products is currently driven by two key factors: the need for planting material and trees for landscape design as well as processed wood product.

83.   Demand for planting material is largely determined by the state policy of creating green zones and relaxation zones around cities as well as increasing forest cover. Annually, the total amount of planting is estimated at 100,000 hectares. On average, about 2,000 young trees are planted per hectare. The works on planting green zones is carried out by private companies commissioned by local authorities. Reforestation after logging follows the principle of "one hectare cut down – two hectares planted", which is met with opposition from the private sector.

84.   The wood processing market is determined by the (declining) demand for fuel wood and the demand driven by the individual housing (construction) market and the furniture industry. According to the Association of Enterprises of Furniture and Woodworking Industry of Kazakhstan, the country's furniture market is estimated at several billion dollars, quite possibly larger if imports from China and Russia (which are not captured by statistical data) are included. This indicates the potential for the development of both small companies and large furniture and woodworking enterprises in Kazakhstan.

5.2.   Pulp and paper products

Domestic production

85.   Currently, Kazakhstan has 376 companies engaged in the production of pulp and paper products, most of them located in the city of Almaty, South Kazakhstan Oblast and Almaty Oblast. For the most part, they are small-sized enterprises that are not engaged in the production of pulp, but

making paper from finished raw materials, often of secondary use and a narrow assortment of low-grade paper (such as toilet and sanitary paper, paper towels or napkins, cellulose wadding, cellulose fiber cloth). The largest producer is Karaganda Pulp and Paper Mill, which produces paper products and sorbents for petroleum products. Generally, the production of pulp is very poorly developed and there is insufficient capacity to meet domestic demand for paper products.

Foreign trade

86.   The import volume of paper products from the ECU is more than 100 tons per year. In terms of value, imports of pulpwood, pulp and finished paper products from the ECU is estimated at 200 million US dollars (out of which more than half is for paper, cardboard and paper products).

87.   Kazakhstan's only export in this category are products of secondary processing, i.e. waste paper, up to 80 % of which is exported. In November 2017, the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" reported that enterprises producing paper products are facing a shortage of raw materials (90 % of which is waste paper) due to waste paper exports to neighboring countries including Russia, Kyrgyzstan and Uzbekistan. In 2016, the Government imposed a restriction on the export of waste paper from Kazakhstan, which helped stabilize the market at the time. As with the sawmilling industry, paper production was significantly impacted by the 2014-2015 drop in the exchange rate with the Russian Ruble.

Consumption and demand

88.   The internal market of toilet paper provides prospects for Kazakhstan producers: domestic production has been stable at around 500 tons per year between 2013 and 2017 while the internal market demand is more or less steady at seven thousand tons per year, nearly all of which is imported. There is potential, through government support that encourages processing from fast growing plantations, to better meet domestic demand for paper products.

5.3.   Furniture

Domestic production

89.   The main hubs of furniture production are Almaty and Astana, which are the largest domestic markets for furniture. Companies are mainly engaged in made-to-order furniture such as kitchen, living room and office furniture. Serial production of furniture is underdeveloped in Kazakhstan. In 2014-2015, a sharp drop in the volume of furniture production was observed, most likely due to the devaluation of the Tenge (February 2014, and again in May and August 2015). Although there was a slight recovery of production volumes thereafter, the 2016 production level (around 500 thousand units) was only about 60 % of the 2013 level.

Foreign Trade

90.   Foreign trade turnover shows that 70 % of the furniture market is imported and only 30 % is produced domestically. Exports are minimal in comparison to imports, even though there is no ban on exports of wooden furniture. In 2016, for instance, imports amounted to 86.17 million US dollars, compared to 1.4 million US dollars in exports. The main countries of furniture suppliers are Russia and Belarus, but furniture is also imported from Ukraine, China, Italy and Turkey all of which have well-developed furniture industry with large enterprise-holdings.

91.   While the furniture manufacturing sector is seeing new companies and individual entrepreneurs emerge, the domestic market for wooden furniture is actually shrinking. This is due to the general economic downturn and decrease in purchasing power of consumers, but also due to the appearance of cheaper substitute goods on the market. According to experts, wooden furniture is viewed as an "elite" product and as such the demand will depend significantly on the purchasing power of the population. Yet, there are potential opportunities for the private sector that should be explored.

5.4.   Fruits, nuts and other non-wood products

Domestic production

92.   Most enterprises engaged in cultivation of non-wood products – fruit, nut and perennial crops are located in South Kazakhstan and Almaty Oblast given the favorable climatic conditions there. Starting from 2015, production of virtually all the product categories has declined, apart from the fruit growing industry. However, in the first half of 2017, a positive trend emerged showing a revival of domestic production.

