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Trade and Agriculture Directorate
Committee for Agriculture

OECD Scheme for the Certification of Forest Reproductive Material Moving in International Trade

DRAFT SELF-EVALUATION REPORT ON THE REQUEST OF SLOVENIA TO JOIN THE OECD FOREST SEED AND PLANT SCHEME

3-4 May 2021, ZOOM Meeting.

This self-evaluation report was submitted by Slovenia. An Evaluation Team consisting of Mr Mirko Liesebach (Germany and Mr Csaba Gaspar (OECD Secretariat) reviewed the report according to the Rules and Regulations of the OECD Forest Seed and Plant Scheme (Annex X.A)

The self-evaluation report is submitted for DISCUSSION and RECOMMENDATION to the Technical Working Group Meeting to be held on 3-4 May, 2021.

Taking into account the exceptional circumstances caused by the COVID-19 pandemic, the Bureau and the Secretariat propose to NDAs to follow the written procedure during the evaluation process of Slovenia.

The Technical Working Group is invited to recommend to the Annual Meeting the approval of the recommendations of the Self-Evaluation Report and the admission of Slovenia to the OECD Forest Seed and Plant Scheme by the written procedure.

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Executive summary

Slovenia applied for membership in the OECD Forest as it would enable the country to plan the transfer and use of FRM for supplementary planting from other South-East European Countries. The membership would also contribute to greater genetic diversity of future forests, their greater resistance to harmful changes in the environment and the existence of forests, despite unfavourable simulations of changing environmental conditions for the growth of economically important tree species.

The area of woodlands in Slovenia is over 1 million ha which is close to 60% of the total country area. This places Slovenia to the 3rd-4th most forested country in the European Union.

The detailed rules of certification of forest reproductive material are defined in the Forest Reproductive Material Act (ZGRM, 2002), its subordinate regulations, and the Slovenian Forest Act (ZOG, 1993). These national regulations are harmonised with and implement the European Directive (EC/105/1999) controlling the marketing of forest reproductive material within the EU and, thus, also in line with the Rules and Regulations of the OECD Forest Seed and Plant Scheme.

Slovenia nominated the Ministry of Agriculture, Forestry and Food as national designated authority for the OECD Forest Seed and Plant Scheme. The OECD FRM certification system will be implemented via the Slovenian Public Forest Service by the Slovenian Forestry Institute, supported by the Slovenia Forest Service and the Inspectorate for Agriculture, Forestry, Hunting and Fisheries.

Slovenia has a sufficient staff to implement properly the OECD Forest Seed and Plant Scheme.

The evaluation team carefully reviewed the entire background documentation and concluded that Slovenia has a well-established FRM certification system. The country has developed all the necessary capacity and tools for implementing the OECD certification system of forest reproductive material.

Recommendation: Having carefully examined the information and data on the forest sector and the national FRM certification system, the evaluation team recommends the admission of Slovenia to the OECD Forest Seed and Plant Scheme. The participation of Slovenia in the Forest Seed and Plant Scheme would further enrich the discussions at the annual meetings and technical working group meetings.

The Annual Meeting is invited to admit Slovenia to the OECD Forest Seed and Plant Scheme by the written procedure.

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DRAFT SELF- EVALUATION REPORT ON THE REQUEST OF THE UNITED KINGDOM FOR ADMISSION TO THE OECD FOREST SEED AND PLANT SCHEME

1. INTRODUCTION

1. This Report discusses the readiness of the Republic of Slovenia (Slovenia) for admission to the OECD Scheme for the Certification of Forest Reproductive Material Moving in International Trade.

1.1. Slovenia and the OECD Codes and Schemes

2. Slovenia is a member of the OECD since 2010. However, the relation between Slovenia and the OECD Codes and Schemes dates back to 1994 when the country joined the OECD Seed Schemes. Today Slovenia is adherent to and actively participating in five from the eight Seed Schemes: The Grass and Legume Seed; the Crucifer Seed and Other Oil and Fibre Species Seed; Cereal Seed; Maize Seed and the Sorghum Seed Schemes. In addition, Slovenia applied for membership in the OECD Fruit and Vegetables Scheme in 2021.

1.2. Application of Slovenia to join the OECD Forest Seed and Plant Scheme

3. Slovenia participated in the Meetings of the OECD Forest Seed and Plant Scheme since 2018 as an observer country. During this period, Slovenia organised the 2018 Technical Working Group Meeting which was a good opportunity for Slovenia to introduce the national forest sector and their certification system for forest reproductive material (FRM) via presentations at the meeting and during the technical field trip.

4. Slovenia applied to join the Scheme in February 2021 in an official letter sent by the Minister of Agriculture, Forestry and Food to the Secretary General of OECD dated 2nd February 2021 (Annex A). The inclusion of Slovenia in the OECD Forest Seed and Plant Scheme would enable the country to plan the transfer and use of FRM for supplementary planting from other South-East European Countries. The membership would contribute to greater genetic diversity of future forests, their greater resistance to harmful changes in the environment and the existence of forests, despite unfavorable simulations of changing environmental conditions for the growth of economically important tree species.

5. In the official application letter, Slovenia indicated that the Ministry of Agriculture, Forestry and Food of the Republic of Slovenia would be responsible for the implementation of the OECD Forest Seed and Plant Scheme.

6. The OECD Secretariat followed up on this application, and requested a self-evaluation report on the national FRM certification system from Slovenia, according to the accession procedure for an OECD Member country (APPENDIX X.A of the Rules and

Regulations of the Forest Seed and Plant Scheme). Slovenia submitted this report to the Secretariat on 15 March 2021. This report was reviewed by an evaluation team consisted of Mr Mirko Liesebach from Germany and Mr Csaba Gaspar from the OECD Secretariat.

7. Taking into account the current safety measures and lack of physical meetings, the Bureau and the Secretariat propose to follow the written procedure during the evaluation process. According to this proposal, an official delegation of Slovenia is invited to participate in the virtual 2021 Technical Working Group Meeting of the OECD Forest Seed and Plant Scheme to present this report and answer questions from delegations of participating countries.

8. The Technical Working Group is invited to recommend to the Annual Meeting the approval of the recommendations of the Self-Evaluation Report and the admission of Slovenia to the OECD Forest Seed and Plant Scheme by the written procedure.

9. Subject to the approval of the Annual Meeting, the Self-Evaluation Report will then be submitted to the Committee for Agriculture for endorsement by the written procedure admitting Slovenia to the OECD Scheme for the Certification of Forest Reproductive Material moving in International Trade.

2. OVERVIEW OF FORESTRY IN SLOVENIA

2.1. Introduction

10. Slovenia is characterised by its heterogeneity in topography, diversity in climate and ecological conditions, its biogene origin, resulting in high biodiversity, and large areas of well-preserved forests, conserving the natural biodiversity at different levels.

2.1.1. *Climate and geography*

11. The climate is from mild sub-mediterranean to continental and alpine.

12. The country reaches from the Adriatic Sea to the highest peak at 2864 m above sea level. The phytogeographic territories, which correspond approximately also to the provenance regions, include Alpine; Prepannonian; Dinaric and Sub Mediterranean regions with a mosaic of intermediate ones, determined as Predinaric and Prealpine.

13. The ground rock material is predominately calcareous limestone, dolomite, flisch and gneiss, with some metamorphic and magmatic areas (Vrščaj et al., 2017). Only one region is characterised by magmatic material; the Pohorje provenance region.

14. The average inclination of the territory is 40 % (Figure 1), and the same is the share of the areas with specific karst phenomena, as described by J.V. Valvasor in his The Duchy of Carniola (1689), defining them with the terms from Slovenian language from the Karst region in South-west Slovenia. Namely, when water reacts with limestone ground rock material it forms

- a number of characteristic structures (such as škraplje),
- valleys with soil piled in the centre (dolina, vrtača, koliševka),
- karst fields (polje) which are flooded as lakes a part of the year,
- a number of caves with different underground formations, while the aboveground water is scarce as it disappears into the ground forming streams inaccessible to plants and humans, and
- Underground habitats for some highly specialized animals.

15. The soils on limestone are strongly dependent on the vegetation, and if the forest is cut, the soil disappears along with it, and the ground rock material is exposed for centuries or millennia before the soils are reformed (Vrščaj et al., 2017).

Figure 1 Slovenian topography (**http://www.hervardi.com/zemljevidi_slovenije.php**).

2.1.2. *Slovenian Flora*

16. From the approximately 3300 plant species in Slovenia, around 350 are woody plants, and around 75 are forest tree species (Martinčič et al., 2007; Brus, 2004) of which 22 are endemic to Slovenia.

17. Including the animal and fungal component, Slovenia belongs to the European 'biodiversity hot belt' (Mršić, 1997). The only national park, the Triglav national park, has been established in 1924. At present 50 % or 41,616 ha within its territory are forests; while if *Pinus mugo* were also considered as forest, then 63 % or 52,965 ha of the national park are forests (Klopčič, Pisek, Poljanec, 2015). In addition to the national park, there is a number of other nature conservation areas of different categories. In total as much as 37.16 % of Slovenian territory is included into NATURA 2000 areas, from which about 29 % is in different nature conservation categories and 71 % is forests (ZGS, 2019).

2.1.3. *Forests in Slovenia*

18. Slovenia is the 3rd to 4th position regarding the share of forests among the European countries. Only 20 % are state forests, while over 400,000 private owners own 8 0%. The present forest area is close to 60 % of the total country area with 1,185,930 ha of forests and according to the forest management plans is shared as follows:

- 1,079,660 ha managed forest,
- 96,762 ha protective forests and
- 9,508 ha forest reserves.

19. In Slovenia, forests are the most important renewable natural resource beside water. Most forests are located within the area of beech, fir-beech and beech-oak sites (70 %), with high production capacity (Perko, 2007). Forests are the key to biodiversity conservation, carbon storage and reserve of renewable raw materials. They also significantly contribute to air and ground water quality. Thus, their deterioration would lead to an increase in human and animal health issues and would have a negative economic impact.

20. The total growing stock is 357 Mm^3, or 303 m^3/ha. The average annual increment is 7.5 m^3/ha, the possible yearly cut is 6,985,621 m^3, and the actual cut in 2019 was 87 % of the possible cut (ZGS, 2019).

21. In the majority of forests (8 7%) the species composition is equal to or similar to the natural one (Figure 2). Beech associations dominate around 70 % of all forests. However, the growing stock of beech is only around 32 % of the total, while Norway spruce is 31 %, Silver fir is 7.5 %, pines are 5.8%, larch and other conifers are 1.4 % for, oaks are 7 %, noble hardwood is 5 %, for other hardwoods are 8.2 %, and 1.7 % of soft broadleaves (ZGS, 2019).

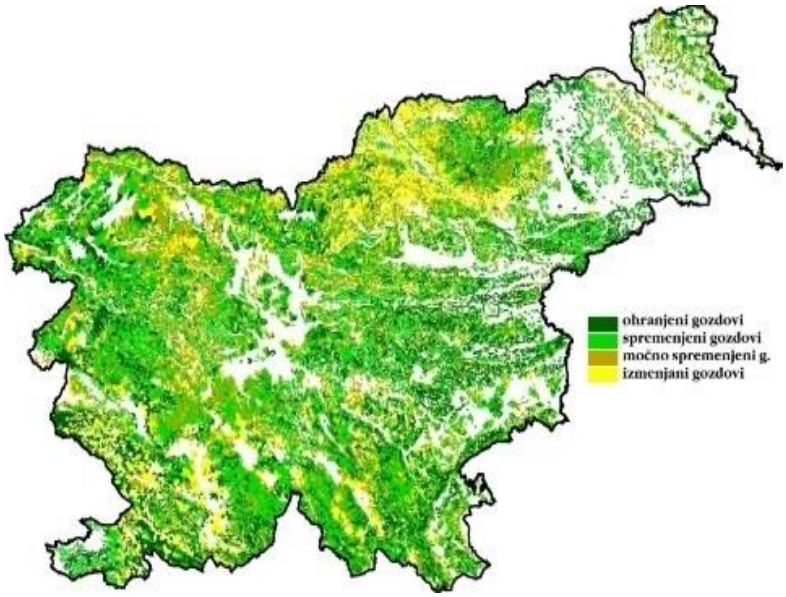

Figure 2) Forests cover around 60 % of the Slovenian territory, and are well preserved (green: species composition equal to (dark green) or very similar to the natural one (light green), only in 13% of forest tree species composition is different form the natural one (yellow colours; Kraigher et al., 2019)

22. Forests in Slovenia provide 0.3 % GDP, with an increasing tendency, and provide more than 6000 full day work equivalent jobs. Forests and the forest based industry in Slovenia has reached its minimum in 2012 of providing for the whole sector (including forestry, woodworking and pulp and paper industry) merely 1 % GDP and 24,000 employees (MKGP, 2017), however, the sector has regained its growth in the last 5 years.

23. As the main renewable resource, the need for research and professional based support for future forests is growing, considering especially the large-scale climate change related disturbances and outbreaks of pests and diseases decimating a number of tree species, and largely affecting their distribution areas. A great responsibility for forestry and forest science is to provide support to management, planning and protection of forests and the conservation of the exceptional biodiversity found in Slovenian forests.

2.1.4. *The European dimension with special emphasis on EUFORGEN and EUFGIS*

24. EUFORGEN – European forest genetic resources programme (www.euforgen.org) – has been established in 1994 based on the resolutions of the Ministerial conferences for the protection of forests (MCPFE, now Forest Europe, FE) in Strasbourg (1990) and Helsinki (1993) (Kraigher et al., 2019). It aims at developing strategies for conservation of forest genetic resources, overviews policies and strategies contributing to it, provides access to research results to forestry professionals and policy makers and organizes the European information system on dynamic conservation units of forest trees (EUFGIS). Currently it is in its 6th five-year phase, combines efforts of 27 countries. It contributes to the development of the indicator 4.6 of the pan-European Criteria and Indicators for sustainable forest management on production and use of genetically diverse forest reproductive material on development of a decision support tool for monitoring and managing gene conservation units. It also provides the coordination for bridging information systems and approaches of Gene Banks across domains of animal, plant / crop and forest genetic resources.

25. Slovenia has been actively participating in EUFORGEN since 1995. It was a partner in the EUFGIS (Agri Gen Res) project, and is currently involved in the preparation of the GenRes Bridge project. Within the EUFGIS information system, 41 forest gene reserves (gene conservation units) for 21 forest tree species are from Slovenia, all also a part of the National list of the seed objects and the *in situ* part of the Slovenian Forest Gene Bank. Furthermore, all harmonization processes in development of the new Slovenian legislation on FRM have been largely enabled through participation at EUFORGEN events. Among important outputs of the EUFORGEN programme was also the organization of the Steering Committee meeting in Novo Mesto in 2007 and the organization of the Conifers network meeting in Brdo by Kranj in 2010. and the initiation of the current LIFEGENMON project (LIFE13/ENV/SI/000148), a six-years (2014 - 2020) international LIFE+ project aiming at development of a system for forest genetic monitoring (www.lifegenmon.si).

