

Legal provisions on soil import

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Executive summary

Soil and growing media are important vectors of transport of invasive alien species into new areas. This technical note addresses the types of soil and growing media that should be considered relevant as possible means of introduction of invasive alien species into the European Union. The pathways through which these can enter the EU, as well as values and volumes of imports into the Union are explored, where possible. This technical report also provides an overview of current international, regional and national legislation related to the import of soil and growing media into the EU and in some relevant third countries.

Soil and growing media can be imported into the EU attached to plants or to turf rolls (mainly via the nursery trade), as a substrate used for potting mixes, as samples moved for research purposes or as waste resulting from construction activities. Based on a thorough literature search and on expert consultation, it was concluded that specific data on volumes or values of soil and growing media as such, or attached to plants for planting, imported into the EU, do not exist, or are scarce. This makes it difficult to ascertain the main types of soil imports into the EU and the most relevant importing countries. Nevertheless, based on an analysis of trade in relevant goods and commodities into the EU over the past five years (as recorded using the EU Combined Nomenclature and the European List of Waste codes), the Netherlands stands out as, by far, the largest EU importer of rooted cuttings and young plants (with soil attached), as well as of soil moved as waste. The major countries exporting these types of plants into the EU are Brazil, Israel and New Zealand. On the other hand, Italy and Germany are the largest importers of different types of outdoor plants, which are mainly exported from Japan. If more data on soil movement were available, it could assist in evaluating risks from soil transported via different pathways, allow the identification of the highest risk pathways and support the development and improved efficacy of management tools.

Whereas countries such as Australia, New Zealand, Canada and the USA have relatively comprehensive policies regarding the import of soil and growing media, the current EU legislation is less strict. Furthermore, only a small proportion of soil entering the EU is inspected at ports of entry for the transport of associated harmful organisms, and inspection intensity largely varies between EU Member States. Nevertheless, new steps recognising these limitations seem to be underway, as indicated by the last proposed amendment to the EU Plant Health Directive, which aims to achieve a level of prohibitions and restrictions similar to those of other more restricting countries. In addition, the existence of a fully functioning notification and rapid alert system reporting interceptions of soil and growing media non-compliant with EU policy and legislation also shows the efforts being developed by the EU as regards to better regulating imports of soil and other plant products.

1. Introduction

Soil can be transported for a variety of reasons, namely intentionally as a commodity for potting mixes, as a result of construction operations, for research purposes, as a commodity contaminant attached to plants or roots for planting, or unintentionally as a contaminant of other products. The movement of soil is considered an important pathway of introduction of invasive alien species (IAS) (IUCN 2017), because soil can harbour a variety of living organisms, such as microorganisms (bacteria, fungi, protozoa and viruses), nematodes, earthworms, molluscs, insects and plants (also as seeds). Soil can also act as a long-term reservoir for disease-causing organisms, which can survive in the soil until a suitable host is found or until the right growing conditions are secured. Plants can be embedded and survive in growing media other than soil, i.e. other materials in which a variety of plants can healthily grow and be transported, such as e.g. peat, green compost or bark (Growing Media Europe 2019), which can also be responsible for carrying and spreading harmful organisms (EFSA 2015).

The risks posed by the movement of soil and other growing media as potential pathways for the introduction and spread of IAS have been largely recognised (EPPO 2012, 2016). As a result, conditions and restrictions on soil movement are addressed in international, regional and national legislation, as well as in several codes of conduct (e.g. EC 2000, Heywood and Brunel 2011, Scalera 2017). However, legislation on these movements is hard to implement, largely due to the difficulty in monitoring and managing the increasing volumes of commodities traded and transported all around the world (Hulme 2009). In fact, EU policy and legislation regarding soil importation have historically been poor, and often ineffective, in preventing the entry of pests into Europe (EPPO 2012, EFSA 2015). This may partly result from the fact that a surprisingly low amount of quantitative information on soil transport and border interceptions is available (McNeill et al. 2011). Furthermore, biosecurity risks from transported soil depend on several factors, such as duration of transport and exposure to environmental extremes during transport, making it difficult for authorities to predict which pathways should be prioritised and management resources allocated to (McNeill et al. 2017).

Soil and growing media can be moved into the EU, and contribute to the unintentional introduction of IAS, in two ways:

- 1) **Intentionally.** This refers to cases in which soil and growing media are moved into the EU intentionally, i.e. in a deliberate and intended way, even if transported with other products, such as attached to plants for planting (where soil is necessary for the plants to survive and is therefore intentionally part of the commodity traded).
- 2) **Unintentionally.** Soil can be unintentionally moved mainly through pathways involving transport, travel or tourism, e.g. as an accidental contaminant on agricultural machinery, vehicle tyres, recreation or military equipment, travellers' clothes and footwear, or as contaminant of traded commodities, such as tubers and roots.

This technical note focuses on the pathways, trade values or volumes, and associated policy and legislation regarding the **intentional** import of soil and growing media into the EU, as a pathway for the unintentional introduction of IAS. Although it does not cover the unintentional import of soils into the EU, it is essential to recognise its importance as a means of introduction of IAS. Many of the pathways mentioned above as being a means of unintentional movement of soil have been involved in the introduction or movement of IAS (McNeill et al. 2011), which is why, for instance, the International Plant Protection Convention has published an International Standard for Phytosanitary Measures on the 'International movement of used vehicles, machinery and equipment' addressing

the risk of IAS introduction (ISPM 41, FAO 2017b). As an example, *Andropogon virginicus*, a grass of American origin that is under consideration for being added as a species of Union concern, is thought to have entered the EU, in France, as a contaminant on military equipment, possibly with soil (Granereau and Verloove 2010, EPPO 2018a). Another example is the transportation of seeds on footwear, which has been shown to pose a risk to the environment through the introduction of invasive alien plants, and which seems to increase with the amount of soil affixed to footwear (Ware et al. 2011). Similarly, McNeill et al. (2011) have demonstrated that a wide range of taxonomic groups of living soil organisms, many of which alien, are regularly transported on contaminated footwear of international aircraft passengers. In the USA, fruits and seeds of *Microstegium vimineum*, a species of Union concern, have been shown to adhere to and be moved with muddy boots of passing hikers, which may help explain its spread through undisturbed natural areas (Miller 2011). Issues concerning the unintentional movement of soils and other growing media will, however, not be further explored in this note, as being out of scope.

Finally, this technical note does not focus on soil and growing media movements within the EU, except when reporting trade values or volumes, because of the few data available. However, it is important to mention that the movement of soil and growing media within the EU, which is not regulated, is a significant pathway that has contributed to the spread of alien species within the EU, and sometimes their introduction into other Member States (e.g. translocation of seeds or plants of common ragweed *Ambrosia artemisiifolia*, Himalayan knotweed *Persicaria wallichii* and Himalayan balsam *Impatiens glandulifera* in contaminated soil and litter from infested to non-infested areas; Bullock et al. 2012, CABI 2019b).

2. Definition of soil and other growing media

2.1. Lack of standardisation in soil and growing media definition used in legislation

Various definitions have been proposed for soil and there is a lack of standardisation across national and international organisations on what is defined as soil, parts of soil, and growing media. Often legislation and other documents on soil import start by providing a definition of soil and growing media, and which types are considered in that scope. However, the definition/types considered often vary depending on countries or regulatory bodies (Table 1), which ultimately impacts the nature of import legislation adopted and how it is implemented.

Table 1. Examples of different types of soil and growing media (and their definitions) considered in international, regional and national standards or legislation involving soil.

Country/Region	Source	Types of soil and growing media considered
Worldwide (IPPC contracting parties)	IPPC ISPM 5 - Glossary of phytosanitary terms (FAO 2018)	growing medium - any material in which plant roots are growing or intended for that purpose
Worldwide (IPPC contracting parties)	IPPC ISPM 40 - International	paper, tissue culture medium, coconut fibres, sawdust, wood shavings, water, wood, cork, peat,

	movement of growing media in association with plants for planting (FAO 2017a)	non-viable moss (sphagnum), other plant material (e.g. rice hulls/chaff, grain hulls, coffee hulls, fallen leaves, sugar-cane refuse, grape marc, cocoa pods, oil palm shell charcoal), bark, biowaste, compost, soil, tree fern slabs, vermicompost
European Union	Directive 2000/29/EC, Annex IIIA and VB (EC 2000)	soil and growing medium as such, which consists in whole or in part of soil or solid organic substances such as parts of plants, humus including peat or bark, other than that composed entirely of peat
European Union	Directive 2000/29/EC, Annex IVA and VB (EC 2000)	soil and growing medium, attached to or associated with plants, consisting in whole or in part of material specified above or consisting in whole or in part of peat or of any solid inorganic substance intended to sustain the vitality of the plants
European Union	Commission Implementing Directive amending Annexes I to V to Council Directive 2000/29/EC (EC 2018b)	soil as such, consisting in part of solid organic substances and growing medium as such, which consists in whole or in part of solid organic substances, other than that composed entirely of peat or fibre of <i>Cocos nucifera</i> L., previously not used for growing of plants or for any agricultural purposes
Australia	Biosecurity Import Conditions system (BICON) ¹	soil, subsoil, aquatic or marine soil, sediments, silt and soil-like samples without evidence of origin
New Zealand	Import Health Standard (New Zealand Government 2018)	soil and sediment, silt, sludge, clay, gravel, rock and sand contaminated with organic material
Canada	Canadian Food Inspection Agency Directive 95-26 (Plant Health Glossary of Terms) ²	soil and soil-related matter, such as humus, compost, earthworm castings, muck, plant litter and plant debris, either individually or in combination
USA	APHIS quarantine regulations 7 CFR 330 (USDA circular) ³	topsoil, forest litter, wood or plant compost, humus, and earthworm castings; materials free of organic matter, such as pure sand, clay, talc, rocks,

¹ <http://www.agriculture.gov.au/import/online-services/bicon>

² <http://www.inspection.gc.ca/plants/plant-pests-invasive-species/directives/glossary/eng/1304730588212/1304730789969>

³ https://www.aphis.usda.gov/plant_health/permits/organism/soil/downloads/soil-circular.pdf

		volcanic pumice, chalk, salt, diatomaceous earth, iron ore and gravel are not considered soil
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2.2. Soil and other growing media types considered in this technical note

Council Directive 2000/29/EC (EC 2000), amended by Directive 2017/1279 (and soon to be replaced by Regulation (EU) 2016/2031), regulates protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community. This directive provides no clear definition of soil and growing media and, when referring to ‘Plants, plant products and other objects the introduction of which shall be prohibited’, or ‘Plants, plant products and other objects which are potential carriers of harmful organisms of relevance for the entire Community’, the types of soil and growing media considered differ, depending on if they are attached to plants or not, as outlined in Table 1. Similarly, although the International Plant Protection Convention (IPPC) considers soil as a regulated article capable of harbouring or spreading pests and deemed to require phytosanitary measures, particularly where international transportation is involved (IPPC 2012), it does not provide a clear definition of soil. Nevertheless, the IPPC International Standards for Phytosanitary Measures glossary of phytosanitary terms (IPSM 5) (FAO 2018) provides a definition of growing medium as ‘any material in which plant roots are growing or intended for that purpose’ (Table 1). The IPPC ISPM 40, on International movement of growing media in association with plants for planting (FAO 2017a), adopts this definition of growing medium and its Annex I lists different components of growing media, not in association with plants for planting, that facilitate pest survival (Table 1). A scientific opinion report produced by the European Food Safety Authority (EFSA) for the European Commission on risks to plant health posed by EU import of soil or growing media (EFSA 2015) has adopted the IPPC’s definition of soil and growing medium, having identified more than 800 types of growing media. However, as the scope of these components of soil and growing media considered both by the IPPC and EFSA’s report is very broad, this technical note focuses on those mentioned in Council Directive 2000/29/EC. As each of the descriptions provided in Annexes IIIA (14) and IVA1 (34) to the Directive considers different, but important aspects of soil and growing media, this note takes into account a combination of both. Therefore, this note considers soil and growing media as such, or attached to/associated with plants, and materials composed entirely of peat, but does not consider materials consisting in whole or part of any solid inorganic substance intended to sustain the vitality of plants. This is because taking into consideration inorganic substances, such as minerals, rock, sand and gravel, would broaden the scope of this technical note significantly. Taking this into account, and based on Council Directive 2000/29/EC, the main types of soil and growing media considered in this note are:

- **soil (and sub/topsoil)**
- solid organic substances, such as parts of plants (**plant litter and debris**)
- **compost:** organic residues, or a mixture of organic residues and soil, that have been mixed, piled, and moistened, and generally allowed to undergo thermophilic decomposition until the original organic materials have been substantially altered or decomposed (Glossary of Soil Science Terms of the Soil Science Society of America⁴)
- **humus:** the well decomposed, more or less stable part of the organic matter in mineral soils⁵

⁴ <https://www.soils.org/publications/soils-glossary>

⁵ <https://www.soils.org/publications/soils-glossary>

- **peat:** organic soil material which is the least decomposed⁶

Further to these, soil resultant from construction activities that needs, or is intended to be moved, which is usually classified as **waste**, is also considered. Although there is no clear definition of what is regarded as waste in relation to soil, according to the EU Waste Framework Directive, waste is *any substance or object which the holder discards or intends or is required to discard* (EC 2008b). In this case, these are soils derived from building and demolition operations, usually consisting of a mixture of topsoil, subsoil, clay and numerous fragments of building waste materials (EC 2008b, DEFRA 2009), and often considered hazardous (if contaminated with e.g. PCB's, oil filters, mixed solvents or other dangerous substances).

3. Types of soil and growing media imports and associated pathways

The types of soil and growing media considered in this note can be imported from third countries into the EU for different purposes. The main pathways of introduction involved in the import of soil and growing media as such, or as a contaminant attached to plants, are subcategories under the CBD category (3) Transport – Contaminant pathway, which refers to *the unintentional movement of live organisms as contaminants of a commodity that is intentionally transferred through international trade* (CBD 2014). Historically, soil was used as ship ballast, which represented another way of it being internationally moved, and so the CBD category (4) Transport – Stowaway, addressing *the moving of live organisms attached to transporting vessels and associated equipment and media, including ballast water and sediments, biofouling of ships, boats, offshore oil and gas platforms and other water vessels, dredging, angling or fishing equipment, civil aviation, sea and air containers* (CBD 2014), is also mentioned in more detail in this section. For each specific pathway subcategory addressed, the types of intentional soil and growing media imports involved and examples of IAS introduced to Europe via that pathway are mentioned.

3.1. Specific pathways potentially involved in soil import into the EU

3.1.1. Transport – Contaminant pathway > Contaminant nursery material

This pathway refers to the unintentional release of species as a contaminant on plants or on any plant habitat material associated with cultivated plants (e.g. soil, peat, mulch, leaf litter, around roots or in pots) transported through the commercial nursery trade (agriculture, forestry and horticulture) (IUCN 2017).

Types of intentional soil and growing media imports involved in pathway

- soil or other growing media of plants cultivated in pots moved via nursery trade
- soil or other growing media attached to roots of plants for cultivation (e.g. root balls) moved via nursery trade

⁶ <https://www.soils.org/publications/soils-glossary>

- soil attached to turf rolls/slabs for lawns, golf courses and sport amenities moved via nursery trade

This pathway, especially in what concerns plants for planting, is likely one of the most relevant for soil entering the EU. This is because the EU has one of the largest markets in plants for planting and plant products in the world, a large amount and diversity of which is imported (Eschen et al. 2015). Indeed, trade volume of growing plants embedded in a growing medium, mainly ornamental pot plants and nursery stock, has largely increased over recent years (FERA 2008, Eschen et al. 2015). The trade of these materials generally represents a high risk of IAS introduction and spread, because often the plant transported is not native to the new location, but also because other IAS can survive and even reproduce on their living hosts or in the soil in which they are transported with (EPPO 2012). This is especially risky if the associated soil, liquid waste or plant residues are not handled or treated properly (FERA 2008). Indeed, the international trade in ornamental nursery stock is the dominant pathway by which invasive alien plants have been introduced worldwide and is a major pathway of introduction of alien tree pests and diseases (Roques 2010, Liebhold et al. 2012).

Examples of IAS introduced to Europe via this pathway

The New Zealand flatworm, *Arthurdendyus triangulatus*, is native to New Zealand and has been introduced to Europe, being invasive in the UK, Ireland and the Faroe Islands (CABI 2019a). Although the exact pathway of introduction of this species into Europe is not known, it is thought to be associated to the trade of consignments of potted plants, given the species tendency to shelter under debris on the soil surface (Schrader and Unger 2003, CABI 2019a). Both eggs and adults of *A. triangulatus* can spread through commercial and non-commercial movement of plant and soil material (Cannon et al. 1999). The species predate on earthworms, causing declines in earthworm diversity, which can reduce soil fertility and have impacts on earthworm-feeding wildlife (CABI 2019a).

Although *Lygodium japonicum*, the Japanese climbing fern, is currently absent from the natural environment in Europe, the species has been identified as having a high risk of arrival to the EU in the next coming years, threatening biodiversity and ecosystem services (EPPO 2018b, Roy et al. 2019). While the most likely pathway of introduction of this species into Europe is through trade of plants for planting, as there is evidence that the species is currently sold as an ornamental plant within the EPPO region, gametophytes of the species have already been detected in the Netherlands as a contaminant in growing media of bonsai plants imported from China (EPPO 2018b).

Solenopsis geminata (fire ant) and *Solenopsis invicta* (red imported fire ant) are two species of ants that have been recorded in the EU, although no established populations are present yet. For these two species, which are currently being considered for listing as species of Union concern, the most important pathway of introduction into Europe is the unintentional translocation of nests as contaminant of nursery material, including soil⁷.

3.1.2. Transport – Contaminant pathway > Contaminant on animals

This pathway refers to species introduced unintentionally as contaminants on animals transported around the world via human related activities, such as farming, sport, research, food, or as pets. It

⁷ <https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp>

addresses the movement of soil material and other contaminants unintentionally transported outside the body, hooves or feet of animals, or inside the body of the animals (which is not relevant for this technical note, as it refers to the unintentional and accidental transport of soil). However, it also refers to contaminants on intentionally transported materials required to ensure the comfort and safety of animals during transport, such as substrates used in animal transport containers, like soil, hay, sawdust or coconut fibre (IUCN 2017).

Types of intentional soil and growing media imports involved in pathway

- soil or other growing media used as a substrate moved in containers for transporting animals

No examples of IAS introduced to Europe via this pathway were found.

3.1.3. Transport – Contaminant pathway > Contaminant on plants

This pathway addresses species, excluding parasites and pathogens, introduced as contaminants on plants or plant products transported through human related activities other than the commercial nursery trade. It specifically refers to plants and plant products not part of the nursery trade, such as plants transported for non-commercial reasons (IUCN 2017).

Types of intentional soil and growing media imports involved in pathway

- soil or other growing media associated with plants not used as nursery material transported through other human related activities (e.g. plants with soil moved with people's personal luggage for their leisure and recreation)

Examples of IAS introduced to Europe via this pathway

No examples of IAS introduced to Europe via this pathway were found.

3.1.4. Transport – Contaminant pathway > Transportation of habitat material (soil, etc.)

This pathway refers to species unintentionally introduced as contaminants of habitat materials such as soil, vegetation, wood chips, mulch and straw, when these products are transported in large quantities and are the commodity in focus of the trade activity (and not associated to plant transport) (IUCN 2017).

Types of intentional soil and growing media imports involved in pathway

- soil used for potting mixes moved through human related activities
- soil from building and construction activities (dredged materials), or from parks/gardens, generally categorised and moved as 'waste' (contaminated or not)
- soil samples moved for research purposes

Examples of IAS introduced to Europe via this pathway

Lasius neglectus, the garden ant, is a species native to Asia Minor, which has been introduced into and become highly invasive in Europe. The most likely pathway of its introduction into Europe is via the movement of turf peat and soil from construction, as well as through the trade of potted plants (CABI 2019c). In fact, the movement of infested garden and landscape material such as soil and mulch, is one of the most likely methods of introduction and spread of ant species. The species is a very successful forager and aggressive competitor, which has been reported to displace populations of native ant species, as well as other invertebrates. It also tends arboreal aphids that may have negative impacts on trees (CABI 2019c, Kenis and Branco 2010).

Construction sites are commonly invaded by the Common ragweed (*Ambrosia artemisiifolia*), which suggests translocation of soils and gravels from construction sites in infected areas in Europe (Bullock et al. 2012).

3.1.5. Transport – Stowaway > Ship/boat ballast water

This pathway mostly refers to species unintentionally introduced by being transported in ships and boats' ballast water. The latter is utilised to balance volumes of cargo ships, being loaded in the departure harbour, sometimes exchanged during the voyage and discharged at the port of arrival (IUCN 2017). However, although modern cargo ships use water as ballast to stabilise their weight, historically ships often used soil or rocks as ballast, which was usually dumped near the arrival ports, making this pathway of historical importance (Wittenberg and Cock 2001).

Types of intentional soil and growing media imports involved in pathway

- soil used as ballast moved via cargo ships transport

Example of IAS introduced to Europe via this pathway

The North American smooth cord grass, *Spartina alternifolia*, is thought to have entered Europe as seeds in ballast soil used in the holds of ships. Although its initial hybridisation with the native *S. maritima* was innocuous, the resulting hybrids suffered a chromosome doubling, which resulted in a fertile polyploid new species that turned out to be an invasive weed, *Spartina anglica* (Wittenberg and Cock 2001).

4. Trade of soil and growing media into and within the EU

To collate data and information on the trade of soil and growing media into (and within) the EU, an exhaustive search on the internet for databases, peer-review and grey literature was undertaken, alongside an email consultation (see Annex I) with the Wider Expert Network (established by IUCN under this contract, ca. 50 experts) and the Aliens-L mailing list run by the IUCN Invasive Species Specialist Group.

