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Forests in Poland, Belarus, Lithuania and Ukraine in 2010

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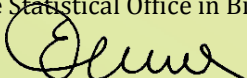
Dear Readers,

"Forests in Poland, Belarus, Lithuania and Ukraine in 2010" is the next publication of the Statistical Office in Białystok concerning forestry issues, the first, however, presenting the abovementioned subject internationally. This publication is the result of the cooperation of the Statistical Office in Białystok with the National Statistical Office Committee of the Republic of Belarus, Statistics Lithuania, as well as with the State Statistics Service of Ukraine.

The publication presents forestry issues concerning four countries, namely Poland, Belarus, Lithuania and Ukraine from statistical angle. So as to demonstrate characteristic features of forests of given countries the elaboration also contains comparisons of certain data in the form of tables and charts.

Presenting this publication, I hope that it will be a source of information useful for many individuals and institutions dealing with this subject. At the same time, I would like to thank the Directors and employees of statistical offices in Belarus, Lithuania and Ukraine for both providing data and help in elaborating on them.

Director
of the Statistical Office in Białystok



Ewa Kamińska-Gawryluk

Białystok, May 2014

SYMBOLS

- (-) — magnitude zero.
(.) — data not available or not reliable.
“Of which” — indicates that all elements of the sum are given.

MAJOR ABBREVIATIONS

- ha = hectare
thous. = thousand
mln = million
m³ = cubic metre
hm³ = cubic hectometre

I. DATA – SOURCES AND SCOPE

1. Detailed methodological notes concerning definitions and presented data can be found in other thematic publications of the Statistical Office in Białystok, the National Statistical Committee of the Republic of Belarus, Statistics Lithuania and the State Statistics Service of Ukraine.

2. Data on forest area, structure, potential stock, average age and forest condition, on growing stock and on forest nurseries, unless indicated otherwise, concern, in the case of Belarus, Lithuania, and Ukraine, their state as 01 January 2011, whereas in the case of Poland – as of 31 December 2010.

3. For all these states, data concerning forest breeding (renewals and afforestation), removals, and forest fires are for the year 2010.

4. Due to the fact that the data are expressed per capita, the population number adopted is as of 01 January 2011 (for Belarus, Lithuania, and Ukraine) and as of 31 December 2010 (for Poland).

5. Information on Polish forest resources and growing stock of standing wood come from the National Forest Inventory (NFI), carried out in 2007–2011 by the Bureau for Forest Management and Geodesy.

6. Data concerning the age and species structure, tree stands age and their potential stock as well as the forest condition in Ukraine come from the State Forest Resources Agency of Ukraine.

7. Data on growing stock of standing wood in Belarus come from the Food and Agriculture Organization of the United Nations (FAO) database.

8. In the case of Lithuania data on breeding work concern public forests.

II. GLOSSARY

1. Forest cover (forest cover indicator) – the percentage ratio of the forest area to the total area of a given territory (country, voivodship, powiat, gmina).

2. Growing stock – total standing volume (thickness) of forest trees, most often associated with estimated timber volume of tree stands.

3. Potential stock – thickness (volume) of tree stands expressed in m³ of timber (or timber and slash) after converting into 1 ha.

4. Renewals – creating of or growing new tree stands, while replacing the already existing ones, which have been disappearing because of their use, natural disasters, insect pests etc. The renewal concerns only forestry produce land or land temporarily devoid of stand.

5. Artificial renewals – woodland crops established through sowing or planting in place of stands being removed or already removed ones.

6. Natural renewals of forests – woodland crops on forest land, obtained from self-seeding and offshoots, regarded as being of quality and covering at least 50% of area.

7. Afforestation of non-forest land – establishing forest land on land until now outside forest production, i.e. on non-forest land.

8. Removals – all actions related to cutting trees and obtaining wood material from their individual parts and sorting this material into certain wood runs. Volume of removals comprises timber, slash, and stump wood volume. **Timber** comprises large and medium-size round wood.

*

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Due to the rounding of data, the sums of components in some cases may insignificantly differ from the “total” values indicated.

FOREST LAND AND FOREST COVER INDICATOR

Forests are one of the most diverse and widespread ecosystems in the world. They fulfil various functions, which can be divided into three basic groups: economic (they provide wood and other forest produce), ecological (among others, they influence local and global climate, regulate water circulation, absorb air emissions) and social (e.g. they ensure favourable health and recreation conditions).

Most forest land (over 10.3 mln ha) is located in Ukraine, whereas the least in Lithuania – over 2.1 mln ha. Poland and Belarus have quite a similar area of forest land – about 9.3 mln ha.

