



Nederlandse Voedsel- en
Warenautoriteit
*Ministerie van Landbouw, Visserij,
Voedselzekerheid en Natuur*



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
*Ministère de l'Agriculture,
de l'Alimentation et de la Viticulture*

Design of a survey for *Agrilus plannipennis* in the Benelux ecoclimatic region

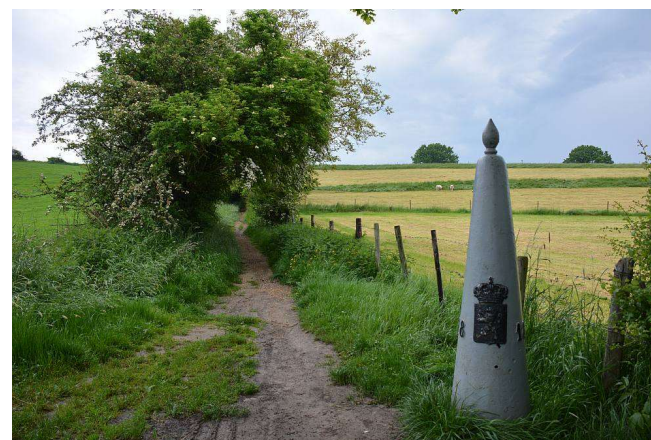
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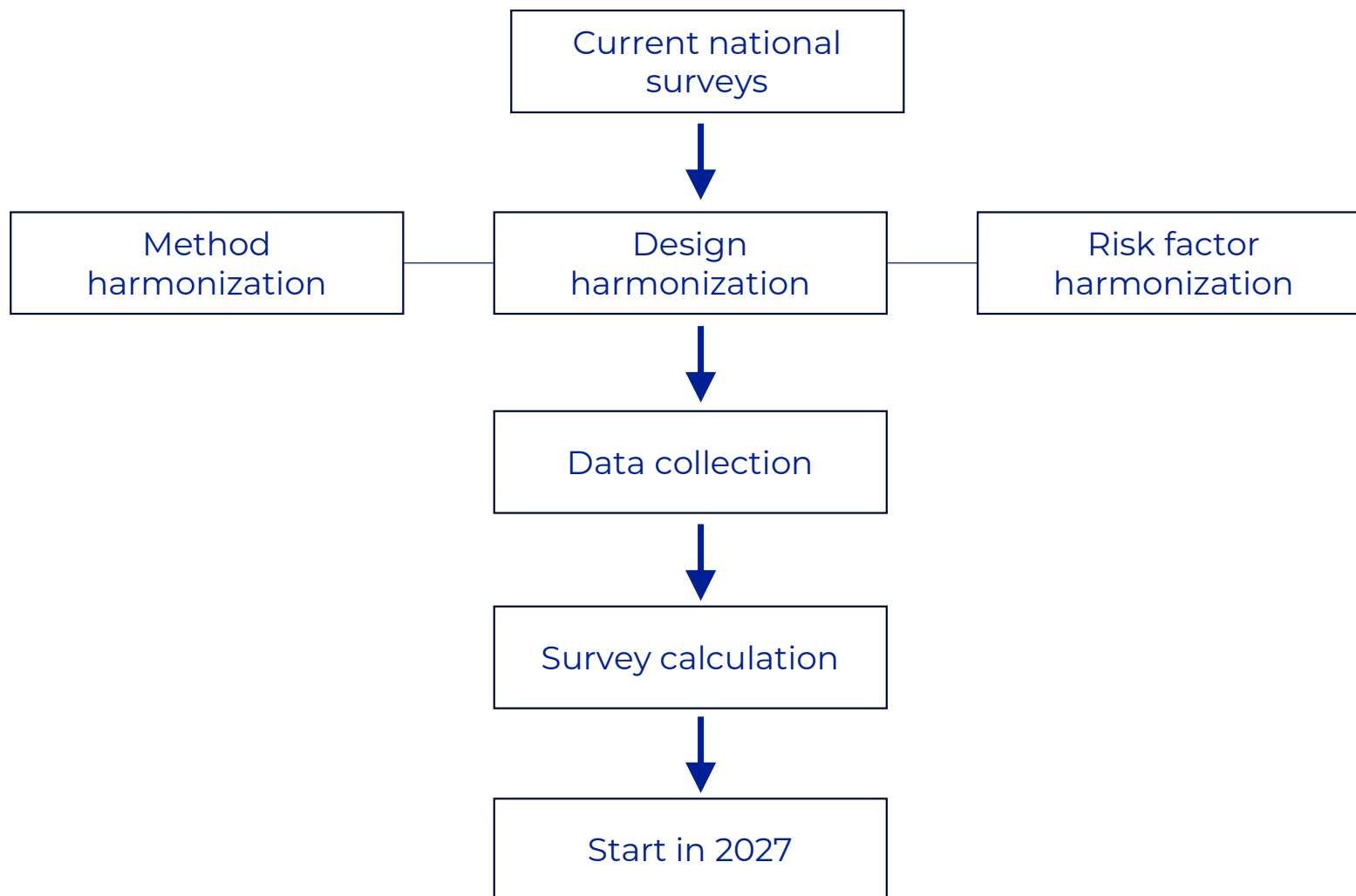
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Safety Authority, The Netherlands

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Services, Grand Duchy of Luxembourg

- The **Belgian EU presidency** proposed the design of surveys in **ecoclimatic regions** spanning multiple countries
- High numbers of quarantine pests and decreasing resources encourage member states to **optimize survey efforts**
- Surveys in ecoclimatic regions have the following benefits:
 - **Harmonisation** of surveys methods
 - **Collaboration** between countries
 - **Lower sample size** for large target populations
- As a case study, the Benelux are designing a survey for *Agrilus planipennis* together: **risk based and statistically sound** in line with regulation (EU) 2024/434





Current surveys with traps for *Agrilus planipennis* in the 3 countries

Traps	Belgium	Netherlands	Luxembourg
Number	20	28	10
Type	Green multi-funnel traps	Green multi-funnel traps	Various
Lures	3Z lactone + Z3 hexenol	3Z lactone + Z3 hexenol	3Z lactone + Z3 hexenol
Location	High-risk locations	High-risk locations	High-risk locations

Survey methods harmonisation

- Green multifunnel traps with 3Z lactone and Z3 hexenol lures
- Collecting cups filled with 50% propylene glycol as killing agent and preservative
- From beginning of June to end of August with monthly inspections of the traps
- Equal numbers of traps in ash trees near import sites and in large urban areas
- No traps in low-risk areas as long as *Agrilus planipennis* has not entered the EU