26. Furthermore, Slovenian scientists have been partners in a number of bilateral and international projects. Among the bilateral projects, the projects FRANGUSAVA with Croatia and Serbia have contributed to population genetic studies of ash species (*Fraxinus excelsior* and *F. angustifolia*) along the Sava River, and the feasibility for division of the area of Slovenia on different provenance regions for the major and selected minority species. Among COST actions, EUROSILVA E6 was the first, also deriving from the resolutions of the MCPFE process in Strasbourg, contributing to belowground physiological and ecophysiological studies for protection of forests. It was followed by actions:

- E38, FP803, FP903, FP1305 on belowground processes and climate change impacts on forest ecosystems
- E28 to genetic population studies
- E52 to development of the international beech provenance trial and analysis of its results
- FP1202 to identification of common problems and development of common strategies for marginal populations of forest trees
- E42 to enhance the growing of valuable broadleaf tree species.

27. The COST FP1405 NNEXT contributes to development of common overviews, risks and applications of non-native forest tree species in Europe, while the current COST action G BIKE contributes to genetic diversity and monitoring studies in all kingdoms of living organisms.

28. Within IUFRO (International Union of Forest Research Organizations) the contributions of Slovenian scientists were maximal during the organization of the XVIII World IUFRO Congress in Ljubljana under the presidency of prof. Dušan Mlinšek, when also The Slovenian Forestry School was presented to the world forestry scientists and professionals. At present, the activities within the forest gene conservation scopes in Slovenia are linked to the IUFRO sessions on Norway spruce genetics, air pollution effects on forest trees and forest ecosystems, on the session on Forest genetic monitoring, as well as others. Furthermore, the Slovenian Forestry School and conservation of hidden biodiversity were presented as a plenary keynote presentation at the 125th Anniversary IUFRO Congress in 2017, and at the sessions on Biodiversity and policy interface, presenting predominantly the LIFEGENMON aims and output at this congress, as well as in several sessions at the IUFRO World Congress in 2019.

29. The excellent international networking and personal collaboration has also enabled several PhD Thesis to be finalized partly abroad (here the special recognition is on the Forestry Faculty Zvolen, Slovakia, and Ladislav Paule and Dušan Gömöry, and to the AWG (former ASP) in Teisendorf, Germany, with the past directors Albrecht Behm and Monika Konnert). It also enabled Slovenia to participate and coordinate several international and European projects. Among these, the 7FW project EUFORINNO, and the LIFE environment fund project LIFEGENMON were of special importance.

30. Furthermore, participation within the EUFORGEN programme has enabled personal exchange and collaboration of experts on FRM legislation who have contributed to the preparation and harmonization of the FRM Act and subordinate legislation between the years 1996 to 2004; among these (according to the year of first contact) Hans Muhs (D), Alan Fletcher (UK), Ilse Strohschneider (A), Alphonse Nanson (B) and others.

2.1.5. *Development of a system for monitoring of forest genetic diversity*

31. Conservation and management of Forest Genetic Resources (FGR) is an essential part of sustainable forestry, however not an easy task. To recognize the state of and changes in the composition of the genetic variation and track the undisturbed transfer of genetic information to subsequent generations, forest genetic monitoring is needed. Genetic monitoring can track changes of FGR adaptive and neutral genetic variation through time caused by climate change, forest management (in particularly FRM production and use), and conservation measures through well defined indicators and their verifiers (Namkoong et al., 1996; Aravanopolous et al., 2015; Fussi et al., 2016, Kraigher et al., 2019).

32. Forest genetic monitoring is an essential prerequisite for maintenance and control of sustainable forest management aiming to conserve genetic and consequently biological diversity at species, ecosystem and landscape levels, especially in marginal and peripheral populations (Fady et al., 2016). The need for monitoring genetic diversity has been recognized by the United Nation's Convention on Biological Diversity, which in Article 7 calls for action to "monitor through sampling and other techniques the components of biological diversity" (CBD, 1992). Further, genetic monitoring has been recognized to be an integral part of managing gene conservation units in forests (Koskela et al., 2013).

33. Genetic monitoring was first proposed by experts from FAO (Namkoong et al., 1996), and later on simplified for practical use by the German programme for conservation of forest genetic resources (Konnert et al., 2011) and by the EUFORGEN working group on forest genetic monitoring (Aravanopolous et al., 2015). The German concept of forest genetic monitoring was put into practice and the baseline data for selected indicators collected (Konnert et al., 2011). Recognizing the importance of forest genetic monitoring, Slovenia is together with Germany (Bavaria) and Greece under the framework of the LIFEGENMON project, and within the SIFORGEN programme, developing and implementing the first internationally coordinated system for forest genetic monitoring for two ecologically and economically important species in the region, *Abies alba* (silver fir) and *Fagus sylvatica* (European beech). Two genetic monitoring plots have been established in 2015 where 250 adult trees and 200 saplings have been marked, measured and sampled for genetic analysis, in addition to yearly phenology and seed set observations. Additionally, seed from 20 adult trees has been sampled to undergo seed quality (germination, vitality) and genetic analysis.

34. In addition to plot selection (representativeness for the area / ecogeographic region / genetic lineage) and establishment, the development of the forest genetic monitoring system entails:

- Transfer of the state-of-the art scientific knowledge into an operational form expressed in indicators and their verifiers,
- Checking of the feasibility of collecting such verifiers in the field and the laboratory,
- Careful cost-benefit analysis of the information value of each verifier with regards to the expenses for its estimation,
- Definition of measurement intervals and definition of thresholds for management and conservation of FGR, and
- Development of a general support among stakeholders, policy makers and the public for its implementation, rendering the policy interface, and communication with foresters from practice, NGOs, and others among important goals for long-term sustainability of the system under development.

2.1.6. *Measures for »genetic protection of forests« - SIFORGEN*

35. Based on the tradition of forest gene conservation in Slovenia starting with Maks Wraber and Miran Brinar in 1950 - 1960 (see chapter 3.1.2) the Slovenian forest genetic resources programme (SIFORGEN) was established alongside with our participation within the EUFORGEN programme. Within different phases of EUFORGEN, Slovenia contributed country reports on the state of forest genetic resources within all EUFORGEN networks and to the working group on forest genetic monitoring. Slovenia is currently actively involved within two working groups on the decision support tool for gene conservation units and on production and use of genetically diverse FRM.

36. The most visible past activity of SIFORGEN was publication of the translations of 21 issues of Technical guidelines for conservation of forest genetic resources with Slovenian additions, some of which combine more species than the originals (available at http://www.euforgen.org/member-countries/slovenia/). At present the SIFORGEN's overview, strategy and action plan are being revised and prepared for a country publication. It takes into account the discussion line with the Slovenia Forest Service, on problems and

measures per tree species, the current situation in forest seed husbandry and nurseries, and the needs for further development of the Slovenian forestry school, development of a system for forest genetic monitoring, and for better supporting forest genetic diversity in development of silvicultural practices. SIFORGEN is under continuous development, concentrating especially on measures, which would enhance genetic diversity of all components in the forest ecosystem, and help maintain the adaptability potential of forest trees to the future environments. It considers the anticipated fast climate change and other stressful events, which are diminishing the chances of forests to remain in their current distribution area and structure, as we know today (e.g. Schueler et al., 2014).

37. The "Measures for genetic protection of forests" (Kraigher et al., 2019) comprise and consider:

- Every silvicultural / forest management measure to be considered with respect to its impact on genetic diversity of the stand / population(s)
- Support of natural regeneration,
- Assist regeneration by co-planting and co-sawing of a high number of tree species based on site-matching (enrichment planting),
- Use adequate forest reproductive material (FRM) of high genetic diversity, through:
    - Defining the minimum number of seed trees for FRM production,
    - Collection of FRM in full mast years,
    - Controlled and prescribed mixing of seed units,
    - Use advanced seed and seedling production systems,
    - Test provenances for transfer and mixing of FRM.

38. Among forestry practices that have shown to help maintain processes in genetic diversity among the adult stand and young regeneration centers was shown to be especially appropriate the irregular shelter wood system (Westergren et al., 2015).

39. However, since all anticipated measures for genetic protection of forests can only be accepted if forestry practice, decision makers and the public recognize the role of forest genetic diversity and its monitoring, communication is of an utmost importance for the future of our forests. The communication strategy 'for future forests' demands to:

- Communicate to general and target audience the needs for conservation of FGR, FGM and measures for genetic protection of forests through a well-developed narrative
- Develop the positive attitude towards forests and forestry through the whole national education system
- Forestry should get to the hearts of people by helping people in need
- Formalize the „science on communicating science" in forestry
- Establish a national and international science – policy interface.

2.1.7. *Organisation of supply with seed and seedlings in Slovenia*

40. Since 1991 the regeneration with planting and seeding in Slovenian forests has diminished from production of around 20 million seedlings per year to less than 2 million seedlings per year. In parallel the number of forest nurseries has declined, and the largest seed producer has ceased to exist in 2014. However, the large scale disturbances, such as ice-sleet in 2014, bark-beetle gradations from 2016 onwards, and windbreaks from 2017 onwards, have impacted around 60 % of forests and 40 % of the forest growing stocks. Therefore, the seed husbandry and forest nurseries have started to recuperate in the past few years.

41. It is not possible to manage forest development sustainably with planting and sowing as an activity complementary to natural reforestation without establishing a comprehensive system that ensures a permanent supply with seed and seedlings. Seedlings are usually grown on a multi-year basis. For this reason, a medium-term programme (for 5–10 years) for the needs for seedlings and collection of seed is required as a basis for planned seedlings production and, if necessary, also for sowing in open fields. The medium-term programme needs to be supplemented on an annual basis; both are prepared within the Public forest service by the Slovenia Forest Service with expert support by the Slovenian Forestry Institute. Based on forest management plans, annual reforestation programmes and medium-term programme for the needs for seed, annual programmes and plans for the collection of seed and programmes for the growing of seedlings by tree species, quantities and provenances are created. In order for the supply of tree nurseries with seed to be undisrupted, previous stocks need to be available for years when there is no seed crop. This role is performed by the Seed storage, kept by the Slovenia Forest Service. Due to the mentioned problems with the production of seed in 'selected' seed stands, we also approve forest stands or groups of trees for FRM category 'source identified'. As an example of the annual production of FRM in Slovenia, we provide the data on the issued master certificates (Annex D) for the FRM extracted in Slovenia for 1998 and 2018, combined with the data from the Slovenia Forest Service report (ZGS, 2019).

42. Currently 10 forest seed and nurseries operators (by 6 owners) are registered at the Ministry of agriculture, forestry and food (MAFF which are all privately owned. Two of them provide seedlings for most forests, and are located in the North (Omorika) and SW (Matenja vas) of Slovenia. Other two are specialized in seed production and marketing (by the same owner), are located in the central part, and the other 6, registered as 2 per owner) are all located in the NE part of Slovenia, specialized in production of seed and planting material for flood-plain forests, predominantly for the Prepannonian provenance region.

43. Slovenian nurseries produce only bare-root seedlings; when containerized seedlings are required, the production is done predominantly with the seed material originating from Slovenia, but produced in a neighboring nursery in Austrian Styria (LEICO).

44. Vast majority of FRM is produced in Slovenian forests and nurseries, while some is produced in Austria and Croatia. The use of the FRM from non-Slovenian origin is limited, defined within the Rules on determination of regions of provenances (PO, 2002), and each lot can only be used upon a written expert opinion by the Slovenian forestry institute.

3. LEGAL FRAMEWORK

45. Slovenia is a Member of the European Union since 2004. Thus, the Slovenian legislation is harmonised with the EU and all European Commission (EC) legislation regarding FRM production and certification has been adopted. However, forestry and forest reproductive material certification principles are much older, as presented in the historical perspective below.

3.1. The 'Slovenian Forestry School'

3.1.1. *History – ordnances & recommendations by Maria Teresia 1774*

46. Historically the first forest ordnances were linked to mining ordnances (Mihelič, 2008), aiming at sustainable wood production for mining purposes. However, these were early on followed by forest ordnances, as overviewed by Boštjan Anko (cit. by Zupančič M., 2013), who organized reprinting of facsimile of a number of forest ordnances:

- The forest ordnance from Ortenburg 1406, 1985;
- The Forest Ordnance of Maria Teresia for Carniola 1771, 1985;
- The Bamberg forest ordnances for the Kanal valley and Bleiberg 1584, 1987;
- The Temporary forest ordnance for Stiria 1539, 1987;
- The forest ordnance for Illyrian provinces, 1810, 1989;
- The forest ordnance for Istria, Furlania and Karst, 1541, 1989;
- The forest ordnance for Lower Austria, 1813, 1989; and the five-language manuscript by Josef Ressl from 1842 Planning of reforestation of community lands in Istria (1993).

47. These ordnances, followed by forest management plans, recommended that no clearcutting is done in forests on sensitive karst terrains, in which any plant cover removal would lead to soil erosion, resulting in exposure of bare ground limestone rock material.

48. The sustainable forest management persisted through centuries, yet the German forestry school had an important influence by actively favoring Norway spruce at the cost of European beech distribution in actual vegetation cover in Slovenian forests. In addition, the land-use change into agricultural lands led the area of forests to reach only about 38% of the total area of Slovenia by mid-20th century.

3.1.2. *Silviculture based on forest genetics*

49. After the Second World War and a brief episode of large exploitation of forests (of about five years), clearcutting was again forbidden by the law (from 1949 onwards), while abandoned agricultural lands underwent natural reforestation. At establishment of the Slovenian Forestry Institute (1947) and the Forestry Department (1948) of the Biotechnical Faculty (1947) in Ljubljana, the first five scientists have also established the basis for future development of forests and forestry in Slovenia (Kraigher and Žitnik, 1999). The phytocoenologist dr. Maks Wraber divided Slovenia into phytogeographic regions, and founded silvicultural measures on genetic basis (1950). This scientific background was

incorporated into forest gene conservation practice by dr. Miran Brinar (1961), the founder of the first national Register of forest seed objects, and certification of forest reproductive material (FRM) (Kraigher and Žitnik, 1996; Westergren et al., 2006; Kraigher et al., 2019).

50. Therefore, the practice and legislation in Slovenia preceded the two EC directives of forest seeds and seedlings (EC/404/66 and EC/161/71) in which the origin of FRM was stipulated to be of primary importance for a successful reforestation. The principles by M. Wraber and M. Brinar were that biology is the theoretical and practical basis for contemporary forestry, in which the success is based on the following (Wraber, 1951):

- Enlargement of forest areas,
- Improvement of yield regarding quantity and quality,
- Improvement of wood quality, and
- Use of site-adapted high value species' FRM being the first priority in professional silviculture and forest management.

51. Brinar (1961) defined principles and methods for approval of seed stands for practical use, and delineated seven Slovenian forest seed regions (Figure 3), based on ecological, phytocenologial, technological, and silvicultural criteria, and defined criteria for approval of seed stands, based on source (autochthonity), homogeneity, size, site, adaptation, age, mixture, silvicultural state, density, isolation, and technical characteristics of wood. He also established the Register of seed stands (the first revision made available in 1971). This was later revised by Pavle (1987 and 1997), before the new Forest reproductive material act (ZGRM, 2002) formed the basis for the present National list of forest seed objects, published yearly in the Official gazette (the last revision in January 2021; Seznam CSO, 2021)), and in the EU database FOREMATIS.