Foreign trade

93.   In terms of foreign trade, exports in the category edible fruits and nuts predominate over imports in almost all commodity categories (nuts, apples, pears, apricots, cherry, peach, dried fruits).

94.   Demand for products made of wicker materials (willow, bamboo, rotunda) has been growing in value terms but is met by imported products. Exports of these products have been negligible.

Consumption and demand

95.   Domestic production covers only a small part of this market (2-3 %), which has not seen any significant downturn over the past five years. Export volumes exceed volumes of domestic production, meaning that a part of the imported products is resold. This could be an incentive and opportunity for local producers. Although almost half of the market for perennial crops is covered by domestic producers, investments in this segment are not particularly promising.

6. ECONOMIC ANALYSIS

96.   The economic analysis developed financial and economic models for energy forest plantations, coniferous forest plantations (pine), private nurseries (pine, birch, spruce), fruit, nut, and berry (buckthorn and rose hip) plantations, and wood processing (saw mill). The analysis showed that there are attractive opportunities for the private sector to invest in forest plantations provided there are targeted incentives and government support for investors. The most viable and attractive plantation models from the financial and private sector view are forest nursery plantations (pine, birch, spruce), and fruit, nut and berry plantations. Assuming a 50% subsidy, improves the Internal Rate of Return (IRR) of all models, particularly for apple and berry plantations as well as for saw mill owners.

97.   For energy plantations (including pine), the investment return is less attractive even with a 50% government subsidy. However, if the government took on the initial costs and risks of establishing

energy plantations this could motivate investments from the private sector as it would allow private investors to come in at a later stage (e.g. at first thinning) to harvest and maintain the plantations until final felling (with the obligation to restock the site). Under such a scenario, poplar and pine plantations become more attractive with expected investment returns between 14.3% and 17.3%[23]. Considering the national and global benefits derived from increased forest cover this would create a win-win situation for the government and private sector.

Table 5: Summary of Investment (Financial) Return, various plantation models

Private Forest Plantation Models		IRR		
		Base Case	50% Subsidy	Full Subsidy
Energy plantations	Poplar	10.4%	12.8%	17.3%
	Saxaul	2.6%	3.5%	4.8%
Coniferous plantation	Pine	7.8%	9.8%	14.3%
Forest nursery plantations	Pine	19.9%	n/a	n/a
	Birch	25.8%	n/a	n/a
	Spruce	23.2%	n/a	n/a
Fruit, nut, and berry plantations	Apple	35.9%	54.6%	n/a
	Walnut	24%	27.6%	n/a
	Berry	36.5%	64.1%	n/a
Wood processing	Saw Mill	15.3%	58.7%	n/a

98. For all models, if carbon benefits (i.e. carbon sequestration) are factored in, the economic returns are viable and attractive, especially assuming a high shadow price of carbon. This shows that although the financial incentives for the individual investor may not be strong in all cases, from a national (and global) perspective, there is a strong incentive to promote the establishment of forest plantations for the benefit of the whole country. If the Government is serious about international commitments on climate change and efforts to mitigate climate change (as delineated in its INDC), the private sector should be encouraged to undertake afforestation and establish plantations (e.g. to plant on bare lands).

99. Details of the investment and economic returns from the different plantation models are presented below[24].

6.1.   Energy plantations

100. Three one hectare financial and economic models were prepared to demonstrate different options of energy plantations: one base case model and two models with low and high output. In addition, the base case model was tested under two different assumptions: a 50% subsidy for the investment costs and full payment of the initial costs of establishing plantations by the government.

Poplar Plantations

101. Poplar was chosen as one of the most common and fast-growing type of the energy tree plantations. The model was built on the assumption that the poplar plantation business specializes in selling timber (roundwood) and firewood. The produced firewood will be sold to households (mainly in rural area) for domestic heating along with coal. This firewood also could be sold to small businesses

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[23] Saxaul plantations remain unattractive.
[24] The full financial and economic analysis, including all assumptions and parameters is available upon request.

that specialize on different kinds of steam bathes (sauna/banyas). It is assumed that the poplar plantation owners would be rural and urban entrepreneurs.

102.   The analysis showed that this type of business is financially viable – under the base case, Internal Rate of Return (IRR) is 10.4% over a 20-year production period with a positive net present value (NPV) of KZT 150,000 at 10% discount rate. Assuming a 50% subsidy for the investment costs, IRR increases to 12.8% with a NPV of KZT 952,666. If the government took on all investments costs of the plantation, the IRR becomes 17.3% with a NPV of KZT 1.8 million, which makes this business financially viable and more attractive. Table 1 shows a summary of NPV and IRR.