Survey design harmonisation

- Target population: hectares with at least 1 Fraxinus tree
- Trapping followed by morphological identification with a global test sensitivity of 0,75
- Design prevalence of 0,02 and confidence level of 0,95
- 1 risk factor with 3 levels:
 - Import sites: relative risk of 5 (high risk)
 - Large urban centres: relative risk of 2,5 (medium risk)
 - Rest of the territory: relative risk of 1 (baseline risk)
- 3 epidemiological units (BE, NL, LUX) with different target populations and risk area proportions



Data collection and estimation

Target population (no of ha with at least one ash):

Total land surface x $1/9^{(a)}$

Target population around import sites:

Number of import sites^(b) x 1260 ha^(c) x $1/9^{(a)}$

Target population in large urban centres:

Surface large urban centres x $1/9^{(a)}$

With

(a) Estimations from Estonia and Luxembourg,

(b) Import data analysis using Traces,

(c) Circle with radius 2 km



High risk import sites

Import sites are identified with the EU platform Traces.
The following products from risk countries are included:

- 1) Fraxinus wood
- 2) Wood packaging material (WPM), as the product
- 3) Various goods shipped with WPM



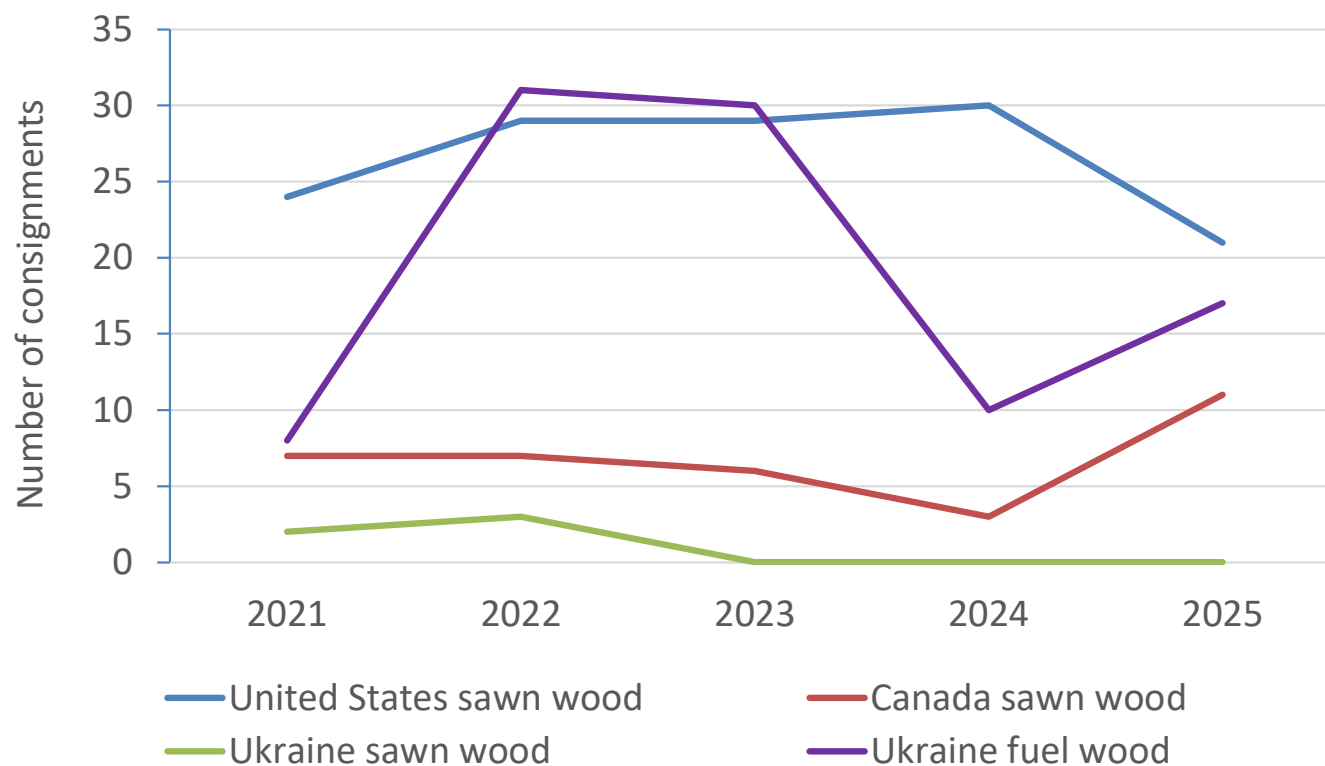
Fraxinus wood from risk countries to Belgium: trends

Traces: Search for Fraxinus species as “Latin name”