The overall finding is that the import into the EU of soil and growing media as such, and especially attached to plants for planting, is not well documented. In fact, data referring specifically to the trade of these materials into (and within) the EU do not seem to exist, or be publically available (except for peat). Although the lack of these data might be related to the fact that the import of soil and some growing media from third countries into the EU is significantly limited by current EU legislation (prohibited or under special requirements), this regulation does not apply to all third countries and, especially for soil and growing media attached to plants for planting, restrictions are not very constraining (EC 2000, EFSA 2005). As such, most likely the best available data on import of these materials would come from national customs authorities responsible for checking the entry of prohibited or regulated products into the EU (Eschen et al. 2015), which makes the access to this data generally restricted to the general public. Nevertheless, as a result of our expert consultation, a scientific officer in the Danish Agricultural Agency, Ministry of Environment and Food of Denmark reported that *“there were no known imports into Denmark from outside the EU of soil/growing media under phytosanitary import requirements, although authorities do not keep such records for verification”* (B. Larsen, pers. comm., 2019). In Cyprus, the volume of soil imported is registered in the electronic system of the Department of Agriculture and, for the last three years, there were no records of any imports (D. Koukkoularidou, Agricultural Officer, Department of Agriculture of Cyprus, pers. comm., 2019). Information on the volume, origin and destination of traded products, in this case soil and growing media, would be extremely important for quantifying, addressing and managing potential risks associated with trade routes of these products.

A dedicated source of information from where specific volumes of soil and growing media imported into the EU could not be identified, therefore various types of data from different sources and focused on different products that incorporate soil or growing media have been used. In addition, and because of the limited data found, information on trade movements of these products within the EU have been included as a complimentary approach.

This section is divided in two subsections, taking into account trade for the different types of soil under consideration: 4.1.) soil and growing media as such or in association with plants for planting, and 4.2.) soil categorised as waste. More specifically, for the first subsection, two different approaches using different resources were used. The Combined Nomenclature (CN) system for classifying traded goods⁸ (EC 2017) has been used to understand trends in the volume of imports and exports of different products associated with soil or growing media into and within the EU, and to assess which EU countries are key importers of these products (section 4.1.1.). For the second approach, data from the European Union Notification System for Plant Health Interceptions (EUROPHYT⁹), a notification and rapid alert system reporting interceptions of plants and plant products imported into the EU and Switzerland, have been retrieved (section 4.1.2). Based on the most common interceptions of organisms harmful to plants, a ‘Non-EU trade alert list’ highlighting specific commodity/exporting country combinations into the EU on which attention of plant health authorities should be focused, is produced and regularly updated. Although EUROPHYT mostly focuses on interceptions of harmful organisms in plants and other objects (such as soil and growing media) imported into the EU, it also contains data on interceptions of commodities from third countries for reasons other than the presence of harmful organisms, which is very relevant here. Once again, even though EUROPHYT does

⁸ EU Combined Nomenclature (CN) codes https://ec.europa.eu/taxation_customs/business/calculation-customs-duties/what-is-common-customs-tariff/combined-nomenclature_en

⁹ https://ec.europa.eu/food/plant/plant_health_biosecurity/europhyt_en

not specifically indicate volumes of soil and growing media imported into the EU, it reports on the number of interceptions of these products when non-conformities with EU legislation or restrictions were found.

In addition, the UN Environment International Resource Panel Global Material Flows Database¹⁰, which comprises a large dataset on direct and consumption-based material flow indicators for different groups and categories of materials traded worldwide, was initially considered. However, although the database provides information on volumes of imports for 'Non-metallic minerals - construction dominant' and 'Non-metallic minerals - industrial or agricultural dominant', none of these categories seem to incorporate or clearly refer to soil as a product. They mostly refer to, in the former case, e.g. limestone, clays, sand, gravel and crushed rock and, for the latter, fertiliser, chemical and industrial minerals (UNEP 2016). Peat is included in the 'Fossil Fuels' category, but because this category has a very broad scope, including many other products, such as coals, petroleum and natural gas (UNEP 2016) and because volumes of peat import into the EU are covered in this section under the analysis using CN codes, it was decided not to further explore this database.

For the second subsection referring to soil categorised as waste, data on the transboundary waste shipments import and export statistics, were analysed. This was based on the relevant codes from the European List of Waste which, according to Commission Decision 2000/532/EC (EC 2000), provides details on the types and classification of waste to be transported or managed.

4.1. Trade of soil and growing media as such, or in association with plants for planting

4.1.1. Trade of soil and growing media using CN Codes

Data were retrieved from both the Comext International Trade in Goods Statistics (ITGS) - *EU trade since 1988 by CN8 (DS-016890)* - and from the EC Trade Helpdesk Statistics website, which also reports on ITGS data¹¹. These databases use the EU Combined Nomenclature (CN) codes to report on trade volumes and values of different products, more specifically on trade between EU MS (intra-EU trade) and trade between EU MSs and non-EU MSs (extra-EU trade). Here, the 'value' of products (in euros) is reported, i.e. the amount that would be invoiced in the event of sale or purchase at the national border of the reporting country, and not on the 'volume' (in Kg) of products traded, because data for the former is much more comprehensive and always reported, while MS do not always report statistics for the latter.

As none of the CN codes refers unambiguously to soil as a singular product, data specifically reporting trade volumes/values of soil as such cannot be provided. However, trade in the product 'Mineral substances not elsewhere specified or included', present in Chapter 25 (*Salt; Sulphur; Earths and stone; Plastering materials, lime and cement*; EC 2017), is analysed, as this is the category most likely to address soil movement. Although it is not possible to know how much soil is actually transported within this category, statistics addressing its trade can perhaps be useful indicators of volume of soil movement. None of the other CN codes under this chapter referring to different types of earths seem to refer to soil as such. For growing media as such, data was analysed for 'Peat (including peat litter),

¹⁰ <http://www.resourcepanel.org/global-material-flows-database>

¹¹ Comext International Trade in Goods EU trade since 1988 by CN8 (DS-016890)

(<http://ec.europa.eu/eurostat/data/database>) (January 2019). The EC Trade Helpdesk Statistics

(<http://trade.ec.europa.eu/tradehelp/statistics>) (January 2019)

whether or not agglomerated' from Chapter 27 (*Mineral fuels, mineral oils and products of their distillation; Bituminous substances; Mineral waxes*; EC 2017), which refers to peat itself.

For data of soil and growing media in association with plants for planting, the codes of products considered here were selected as those with the highest potential to intentionally include or be associated to different types of soil and growing media. For this, products with CN codes from Chapter 6, corresponding to *Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage* (EC 2017), which largely refer to plants moved via the nursery trade, and which are often transported attached to soil and growing media, were focused on. Large amounts of soil may be attached to such commodities, although the risk of IAS introduction will depend on the plant size and life cycle (perennial, biennial or annual), on how long the plant has been exposed to potential contamination of IAS in the country of origin, on the production mode of the plant at origin, and on how the growing media has been treated at the origin (EPPO 2012).

CN codes referring to products with bare roots were excluded, as for this type of roots there is no soil intentionally transported with them. Again, none of these CN codes explicitly refers to soil, making it difficult to ascertain how much soil or growing media is transported with the plant groups considered. As such, the CN codes of all plants that can have soil and growing media attached to were not analysed, with the focus instead being on a selection of codes that include a broad scope of products and those that are more prone to have considerable amounts of soil attached to them. These codes likely provide a representative sample of, and can be a proxy for, the volumes/values of soil and growing media attached to plants imported into and moved within the EU. A total of five CN codes were analysed, as described in Table 2.

This technical note focuses on patterns of import from extra-EU countries, but also on import and export intra-EU countries, analysing data from the past five years (2013 to 2017, as data for 2018 is not available as yet) and determining:

- 1) Extra-EU imports for the top 10 EU MS importers (as calculated for the past five years);
- 2) Extra-EU imports from the top 10 exporting countries for the EU-28 (as calculated for the past five years);
- 3) Extra-EU trade flows from the top 10 exporting countries for each of the top 5 EU MS importers (as calculated for the past five years);
- 4) Intra-EU imports and exports for all EU MSs.

Table 2. CN Codes selected for our trade analysis, their respective names (according to EC 2017) and additional explanations about what they incorporate, when available (provided in EC 2015).

CN Code	CN Code name	CN Code further explanations
2530 90 00	Mineral substances not elsewhere specified or included – Other <i>[part of - 25 Salt; Sulphur; Earths and stone; Plastering materials, lime and cement > 2530 Mineral substances not elsewhere specified or included]</i>	

2703 00 00	Peat (including peat litter), whether or not agglomerated <i>[part of - 27 Mineral fuels, mineral oils and products of their distillation; Bituminous substances; Mineral waxes]</i>	
0602 90 45	Rooted cuttings and young plants <i>[part of - 06 Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage > 0602 Other live plants (including their roots), cuttings and slips; mushroom spawn > Other > Outdoor plants > Trees, shrubs and bushes]</i>	Young plants, not elsewhere specified or included, i.e., plants requiring further nursery cultivation before being planted. These are one- to two-year-old seedlings, also rooted cuttings, grafted or budded rootstocks or plants, layers and plants which are generally not older than two to three years.
0602 90 48	Outdoor trees, shrubs and bushes – Other <i>[part of - 06 Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage > 0602 Other live plants (including their roots), cuttings and slips; mushroom spawn > Other > Outdoor plants > Trees, shrubs and bushes]</i>	Includes trees and shrubs of European or exotic species, not elsewhere specified or included, which are not normally used for afforestation. They are generally supplied with balled roots.
0602 90 50	Other outdoor plants <i>[part of - 06 Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage > 0602 Other live plants (including their roots), cuttings and slips; mushroom spawn > Other > Outdoor plants > Trees, shrubs and bushes]</i>	Includes winter-hardy plants which are intended for permanent planting, whose non-woody stem above the ground dies in autumn and sends out new shoots in spring. Also includes ferns, marsh and aquatic plants (other than those of heading 0601 and of subheading 0602 90 99). This subheading also includes turf rolls and turf slabs for making lawns.

4.1.1.1. Mineral substances not elsewhere specified or included – Other (CN Code 2530 90 00)

Extra-EU imports for the top 10 EU MS importers

For the past five years, the total import value of the top 10 extra-EU importers (€614,463,239) corresponded to 94.8% of the total extra-EU import value for all 28 EU MSs (€648,041,795). Belgium has generally been the country importing the highest value of these substances, with a peak of €40,574,737 imported in 2015 and an average of €29,130,342 imported over the past five years. Germany, UK, the Netherlands and France were the following importers, with a stable trend of mineral substances imported over the past five years (Figure 1).

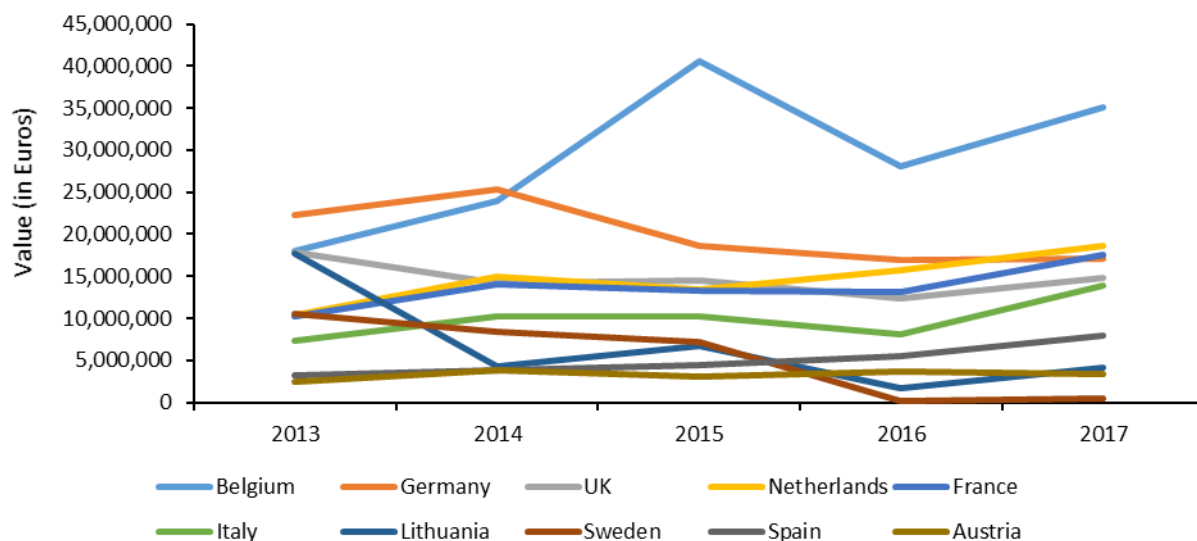


Figure 1. Extra-EU annual import value (in euros) of other mineral substances not elsewhere specified or included for the top 10 importing EU MSs, from 2013 to 2017. Countries are presented according to their ranking position as importer for the total of the past five years (i.e. Belgium is the top importer and Austria the 10th importer).

Extra-EU imports from the top 10 exporting countries for the EU-28

The largest exporter to the EU for the past five years has been China, with an average annual import value of €22,457,143. However, the USA and Australia, the following exporters, have also been the top exporting countries in 2017 and 2015, respectively, and Russia has been the top exporter in 2013 (€25,257,468), although exports drastically decreased in the following years (Figure 2).

Because the import of soil and growing media as such into the EU is prohibited if the country of origin is Turkey, Belarus, Moldavia, Russia, Ukraine or any other third country not belonging to continental Europe (EC 2000), a close look at Figure 2 suggests that this CN code probably does not largely address the trade of soil as such. Nevertheless, it can partly refer to it, as Switzerland and Norway, two countries from where imports are allowed, were the 4th and 5th biggest exporters over the past five years, with an average of €12,954,597 and €12,158,798.

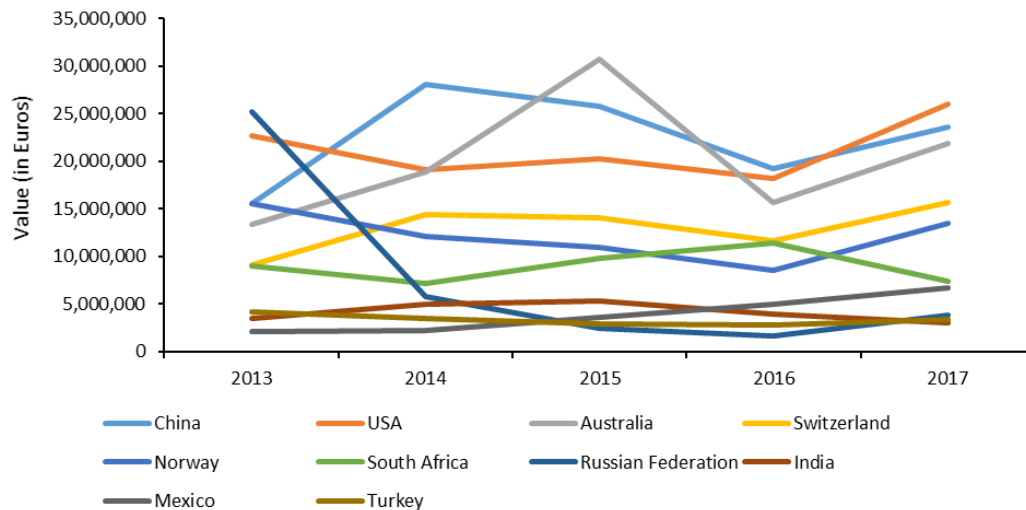


Figure 2. Extra-EU annual import value (in euros) of other mineral substances not elsewhere specified or included by the top 10 exporting countries, for the EU-28, from 2013 to 2017. Countries are presented according to their ranking position as exporter for the total of the past five years.

Extra-EU trade flows from the top 10 exporting countries for each of the top 5 EU MS importers

Figure 3 shows that Belgium, the largest EU importing country for this CN code, mostly imports other minerals from Australia, although products are imported from a multitude of countries. Germany, the second largest importer, largely imports from the USA, China, South Africa and Norway, while the Netherlands mostly imports from the latter three countries and the UK from the former. Interestingly, France imports almost only from Switzerland.

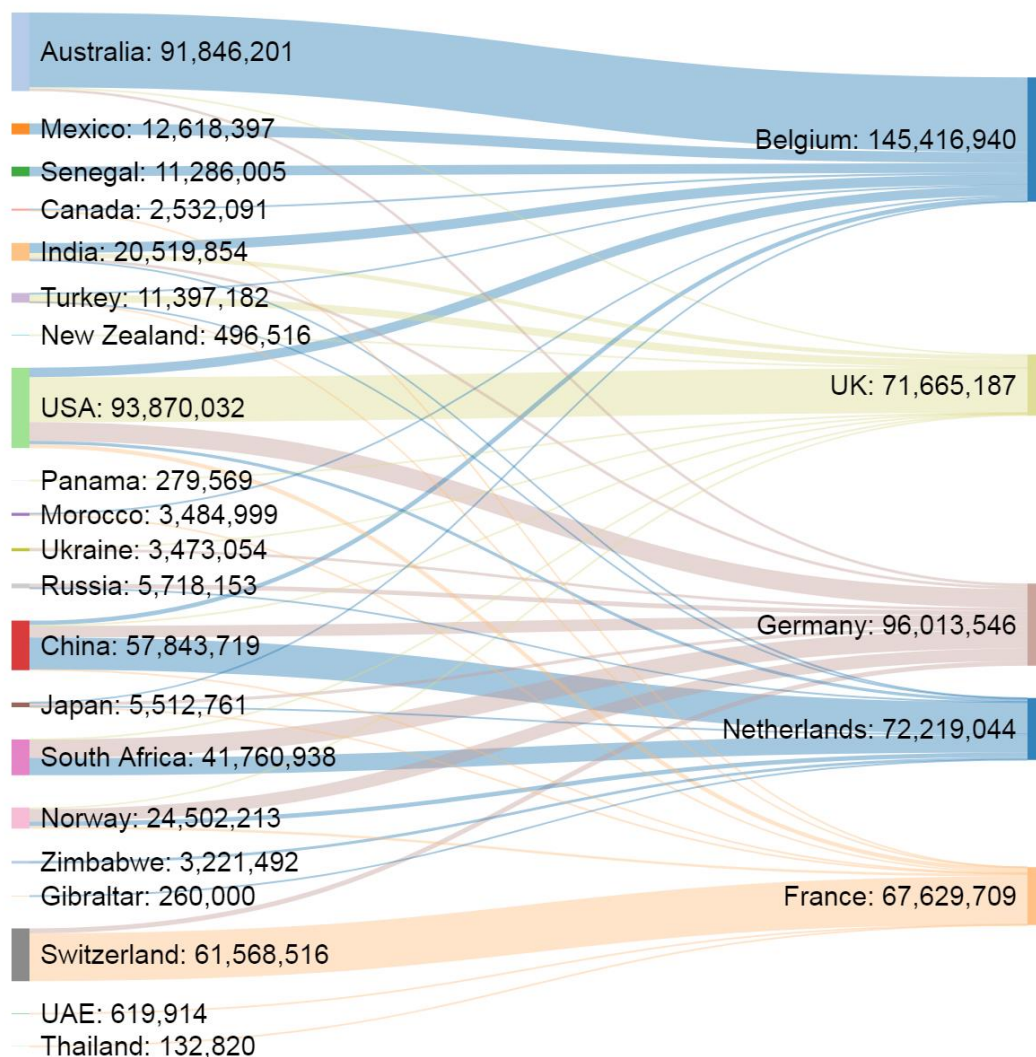


Figure 3. Extra-EU trade flows (value in euros) of other mineral substances not elsewhere specified or included of the top 10 exporting countries (left hand panel) for each of the top 5 EU MS importers over the past five years (right hand panel). For each EU MS importer, values imported from the top 10 exporting countries always represented over 95% of the total imports values over the past five years.

Intra-EU imports and exports for all EU MSs

For the past five years, Germany was both the largest intra-EU importer and exporter, with a total import value of €236,069,556 and a total export value of €192,315,635. The following intra-EU importers for this period were France (€188,705,711), Italy (€107,660,215), the Netherlands (€92,398,427) and Poland (€76,470,103), and the following exporters were Belgium (€188,705,711), the Netherlands (€175,827,562), Austria (€103,436,132) and Spain (€93,424,377) (Figure 4).

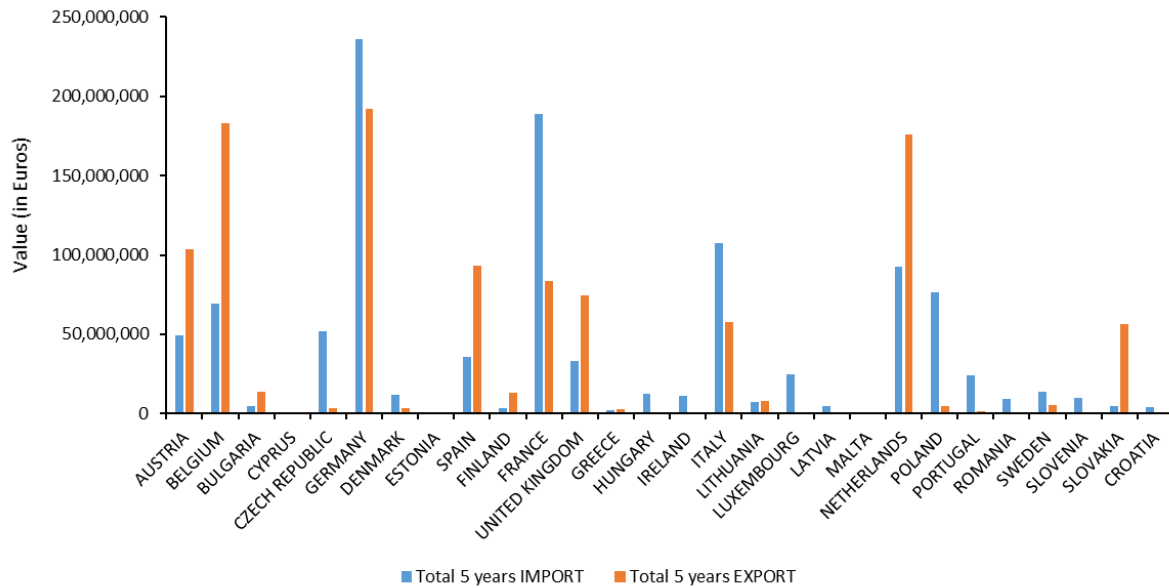


Figure 4. Intra-EU total import and export value of other mineral substances not elsewhere specified or included for each MS, for the past five years (2013-2017).

