

Trilateral Partnerships - Cooperation Projects between Scholars and Scientists from Ukraine, Russia and Germany – VolkswagenStiftung – virtual Kick-off Meeting March 10th, 2021

The past development, present status and likely futures of Norway spruce in Western Ukraine, Northwest Russia and Southwest Germany

- A scenario-based projection of forest resources and wood supply to support transition to green economies -

SURGE-Pro

Prof. Dr. Hans-Peter Kahle
Chair of Forest Growth and Dendroecology
Institute of Forest Sciences
Albert-Ludwigs-University Freiburg, Germany
Hans-Peter.Kahle@iww.uni-freiburg.de

Agenda virtual Kick-off Meeting March 10th, 2021:

1. Cooperation contract

Cooperation and funds transfer agreement (“Agreement”)

2. Administrative affairs

Money transfer, personnel, equipment, documentation etc.

3. Project website

4. Work packages and project tasks

5. Corona-pandemic issues

6. Other topics

New publications etc. on the topic

Rationale and objectives

Objective:

consistent assessment of the potential future role of Norway spruce in the three model regions

Aims:

provide reliable estimates of the future supply of Norway spruce wood as a renewable resource to facilitate and support the transition to green economy

assess and evaluate the implications of the Norway spruce-based scenarios for the provision of other forest ecosystem services.

Hypotheses

We hypothesize,

(i) that current trends in growth and productivity, and in mortality and regeneration of Norway spruce in Western Ukraine and Southwest Germany are indicative of a non-sustainable development

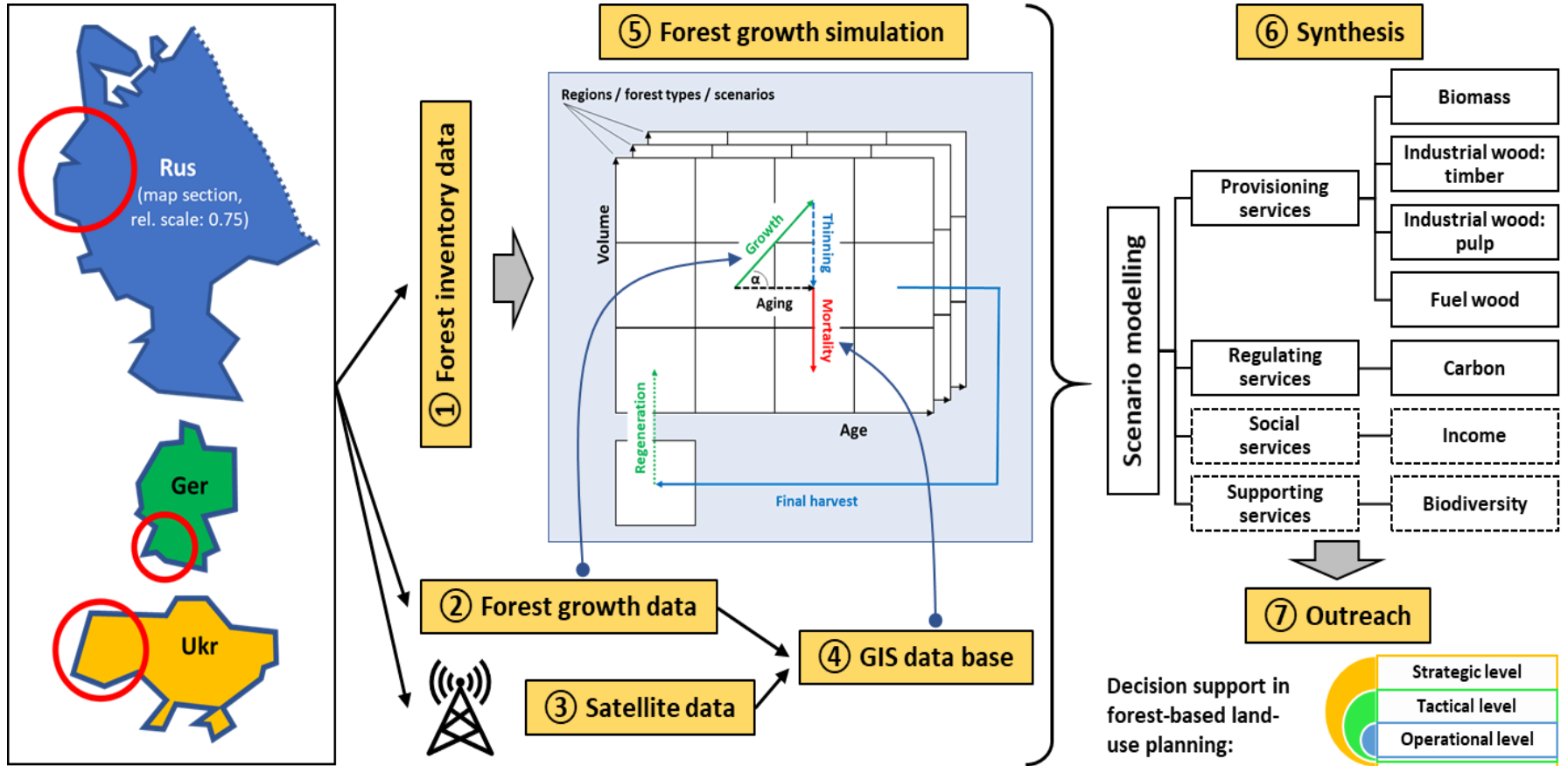
(ii) that gains in Norway spruce growth and productivity in the boreal forests of Northwest Russia can partially compensate for losses in the other regions.

