## 1. Project Data

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<td>P147760</td>
<td>Belarus Forestry Development Project</td>
<td>Belarus</td>
<td>Environment, Natural Resources &amp; the Blue Economy</td>
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Prepared by Katharina Ferl  
Reviewed by Christopher David Nelson  
ICR Review Coordinator Christopher David Nelson  
Group IEGSD (Unit 4)
2. Project Objectives and Components

a. Objectives
According to the Project Appraisal Document (PAD) (p. 5) and the Financing Agreement of April 2, 2015 (p.5) the objective of the project was “to enhance silvicultural management and reforestation and afforestation, increase the use of felling residues and improve the public good contribution from forests in the Borrower’s targeted forest areas”.

b. Were the project objectives/key associated outcome targets revised during implementation?
No

c. Will a split evaluation be undertaken?
No

d. Components
The project included three components:

Component 1: Improving silviculture and the sustainability of forest management (appraisal estimate US$50.87 million, actual US$52.07 million): This component was to finance developing more intense silviculture, optimizing the intensity of silvicultural interventions in young and middle-aged stands as well as increasing the use of logging residues for production of woody biomass. Also, the component was to finance improving the quality of seedling production for afforestation and reforestation. Furthermore, this component was to support the purchase of 74 harvesters and 52 forwarders for use in 67 SFEs in all six Oblasts. The funding of the operation and maintenance costs for all machinery and goods procured under the project was to be provided from the SFEs’/State Agencies’ own budget resources.

According to the PAD (p. 5) the project was to provide direct support to 88 of the 97 State Forest Enterprises (SFEs). All SFEs were invited to participate in the loan. Final selections were based on the SFE business plans which were then included in one of the six feasibility studies prepared for each of the Oblast level Forestry Associations.
Under the AF, additional activities were financed under this component: i) civil works and installation services; ii) an increase in the number of nurseries from four to six nurseries produced; iii) the procurement of reusable cartridges for container grown seedlings that were needed for the new nurseries; iv) two additional forwarders.

Component 2: Improving forest fire prevention, monitoring, detection, and suppression, and improving forest management information systems (appraisal estimate US$4.88 million, actual US$3.09 million): This component was to finance increasing prevention activities (e.g. raising public awareness,); and increasing the use of video and communications equipment to improve monitoring, surveillance and detection, and the provision of fire-fighting equipment to help extinguish the fires once started.

Component 3: Building the capacity for sustainable forest management (including GEF Project management) (appraisal estimate US$2.10 million, actual US$2.10 million): This component was to finance the following activities: i) creating the enabling environment to allow for the development of more intense silviculture; ii) piloting the enhancement of biodiversity values in production forest and also in developing resistance of forest to climate change through silvicultural intervention; iii) enhancing the forest management information system (including forest carbon monitoring); iv) developing and training in the use of advanced technologies; and v) developing appropriate management approach for the rational treatment of radioactively contaminated forest.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost: The project was estimated to cost US$57.85 million. Actual cost was US$57.26 million.

Financing: The project was to be financed by an IBRD loan in the amount of US$40.71 million (which completely disbursed), an IBRD loan in the amount of US$14.4 million (of which US$13.81 million disbursed), and a GEF grant in the amount of US$2.74 million (which completely disbursed).

Borrower Contribution: The Borrower was not to make any contributions.

Dates: The project was restructured three times:

- On March 12, 2018, the project received Additional Financing (AF) in the amount of US$14.4 million to cover a financing gap as a result of government budget constraints due to macroeconomic imbalances and scaled up investments in forest nurseries and some low-impact forest harvesting equipment.
- On September 17, 2018, the project was restructured to extend the closing date by 12 months from August 31, 2020, to August 31, 2021, for the GEF grant’s closing date to be in line with the closing date of the parent project and AF.
- On July 17, 2019, the project was restructured to relocate funds from the construction of three nurseries and reduce it to one and instead purchase 31 additional multipurpose harvesting machines, additional nursery equipment and machinery.
3. Relevance of Objectives

Rationale

According to the PAD (p.1) before the global economic crisis of 2008-2009, Belarus had been experiencing high growth rates as a result of its trade and close economic ties and its position as transit corridor between the Russian Federation and the European Union (EU). However, during the economic crisis, Belarus suffered from macroeconomic instability, high inflation and a marginal increase in poverty. When the project was appraised in 2015, the economy was starting to recover.