4.1.1.2. Peat (including peat litter), whether or not agglomerated (CN Code 2703 00 00)

Extra-EU imports for the top 10 EU MS importers

The total import value of peat for the top 10 extra-EU importers over the past five years (€85,265,413) corresponded to 87.9% of the total extra-EU import value for all 28 EU MSs (€97,044,149). Sweden (€20,046,048) and Lithuania (€14,853,306) have been the top importing countries of peat in the last five years, although showing a marked decrease in imports since 2014. This probably reflects trends observed for other EU MS, such as the UK, which are undertaking efforts to drastically reduce the use of peat due to the current overexploitation of peatlands (DEFRA 2005). Nevertheless, Poland has instead risen as the 3rd largest importer (€10,267,194), with an upcoming trend of peat imports in the past years (Figure 5).

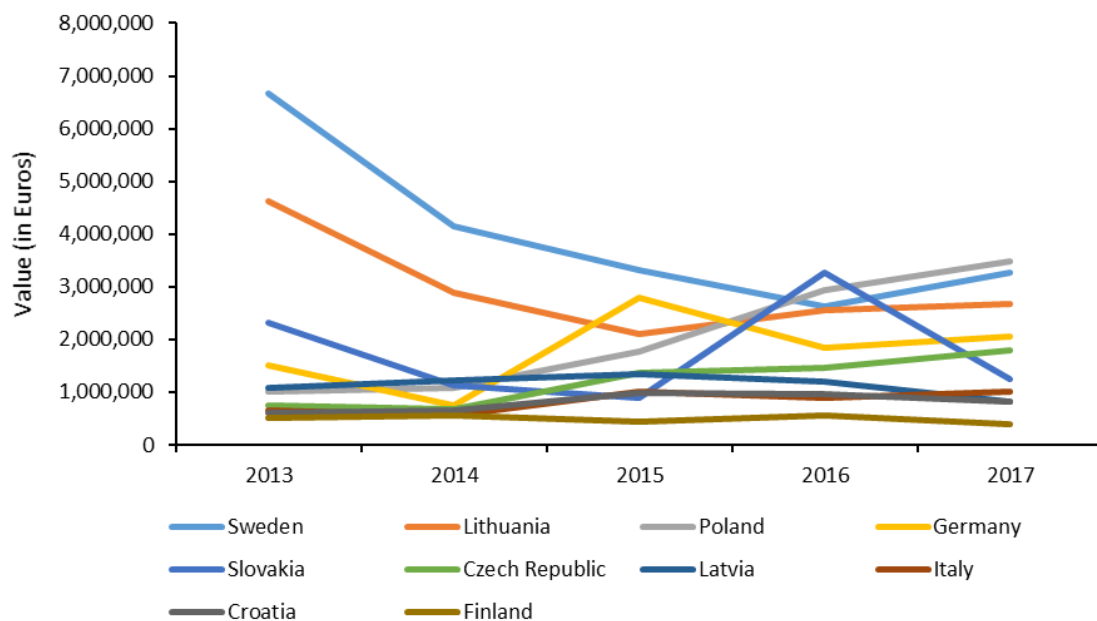


Figure 5. Extra-EU annual import value (in euros) of peat for the top 10 importing EU MSs, from 2013 to 2017. Countries are presented according to their ranking position as importer for the total of the past five years.

Extra-EU imports from the top 10 exporting countries for the EU-28

The largest exporter of peat to the EU for the past five years has been Belarus, with a total import value of €54,006,641 for this period, which corresponds to 56% of the total extra-EU import value for all 28 EU MS (€97,029,382). Russia and Ukraine are the next largest exporters with, respectively, a total of €20,221,226 and €9,144,993 imports by the EU-28 over the past five years (Figure 6).

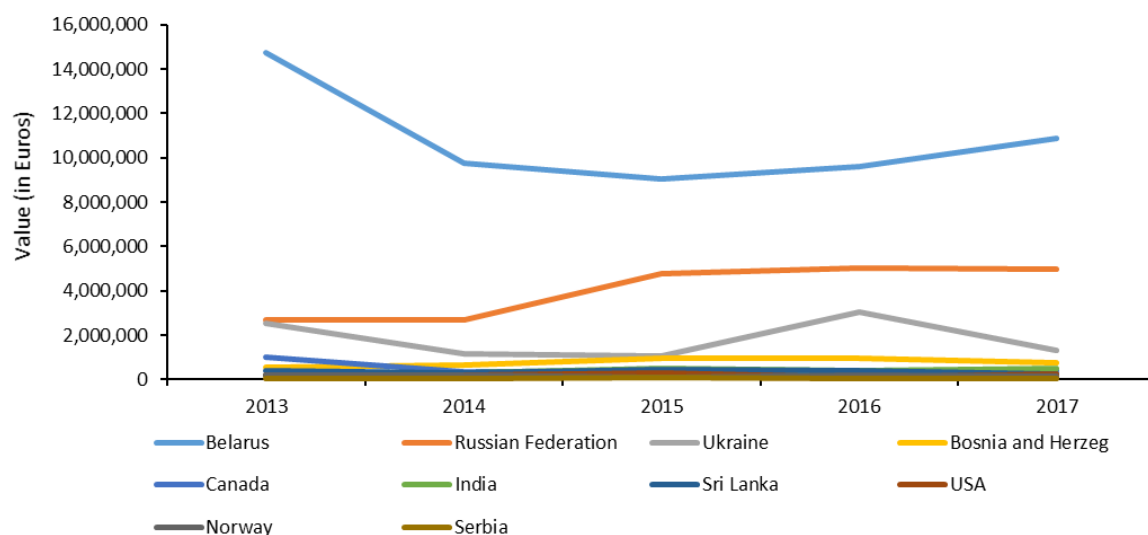


Figure 6. Extra-EU annual import value (in euros) of peat by the top 10 exporting countries, for the EU-28, from 2013 to 2017. Countries are presented according to their ranking position as exporter for the total of the past five years.

Extra-EU trade flows from the top 10 exporting countries for each of the top 5 EU MS importers

For most of the main EU importers of peat (Sweden, Lithuania and Poland), the extra-EU trade flows come mainly from Belarus. However, for Germany, the main flow is from Russia, and Slovakia largely imports from Ukraine (Figure 7).

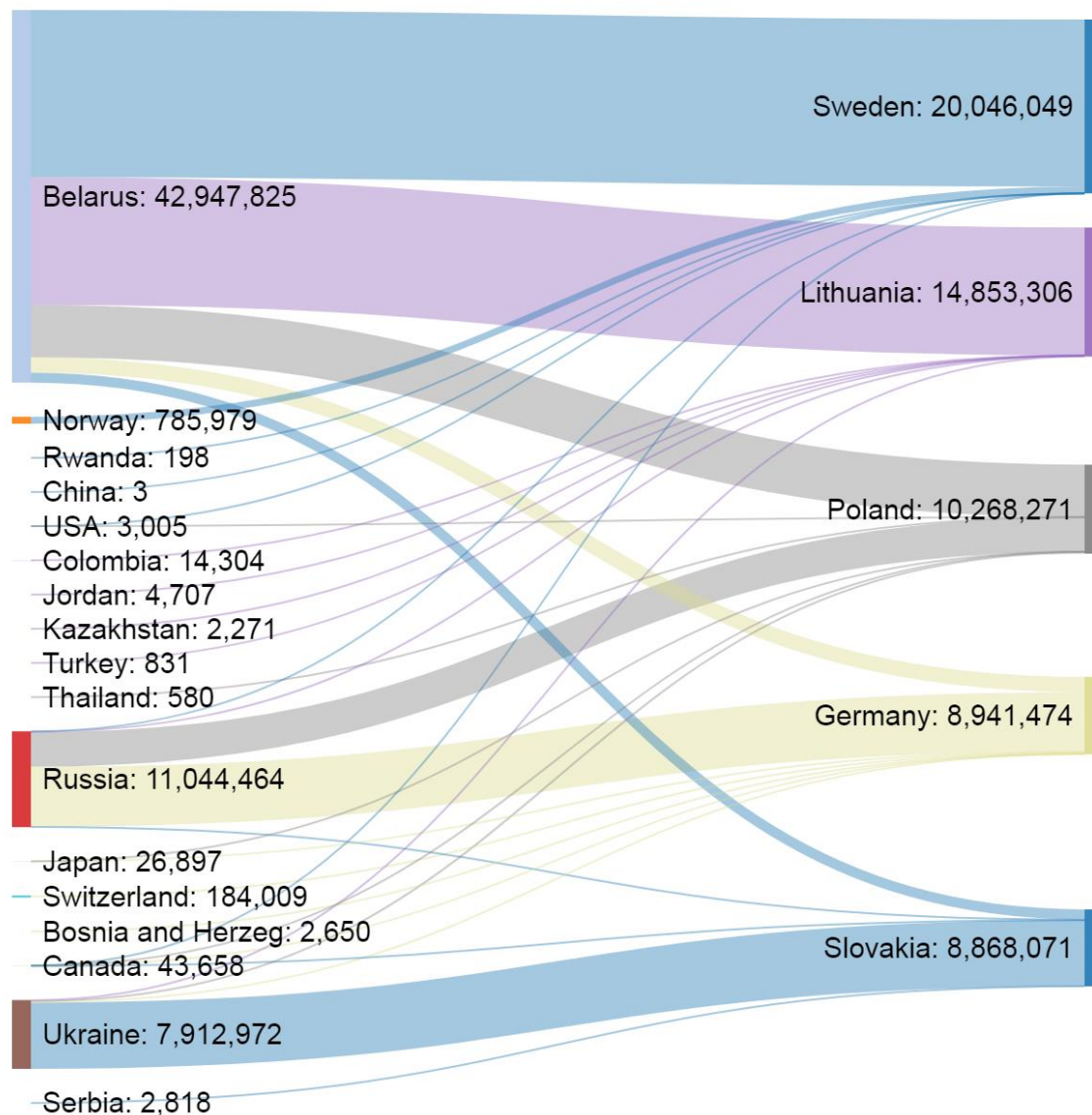


Figure 7. Extra-EU trade flows (value in euros) of peat of the top 10 exporting countries (left hand panel) for each of the top 5 EU MS importers over the past five years (right hand panel). For each EU MS importer, values imported from the top 10 exporting countries always represented over 95% of the total imports values over the past five years.

Intra-EU imports and exports for all EU MSs

For the total of the past five years, the Netherlands (€527,812,845), France (€362,998,150) and Germany (€357,208,991) were the largest intra-EU importers of peat. Germany, Latvia and the Netherlands were the top intra-EU exporters (Figure 8).

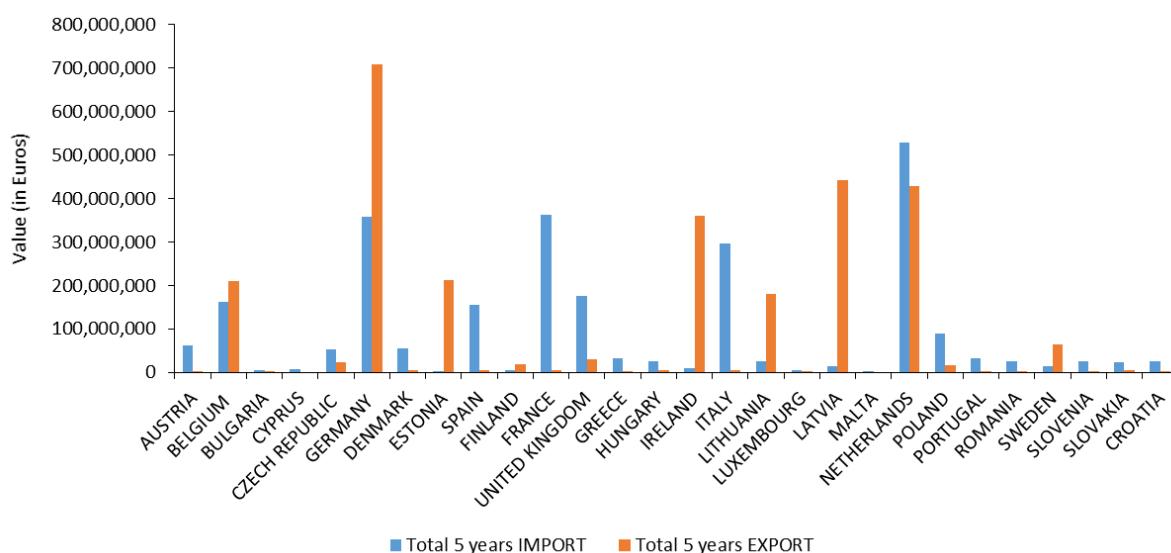


Figure 8. Intra-EU total import and export value of peat for each MS, for the past five years (2013-2017).

4.1.1.3. Rooted cuttings and young plants (CN Code 0602 90 45)

Extra-EU imports for the top 10 EU MS importers

Over the past five years, the total import value of rooted cuttings and young plants for the top 10 extra-EU importers (€25,556,044) corresponded to 93.2% of the total extra-EU import value for all 28 EU MSs (€27,419,275). The Netherlands, Italy and Germany have been the largest importing countries of these products, although showing very different trends over this period: imports for the Netherlands have been steadily increasing, while Italy showed quite a stable trend with an increase in 2017, and Germany imports have generally been decreasing over the past few years, although also increasing in 2017 (Figure 9).

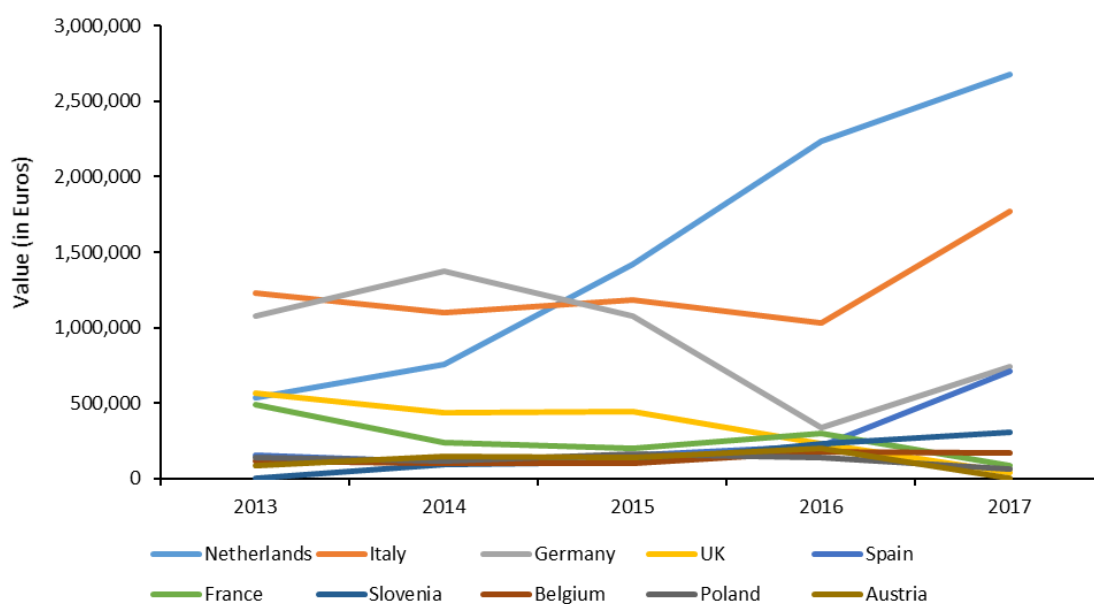


Figure 9. Extra-EU annual import value (in euros) of rooted cuttings and young plants for the top 10 importing EU MSs, from 2013 to 2017. Countries are presented according to their ranking position as importer for the total of the past five years.

Extra-EU imports from the top 10 exporting countries for the EU-28

Brazil has been the top extra-EU exporter of rooted cuttings and young plants into the EU for the past five years, with a total import value of €4,876,976. Israel (total of €2,869,644), New Zealand (€2,422,609), Turkey (€2,267,865) and Kenya (€1,996,605) are the following largest exporters, with variable trends over the years. Interestingly, Costa Rica showed a steady increase of exports into the EU, especially from 2014 to 2016, being the 6th exporting country of rooted cuttings and young plants into the EU over the past five years (Figure 10).

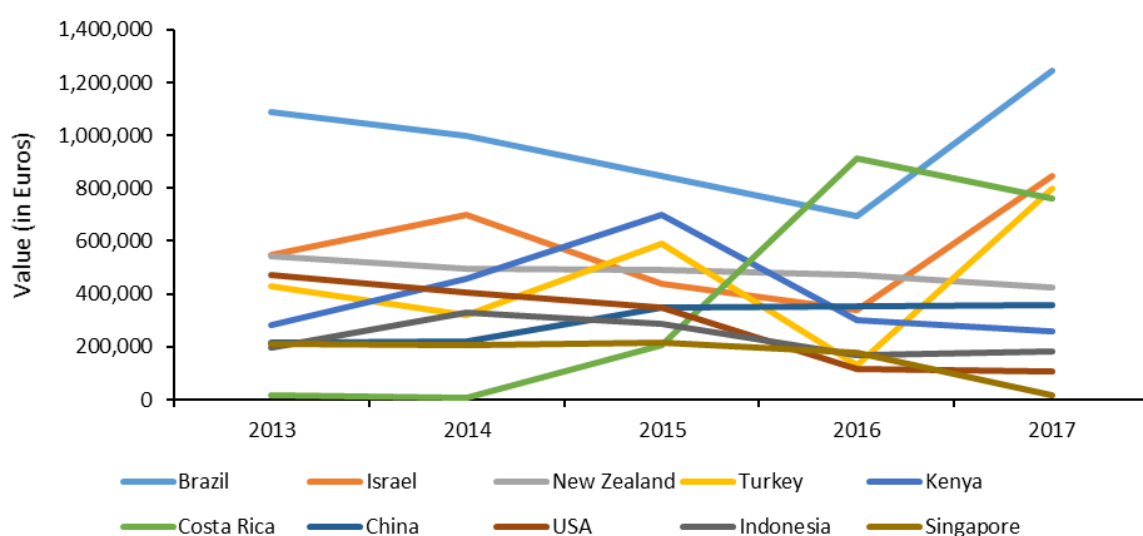


Figure 10. Extra-EU annual import value (in euros) of rooted cuttings and young plants by the top 10 exporting countries, for the EU-28, from 2013 to 2017. Countries are presented according to their ranking position as exporter for the total of the past five years.

Extra-EU trade flows from the top 10 exporting countries for each of the top 5 EU MS importers

Figure 11 shows that rooted cuttings and young plants imported by the top EU importing countries are coming from a multitude of countries, but especially Brazil, Turkey and Israel (Figure 11).

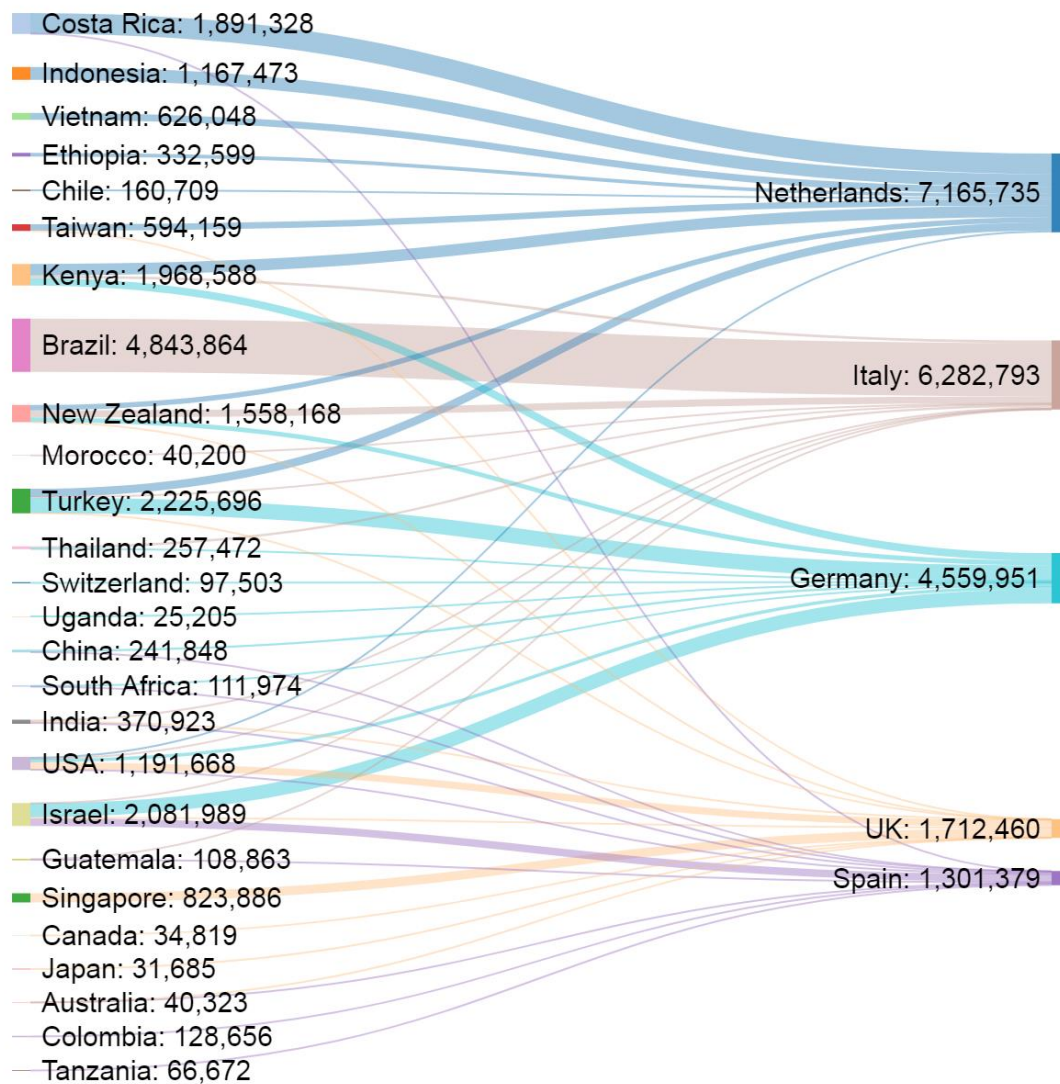


Figure 11. Extra-EU trade flows (value in euros) of rooted cuttings and young plants of the top 10 exporting countries (left hand panel) for each of the top 5 EU MS importers over the past five years (right hand panel). For each EU MS importer, values imported from the top 10 exporting countries always represented over 95% of the total imports values over the past five years.

Intra-EU imports and exports for all EU MSs

For the past five years, France and the UK were the largest intra-EU importers and the Netherlands the largest intra-EU exporter of rooted cuttings and young plants. Germany was the third largest intra-EU importer and second largest exporter of these products over this period (Figure 12).