Figure 3 The map of Slovenian Seed regions (Semenski objekti, 1971)

3.1.3. *The 'Slovenian forestry school'*

52. The 'Free silvicultural technique' as defined by Dušan Mlinšek (1968) is based on learning from processes in natural forests, aiming at sustainable management and active

support of all functions and roles of forests. The 'Slovenian Forestry School' is based on the following principles (as reported in IPGRI/FAO and EUFORGEN country reports by Kraigher et al., 1996 and Smolej et al., 1998):

- "small-scale flexible forest management, adapted easily to site characteristics and natural development of forests;
- active protection of natural populations of forest trees;
- protection and conservation of biological diversity in forests;
- support of the bio-ecological and economic stability of forests by improving the growing stock;
- tending of all developmental stages and all forest forms for supporting of vital and high-quality forest trees, which could fulfil optimally all functions of forests;
- natural regeneration is supported in all forests;
- if seedlings are used, they should derive from adequate seed sources / provenances, and only adequate species can be used."

53. These principles form the basis of the current Forestry Act (1993) and the resolutions in the National Forest Programme (NGP, 2007).

3.2. The legislative basis for FRM certification

3.2.1. *EU Legislative framework*

54. Slovenia is part of the European Union and therefore the Slovenian legislation on forest reproductive material is harmonized with the *EC Directive on marketing of FRM (EC/105/1999).*

55. Regarding the list of species from the Annex 1 of the *Directive on marketing of FRM (EC/105/1999)*, 10 spp. were excluded from the formal list with the Commission Decision of 6 December 2005 releasing Denmark and Slovenia from certain obligations for marketing of forest reproductive material under Council Directive EC/105/1999 (2005/871/EC). On the other hand, the total list of species for which the Slovenian FRM Act is valid includes several additional tree species (see 5.1 and Annex F).

56. Regarding reporting the Commission Recommendation of 14 February 2012 on guidelines for the presentation of the information for the identification of lots of forest reproductive material and the information to be provided on the supplier's label or document (EC/90/2012) is applied.

57. The *Commission Regulation EC/1597/2002 of 6 September 2002* is laying down detailed rules for the application of Council Directive EC/105/1999. It defines the format of national lists of the basic material of forest reproductive material and its standardised form for the national lists of basic material approved by Member States has been applied for reporting to the EC, and its database (amended regularly according to the instructions from DG SANTE) uploaded into the FOREMATIS database.

58. The *Commission Regulation (EC) No 1598/2002 of 6 September 2002* lays down detailed rules for the application of Council Directive EC/105/1999 as regards the provision of mutual administrative assistance by official bodies is applied regarding the required information for certification forms provided by member states.

59. The *Commission Regulation EC/1602/2002 of 9 September 2002* lays down detailed rules for the application of Council Directive EC/105/1999 as regards the authorisation of a Member State to prohibit the marketing of specified forest reproductive material to the end-user. It is based on

- the list of information to be provided by a Member State in support of an application under Article 17(2) of Council Directive EC/105/1999 (as provided in the annex to this regulation) and
- the delimitation of regions of provenances and recommendations for use of FRM determined within the national Rules on the determination of areas of provenance (Official Gazette of the Republic of Slovenia, Nos. 72/03, 58/12 and 69/17).

60. Relevant national plant health and phytosanitary legislation regarding FRM has also been adopted to EU requirements. Regulation (EU) 2016/2031 on protective measures against plant pests ("Plant Health Law") entered into force on 14 December 2019 and together with several delegated and implementing acts by the Commission is directly implemented in EU Member States. Regulation (EU) 2016/2031 goes hand-in-hand with Regulation (EU) 652/2014, which lays down provisions for the management of expenditure relating to the food chain, animal health and animal welfare. It relates to Regulation (EU) 2017/625 on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products.

61. Lists of pests, commodities and plant health requirements are laid down in Implementing Regulation (EU) 2019/2072:

- Regulated plants: all plants (including living parts of plants) need to be accompanied by a phytosanitary certificate to enter into the EU, unless they are listed in Annex XI, Part C, of Implementing Regulation (EU) 2019/2072 as exempted from this general requirement.
- High-risk plants: The Plant Health Law increases the prevention against the introduction of new pests via imports from third countries. Commission Implementing Regulation (EU) 2018/2019 establishes the list of high-risk plants the introduction of which into the EU territory is provisionally prohibited until a full risk assessment has been carried out.
- Priority pests: the Commission Delegated Regulation (EU) 2019/1702 lists 20 quarantine pests as priority pests, whose economic, environmental and social impact on EU territory is the most severe. EU Member States will have to prepare information campaigns to the public in case they are present in their territory, perform annual surveys, and prepare contingency plans, simulation exercises and action plans for eradication.
- Plant passports: accompany the movement and trade within the EU of certain plants, plant products and other objects, which are potential carriers of quarantine pests (listed in Annex VIII and IX of Regulation (EU) 2019/2072). Plant passport confirms compliance with the requirements set in EU legislation. Inspections and controls are carried out at the place of production or processing. The competent authorities must register producers and distributors. Plant passport confirms that the material is free of quarantine pests (Annex II to Regulation 2019/2072 / EU and European Commission emergency regulations) and meets the specific requirements laid down therein (Annex VIII to Regulation 2019/2072 / EU and European

Commission emergency regulations) and meets the prescribed tolerances for controlled non-quarantine pests (Annex IV of Regulation 2019/2072 / EU and the prescribed measures have been taken during production (Annex V of Regulation 2019/2072 / EU)

3.2.2. *Slovenian legislative framework*

62. The principles for conservation of forest genetic resources as the basic principle, referred to also in the Forest Reproductive Material Act (ZGRM, 2002) in Slovenian legislation, are formalized within the Nature conservation act (ZON, 1999), the Forest Act (ZOG, 1993), the Biodiversity Conservation Strategy of Slovenia (BCSS, 2002), and the Resolution on the National Forest Programme (NGP, 2007). The detailed rules are defined in the Forest Reproductive Material Act (ZGRM, 2002) and its subordinate regulations (available at http://www.mkgp.gov.si/zakonodaja_in_dokumenti/veljavni_predpisi/).

Forest Act

63. This Act regulates the protection, cultivation, exploitation and use of forests and the role of forests as natural resources with the aim of ensuring sustainable and multifunctional management in accordance with the principles of environmental protection and natural values, sustainable and optimal functioning of forests as ecosystems and exercising their functions. It defines the use of FRM.

Forest Reproductive Material Act

64. This Act is harmonised with the EU Directive on Marketing of FRM (EC/105/1999), while it is also based on conservation of forest genetic resources (# 2). It was first prepared in 2002. Subsequent amendments were done in 2002 (correction of a minor mistake), 2004 (upon joining the EU some responsibilities from the Ministry were relayed to the EC) and in 2011. It lays down

- the conditions for the production, marketing and use of forest reproductive material;
- obligations of persons involved in the production,
- rules for marketing and importation of reproductive material;
- professional tasks and procedures related to the certification of origin, quality and identity of reproductive material;
- rules for obtaining, using and exchanging data and information;
- establish seed reserves (storage) and the forest gene bank;
- costs;
- Bodies implementing this law, and inspections.

65. This Act is based on the principles of conservation of forest genetic resources and is valid in:

- reforestation by planting and sowing,
- afforestation,
- design and maintenance of permanent protective or anti-erosion belts of forest trees,

- design and maintenance of tree plantations.

66. This Act also transposes the Directive EC/123/2006 of the European Parliament and of the Council of 12 December 2006 on services in the internal market (OJ L 376, 27.12.2006, p. 36).

Order on the List of tree Species and Artificial Hybrids

67. This order implements the list of tree species and artificial hybrids from the Annex 1 of the Directive on marketing of FRM (EC/105/1999), while excludes 10 non-autochthonous (exotic) tree species according to the European Commission Decision no. 2005/871, and adds several additional, nationally important tree species (see 5.1 and Annex F).

Rules on the conditions for entry in the register of suppliers and other obligations of suppliers and requirements for the marketing of forest reproductive material

68. This legislation specifies:

- the conditions regarding the professional qualification of the person who will be responsible for fulfilling the obligations of the supplier of forest reproductive material and more detailed requirements regarding land, facilities, machinery or equipment;
- the form and documents that must be attached to the application for entry in the register of suppliers;
- the form and content of the production plan;
- the criteria for the appropriate quality of forest reproductive material;
- the method of marking and packaging of the reproductive material being marketed;
- more detailed content and form of the supplier's document;
- quantities of seed considered small;
- the method of keeping records on the production, extraction, storage, stocks, sale and purchase of reproductive material;
- the method of reporting data on the marketing of reproductive material.

Rules on the conditions for the approval of forest seed objects in the categories "known origin" and "selected", and on the list of forest seed establishments

69. This legislation specifies:

- the criteria for approval and the more detailed procedure for the approval of forest seed establishments in the categories " source identified" (in official translation 'known origin' from Slovenian into English language) and "selected",
- the application form for initiating the approval procedure,
- the form and content of the information and assessment sheets for the stand or group of seed trees,

- more detailed content, form, method of production and publication of the National list of forest seed objects (basic material); the last National list of forest seed objects published in January 2021 (Seznam GSO, 2021)

70. Rules on the conditions and procedure for the approval of forest seed objects intended for the production of forest reproductive material in the categories "qualified" and "tested" This legislation specifies:

- the content and procedure for approving forest seed orchard management plans and their amendments,
- the conditions to be met by the predetermined trees used for the design of forest seed orchard in the "qualified" category, and
- the method of performing comparative and genetic tests to prove the above-average characteristics of forest seed objects in the "tested" category.

Rules on certificates and master certificates for forest reproductive material)

71. This Regulation, in accordance with Council Directive 1999/105 / EC on the marketing of forest reproductive material provides:

- the content and form of the proof of origin (Field confirmation) of forest reproductive material;
- more detailed content and form of the Master certificates on the identity of forest reproductive material obtained from different types of forest seed objects;
- the procedure for obtaining the Master certificate;
- size and method of taking samples of forest reproductive material obtained in a forest seed object;
- the method of keeping records per the forest seed object of the obtained seed material, parts of plants or pulleys.

Rules on determining data for forest tree seeds

72. This Regulation lays down the methods and conditions for determining the purity, germination, weight and number of germinating or vital seeds in a lot of forest tree seed to be marketed, which must be contained in the supplier's document and should include the time-validity of this information.

Rules on the determination of areas of provenance

73. This Regulation, in accordance with Council Directive 1999/105 / EC of 22 December 1999 on the marketing of forest reproductive material (OJ L 11, 15.1.2000, p. 17), determines the areas of provenance to be taken into account in production and marketing of forest reproductive material and recommendations for its use.

Rules on the uniform application form for consignments of plants, plant products and controlled objects, forest reproductive material or seed material of agricultural plants for inspection at import

74. This Regulation stipulates a uniform application form for the inspection of consignments of plants, plant products and controlled objects, forest reproductive material

or agricultural plant seed material, which must be inspected before import. The uniform application form is available at the Phytosanitary Administration of the Republic of Slovenia and on the website of the Administration (www.furs.si).

Slovenian legislative framework on plant health (pests and diseases)

Decree on implementation of EU regulations on protection measures against pests of plants for the implementation of Regulation (EU) 2016/2031 and Delegated Regulation (EU) 2019/827 and Delegated Regulation (EU) 2019/829:

- The competent authorities, measures, procedures, and sanctions in Slovenia
- The details about procedures relating to quarantine stations and isolation facilities, by issuing permits for research purposes, by registering business operators, by issuing plant passports, permits for processing, marking and repairing wooden packaging material, by issuing phytosanitary certificates for export and re-export , by issuing pre-export certificates and sanctions in Slovenia

Decree implementing the Regulation (EU) on official controls and other official activities concerning food, feed, animal health and welfare, and plant health and plant protection products

- The competent authorities, the obligations relating to the performance of official controls and other official activities, border inspection posts and other control points, and fees for official controls and other official activities for the implementation of Regulation (EU) 2017/625

Plant Protection Act

- Economically important harmful organisms in forestry are regulated by EU Directive 99/105/EC, the Forest Reproductive Material Act and the Plant Health Act.

3.3. Rules on the determination of areas of provenance

75. In accordance with Directive EC/105/1999, the territory of Slovenia has been divided into regions of provenance (as proposed by Kutnar et al. 2002). These are created in the sense of continuing in the direction outlined by Wraber in 1950 and upgraded by M. Pavle in 1987. The upgrade is based on a new phytogeographic division of Slovenia, as proposed by Mitja Zupančič and Vinko Žagar (1995). For individual species, they are also created based on population and genetic research. A similar division based on ecologically related regions has been accepted in some other European countries.

76. The basis for demarcation are broader ecological regions that are on the ground delineated in more detail with boundaries between regional units – forest management areas and administrative boundaries – cadastral municipalities, which enables precise control over the production and recommended use of forest reproductive material (FRM) in individual forest management areas and forest management units.

77. The current Rules on the determination of areas of provenance (Official Gazette of the Republic of Slovenia, Nos. 72/03 , 58/12 and 69/17) (Pravilnik PO, 2003) combines the ecological regions, soil types, and main topographical and administrative borders, including the 14 Slovenian forest regions, while each region is divided into 4 elevation

zones (Figure 4). For majority tree species *(Abies alba, Fagus sylvatica, Picea abies, Quercus petraea, Quercus robur*) Slovenia is divided into 7 provenance regions. For all other ("minority") species it would not be feasible to produce and use FRM in the same way, therefore Slovenia as a whole represents a single provenance region for these species, but still divided into the four elevation zones. The Regulation includes recommendations for use of FRM, while the decisive role is on the forest rangers formalizing the use in their Decree on detailed silvicultural plan.

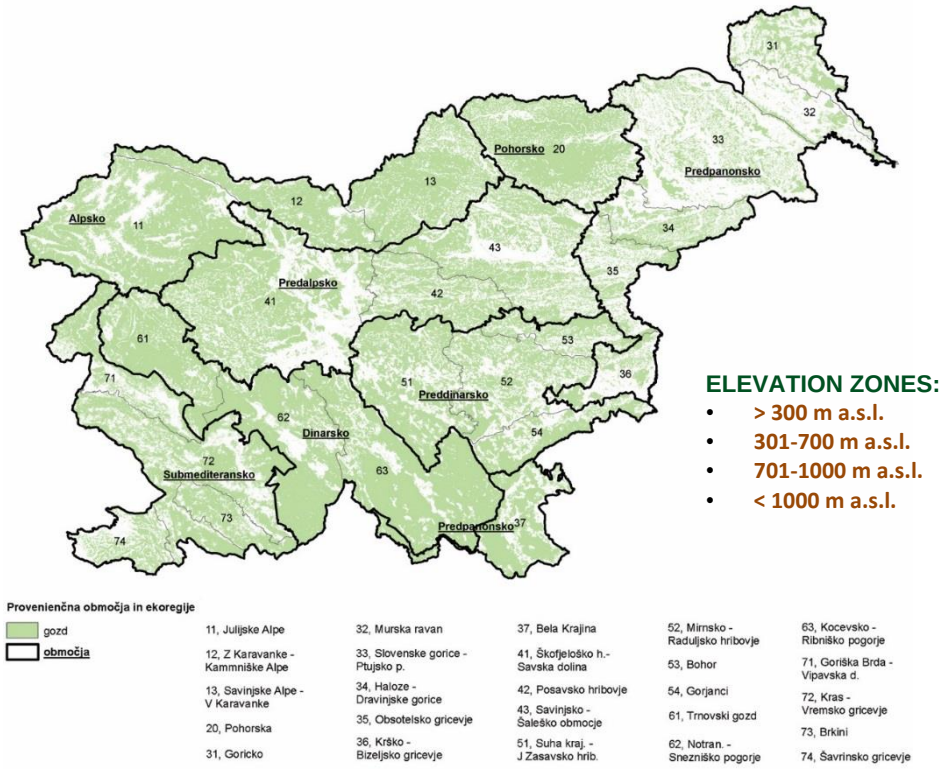

Figure 4. **Regions of provenances based on ecological regions & subregions: 1. Alpine, 2. Pohorje, 3. Prepannonian, 4. Prealpine, 5. Predinaric, 6. Dinaric, 7. Submediterranean**

78. Article 7 of the Rules determining regions of provenance (Pravilnik PO, 2003) includes the following guidelines for use:

"(1) In order to steer the use of FRM, the following suitability scale for the use of FRM is applied:

- *1. most suitable: use of FRM in a certain sub-region of provenance and altitudinal zone produced from a seed source in the same sub-region and altitudinal zone,*
- *2. very suitable: use of FRM in a certain region of provenance and altitudinal zone produced from a seed source in the same region of provenance and altitudinal zone,*
- *3. suitable: use of FRM in a certain region of provenance and altitudinal zone produced from a seed source in a neighboring region of provenance and the same altitudinal zone,*

- *4. less suitable: use of FRM in a certain region of provenance and altitudinal zone produced from a seed source in the remaining regions of provenance and the same altitudinal zone,*
- *5. exceptionally suitable: use of FRM in a certain region of provenance and altitudinal zone produced from a seed source in the remaining regions of provenance and a neighboring altitudinal zone,*

(2) If the most suitable or very suitable FRM is not available in a seed source of a certain region of provenance and altitudinal zone and if it is not available even in a seed storage, FRM for suitable or less suitable use may also be stored or used, although only for the needs of one year at the most.