Methods

Research plan along three data streams:

- **forest inventory data, e.g. NFI**
- **forest growth data, e.g. retrospective data**
- **satellite data, e.g. Landsat, MODIS, Sentinel-2**

Methods - Process diagram indicating the partner regions, data streams, work flows and type as well as sequence of work packages



Project life-time (updated)

36 months: 01.02.2021 – 31.01.2024

Meetings:

- **MS 0-1 Project workshop (WS, hosted by P4, duration: 1 week, due: month 9)**
- **MS 0-3 Project symposium (SY, hosted by P3, duration: 1 week, due: month 32)**
- **MS 0-4 Research stays of P3 and P4 at P1 (duration: 1 month)**

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Cooperation and funds transfer agreement

Cooperation and funds transfer agreement

hereafter: "Agreement"

between

the University of Freiburg

Fahnenbergplatz, 79085 Freiburg, Germany

Represented by its Rector, Prof. Dr. Kerstin Kriegelstein

Executing institution

hereafter: "grant recipient"

and

the Baden-Württemberg Forest Research Institute

Wonnhaldestraße 4, 79100 Freiburg, Germany

Represented by its director Prof. Dr. Ulrich Schraml

and

the Ukrainian National Forestry University, Lviv

Gen. Chuprynyk Str. 103, 79057 Lviv, Ukraine

Represented by the Vice-Rector for Research, Prof. Dr. Vasyl Lavnyy

and

the St. Petersburg State Forest-Technical University

Institutsky per., 5, 194021 Saint-Petersburg, Russian Federation

Represented by its Vice-Rector for Research and International Activities,

Dr. Sci. Dmitry Musolin

hereafter: "last recipients"

all together hereafter: "Partners"

concerning the Project "The past development, present status and likely futures of Norway spruce in Western Ukraine, Northwest Russia and Southwest Germany – SURGE-Pro" financed by the Volkswagen Foundation (hereinafter referred to as "Project")

1/11

Project budget – SURGE-Pro-2021-2024-Budget-Documentation-and-Planing-Call-of-funds-2021.xlsx



Kontakt
Tel.: 0511/83 81-382
Fax: 0511/83 81-4382
E-Mail: finanz@volkswagenstiftung.de
volkswagenstiftung.de

VolkswagenStiftung
Kastanienallee 35
30519 Hannover

Mittelabrufplan
für Bewilligungen

		Aktenzeichen:	97 781
Bewilligungsempfänger:	Universität Freiburg	Monatliche Raten bzw. vierteljährliche Raten bis 15.000 EUR	
Institut für Forstwissenschaften		Datum:	EUR:
Professur für Waldwachstum und Dendroökologie		01.02.2021	57.014
Tennenbacher Str. 4		Verw.zweck	2100355101-DA001
79106 Freiburg		01.04.2021	10.424
Bewilliger Betrag:	291.100	EUR	Verw.zweck
Summe der bislang von Ihnen angeforderten Projektmittel:	0,0	EUR	2100355101-DA002
		01.07.2021	11.295
Sald:	291.100	EUR	Verw.zweck
Kontoinhaber:	Universität Freiburg	01.10.2021	8.970
	Universitätskasse	Verw.zweck	2100355101-DA004
Name der Bank:	LBBW/BW-Bank		
	Stuttgart		
IBAN:	DE47 6005 0101 7438 5009 55		
BIC/SWIFT:	SOLADEST600		
Verwendungszweck:	2100355101-DA001	Zwischensumme:	87.703
	bitte fortl. nummerieren		
	vgl. Spalte rechts	Restbetrag:	203.397
Telefonnummer der anfordernden Stelle:	0761 - 203 3737	Die Stiftung überweist die Mittel erst zu Beginn des Monats, in dem sie für den Bewilligungszweck gebraucht werden. Änderungen des Mittelbedarfs sind der Stiftung umgehend mitzuteilen. Die Überweisung der abgerufenen Mittel erfolgt unter dem Vorbehalt einer abschließenden Verwendungsprüfung durch die VolkswagenStiftung.	
E-Mail der anfordernden Stelle:			
Ort, Datum:	Freiburg, 24.02.2021		
Stempel, Unterschrift:			

Project budget – SURGE-Pro-2021-2024-Budget-Documentation-and-Planing-Call-of-funds-2021.xlsx

SURGE-Pro Project: Plan for call of funds Feb-Dec 2021		Plan for call of funds Feb-Dec 2021				
Cost category	Units	P1: Universität Freiburg	P2: Forstliche Versuchs- und Forschungsanstalt Baden-Württemberg, Freiburg	P3: Ukrainian National Forestry University, Lviv	P4: St. Petersburg State Forest-Technical University	Total
Staff appropriations	Principal Investigator (PI)	Number	0	0	0	1
		Duration (month)	0	0	0	1
		Euro/month	0	0	0	2300
		Total (Euro)	0	0	0	2300	2300
	Professor	Number	0	0	1	1
		Duration (month)	0	0	11	4
		Euro/month	0	0	580	1900
		Total (Euro)	0	0	6380	7600	13980
	Postdoc	Number	1	1	1	1
		Duration (month)	11	11	11	1
		Euro/month	1350	1350	420	1900
		Total (Euro)	14845	14845	4620	1900	36210
	Student Assistant	Number	1	0	1	1
		Duration (month)	4	0	5	12
Euro/month		1327	0	282	300	
Total (Euro)		5307	0	1410	3600	10317
Administrative staff	Number	0	0	0	0	
	Duration (month)	0	0	0	0	
	Euro/month	0	0	0	0	
	Total (Euro)	0	0	0	0	0
Technician	Number	0	0	0	1	
	Duration (month)	0	0	0	4	
	Euro/month	0	0	0	600	
	Total (Euro)	0	0	0	2400	2400
Sum (Euro)		20152	14845	12410	17800	65207
Travel costs (Subsidy for travel and accommodation expenses)	Participation at project meetings	Number persons	1	2	5	0
		Number events	1	1	1	0
		Euro/event	1175	1175	1190	0
		Total (Euro)	1175	2350	5950	0	9475
	Additional scientists	Number persons	0	0	0	0
		Number events	0	0	0	0
		Euro/event	0	0	0	0
		Total (Euro)	0	0	0	0
	Resarch stays	Number persons	0	0	0	1
		Number events	0	0	0	2
Euro/event		0	0	0	2660	
Total (Euro)		0	0	0	5320	5320
Sum (Euro)		1175	2350	5950	5320	14795
Recurrent expenses	Consumables	Lump sum	0	0	0	300
		Meetings	0	0	0	4000
	Sum (Euro)	0	0	0	4300	4300
Non-recurrent expenses	Equipment	PC, electr. borer, incr. borer	0	0	0	3400
	Sum (Euro)	0	0	0	3400	3400
Publication costs	Publication costs		0	0	0	0
	Sum (Euro)	0	0	0	0	0
Total	Sum (Euro)	21327	17195	18360	30820	87702