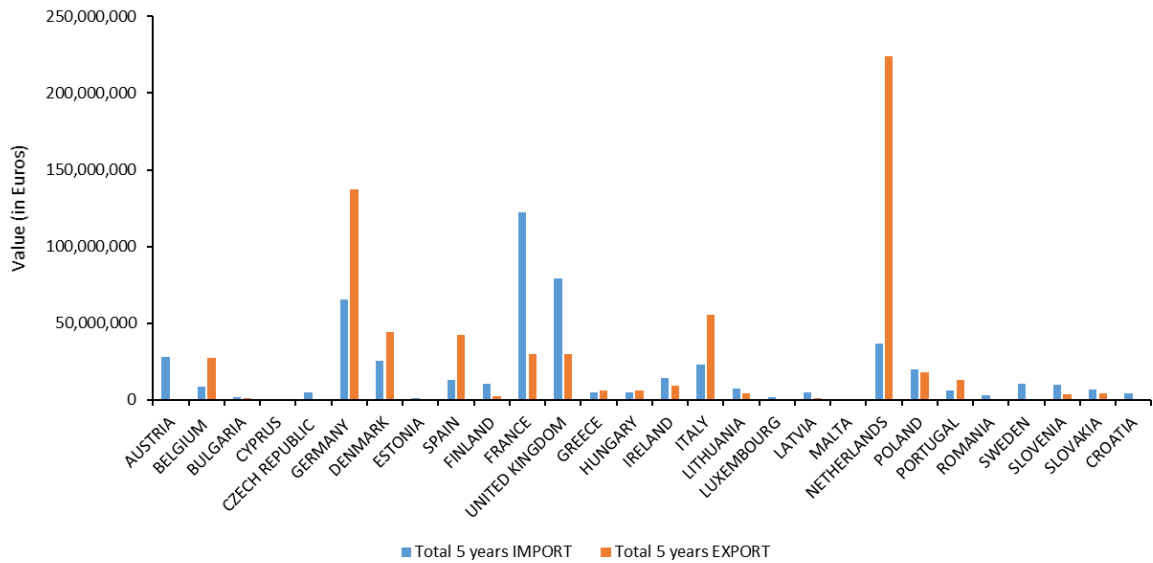


Figure 12. Intra-EU total import and export value of rooted cuttings and young plants for each MS, for the past five years (2013-2017).

4.1.1.4. *Outdoor trees, shrubs and bushes – Other (CN Code 0602 90 48)*

Extra-EU imports for the top 10 EU MS importers

Because this CN code (together with code 0602 90 46) has replaced code 0602 90 49 in 2015, data for these products is only available from 2016. For 2016 and 2017, the total import value of other outdoor trees, shrubs and bushes for the top 10 extra-EU importers (€4,588,750) corresponded to 97.1% of the total extra-EU import value for all 28 EU MSs (€4,725,677). Over the past two years, Spain (€1,481,410), Italy (€914,167) and Germany (€580,598) have been the top importing countries of these products, although showing slightly different trends over this period (Figure 13).

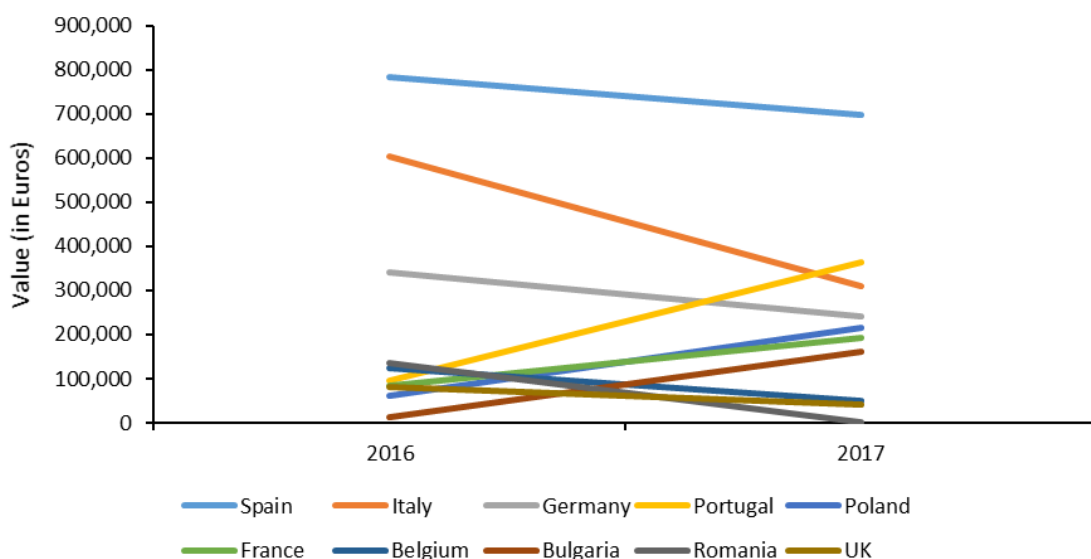


Figure 13. Extra-EU annual import value (in euros) of other outdoor trees, shrubs and bushes for the top 10 importing EU MSs, for 2016 and 2017. Countries are presented according to their ranking position as importer for the total of the past five years.

Extra-EU imports from the top 10 exporting countries for the EU-28

For the past two years, Japan, China, Honduras, Macedonia and Turkey have been the largest exporters of other outdoor trees, shrubs and bushes to the EU, with a total import value of €2,810,475 for this period (Figure 14).

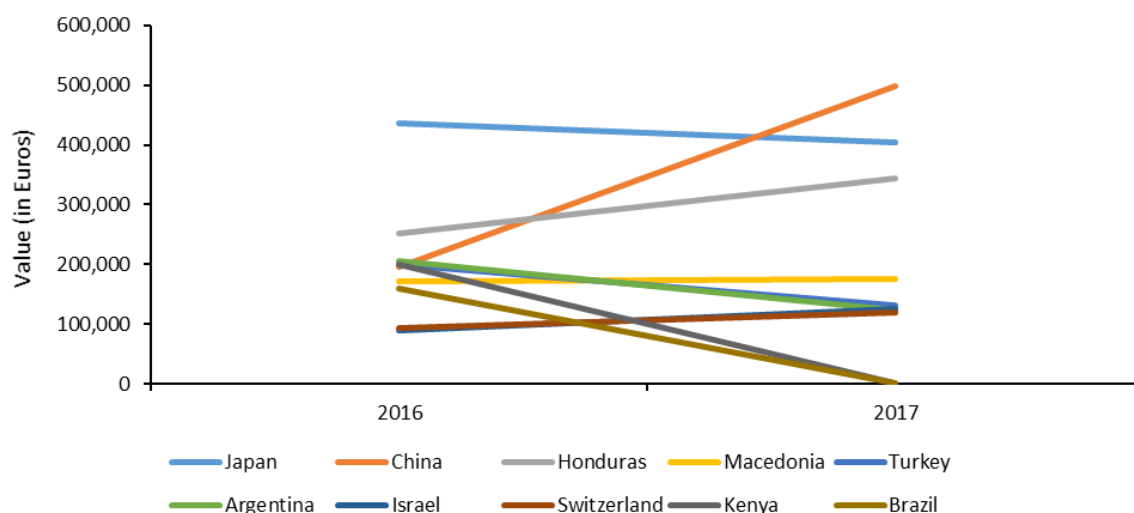


Figure 14. Extra-EU annual import value (in euros) of other outdoor trees, shrubs and bushes by the top 10 exporting countries, for the EU-28, for 2016 and 2017. Countries are presented according to their ranking position as exporter for the total of the past five years.

Extra-EU trade flows from the top 10 exporting countries for each of the top 5 EU MS importers

For Spain, the largest EU importer of other outdoor trees, shrubs and bushes, extra-EU trade flows come mainly from Honduras, China and Japan. For Germany, the main flow also comes from Japan, but for the other top EU importers flows come from a large spectrum of extra-EU countries (Figure 15).

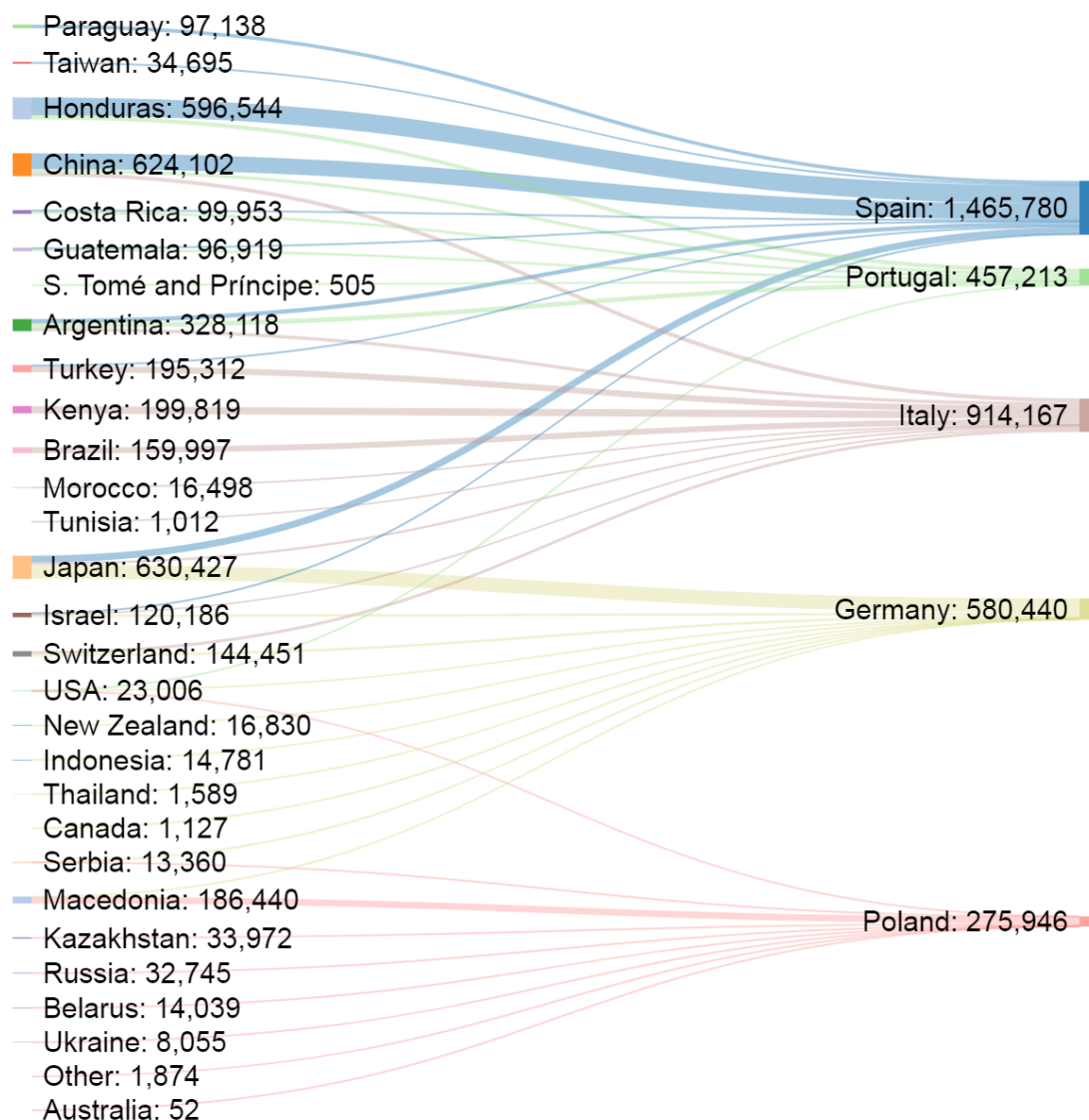


Figure 15. Extra-EU trade flows (value in euros) of other outdoor trees, shrubs and bushes of the top 10 exporting countries (left hand panel) for each of the top 5 EU MS importers over the past five years (right hand panel). For each EU MS importer, values imported from the top 10 exporting countries always represented over 95% of the total imports values over the past two years. Other (left hand panel) refers to countries and territories not specified within the framework of trade with third countries.

Intra-EU imports and exports for all EU MSs

For the past two years, Germany has been the largest intra-EU importer (€100,432,203) and the second largest intra-EU exporter (€99,070,439) of other outdoor trees, shrubs and bushes. The Netherlands was, by far, the largest intra-EU exporter of these products, with a total export value of €316,845,929 over the past two years (Figure 16).

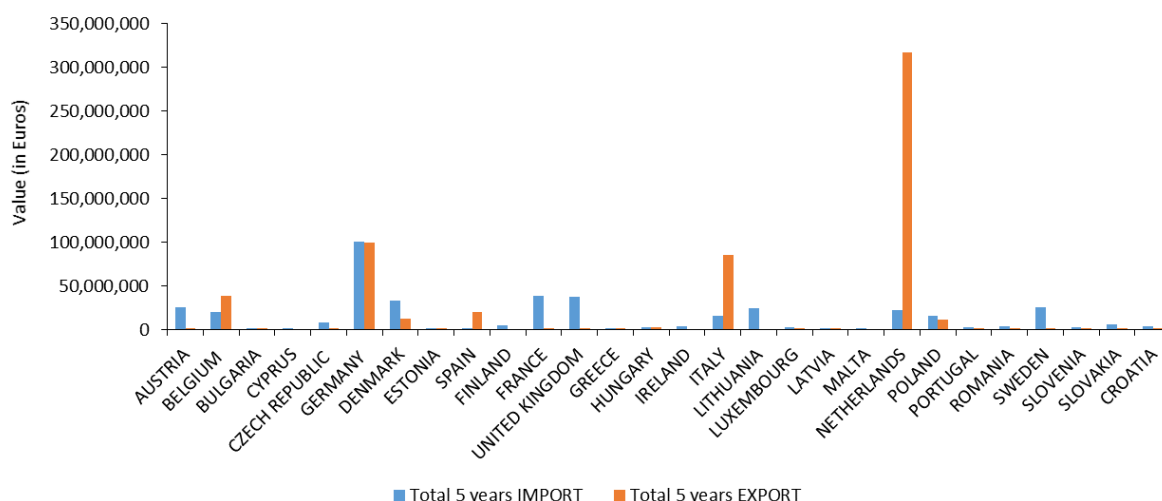


Figure 16. Intra-EU total import and export value of other outdoor trees, shrubs and bushes for each MS, for the past two years (data only available for 2016 and 2017).

4.1.1.5. Other outdoor plants (CN Code 0602 90 50)

Extra-EU imports for the top 10 EU MS importers

The total import value of other outdoor plants for the top 10 extra-EU importers over the past five years (€54,979,060) corresponded to 96.7% of the total extra-EU import value for all 28 EU MSs (€56,871,663). Italy (€13,852,513), Germany (€11,983,162) and Belgium (€7,473,675) have been the top importing countries of these products in the last five years although, since 2015, Belgium imports have steadily decreased (Figure 17).

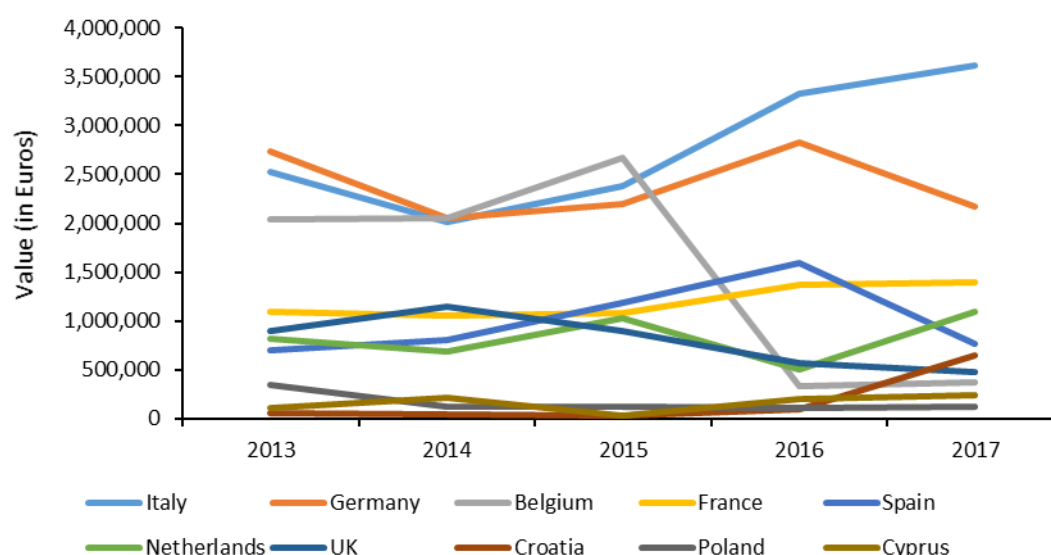


Figure 17. Extra-EU annual import value (in euros) of other outdoor plants for the top 10 importing EU MSs, from 2013 to 2017. Countries are presented according to their ranking position as importer for the total of the past five years.

Extra-EU imports from the top 10 exporting countries for the EU-28

The largest exporters of other outdoor plants to the EU for the past five years have been Japan, Turkey, Israel, New Zealand and El Salvador, with a total import value of €31,567,457 for this period, which corresponds to 73.5% of the extra-EU import value for the top 10 exporting countries (€42,932,924) (Figure 18).

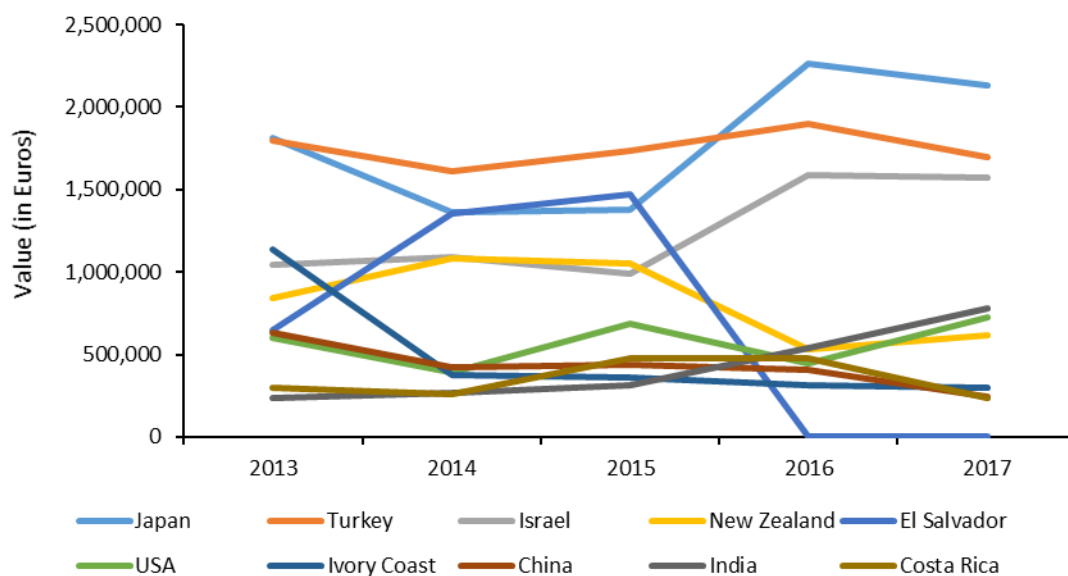


Figure 18. Extra-EU annual import value (in euros) of other outdoor plants by the top 10 exporting countries, for the EU-28, from 2013 to 2017. Countries are presented according to their ranking position as exporter for the total of the past five years.

Extra-EU trade flows from the top 10 exporting countries for each of the top 5 EU MS importers

Figure 19 shows that the main trade flows of other outdoor plants are from Japan to Italy, from Turkey to Germany, from El Salvador to Belgium and from Israel to France. Spain imports these products from a large variety of countries.

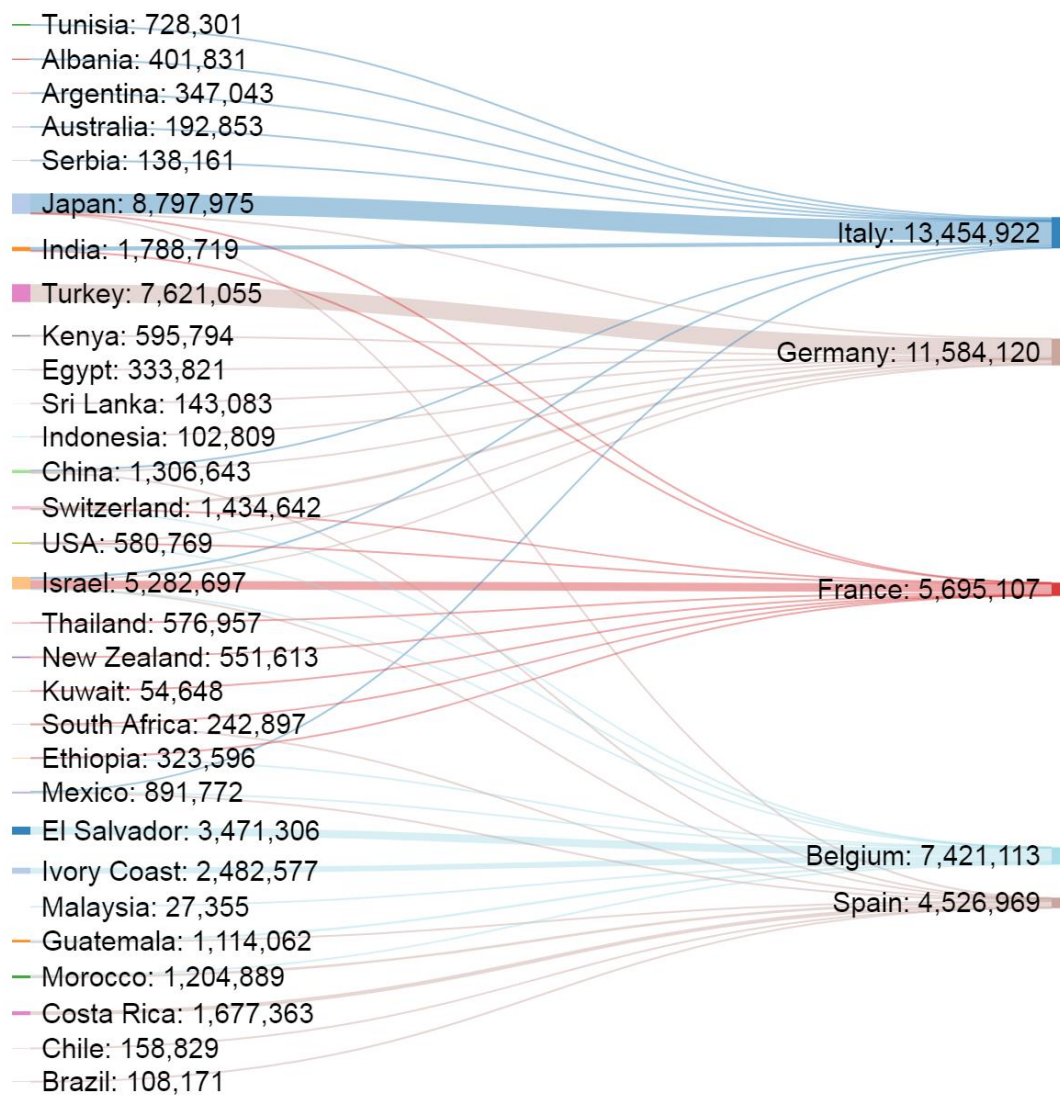


Figure 19. Extra-EU trade flows (value in euros) of other outdoor plants of the top 10 exporting countries (left hand panel) for each of the top 5 EU MS importers over the past five years (right hand panel). For each EU MS importer, values imported from the top 10 exporting countries always represented over 95% of the total imports values over the past five years.