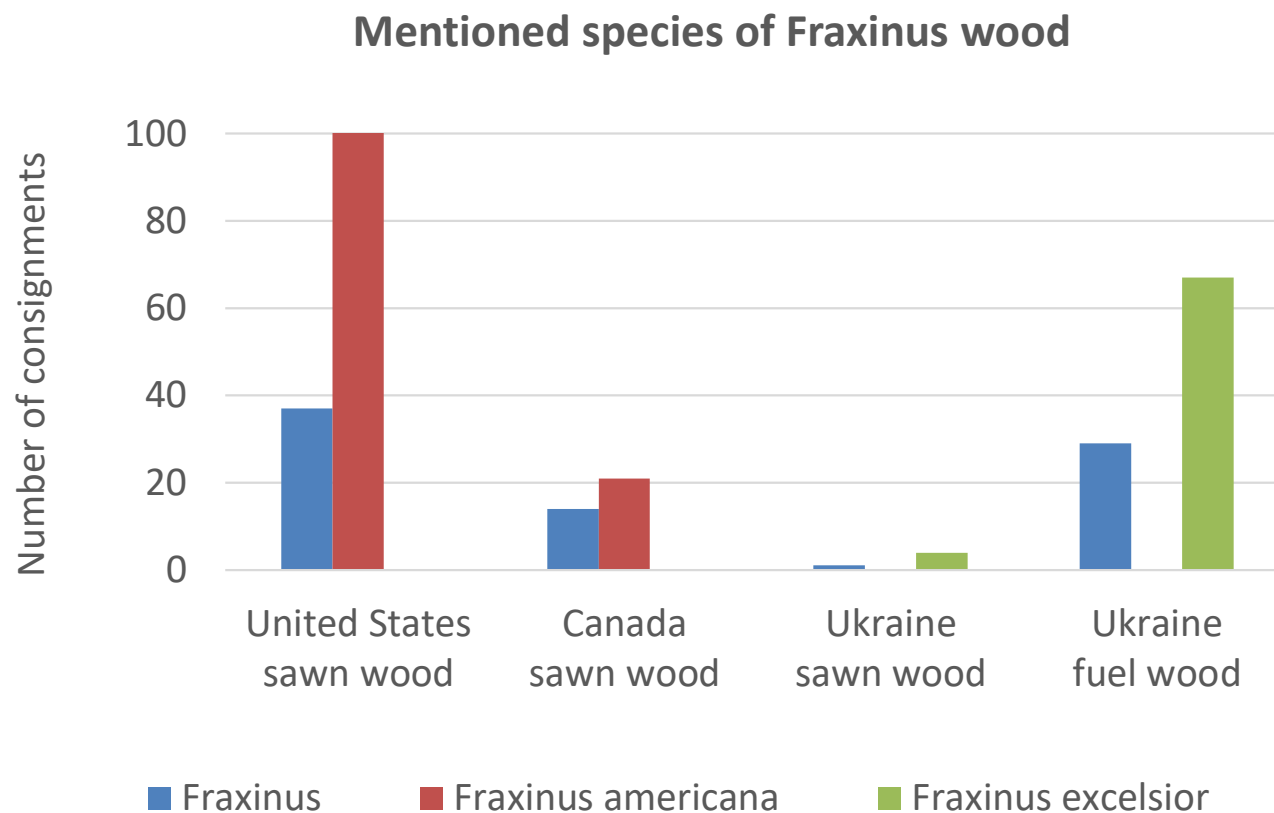
->CN code 44011200: non-coniferous fuel wood