(3) If not even FRM for less suitable use is available for more than 10 years, FRM for exceptionally suitable use may also be stored or used, although only for the needs of one year at the most.

(4) Notwithstanding the provisions from the preceding paragraphs, in order to preserve the forest genetic resources in the Šavrinija sub-region of provenance, it is permitted to use only FRM from that sub-region."

79. This article was subsequently amended several times. After the latest harmonisation it is permitted to also use FRM from certain regions of provenance from the neighbouring countries (Austria, Croatia and Hungary) in certain areas and altitudinal zones in Slovenia., in case of lack of adequate FRM originating from within the Slovenian forests, for sanitary reasons after large-scale disturbance, and after obtaining a positive expert opinion of the Slovenian Forestry Institute,

4. INSTITUTIONAL CAPACITY

4.1. Introduction

80. According to the FRM Act (ZGRM, 2002) the tasks and relations of institutions ensuring the FRM certification scheme in Slovenia are as follows (Figure 5):

- Supervision over the production of reproductive material in stands and groups of trees is carried out by the *Slovenia Forest Service (SFS).*
- Supervision over the production of reproductive material in seed orchards, parents of families, clones and clonal mixtures is carried out by the *Slovenian Forestry Institute (SFI).*
- Supervision of suppliers in the process of production and marketing of reproductive material, except when the supplier obtains reproductive material in the seed object, and the use of reproductive material by the end users, is carried out by *forestry inspectors (Inspectorate of the Republic of Slovenia for Agriculture, Forestry, Hunting and Fisheries, IAFHF).*
- Supervision of the import of reproductive material is carried out by *phytosanitary inspectors (PhSI).*

81. All bodies exercising control over the production, marketing, import or use of reproductive material shall cooperate with each other, exchange data and information and report on their work to the *Ministry of Agriculture, Forestry and Food* (MAFF).

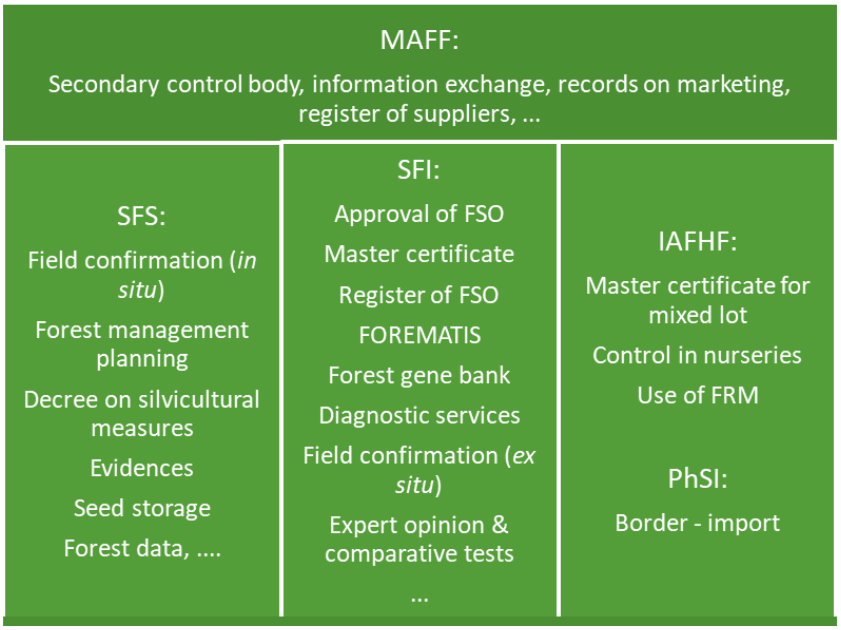

Figure 5 **Institutions and overview of their roles & authorizations in certification of FRM**

1.The provision of conditions for the implementation and performance of tasks under public authority is financed from the budget of the Republic of Slovenia.

82. The Slovenian Forestry Institute (SFI) and the Slovenia Forest Service (SFS), as holders of public authority in accordance with the Forest Reproductive Material Act are responsible to the Ministry of Agriculture, Forestry and Food for the performance of tasks for which they have been authorized.

83. The Ministry of Agriculture, Forestry and Food is the second level authority (in case of appeals) in administrative matters decided by SFI and SFS in accordance with the Forest Reproductive Material Act,.

4.1.1. *Brief overview of the procedures in the FRM certification in Slovenia*

84. The Slovenia Forest Service (SFS) surveys the production of FRM in all in situ seed objects (in EC Directive these are named 'basic material'), and the Slovenian Forestry Institute (SFI) surveys the production of FRM in the seed orchards. Upon finalisation of production, a 'Field confirmation' is issued, stating the daily and total weight of the produced seed / cones / fruits, which accompanies the seed lot to the producer's extraction infrastructure; simultaneously a sample from each tree used for production and a copy of the Field confirmation is sent to the SFI; the samples, according to the Rules on certificates. (Pravilnik o spričevalih, 2002), as modified in 2012, can be:

- three live buds,
- live branch,
- three live cambium drills,
- 1 cone in the case of species of the genus *Abies* or *Picea*,
- 3 cones in the case of *Pseudotsuga menziesii* or species of the genera *Cedrus, Larix, Pinus*,
- 5 conelets in the case of species of the genus *Alnus*,
- 10 chestnuts, walnuts or acorns in the case of *Castanea sativa, Juglans regia* or species of the genus *Quercus*,
- 20 acorns in the case of *Fagus silvatica*,
- 20 cleaned seeds in the case of *Taxus baccata* or species of the genera *Celtis, Ilex, Laurus, Malus, Mespilus, Olea, Pyrus, Prunus* or *Sorbus*, or
- 20 fruits or seeds in the case of species of the genera *Acer, Betula, Carpinus, Cercis, Ficus, Fraxinus, Laburnum, Ostrya, Phillyrea, Pistacia, Populus, Robinia, Salix, Tilia* or *Ulmus.*

85. Upon receiving the samples from the field and the Field confirmation, the SFI checks the I.D. of the approved seed object, the data on the Field confirmation, checks whether the 'Directives for production of FRM' from the Decree on approval of the seed object have been considered. Then SFI extracts the DNA from each mother tree and stores it in the DNA library. After seed extraction is finalized, the producer sends a sample from composite seed lot to the SFI together with the extraction protocol stating the initial and final seed weight; if all is correct the SFI issues the Master certificate of origin within 7 days upon receive of the Extraction protocol;

86. In case of an urgency (immediate transport of the seed lot outside the country borders) the Institute can issue the Master certificate on the basis of the Field confirmation directly (i.e. for cones instead of for extracted seeds);

87. In case of doubt on the authenticity of the produced seed lot the DNA samples (from the DNA library) are used for molecular identification and comparison with the Molecular database of the seed objects;

88. The SFI sends a yearly report on issued Master certificates to the Ministry, Inspectorate and the SFS, while the producers send a yearly report on marketing of FRM to the Ministry;

89. The Ministry is the second level authority for control of all other organizations.

90. In forest nurseries, the Inspectorate controls the production, which is based on the annual and mid-term (5 years) planning of needs for seedling production, prepared by the SFS. For health inspection the SFI surveys the nurseries twice a year and produces a Health control report for the nursery and the Inspectorate.

4.2. Ministry of Agriculture, Forestry and Food

91. The Ministry of Agriculture, Forestry and Food of the RS (MAFF) is the designated authority for the international communication on the OECD Forest Scheme. Within the FRM certification system the Forest Reproductive Material Act defines its tasks as follows:

a) Keeps the register of the suppliers of FRM and evidences on marketing of FRM,

b) issues import licenses for reproductive material,

c) exercises professional supervision over public service providers and holders of public authority (i.e. the Slovenian Forestry Institute, Slovenia Forest Service and the Inspectorate for Agriculture, Forestry, Hunting and Fisheries,

d) prepares reports, analyses, information and other materials for bodies and international organizations to which the Republic of Slovenia reports, in accordance with regulations and international treaties,

e) participates in the preparation of international agreements concluded by the Government of the Republic of Slovenia in the field of FRM and takes care of their implementation,

f) Establishes and maintains an information system in the field of production and marketing of FRM.

92. FRM is dealt within the Directorate for Forestry and Hunting, Sector for Forestry. This sector includes 11 collaborators, among which one is in charge of FRM related issues. The task of reporting the National list of Approved Forest Seed Objects (basic material) to FOREMATIS is therefore delegated to the Slovenian Forestry Institute.

4.3. Slovenian Forestry Institute

93. The Slovenian Forestry Institute (www.gozdis.si) is a public research institute of national importance, in which around 100 employees conduct basic and applied research on forests and forest landscapes, forest ecosystems, wildlife ecology, hunting, forest management, and other uses of the resources and services forests provide. The scientific knowledge from these fields helps further the research on forest biodiversity and its management in relation to climate change.

94. The Slovenian Forestry Institute (SFI) performs the following tasks as a public authority:

- issuing the Master certificate of identity (of origin);
- leading the procedure for approving a seed object (basic material);
- evaluation of conditions for approval of a seed object in the 'tested' category;
- approval of the seed orchard management plan;
- based on the data from the Register of seed objects (organized and kept by the Institute) once a year published the National list of seed objects;
- provides the infrastructure needed to, and performs laboratory diagnostic tests and other tests of reproductive material for the needs of the inspectorate;
- organises the Slovenian forest gene bank, within which it keeps the Seed bank, the DNA library and the Living archives of forest trees, and
- provides professional advice and seed analyses for the Seed storage facility (the latter being kept by the Slovenia Forest Service).

95. Furthermore, the SFI provides or supports:

- preparation of professional background documents, expert opinions and proposals for modification and harmonization of regulations on FRM for the needs of the Ministry,
- provides basis for development of national and international strategies and action plans (such as SIFORGEN (Slovenian programme for forest genetic resources) and EUFORGEN (European programme for FGR)), which include the 'measures for genetic protection of forests', predominantly linked to the requirements supporting genetic diversity as required for issuing the Master certificates,
- contribute to the EUFGIS information system (the European information system on dynamic conservation units (forest gene reserves)), which are all also included in the National list of forest seed objects with a special remark 'forest gene reserve' of 'forest genetic monitoring plot',
- collaborate in dedicated European projects, and development of the system for forest genetic monitoring (such as LIFEGENMON), based on the outputs of the public forest service and state authorization for the certification process, and contributing to the improvement of the diagnostic services in certification of FRM.

96. The FRM certification within SFI is delegated to **the Department for Forest Physiology and Genetics (FIGE**) with its laboratories, collections and specified information system:

- Laboratory for forest seeds and germination
- Laboratory for forest genetics (fully equipped for genetic-molecular analyses)
- Laboratory for physiology of seeds and seedlings, including the Living collection of ectomycorrhizal fungi, the Greenhouses and the phytotrons
- Microscopy room (several microscopes, including a laser microdissection system)
- The Slovenian forest gene bank, including the Seed bank (with freezing chambers), the DNA library (with deep-freezers), the Living archives, the Provenance tests and the Register of forest seed objects

97. Another of the Institute's functions is to provide scientific knowledge on all aspects of sustainable development, with the purpose of increasing knowledge and awareness of the importance of forests within the environment and the importance of forest management. In short, the Institute is a scientific, professional, and cultural storehouse for Slovenia's relationship with its forests and the resources and services they provide.

98. The Institute's research programme (the Research Programme group for forest biology, ecology and technology) is organized into six departments:

Department of Forest Ecology

Department of Forest Physiology and Genetics

Department for Forest Technique and Economics

Department of Forest and Landscape Planning and Monitoring

Department of Forest Yield and Silviculture

Department of Forest Protection

99. Laboratory infrastructure (part of the Infrastructural group) at the SFI includes

- Certified Laboratory for Forest Protection;
- Stable Isotopes Lab;
- Dendrochronology Lab and the Dendrochronological Collection,
- Wood Anatomy ab and Wood Collection,

  Soil, Plant tissues and Water Analysis lab,
- Lab for Electronical Systems,
- Wildlife Ecology Lab,
- Lab for Wood Biomass and Forest Technology

4.3.1. *Staff*

100. The Department (FIGE) is currently the biggest department at the SFI with 15 full-time (FT) employees and 3 part-time employees. Among the FT employees, the FRM certification includes

- 2 researchers (a PhD in plant physiology (also the head of the SFI Research programme group and the Department) and Pa hD in forest genetics) providing the public authority tasks (approval of seed objects, Register, Master certificates, reporting), supported by one additional researcher (PhD in forest genetics),
- 1 PhD student (in bioinformatics) and
- 4 technicians: 2 in forest genetics lab (including the head of the SFI Infrastructure group), 1 in lab for forest seeds, and 1 for databases and statistics (including database for FOREMATIS).

101. Additionally, 1 researcher (PhD in root growth and physiology) is responsible for seedling analyses, 1 for microscopy (PhD, predominantly working on fine roots identification and mycorrhiza), and 4 researchers working on different aspects of the ectomycorrhiza and soil microbiome (using molecular techniques, bioinformatics and

microscopy), while other FIGE collaborators are specialists in project management, dissemination and communication.

102. The SFI support staff includes the management, accountants, the informatics infrastructure, the SFI maintenance, the Forestry library and INDOK centre, and the *Silva Slovenica* publishing centre.

4.4. Slovenia Forest Service

103. The Slovenia Forest Service (SFS) is a public institution, established in 1993, which performs public forestry service in all Slovenian forests, irrespective of ownership.

104. At state level, it is organized with its central unit in Ljubljana, at regional level in 14 regional units, and at local level it has 93 local units and 408 forest districts. The Slovenia Forest Service also comprises 10 hunting reserves with a special purpose whose task is sustainable management of wild animals, protection of rare and endangered animal species and they also perform activities of hunting tourism.