In the group of the analysed countries, the highest forest cover indicator (the percentage ratio of the forest area to the total area of a given country), equalling 39.0%, is noted in Belarus. The lowest one, however, is in Ukraine – 15.9%.

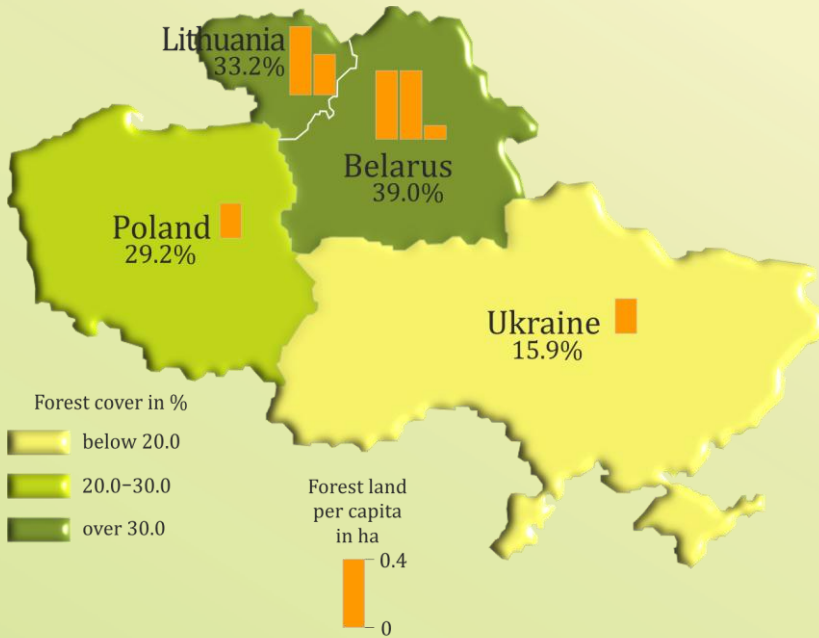
TABLE 1. **FOREST LAND**

SPECIFICATION	Poland	Belarus	Lithuania	Ukraine
	in thous. ha			
TOTAL	9328.9	9275.3	2169.8	10378.7
Forests	9121.4	8566.7	2125.0	9573.9
Land connected with forest management	207.6	708.6	44.8	804.8
Public	7642.6	9275.3	1075.4	10362.3
Wooded	7323.2	8094.1	1006.9	9557.7
Non-wooded ^a	319.5	1181.2	68.5	804.6
Private	1686.3	–	1094.4	16.4
Wooded	1658.4	–	1050.6	16.2
Non-wooded ^a	27.9	–	43.8	0.2

^a Including land connected with forest management.

FOREST LAND AND FOREST COVER INDICATOR

Forest cover and forest land per capita



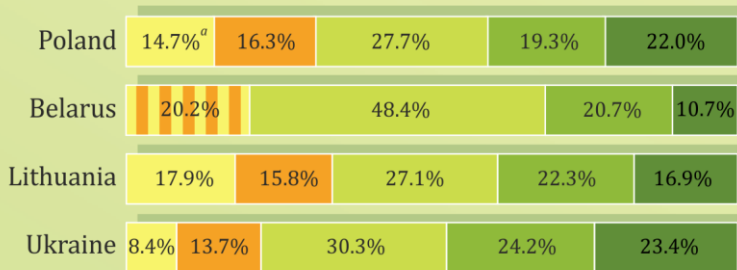
Public land predominates in the ownership structure of forest land in Poland and in Ukraine, namely it occupies 99.8% in Ukraine and 81.9% in Poland. In Lithuania, the percentage share of publicly and privately owned land is comparable, while in Belarus all forest land is state owned.

Significantly higher figures concerning forest land per capita are noted in countries with a lower density of population, i.e. in Lithuania (0.7 ha per capita) and in Belarus (0.9 ha per capita). The value of this indicator is the same for Poland and Ukraine – 0.2 ha per capita.

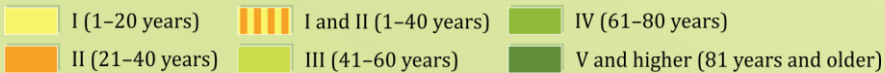
The forest age structure of given countries is characterized by the prevailing forest stands of the III class of age (41–60 years). Their highest share is observed in Belarus – 48.4%. The smallest share in forests in Poland and in Ukraine hold tree stands of the I class of age (1–20 years) – respectively 14.7% and 8.4%. The smallest area in Belarus occupy tree stands of over 81 years (10.7%), whereas in Lithuania – tree stands aged 21–40 years (15.8%). The share of tree stands belonging to the IV class of age (61–80 years) in forests of all countries in question is similar and is between 19.3% and 24.2%.