->CN codes 440795: Fraxinus sawn wood

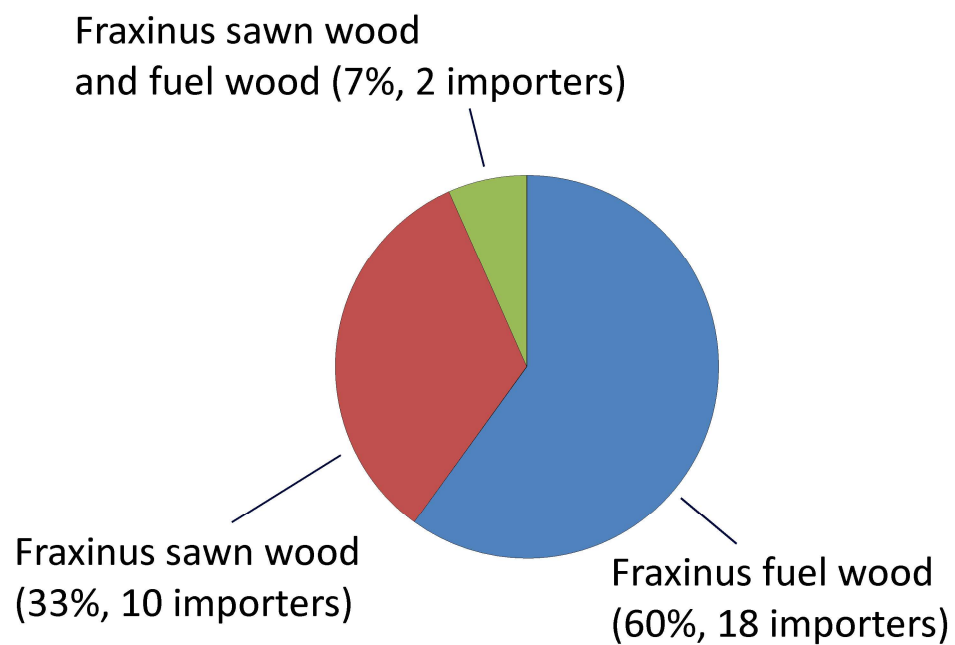
Number of consignments of Fraxinus wood



Fraxinus wood from risk countries to Belgium: species

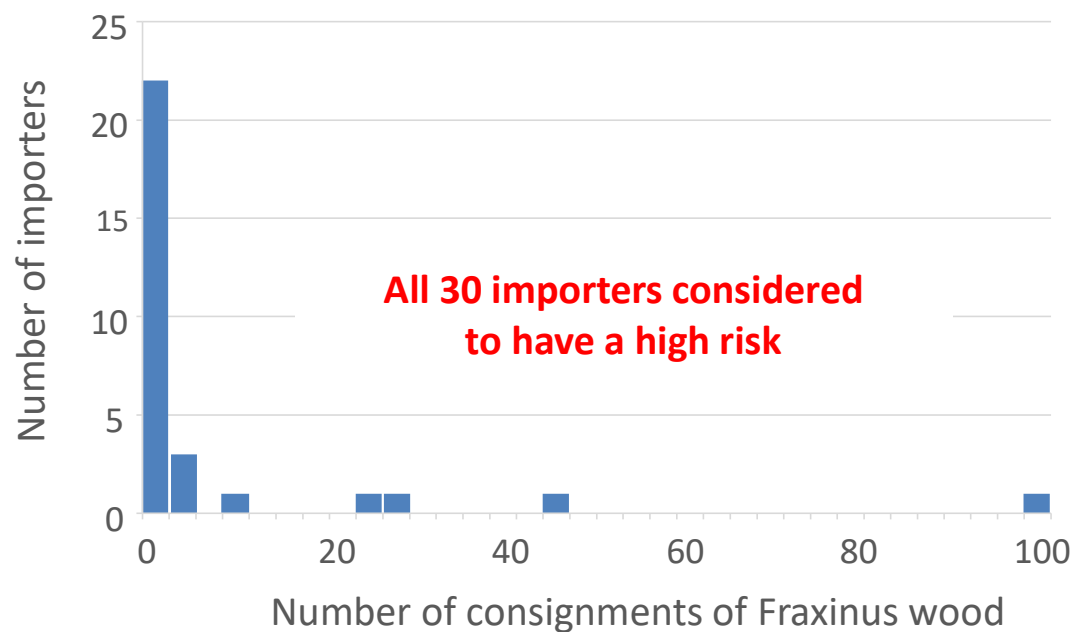


Fraxinus wood from risk countries to Belgium: importers



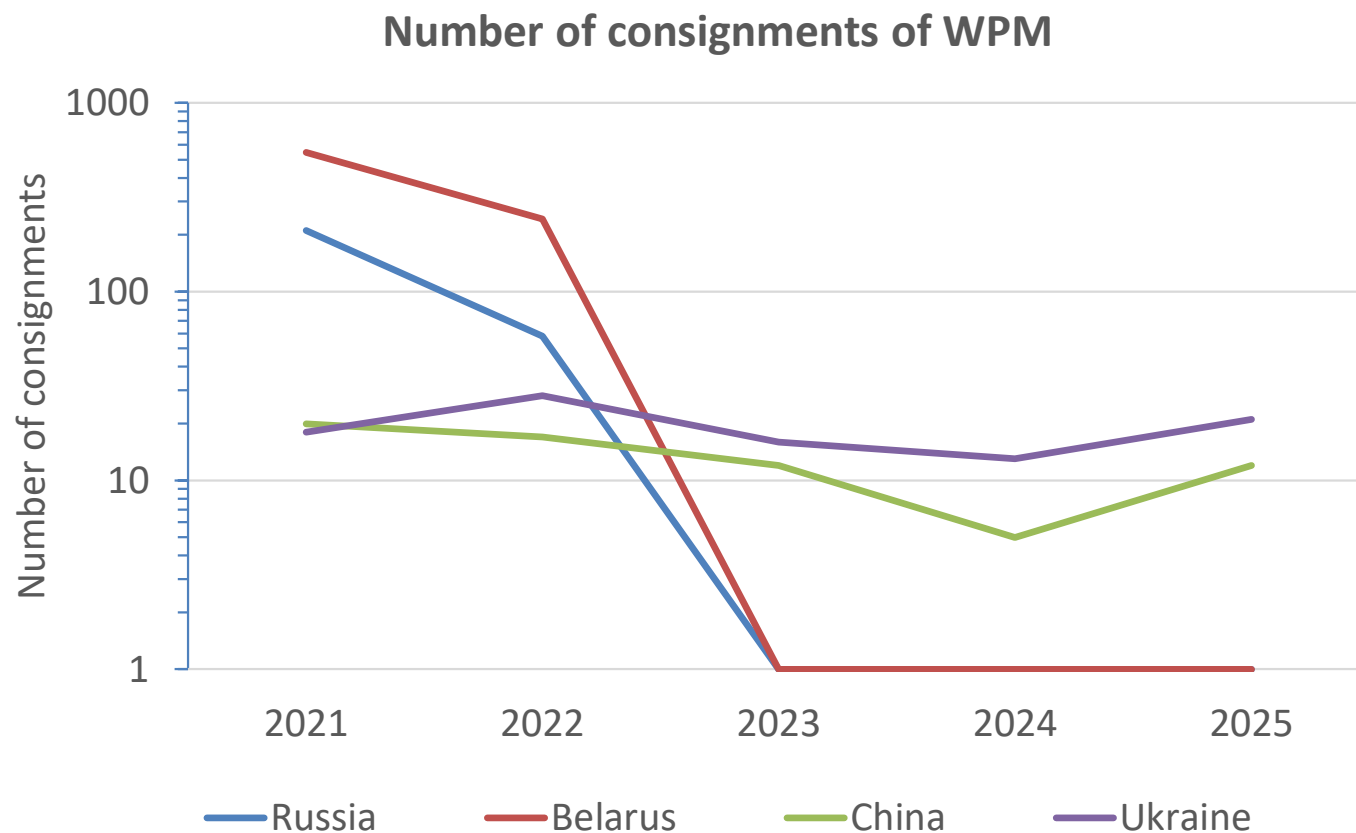
Total: 30 importers

Number of consignments per importer



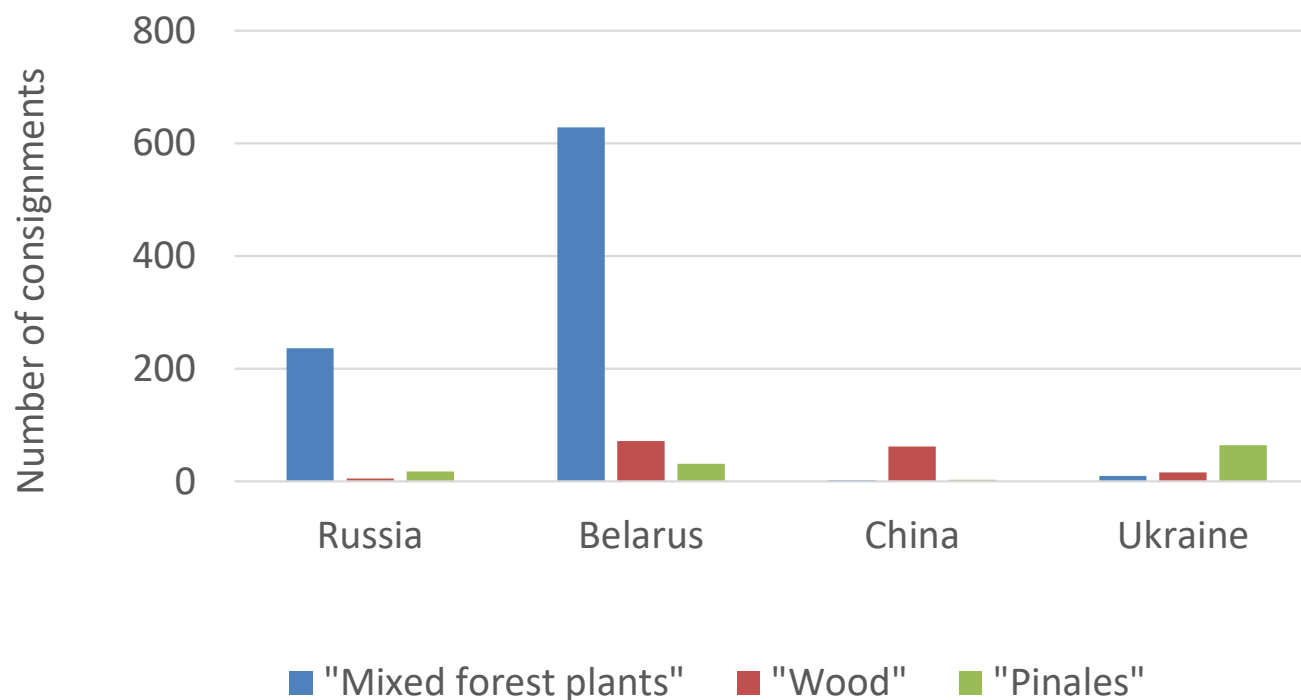
WPM from risk countries to Belgium: trends