Intra-EU imports and exports for all EU MSs

For the total of the past five years, Germany was the largest intra-EU importer (€1,163,903,646) and the second largest intra-EU exporter (€861,320,430) of other outdoor plants. Once again, the Netherlands was, by far, the largest intra-EU exporter of these products, with a total export value of €2,137,917,222 over the past five years (Figure 20).

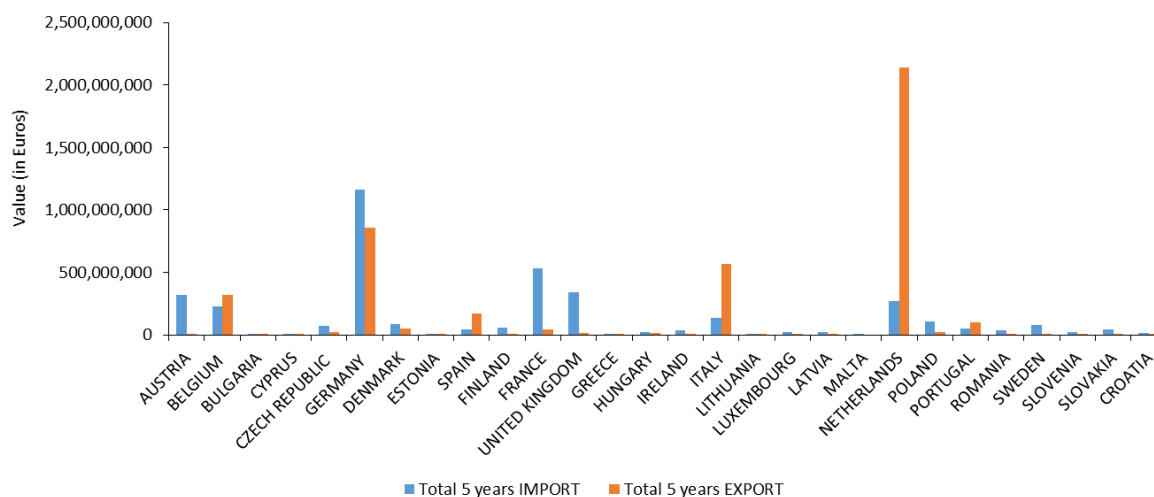


Figure 20. Intra-EU total import and export value of other outdoor plants for each MS, for the past five years (2013-2017).

4.1.2. Interceptions of soil and growing media imported into the EU

The European Union Notification System for Plant Health Interceptions (EUROPHYT¹²) reports the number of interceptions of plants and other objects imported into the EU Member States and Switzerland. In this database, soil and growing media are grouped together and indicated as a category of ‘objects’ imported, under which other products such as wooden crates, wood pallets and packaging materials are also listed. The interceptions reported mainly refer to plants and other objects that have been found carrying harmful organisms as per Directive 2000/29/EC (EC 2000), but there is also a section addressing interceptions of commodities for reasons other than the presence of harmful organisms, when non-conformities are reported. As such, the trends of soil/growing media intercepted for non-complying with restrictions imposed by EU legislation, according to Directive 2000/29/EC (EC 2000), are analysed. Data is reported yearly for the past five years, in this case from 2014 to 2018, as data for 2018 is already available. Because EUROPHYT is an EU-level instrument, data on which interceptions are reported by each EU MS is not reported, making it not possible to ascertain which EU countries have the highest number of interceptions of soil and growing media.

Although this technical note does not report on imports of soil/growing media intercepted due to carrying harmful organisms, because of the low number reported in the past five years (only seven interceptions overall), it is important to mention its past and current occurrence. For example, a study by the European and Mediterranean Plant Protection Organization has reported that, although bonsais are under specific stringent import measures, a significant number of bonsais from certain origins is intercepted with soil pests (e.g. soil nematodes), indicating a large volume of bonsai trade, but more importantly that the requirements are not successfully applied (EPPO 2012).

Over the past five years, the largest number of interceptions of soil and growing media imported into the EU was reported in 2017 (94 interceptions), with this number being over 55 interceptions per year (Figure 21). For these years, most of the interceptions were related to the prohibited import of these products from third countries, but various other reasons have been reported, such as problems with

¹² https://ec.europa.eu/food/plant/plant_health_biosecurity/europhyt_en

phytosanitary certificates (Figures 21 to 25), probably mostly referring to growing media that are allowed to be imported under certain conditions (EC 2000).

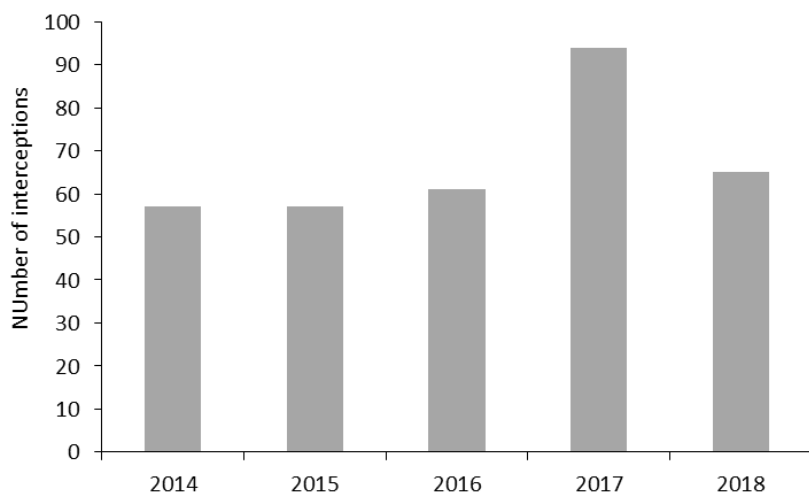


Figure 21. Number of interceptions of soil/growing media imported from third countries into the EU and Switzerland from 2014 to 2018.

In 2014, the third country from which soil and growing media imported into the EU were intercepted the most times was India (5 interceptions), followed by Australia, Turkey and the United Arab Emirates (4 interceptions). Other than for the reason of their import being prohibited, soil/growing media imported from all the different third countries were mostly intercepted for non-compliance with special requirements and for other non-specified reasons (Figure 22).

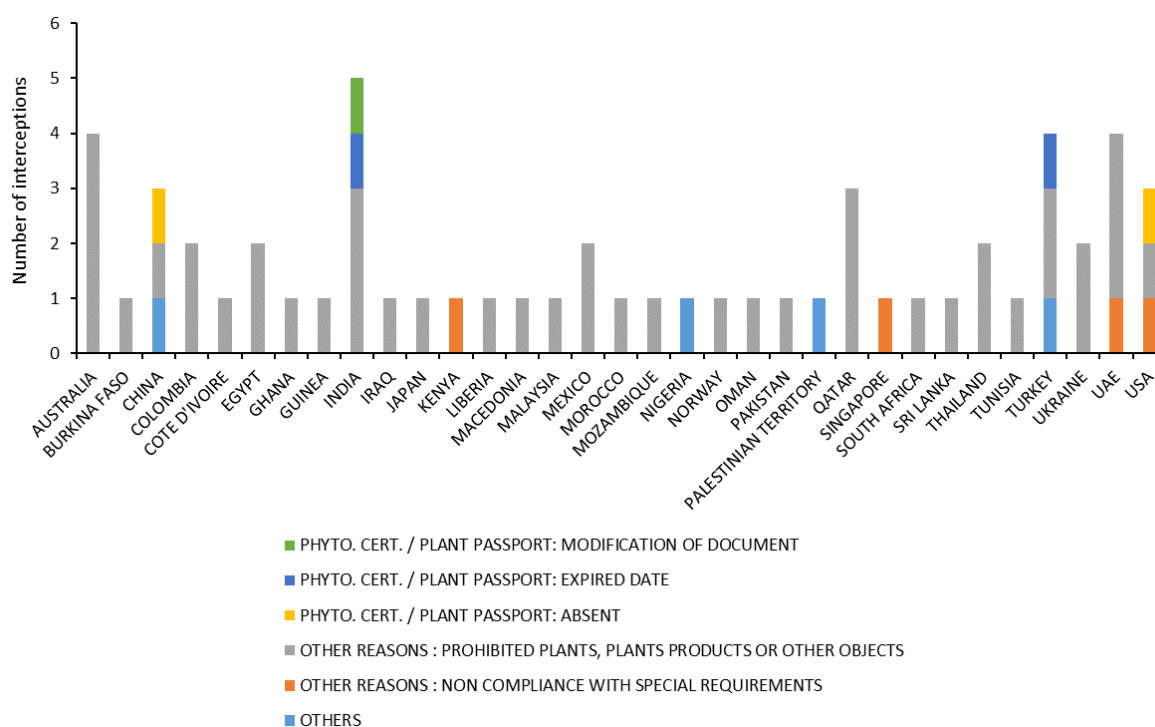


Figure 22. Number of interceptions of soil/growing media imported from different third countries into the EU and Switzerland in 2014, indicating the type of non-conformities reported per country.

In 2015 and 2016, the third countries with the largest number of interceptions were the USA and Qatar, followed by South Africa in 2015 and Nigeria in 2016. For these countries, prohibited import was the main reason, followed by a valid phytosanitary certificate being absent or incomplete (Figures 23 and 24).

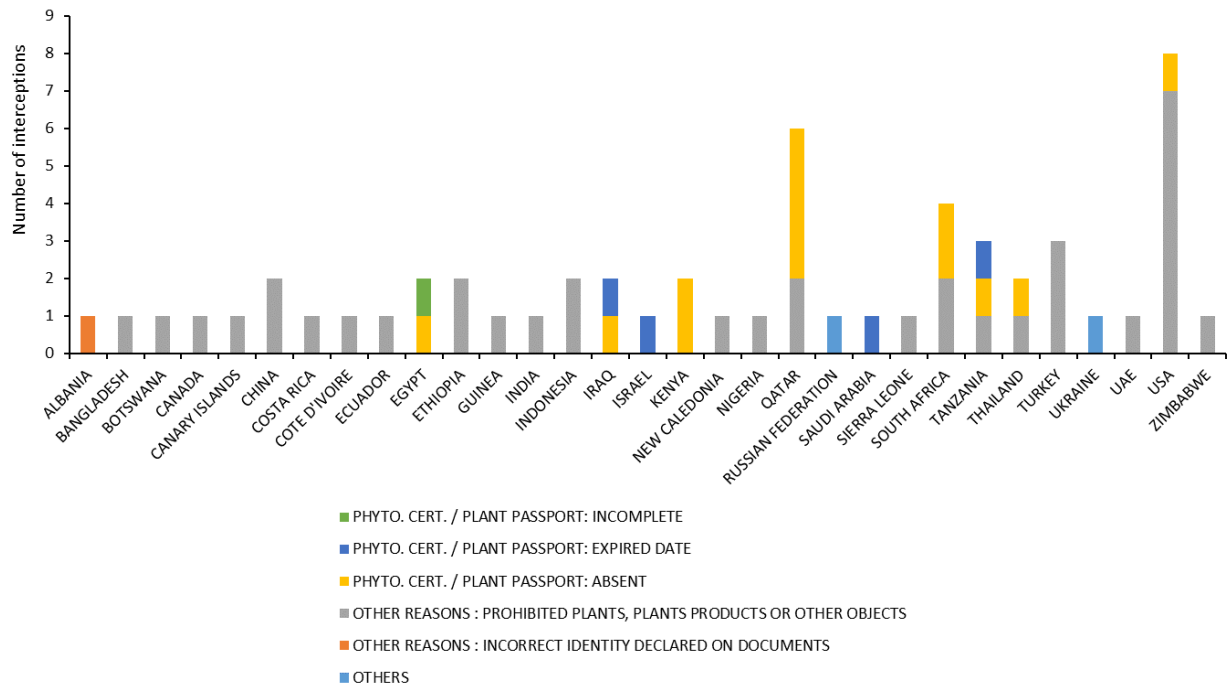


Figure 23. Number of interceptions of soil/growing media imported from different third countries into the EU and Switzerland in 2015, indicating the type of non-conformities reported per country.

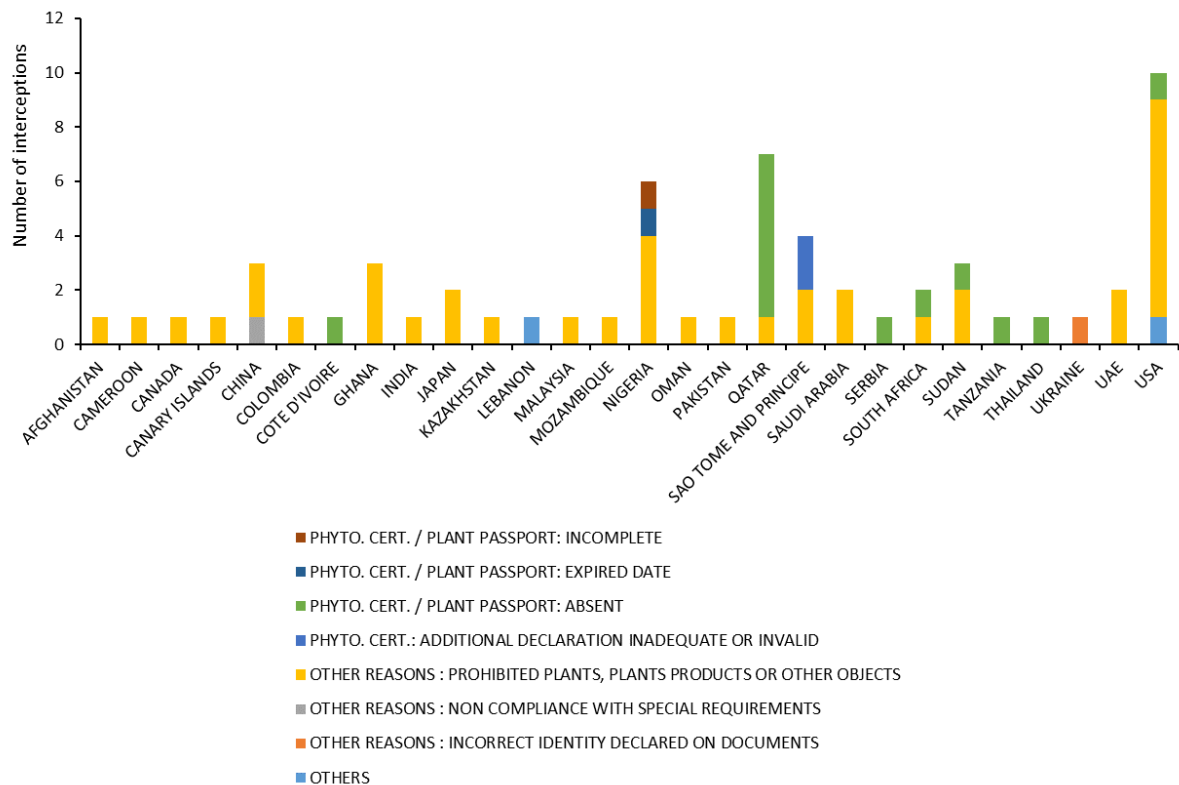


Figure 24. Number of interceptions of soil/growing media imported from different third countries into the EU and Switzerland in 2016, indicating the type of non-conformities reported per country.

In 2017, the third countries from which soil and growing media imported into the EU were intercepted the most times were Zimbabwe (13 interceptions), Russia (11 interceptions) and the USA (10 interceptions). Other than interceptions from the USA, which were due to varied reasons, all the interceptions from the other countries were due to the prohibited import of soil and growing media (Figure 25).

In 2018, South Africa (8 interceptions), Qatar (5 interceptions), and Nigeria/UAE/USA (4 interceptions) were the countries from which soil and growing media were intercepted the most, due to prohibited imported, but also to phytosanitary certificates being absent, incomplete or expired (Figure 26).

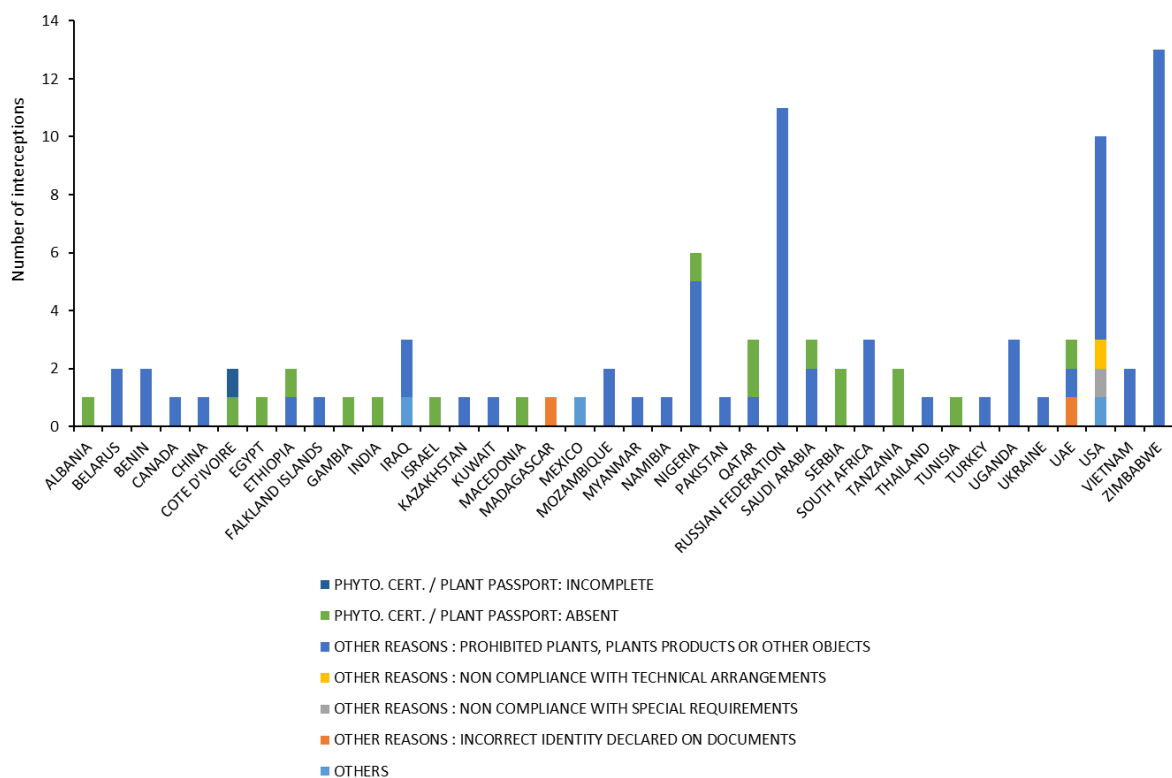


Figure 25. Number of interceptions of soil/growing media imported from different third countries into the EU and Switzerland in 2017, indicating the type of non-conformities reported per country.

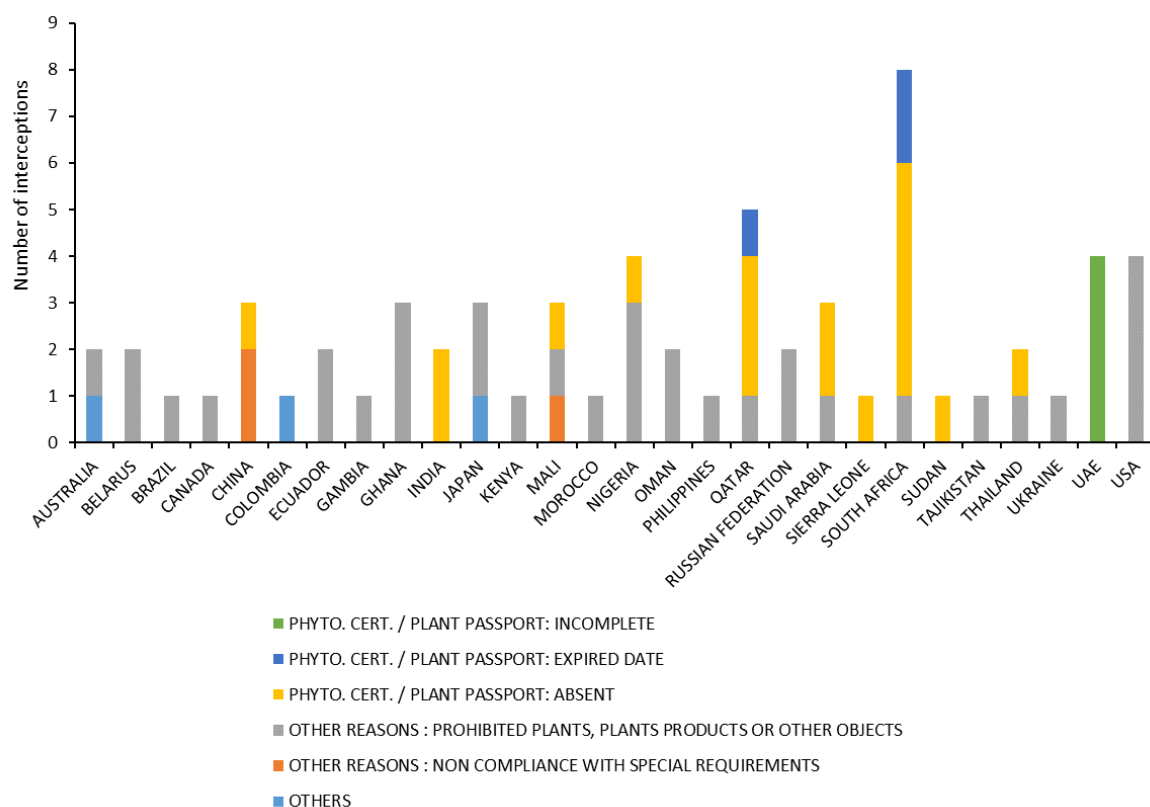


Figure 26. Number of interceptions of soil/growing media imported from different third countries into the EU and Switzerland in 2018, indicating the type of non-conformities reported per country.