105. The SFS performs the following tasks as a public authority during production and certification of FRM

- at the time of obtaining reproductive material in the seed object *in situ* supervises the course of obtaining reproductive material and draws up a report (Field confirmation) on this control,
- send samples of reproductive material (from each tree used in production and from a composite seed unit when available).

106. SFS submits a copy of the field confirmation and the samples of the trees used in production of FRM, or samples of the FRM from individual trees and the composite seed unit to the Slovenian Forestry Institute immediately. (Unless the Slovenian Forestry Institute is also the competent institution for field supervision (in seed orchards, parents of families, clones and clonal mixtures).

107. In addition, according to the FRM Act the SFS

- collects evidences on the state of the approved seed objects,
- contacts forest owners explaining the procedures for approval of forest seed objects,
- participates in the committee for approval of forest seed objects and provides data on the forests needed for approval,
- checks the state of the approved forest seed objects at an annual basis and proposes their deletion when they no longer meet the criteria,
- prepares mid-term planning of the needs for FRM and prepares the public tenders for their provision,
- collects information on flowering and fructification in approved seed objects,
- proposes to the SFI and the forest owners to start the procedure for approval of forest seed objects, helps maintain them,
- contributes to the directives on tending of forest seed object and production of FRM,
- prepares forest management plans, detailed silvicultural plans etc.

- Distributes FRM to private forest owners based on the detailed silvicultural plans and the signed private forest owner order.

4.4.1. *Approval of forest seed objects (basic material)*

108. The head for silviculture and forest protection in each regional unit participates as a member of the committee for approval of forest seed object. The local forest ranger communicates with the forest owner and provides data on the seed object. The local forest ranger is responsible to check the state of approved forest seed objects on an annual basis, while they also communicate with the forest owner on the issue of all silvicultural measures and cutting, all with a written Decree to the forest owner (irrelevant of the category of the forest ownership).

4.4.2. *Production of FRM in situ*

109. The local forest ranger supervises the production within the seed object, while the total amount of FRM produced within the seed object is signed (in the Field confirmation form) by the regional head for silviculture. All communication on needs and proposals for approval of forest seed objects and fructification is communicated directly with the responsible person at SFI. The Decree on the approval is forwarded also to the head for silviculture at the Central unit.

4.4.3. *Staff*

110. While the SFS employees are around 650 in total, the responsible personnel within the FRM system are the heads for silviculture at each of the 14 regional units, supported by the local forest rangers. At the Central unit of the SFS, one person is in charge for silvicultural measures, including mid-term planning for production and use of FRM , and another one for organization of public tenders for procurement of the production of FRM, as well as distribution (and costs) of seeds from the Seed storage to the nurseries.

4.5. Inspectorate for Agriculture, Forestry, Hunting and Fisheries

111. the Inspectorate of the Republic of Slovenia for Agriculture, Forestry, Hunting and Fisheries (Forestry Inspectorate or IAFHF) is an organ within the field of the Ministry of Agriculture, Forestry and Food.

112. Forestry and phytosanitary inspectors supervise the implementation of the provisions of this Act, regulations issued on the basis thereof and Community regulations on forest reproductive material.

113. There are 16 forestry inspectors for the 14 forestry regions and the Inspectorate's Headquarters.

114. Whoever is engaged in the production, marketing or import of reproductive material must enable the forestry or phytosanitary inspector to supervise this activity and carry out inspection control without hindering it and required documents, particulars, explanations or necessary items.

115. The forestry inspector has the following powers and competencies:

- Inspect reproductive material, places where it is grown, and documentation from suppliers of reproductive material and end users of reproductive material;

- Determine whether the reproductive material produced or marketed by the supplier meets the conditions referred to in Article 7 of the FRM Act;
- Take samples of the reproductive material being marketed and send them to the authorized institution for analysis;
- Determine whether the suppliers entered in the register of suppliers and the suppliers who have applied for entry in the register meet the prescribed conditions;
- Check whether the holders of public authorizations or the providers of the public forestry service perform their tasks in accordance with this Act and the regulations issued on the basis thereof;
- Check at least once a year whether the supplier fulfills the obligations referred to in Article 25 of the FRM Act;
- Obtain data from databases necessary for the implementation of supervision.

116. In addition to the powers it has under the regulations governing inspections, the phytosanitary inspector also has the following powers and competencies:

- Inspect reproductive material and documentation of suppliers at import;
- Take samples of the reproductive material to be imported and send them for analysis to the authorized institution;
- Allow the importation of reproductive material;
- Obtain data from databases necessary for the implementation of supervision.

5. CERTIFICATION SCHEME FOR FOREST REPRODUCTIVE MATERIAL IN SLOVENIA

5.1. List of Species under the Scope of the FRM Act

117. The EU Directive EC/105/1999 lists 48 species and artificial hybrids to which the guidelines from the Directive that need to be transposed in national legislation apply. It is permitted to amend the regulations from this Directive, which may be stricter than the listed ones, although for each exception a well-argued application for an exemption from an individual requirement needs to be addressed to the EC. Slovenia used this for the last time in 2005, when the EC approved with a Decree to Slovenia and Denmark the deletion of individual non-native species, which were considered to be economically uninteresting species for these countries, from the national list of species to which the Forest Reproductive Material Act applies (ZGRM, 2002).

118. In principle, for preservation of forest genetic resources, it is in the interest of the state to regulate all forest tree species that are used for planting in forests and in permanent forest plantations, including planting for sanitary reasons after disturbances, such as windbreaks, park forests in urban environments, etc. For this reason, Slovenia included a few additional species already in the first list of species, and in 2010 it supplemented the list with all indigenous tree species. Now there are 77 species on the List (see Annex F).

119. In accordance to the Decision EC/871/2005 (Decision 871, 2005) the following tree species, which have been supposed to be of no relevance in Slovenia, have been omitted from the List of species: *Abies pinsapo, Cedrus atlantica, Cedrus libani, Larix sibirica, Picea sitchensis, Pinus brutia, Pinus canariensis, Pinus contorta, Pinus leucodermis, Pinus radiata.*

120. A proposal for an enlargement of the List has been prepared, including a number of shrubs and a few additional non-indigenous tree species. The placing of these species on the List would enable financing of their use in reforestation. However, it has not yet been accepted after intersectorial discussions.

5.2. Types of basic material and FRM categories

121. The Forest Reproductive Material Act (ZGRM, 2002) specifies the forest seed objects (basic material) and the categories of forest reproductive material exactly as stated within the Directive EC7105/1999. The FRM categories are:

(i) '**Source-identified'** (translated by official Slovenian translators as 'known origin'): Reproductive material derived from basic material which may be either a seed source or stand located within a single region of provenance and which meets the requirements set out in the Regulation (Pravilnik 91/03, 2003);

(ii) '**Selected**': Reproductive material derived from basic material which shall be a stand located within a single region of provenance, which has been phenotypically selected at the population level and which meets the requirements set out in Regulation (Pravilnik 91/03, 2003)-

(iii) '**Qualified**': Reproductive material derived from basic material which shall be seed orchards, parents of families, clones or clonal mixtures, the components of

which have been phenotypically selected at the individual level, and which meets the requirements set out in Regulation (Pravilnik 19/04, 2004). In Slovenia only one seed orchard for *Alnus glutinosa* has been approved so far;

(iv) '**Tested**': Reproductive material derived from basic material, which shall consist of stands, seed orchards, parents of families, clones or clonal mixtures. The superiority of the reproductive material must have been demonstrated by comparative testing or an estimate of the superiority of the reproductive material calculated from the genetic evaluation of the components of the basic material. This category is not yet available in Slovenia.

122. It should be noted that the purpose for which FRM is produced in an individual seed object may be labelled as:

- "for multi-purpose forestry",
- "not for use in forestry", such FRM has not been produced under any survey and not in the approved seed objects for production of FRM of the above four categories, or
- "with limited importance for wood production" – the latter is intended for use in forestry, although its primary purpose is the conservation of forest genetic resources.

123. The current National list of basic material – forest seed objects is available at www.gozdis.si.

5.3. The Slovenian Forest Gene Bank and the National List of Forest Seed Objects (Basic Material)

5.3.1. *The Slovenian Forest Gene Bank*

124. Forest management and silvicultural measures depend on the long life span of forest trees, well adapted to the site conditions, while seeds of a number of tree species are impossible to store over longer periods in seed storage and seed banks. Therefore, the Slovenian Forest Gene Bank (SFGB) (Kraigher and Žitnik, 1999) *sensu lato* is a gene bank, including *in situ* and *ex situ* components of the gene bank, as defined in the Nature conservation act (ZON, 1999): "*Gene banks shall be the controlled or cultured populations or parts of animals and plants, in particular seeds, spores, reproductive cells and other biological materials which are managed for the purposes of conserving species or their gene pools*."

125. The *in situ* components of the SFGB *sensu latissimo* consider as its parts all natural populations of autochthonous forest tree species, managed according to the principles of co-natural sustainable forest management, and particularly forest stands in protection forests and in different nature conservation areas (Table 2). SFGB *sensu lato* comprise all *in situ* and *ex situ* forest seed objects – approved basic material for production of forest reproductive material, while SFGB *sensu stricto* comprises *in situ* dynamic gene conservation units - forest gene reserves, *ex situ* living archives, provenance tests, the Forest seed bank, the DNA library and molecular databases.

126.

Table 1 Components of the Slovenian Forest Gene Bank

Component of SFGB	Area (ha) / Number / Established in	Reference
Protection forests	98,759.80	UVG, 2005
Forest reserves (173)	9,508.16	UVG, 2005
Forests in TNP	52,965	Klopčič *et al.*, ,2015
Forests in 36 regional parks	30,045	Kraigher 1996
National List of Seed Objects	1,146.145 ha / 256 SO	Off. g. 4, 2020
Forest Gene Reserves – Dynamic Conservation Units	1,134.45 / 40 FGR / 39 spp	Off. G 4, 2020 & EUFGIS database
Forest Seed Bank	154 accessions / 26 spp	SFI int. report, 2020
DNA library (2014-2016)	6163 extractions	SFI int. report, 2020
Provenance trials / species:		
Fagus sylvatica	Est. 1998, 38 provenances, Kamenski hrib - Straža	Božič *et al*., 2000, Westergren *et al.*, 2010
Picea abies	Est. 2017, two sites, 6 provenances	SFI int. report, 2020
Pseudotsuga menziesii	Est. 1971 and 1972, 27 provenances	Breznikar, 1991
Living archives / species:		
Metasequoia glybtostroboides	Est. 1993, 350 trees, Zadobrova	Kraigher, 1996
Populus ssp. and their arificial hybrids	43 clones, Zadobrova 31 clones, Pince-Marof 13 clones, Ižakovci	Božič, Krajnc, 2012, Božič, 2016
Populus nigra	Est. 2013, 14, 17, Ižakovci, Mura river	Božič, 2016, SFI int. report 2020

(TNP – Triglav National Park)

5.3.2. *National Register of Forest Seed Objects (Basic Material)*

127. The National List of Forest Seed Objects is the publicly available part of the Register of Approved Seed Objects, organized and lead by the Slovenian Forestry Institute. The Institute is responsible for leading the approval, the database and information system, and to report – publish the National list yearly in the Official gazette and submit the list into the EU FOREMATIS database. The location of the seed objects in the publicly available National list is restricted to a single spot, while for ownership it states the code of the owner and ownership (the state or different categories of private ownership). The restricted part of the Register includes full information on the forest owners and the exact location; this part is only available to the authorized personnel at the SFI.

128. Currently, the list includes 255 seed objects for 39 species approved "for forestry purposes" (code of purpose 1, remark "for multifunctional forestry"), or "with a limited wood-production purpose" (code of purpose 2, remark "gene conservation unit") (Table 3).

129. In 40 cases the approved seed objects are also gene conservation stands or stands for forest genetic monitoring (2 stands so far).

130. Including 15 approved plus trees, the total number of seed objects for forestry purposes is 270.

131. Additionally, the whole of Slovenia, or the whole provenance region for the stand-forming tree species, has an i.d. number of a seed object "not for use in forestry" (code 2, remark "not for use in forestry"). Including these (127 in total, FRM production not under any control)), the total number is 397 seed objects in the national Register.

Table 2 Overview of approved seed objects in Slovenia

Type of forest seed object	Number	Forest gene reserve
Forest stands or groups of trees for production of FRM category 'Source identified'	93	6
Forest stands for production of FRM category 'Selected'	161	34
Seed orchards, parents of families, clones or clonal mixtures for production of FRM category 'Qualified'	1	/
Plus trees*	15	/
Provenance regions for production of FRM category 'Not for use in forestry'**	127	/
Total	397	40

No forest seed object for the category "Tested" has been approved so far.

*The database of plus trees, which may be used in future for collection of material from which seed orchards or clones or clonal mixtures might be established, has also been included in the national Register.

**The national Register also includes the list of provenance regions (for majority spp) or whole Slovenia (for all other species) per species as 'seed objects' with the purpose 'Not for use in forestry'; therefore all FRM, produced in Slovenia, receives a Master certificate with a specific purpose, including 'not for forestry purposes'.

5.4. Procedures and criteria for approval of forest seed objects

132. The *in situ* stand or group of seed trees is evaluated on 10 criteria, corresponding to the (better defined) criteria set-up in the Directive EC/105/1999, but with more stringent requirements regarding the category 'source identified':

- Type of the seed object: forest stand or group of seed trees (Master certificate for 'source identified' and 'selected' categories, for the category 'qualified' and 'tested'. When produced in the seed orchard the type can state: seed orchard, parents of families, clones, mixture of clones)
- Origin: autochthonous, non-autochthonous, origin if non-autochthonous (unknown or known; if known, the source is written down under remarks)
- Isolation: distance from another stand of the same species with different origin or characteristics
- Effective Population Size: minimum area and number of trees / groups of trees is defined for majority species to over 5 ha and over 70 trees)

- Age and Development: sufficient for the different characteristics to be evaluated
- Adaptation to the ecological conditions: whether the population can sustain itself on the site, based on regeneration (mainly generative: flowering, fructification, germination, survival of natural regeneration)
- Health and Resistance: presence of any pests and diseases, mechanical damages, and resistance to biotic / abiotic stressors
- Volume production: in comparison to other stands in the region
- Wood Quality: in comparison to the other stands in the region
- Form or Growth Habit: share of trees in the population with unfavorable (presumable inherited) growth habit is limited to 20%.

133. For 'source-identified' the criteria under 8 and 9 are not important, while in no. 10 a higher share (40 %) of unfavorable phenotypes can be present.

134. For the seed orchards, the establishment and management plan is to be approved in advance by the SFI. Upon approval, the number and repetition of clones is checked, and if needed, the identity of the clone is defined by molecular techniques. In the case of a *Fraxinus excelsior* seed orchard, the number of hybrids with *F. angustifolia* were identified and the proposed seed orchard, established in the 1983-1989, when the chosen plus trees were not checked by the Institute in advance, has not been approved. At present only one seed orchard (for category "qualified") has been approved in Slovenia, for *Alnus glutinosa* in NE Slovenia.