[Traces](#): Search for CN code 4415 and subcategories

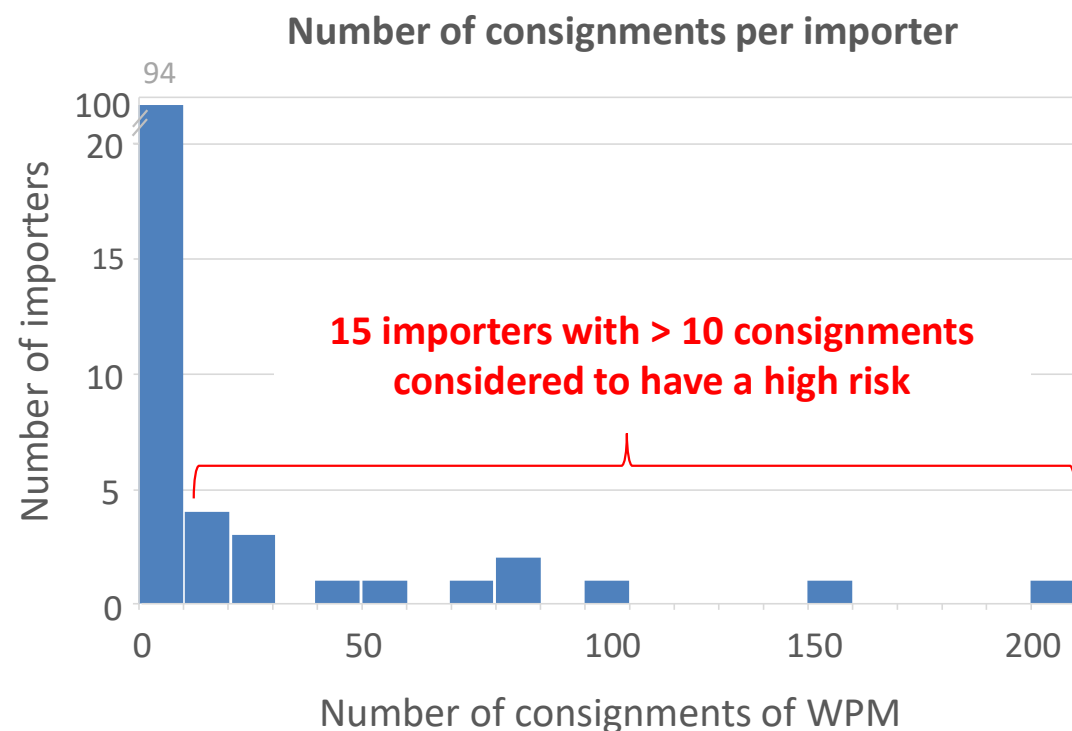
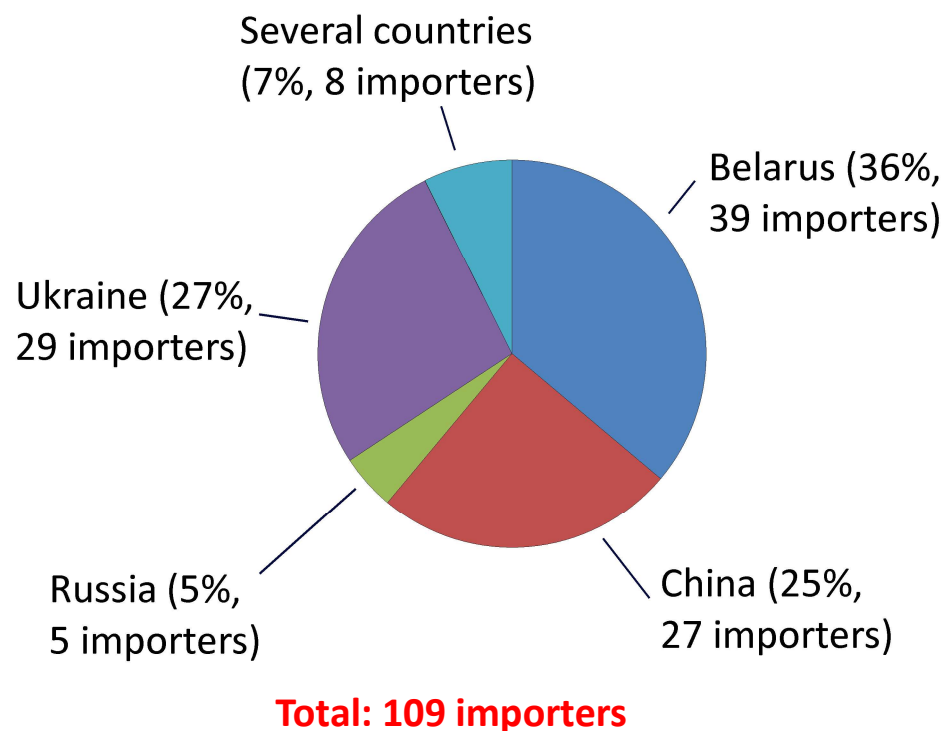