Belarus is one of the most forested countries in the Europe and Central Asia region accounting for nearly 39 percent of the territory. Forests provided multiple environmental services (e.g. 30 million tons of carbon were sequestered in 2014), raw material to the forest industry, employment in the forest and forest products industries, woody biomass for generation of heat and power, and non-timber forest products for both commercial production and subsistence consumption by local communities. In 2013, the forestry sector contributed to 2.1 percent of Gross Domestic Product (GDP) (of which 1.6 percent came from the forest processing industry) and exports amounted to US$ 1.2 billion.

However, according to the ICR (p. 6) the forest sector faced several challenges: i) silvicultural practices resulted in high stocking densities limiting forest productivity of young and middle-aged forests; ii) wind blow, snow events, fires and drying of spruce stands and ash trees resulted in significant damage; iii) lack of resilience of forest cultures and planting materials to climate change impacted further limited regenerative capacity and sustainability of forest sector; iv) insufficient government capacity with limited economic independence of State Forrest Enterprises (SFEs) given the centralized approach to planning and management of their activities; and vi) limited engagement from all stakeholders and supplementary legal and regulatory frameworks.

The objective of the project was in line with the government’s 2016-2020 Program of Socio-Economic Development, especially focus area four “promotion of the green economy”, which identified biodiversity conservation and environmental technologies to enhance environmental protection as key priorities. Furthermore, the project supported the development of the Belarusian state program to expand woodland areas (2021-2025) as well as the Forestry Development Strategic Plan (2015-2030) and the Forest Code, which prioritized improvement of legislative, normative, and the legal basis with the development of new methods and technologies on forest monitoring, planning and inventory etc. Also, the objective of the project supported the National Program on Climate Change for 2013-2020, the Intended Nationally Determined Contribution (INDC) in 2015, Nationally Determined Contribution (NDC) in 2020, and Paris Agreement.

The objective of the project was in line with the Bank’s most recent Country Partnership Framework (CPF) (FY18-22) and its focus area 3 “improving contribution of infrastructure to climate change management, economic growth, and human development”. The project is also aligned with the “World Bank Europe and Central Asia Green Transition”, “Green Resilient Inclusive Development Strategy”, the Europe and Central Asia Climate Change Action Plan, and the World Bank Forest Action Plan.

Taking this together, the relevance of the objective was High.
4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective
Enhance silvicultural management and reforestation and afforestation

Rationale

Theory of Change: The project’s theory of change assumed that project activities/outputs such as purchasing harvesters and forwarders, developing a thinning regime, thinning forest areas, and providing training as well as establishing new nurseries were to result in the outcome of enhancing silvicultural management and reforestation and afforestation.

Assumptions: The project made the following assumptions: i) thinning would provide SFEs with budget resources to cover O&M costs and reinvest in new machinery and labor due to improved profits (assuming prices and other factors impacting economic viability of SFEs were held constant); ii) road connectivity and transport are accessible and available across timber supply chains to move, for example, felled trees or transport seedlings from nurseries; iii) people are willing and interested to work in labor intensive forestry operations; and iv) approved forest management plans were prepared at the oblast level.

Outputs:

- 195 harvesters and forwarders were supplied to 78 State Forest Enterprises (SFEs) (98 percent of SFEs in the country) in all the regions to use for the young and middle-age forest thinning.
- Training was provided to 405 forestry specialists in the use of modern machinery.
- 195 new jobs as machine operators in rural areas were created.
- Four nursery lines for container grown seedlings of native tree species were established and equipped with the necessary equipment, achieving the target of four nursery lines.
- 25.1 million container grown seedlings were produced with two rotations each for two planting seasons, exceeding the original target of 4 million and the revised target of 23.7 million. These seedlings had several positive aspects: i) they were more climate resilient and had an improved survival rate (95 percent versus bare root before project of approximately 75 to 80 percent) as well as an increased resistance of mixed stands to wind and snow relative to traditional monocultures of this commercially important species; ii) the planting season for container-grown seedlings is longer, allowing for a more efficient use of resources and lower capital investment in storage and distribution; iii) they require 20 percent less planting material per hectare; and iv) they allow for 4,000 trees per hectare, which is a much higher density than similar activities in Kazakhstan and China (2,000 trees and 474 trees per hectare, respectively).
- The area outside the protected areas managed as biodiversity friendly increased from 1.2 million hectares in 2015 to 4.6 million hectares in 2021, exceeding the target of 4.5 million hectares.
A new thinning regime and associated regulatory reform to clarify the grounds for harvesting were introduced in December 2019, achieving the target.

6,679 hectares of peatlands under agriculture and industrial exploitation were brought under protection to minimize fire risk through the transfer to the forest fund.

### Outcomes:

- The size of the area of young and middle-aged production-forest thinned according to approved management plans increased from 132,500 hectares in 2015 to 167,000 hectares in 2021, achieving the target of 165,000 hectares.
- About 6,500 additional truckloads of timber entered the market annually.
- The Economic performance of participating SFES was enhanced, generating a net profit of US$46.6 million, exceeding the target of US$15.8 million. The indicator measured the excess of revenue over expenditures inclusive of all financing sources for participating SFES.

### Rating
- Substantial

### OBJECTIVE 2

**Objective**

Increase the use of felling residues

**Rationale**

**Theory of Change:** The project’s theory of change envisioned that project activities/outputs such as purchasing harvesters and forwarders (as stated under objective 1) in addition to wood chipping machines for two SFES, providing training in the operation of the machinery, and adopting commercial felling technology were to result in increasing the use of felling residues.

**Assumptions:** The project assumed that: i) road connectivity and transport are accessible and available across the timber supply chain, for example, felled trees or transport seedlings from nurseries; and ii) people are willing and interested to work in labor intensive forestry operations.

**Outputs:**

- Two woodchipper machines were purchased. Originally, the project planned to purchase 11 machines but in 2016, the ministry used its own resources to buy nine machines, which allowed the project to reallocate funds to finance the construction of new nurseries.
- Staff were trained in the operation of new machinery.
- Commercial felling technology was adopted, which was in line with best practices that considered socioeconomic benefits, protect biodiversity, nutrients, and maximize carbon sequestration potential of forest stands.

**Outcomes:**
• The average utilizable volume of commercial timber harvested during intermediate felling in targeted SFEs increased from 28.50 cubic meters in 2015 to 35 cubic meters in 2021, achieving the target of 35 cubic meters.

Rating
Substantial

OBJECTIVE 3
Objective
Improve the public good contribution from forests in the Borrower’s targeted forest areas

Rationale
Theory of Change: The project’s theory of change envisioned that project activities/outputs such as revising firefighting zones, purchasing video surveillance equipment, drafting policies, legislation and providing advanced technology training as well as launching awareness campaigns and trainings were to result in improving the public good contribution from forests in the Borrower’s targeted forest areas.

Assumptions: The project assumed that: i) data is shared and made available between relevant stakeholders; and ii) people are willing and interested to work in labor intensive forestry operations.

Outputs:

• The number of people trained in new methods and technologies increased from 2,243 people in 2015 (of which 110 people were female) to 3,488 people in 2021 (of which 157 people were female), exceeding the original target of 2,380 people (of which 145 people being female) and the revised target of 3,000 people (of which 150 people being female).
• 12 government institutions were provided with capacity building to improve management of forest resources, exceeding the target of 11 institutions.
• Reforms in forest policy, legislation and other regulations were supported, achieving the target of doing so. 16 normative documents were developed of which 11 were officially approved, in order to update forest legislation in the country based on international experience and to ensure harmonization with international standards. Also, new forest fire zoning was developed, publicly discussed, and included in respective decrees.
• The project supported organizations to publicly report on inputs and the effect of consultation and information dissemination activities on project/program/policies, achieving the target of doing so.
• 45 SFEs received and used eight fire trucks, 31 off-road vehicles with cargo platform, 31 off-road vehicles for forest fire protection, and two forest fires extinguishing tank trucks. Additional equipment for forest fire extinguishing, including motor pumps, fire hoses, and a backpack fire extinguisher were purchased.
• Three video surveillance systems were purchased to provide for permanent monitoring over the forest fund for timely detection of forest fires on the territory of two SFEs.