Table 6: Summary of Financial Return, Poplar Plantation

Poplar Plantation (per 1 ha, growing period 20 years)	Final felling (harvesting), m3/ha	NPV (KZT)	IRR
Base case	600	149,575	10.4%
50% Subsidy	600	952,666	12.8%
Full Government Subsidy	600	1,800,000	17.3%
Low output	400	-593,643	8.3%
High output	800	892,793	11.9%

103.   From the economic point of view (that is, from the point of view of benefits for the whole economy of the country), all the analyzed poplar cultivation models have quite a high level of economic return with the Economic Rate of Return (ERR) ranging from 15.9% to 22.5%, which is much higher than the discount rate applied in the economic analysis (10%), depending on the assumed carbon shadow price (

104.   Table 7).

Table 7: Summary of Economic Return, Poplar Plantation

Poplar Plantation (per 1 ha, growing period 20 years)	Final felling (harvesting), m3/ha	ERR	
		Low carbon shadow price	High carbon shadow price
Base case	600	17.0%	21.9%
Low output	400	15.9%	21.2%
High output	800	17.9%	22.5%

Coniferous pine plantations

105.   This model assumes that an owner of a pine plantation would be rural and urban entrepreneurs, specializing on selling timber (roundwood) and firewood (as a side product), but not on producing deeply processed timber. The main purchasers of firewood are mainly rural area households, that would use it to heat their houses along with coal.

106.   Under the base case and low / high output scenarios, all models have a negative NPV and the IRR is lower than the discount rate of 10%. Assuming the 50% subsidy for the investment costs improves IRR to 9.8% while NPV is still negative at KZT -59,957. However, if the government was to take on all initial costs, the pine plantation model becomes financially viable and would be attractive for private investors as IRR increases to 14.3% and NPV becomes positive. See Table 8.

Table 8: Summary of Financial Return, Pine Plantation

Pine plantation (per 1 ha, growing period 30 years)	Final felling (harvesting), m3/ha	NPV (KZT)	IRR
Base case	300	-885,593	7.8%
50% Subsidy	300	-59,957	9.8%
Full Government Subsidy	300	765,680	14.3%
Low output	200	-1.2 million	6.6%
High output	500	-312,507	9.4%

107.   From the economic point of view, the models for a base case and a low output are economically not viable. The potential ERR ranges between 7.6% and 9.4%, which is lower than the discount rate of 10%. In case of high output, the model is economically viable, although the ERR is around the discount rate (Table 9).

Table 9: Summary of Economic Returns, Pine Plantation

Pine Plantation (per 1 ha, growing period 30 years)	Final felling (harvesting, m3/ha)	ERR	
		Low carbon shadow price	High carbon shadow price
Base case	300	8.6%	9.4%
Low output	200	7.6%	8.5%
High output	500	10%	10.7%

Saxaul plantations

108.   The saxaul business is mostly geared toward firewood that is used by cafés and restaurants for barbeque (shashlyk and grills), thanks to special quality of saxaul as a firewood. A saxaul harvesting ban was introduced in August 2015 until December 2018, although the ban is expected to be prolonged. It is assumed that the plantation owners would be rural and urban entrepreneurs. Primary felling would take place in year 30 and final felling in year 40.

109.   The analysis showed that this business model is not financially viable and would not be attractive for the private sector due to the very long production cycle, in which the potential plantation owner would receive relatively low output. While the current market price of saxaul firewood is very high (KZT 50,000, because of the high quality of saxaul firewood, but also due to the ongoing ban for saxaul harvesting in Kazakhstan), the IRR is low and NPV is negative for this plantation model (Table 10). Even assuming the government takes on all initial costs, IRR is still modest at 4.8% with a negative NPV.

Table 10: Summary of Financial Return, Saxaul Plantation

Saxaul Plantation (per 1 ha, production cycle of 40 years)	Felling output per whole cycle (harvesting), m3/ha	NPV (KZT)	IRR
Base case	60	-561,478	2.6%
50% Subsidy	60	-395,028	3.5%
Full Government Subsidy	60	-228,578	4.8%
Low output	40	-601,180	-0.09%
High output	80	-521,776	4.0%

110.   The economic analysis showed that ERR is much lower than the discount rate (10%), which means that this model is not economically viable.

Table 11: Summary of Economic Return, Saxaul Plantation

Saxaul Plantation (per 1 ha, production cycle of 40 years)	Felling output (per whole cycle) Harvesting, m3/ha	ERR	
		Low carbon shadow price	High carbon shadow price
Base case	60	-8.1%	-6.4%
Low output	40	too low	-12.3%
High output	80	-6.4%	-5.1%

6.2.   Private nursery plantations

111.   Three models were developed to demonstrate a private nursery business to produce young forest plants (pine, birch, spruce). These young plants will be sold to households (mostly in urban area) for decorative purposes and landscape design of household yards and other private areas. They could be also supplied to the municipalities and other local and national government agencies engaged in decoration and afforestation of the cities and suburban areas. It is assumed that the nursery owners would be rural and urban entrepreneurs and small-scale farmers that would like to diversify the production.