WPM from risk countries to Belgium: species

Mentioned wood species of WPM



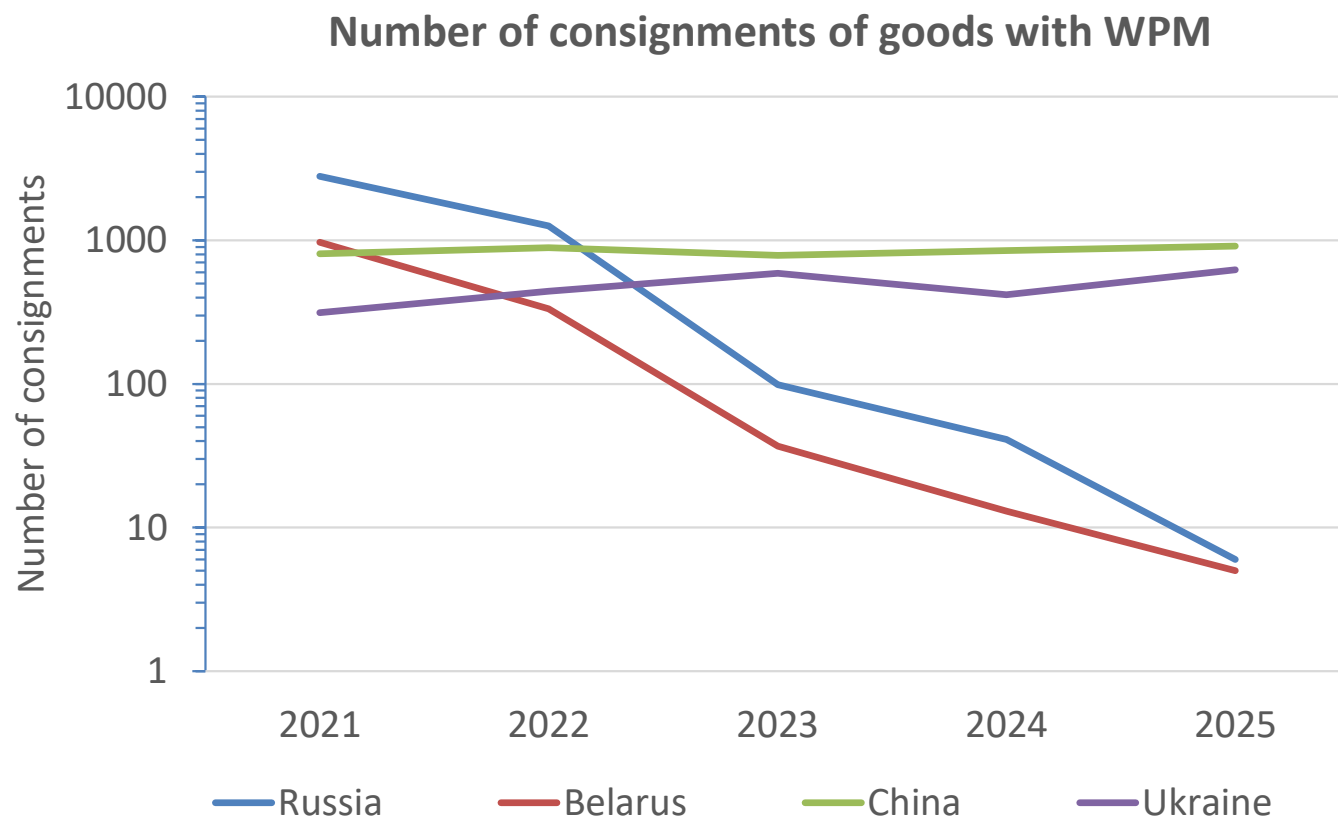
WPM from risk countries to Belgium: importers