Outcomes:
The amount of carbon (CO2) sequestered increased from 4.6 million metric tons in 2015 to 6.09 million metric tons in 2021, exceeding the original target of 5.11 million and the revised target of 5.24 million metric tons.

In total, the project benefited 38,487 beneficiaries (of which 17.70 percent were female), exceeding the original target of 35,000 beneficiaries (with 10 percent being female) and the revised target of 35,500 beneficiaries (with 17.50 percent being female).

Rating
Substantial

OVERALL EFFICACY

Rationale
The project’s achievement of the first objective was Substantial given the size of the area of young and middle-aged production-forest thinned according to the approved management plans and the improved economic performance of participating SFEs which had a US$46.6 million return. Also, the achievement of the second objective was Substantial given the increase in the average utilizable volume of commercial timber harvested during intermediate felling. Finally, the achievement of the third objective was also Substantial given the increase in the amount of CO2 sequestered. Taking everything together, the project’s overall efficacy rating was Substantial.

Overall Efficacy Rating
Substantial

5. Efficiency

Economic efficiency:

The PAD (p. 12) included a traditional economic analysis, which identified the project’s benefits as: i) increasing the intensity of thinning operations; ii) increasing the utilization of forest production by using felling arisings, which were being wasted; iii) reducing costs and increasing survival rates for forestry planting stocks; and iv) reducing the losses from forest fires.

Furthermore, the Project was to invest in the improvement of the fire prevention system, which was to increase prevention, better detection and more timely and effective response to forest fires. The reduced losses from forest fires attributable to the project were estimated at about 30 percent of average annual losses due to the prevalence of forest fires over the previous twelve years. Also, based on the Greenhouse Gas (GHG) emissions
accounting the project net carbon balance was estimated at 422,124 tCO2-e of avoided emissions or increased carbon sequestration over the full analysis period (30 years).

Given the above benefit and cost streams, the base case Economic Rate of Return (ERR) was estimated at 20.1 percent. The base case Net Present Value (NPV) of the Project’s net benefit stream, discounted at 10%, was US$14.7 million in economic terms.

The ICR (p. 18) applied a discount rate of 6 percent over 15 years and estimated an ERR of 28.8 percent and a NPV of US$57.41 million. The ICR stated that the main differences between the analysis at appraisal and after project closure were related to: i) the higher level of investment in machinery and in fewer larger nurseries; ii) the lower price for thinning revenues and higher price for improved nursery seedlings; and iii) a lower ratio of chainsaw men required to equal the production of harvesters when calculating the counterfactual regarding the mechanization of thinning.

These analyses indicate that the project was a worthwhile investment.

Operational efficiency:

According to the ICR (p. 23) during the first 15 months of project implementation, the project did not make any disbursement due to the large and complex procurement of harvesting machinery. The total project implementation period was extended by 12 months to allow for the implementation of the activities under the AF. The PIU costs for grant management were less than one percent of total project funding and the AF did not require any additional budget for the PIU.

Taking everything together, the project’s efficiency is rated Substantial.

Efficiency Rating
Substantial

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* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

Relevance of objectives was High given its alignment with the Bank’s most recent Country Partnership Framework (CPF) (FY18-22) and its focus area 3, “improving contribution of infrastructure to climate change...
management, economic growth, and human development". Efficacy and Efficiency were rated Substantial. Taking everything together, the project’s overall outcome rating is Satisfactory.

a. Outcome Rating
Satisfactory

7. Risk to Development Outcome

The risks to the development outcome can be classified into the following broad categories:

Financing: Even though the government remains committed to the project’s objectives as demonstrated through the continuous implementation of the Forestry Development Strategic Plan (2015-2030) and the Belarusian Forest 2021-2025 program, public financing towards sustainable forestry management has been decreasing since 2014. According to the ICR (p. 31), while the government funded in 2014 33 percent of the sustainable forestry management budget, it was only 30 percent in 2020. Also, the Bank’s AF was used to fund a financing gap in 2018. Also, major funding sources are highly dependent on profits generated by SFEs from forestry commercial activities and credit sources resulting in an increased pressure on SFEs despite a poor macroeconomic outlook (projected GDP decline by 2.8 percent year-on-year) in a post COVID-19 fiscally constrained world economy.