4.2. Trade of soil categorised as waste

In the EU, the transport of large amounts of waste across borders is regulated by Regulation 1013/2006 (EC 2006), also called the Waste Shipment Regulation, which transposes the ‘Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal’ into EU law (see section on *Policies and legislation* for more details). The Basel Convention uses a list of Y-codes for classifying wastes and, in the EU, a European List of Waste (LoW) has been adopted to categorise different types of waste with more detail, according to Commission Decision 2000/532/EC (EC 2000). The LoW, which is regularly revised, provides a common nomenclature for classifying waste across the EU, facilitating the correct categorisation and interpretation of wastes for different purposes, such as classification of hazardous wastes, and management or transport of wastes.

Data was retrieved from a detailed file available from Eurostat’s database on transboundary shipments of waste¹³, updated as of November 2018, and reported to the European Commission in accordance to the Waste Shipment Regulation. In this database file, the volume of different types of waste - based on the Basel Convention Y and detailed codes, as well as on the European LoW codes - shipped across borders into, within or to outside the EU is reported. For extracting import and export statistics, the European LoW codes considered were from category 17 *Construction and demolition wastes (including excavated soil from contaminated sites)*, 17 05 *soil (including excavated soil from contaminated sites), stones and dredging spoil*, and from subcategories:

¹³ <https://ec.europa.eu/eurostat/web/waste/transboundary-waste-shipments>

- 17 05 03 - soil and stones containing hazardous substances
- 17 05 04 - soil and stones other than those mentioned in 17 05 03

As already mentioned in a previous section, soil and stones are considered to contain hazardous substances, if they are contaminated with e.g. PCB's, oil filters, mixed solvents or other dangerous substances. Category 20 addresses *Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions, 20 02 garden and park wastes (including cemetery waste)*. Subcategory 20 02 02 soil and stones was also taken into consideration for data extraction; however, no data on volumes of imports or exports for this specific code seem to have been reported to Eurostat, so data could not be retrieved.

For the codes here investigated, volumes of shipped soil and stones (contaminated or not) were retrieved as reported by either the importing or the exporting reporting countries. Whether focusing on the importing, or on the exporting country, the country reporting will, of course, have to be an EU MS. That is why it is relevant to look at information reported both by exporting and importing countries, so that the largest possible scope of non-EU countries involved in these transboundary ship movements can be captured. Where the shipment is between two EU Member States, the volume of exports reported by country A as being exported to country B should be the same as the volume of imports reported by country B as being imported from country A. However, in practice, differences in reporting between the respective countries due to, for example, the use of different waste classification or treatment codes, indicate that very often there will be discrepancies.

This note reports on flows of import and export by EU countries, focusing on trade both intra- and extra-EU, analysing combined data for the past five years (2012 to 2016, as data for 2017/18 was not available) and determining:

- 1) Extra- and intra-EU imports by all reporting EU MS importers (as calculated for the past five years);
- 2) Extra- and intra-EU exports by all reporting EU MS exporters (as calculated for the past five years).

4.2.1. Soil and stones containing hazardous substances (LoW code 17 05 03)

Extra- and intra-EU imports by all reporting EU MS importers

The Netherlands is the country that has imported the largest amount of contaminated soil and stones over the past five years, followed by Germany and Belgium. These three MS import those materials from a large variety of countries, mainly from the EU, but also from outside the EU and even from outside of Europe. While Germany has imported contaminated soil and stones from 15 different countries, four of those non-EU (but all in Europe), the Netherlands has imported from 16 countries, six of those non-EU and three of which from outside of Europe (Dominican Republic, Mauritius and Bahamas). France has also imported some of these materials from Côte d'Ivoire (Figure 27).

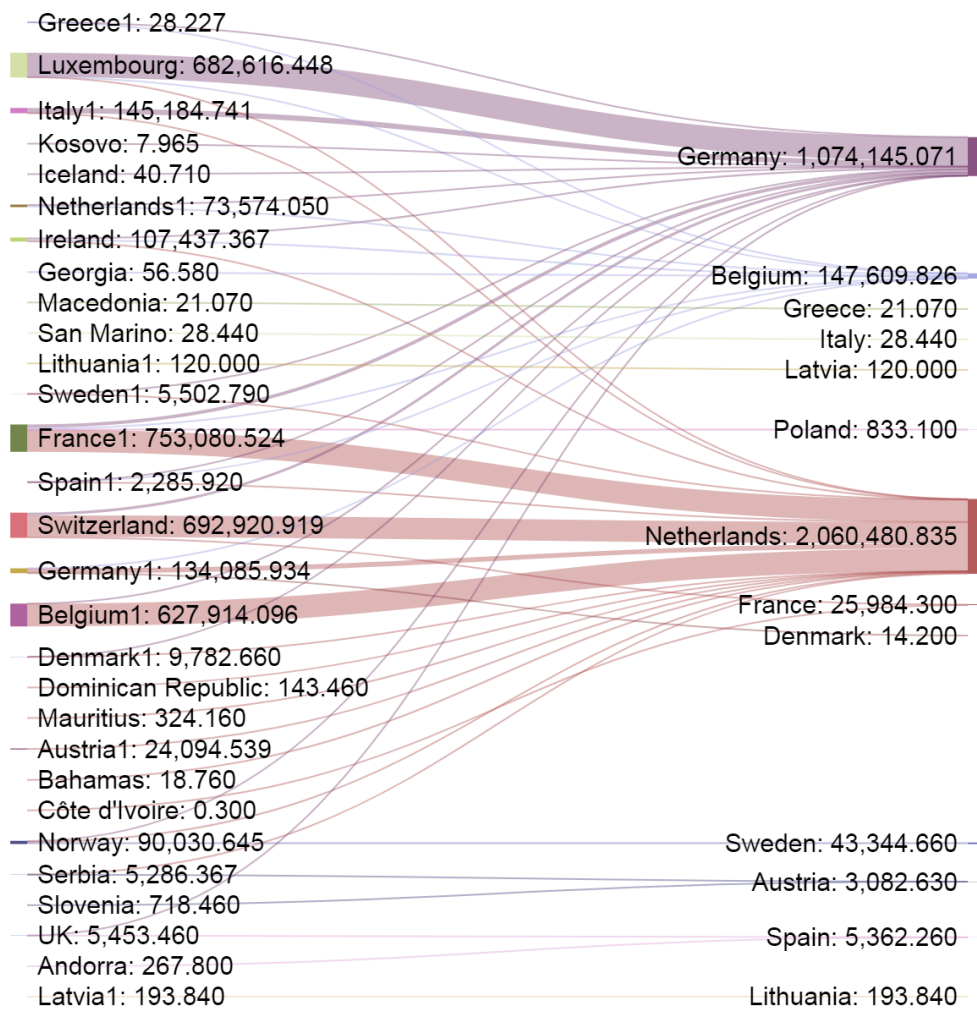


Figure 27. Imports of soil and stones containing hazardous substances (in tonnes) from 2012-2016, as reported by EU importing countries (right hand panel), and respective exporting countries from where the products have been exported (left hand panel). Names of countries present in both left and right hand panels are followed by the number 1 on the left hand panel, only such that the software could perceive (and accept) them as different entities.

Extra- and intra-EU exports by all reporting EU MS exporters

From 2012 to 2016, hazardous soil and stones have been mainly exported by Belgium, France, Germany, Luxembourg and Italy (Figure 28). Exports from these (and all other) EU countries have always remained within the EU, which is not surprising taking into account the restrictions imposed by Regulation 1013/2006 (EC 2006) and the Basel Convention. Although large amounts of soil can be very heavy and difficult to transport across borders, contaminated soil is usually exported due to a lack of treatment capacity in the exporting country. In the EU, exports of hazardous waste majorly stay within the EU, primarily going to neighbouring countries which often have closer or cheaper waste management facilities (EEA 2012). A report by the European Environment Agency states that, in 2007, 'contaminated soil and stones' (code 17 05 03) resulting from construction and demolition activities, was the type of hazardous waste exported from EU countries in greatest quantities (EEA 2012).

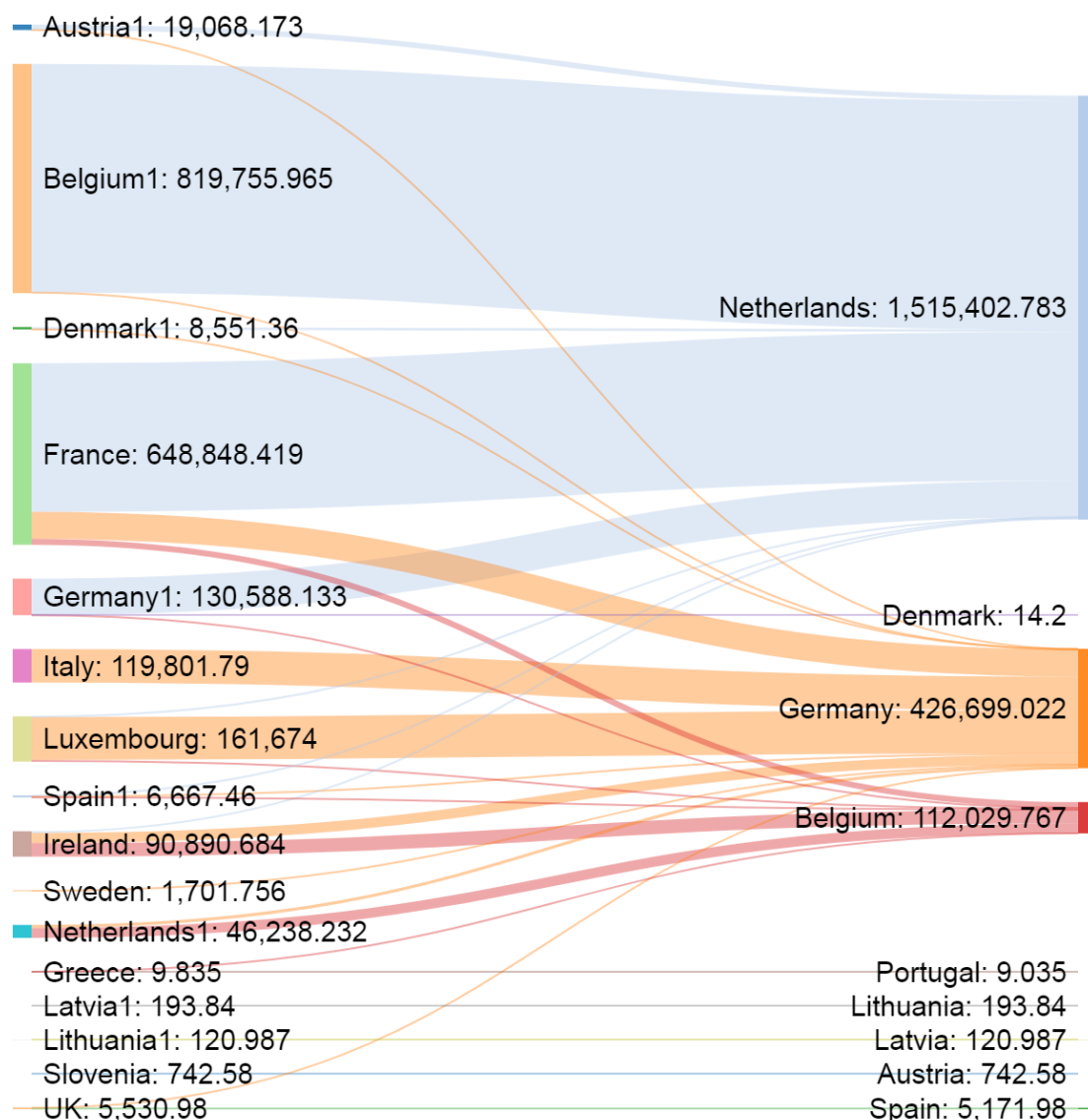


Figure 28. Exports of soil and stones containing hazardous substances (in tonnes) from 2012-2016, as reported by EU exporting countries (left hand panel), and respective importing countries by which the products have been imported (right hand panel). Names of countries present in both left and right hand panels are followed by the number 1 on the left hand panel, only such that the software could perceive (and accept) them as different entities.

4.2.2. Soil and stones other than those mentioned in 17 05 03 (LoW code 17 05 04)

Extra- and intra-EU imports by all reporting EU MS importers

In what concerns non-hazardous soil and stones, France is by far the largest importing country, importing these products mostly from Switzerland and Luxembourg. The Netherlands and Germany follow, the former importing mostly from Belgium and Germany, and the latter importing mostly from the Netherlands and Austria. In the case of these non-contaminated materials, shipments seem to be confined to European borders, with only Switzerland, Monaco and Andorra as exporting countries that are not part of the EU (Figure 29).

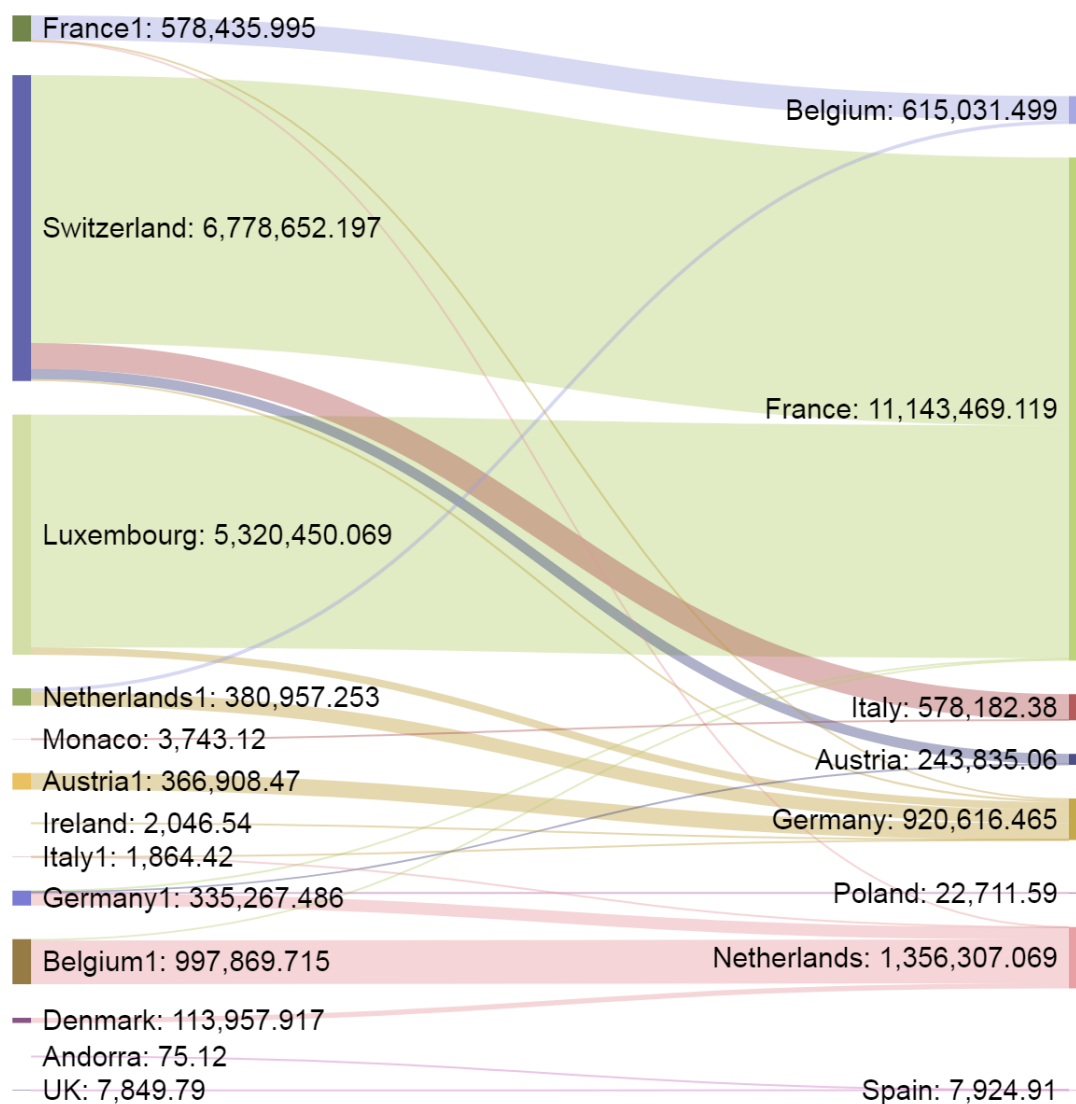


Figure 29. Imports of non-hazardous soil and stones (in tonnes) from 2012-2016, as reported by EU importing countries (right hand panel), and respective exporting countries from where the products have been exported (left hand panel). Names of countries present in both left and right hand panels are followed by the number 1 on the left hand panel, only such that the software could perceive (and accept) them as different entities.

Extra- and intra-EU exports by all reporting EU MS exporters

From 2012 to 2016, non-hazardous soil and stones have been mainly exported by Luxembourg, Belgium, France, the Netherlands, Germany and Austria (Figure 30). Similarly to what was observed for the hazardous substances, exports of these non-hazardous substances have been mainly transported within the EU, with only Norway as an exception of an importing country outside of the EU.

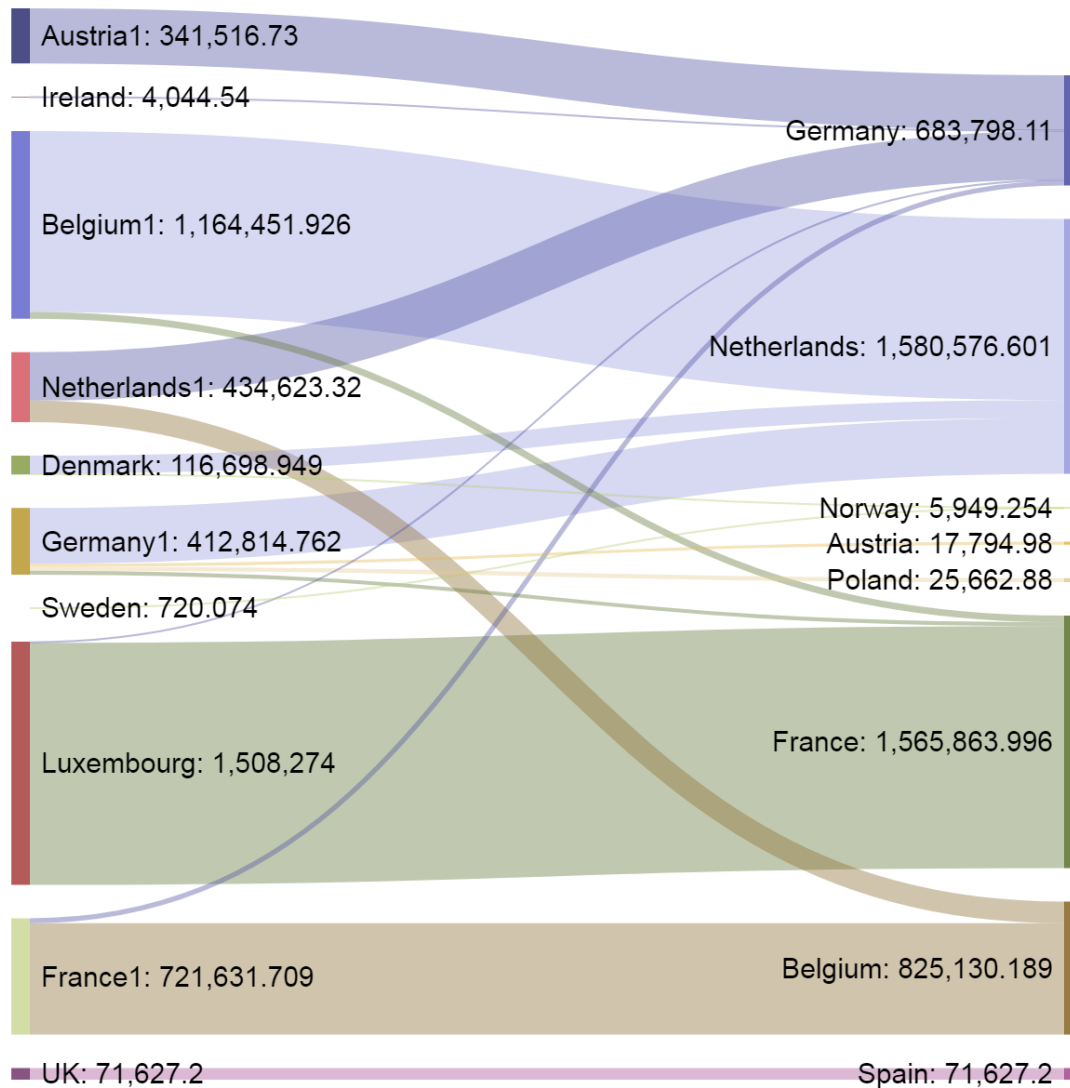


Figure 30. Exports of non-hazardous soil and stones (in tonnes) from 2012-2016, as reported by EU exporting countries (left hand panel), and respective importing countries by which the products have been imported (right hand panel). Names of countries present in both left and right hand panels are followed by the number 1 on the left hand panel, only such that the software could perceive (and accept) them as different entities.

5. Overview of existing policies and legislation on soil import

This section provides an overview of existing international, European and national level legislation regarding the intentional importation of soil and growing media. This section is divided in two subsections, taking into account the different types of soil import being considered and the different legislation associated to those. More specifically, the first subsection (5.1) provides an examination of legislation addressing the movement of soil and growing media as such, or in association with plants for planting, and the second subsection (5.2) explores legislation addressing the movement of soil as waste.