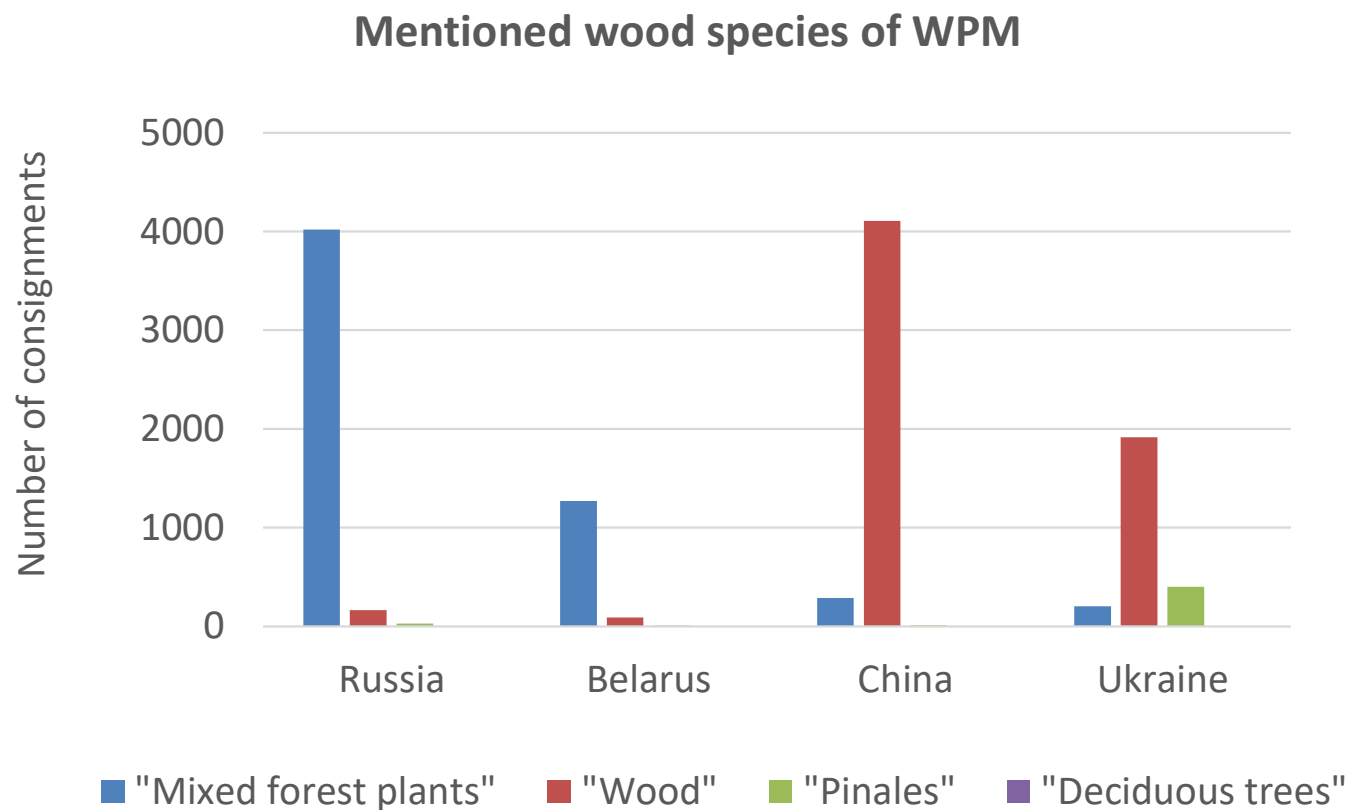


Various goods with WPM from risk countries to Belgium: trends

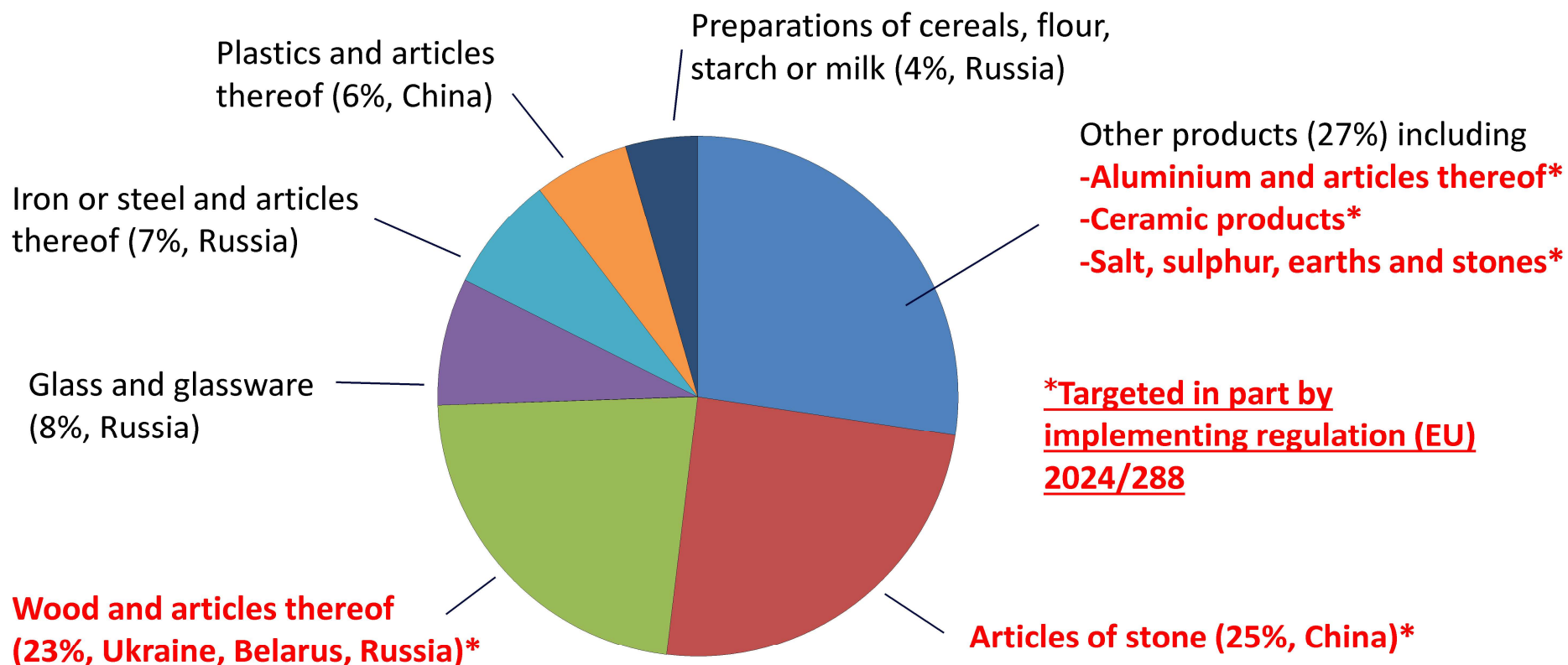
Traces: Check the field “wood packaging material”



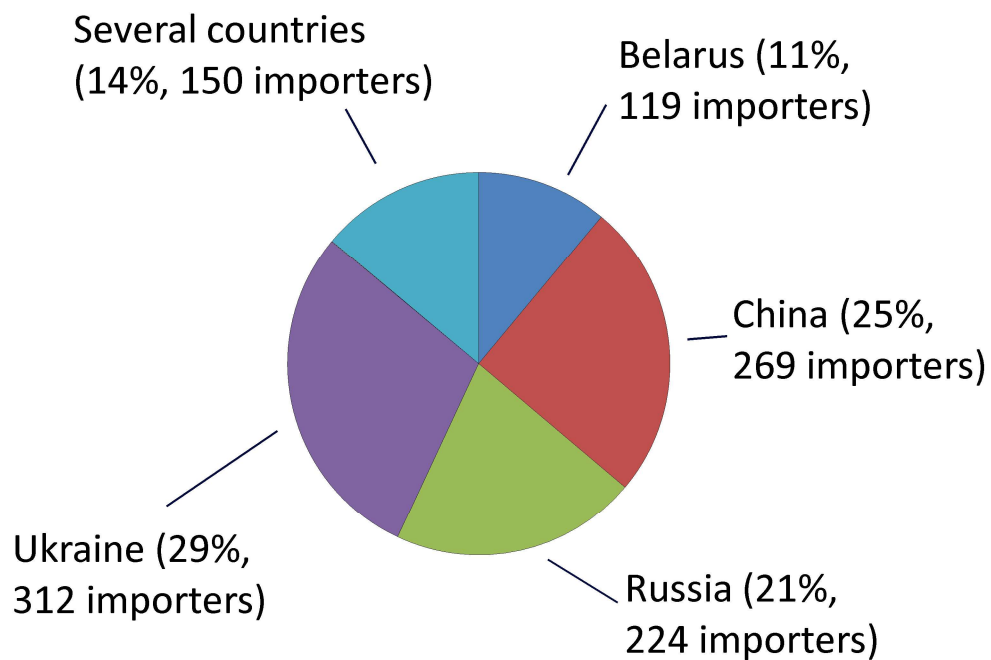
Various goods with WPM from risk countries to Belgium: species



Various goods with WPM from risk countries to Belgium: type



Various goods with WPM from risk countries to Belgium: importers



Total: 1074 importers



Data collection and estimation

	Belgium	Netherlands	Luxembourg
Number of import sites (high risk)			
Fraxinus wood	30	55 ^a	8 ^a
WPM	15	28 ^a	4 ^a
Various goods with WPM	19	35 ^a	5 ^a
Surface large urban centres (ha, medium risk)	500000	780145 ^b	7540

^aNot yet available, data for the Netherlands and Luxembourg are extrapolated based on nominal GDP

^bNot yet available, data for the Netherlands are extrapolated based on population

Data collection and estimation

	Belgium	Netherlands	Luxembourg
Total surface (ha)	3068900	4186500	258640
Target population (ha with at least 1 Fraxinus)	340989	465167	28738
% in import areas	2,6	3,6	8,3
% in large urban centres	16,3	18,6	2,9
% in low risk areas	81,1	77,8	88,8

Survey design per country with RiBESS+


RiBESS+

What would you like to estimate?