112.   *Pine nursery:* The model shows a good financial viability, IRR is 19.9% over a 7-year production period with a positive NPV of KZT 2.1 million at 10% discount rate. The financial analysis shows that this model could be attractive for private sector although the sensitivity analysis showed that the model is very sensitive to changes in selling prices of young plants.

113.   *Birch nursery:* The model shows a good financial viability, IRR is 25.8% over a 7-year production period with a positive NPV of KZT 3.6 million at 10% discount rate. The financial analysis shows that this model could be attractive for entrepreneurs and farmers. Again, this model is sensitive to changes in selling prices of young plants.

114.   *Spruce nursery:* This model shows a good financial viability, IRR is 23.2% over a 9-year production period with a positive NPV of KZT 4 million at 10% discount rate. The financial analysis shows that this model could be attractive for the private sector, although the model is sensitive to changes in selling prices of young plants. Table 12 summarizes the IRR and NPV of the three types of private nursery plantations.

Table 12: Summary of Financial Return for Private Nursery Plantations

Private nursery plantation 3-5 ha; discount rate 10%)	Production period (years)	NPV (KZT)	IRR
Pine nursery	7	2.1 million	19.9%
Birch nursery	7	3.6 million	25.8%
Spruce nursery	9	4 million	23.2%

6.3.   Fruit, walnut and berry plantations

115.   The analysis for fruit, walnut and berry plantations showed that the investment (financial) return is quite attractive because these plantations begin bearing fruits, nuts, and berries already in the fourth or fifth year from the moment of planting, and the market value of these products is relatively high.

Apple plantation

116.   Apple was chosen as the most popular fruits among consumers, which has a stable demand, especially for the local apple varieties. This kind of plantation is mostly designed for the south and south-east part of Kazakhstan with application of non-intensive plantation technology and assuming a drip-irrigation system. The financial analysis shows that this type of business is attractive to the private sector with an IRR of 35.9% and a NPV of KZT 24.7 million. Assuming a 50% subsidy, increases IRR to 54.6%. Table 13 summarizes the results.

Table 13: Summary of Financial Returns, Apple Plantation

Apple plantation (per 1 ha, growing period of 20 years)	Total harvesting, tons/hectare	NPV (KZT, millions)	IRR
Base case	390	24.7	35.9%
50% Subsidy	390	28	54.6%
Low output	195	7.4	19.9%
High output	487.5	33.4	42.4%

Walnut plantation

117.   Walnut plantations are not a common type of business because of Kazakhstan's low scientific and research capability in walnut production. However, this model assumes that walnut plantations would be located in south or south-east Kazakhstan and that plantation owners would sell walnuts at the wholesale price to resellers from urban and rural area bazaars and small grocery store owners. The financial analysis shows that this type of business is attractive to the private sector with an IRR of 24% and a NPV of KZT 4 million. Applying a 50% subsidy, increases IRR to 27.6%. XX summarizes the results.

Table 14: Summary of Financial Returns, Walnut Plantation

Walnut plantation (per 1 ha, growing period of 17 years)	Total harvesting, tons/hectare	NPV (KZT, millions)	IRR
Base case	25.7	4	24%
50% Subsidy	25.7	4.4	27.6%
Low output	6.4	0.55	6.4%
High output	32.1	5.6	27.2%

Berry plantation (sea buckthorn and rose hip)

118.   Financial models were prepared for combined sea buckthorn and rose hip plantations, which are berries used in the pharmaceutical industry. Because this industry is not well-developed in Kazakhstan, stable sales of these berries are questionable. The analysis showed that this model would be attractive for the private sector with an IRR of 36.5% over a 10-year production period at 10% discount rate. And a positive NPV of KZT 4.1 million. IRR increases to 64.1% if a 50% subsidy was granted for the investment costs. Table 15 summarizes the results of the analysis.

Table 15: Summary of Financial Returns, Berry Plantation

Berry plantation (per 1 ha, growing period of 10 years)	Total harvesting, tons/hectare	NPV (KZT, millions)	IRR
Base case	43.8	4.1	36.5%
50% Subsidy	43.8	5.2	64.1%
Low output	21.9	-1.5	-3.8%
High output	54.7	6.8	51.1%

6.4.   Wood processing

119.   One combined model of mini sawmill industry was built to demonstrate the potential business opportunity in timber processing. The model assumes that the sawmill owner would sell the processed wood to furniture production companies and the wood pellets to rural area households. Based on the financial analysis of the base case[25], the IRR is 15.3% over 20 months of production period at 10% discount rate with a positive NPV of KZT 2.8 million. Assuming a 50% subsidy for the investment cost, the financial results become highly attractive at 58.7%.