For both subsections, the legal tools that are produced under an international and European context are presented. For the first subsection (5.1. soil and growing media as such, or in association with plants for planting), an additional overview is given of the legal tools implemented by EU Member States, by other non-EU Member States in Europe and also by some representative third countries where policies on soil import are relatively restrictive and have been published in English language.

5.1. Soil and growing media moved as such, or in association with plants for planting

5.1.1. International legal tools and organisations

5.1.1.1. Agreement on the Application of Sanitary and Phytosanitary Measures (WTO-SPS Agreement)¹⁴

This is one of the Agreements of the World Trade Organization (WTO) regulating international trade in goods, services and intellectual property, which entered into force with the establishment of WTO. This Agreement concerns the application of basic rules for food safety, animal and plant health standards that are based on scientific evidence, and aims to ensure that members adopt import conditions that protect human, animal and plant life (Shine et al. 2000). The SPS Agreement seeks to provision for safe trade by, among other things, encouraging the use of international standards as a basis for national SPS measures, and promoting transparency through notification of trade measures. One of the international organisations recognised under the WTO-SPS Agreement as standard-setting in the area of food safety and plant health is the IPPC (International Plant Protection Convention) (Shine et al. 2000), which is discussed in 5.1.1.2. below.

5.1.1.2. International Plant Protection Convention (IPPC)

In order to address the high level of trade and consequent movement of undesired plant pests between countries, the International Plant Protection Convention was established (IPPC; FAO 2011). This instrument promotes harmonised international cooperation and action, by implementing international practices and standards for phytosanitary measures that aim to prevent the introduction and spread, as well as guarantee the control of, pests of plants, plant products and other associated materials (Shine et al. 2000). The European Union and all its Member States are contracting parties to the IPPC. IPPC parties have to adopt legislative, technical and administrative procedures and standards that allow them to prevent the introduction and spread of pests that might pose a threat to plant health (Shine et al. 2000). The IPPC standards are used by many countries as a basis for developing import legislation of plants and plant products that might carry associated harmful pests. The IPPC also requires each party to establish an official national plant protection organisation with, among others, the responsibilities of issuing certificates in compliance to phytosanitary regulations, conducting pest risk analysis, inspecting consignments of plants and plant products traded internationally, reporting and controlling plant associated pests, and training staff (Shine et al. 2000, FAO 2011).

Although its primary focus is on plants and plant products, the IPPC recognises soil as an important material traded internationally and capable of harbouring or spreading plant pests, and for which provisions of the Convention may be deemed by contracting parties (FAO 2011).

¹⁴ https://www.wto.org/english/tratop_e/sps_e/spsagr_e.htm

5.1.1.3. European and Mediterranean Plant Protection Organization (EPPO)

The European and Mediterranean Plant Protection Organization (EPPO) is an international organisation responsible for cooperation and harmonisation in plant protection within the European and Mediterranean region. Under the IPPC (Article IX), EPPO is the Regional Plant Protection Organization (RPPO) for the Euro-Mediterranean region. One of EPPO's main aims is to provide assistance and guidance to member governments on the administrative, legislative and operational measures necessary to prevent the introduction and spread of non-native plant pests. EPPO works to protect plant health in agriculture, forestry and the uncultivated environment by developing an international strategy against the introduction and spread of pests (including invasive alien plants) that damage cultivated and wild plants, in agricultural and natural ecosystems, and by protecting biodiversity. EPPO recognises the risk posed by the movement of soil with plants for planting and the EPPO Council in 2016 reiterated that '*Intercontinental movement of soil with plants for planting is high risk for plant health*'. EPPO's Standard PM 3/54, entitled 'Growing plants in growing medium prior to export' (EPPO 1994), highlights specific requirements that should be followed in order to reduce the introduction of plant pests. In addition, EPPO PM 3 Phytosanitary Standards for inspection of consignments and inspection of places of production, describe the methods to be followed for performing inspections of commodities moving in trade, or surveys against quarantine pests.

5.1.2. EU legal tools

5.1.2.1. Council Directive 2000/29/EC (soon repealed and replaced by Regulation (EU) 2016/2031)

The current European Union import regime of soil in association with plants is established by Council Directive 2000/29/EC (Plant Health Law; EC 2000), which has been amended by Directive 2017/1279, on protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community. This directive includes a list of particularly dangerous organisms whose introduction into, and spread within, the Community must be prohibited, mentions provision for bans and addresses special requirements on the introduction and movement of certain plants, plant products and other objects into the Community, and provides information on plant health checks and phytosanitary measures that have to be undertaken by producer countries, in case they are non-EU members.

Directive 2000/29/EC will be repealed and replaced by Regulation (EU) 2016/2031 of the European Parliament and of the Council on protective measures against pests of plants, which entered into force on 13 December 2016 and will be applicable from 14 December 2019 (EC 2016). This new regulation recognises the high risk posed by the potential introduction of species injurious to plants and plant products due to globalisation of trade and climate change. However, in this new regulation, once again soil and growing media are not clearly defined, and simply referred to as 'other objects', which are defined as any material or object, other than plants or plant products, capable of harbouring or spreading pests.

Annexes III, IV and V of Directive 2000/29/EC set out the import prohibitions or requirements relating to the introduction of soil and growing media into the EU, which are summarised in Table 2. However, the EC has recently proposed a new Commission Implementing Directive amending Annexes I to V to Council Directive 2000/29/EC (EC 2018b), in which import rules to protect plants and prevent the spread within the EU of diseases affecting them are revised. Interestingly, this new Directive

recognises the need of stricter EU legislation addressing soil and growing media, by mentioning that *“With a view to protecting plants, plant products and other objects, in light of increased international trade and following the pest risk assessment performed and published by the Authority on soil and growing media and the relevant International Standards, it is scientifically justified and consistent with the pest risks involved to strengthen the requirements for soil and growing media through revising the relevant requirements in Annex III, in Section I of Part A of Annex IV and in Annex V to Directive 2000/29/EC.”* Following this, the sections of different annexes of Directive 2000/29/EC addressing soil and growing media have been reformulated, redefining what is considered as soil and growing media and suggesting stricter prohibitions and import requirements for these products (Table 2). Unless there are further adjustments, these alterations will likely be incorporated into Regulation (EU) 2016/2031. This new Commission Implementing Directive under discussion also imposes stricter restrictions on the unintentional import of soil, e.g. attached to bulbs, corms, rhizomes, tubers and root and tubercle vegetables, or attached to agricultural or forestry machinery and vehicles, although this will not be further explored here.

The current requirements for plant health inspections of plants, plant products or other objects coming from third countries, and carried out at inspection posts other than those at the place of destination, have to satisfy at least the minimum conditions laid down in Commission [Directive 98/22/EC](#) (EC 1998). Commission [Directive 2004/105/EC](#) (EC 2004) determines the models of official phytosanitary certificates or phytosanitary certificates for re-export that have to be issued by the exporting country and accompany plants, plant products or other objects listed in Part B of Annex V to Directive 2000/29/EC originating from third countries. As laid down in Article 13 of Directive 2000/29/EC, exemptions of the need for plant health inspections and phytosanitary certificates may apply, provided that there is no risk of harmful organisms spreading and:

- plants, plant products or other objects are directly moved between two places within the Community via the territory of a third country;
- in the case of transit through the territory of the Community;
- in the case of small quantities of plants, plant products, where they are intended for use by the owner or recipient for non-industrial and non-commercial purposes;
- for trial or scientific purposes and for work on varietal selections;
- in individual specified cases to plants, plant products and other objects which are grown, produced or used in its immediate frontier zone with a third country and introduced into that Member State in order to be worked in nearby locations in the frontier zone of its territory.

Commission [Directive 2008/61/EC](#) (EC 2008a) establishes the conditions under which certain harmful organisms, plants, plant products and other objects listed in Annexes I to V to Council Directive 2000/29/EC may be introduced into, or moved within, the Community or certain protected zones thereof, for trial or scientific purposes and for work on varietal selections. However, the EC has proposed a new Commission Delegated Regulation supplementing the forthcoming Regulation (EU) 2016/2031, which will repeal Directive 2008/61/EC (EC 2018a). This will authorise Member States to provide for temporary derogations of the introduction into, the movement within, and the holding and multiplication in their territory of plant pests, plants, plant products and other objects used for official testing, scientific or educational purposes, trials, varietal selections or breeding.

Table 2. Conditions for importing soil and growing media into the EU laid down by Directive 2000/29/EC (amended by Directive 2017/1279, soon replaced by Regulation 2016/2031) and amendments proposed by the Commission Implementing Directive amending Annexes I to V to Council Directive 2000/29/EC.

Products	Directive	Annex	Rules of import into the EU
Soil and growing medium as such , which consists in whole or in part of soil or solid organic substances such as parts of plants, humus including peat or bark, other than that composed entirely of peat	Directive 2000/29/EC	Annex III, Part A	Prohibited if country of origin is Turkey, Belarus, Moldavia, Russia, Ukraine and third countries not belonging to continental Europe, other than Cyprus, Egypt, Israel, Libya, Malta, Morocco, Tunisia
		Annex V, Part B	Subject to a plant health inspection and accompanied by a phytosanitary certificate if country of origin is outside the Community
#Soil as such , consisting in part of solid organic substances and growing medium as such , which consists in whole or in part of solid organic substances, other than that composed entirely of peat or fibre of <i>Cocos nucifera</i> L., previously not used for growing of plants or for any agricultural purposes	Commission Implementing Directive amending Annexes I to V to Council Directive 2000/29/EC (EC 2018b)	Annex III, Part A	Prohibited if country of origin are third countries except Switzerland
Soil and growing medium, attached to or associated with plants , consisting in whole or in part of material specified above or consisting in whole or in part of peat or of any solid inorganic substance intended to sustain the vitality of the plants	Directive 2000/29/EC	Annex IV, Part A, Section 1	Special requirements* if country of origin is Turkey, Belarus, Moldavia, Russia, Ukraine and non-European countries other than Cyprus, Egypt, Israel, Libya, Malta, Morocco, Tunisia
		Annex V, Part B	Subject to a plant health inspection and accompanied by a phytosanitary certificate if country of origin is Turkey, Belarus, Moldavia, Russia, Ukraine and non-European

				countries other than Cyprus, Egypt, Israel, Libya, Malta, Morocco and Tunisia
# Growing medium, attached to or associated with plants , intended to sustain the vitality of the plants, with the exception of sterile medium of in-vitro plants	Commission Implementing Directive amending Annexes I to V to Council Directive 2000/29/EC (EC 2018b)	Annex IV, Part A, Section 1		Tighter special requirements** if country of origin are third countries other than Switzerland
		Annex V, Part B		Subject to a plant health inspection and accompanied by a phytosanitary certificate if country of origin are third countries other than Switzerland

Text from Commission Implementing Directive amending Annexes I to V to Council Directive 2000/29/EC (EC 2018b) – is not yet in force, and further alterations may still be made.

* Official statement that growing medium, at the time of planting, was either free from soil and organic matter, free from insects and harmful nematodes or subjected to appropriate heat treatment or fumigation, and that, since planting, measures have been taken to ensure that the growing medium has been maintained free from harmful organisms, or within two weeks prior to dispatch, the plants were shaken free from the medium leaving the minimum amount necessary to sustain vitality during transport.

** Official statement that growing medium, at the time of planting of the associated plants, was either free from soil and organic matter and not previously used for growing plants or for any agricultural purposes, or was composed entirely of peat or fibre of *Cocos nucifera* L. and not previously used for growing plants or for any agricultural purposes, or was subjected to effective treatment to ensure freedom from harmful organisms and in all the above cases was stored and maintained under appropriate conditions to keep freedom from harmful organisms. Also that, since planting, appropriate measures have been taken to ensure that the growing medium has been kept free from harmful organisms, including at least physical isolation of the growing medium from soil and other possible sources of contamination, hygiene measures, using water free from harmful organisms, or within two weeks prior to export the growing medium has been completely removed by washing using water free from harmful organisms.

5.1.3. National legal tools of EU Member States

Among EU Member States there is a policy of free trade, establishing a large unified market. However, a variety of national laws on importation of soil and growing media from non-EU countries are in place in different Member States. These **laws transpose Council Directive 2000/29/EC (EC 2000) into national legislation**, and the National Plant Protection Organisation of each Member State, established in accordance to IPPC (FAO 2011), is generally the official entity responsible for the implementation of the provisions relating to these laws. Below -is the EU Member States national legislation that regulates the import of soil and growing media from third countries, with law names translated. Note that the English names for the national legislation are not always official translations, and names of legislation in their original languages are provided in footnotes. It is important to stress that all EU Member States will need to adapt their national legislation to ensure the correct implementation of the EU Plant Health Regulation 2016/2031 that is coming into force on 14 Dec, 2019.

Austria - Plant Protection Act 2011 (modified 2018)¹⁵.

Belgium - Royal Decree of 10/08/2005 Concerning Measures Against Organisms Harmful to Plants and Plant Products¹⁶. See also additional information on plant protection and phytosanitary practice¹⁷.

Bulgaria - Plant Protection Act (Official Gazette No. 91 of 10 October 1997, amended SG No. 43 of 29 April 2008)¹⁸, and Ordinance No. 68 (16 May 2006) for phytosanitary checks on plants and other products from third countries other than the European Community¹⁹.

There is a 'bilateral agreement on the possibility of carrying out identity checks and plant health checks at the place of destination' established between the Bulgarian National Organization for the Protection of Plants and the National Organization for the Protection of Plants in the Netherlands²⁰. It states that the official body of the Community point of entry performs the "documentary check"; the official body of the point of destination performs the "identity checks" and the "plant health checks" in full. Directive 2004/103/EC specifies, in particular, in its Article 1.2.a) "*when the official bodies of the point of entry and of destination, decide, where appropriate, by agreement between the responsible official bodies of the Member States, that identity checks and plant health checks [...] could more meticulously be carried out at a place other than the point of entry into the Community or at a place close by.*

¹⁵ Bundesgesetz über Maßnahmen zum Schutz gegen das Verbringen von Schadorganismen der Pflanzen und Pflanzenerzeugnisse sowie betreffend Grundsätze für den Schutz der Pflanzen vor Krankheiten und Schädlingen (Pflanzenschutzgesetz 2011). <https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20007154>.

¹⁶ 2005 Arrêté royal relatif à la lutte contre les organismes nuisibles aux végétaux et aux produits végétaux / 2005 Koninklijk besluit betreffende de bestrijding van voor planten en plantaardige producten schadelijke organismen <https://www.health.belgium.be/nl/10-augustus-2005-koninklijk-besluit-betreffende-de-bestrijding-van-voor-planten-en-plantaardige>

¹⁷ <https://www.health.belgium.be/en/node/22996>

¹⁸ ЗАКОН ЗА ЗАЩИТА НА РАСТЕНИЯТА http://www.stenli.net/nsrz/files/ZZR_12.05.09.pdf

¹⁹ НАРЕДБА № 68 ОТ 16 МАЙ 2006 Г. ЗА ФИТОСАНИТАРНИ ПРОВЕРКИ НА ВНАСЯНИТЕ ОТ ТРЕТИ СТРАНИ РАСТЕНИЯ, РАСТИТЕЛНИ И ДРУГИ ПРОДУКТИ, ОСЪЩЕСТВЯВАНИ НА МЕСТА, РАЗЛИЧНИ ОТ ОПРЕДЕЛЕНИТЕ ЗА ВЪВЕЖДАНЕ НА ТЕРИТОРИЯТА НА ЕВРОПЕЙСКАТА ОБЩНОСТ http://www.stenli.net/nsrz/files/fsk_nar-68.pdf

²⁰ National Service for Plant Protection Import Control http://www.stenli.net/nsrz/main.php?module=info&object=info&action=view&inf_id=34

Croatia - Ordinance on Measures Against the Introduction and Spread of Organisms Harmful to Plants, Plant Products and Other Regulated Objects, and Measures to Control These Organisms (Official Gazette, No 74/06, 84/10 and 120/11)²¹.

Cyprus - Law on Protection Against the Infection and Spread of Organisms Harmful to Plants and Plant Products of 2003 (147 (I) / 2003)²².

Czech Republic - Decree No. 215/2008 on Measures Against the Introduction and Spread of Harmful Organisms of Plants and Plant Products and Against their Spread (as amended)²³.

Denmark - Order No 913 on Importing Plants and Plant Products²⁴, and see additional information on importing plants²⁵.

Estonia - Plant Protection Act 2004²⁶

Finland - Law on the Protection of Plant Health 702/2003 (consolidated on 25 January 2013)²⁷, and Decree of the Ministry of Agriculture and Forestry on the Protection of Plant Health (No. 17 of 2008)²⁸. See additional information on plant health²⁹.

France - Order of 3 September 1990 on the Sanitary Control of Plants and Plant Products³⁰, Order of 24 May 2006 on the Health Requirements for Plants, Plant Products and Other Objects³¹, and Regulation on Protective Measures Against the Introduction into the European Union of Pests of Plants or Plant Products³². See also information on phytosanitary restrictions from a third country.³³

²¹ Provisional translation of the Ordinance on Measures Against the Introduction and Spread of Organisms Harmful to Plants, Plant Products and Other Regulated Objects, and Measures to Control These Organisms.
https://www.ippc.int/static/media/files/reportingobligation/2015/03/30/1197639938050_Republic_of_Croatia___Ordinan1646683085_2013042321-18En.pdf.

²² Ο περί Μέτρων Προστασίας κατά της Εισαγωγής και Εξάπλωσης Οργανισμών Επιβλαβών για τα Φυτά και τα Φυτικά Προϊόντα Νόμος του 2003 (147(I)/2003) http://www.cylaw.org/nomoi/enop/ind/2003_1_147/section-scdd461c20-135f-c9b0-042e-12c15bec7ee4-aiad94e3d9-a693-4dba-b689-5fb3b3c26918.html

²³ 215/2008 o opatfenich proti zavlekani a rozsirovani skodlivych organismu rostlin a rostlinnych produktu.
http://eagri.cz/public/web/ukuzportal/skodlive-organismy/legislativa/legislativa-cr/obsah_cz_mze_ministerstvo-zemedelstvi_legislativa_Legislativa-MZe_uplna-zneni_Vyhlaska-2008-215-rostlinolekarskapece.html

²⁴ BEK nr 913 af 17/07/2015 (Gældende) Bekendtgørelse om import af planter og planteprodukter m.m
<http://extwprlegs1.fao.org/docs/pdf/den148133.pdf>

²⁵ Min. of Environment and Food, Imports of plants <https://eng.lbst.dk/international-trade/import-and-export-inspections/#c22027>

²⁶ Taimekaitseseadus <https://www.pma.agri.ee/index.php?id=104&sub=133&sub2=268&sub3=269>

²⁷ Lag om skydd för växters sundhet 702/2003 (konsoliderat 25.1.2013) <http://www.finlex.fi/sv/laki/ajantasa/2003/20030702>

²⁸ förordning om skydd för växters sundhet 17/08 <https://www.finlex.fi/sv/viranomaiset/normi/400001/33638>

²⁹ Min. Agriculture and Forestry of Finland, Plant health <https://mmm.fi/sv/djur-och-vaxter/vaxtskydd/vaxthalsa>

³⁰ Arrêté du 3 septembre 1990 relatif au contrôle sanitaire des végétaux et produits végétaux
<https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=LEGITEXT000006076933>

³¹ Arrêté du 24 mai 2006 relatif aux exigences sanitaires des végétaux, produits végétaux et autres objets,
<https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT00000637300>

³² Réglementation relative aux mesures de protection contre l'introduction dans l'Union européenne d'organismes nuisibles aux végétaux ou aux produits végétaux <http://douane.gouv.fr/informations/bulletins-officiels-des-douanes?da=18-038>

³³ <http://douane.gouv.fr/articles/a11624-restrictions-phytosanitaires-applicables-aux-vegetaux-fruits-et-legumes-en-provenance-d-un-pays-tiers>.

Germany - Protection of Cultivated Plants (Plant Protection Act)³⁴, and see additional information on plant health³⁵.

Greece - Presidential Order No. 365 (2002) establishing protective measures against the introduction into the European Community of organisms harmful to plants or plant products and against their spread within the Community³⁶, and Presidential Order No. 84 on identity and plant health checks of plants, plant products or other objects, listed in Part B of Annex V to Presidential Order No. 365/2002, which may be carried out at a place other than the point of entry into the Community or at a place close by and specifying the conditions related to these checks³⁷. See also information on Plant Health Inspection Service³⁸.

Hungary - Act No. XLVI of 2008 on Food-chain and its Control³⁹, see also additional information on plant protection⁴⁰.

Ireland - European Communities (Control of Organisms Harmful to Plants and Plant Products) Regulations 2004 (S.I. No. 894 of 2004)⁴¹, see also additional information on importing plants / plant products⁴².

Italy - Decree 2005, n. 214, Directive 2002/89/EC on Protective Measures Against the Introduction Into and the Spread Within the Community of Organisms Harmful to Plants or Plant Product⁴³, and Decree of 16 October 2006⁴⁴, and see also additional information on plant health and phytosanitary service⁴⁵.