**Structure of forest land
by age groups of tree stands**



Age agroups of tree stands:



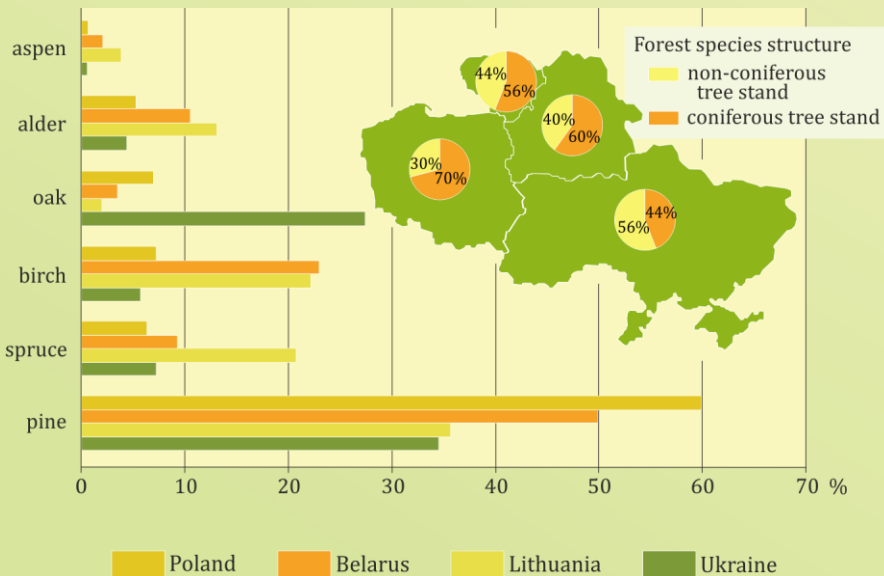
^a Including renewal class.

FOREST STRUCTURE

In all countries presented here, except for Ukraine, coniferous tree stands, with pines constituting the major share, prevail in the species structure of forests (60% – Poland, 50% – Belarus and 35% – Lithuania). In the case of broadleaved trees, in Belarus and in Lithuania birch trees have the major share. In Poland, apart from birch, the species dominant in non-coniferous tree stands is also oak.

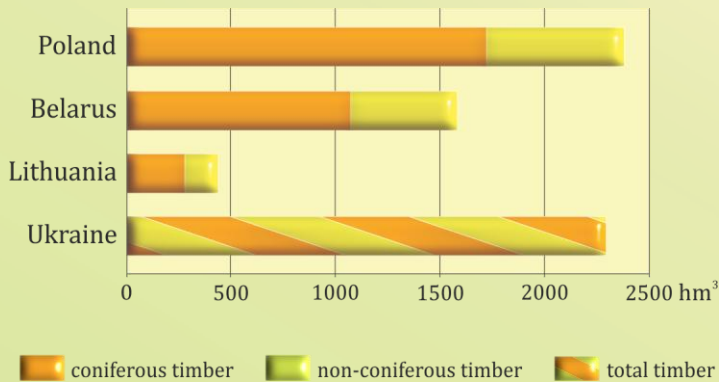
In Ukraine, as opposed to other countries, broadleaved trees prevail in the species structure of forests and occupy 56% of forest land. Oak is the dominant species in these tree stands – 27%. In the coniferous tree stands the prevailing species is pine – 35%.

**Structure of forest land
by selected species dominant in tree stands**



The largest stock of standing wood (considering all forms of ownership) is noted in Poland and in Ukraine – respectively 2371.7 hm³ and 2297.7 hm³ of gross timber. The smallest growing stock is noted in Lithuania – 440.1 hm³. A significant prevalence of coniferous trees in the growing stock of standing wood is visible in the analysed countries (with no detailed data for Ukraine).

Growing stock of standing wood



A relatively small growing stock of standing wood is noted in Lithuania, which is connected with the smallest forest area of this country. Due to the fact that a similar area of forest is found in Poland, in Belarus, and in Ukraine, it may be expected that the volume of growing stock of standing wood would also be similar. However, the significantly lower volumes are observed in Belarus.



