Questionnaire

Provenance delineation and deployment in CE countries

Details of the participant

Name	
Country	
Institution	
Address	
Contact details	
Phone	
Email	
Date	

Introduction:

SUSTREE is an Interreg CENTRAL EUROPE project that aims at the promotion of climate change adaptation of forest ecosystems by fostering and enabling transnational adaptive management of forest genetic resources.

The present survey for the participating countries Austria, Czech Republic, Germany, Hungary, Poland, and Slovakia is part of Activity A.T1.1 and should help to compare the legal, administrative and scientific basis of the present seed zone respectively provenance region delineation within the various countries of Central Europe.

The survey will be accompanied by a statistical comparison of seed zones/provenance regions with respect to present and expected future climate.

How to fill:

➔This questionnaire should be filled in only one time per country, at best from an expert of the countries' project partner or in cooperation with an associated partner that is responsible for legal aspects of FRM within the country.

Also needed:

➔In addition to the filled questionnaire, we need digital (GIS) maps of seed zones/provenance region form each country in order to undertake the statistical comparison

A) Design and Development of provenance regions

This section should help us to find out on which basis provenance regions are delineated. Although the main purpose of provenance regions is to characterize regions with similar phenotypic or genetic characters of the respective tree species, mostly ecological conditions or vegetation types are the basis for delineation.

Within the questions below, we thus differentiate between **direct** criteria (criteria that were used for the calculation/aggregation/division of regions) and **indirect** criteria (criteria for which the delineation is intended for, which are supposed to be important or which are thought to be correlated with the direct criteria). This distinction should help us to compare the real data that underlie the various national approaches.

A.1 On which criteria were the provenance regions delineated

A.1.1 Based on ecological/environmental conditions

Which variables were used **directly** for the delineation (of course some variables depend on each other) and which are considered to be **indirectly** affected by the delineation.
Please mark only those criteria as direct that were really used for the division of provenance regions.

	Directly	Indirectly	Remarks
Climatic conditions	☐	☐	
Bedrock and soil characteristics	☐	☐	
Vegetation communities	☐	☐	
Altitude	☐	☐	

Please, just mark the appropriate field with a "✓" , and add – if necessary - additional criteria or remarks.

A.1.2 Based on <u>genetic knowledge</u>

Which variables were used **directly** for the delineation (of course some variables depend on each other) and which are considered to be **indirectly** affected by the delineation.

Please mark only thus criteria as direct that were really used for the division of provenance regions.

	Directly	Indirectly	Remarks
Provenance tests (typically common garden test on multiple test sites that are measured in tree ages of 5-40 years)	☐	☐	
Climate chamber experiments or nursery trials (typically on one test site (nursery or climate chamber) and including measures of quantitative genetic variation in tree ages of 1-5 years)	☐	☐	
Growth (tree height, dbh or similar measures)	☐	☐	
Phenology	☐	☐	
Resistance to diseases/pest	☐	☐	
Isozyme analysis	☐	☐	
Molecular genetic variation (mitochondrial, chloroplast or nuclear variation)	☐	☐	
	☐	☐	
	☐	☐	

Please, just mark the appropriate field with a "✓" , and add – if necessary - additional criteria or remarks.

A.1.3 Based on <u>administrative boundaries</u>

Yes No

If **YES**, on which NUTS-level is the delineation based:

For details on NUTS-levels see:
http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction
https://en.wikipedia.org/wiki/Nomenclature_of_Territorial_Units_for_Statistics
https://en.wikipedia.org/wiki/First_level_NUTS_of_the_European_Union

A.1.4 Are the provenance regions accompanied by an <u>altitudinal classification?</u>

Yes **No**

<u>If **YES:**</u>

- the altitudinal classification is fixed (= fixed elevation classes) for each (or all) provenance region

Yes **No**

- the altitude of the single seed stands (or orchards/clones) is considered for their identification/labeling

Yes **No**

- provenance recommendations/deployment make use of the altitudinal characterization

Yes **No**

If there is a fixed altitudinal classification, please specify **how many** altitudinal classes are used and for **which altitude** they are given:

A.1.5 If environmental or genetic data were used for the delineation of provenances, which statistical approaches were used for delineation? (e.g. PCA, CCA, SAMOVA, TESS….)

A.1.6 Does the provenance delineation consider climate change scenarios?

☐ **Yes** ☐ **No**

A.1.7 Methods for delineation

In some countries, for example Austria, different species have the same provenance regions. This is done on the basis of homogeneity tree communities with the hypothesis that similar tree communities/ populations will occur under identical environmental conditions. This approach is known as **Agglomerative approach**.

On the other hand in some countries **Divisive approach** is adopted to delineation of provenance region. Under this approach different tree species/ population have different provenance regions. This occurs for example in Germany, which is based on the environment -tree occurrence correlation.

In my country following approach is affective:

☐ Agglomerative methods (for all species together)

☐ Divisive methods (different for different species)

B) Purposes of the provenance delineation and its utilization/deployment

In some countries, the labeling and identification of seed reproductive material and provenance regions have a long tradition in forestry and thus a strong foundation in forest practice, in other countries provenance regions were recently developed in order to meet the requirements of the Council Directive 1999/105/EC. The following questions should help to assess how important the system is at the moment for the respective national forest and nursery sector.

B.1 What are the most important purposes of the provenance delineation system?

	Very important	Important	Not important	Remarks
1) Fulfillment of the rules of the COUNCIL DIRECTIVE 1999/105/EC (i.e. labeling of FRM)	☐	☐	☐	
2) Basis for breeding activities (Provenance regions = breeding zones)	☐	☐	☐	
3) As a provenance recommendation system (delineation of seed transfer zones)	☐	☐	☐	
4) As regulation system for subsidies for forest reforestation and planting	☐	☐	☐	

Definitions according to the attached presentation of Alia et al.:

- Region of provenance / Seed zone:
  An area or group of areas subject to sufficiently uniform ecological conditions in which stands or seed sources showing similar phenotypic or genetic characters are found, taking into account altitudinal boundaries
- Seed transfer zone:
  An area within a seed from a determined seed zone can be planted in any new site without fear of maladaptation.
- Breeding zone:
  An area within which a single population of improved trees can be planted without fear of maladaptation, or an area for which breeding activities (e.g. seed orchards, clone collection) are undertaken.

B.2 Are forest tree nurseries aware of the provenance delineation system?

Yes **No**

B.3 Are foresters aware of the provenance delineation system?

Yes **No**

B.4 Is the planting of forest trees (respectively seedlings or clones)from the correct provenance regions mandatory for forest owners and managers?

- ☐ **YES**, but only for public forests
- ☐ **YES**, for all forest owners
- ☐ **NO**

B.5 Is the planting of forest tree/seedlings from the correct provenance regions connected to subsidies?

Yes **No**

B.6 Is it allowed to use forest seed/seedlings from outside your country for aforrestations,

if the seeds/seedling originate from within the EU

Yes **No**

if the seeds/seedling originate from outside the EU

Yes **No**

Please explain of there are any restrictions with reproductive material from outside source country