Environment: Due to climate change, there is a high risk of extreme weather events including windblows, heatwaves, and water scarcity as well as pest outbreaks affecting forests and swamps. These events could negatively impact the outcomes of this project.

8. Assessment of Bank Performance

a. Quality-at-Entry
According to the PAD (p. 10) the project was built on the Bank’s extensive experience in the Belarus forest sector and other countries such as Romania, Bulgaria, Russia, and Kazakhstan. The project design also reflected the ongoing reforms within the sector, for example, the increasing demands for private sector involvement in both the harvesting and processing of timber and timber products. Furthermore, according to the ICR (p. 29) the project design was based on the latest evidence as studied and analyzed in the Bank’s 2013 Forest Policy Note.

The Bank team identified relevant risks and rated institutional capacity and fiduciary risks as Substantial since the PIU did not have any experience in implementing Bank funded projects. To mitigate these risks, the PIU was to receive training in Bank procurement and financial management as well as in safeguard support. However, mitigation measures were not sufficient, and the project experienced a lack of disbursement for the first 15 months of project implementation due to the large and complex procurement of harvesting machinery. This was somewhat reconciled in the latter part of the project.
The project's Results Framework had minor shortcomings such as the lack of counterfactual evidence (see section 9a for more details).

Quality-at-Entry Rating
Satisfactory

b. Quality of supervision
According to the ICR (p. 29) the Bank team included staff with the appropriate technical mix. Also, the Task Team Leader (TTL), Safeguard and Financial Management specialists were based in the country, allowing for continuous engagement with the counterpart. Furthermore, the ICR (p. 29) stated that the transition between TTLs was smooth and performance reporting was candid and aide memoires were sufficiently detailed.

The Bank team restructured the project three times and was able to secure AF to increase the scope of project activities.

Quality of Supervision Rating
Satisfactory

Overall Bank Performance Rating
Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design
The objectives of the project were clearly specified. Also, the project's theory of change and how key activities/outputs were to result in the intended outcome was sound and appropriately reflected in the Results Framework. The indicators had baselines and endline targets, when appropriate. However, the Results Framework included three PDO indicators to measure the first objective (enhance silvicultural management and reforestation and afforestation) and only two PDO indicators measuring the second objective (increase the use of felling residues) and third objective (improve the public good contribution from forests in the Borrower’s targeted forest areas). The intermediate outcome indicators were mostly measuring the delivery of outputs. Also, the achievement of the target of PDO indicator 3 “economic performance of participating SFEs enhanced” was not completely under the control of the project because it could have been influenced by price changes. Furthermore, the project's M&E would have benefitted from collecting counterfactual evidence. For example, for intermediate outcome indicators monitoring the reduction in area under forest fires before and after project implementation or between areas within and outside the scope of project implementation.
According to the PAD (p. 11) the Project implementing agency, Bellesexport, was to be responsible for project’s M&E activities.

b. M&E Implementation
According to the ICR (p. 26) the PIU updated the Results Framework and generated progress reports on a bi-annual basis. All annual progress reports were submitted to the Bank on a timely basis. Also, the when the project received AF in 2018, the Results Framework was updated to reflect the increase in scope.

The ICR (p. 27) stated that M&E staff will remain in their positions and being paid by the government to monitor project performance. Also, the website with documents will be maintained by the Ministry of Forestry.

c. M&E Utilization
According to the ICR (p. 27) the project’s M&E was used to support evidence-based learning and informed decision making. The ICR did not provide any evidence for this.