Statement of account



Ref.: _____
(of grant letter)

Statement of Account

Grant recipient:

Purpose:

Amount of grant:

Grant letter of:

(June 2020)

- 2 -

Use of funds^{*)}

The use of funds must be proven for all project participants for whom cost plans are included in the grant letter.
(the total amounts of II. and IV. must be equal)

I. Breakdown of receipts		Euro
1. Grant provided by the VolkswagenStiftung		.....
2. Own resources		.....
3.		.....
4.		.....
5.		.....
Total amount of funds		.....
II. Breakdown of expenditure		Euro
	Code letter	
1. Scientific personnel	sP	.....
2. Other personnel	oP	.....
3. Travelling	tr	.....
4. Other running material expenses	oe	.....
5. Equipment	eq	.....
6. Other non-recurring purchases	pu	.....
7. Communicating science and research	c	.....
Total amount of expenses		.....
III. Balance remaining		.....

^{*)} Please mind that a final report on execution, results and evaluation of the project is requested additionally.

Statement of account

- 3 -

IV. Specification of receipts and expenditure

Alternatively, you can send us the specification of the receipts and expenditures for all project participants, for whom cost plans are included in the grant letter, as SAP document, Excel file or fiscal surveillance list. Please adhere to the table header showing the relevant information needed.



Serial No.	Voucher No.	Date of Payment	Recipient of and reason for payment (Deliveries or services; official journeys: name of the person undertaking the journey, destination and purpose of journey)	Receipts Euro	Expenditure Euro	Code letter

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36 months: 01.02.2021 – 31.01.2024

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- **MS 0-3 Project symposium (SY, hosted by P3, duration: 1 week, due: month 32 → 10.2023 ?**
- **MS 0-4 Research stays of P3 and P4 at P1 (duration: 1 month) → due: in 2022?**

Recent publications on the topic



NEWS

Europe's Eastern Partnership countries make significant progress in expanding protected nature sites

The six Eastern Partnership countries are making significant progress in expanding their networks of nationally protected areas, giving a boost to local nature, according to an assessment released today by the European Environment Agency (EEA) under a dedicated EU-funded project.

The EEA's briefing 'Protected areas in the Eastern Partnership countries' found that between 2000 and 2019 coverage of nationally protected areas were expanded in all six partnership countries which includes Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine.

Thanks to the European Commission's financial and Council of Europe's

Europe's Eastern Partnership countries make significant progress in expanding protected nature sites 1



Article

Is There a Scope for Social Innovation in Ukrainian Forestry?

Maria Nijnik ^{1,*}, Tatiana Kluvánková ², Albert Nijnik ³, Serhiy Kopiy ⁴, Mariana Melnykovich ⁵, Simo Sarkki ⁷, Carla Barlagne ¹, Stanislava Brnkaláková ², Leonid Kopiy ⁴, Igor Fízyk ⁴ and David Miller ¹

- ¹ The James Hutton Institute, Craigiebuckler, Aberdeen AB15 8QH, UK; carla.barlagne@hutton.ac.uk (C.B.); david.miller@hutton.ac.uk (D.M.)
 - ² SlovakGlobe: Slovak Academy of Sciences and Slovak University of Technology, 81243 Bratislava, Slovakia; tana@ceip.sk (T.K.); brnkalakovas@fe.sk (S.B.)
 - ³ Environmental Network Ltd., Aboyne AB34, UK; anijnik@yahoo.com
 - ⁴ Ukrainian National Forestry University, Gen. Chuprynyk Str., 103, 79057 Lviv, Ukraine; s.kopiy@email.ua (S.K.); kop.10@ua (L.K.); i.v.fizyk@unuv.m.edu.ua (L.F.)
 - ⁵ Swiss Federal Institute for Forest, Snow and Landscape Research, WSL, Zürcherstrasse 111, 8903 Birmensdorf, Switzerland; mariana.melnykovich@wsl.ch
 - ⁶ European Forest Institute, St. Antoni M. Claret, 167, 08025 Barcelona, Spain
 - ⁷ Cultural Anthropology, University of Oulu, Pentti Kaiteran katu 1, FI-90014 Linnanmaa, Finland; simo.sarkki@oulu.fi
- * Correspondence: maria.nijnik@hutton.ac.uk

Received: 29 October 2020; Accepted: 16 November 2020; Published: 19 November 2020



Abstract: Social innovation is recognised for its potential to turn societal challenges into opportunities and develop sustainable solutions for people and nature. We identify and examine challenges that Ukrainian forestry is facing and apply an “action arena” conceptual approach to explore whether and how social innovation can enhance the sustainable development of forestry. We develop a framework to analyse the reconfiguration of social practices by using research methods that focus on the use of documentation of the institutional contexts and interviewing forest policy experts, as well as stakeholder evaluation of the challenges and ways forward for Ukrainian forestry. We apply the Q-method to identify stakeholder attitudes and examine the role of people in the reconfiguring of social practices and promoting sustainable development of the forest sector. Implications for changing the rules of the game and institutional perspectives on forestry are identified, with examples of social innovation initiatives presented. Results show that to emerge, develop, and be transformative, social innovation must have supporting institutional conditions to create new norms, rules, and social practices. Relevant stakeholders need to envision alternative futures, reshape places, and become more actively engaged in decision-making processes. We identify the key directions for changing the rules of the game and the opportunities that social innovation has to offer.