135. Additionally, 'plus trees' have been registered according to the same procedures as for approved seed stands, based on individual assessment of these trees. So far only 15 plus trees of *Prunus avium* have been included into the database, while a total of 105 potential wild cherry plus trees have already been evaluated. Also *Populus nigra* trees have already been identified for future approval as plus trees. The plus trees are to provide stock material (cuttings and graftings) for establishment of new seed orchards. The plus trees (15 so far, all for *Prunus avium*) are approved individually, based on the criteria for each tree species, and on the application for approval signed by the owner (same procedure as for other in situ seed objects).

5.4.1. *Seed trees or stands for the production of FRM of the "source identified" category*

136. Due to the large-scale disturbances in the last 10 years, and shortage of FRM, as well as the need to conserve forest genetic resources, a larger number of forest seed objects for the production of FRM of the "source identified" category has been approved in Slovenia. However, even these forest seed objects (FSO) must meet the criteria for approval as written down for FSO for the "selected" category, only that criteria 8, 9 and 10 are not taken into account in the approval (see 4.2); in these, the share of trees with major defects may be up to 40 %. Such seed object may be a stand or a group of seed trees, and for indigenous tree species it must as a rule be of natural origin (only for the spruce or black pine it may be non-indigenous or of unknown origin). For seed objects that are not of natural origin, a note should be added that the stand originates from FRM of local origin or from local tree nurseries.

5.4.2. *Selected seed stands – for production of FRM category 'selected'*

137. Seed material for reforestation with planting in Slovenia is acquired primarily from selected seed stands. These represent the best part of the populations of a tree species in terms of properties important for future development and yield of this tree species in a managed forest. The objective of management of a seed stand is adjusted to the role of production of seed and includes production of quality seed with excellent genetic treats along with the implementation of other forest management objectives. Seed from the seed stands under the European Directive for the categorisation of forest reproductive material belongs to the "selected" category. Information about provenance, climatic conditions in this region and a series of other information about it is known, while the starting material (seed stand) has been selected based on phenotypic properties of the tree population in the stand.

138. In reforestation with sowing and planting, sustainable and multi-purpose forest management requires consistent consideration of the origin of seed and constant selection of seed material. Saplings that are created by means of reforestation with sowing and planting must be able to meet all forest management objectives in a future forest. The series of measures in the selected seed stands thus represents the 'breeding without breeding' of forest trees. Its purpose is to improve hereditary characteristics of the future populations of forest trees in accordance with the envisaged objectives, and at the same time preserve a broad genetic diversity that will provide security to the population and species in the case of unpredictable changes in the environment.

5.4.3. *Description and tending of selected seed stands, and directives for production of FRM*

139. A description and analysis of the state of a stand is the basis for the planning of detailed silvicultural measures in seed stands. A detailed analysis of the state of a forest stand is already performed during the procedure to select seed stands of individual tree species. The analysis of the stand includes evaluation and assessment of:

- the needs for selected seed stands of a certain species in the relevant region of provenance and altitudinal zone,
- the information about the site and stand,
- the overview of the stand on the basis of phenotypic properties of the population,
- Comparison to the stands of the same tree species in the region.

140. Basic information includes information about the site, forest community, size of stand, growing stock, increment, number of trees of the relevant tree species, age of stand, stand structure, forest management unit, rate of the mixing of tree species, etc. This information helps to create an appropriate long-term silvicultural objective for the seed stand and a list of silvicultural measures with which this objective will be attained. The required information is listed in the description sheet for the seed stand, which is an integral part of the documentation of every seed stand. This information is also the basis for the silvicultural plan, which is somewhat more complex due to the production of a seed being pronounced and which requires more information than for a managed forest, where this function is not as pronounced.

141. A long-term silvicultural plan is prepared for the seed stand to determine the future state of the stand that would satisfy the need for production of FRM. It needs to be taken

into account here that a seed stand realizes more functions than a normal managed forest. A long-term silvicultural plan thus consists of several components:

- production of seed material with excellent genetic characteristics; as maintain as much genetic diversity as possible,
- production of large quantities of quality seed in a specific period of time,
- providing conditions for collecting seed (adequate stand structure, management of the ground vegetation),
- implementing the wood production functions of the stand (seed stands are stands with a particular quality of timber, which is why the importance of this objective is specially pronounced),
- implementation of all other functions of forests, such as protective and social functions (their relative importance is a result of evaluation in a broader environment).

142. Silvicultural measures (thinning) in seed stands are directed primarily towards:

- selection in terms of target traits (removal of specimens with undesired properties, in particular those that are more dependent on genetic basis - heredity),
- increasing seed crop (releasing tree crowns),
- maintaining an adequate stand structure (distribution, stability, existence of canopy layer, withholding natural regeneration),
- protecting genetic diversity (size of the population that is mutually pollinated),
- increasing the value increment of the stand (the wood production function is less important; felling of quality trees is not supported for the time during which the stand will be used for the production of quality seed).

5.4.4. *Detailed procedures related to the approval of forest seed objects (basic material)*

Approval of seed objects (Basic material) – an overview

143. The approval of forest seed objects for the "source identified" and "selected" categories starts based on an application by the owner of the seed source. If there is a need to obtain forest reproductive material, the Slovenian Forest Service (SFS) makes a record of the expectedly suitable seed sources and starts a procedure to obtain an application for the approval of the owner – communication with owners mostly depends on competent district foresters or other SFS experts competent for specific localities or regions.

144. At the time of the evaluation, the decision is taken whether the seed object is to be registered, and under which category. Furthermore, at approval, the criteria for dynamic gene conservation units – forest gene reserves are discussed aiming at whether they are conforming to the minimum criteria (Lefèvre et al., 2012), the owner is consulted whether the seed stand can also be considered for a forest gene reserve, or for a forest genetic monitoring plot. Finally, the directives for tending and production of FRM are discussed and written into the Decree on approval of the seed object by SFI; these directives become an integral part of the forest management plans, and the prescribed minimum number of trees for production of seed is considered at issuing the Master certificate. The directives

mainly contribute to conservation of forest genetic diversity in produced seeds from an appropriate and still feasible number of forest trees, and on supporting the stability of the stand and supporting the species in concern, while at the same time eliminating the negative phenotypes.

Detailed procedures for approval of a seed object in situ:

145. A client submits an application to the SFI on the prescribed form. Fee: application – 50 points (tariff number 1), decision – 200 points (tariff number 3). The client can be:

- the owner,
- the supplier to whom the owner referred the collection of reproductive material for a definite or an indefinite period with a written statement certified by a notary, or
- any other person who has authorisation to represent the owner in the approval procedure.

146. The followings have to be attached to the application:

- a statement verified by a notary with which the owner refers the collection of reproductive material to another person,
- power of attorney on the representation of the owner,
- qualified: management plan,
- tested: test results,
- genetically modified: permission to be released into the environment.

147. If the application is incomplete, the SFI must request within three days the Ministry of Agriculture, Forestry and Food (MAFF) to supply additional data from official records, and must obtain them within 15 days.

148. In case of the "source identified" and "selected" categories, the SFI obtains a description sheet from the SFS. Costs of the production of description sheet are covered by the public forestry service.

149. The SFI defines the:

- guidelines for tending the stands,
- guidelines for collection of FRM, such as the minimum number of trees for collection of FRM, distance between them etc.

150. The SFI issues the approval decision. Deadlines for the issuing of a decision

- summary facts-finding proceedings: 1 month,
- special facts-finding proceedings: 2 months.

151. The SFI enters the new forest seed object in the register.

152. The SFI charges the costs incurred in the approval procedure to the client. The SFI decides on the costs in a decision. Note: all costs for field work and production of the Decision is financed through the public forest service.

Review of seed objects

153. The SFS reviews the FSO of the "source identified" and "selected" categories once a year. Costs: public forestry service.

154. The SFI reviews once a year the "qualified" and "tested" categories. Costs: public forestry service.

155. The SFS (*in situ*) or SFI (*ex situ*) inspects the source on the owner's request Costs: owner.

Deletion of seed objects

156. By virtue of office, if the material does not meet the requirements. Fee: decision – 200 points (tariff number 3).

157. On request of the owner of the material. The costs of the deletion procedure are covered by the owner, and the SFI decides on the costs in a decision. Fee: application – 50 points (tariff number 1), decision – 200 points (tariff number 3).

5.5. PROCEDURES FOR PRODUCTION AND CERTIFICATION OF FRM

5.5.1. *Brief overview of the certification process*

158. The certification in Slovenia is a two stage process:

- the Slovenia Forest Service (SFS) surveys the production of FRM in all *in situ* seed objects (in EC Directive these are named 'basic material'), and the Slovenian Forestry Institute (SFI) surveys the production of FRM in the seed orchards; upon finalization a 'Field confirmation' is issued stating the daily and total weight of the produced seed / cones / fruits, which accompanies the seed lot to the producer's extraction infrastructure; simultaneously a sample from each tree used for production and a copy of the Field confirmation is sent to the SFI;
- upon receiving the samples from the field and the Field certificate, the SFI checks the I.D. of the approved seed object, the data on the Field certificate, extracts the DNA from each mother tree and stores it in the DNA library; after extraction is finalized, the producer sends a sample from composite seed lot to the SFI together with the extraction protocol stating the initial and final seed weight; if all is correct the SFI issues the Master certificate of origin within 7 days upon receival of the Extraction protocol;
- in case of an urgency (transport of the seed lot outside country borders) the Master certificate can be issued on the basis of the Field confirmation;
- in case of doubt on the authenticity of the produced seed lot the DNA samples are used for molecular identification and comparison to with the Molecular database of the seed objects;
- the SFI sends a yearly report on issued Master certificates to the Ministry (MAFF), Inspectorate (IAFHF) and the SFS, while the producers send a yearly report on marketing of FRM to the Ministry;
- the Ministry is the second level authority for control of all other organizations.

159. The following scheme (Figure 6) presents the flow of control and certification of FRM in Slovenia.

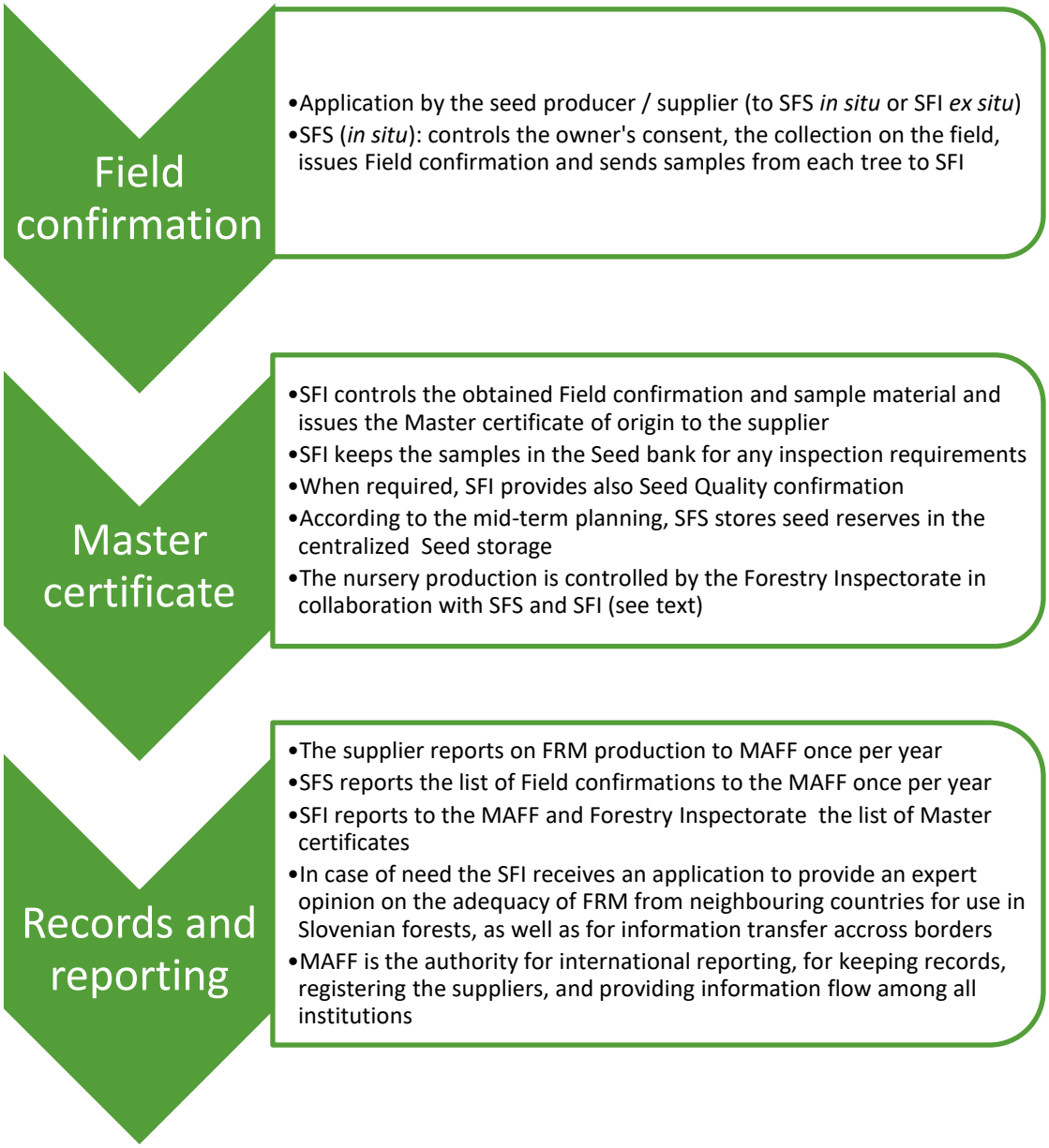

Figure 6 : Flow of control and certification of FRM in Slovenia

160. When a mixture of seed lots / FRM units is required and done under the control of the Forestry Inspectorate, the latter issues a new Master certificate for the mixed lot, which contains all information required within the Slovenian legislation and the EC Directive (EC/105/1999).

5.5.2. *Detailed control procedure of the production of forest reproductive material*

161. At FRM production, the operator is obliged to announce the timing to the local forest office, and providing the proof about the consent of the forest owner. During production, the local forest ranger oversees the production on a daily basis, while the whole production is signed at the end by the head for silviculture at the Regional SFS Unit. At the time of production, a specified sample is collected from each tree from which FRM has been collected and sent immediately to the SFI for inspection of the origin of the material and of the diversity (number of trees from which FRM has been produced). After processing, the SFI issues a Master certificate to the operator, which has to accompany the FRM unit at all time. When needed, the SFI analyses the identity and genetic diversity of the collected FRM with molecular methods, an example of such traceability was published for beech seeds recently (Westergren et al., 2017). The production of FRM is reported yearly to the ministry by the FRM operator, and on the issued master certificates by the SFI to the ministry and the inspectorate.

162. Within the only still active seed orchard, established in 1990 for black alder (*Alnus glutinosa*), at 55 clones and 256 trees on 1.05 ha, the fructification per clone needs to be assessed by the SFI, and seeds / cones are obtained from every tree in the plantation prior to issuing the master certificate.

5.5.3. *Detailed procedures for the collection of FRM*

163. Seven days prior to the collection, the supplier submits to the SFS a formal application (Annex D) to obtain the Field confirmation. For the seed orchard it is the SFI instead of the SFS. Fee: application – 50 points (tariff number 1), certificate – 50 points (tariff number 6), certificate – 30 points (tariff number 6).

164. If the supplier is not the owner, it must enclose the following with the application:

- a statement verified by a notary with which the collection of reproductive material is referred to another person,
- a written statement on the one-off referral of the collection of reproductive material,
- power of attorney on the representation of the owner.