Table 16: Summary of Financial Return, Wood Processing Industry

Saw mill (production period of 20 months)	Total output, tons	NPV (KZT, millions)	IRR
Base case	139	2.8	15.3%
50% Subsidy	139	8.4	58.7%
Low output	104	0.47	10.9%

7. KEY CHALLENGES AND RECOMMENDATIONS

120.   The following section brings together the key issues and challenges identified during the preparation of this report. It also offers some recommendations for addressing the most pressing issues facing private forestry in Kazakhstan.

7.1.   Key challenges

Varying views about the role of forests

121.   Sustainable forest management (SFM) is a dynamic and evolving concept that aims to maintain and enhance the economic, social and environmental values of all types of forests through human intervention. In Kazakhstan, attitudes toward forest management still reflect a certain tension between economic (i.e. commercial use) and environmental (i.e. preservation) goals.

122.   In the south of Kazakhstan, where almost all forest is in state protected areas (parks, reserves), forests are generally viewed as a fragile ecosystem, which must be protected and preserved. While some private enterprises exist (e.g. forest nurseries, fruit and nut gardens, as well as herb and berry producers) there is skepticism about establishing private plantations on SFF lands due to a lack of confidence that the forest fund resources would be conserved. In the east and north of Kazakhstan,

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[25] The base case model functions at the maximum level of capacity of the available machinery; no high output model was developed.

where much of the territory is covered with forests, attitudes toward forest management are more pragmatic with a greater focus on economic and commercial considerations. Private businesses are involved in afforestation, commercial felling and processing of forest products (such as firewood, charcoal, plywood, particle board, medium density fiberboards, and furniture).

123.   Kazakhstan should aim to better recognize the multiple benefit streams provided by forests and integrate these principles in national policy and forest management considerations. In other countries with a well-established private forestry sector (e.g. Austria where 80% of forests are privately owned, mostly as part of family-run holdings), sustainable forest management is understood to include the following principles[26] (see Figure 4):

- a widely recognized commitment to comprehensive sustainability in forests;
- a sound legal framework;
- an efficient institutional architecture;
- a well-balanced financial system;
- systematic public participation in policy development and implementation; and
- a wise monitoring and information system.

124.   A seventh principle relates to "Austria's International Responsibility for Sustainable Forest Management" given the importance for Austria of shaping the international dialogue and development on forests. These principles are laid down by law and provide the underlying framework for sustainable forest management and all other aspects of forests.

Figure 4: Principles underlying sustainable forest management in Austria

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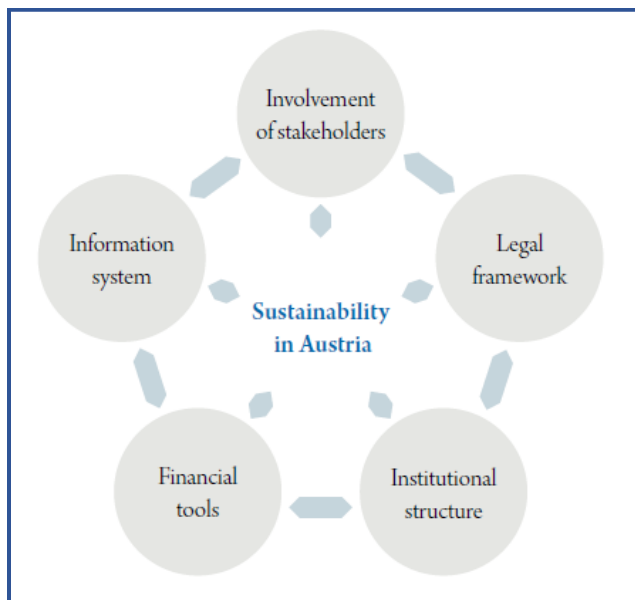
[26] Based on the "Pan-European Criteria for Sustainable Forest Management" of the FOREST EUROPE Ministerial Conference, which are organized along six forest-political fields of action.

Lack of suitable land

125.   The lack of suitable land resources, with secure land rights, emerged as one of the main obstacles facing private investors in Kazakhstan. Stakeholder survey results revealed that land designated for afforestation is either degraded or being used for other purposes (e.g. growing crops on land that was transferred to plough land although it was in fact forest land), resulting in limited availability of suitable sites for forest plantations. In effect, only lands that were previously classified as unsuitable for afforestation (so-called reserve lands) can be considered for private plantations. However, reserve lands must first be transferred to the appropriate category of purpose, which is difficult as there are no clearly established procedures for this process. Anecdotal evidence reveals that it can take up to three years for entrepreneurs to formally obtain land for establishing private plantations. The lack of updated forest inventory data undermines efforts to a conduct a comprehensive assessment of key areas suitable for plantations. Although the Republican State Treasury Enterprise "Kazakh Forest Inventory" is responsible for conducting forest inventory work, it is unclear who would pay for and conduct a wide-scale forest inventory that would look at both SFF lands and areas outside (within the agricultural land category). Addressing these shortcomings will be critical for removing key barriers facing the private sector in the development of forest plantations.