Keywords: sustainability; institutions; forest governance; stakeholder engagement; social practices; attitudes; perceptions; reconfiguration; transformation

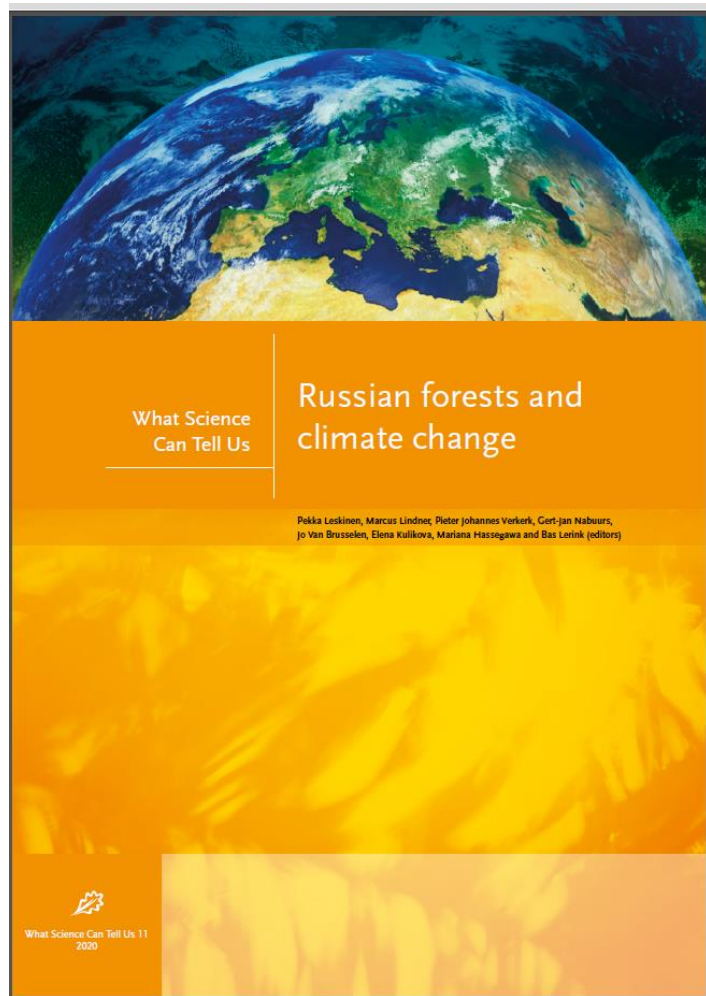
1. Introduction

Forests provide numerous benefits to people. The sustainable use of forests contributes to the well-being of local communities and delivering of UN Sustainable Development Goals [1]. Sustainability is enhanced by suitable rules and regulations. It is improved by market incentives and public policy instruments, but these can overlook the realities and challenges faced by forest-dependent communities [2]. Responses to these challenges can result in civil-society-led initiatives that are

Sustainability 2020, 12, 9674; doi:10.3390/su12229674

www.mdpi.com/journal/sustainability

Recent publications on the topic

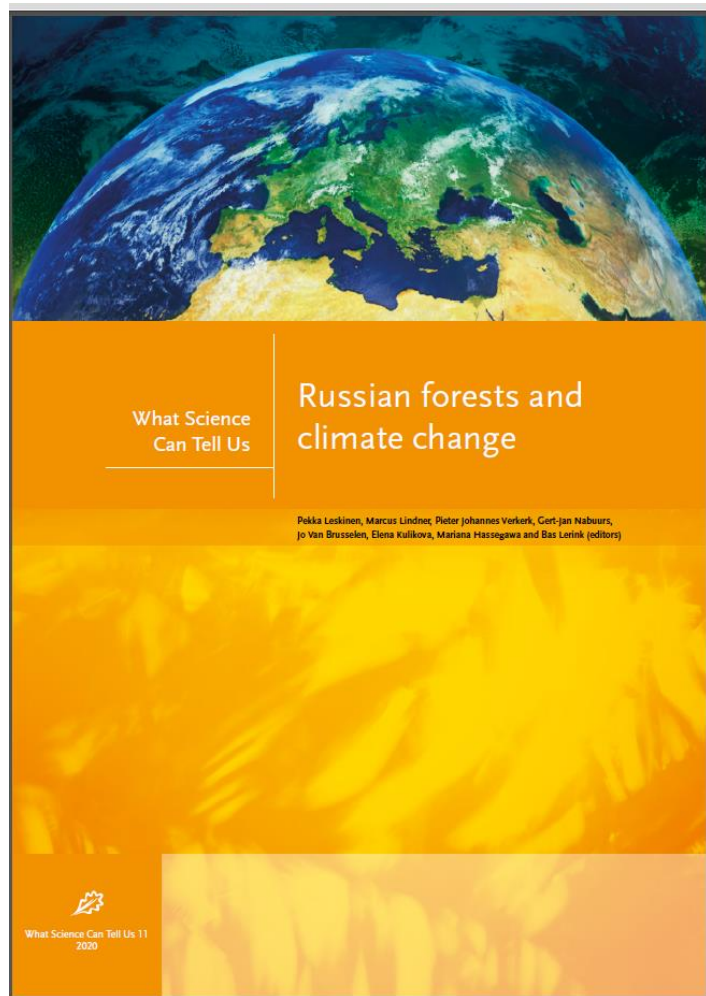


Contents

Authors	7
Acknowledgements	9
Executive summary	11
1. Introduction	13
<i>Riccardo Valentini, Pekka Leskinen, Pieter Johannes Verkerk, Gert-Jan Nabuurs, George Safonov and Elena Kulikova</i>	
2. State of Russian forests and forestry	17
<i>Dmitry Zamolodchikov, Anatoly Shvidenko, Sergey Bartalev, Elena Kulikova, Alexander Held, Riccardo Valentini and Marcus Lindner</i>	
2.1 Major characteristics of Russian forests	17
2.2 Natural forest disturbances	21
2.3 Forest governance and use	26
2.4 Ecosystem functions and services of Russia's forests	28
2.5 Key challenges in forest resource management	35
2.6 Key messages	38
3. Climate change in Russia – past, present and future	45
<i>Riccardo Valentini, Dmitry Zamolodchikov, Christopher Reyer, Sergio Noce, Monia Santini and Marcus Lindner</i>	
3.1 Observed changes of Russian climate in recent decades	45
3.2 Climate change scenarios	48
3.3 Key messages	51
4. Climate change and Russian forests: impacts, vulnerability and adaptation needs ..	53
<i>Christopher Reyer, Marcus Lindner, Dmitry Zamolodchikov, Anatoly Shvidenko, Martin Gutsch and Sergey Bartalev</i>	
4.1 Observed impacts of climate change	53
4.2 Projected impacts	56
4.3 Vulnerability assessment	61
4.4 Adaptation needs	64
4.5 Key messages	67