Sample Size

Target confidence of freedom

0.01 0.95

Convenience sampling approach

Convenience

The number sampled per group is proportional to the convenience value

risk factor 1	Convenience
Baseline	0.00
Medium	1.00
High	1.00

Parameters Risk factors

Enter as data frame

<none>

Number of Risk factors

0 1 2 4 6

Complete risk proportions

Risk Factor

risk factor 1

levels

2 3 10

Level name Value Value

Baseline 1 0.811

Level name Value Value

Medium 2.5 0.163

Level name Value Value

High 5 0.026

Parameters Risk factors

Population size

fixed Value

340989

Test sensitivity

fixed Value

0,75

Design prevalence

fixed Value

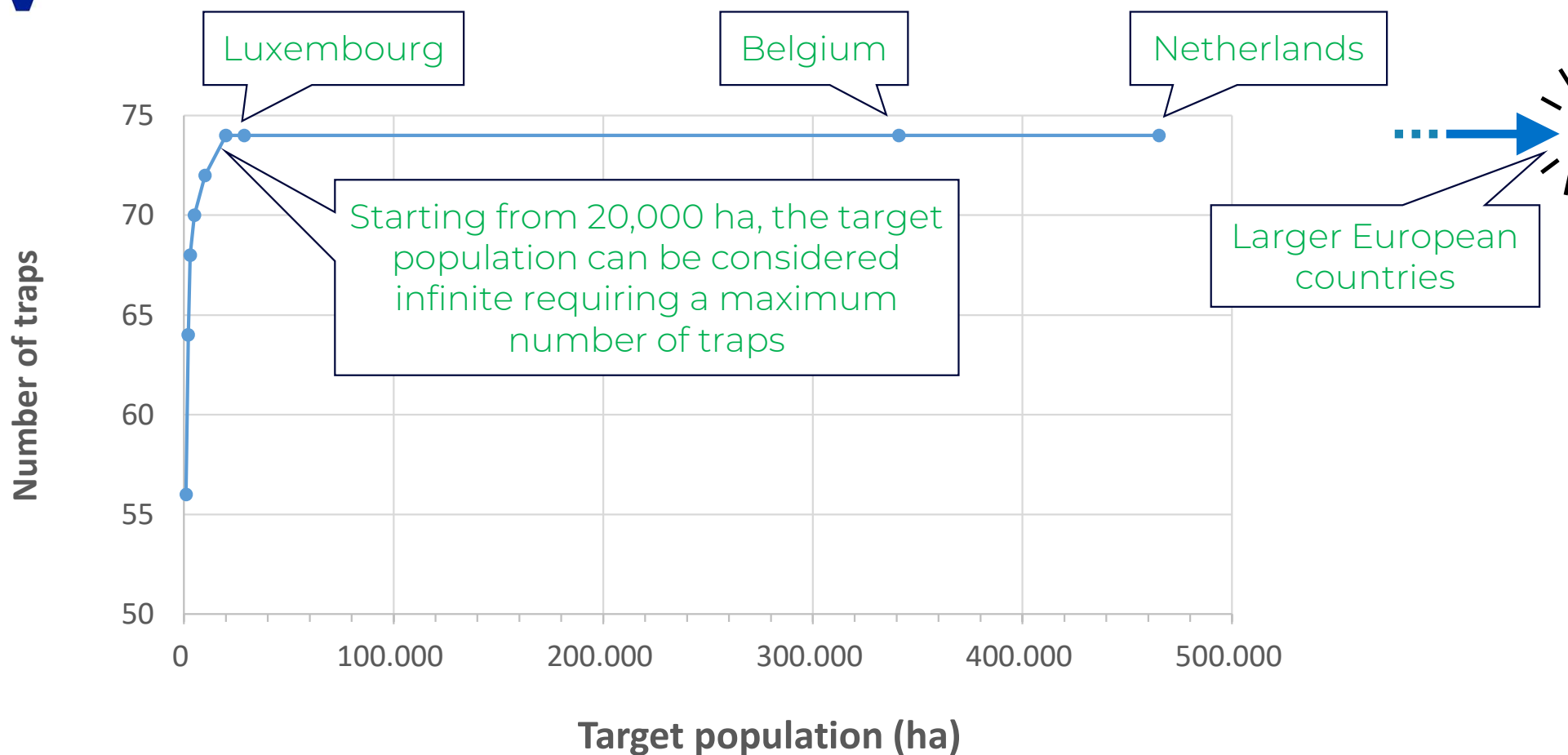
0,02



Survey design per country with RiBESS+

Country	Target population	Traps, High risk	Traps, Med risk	Traps, Base risk	Total	CL
Belgium	340989	36	36	0	72	0,95
Netherlands	465167	38	38	0	76	0,95
Luxembourg	28738	36	36	0	72	0,95
Benelux	834,893	110	110	0	220	1

Population size simulation with RiBESS+*



*For this simulation, Belgium, The Netherlands and Luxembourg were assumed having the same risk site proportions

Survey design for the ecoclimatic region with RiPEST

Epidemiological units

How can you divide the target population?

Administrative units (NUTS)

Land use (Agricultural areas, urban areas, forest areas and other areas)

Administrative units and land use

User defined

Select the appropriate NUTS classification.

NUTS 1

Label epidemiological unit	Number of inspection units
Belgium	340989
The Netherlands	465167
Luxembourg	28738

Do you want to reallocate the samples to the epidemiological units?

Yes No

How do you want to allocate the samples?

Proportional to host population in the epidemiological units

Risk factors

How many risk levels do you want to take into account?

3

[Refresh/update](#)

Epidemiological unit	Risk level	Relative risk	Percentage within each epidemiological unit [%]
Belgium	high	5.00	2.6000
Belgium	medium	2.50	16.3000
Belgium	base	1.00	81.1000
The Netherlands	high	5.00	3.6000
The Netherlands	medium	2.50	18.6000
The Netherlands	base	1.00	77.8000
Luxembourg	high	5.00	8.3000
Luxembourg	medium	2.50	2.9000
Luxembourg	base	1.00	88.8000



Survey design for the ecoclimatic region with RiPEST

Country	Target population	Traps, High risk	Traps, Med risk	Traps, Base risk	Total	CL
Belgium	340989	13	13	0	26	0,67
Netherlands	465167	18	18	0	36	0,77
Luxembourg	28738	6	6	0	12	0,39
Benelux	834,893	37	37	0	74	0,95

- Statistically sound surveys for large target populations, eg like in forests, often require maximum numbers of traps regardless the size of the country.
- Surveys in ecoclimatic regions can reduce the numbers of traps, but at the cost of confidence level per country.
- The regional collaboration, methods harmonization, in depth risk factor categorization, will improve the quality of the survey
- The work will continue to finalize the data analyses and survey calculations by 2027