Low attractiveness of the sector

126.   Kazakhstan's private forest industry is still underdeveloped as evidenced by the limited number of active private forestry enterprises, the use of old technologies, small volumes of production, and low levels of processing of materials. Enterprises engaged in the production of pulp and paper products, for instance, are for the most part focused on a narrow assortment of low-grade paper (such as toilet and sanitary paper, paper towels or napkins, cellulose wadding, cellulose fiber cloth). According to Kazakhstan's National Chamber of Entrepreneurs, the average wage in the forest, hunting and fishing industries has been among the lowest in the country for many years. In addition, the number of qualified professionals in the sector has been declining and many experts expressed concern over a shortage of skilled personnel in the forestry sector. Institutions of higher education have seen a gradual decrease in forestry training; even graduates of forestry degrees do not necessarily pursue their specialty. If this trend continues, there is a risk that no new generation of foresters will be available to replace the current one.

Legal and regulatory uncertainty

127.   Responsibly dealing with forests starts with legal certainty, and ensuring clarity about who has which rights and duties in respect to forests. While the 2003 Forest Code introduced the norm of private forests, there are a host of legal and regulatory uncertainties as well as policies that are counterproductive for developing private forestry.

128.   *Moratorium*: Long-term legislative stability and clarity on rules are essential for creating a vibrant private sector. Disjoined policies, ambiguous wording in parts of the forestry law, and changing norms and rules can be harmful to the sector, especially when they ignore the interests of businesses and private actors. The Government moratorium on the cutting of coniferous forests (introduced on January 1, 2017) is a clear example of haphazard regulation that has adversely impacted the private forest industry. One private entrepreneur[27] suffered significant financial losses when a large contract for

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[27] Interviewed as part of the market study carried out by BISAM.

the supply of pine wood was terminated following the government moratorium on all types of cutting of coniferous trees. At that point, the entrepreneur had already spent considerable funds on building access roads to the planned felling sites, resulting in large sunk costs. This demonstrates the risks faced by entrepreneurs when investing in the forestry sector, and can partially explain the low enthusiasm by the private sector.

129.   *Transfer of land*: While the Forest Code allows for the creation of private forest plantations, there is no mechanism on formalizing the transfer of state land to private ownership. Some norms of the Land Code also prohibit the lease and sale of land. Anecdotal evidence reveals that corruption can be an issue in the sphere of land relations, particularly in connection with the transfer of ownership of valuable plots of land. Unless these issues are unresolved, the resulting challenges will continue negatively impacting the development of the private forestry sector. In particular, the government should look at establishing a mechanism for long-term leases with the private sector that supports the development of forest plantations (e.g. as part of a larger, national planting program or the establishment of fast growing plantations for use in processing).

Financial considerations

130.   *State support*: While the general Strategy for Industrialization of Kazakhstan up to 2020 provides some state support for the forestry sector, there is limited awareness of these opportunities among entrepreneurs. In addition, entrepreneurs face difficulties in preparing applications and submitting successful business plans. As is the case with the subsidy scheme, there is a lack of clarity on the type of measures that are supported under the various programs (such as Business Roadmap 2020, Export 2020, Investor 2020, Productivity 2020). An informational campaign, targeted at enterprises that are often located far away from the oblast centers, coupled with specific capacity building training, would help raise awareness and uptake of existing opportunities.

131.   *Tax benefits*: International experience has shown that tax benefits can play a large role in incentivizing private sector investment in forestry (see Box 1). In Kazakhstan, there are gaps in the tax code and it is unclear what the specific tax rates are for certain types of forestry activities. If Kazakhstan is serious about providing meaningful incentives for the private sector to invest in forestry, this lack of clarity needs to be addressed and the government should look at preferential tax treatment of private forest plantations.

132.   *Costs of investments*: The initial establishment costs for forest plantations are often prohibitive for private investors, particularly considering regulatory risks and uncertainties (e.g. unsecured land rights, moratoria). Financial returns from most plantations are weak given existing policies and disincentives (e.g. the principle applied to restocking of sites is based on "one hectare cut down – two hectares planted"). Embedded in the Forest Code is also a requirement to conduct a qualitative study on soil composition. Responsibilities for carrying out and paying for the study are unclear. For potential investors, the costs associated with this study and the possible risk of non-conformity of the soil with established norms, which would jeopardize the feasibility and success of any project, provide a clear disincentive to invest in plantations. The government should consider targeted subsidies and support, including taking on the initial costs and risks of establishing plantations, to improve the profitability for private investors.