(Leskinen et al. EFI, WSCTU 2020)

Recent publications on the topic



5. Climate-Smart Forestry in Russia and potential climate change mitigation benefits	73
<i>Bas Lerink, Mariana Hassagawa, Alexander Kryshen, Anton Kovales, Eldar Kurbanov, Gert-Jan Nabuurs, Sergei Mozhnikov and Pieter Johannes Verkerk</i>	
5.1 Introduction.....	73
5.2 Approach and general scenario assumptions.....	74
5.3 Case study: Republic of Karelia.....	78
5.4 Case study: Republic of Mari El.....	84
5.5 Case study: Angara macro-district (Krasnoyarsk kray).....	91
5.6 Concluding remarks, discussion and implications.....	98
5.7 Key messages.....	101
6. The role of the bioeconomy in climate change mitigation in Russia	105
<i>Pekka Leskinen, Jo Van Brusselen, Mariana Hassagawa, Alexander Alekseev, Natalia Lukina, Olga Rakitova, Georg Safonov, Elena Kulikova and Mikhail Safonov</i>	
6.1 Introduction.....	105
6.2 The bioeconomy concept in Russia.....	106
6.3 The link between bioeconomy and climate change mitigation.....	107
6.4 State of Russian forest industry and potential for bioeconomy.....	111
6.5 Sectoral development and outlook.....	113
6.6 Summary and conclusions: Opportunities and challenges for a bioeconomy in Russia.....	123
6.7 Key messages.....	125
7. Conclusions	131
<i>Pekka Leskinen, Jo Van Brusselen, Marcus Lindner, Gert-Jan Nabuurs, Pieter Johannes Verkerk, Natalia Lukina, Sergey Bartalev and Elena Kulikova</i>	
7.1 Forest resources.....	131
7.2 Climate change impacts, adaptation and mitigation.....	132
7.3 Forest management.....	133
7.4 Enabling environment for a bioeconomy.....	134
7.5 Holistic view.....	135
7.6 Key messages and next steps.....	136

(Leskinen et al. EFI WSCTU 2020)

Recent publications on the topic

Climatic Change (2020) 162:1929–1945
<https://doi.org/10.1007/s10584-020-02780-9>

The low carbon development options for Russia



George Safonov¹ · Vladimir Potashnikov² · Oleg Lugovoy² · Mikhail Safonov³ · Alexandra Dorina¹ · Andrei Bolotov⁴

Received: 4 December 2017 / Accepted: 25 June 2020 / Published online: 22 July 2020
 © Springer Nature B.V. 2020

Abstract

Russia is one of the largest carbon emitters in the world, possessing huge resources of both fossil fuels and zero-carbon energy sources. The Paris Agreement targets require substantial efforts to limit global warming to “well below 2 °C”. Energy-economic modeling provides sound conclusions that continuation of existing energy and climate policy will lead to stabilization of energy carbon emissions in Russia at the current level in 2010–2050 (about 30% below 1990). Stronger mitigation policies could gradually reduce domestic energy CO₂ emissions by 61% from 2010 to 2050 (75% below 1990). Deep decarbonization policies with even more ambitious commitments could ensure an 83% reduction in energy CO₂ emissions from 2010 levels (88% below 1990) by 2050. All key sectors (energy, industries, transport, and buildings) can play a substantial role in decarbonizing the national economy. However Russia’s historical reliance on domestic consumption and exports of fossil fuels creates strong barriers to decarbonization. Emission reduction costs are expected to be below 29 USD/tCO₂ by 2030, 55 USD/tCO₂ by 2040, and 82 USD/tCO₂ by 2050 in the most ambitious decarbonization scenario. The results of this study provide insights into how Russia can enhance its ambitions to implement the Paris Agreement and contribute to global efforts toward building a climate-neutral economy by 2050.

Keywords Russia · Decarbonization · Climate change · Paris Agreement · Carbon emissions · Low carbon development

✉ George Safonov
 gsafonov@mail.ru

¹ National Research University Higher School of Economics (HSE), Moscow, Russia

² Russian Presidential Academy of National Economy and Public Administration (RANEPA), Moscow, Russia

³ University of California, Irvine (UCI), Irvine, CA, USA

⁴ Russian State Agrarian University (RSAU), Moscow, Russia

Focus Report series - Hot topics in global forest industries

Russian log export ban in 2022

Implications for the Global Forest Industry
 February 2021



WOOD RESOURCES INTERNATIONAL



O'Kelly Acumen



Russia has been a leading log exporter for decades and this may come to an end in 2022. A proposed export ban will have immediate impact on global trade flows of logs and lumber. China will be forced to explore new supply regions. Russia will strive to process the logs domestically into lumber and other forest products. This Focus Report highlights Russia’s major trade partners and the likely changes in global forest products trade as a consequence of the Russian log export ban.