165. During collection, the SFS (SFI) periodically supervises the collection in the following way:

- compiles a record on supervision,
- takes a sample of reproductive material to be sent to the SFI,
- the supplier enters data on the quantity of the collected reproductive material for the application on a daily basis under the control of the local forest ranger.

166. The SFS issues the application as a Field confirmation to the supplier, and sends a copy of the Field confirmation to the SFI. The SFS charges the costs incurred in the procedure to the supplier with a decision (price list is compiled by the MAFF; not implemented in practice, since all is done as part of the public forest service). During the collection, an expert authorised by the SFS (head of district of head of silvicultural department) or the supplier who collects FRM in the forest seed object takes a sample. It can be plant tissue (a branch with three sleeping shoots or seeds / cones) in the prescribed

quantities in accordance with the Rules on Certificates and Master Certificates for FRM (2004, amended in 2011) from every tree from which FRM was collected. This person puts the sample in a paper bag and, together with a copy of the SFS's Field Confirmation, sends it immediately to the SFI for its origin to be verified upon the issuing of the Master certificate or for later identification of FRM. The supplier also delivers to the SFI a representative sample of the entire lot of extracted seeds together with the seed extraction record, in which the initial quantity in the stand of the collected FRM and the quantity of extracted FRM is indicated.

167. The original Field confirmation remains with the seed lot until the Master certificate is obtained.

168. The SFI issues the Master certificate: not later than 7 days after the conclusion of collection or extraction. depending on what the supplier has requested in the application; the SFI issues the Master certificate:

- immediately after it gets the Field confirmation and the samples from the SFS and, after issuing the Master certificate, takes obtains the treated seed sample for the gene bank,
- after extraction in a Seed storage or by the supplier, where the SFI examines the quantity and takes the treated seed sample for the gene bank.
- The SFI charges the costs incurred in the procedure to the supplier (price list is compiled by the MAFF; not implemented in practice, since all is done as part of the public forest service).

169. If all procedures are related to the approval of seed sources and certification of FRM for the purpose of medium-term planning of the needs for use of FRM in Slovenia in accordance with the plans of the SFS, they are exempt from payment of fees, while the costs of approval are part of the tasks of the public forestry service.

170. Not later than 14 days after obtaining documentation, the SFI issues the Master Certificate of origin (Annex D). If the supplier or the SFS requires it, the SFI may also make an analysis of the quality of seed and issues a Seed quality report, which is a bit simplified form with respect to the ISTA form. A quality analysis may also be performed by the supplier according to the internationally recognised methodology of the International Seed Testing Association (ISTA).

5.6. SUPPLIER'S DOCUMENT (ZGRM, 2002)

171. FRM shall be marketed only in consignments which are accompanied by a document issued by the supplier and in which at least the following information is stated:

- - master certificate number,
- name of the supplier,
- the quantity of reproductive material in the consignment,
- botanical name of the tree species or artificial hybrid,
- category,
- purpose,
- identification number of the forest seed object from the register of seed objects,

- the year of harvest in the case of seed,
- age and shape of seedlings or cuttings in the case of planting material,
- the form and duration of rearing in the nursery for poultry,
- the type, location, provenance area and origin of the basic material from which the reproductive material originates,
- quality class.

172. If the seed is marketed, the document must contain information on:

- purity as a percentage by weight of pure seed,
- seed germination,
- weighs 1000 pure seeds,
- the number of germinating or vital seeds per kilogram of the lot, in which case the method of determining vitality shall also be indicated.

173. The lots of seed or fruit marketed must contain at least 99 % seed or fruit of the same species. In the case of highly related species other than artificial hybrids, the proportion of each species in the lot may be less than 99 %. In such a case, the percentage purity shall be indicated separately on the supplier's document.

174. If reproductive material of the "tested" category is marketed, the supplier's document shall state whether the reproductive material has been genetically modified and whether it originates from a temporarily approved seed object.

175. If vegetatively propagated reproductive material is marketed, the supplier's document shall also state this information.

176. A consignment of reproductive material obtained in a seed object for which the master certificate has not yet been issued shall be accompanied by the supplier's document, which shall contain the field confirmation number instead of the master certificate number.

5.7. MASTER CERTIFICATE (ZGRM, 2002)

177. For each lot of seed, parts of plants or pollen obtained in the seed object, the supplier shall be issued the Master certificate of origin of reproductive material, which shall also apply to all reproductive material produced from this seed, parts of plants.

178. The Master certificate of origin must specify in particular:

- - the number of the Master certificate with the code of the Republic of Slovenia,
- date of issue of the Master certificate,
- botanical name of the tree species or artificial hybrid,
- name or company name and address or registered office of the supplier,
- type of reproductive material,
- quantity of reproductive material,
- category of reproductive material,
- the purpose for which the reproductive material is used,

- type of seed object,
- seed object number from the Register of forest seed objects,
- location and origin of the seed object,
- region of provenance.

5.8. PACKAGING AND LABELLING

179. The FRM Act further specifies:

"Seed units shall be marketed only in sealed packages. The sealing device shall be such as will become unserviceable when the package is opened."

180. The Rules on the conditions for entry in the register of suppliers …. (Pravilnik o dobaviteljih, 2003) specifies further the requirements on the labelling and packaging of FRM as follows:

In order to ensure the traceability of the reproductive material for which the main certificate of identity has been issued and to ensure its identity at all stages of production and marketing, the supplier shall issue a document for each quantity of reproductive material marketed or moved between production units. It consist of:

- supplier's document number,
- certificate of identity and quality of reproductive material (hereinafter referred to as "the certificate"),
- plant passport, if provided for in plant health regulations, and
- form for keeping records of consumption and stocks.

Specific requirements for seed packaging and labelling:

181. Seed material must be packed in packaging that enables the preservation of the appropriate market quality and prevents scattering or scattering during storage, transport and handling.

182. The supplier must pack the marketed seed material in such a way that it uses a sealing method which becomes unusable after opening the original packaging.

183. Lots of seed material must be physically separated from each other during storage, at all stages of processing and during marketing. Each unit must be marked with at least the following information:

- the name or business name of the supplier who packaged or assigned the seed material,
- botanical name,
- quantity,
- the batch number or, in the case of marketing, the supplier's document number,
- date of packaging or start of finishing.

184. When storing and marketing seed material, the label referred to in the preceding paragraph must be affixed to the inside and outside of each package. Any storage longer than 3 months is considered to be storage of seed material.

185. When the supplier obtains seed material in a forest seed object, he must immediately, but no later than before the start of transfer from the place of acquisition, pack it in the manner prescribed by these Rules and equip it with the mark referred to in the third paragraph of this Article. In this case, the lot number or Field confirmation number shall bear the number of the Field confirmation.

Specific requirements for planting material packaging and labelling:

186. Planting material and parts of plants to be marketed must be bundled. A package is the smallest unit of packaging intended for marketing that contains only planting material or parts of plants of the same lot. If a quality class is prescribed, each package contains only planting material or parts of plants of the same quality class.

187. The method of bundling must prevent scattering and enable the affixing of the prescribed marking.

188. Each package must be clearly marked with the number of the supplier's document. If the same supplier's document is issued for several packages, the number of each package shall also be indicated on the label of each package.

189. The colour of the national labelling in practice is white for all categories of FRM. The EU labels used by Slovenia can be colour-coded following the EU requirements. These are in line with the OECD labelling rules..

190. According to the Rules for registering the suppliers….. (Pravilnik o dobaviteljih, 2003) the labelling can follow the colour code or be in white for all categories; the #18 states as follows:

191. If paper or other material other than white is used for the supplier's documents and markings of reproductive material under these Rules and for documents under other regulations on reproductive material, the following colours shall be used for individual categories of reproductive material, namely:

- for the category "known origin": yellow,

- for the "selected" category: green,

- for the "qualified" category: pink,

- for the "tested" category: blue.

192. The examples of Master certificates and Labels are attached in Annex D.

6. RECOMMENDATION OF THE EVALUATION TEAM

6.1. Background

1. In 2017, OECD Council following the recommendation of the Annual Meeting approved a new procedure for admitting OECD members into the OECD Forest Seed and Plant Scheme. The new procedure is laid down in APPENDIX X.A of the Rules and Regulations. As Slovenia is being an OECD member country, the evaluation of their request followed this process.

2. Slovenia sent a self-evaluation report to the Secretariat March 2021. This report was reviewed by an evaluation team consisted of Mr Mirko Liesebach, a national expert from Germany and Mr Csaba Gaspar from the Secretariat. The team was set up in agreement with Mr Claes Uggla, the Chair of the Annual Meeting.

6.2. Recommendation

3. The evaluation team carefully examined and found the provided information on the national legislation, institutional capacity and the national FRM certification system in line with the rules and regulations of the OECD Forest Seed and Plant Scheme.

4. The national FRM certificates and labels are line with the OECD Forest Scheme. In case of the admission Slovenia to the Scheme, they must submit the specimen OECD certificates and labels to the OECD Secretariat before their use for prior approval as required by the Rules and Regulations.

5. The evaluation team recommends the admission of Slovenia to the OECD Forest Seed and Plant Scheme. The participation of Slovenia will further enrich the discussions at the technical working group and annual meetings.

6. The Annual Meeting is invited to admit Slovenia to the Forest Seed and Plant Scheme by the written procedure.

7. Acknowledgements

193. The Slovenian self-evaluation is based partly on the publication by Kraigher et al. 2019, in the Springer monography entitled Forests of Southeast Europe under a changing climate. The text was further amended based on the Seed manual (Kraigher, mnscr) and by detailed contributions by Hojka Kraigher (SFI), Saša Rus (MAFF) and Barbara Piškur (SFI, for Plant Protection part).

194. The programme SIFORGEN, the Slovenian Forest Gene Bank and professional advisory services of the Slovenian Forestry Institute are financed through the Civil forest service by the Ministry of agriculture, forestry and food (MAFF). The development of the system for forest genetic monitoring was part of the project LIFEGENMON (LIFE13/ENV/SI/000148), co-financed in Slovenia by the Ministry of the environment and spatial planning, MAFF, and the Slovenian Forestry Institute through its Research programme P4-0107, financed by the Slovenian Research Agency (SRA). The development of measures for genetic protection of forests, development of the proposal for forest genetic monitoring, and categorization of plus trees of wild cherry, were financed from 2011 through three-year target developmental projects V4-1140, V4-1428 and V4-1616, V4-1819, V4-2015, co-financed by MAFF and SRA, and the 7FW project EUFORINNO (RegPot. 315982).

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LIST OF ANNEXES:

Annex A. OFFICIAL APPLICATION LETTER

REPUBLIC OF SLOVENIA
MINISTRY OF AGRICULTURE,
FORESTRY AND FOOD

dr. Jože Podgoršek
MINISTER

Ref. No. 340-82/2020/10
Ljubljana, 4 February 2021

Subject: LETTER OF APPLICATION TO THE OECD FOREST SEED AND PLANT SCHEME

Dear Secretry-General of Organisation for Economic Co-operation and Development,

Republic of Slovenia has the honour to seek admission to the OECD Scheme for the Certification of Forest Reproductive Material moving in International Trade.

The Authority responsible for the implementation of the OECD Scheme will be the Ministry of Agriculture, Forestry and Food of the Republic of Slovenia, Directorate of Forestry and Hunting. This Administration will take the formal steps required by the admission procedure.

In line with a new simplified accession procedure for OECD member countries, Slovenia commits to provide a self-evaluation report.

We also acknowledge the fact that once admitted in the OECD Scheme, the participating country would have to pay for an annual fee, starting the calendar year following the official admission.

The inclusion of the Republic of Slovenia in the OECD Forest Seeds and Plants Scheme will enable us to plan the transfer and use of forest reproductive material for supplementary planting from other SE European countries. In this way, it will contribute to greater genetic diversity of future forests, their greater resistance to harmful changes in the environment and the existence of forests, despite unfavourable simulations of changing environmental conditions for the growth of economically important tree species.

Accept, Sir, the assurance of my highest consideration.

Dr. Jože Podgoršek
Minister

Mr Angel GURRÍA
Secretary-General of OECD
2 rue André-Pascal
F-75775 Paris Cedex 16
France

Annex B. Collection of seed in forest stands for production of FRM category 'selected' and in forest stands, groups of trees and seed trees for production of the FRM category 'source identified' in Slovenia in 1998/1999 and in 2018

Tree species	Quantity of seed (kg)	Quantities needed for the SFS in 1999	Quantities relative to the certificates issued in 2018
Abies alba	69	69	92
Fagus sylvatica		1,316	538
Fagus sylvatica – plants from natural regeneration			200,000 pulleys
Quercus petraea	600	1,429	4,950
Quercus robur	600	1,151	7,620
Acer pseudoplatanus	136	414	90
Acer platanoides			160
Fraxinus excelsior	98	537	0
Fraxinus ornus		10	0
Prunus avium	94	30	540.5
Carpinus betulus		3	4,200
Ostrya carpinifolia		10	0
Alnus glutinosa		1	2.8
Sorbus torminalis	1	1	0
Pseudotsuga menziesii			1.3
Castanea sativa			2,600
Malus sylvestris			1.3
Pyrus pyraster			1.3

Annex C. Seeds and seedlings used for planting and sowing in Slovenia in 1998 (only for reforestation after regular felling) and in 2018

Tree species	Seed sowing (kg) in 1998/2018	Seedlings (in 1,000) in 1998	Seedlings (%) in 1998	Seedlings , in 2018	Seedlings (%) in 2018
Picea abies	24	789	46	488,233	48
Abies alba	4	18	1	10,298	1
Pinus silvestris	5	41	2	5,865	1
Pinus nigra	414 / 32		3	1,.200	<1
Larix decidua		51		21,400	2
Other conifers		4		2,083	<1
Fagus sylvatica	4	229	13	309,598	30
Quercus petrea	20 / 5	152	9	15,580	2
Quercus robur	724 / 1,460			68,225	7
Noble deciduous trees		353	21		
Hardwood deciduous trees		11	1		
Fast-growing deciduous trees		61	4		
Other deciduous trees	31	5			
Fraxinus excelsior	na / 3				
Acer pseudoplatanus				49,110	5
Prunus avium				21,.695	2
Alnus glutinosa	na / 0.5			17,000	2
Carpinus betulus				3,730	<1
Populus spp.				2,805	<1
Tilia platyphyllos				2,420	<1
Sorbus aucuparia				842	<1
Crataegus spp.				650	<1
Malus sylvestris				595	<1
Acer platanoides				575	<1
Juglans regia				551	<1
Castanea sativa				527	<1

Ulmus minor				400	<1
Pyrus pyraster				382	<1
Sorbus domestica				038	<1
Sorbus torminalis				027	<1
Sorbus aria				001	<1
Total	1,226 / 1,501	1,710	100	1,006,847	100

In 1998 quantities do not comprise sanitary felling for which additional up to 1.3 million of seedlings a year may be required.

Annex D. CERTIFICATES

D/1 Master certificate for *in situ* seed objects (categories 'source identified', 'selected', 'tested')

GLAVNO SPRIČEVALO O ISTOVETNOSTI GOZDNEGA REPRODUKCIJSKEGA MATERIALA
izdano v skladu z Direktivo 1999/105/ES

SLOVENIJA	SI/

Potrjujemo, da je bil spodaj opisani gozdni reprodukcijski material proizvedeni:
- ❑ skladno z direktivo ES;
- ❑ reprodukcijski material, za katerega velja prehodna ureditev.