133.   *Limited access to financing*: The lengthy payback period of forestry investments presents a real obstacle for private entrepreneurs who often do not have sufficient funds from their own resources to cover upfront investments. Financial institutions do not offer credit products designed for long-term periods and it is impossible for entrepreneurs to obtain long-term loans. The maximum term of lending at second-tier banks and other credit organizations is often seven years, while it can take decades for trees to reach maturity.

Box 1: UK's Experience with Tax Incentives to Encourage Private Sector Investments in Forestry

In the UK, tax incentives proved highly successful in encouraging private sector investments in commercial forests and woodlands. Over the past three years, forestry has been the top-performing asset class in the UK with total returns at 14.7 %, better than returns on commercial property, homes, equities and bonds. The underlying returns from forestry are principally derived from the physical growth of timber, enhanced by the tax treatment.

Specific tax advantages are offered to taxpayers to increase the appeal of forestry investments, including income tax benefits and incentives under the Capital Gains Tax (CGT), Inheritance Tax (IHT), and Value Added Tax (VAT).

Income Tax: The Finance Act 1988 introduced changes to exempt income derived from the occupation of commercial woodlands such as the sale of timber from income or corporation tax. These benefits have the effect of increasing the returns compared with taxable sources of income. At the height of popularity, this led to planting rates of up to 30 thousand hectares per year (see below).
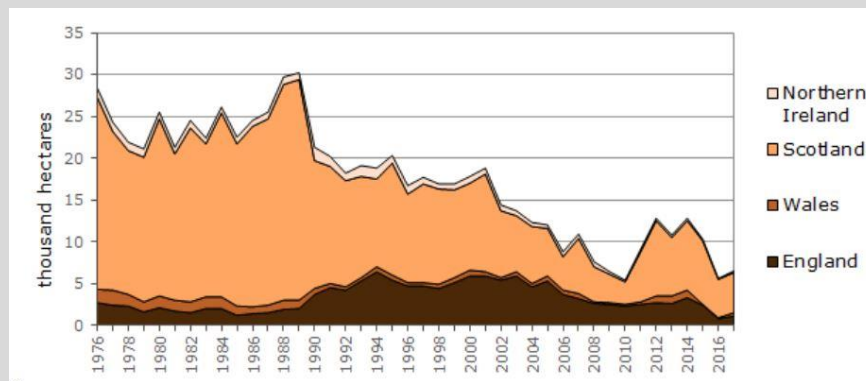
Source: Forestry Commission, Natural Resources Wales, Forest Service, grant schemes.

Capital Gains Tax: When forest is managed on a commercial basis, any gains made on the value of the forest (attributable to the trees during the period of ownership) are exempt from capital gains tax. In certain cases, investors can take advantage of roll-over relief.

Inheritance Tax: Commercial forestry that is owned for more than two years qualifies for a zero inheritance tax on the total value of the land and trees.

Value Added Tax: Investors can elect to register for VAT to enable them to reclaim the VAT element of expenditure on forestry operations.

Macroeconomic factors

14.   Exchange rates can have a significant role in determining the ability of timber and wood product producers to compete in international markets. Accession to the Eurasian Economic Union, combined with the sharp fall of the Russian currency, has negatively impacted Kazakhstan's timber producers who became sharply uncompetitive in comparison to Russia. Competition with "discount" wood from Russia nearly wiped out Kazakhstan's sawmill production, which has not been able to recover. There is a need to more closely analyze market demand for various forestry products and identify areas with potential

comparative advantages. Based on current trends there is untapped potential to produce value-added products for domestic consumption (e.g. pulp and paper, wood chipboards, wooden housing).

7.2. Recommendations

134. Developing the forestry sector in an open and transparent manner that optimizes the economic, ecological and social benefits for Kazakhstan (and globally) requires a consensus among stakeholders about the overall vision and policy goals for the role of private forest plantations, including the scale of commitment. This process needs to include all relevant stakeholders at the national, sub-national and local level and engage the private sector and communities on a continuous (but as necessary) basis. The key policy challenges and responses, ranked in order of importance and suggested sequencing of the responses are summarized in Table 17.