Contents

- 1. Importance of Russian log exports**
 - Share of global resource and harvest
 - Potential to expand harvest
 - Sawlog and pulpwood prices
 - Log exports
- 2. Proposed export ban**
 - Details of the proposed ban
 - Impact of past export restrictions
 - Strategy for the development of the timber industry
 - Reactions to the proposed ban
- 3. Likely impact on China and Finland**
 - Current imports to China and Finland from Russia
 - Impact on China log supply
 - Impact on Finland log supply
- 4. Implications for Russian forest industries**
 - Overview of likely impact of ban on Russian industry
 - Impact on wood prices in Russia
 - Likely responses from Russian forest industries
 - Russian investment targets and progress
 - Potential investors and hurdles
 - Implications for illegal logging
- 5. Potential repercussions for global markets**
 - Overview of possible impacts on global markets
 - Softwood log trade flows
 - Softwood log supply potential in key export regions
 - Hardwood log imports to China
 - Softwood lumber trade flows and outlook
 - Potential for Russian wood processing

Example exhibits

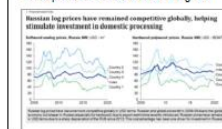
Russia’s additional harvest potential by Federal District



New version of Russian Strategy for the Development of the Timber Industry



Softwood sawlog and hardwood pulplog price development in Russia and other regions



Recent projects on the topic

The screenshot shows a web browser window with the URL <https://www.thuenen.de/en/wf/projects/modelling-of-the-global-roundwood-supply/>. The page features the Thünen logo and navigation links like CONTACT, DEUTSCH, J. H. v. THÖNEN, and BMEL. A sidebar on the left lists the lead institute (Institut für Institute of Institute of International Forestry and Forest Economics), topics (Forest Management and Wood Use, Marketing, Trade and Certification), and contact information for the director (Prof. Dr. Matthias Dieter) and deputy (Prof. Dr. Peter Elsasser). The main content area is titled 'Project Modelling of the global roundwood supply' and features a world map with the iNFORsu logo and the text 'Integrated Forest Development and Roundwood Supply in a Global Forest Products Model'. Below this is a photograph of a forest and a stack of logs, followed by the title 'Integrated Forest Development and Roundwood Supply in a Global Forest Products Model (iNFORsu)' and a paragraph describing the project's focus on modeling the relationship between socioeconomic variables and forest development.

(Savonov et al. 2020, WIR 2021)

Recent projects on the topic

“The objective of our research project is to improve the representation of the roundwood supply in the GFPM by a more precise depiction of the total forest development under consideration of socioeconomic variables.”

Topics

- # Forest Management, Wood Use
- # Marketing, Trade and Certification

Director
Dir. und Prof. Dr. Matthias Dieter

Deputy
Dir. und Prof. Dr. Peter Elsasser

Secretariat
Anna Frerck
Institute of International Forestry and Forest Economics

Leuschnerstraße 91
21031 Hamburg-Bergedorf
Phone: +49 40 739 62 301
Fax: +49 40 739 62 399
wf@thuenen.de

iNFORSu
Integrated Forest Development and Roundwood Supply in a Global Forest Products Model

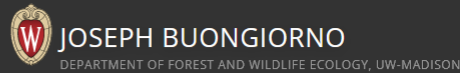
Integrated Forest Development and Roundwood Supply in a Global Forest Products Model (iNFORSu)

Which economic theories describe the relationship between socioeconomic variables and forest development? How can global roundwood production be modeled with the help of theories of forest development? We want to improve the global forest products model GFPM with an extension of the module on forest development.

(Savonov et al. 2020, WIR 2021)

Online data sources

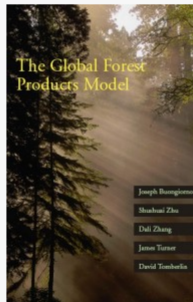
“The Global Forest Products Model”: <https://buongiorno.russell.wisc.edu/gfpm/>



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GFPM



“The Global Forest Products Model”

Joseph Buongiorno, Shushuai Zhu, Dali Zhang, James Turner, David Tomberlin (Academic Press 2003, ISBN 0-12-141362-4)

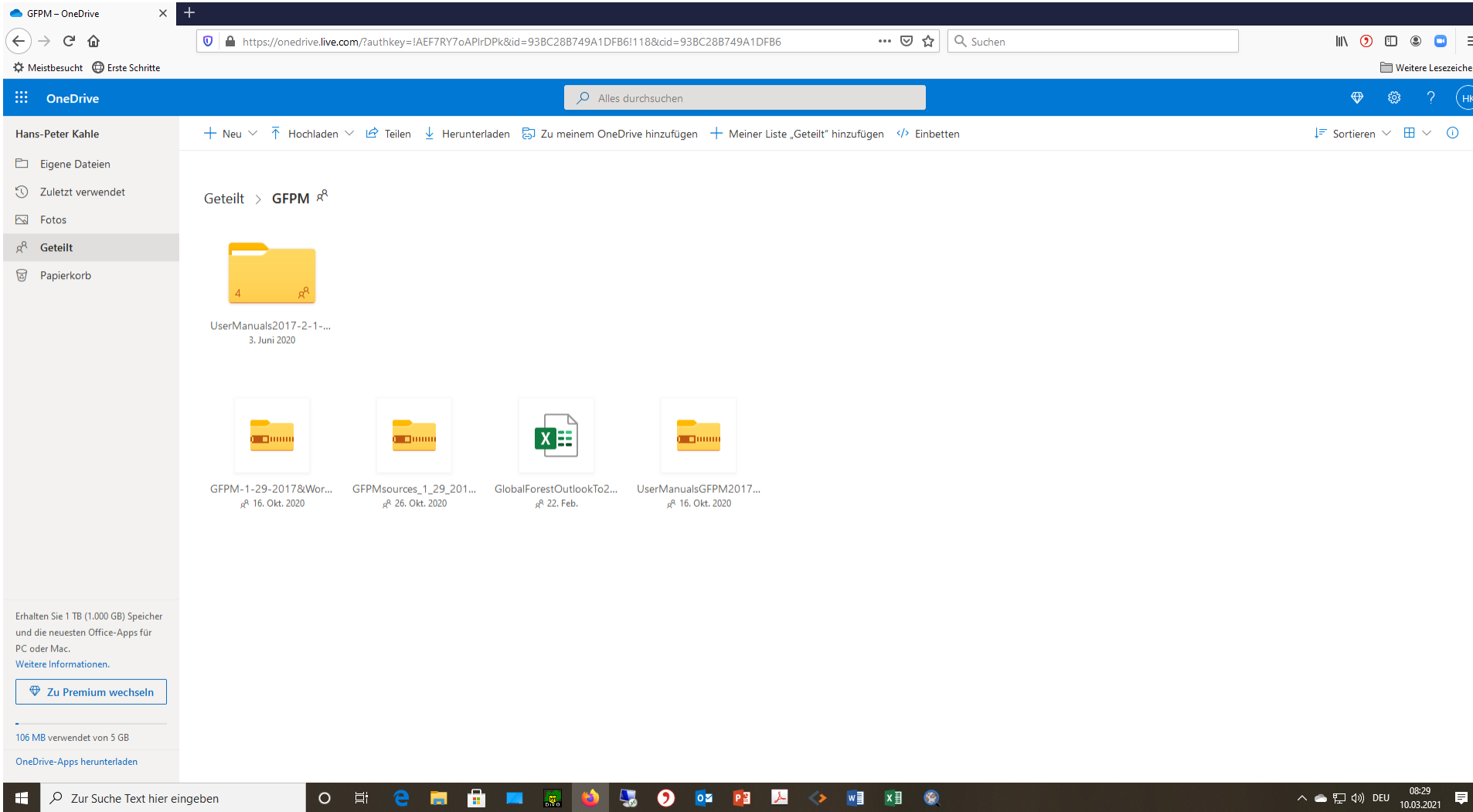
The Global Forest Products Model (GFPM) is a dynamic economic equilibrium model to predict production, consumption, trade, and prices of major forest products in world markets. The model describes how world forests and their industries interact through international trade. The book documents thoroughly the methods, data, and computer software of the model. Six applications of the model show its usefulness in addressing international economic and environmental issues.