M&E Quality Rating
Substantial

10. Other Issues

a. Safeguards
The project was classified as category B and triggered the Bank’s safeguard policies OP/BP 4.01 (Environmental Assessment), OP/BP 4.36 (Forests), and OP/BP 4.09 (Pest Management). According to the ICR (p. 27) the project prepared and implemented for all nurseries site specific Environmental and Social Management Plans (ESMPs). According to the progress reports, the newly constructed nurseries functioned and were in compliance with the Bank’s and the national environmental and social requirements as defined in their ESMPs.

During the design phase of the project, a Pest Management Plan was not required. The ICR (p. 28) stated that the PIU was adequately staffed to monitor the implementation of mitigation measures as well as occupational health/labor safety requirements.

The project established a Grievance Redress Mechanism (GRM). When the project closed, no grievances had been registered.

b. Fiduciary Compliance
Financial Management:

According to the ICR (p. 28) the PIU’s Financial Management (FM) performance was satisfactory throughout the implementation of the project. The PIU built its FM capacity through on-the-job learning and attending learning events organized by the Bank. Interim unaudited financial reports were submitted on a quarterly basis, progress reports were submitted on a bi-annual basis, and audit reports were submitted on an annual basis and were of adequate quality. Also, the external auditor’s opinion was unqualified.

Procurement:

The ICR (p. 28) stated that the project’s procurement was in line with the Bank procurement rules and procedures. Also, the PIU was well staffed. According to the ICR (p. 23) during the first 15 months of project implementation, the project did not make any disbursement due to the large and complex procurement of harvesting machinery. The Bank addressed this issue by providing technical assistance and procurement trainings.

The ICR (p. 28) stated that the procurement risk of the PIU was Substantial since it did not have any experience in implementing Bank funded projects. Also, the PIU faced a new procurement policy framework for implementing the AF and a new STEP tool. The Bank provided training for the new STEP tool and a draft Project Procurement Strategy for Development (PPSD) was prepared.

According to the ICR (p. 29) the project faced several procurement related issues related to process bids being issued multiple times as a result of: i) non-compliance of bids and bidders with requirements of bidding documents; ii) challenges to deliver equipment within required time; iii) non-compliance with technical specifications of equipment; and iv) price being significantly higher than the planned budget. The Bank provided support to address these issues. Also, having engineering plans and specifications prepared in advance for, for example, fire fighting equipment, and nurseries ensured a smooth procurement process.

The ICR (p. 29) stated that the COVID-19 pandemic negatively affected the timely completion of some contracts, which was mitigated by the Bank providing close monitoring of contract implementation. At project closure, the project’s procurement rating was Moderately Satisfactory.

c. Unintended impacts (Positive or Negative)

NA

d. Other

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11. Ratings

<table>
<thead>
<tr>
<th>Ratings</th>
<th>ICR</th>
<th>IEG</th>
<th>Reason for Disagreements/Comment</th>
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12. Lessons

The ICR (p. 31-32) included several lessons, which are included here with minor revisions:

- **Sustainable Forest Management (SFM) can have a positive impact on climate change goals as well as promote a circular economy and result in an economic boost for the forest sector.** In this project, the intensified thinning regimes invigorated the forest stands, increased the volume of production by recovering timber from routine removal through thinning and increased the proportion of high value logs. These interventions had climate resilience benefits in addition to the economic improvements.

- **Investments in new technologies require advanced training for the intended users.** This project provided training to the users before the large-scale equipment was procured allowing for little time to be lost once the new equipment came online.

- **Investments to enhance private sector performance in the timber industry can significantly amplify the benefits of improved public forest management.** In this project, the investments in modern machines increased the economic viability of SFEs which is likely to result in their transformation to fully commercial state enterprises like those based in EU countries.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR provided an adequate overview of project preparation and implementation. Also, the ICR included an appropriate economic analysis, was internally consistent and concise. The ICR was sufficiently outcome driven and provided useful lessons learned but would have benefitted from providing additional lessons learned. Also, the ICR would have benefitted from providing more details in regard to mitigation measures for the triggered safeguard policies. The overall quality of the ICR is rated as Substantial.

a. **Quality of ICR Rating**
Substantial