Table 17: Matrix identifying key challenges and recommended responses

Challenge	Recommended Response	Timing and Priority
1. To build consensus among key stakeholders for reconfirming the overarching vision and goals for the development of private forest plantations and determine the scale to which to proceed	Reconfirm existing government policy in support of private sector and community plantations and undertake an over-arching process to formulate a vision and goals for the scale of development of forest plantations. This should follow participatory procedures, based on stakeholder surveys, technical analyses, dissemination, and public consultation, including private sector and local communities, and consider cross cutting issues such as climate change. Once consensus is reached, develop an action plan to fully operationalize and implement the vision and goals related to private forestry.	This is the **highest short term priority** (1 to 2 years) but will need long term commitment and review.
2. To fully develop the enabling environment for the implementation of the private forestry norm under the Forest Code	Update and adopt subsidiary legislation to fully develop the legal framework on forest plantations, based on the principles of legal certainty, clarity of rights and responsibilities of different stakeholders, and supported by a tight and consistent set of rules and regulations. This process should seek to remove conflicting rules, repeal obsolete regulations, and consolidate existing legislation, wherever necessary. Depending on the scale to which the country wants to develop private plantations, this process may require support across different ministries.	**High priority** to be implemented over the **short and medium** (1 to 5 years) **term**. It can be started once the existing policy and scale have been reconfirmed.
3. To clarify the financial mechanism, incentives and subsidies available for private forest plantations	Establish a clear set of rules and regulations regarding the financial incentives and state support available for private forest plantations, such as a detailed mechanism and eligibility criteria for the implementation of the subsidy scheme and clarity on tax incentives. This should include efforts to determine the scale of investments and state support needed for afforestation and, subsequently, allocation of the appropriate budget for the subsidy scheme. In addition, the government should consider entering into long-term leases with the private sector to jointly develop forest plantations Encourage processing from fast growing plantations through government subsidies and tax incentives in support of further	**High priority** to be implemented in conjunction with the development of the enabling environment over the **short and medium term**.

	developing the domestic processing industry and the production of value-added forest products.	
4. To improve the effectiveness of participatory forest management and create a benefit sharing mechanism involving local communities	Build on the successful experiences with PFM and develop a transparent, inclusive benefit sharing mechanism based on the existing lessons learned. This should include strengthening the financial sustainability of PFM and establishing a clear set of rules and responsibility for PFM entities. Emphasis should be placed on enhancing the practical value and economic benefits of PFM to local communities and on ensuring that benefits are distributed widely and equitably among community members.	This is a **medium term, medium level priority.**
5. To conduct a comprehensive assessment of key areas suitable for afforestation, based on updated forest inventory data, and including lands outside of the State Forest Fund	Carry out a comprehensive assessment to determine which areas are truly suitable and available for private plantations, including outside of the State Forest Fund. This should look at whether available land is scattered across Kazakhstan or clustered together, which would provide valuable information on the scale of afforestation needs and opportunities for private plantations. To enable this assessment, update national forest inventory data more widely and combine this information with other data layers (including land use classification, land tenure information, soil data, climate data, access to infrastructure and markets). Clarify funding and institutional responsibilities for carrying out inventory work.

The results of the assessment can serve as a decision-making tool in forest policy and forest management (e.g. the scale of investments and state support needed for afforestation) and guide strategic thinking of the sector. | This is a **medium term, high level priority**. |
| 6. To manage the trade-offs and possible synergies of forest management based on economic valuation of the various ecosystem services provided by forests (including carbon sequestration values) | Undertake economic analysis to support decision making on the trade-offs required when managing the multiple benefit streams of forests. This should integrate the economic, ecological and social dimensions of sustainable forest management in the best possible manner and aim to optimize the balance between forest ecosystem preservation with encouraging the productive functions of forests (wood and non-wood).

Natural Capital Accounting can provide a tool to integrate the full value of forest ecosystem services (e.g. carbon sequestration and air filtration) into accounting and reporting systems to support better decisions. Similarly, wealth accounting (another indicator / measure of economic trends and sustainability) should include natural capital like forests to report on assets that are critical for the prospects of growth in the long-term. | **Medium priority, medium term**. |

| 7. | To maximize the role of forests in the context of climate change by integrating climate considerations (both adaptation and mitigation) in forest policy and management and leveraging the carbon benefits provided by forest plantations | Recognize the multiple benefits provided by forests in national policy and forest management, particularly related to meeting the country's international climate change commitments and long-term goal to transition to a low carbon growth economy.

Investigate options to leverage the carbon values of forest plantations, e.g. through identifying opportunities to develop a mechanism for including forestry offsets under the existing emissions trading scheme, or through establishing a national program to encourage private investments in forest plantations, which would enhance forest cover and provide climate change mitigation co-benefits. Determine the type of policies and management needed to create more resilient forest ecosystems (and in turn to implement suitable adaptation measures).

Explore possible avenues to access international financing in support of climate resilience and carbon mitigation in forests (e.g. through the Global Environmental Fund, Green Climate Fund, international donors). | **High priority**, over the **medium and longer term**.

This will support Kazakhstan in implementing its INDC. Every five years, a global stocktake will assess the collective progress towards the goals of the Paris Agreement. The first NDC review will take place in 2020 when countries, including Kazakhstan, are expected to adopt more ambitious targets for addressing climate change. |
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