GFPM 2017 (Latest Version)

Please go to [this directory](#) where you can download the installation files, instructions and manuals for GFPM –

(Buongiorno et al. 2003)

Online data sources



(Buongiorno et al. 2003)

Online data sources

Outlook to 2065 for World Forests and Forest Industries

Outlook to 2065 for World Forests and Forest Industries

Prepared by:
 Joseph Buongiorno
 Department of Forest and Wildlife Ecology, University of Wisconsin-Madison
 jbuongio@wisc.edu

Content:
 FAOSTAT historical data of 1992 to 2015 and projections from 2015 to 2065
 Projections with the Global Forest Products Model (GFPM 2017)
 conditional on projections of GDP and Population based on the Shared Socioeconomic Scenarios SSP1, 2, 3, 4, 5 (IIASA 2017)

Acknowledgments:
 This work was supported in part by the USDA Forest Service Southern Forest Research Station, under Dr. Jeff Prestemon's leadership.
 The author is grateful to Dr. Prakash Nepal and Dr. Craig Johnston for providing the SSP projections of GDP and Population.
 However, the results presented here are the sole responsibility of the author and do not reflect in anyway the view of the USDA Forest Service.

References:
 IIASA 2017. International Institute for Applied Systems Analysis. 2017. Shared Socioeconomic Pathways Database Version 1.1.
<https://tntcat.iiasa.ac.at/SspDb/dsd?Action=htmlpage&page=about>
 GFPM 2017. Software and documentation available for academic research only at:
<http://labs.russell.wisc.edu/buongiorno/welcome/gfpm/>

(Buongiorno et al. 2003)