POTENTIAL STOCK AND AGE OF TREE STANDS

Among described countries, the highest potential stock of tree stands in 2010 was noted in Poland – 260 m³/ha, the lowest in Belarus – 184 m³/ha. Apart from Belarus, whose detailed data are not available, it can be stated that coniferous tree stands are characterized by a higher potential stock than non-coniferous ones.

TABLE 2. **POTENTIAL STOCK^a OF TREE STANDS
IN FORESTS BY DOMINANT SPECIES**

TREE SPECIES	Poland	Lithuania ^b	Ukraine
Coniferous trees	271	247	277
of which:			
Fir	320	.	.
Pine	269	275	265
Spruce	275	200	336
Broadleaved trees	233	184	214
of which:			
Birch	175	173	153
Beech	313	.	328
Oak	222	195	210
Hornbeam	225	190	.
Ash	184	.
Alder	249	194	177
Aspen	216	204	214
Poplar	236	.	.

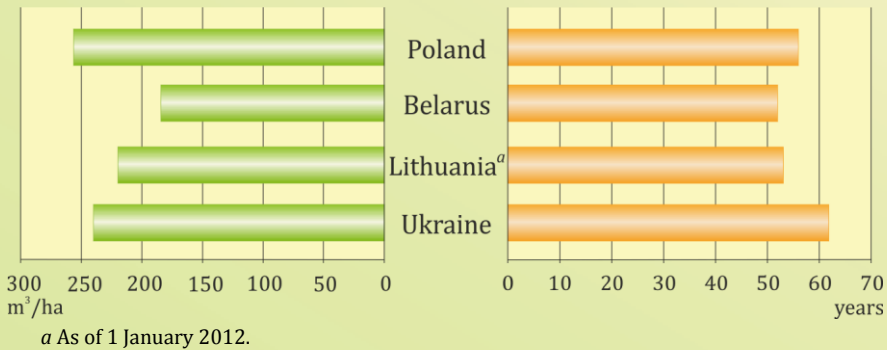
^a Gross timber (over bark) per 1 ha of forest area in m³. ^b As of 1 January 2012.

NOTE. Data on potential stock of coniferous and non-coniferous tree stands for Belarus not available.

POTENTIAL STOCK AND AGE OF TREE STANDS

The available data show that among coniferous tree stands in Poland fir ones are of the highest potential stock – 320 m³/ha, in Lithuania – pine ones – 275 m³/ha, and in Ukraine – spruce ones – 336 m³/ha. Among non-coniferous tree stands in Poland and in Ukraine beech tree stands have the highest potential stock (313 m³/ha and 328 m³/ha respectively), and in Lithuania – aspen ones – 204 m³/ha.

Potential stock and average age of tree stands



The average age of the coniferous tree stands of Poland, Belarus, Lithuania and Ukraine is similar (57–60 years). In Poland and in Belarus the oldest are fir tree stands (65 and 71 years respectively), in Lithuania – pine ones (67 years), while in Ukraine – spruce ones (64 years).

POTENTIAL STOCK AND AGE OF TREE STANDS

In the analysed countries, except for Ukraine, non-coniferous tree stands are younger than coniferous ones. In Ukraine non-coniferous tree stands are older, which is probably the result of a high average age of beech and oak tree stands. Additionally, among non-coniferous tree stands in Poland and in Ukraine the oldest are beech ones (66 and 88 years respectively), and in Belarus and Lithuania – oak ones (70 and 84 years respectively).

TABLE 3. AVERAGE AGE OF TREE STANDS IN FORESTS BY DOMINANT SPECIES

TREE SPECIES	Poland	Belarus	Lithuania ^a	Ukraine
	in years			
Coniferous trees	57	59	60	58
of which:				
Fir	65	71	·	·
Pine	58	59	67	57
Spruce	52	55	43	64
Broadleaved trees	52	53	48	66
of which:				
Birch	43	41	48	43
Beech	66	33	·	88
Oak	55	70	84	71
Hornbeam	55	57	64	·
Ash	·	60	65	·
Alder	47	37	43	46
Aspen	39	38	43	42
Poplar	47	45	·	·

^a As of 1 January 2012.

The most renewals and afforestation in 2010 were noted in Ukraine, over 70 thous. ha, the least, however, in Lithuania – over 10 thous. ha. This difference is undoubtedly connected with the total area of forests in these countries.

In forest breeding work, renewal work was the dominating type and constituted about 60% of work in Ukraine, while in other countries as much as about 90%.

Among countries in question, Ukraine is decidedly the country with the greatest area of afforestation, constituting about 40% of analysed forest breeding work (in other countries its value does not exceed 12%). It is also the country of the greatest area of natural renewals – 14 thous. ha.