1. Botanično ime: .....

2. Oblika :	**3. Kategorija :**	**4. Tip gozdnega semenskega objekta:**
❑ semenski material	❑ znano poreklo	❑ skupina semenjakov
❑ deli rastlin	❑ izbran	❑ sestoj
❑ sadilni material	❑ testiran	

5. Namen:

6. Sklicna številka oziroma izkaz istovetnosti izhodiščnega materiala glede na nacionalni register: .....
..... **/ Mešanica:** .....

7. Izvor
- ❑ avtohton
- ❑ neavtohton, in sicer: **8. Poreklo izhodiščnega materiala (neavtohton, če je izvor znan):** .....
- ❑ neznan

9. Država in provenienčno območje izhodiščnega materiala:
.....
Provenienca (kratko ime): .....
.....

10. Nadmorska višina ali razpon višin lokacije izhodiščnega materiala: ....

11. Leto dozoritve semena: .. **12. Količina:** .....

13. Ali je partija, za katero se izdaja to spričevalo, nastala z delitvijo večje partije, za katero je bilo že izdano spričevalo ES?
- ❑ Da ❑ Ne

Številka prejšnjega spričevala: ..... Količina v prvotni partiji: ....

14. Trajanje vzgoje v drevesnici:

15. Ali je sadilni material vzgojen iz semena in naknadno vegetativno razmnožen?
- ❑ Da ❑ Ne

Način razmnoževanja: ..... Število razmnoževalnih ciklusov: .....

16. Ostale pomembne informacije: .....
.....

17. Ime in naslov dobavitelja

Ime in naslov uradnega organa	**Žig** **datum**	**Ime in priimek odgovorne osebe:** **podpis**

D/2 Master certificate for categories 'qualified' and 'tested', for *ex situ* seed objects: seed orchard or parents of families

GLAVNO SPRIČEVALO O ISTOVETNOSTI GOZDNEGA REPRODUKCIJSKEGA MATERIALA
izdano v skladu z Direktivo 1999/105/ES

SLOVENIJA	SI/

Potrjujemo, da je bil spodaj opisani gozdni reprodukcijski material proizveden:
- ❑ skladno z direktivo ES;
- ❑ reprodukcijski material, za katerega velja prehodna ureditev.

1. a) Botanično ime:

b) Ime gozdnega semenskega objekta:

2. Oblika:	**3. Kategorija:**	**4. Tip gozdnega semenskega objekta**
❑ semenski material ❑ deli rastlin ❑ sadilni material	❑ kvalificiran ❑ testiran	❑ semenska plantaža ❑ starši družin(e)

5. Namen:

6. Sklicna številka oziroma izkaz istovetnosti izhodiščnega materiala glede na nacionalni register:
- ❑ avtohton

7. Izvor
- ❑ neavtohton, in sicer: **8. Poreklo izhodiščnega materiala (neavtohton, če je izvor znan):**.....
- ❑ neznan

9. Država in provenienčno območje izhodiščnega materiala:

Provenienca:

10. Seme je dobljeno:
- ❑ s prostim opraševanjem
- ❑ z dodatnim opraševanjem
- ❑ s kontroliranim opraševanjem

11. Leto dozoritve semena:

12. Količina:

13. Ali je material, zajet v tem spričevalu, nastal z delitvijo večje partije, za katero je bilo že izdano spričevalo ES?

❑ Da ❑ Ne

Številka spričevala: Količina v prvotni partiji:

14. Trajanje vzgoje v drevesnici:

15. Število zastopanih komponent:
Družine:
Kloni:

16. Nadmorska višina ali razpon višin:

17. Ali je gozdni semenski objekt gensko spremenjen? ❑ Da ❑ Ne

18. Reprodukcijski material iz staršev družin(e): načrt križanja:
sestava družin (razpon v %):

19. Ali je bil material, pridobljen iz semena, naknadno vegetativno razmnožen? ❑ Da ❑ Ne
Način razmn. Št. razmn. cikl.

20. Ostale pomembne informacije:

21. Ime in naslov dobavitelja

Ime in naslov uradnega organa	**Žig** **datum**	**Ime in priimek odgovorne osebe:** **podpis**

D/3 Master certificate for categories 'qualified' and 'tested' for *ex situ* seed objects: clone or clonal mixture

GLAVNO SPRIČEVALO O ISTOVETNOSTI GOZDNEGA REPRODUKCIJSKEGA MATERIALA
izdano v skladu z Direktivo 1999/105/ES

SLOVENIJA	SI/

Potrjujemo, da je bil spodaj opisani gozdni reprodukcijski material proizveden:
- ❑ skladno z direktivo ES;
- ❑ reprodukcijski material, za katerega velja prehodna ureditev.

1. a) Botanično ime:
b) Ime klona ali klonske mešanice:

2. Oblika:	**3. Kategorija:**	**4. Tip gozdnega semenskega objekta:**
❑ deli rastlin	❑ kvalificiran	❑ klon
❑ sadilni material	❑ testiran	❑ mešanica klonov

5. Namen:

6. Sklicna številka oziroma izkaz istovetnosti izhodiščnega materiala glede na nacionalni register:

7. Izvor ❑ avtohton
❑ neavtohton, in sicer: **8. Poreklo izhodiščnega materiala (neavtohton, če je izvor znan):**.....
❑ neznan

9. Država in provenienčno območje izhodiščnega materiala:

Provenienca:

10. Ali je gozdni semenski objekt gensko spremenjen? ❑ **Da** ❑ **Ne**

11. a) Način razmnoževanja: **b) Število razmnoževalnih ciklov:**

12. Količina reprodukcijskega materiala:

13. Ali je material, zajet v tem spričevalu, nastal z delitvijo večje partije, za katero je bilo že izdano spričevalo ES?	
❑ Da	❑ Ne
Številka spričevala:	Količina v prvotni partiji

14. Trajanje vzgoje v drevesnici:	**15. Reprodukcijski material iz mešanice klonov** Število klonov: Sestava klonov (razpon v %):

16. Ostale pomembne informacije:

17. Ime in naslov dobavitelja

Ime in naslov uradnega organa	**Žig** **datum**	**Ime in priimek odgovorne osebe:** **podpis**

D/4 Master certificate – Confirmation of the Inspectorate on mixing of FRM lots

(ime in naslov prijavitelja)	prostor za koleke
(ime in naslov pristojne enote gozdarske inšpekcije)	

Na podlagi 12. in 13. člena zakona o gozdnem reprodukcijskem materialu (Uradni list RS, št. 58/02 in 85/02-popr.) se prosi za izdajo glavnega spričevala o istovetnosti gozdnega reprodukcijskega materiala, pridobljenega z mešanjem:

proveniènčno območje/provenienca:	
kategorija:	botanično ime:
ime in naslov oziroma firma in sedež dobavitelja:	
ime in priimek odgovorne strokovne osebe:	

Potrdilo o nadzoru nad mešanjem gozdnega reprodukcijskega materiala št.

Podatki o mešanici:

št. glavnega spričevala:	leto obroda:	gozdni semenski objekt:	količina:

Potrjujemo, da je bil zgoraj opisani gozdni reprodukcijski material pridobljen pod nadzorom gozdarske inšpekcije, v skladu s predpisi o gozdnem reprodukcijskem materialu.

Datum: Ime in priimek pristojnega gozdarskega inšpektorja:

Žig: Podpis:

D/5 Field confirmation

Na podlagi 14. člena zakona o gozdnem reprodukcijskem **materialu (**Uradni list RS, št. 58/02, 85/02-popr in 77/11**) se** izdaja potrdilo o izvoru gozdnega reprodukcijskega materiala

Potrdilo o izvoru gozdnega reprodukcijskega materiala ZGS/□□/□□/□□
GIS/□□/□□

Botanično ime: .....

Sklicna številka oziroma izkaz istovetnosti izhodiščnega materiala glede na nacionalni register: .....

Provenienca (kratko ime): .....

Namen uporabe: □ V gozdarstvu □ Ni za uporabo v gozdarstvu

Tip reprodukcijskega materiala:
□ Semenski material: □semena □plodovi □storži □soplodja
□ Deli rastlin
□ Sadilni material: □ Puljenke □ Sadike □ Ukoreninjen material

Podatki o pridobljeni količini

datum										skupaj
hl/kg/kom										
podpis										

Potrjujemo, da je bil zgoraj opisani gozdni reprodukcijski material pridobljen pod nadzorom:
□ Zavoda za gozdove Slovenije
□ Gozdarskega inštituta Slovenije
v skladu s predpisi o gozdovih in predpisi o gozdnem reprodukcijskem materialu.

Datum: Ime in priimek pooblaščene osebe:

Žig: Podpis:

Annex E. National FRM labels

Priloga 4
Obrazec 1: Spričevalo za nedodelan semenski material ali čisto seme

Dobavitelj	št.
Regist.št.	

Spričevalo o istovetnosti in kakovosti gozdnega reprodukcijskega materiala

Prejemnik			Reg.št.
Botanično ime		Domače ime	Količina
☐ Nedodelan semenski material ☐ Čisto seme		Leto obroda	potrdilo/ glavno spričevalo
Izvor	Tip	Reg.št.	
Kategorija	Namen	Provenin.območje	Provenienca
Čistost	Teža 1000 čistih semen		Kalivost
Št.kalivih/vitalnih semen	Metoda		Datum testiranja
Ostali podatki:			

Kraj in datum: Podpis:

Obrazec 2: Spričevalo za sadilni material, dele rastlin ali puljenke

Dobavitelj

Št.

Regist.št.

Spričevalo o istovetnosti in kakovosti gozdnega reprodukcijskega materiala

Prejemnik			Reg.št.
Botanično ime	Domače ime		Količina
☐ Sadilni material ☐ Deli rastlin ☐ Puljenke			potrdilo/ glavno spričevalo
Izvor	Tip	Reg.št.	
Kategorija	Namen	Provenin.območje	Provenienca
Oblika in starost	razred		
Ostali podatki:			

Izjavljamo, da je navedeni gozdni reprodukcijski material ustrezne tržne kakovosti

Kraj in datum: Podpis:

Priloga 6 : Obrazec rastlinskega potnega lista

1. **Rastlinski potni list RS**	2. **SI**	3. **MKGP - UVRS**	4.	5.
6.	7.	8.	9.	10.

Navodila za izpolnjevanje obrazca:

Polja pod zap.št. 1-3 ostanejo nespremenjena.
V polja pod zaporednimi številkami 4 - 10 se vpišejo podatki kot sledi:

4. registrska številka dobavitelja
5. številka partije
6. botanično ime vrste /umetnega križanca
7. količina
8. polje se izpolni, če gre za premeščanje v določeno varovano območje:
   - z oznako ZP in imenom ali kodo tega varovanega območja, ali
   - z oznako ZP in zaporedno številko škodljivega organizma s seznamov varovanih območij, za katere so izpolnjeni pogoji,
   sicer se vnese črtica (-).
9. polje se izpolni, če gre za nadomestni rastlinski potni list, z oznako RP in registrsko številko izdajatelja prvotnega rastlinskega potnega lista, sicer se vnese črtica (-)
10. polje se izpolni, če je bila partija pridelana v drugi državi, z imenom te države, sicer se vnese črtica (-)

Podatki v poljih pod zap.št. 4, 6 in 7 morajo biti identični podatkom na spričevalu.

Annex F. LIST OF SPECIES TO WHICH THE FRM ACT APPLIES AS LISTED IN THE NATIONAL LIST (2010)

No.	**Botanical name**
1.	*Abies alba* Mill.*
2.	*Abies cephalonica* Loud.*
3.	*Abies grandis* Lindl.*
4.	*Acer campestre* L.
5.	*Acer monspenssulanum* L.
6.	*Acer obtusatum* W. et K. ex. Willd.
7.	*Acer platanoides* L.*
8.	*Acer pseudoplatanus* L.*
9.	*Acer tataricum* L.
10.	*Alnus glutinosa* (L.) Gaertn.*
11.	*Alnus incana* (L.) Moench *
12.	*Alnus viridis* (Chaix) DC.
13.	*Betula pendula Roth**
14.	*Betula pubescens* Ehrh.*
15.	*Carpinus betulus* L.*
16.	*Carpinus orientalis* Mill.
17.	*Castanea sativa* Mill.*
18.	*Celtis australis* L.
19.	*Cercis siliquastrum* L.
20.	*Fagus sylvatica* L.*
21.	*Ficus carica* L.
22.	*Fraxinus angustifolia* Vahl*
23.	*Fraxinus excelsior* L.*
24.	*Fraxinus ornus* L.
25.	*Ilex aquifolium* L.
26.	*Juglans regia* L.
27.	*Laburnum alpinum* (Mill.) Bercht. et J. Presl
28.	*Laburnum alschingeri* (Vis.) C. Koch
29.	*Laburnum anagyroides* Medik.
30.	*Larix decidua* Mill.*
31.	*Larix kaempheri* (Lamb.) Carr.*
32.	*Larix* x *eurolepis* Henry*
33.	*Laurus nobilis* L.
34.	*Malus sylvestris* (L.) Mill.
35.	*Mespilus germanica* L.
36.	*Olea europaea* L.
37.	*Ostrya carpinifolia* Scop.
38.	*Phillyrea latifolia* L.

39.	*Picea abies* (L.) Karst.*
40.	*Pinus cembra* L.*
41.	*Pinus halepensis* Mill.*
42.	*Pinus mugo* Turra
43.	*Pinus nigra* Arnold*
44.	*Pinus pinaster* Ait.*
45.	*Pinus pinea* L.*
46.	*Pinus sylvestris* L.*
47.	*Pistacia terebinthus* L.
48.	*Populus alba* L.
49.	*Populus nigra* L.
50.	*Populus tremula* L.
51.	*Popululus* x spp*
52.	*Prunus avium* L.*
53.	*Prunus mahaleb* L.
54.	*Prunus padus* L.
55.	*Pseudotsuga menziesii* (Mirb.) Franco*
56.	*Pyrus amygdaliformis*
57.	*Pyrus pyraster* (L.) Burgsd.
58.	*Quercus crenata Lam.*
59.	*Quercus cerris L.**
60.	*Quercus ilex* L.*
61.	*Quercus petraea* (Matt.) Liebl.*
62.	*Quercus pubescens* Willd.*
63.	*Quercus robur* L.*
64.	*Quercus rubra* L.*
65.	*Quercus suber* L.*
66.	*Robinia pseudoacacia* L.*
67.	*Salix* × spp.
68.	*Sorbus aria* (L.) Crantz
69.	*Sorbus aucuparia* L.
70.	*Sorbus domestica* L.
71.	*Sorbus torminalis* (L.) Crantz
72.	*Taxus baccata* L.
73.	*Tilia cordata* Mill.*
74.	*Tilia platyphyllos* Scop.*
75.	*Ulmus glabra* Huds.
76.	*Ulmus laevis* Pall.
77.	*Ulmus minor* Mill.

* Tree species and artificial hybrids identified in accordance with Council Directive EC/105/1999 (OJ L 320, 8.12.2005, p. 50) and Commission Decision of 6 December 2005 exempting Denmark and Slovenia certain obligations in the marketing of forest reproductive material in accordance with Council Directive 1999/105 / EC (OJ L 320, 8.12.2005, p. 50)