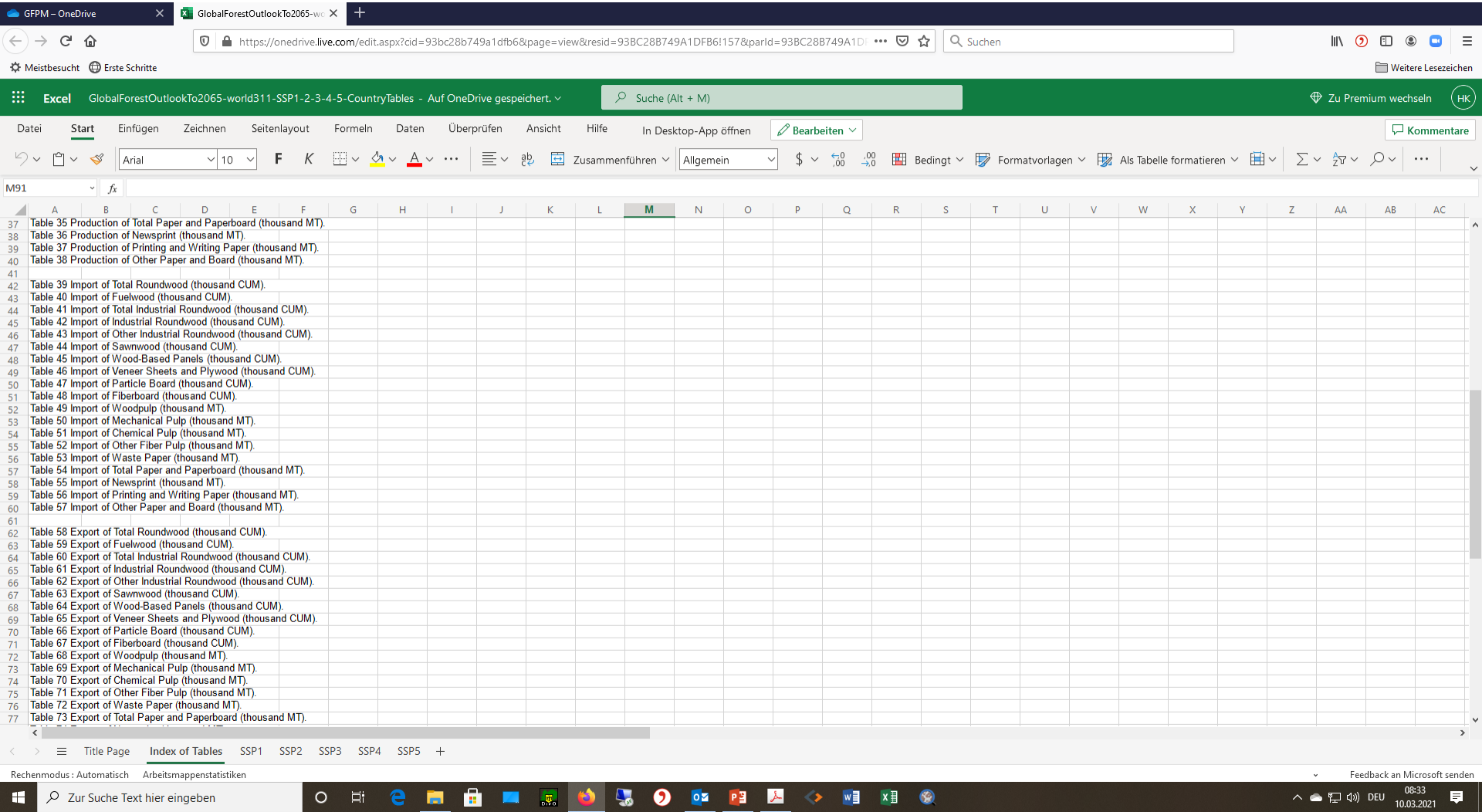
Online data sources

The screenshot shows an Excel spreadsheet with the following content:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC							
1	Index of Tables							Products definitions available at: http://www.fao.org/forestry/statistics/80572/en/																												
2	Table 1 Consumption of Total Roundwood (thousand CUM).							=Fuelwood+Total Industrial Roundwood																												
3	Table 2 Consumption of Fuelwood (thousand CUM).																																			
4	Table 3 Consumption of Total Industrial Roundwood (thousand CUM).							=Industrial Roundwood+Other Industrial Roundwood																												
5	Table 4 Consumption of Industrial Roundwood (thousand CUM).																																			
6	Table 5 Consumption of Other Industrial Roundwood (thousand CUM).																																			
7	Table 6 Consumption of Sawnwood (thousand CUM).																																			
8	Table 7 Consumption of Wood-Based Panels (thousand CUM).							=Veneer Sheets and Plywood+Particleboard+Fiberboard																												
9	Table 8 Consumption of Veneer Sheets and Plywood (thousand CUM).																																			
10	Table 9 Consumption of Particle Board (thousand CUM).							includes flakeboard																												
11	Table 10 Consumption of Fiberboard (thousand CUM).																																			
12	Table 11 Consumption of Woodpulp (thousand MT).							=Mechanical Pulp+Chemical Pulp																												
13	Table 12 Consumption of Mechanical Pulp (thousand MT).																																			
14	Table 13 Consumption of Chemical Pulp (thousand MT).							includes semi-chemical pulp																												
15	Table 14 Consumption of Other Fiber Pulp (thousand MT).																																			
16	Table 15 Consumption of Waste Paper (thousand MT).																																			
17	Table 16 Consumption of Total Paper and Paperboard (thousand MT).							=Newsprint+Printing and Writing Paper+Other Paper and Paperboard																												
18	Table 17 Consumption of Newsprint (thousand MT).																																			
19	Table 18 Consumption of Printing and Writing Paper (thousand MT).																																			
20	Table 19 Consumption of Other Paper and Board (thousand MT).																																			
21																																				
22	Table 20 Production of Total Roundwood (thousand CUM).																																			
23	Table 21 Production of Fuelwood (thousand CUM).																																			
24	Table 22 Production of Total Industrial Roundwood (thousand CUM).																																			
25	Table 23 Production of Industrial Roundwood (thousand CUM).																																			
26	Table 24 Production of Other Industrial Roundwood (thousand CUM).																																			
27	Table 25 Production of Sawnwood (thousand CUM).																																			
28	Table 26 Production of Wood-Based Panels (thousand CUM).																																			
29	Table 27 Production of Veneer Sheets and Plywood (thousand CUM).																																			
30	Table 28 Production of Particle Board (thousand CUM).																																			
31	Table 29 Production of Fiberboard (thousand CUM).																																			
32	Table 30 Production of Woodpulp (thousand MT).																																			
33	Table 31 Production of Mechanical Pulp (thousand MT).																																			
34	Table 32 Production of Chemical Pulp (thousand MT).																																			
35	Table 33 Production of Other Fiber Pulp (thousand MT).																																			
36	Table 34 Production of Waste Paper (thousand MT).																																			
37	Table 35 Production of Total Paper and Paperboard (thousand MT).																																			
38	Table 36 Production of Newsprint (thousand MT).																																			
39	Table 37 Production of Printing and Writing Paper (thousand MT).																																			
40	Table 38 Production of Other Paper and Board (thousand MT).																																			
41																																				

(Buongiorno et al. 2003)

Online data sources



(Buongiorno et al. 2003)

Expected outcomes - 1

Provision of

- **unique and timely information on future availability of Norway spruce wood in the three model regions in Europe.**
- **relevant information for the forestry-wood sector and for the policy development towards transition to green economy in Europe**

Scientific outcomes:

- **compare EFISCEN-based approach with the WEHAM-model**
- **comparative results of the environmental control of Norway spruce growth under temperate-continental, boreal and temperate-atlantic conditions**
- **combined analysis of field growth data and remotely sensed data for the development of large-scale real-time forest monitoring systems, e.g. for the detection of early warning signals of environmental stresses on trees and forests**

Expected outcomes - 2

Training and capacity building

- **support education and training of young scientists (PhD and postdoctoral students)**
- **multidisciplinary researches**
- **working in international teams.**

Work program

WP0: Project coordination - WP-Leader P1 ALU-FR

WP1: Forest inventory database - WP-Leader P4 SFTU-SP

WP2: Growth database - WP-Leader P3 UNFU-LV

WP3: Satellite database - WP-Leader P3 UNFU-LV

WP4: GIS database - WP-Leader P4 SFPU-SP

WP5: Growth simulation - WP-Leader P2 FVA-FR

WP6: Synthesis - WP-Leader P1 ALU-FR

WP7: Outreach - WP-Leader P3 UNFU and P4 SFPU-SP