TABLE 4. SELECTED DATA ON FOREST BREEDING

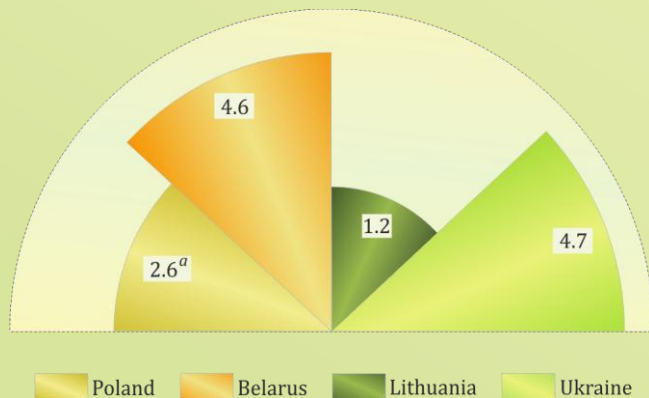
SPECIFICATION	Poland	Belarus	Lithuania	Ukraine
	in thous. ha			
Renewals and afforestation ..	51.9	33.0	10.2	70.1
Renewals	46.1	29.5	9.4	42.3
artificial	41.4	.	5.8	28.3
natural	4.6	.	3.6	14.0
Afforestation	5.9	3.5	0.8	27.8

Renewals and afforestation area



In the group of described countries, Belarus and Ukraine stand out in terms of the area of forest nurseries. This area slightly exceeds 4.5 thous. ha.

Area of forest nurseries in thousand hectares



^a Concerns production area in forest nurseries.



The comparison of data concerning removals shows that Poland has a decidedly dominant position against other countries. In 2010 obtained removals in Poland equalled to 35.5 mln m³. It is worth noticing that Belarusian and Ukrainian values for removals are doubled in Poland, although these countries' forest area is similar to the Polish one.

The removals value per 100 ha of forest land for Poland and Lithuania is similar. High values of

this index may show the intensive economic use of forests.

The highest removals value per capita is in Lithuania, the lowest – in Ukraine.

TABLE 5. REMOVALS

SPECIFICATION	Poland	Belarus	Lithuania	Ukraine
T O T A L in thous. m³.....	35467	15473	6375	18065
of which timber in thous. m ³	33568	.	6300	16146
Per 100 ha of forest area in m ³	388.8	180.6	300.0	188.7
Per capita in m ³	0.9	1.6	2.1	0.4

Among countries in question the greatest number of fires was noted in Poland – over 4.6 thous. In our climatic zone (the temperate climate) one of the most flammable tree stands are one-species and even-age pine forests, especially these younger ones, not over 40 years. Thus, forests in Poland and in Belarus, where the pine tree stand share is dominant, are potentially in the greatest danger of fire.



By far the greatest area of forest fires is in Ukraine, while the smallest one – in Lithuania.

TABLE 6. FOREST FIRES

SPECIFICATION	Poland	Belarus	Lithuania	Ukraine
Number of fires	4681	607	110	3240
Area of forest burned in ha	2127	424	22	4241
Average forest area burned by one fire in ha	0.5	0.7	0.2	1.3

FOREST CONDITION

Forests of the best condition are in Belarus, where over 85% of trees have no damage, while in Poland such forests constitute only slightly over 20%. In the compared countries, significant damage affects no more than 1.0% of forests, the least in Ukraine – 0.3%.

Damage done to the coniferous trees is smaller than to broadleaved ones in Belarus and in Ukraine. In Poland the situation is reversed.

TABLE 7. FOREST CONDITION

SPECIFICATION	Poland	Belarus	Ukraine
	in per cent		
T O T A L			
0 (no damage)	21.0	85.9	67.7
1 (slight damage)	58.3	7.5	26.5
2 (mild damage)	19.5	2.1	5.5
3 (significant damage)	1.0	0.4	0.3
CONIFEROUS TREES			
0 (no damage)	18.8	89.1	69.3
1 (slight damage)	61.0	5.9	25.1
2 (mild damage)	19.3	2.1	5.4
3 (significant damage)	0.9	0.5	0.2
BROADLEAVED TREES			
0 (no damage)	25.2	77.8	64.7
1 (slight damage)	53.1	11.6	28.9
2 (mild damage)	20.0	2.3	6.0
3 (significant damage)	1.2	0.3	0.4

NOTE. Data on forest condition in Lithuania not available.