³⁴ Gesetz zum Schutz der Kulturpflanzen (Pflanzenschutzgesetz - PflSchG) http://www.gesetze-im-internet.de/pflschg_2012/index.html

³⁵ Bundesforschungsinstitut für Kulturpflanzen, plant health and quarantine <https://pflanzenengesundheit.julius-kuehn.de/betriebe-einfuhr-aus-nicht-eu-staaten.html> (English version <https://pflanzenengesundheit.julius-kuehn.de/en/0919990f549f6ab753c344c6471686fa.html>)

³⁶ Presidential Order No. 365 (2002) <http://extwprlegs1.fao.org/docs/pdf/gre64379.pdf>

³⁷ Presidential Order No. 84 <http://extwprlegs1.fao.org/docs/pdf/gre64385.pdf>

³⁸ Min. of Rural Development and Food Plant Health Inspection Service <http://www.minagric.gr/index.php/en/farmer-menu-2/plantprotection-menu/planthealthinpec-menu>

³⁹ 2008. évi XLVI. törvény az élelmiszerláncról és hatósági felügyeletéről <http://extwprlegs1.fao.org/docs/pdf/hun98048.pdf>

⁴⁰ Nemzeti Élelmiszerlánc-biztonsági Hivatal, List of authorized and withdrawn plant protection products authorized and withdrawn <http://portal.nebih.gov.hu/en/-/engedelyezett-es-visszavont-novenyvedo-szerek-jegyzeke-list-of-plant-protection-products-authorised-and-withdrawn->

⁴¹ European Communities (Control of Organisms Harmful to Plants and Plant Products) Regulations 2004 (S.I. No. 894 of 2004) <http://extwprlegs1.fao.org/docs/pdf/ire50615.pdf>

⁴² Dept. Agriculture Food and the Marine, Procedures for import <https://www.agriculture.gov.ie/farmingsectors/planthealthtrade/registrationproceduresforimport/>, and movement of plants <https://www.agriculture.gov.ie/agri-foodindustry/tradeimportsexports/plantsimportsexports/>

⁴³ Decreto Legislativo 2005, n. 214 Attuazione della direttiva 2002/89/CE concernente le misure di protezione contro l'introduzione e la diffusione nella Comunità di organismi nocivi ai vegetali o ai prodotti vegetali http://www.importfito.it/mpdf/2005_214.htm

⁴⁴ Decreto 2006 Recepimento della direttiva n. 2004/103/CE della Commissione del 7 ottobre 2004, concernente i controlli di identità e fitosanitari su vegetali, prodotti vegetali e altre voci, elencati nell'allegato V, parte B, della direttiva 2000/29/CE del Consiglio, che possono essere svolti in un luogo diverso dal punto di entrata nella Comunità o in un luogo vicino e che specifica le condizioni relative a tali controlli http://www.importfito.it/mpdf/D_16_10_2006.pdf

⁴⁵ Ministero delle politiche agricole alimentari, forestali e del turismo, Plant health <https://www.politicheagricole.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/9956> and Phytosanitary service <https://www.politicheagricole.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/9957>

Latvia - Cabinet Regulation No. 218 of 2004 on Plant Quarantine⁴⁶. See additional information on plant quarantine, and on fertilisers and growing media⁴⁷.

Lithuania - Phytosanitary Law of the Republic of Lithuania 2010 No. XI-653 (Amending 1999 No. VII-1481)⁴⁸, see also phytosanitary guidance⁴⁹.

Luxembourg - Law of 14 July 1971 on the Protection of Plants and Plant Products Against Harmful Organisms⁵⁰, and Grand-Ducal Regulation of 9 January 2006 laying down protective measures against the introduction and spread of organisms harmful to plants or plant products⁵¹. See also additional guidance on plant protection and phytosanitary controls at import⁵².

Malta - Plant Quarantine Act 2001⁵³, and Identity and Plant Health Checks of Plants, Plant Products or other Objects carried out at a place other than point of entry into the European Community Regulations, 2005 (L.N. 34 of 2005)⁵⁴.

Netherlands - Unknown, but the phytosanitary requirements of the Netherlands are directly based on the plant health regime of the European Community and its Member States⁵⁵.

Poland - Ordinance on Preventing the Introduction and Spread of Quarantine Organisms 2008⁵⁶, and Plant Protection Act 2003⁵⁷. See also information on border phytosanitary control, and links to additional legislation⁵⁸.

Portugal - Decree-Law No. 154/2005⁵⁹ ruling on a national phytosanitary system. See also a guide to explain the rules of import according to the regulation⁶⁰.

⁴⁶ Ministru kabineta noteikumi Nr.218 Rīgā 2004.gada 30.martā (prot. Nr.17 68.§) Augu karantīnas noteikumi <https://likumi.lv/ta/id/87577-augu-karantinas-noteikumi> - English translation (though not up to date and doesn't incorporate a number of amendments) <https://likumi.lv/ta/en/id/87577-regulations-regarding-plant-quarantine>

⁴⁷ National Plant Protection Service, plant protection <http://www.vaad.gov.lv/english/about-us/plant-quarantine.aspx>, fertilisers and growing media <http://www.vaad.gov.lv/english/about-us/plant-protection/surveillance-of-fertilisers.aspx>

⁴⁸ Lietuvos Respublikos Fitosanitarijos Įstatymo Pakeitimo Įstatymas 2010 m. sausio 14 d. Nr. XI-653 (Žin., 1999, Nr. 113-3285) <https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.363732>

⁴⁹ State Plant Service, phytosanitary guidance <http://www.vatzum.lt/lt/veiklos-sritys/fitosanitarija/>.

⁵⁰ Loi du 14 juillet 1971 concernant la protection des végétaux et produits végétaux contre les organismes nuisibles <http://legilux.public.lu/eli/etat/leg/loi/1971/07/14/n2/jo>

⁵¹ Règlement grand-ducal du 23 mars 2010 modifiant le règlement grand-ducal modifié du 9 janvier 2006 fixant les mesures de protection contre l'introduction et la propagation d'organismes nuisibles aux végétaux ou aux produits végétaux <http://legilux.public.lu/eli/etat/leg/rgd/2010/03/23/n2/jo>

⁵² Ministerium für Landwirtschaft, Weinbau und ländliche Entwicklung plant protection <https://agriculture.public.lu/de/pflanzen-boden/pflanzenschutz.html>, Luxembourg Single Window for Logistics, phytosanitary controls at import <https://logistics.public.lu/en/formalities-procedures/type-goods/plants-wood/phytosanitary-controls.html#>.

⁵³ Att Dwar Il-Kwarantina Tal-Pjant 2001 https://agriculture.gov.mt/en/phd/Pages/actslegal_notices.aspx

⁵⁴ Identity and Plant Health Checks Regulations 2005 <http://extwprlegs1.fao.org/docs/pdf/mlt61473.pdf>

⁵⁵ Netherlands Food and Consumer Product Safety Authority, import regulations of the Netherlands on plant health <https://english.nvwa.nl/topics/import-regulations-of-the-netherlands-on-plant-health>

⁵⁶ Rozporządzenie z dnia 21 lutego 2008 r. w sprawie zapobiegania wprowadzaniu i rozprzestrzenianiu się organizmów kwarantannowych <http://piorin.gov.pl/files/userfiles/giorin/prawo/rozporzadzenia/wnf/glowne/dz-u-2015-1227.docx>

⁵⁷ Ustawa 2003 r. o ochronie roślin <http://extwprlegs1.fao.org/docs/pdf/pol60257.pdf>

⁵⁸ Main Inspectorate of Plant Health and Seed Inspection, border phytosanitary control <http://piorin.gov.pl/eksport-i-import/graniczna-kontrola-fitosanitarna/>, additional regulations <http://piorin.gov.pl/prawo/rozporzadzenia/nadzor-fitosanitarny/>

⁵⁹ Decreto-Lei n.º 154/2005 <http://extwprlegs1.fao.org/docs/pdf/por61764.pdf>,

⁶⁰ Min. da Agricultura e do Mar Direccao-Geral de Alimentacao e Veterinaria. 2015. Guia Fitossanitario d Importacao http://www.drappn.min-agricultura.pt/drappn/conteudos/fito/certificado_atestado/Guia_Fitoss_Importa%C3%A7%C3%A3o_6ED.pdf

Romania - Law on protective measures against the introduction and spread of quarantine pests for plants or plant products in Romania⁶¹, which approves Government Ordinance no.136 / 2000⁶². See additional national legislation on the National Phytosanitary Authority page⁶³.

Slovakia - Act 405/2011 on Phytosanitary Measures⁶⁴.

Slovenia - Plant Health Act (2001, as amended)⁶⁵.

Spain - Plant Health Act 43/2002⁶⁶, Royal Decree 58/2005 adopting protection measures against the introduction and spread in the national territory and the European Community of organisms harmful to plants or plant products, as well as for export and transit towards third countries⁶⁷. See additional information on plant health framework⁶⁸.

Sweden - Unknown, but see information on importing plants and seeds (and soil) from non-EU countries⁶⁹, also information for importing manure, soil, and organic fertilisers⁷⁰.

UK - Plant Health Act 1967 and the relevant National Plant Health Order⁷¹. Also see additional information on plant health controls and on moving prohibited plants, plant pests, pathogens and soil⁷².

5.1.4. National legal tools of non-EU Member States European countries

5.1.4.1. Norway - The Ministry of Agriculture and Food regulates trade in plants through phytosanitary regulations pursuant to the Food Safety Act⁷³. The main purpose of this legislation is to protect plant

⁶¹ Legea nr.214/2001 (Monitorul Oficial, Partea I, nr. 213 din 26 aprilie 2001) pentru aprobarea Ordonantei Guvernului nr.136/2000 privind masurile de protectie impotriva introducerii si raspandirii organismelor de carantina daunatoare plantelor sau produselor vegetale in Romania. http://www.anfd.ro/legi_files/fito/nationala/lege-214-2001.pdf

⁶² Ordonanta Guvernului nr.136/2000 (Monitorul Oficial, Partea I, nr. 431 din 2 septembrie 2000) privind masurile de protectie impotriva introducerii si raspandirii organismelor de carantina daunatoare plantelor sau produselor vegetale in Romania, aprobata si modificata prin Legea nr. 214/2001(Directiva Consiliului 2000/29/CEE) http://www.anfd.ro/legi_files/fito/nationala/ordonanta-136-2000.pdf

⁶³ Autoritatea Nationala Fitosanitara <http://www.anfd.ro/legislatie.html>

⁶⁴ Zákon č. 405/2011 Z. z.Zákon o rastlinolekárskej starostlivosti a o zmene zákona Národnej rady Slovenskej republiky č. 145/1995 Z. z. o správnych poplatkoch v znení neskorších predpisov <http://www.zakonyopreludi.sk/zz/2011-405>

⁶⁵ Zakon o zdravstvenem varstvu rastlin (Uradni list RS, št. 45/2001, 45/2004-ZdZPKG, 86/2004, 61/2006-ZDru-1, 40/2007, 36/2010 in 40/14 - ZIN-B)

http://www.arhiv.fu.gov.si/en/legislation_and_documents/legislation_in_force/plant_health/si_legislation/index.html

⁶⁶ Ley 43/2002, de 20 de noviembre, de sanidad vegetal <https://www.boe.es/buscar/act.php?id=BOE-A-2002-22649>,

⁶⁷ Real Decreto 58/2005, de 21 de enero, por el que se adoptan medidas de protección contra la introducción y difusión en el territorio nacional y de la Comunidad Europea de organismos nocivos para los vegetales o productos vegetales, así como para la exportación y tránsito hacia países terceros <https://www.boe.es/buscar/act.php?id=BOE-A-2005-1154>

⁶⁸ Ministerio de Agricultura, Pesca y Alimentación <https://www.mapa.gob.es/es/agricultura/temas/sanidad-vegetal/>.

⁶⁹ Jordbruksverket, importing plants and seeds from non-EU countries

<https://www.jordbruksverket.se/swedishboardofagriculture/engelskasidor/trade/tradeinplants/importingfromnoneucountries.4.6621c2fb1231eb917e680003364.html>

⁷⁰ Jordbruksverket, importing manure, soil, and organic fertilisers

<http://www.jordbruksverket.se/swedishboardofagriculture/engelskasidor/crops/plantnutrients/importingmanuresoilandorganicfertilisers.4.6621c2fb1231eb917e680003241.html>

⁷¹ Plant Health Act 1967 <http://www.legislation.gov.uk/ukpga/1967/8/contents>, Plant Health (England) Order (2015)

<https://www.legislation.gov.uk/uksi/2015/610/contents> Plant Health (Forestry) Order 2005 (S.I. 2005/2517)

<http://www.legislation.gov.uk/uksi/2005/2517/contents>, <http://www.legislation.gov.uk/uksi/2005/2530/contents/made>, Plant Health

(Wales) Order (2018) <http://www.legislation.gov.uk/wsi/2006/1643/contents/made>, Plant Health (Scotland) Order (2005) -

<http://www.legislation.gov.uk/ssi/2005/613/contents/made>.

⁷² **UK Government, Plant health controls** <https://www.gov.uk/guidance/plant-health-controls>, **moving prohibited plants and soil** <https://www.gov.uk/guidance/moving-prohibited-plants-plant-pests-pathogens-and-soil>.

⁷³ Lov om matproduksjon og mattrygghet mv. (matloven). <https://lovdata.no/dokument/NL/lov/2003-12-19-124>

health, so the risk of spread of invasive alien species that are not an indirect or direct threat to plant health is, therefore, not specifically regulated. However, ensuring high phytosanitary standards for cultivated plants also reduces the likelihood that pests will spread to wild plants.

The Norwegian Food Safety Authority is the supervisory authority for plants, parts of plants and other regulated articles that may carry pests that are imported to, or produced, or sold in Norway. For imports, checks are carried out to ensure that consignments for which this is mandatory are accompanied by satisfactory phytosanitary certificates documenting compliance with Norwegian import requirements. In addition, spot checks of such consignments are made to inspect them for quarantine pests. The Food Safety Authority may also decide to inspect consignments for which phytosanitary certificates are not required. Norway's legislation relating to plants and measures against pests prohibits the import of certain plants, parts of plants, organisms and plant pests, and soil from certain areas. The Norwegian Food Safety Authority may, nevertheless, on application and on certain conditions, permit the import of such articles for research or cultivation purposes. The Authority bases its pest risk management on pest risk assessments carried out by the Norwegian Scientific Committee for Food Safety.

Any firm that imports, produces or sells plants, including seeds and other plant propagating material, to another stage in the chain of distribution or for commercial cultivation, is required to register with the Food Safety Authority. The Food Safety Authority carries out inspection and control of registered firms to prevent the introduction and spread of the serious plant pests listed in the legislation with imported or Norwegian-produced plants. There is no approval scheme for plant species for import or for production and sale, but the import and cultivation of seeds of narcotic plants is prohibited, and Annexes 3 and 7 of the legislation list species that it is prohibited to import, or plant and sell.

Details are set out in Annex 5 of the legislation relating to plants and measures against pests.

5.1.4.1. Switzerland - Switzerland's Plant Protection Ordinance 2010 916.20⁷⁴ (as of June 1 2018) states that soil and growing medium consisting wholly or partly of soil or solid organic matter, such as parts of plants, humus, including peat or bark, but not only peat, is prohibited to be imported from Turkey, Belarus, Georgia, Moldova, Russia, Ukraine and countries outside continental Europe, with the exception of Egypt, Israel, Libya, Morocco and Tunisia. In addition, for non-commercial imports according to the Plants, cut flowers and protection of species (CITES), garden soil or flower soil are not subject to phytosanitary measures, so long as these goods are imported in tourist traffic for personal use⁷⁵.

5.1.5. National legal tools of countries outside of Europe

5.1.5.1. Israel - The import of plants, plant products, pests and regulated articles into Israel is regulated by the **Plant Import Regulations 2009** (צמחים יבוא תקנות) 2009⁷⁶. The Regulation defines 'growing

⁷⁴ 916.20 Verordnung über Pflanzenschutz Pflanzenschutzverordnung, PSV) vom 27. Oktober 2010 (Stand am 1. Juni 2018) <https://www.admin.ch/opc/de/classified-compilation/20101847/index.html#>

⁷⁵ Federal Customs Administration <https://www.ezv.admin.ch/ezv/en/home/information-individuals/animals-and-plants/plants--cut-flowers-and-protection-of-species--cites-.html>

⁷⁶ Plant Import Regulations 2009 Unofficial Translation on the Ministry of Agriculture and Rural Development website <https://www.moag.gov.il/en/Ministrys%20Units/Plant%20Protection%20and%20Inspection%20Services/Import%20of%20Plants%20and%20their%20Products/Documents/plantimportregulations2009unofficialtranslation1.pdf> [Accessed 27/02/19]

medium' as any material in which plants are sown, rooted or grown, but excludes soil, sand, compost and organic waste. A permit is required to import any fresh produce, plants, plant products, seed, propagation material, and biotic material⁷⁷. Soil is included within the term 'Biotic Material', which is defined as 'invertebrate organisms (insects, nematodes, worms, etc), microbes, fungi, viruses and soil'. **Soil (and compost) as such is prohibited for import** (Article 10(a)) listed in Annex 7 Goods Prohibited for Import). However, the Director may grant a permit for prohibited articles, if the importation is needed for purposes of research or the development of agriculture in Israel (Article 10(b)). In this case, the product will be held in an Official Quarantine Station or in another place authorised by the Director, with the consent and at the expense of the Importer, and will not be released until inspected by an Inspector and found free from pests (Article 10(c)). In terms of soil being imported attached to, or associated with plants, **every consignment that is imported needs to be free from soil**, sand, compost and organic waste (Article 11).

5.1.5.2. USA - In the USA, soil is distinguished as soil as such, attached to plants, and as a packing material. **Soil as such** is not allowed to be imported into or through the United States from any foreign country (or from any Territory or possession into or through any other Territory or possession or the Continental United States) and is controlled under US Department of Agriculture, Animal and Plant Health Inspection Service (APHIS) Regulations 7 CFR 330⁷⁸. However, soil from Canada is allowed to be imported, unless it is from specified areas⁷⁹, and is subject only to inspection and verification of the origin.

There are exceptions to the import ban, which require permits, and include research, analytical, religious, ceremonial, patriotic, or similar purposes. APHIS issues the permits for the importation of, and interstate movement of soil originating from Hawaii and U.S. Territories⁸⁰. The permit issuance is determined by the volume and proposed treatment of soil:

- **3 lbs (1.36 kg) or more non-sterile soil** (not including soil intended for extraction of biological organisms). A permit is required to import non-sterile soil that will not undergo treatment at the port of entry. Untreated soil from these sources may only be moved to a permit holding approved [APHIS inspected] facility. If the importers facility is not approved, a compliance agreement (describes the handling, treatment, and disposal of soil at the specific authorized site) is required prior to attain approval of the permit.
- **3 lbs (1.36 kg) or less for sterilization treatments at the port of entry.** Importation or interstate movement of non-sterile soil from all foreign countries, Hawaii and the U.S. territories that is in quantities of 3 lbs (1.36 kg) or less for sterilization treatments at the port of entry requires a permit for movement prior to the treatment facility, but does not require

⁷⁷ Israel Ministry of Agriculture and Rural Development Import Permits <https://www.moag.gov.il/en/Ministrys%20Units/Plant%20Protection%20and%20Inspection%20Services/Import%20of%20Plants%20and%20their%20Products/Pages/Import%20permits.aspx> [Accessed 27/02/19]

⁷⁸ USDA APHIS Regulated organisms and soil permits https://www.aphis.usda.gov/aphis/ourfocus/planthealth/import-information/permits/regulated-organism-and-soil-permits/sa_soil/ct_regulated_organism_soil_permits_home [Accessed 27/02/19] & CFR 330 Federal plant pest regulations; general; plant pests; soil, stone, and quarry products; garbage <https://www.ecfr.gov/cgi-bin/text-idx?SID=7ab3da7ec6e85257eac7e49837f456b6&mc=true&node=pt7.5.330&rgn=div5> [Accessed 27/02/19]

⁷⁹ Alberta: A farm unit and associated land located near the municipality of Fort Saskatchewan; and a farm unit and associated land located near the municipality of Spruce Grove.; British Columbia: That portion of the municipality of Central Saanich on Vancouver Island, east of the west Saanich Road.; Newfoundland and Labrador: The entire Island of Newfoundland.; Quebec: The municipality of Saint-Amble.

⁸⁰ APHIS Soil Import Process https://www.aphis.usda.gov/aphis/ourfocus/planthealth/import-information/permits/regulated-organism-and-soil-permits/sa_soil/ct_soil_permit_process [Accessed 27/02/19]

a compliance agreement for subsequent movement within the United States. Most major ports have Plant Health operated facilities where soil can be treated under prescribed treatment schedules. These treatments require dry heat at 250 F for at least two hours or steam heat at the same temperature for 30 minutes with 15" pressure⁸¹. All shipments must be shipped by courier (i.e. not hand carried), and be in sturdy, leakproof cloth bags within a sturdy leak-proof container, which can be heat treated without removing the soil, non-compliance will result in the shipment being destroyed or re-exported at the importers expense.

- **All soil intended for extraction of biological organisms.** Importation of any volume of soil for the extraction of biological organisms needs to apply for a permit to move live plant pests, biological control agents, or noxious weeds. This permit includes the following safeguards: must be shipped in sturdy, escape-proof containers; soil must be sterilized or destroyed after the removal of pests; all pests shall be kept only within laboratory or designated areas.

Other additional restrictions due to quarantine reasons include soil from Puerto Rico, which is subject to the provisions of the imported fire ant quarantine and regulations (7 CFR 301.81), which states that soil as such or with other articles (except potting soil that is shipped in the original container in which the soil was placed after commercial preparation), plants and sod with roots and soil attached (except plants maintained indoors and not for sale), soil moving equipment unless removed of all non-compacted soil, cannot be moved from quarantine areas⁸². Soil as such, and soil or earth in the roots of plants from Hawaii, Puerto Rico, and the Virgin Islands cannot be moved to any other State, Territory, or District of the United States to prevent the spread of certain dangerous insects, including *Phyllophaga* spp. (White grubs), *Phytalus* sp., and *Adoretus* sp., and of several species of termites or white ants (7 CFR 318.60)⁸³.

In terms of soil attached to or associated with plants imported for planting, soil is defined as ‘the loose surface material of the earth in which plants, trees, and shrubs grow, in most cases consisting of disintegrated rock with an admixture of organic material and soluble salts’ and earth as ‘the softer matter composing part of the surface of the globe, in distinction from the firm rock, and including the soil and subsoil, as well as finely divided rock and other soil formation materials down to the rock layer’ (7 CFR 319.72)⁸⁴. All plants imported for planting need to be accompanied by a phytosanitary certificate, and need to be free from sand, soil, earth, and other growing media. An exception is made for plants originating from Canada, which can be imported in any growing media (including soil), unless they are from NPPO regulated area for potato cyst nematodes. Additional exceptions include certain types of plants growing solely in certain types of growing media, where the Administrator determines it does not pose a risk, or established in a growing medium which is approved by the Administrator.

⁸¹ USDA APHIS Soil Treatment Facilities https://www.aphis.usda.gov/aphis/ourfocus/planthealth/import-information/permits/regulated-organism-and-soil-permits/sa_soil/ct_soil_under3pounds [Accessed 27/02/19]

⁸² CFR 310 – Domestic quarantine notices <https://www.ecfr.gov/cgi-bin/text-idx?SID=7ab3da7ec6e85257eac7e49837f456b6&mc=true&node=pt7.5.301&rgn=div5> [Accessed 27/02/19]

⁸³ CFR 318 = State of Hawaii and Territories quarantine notice <https://www.ecfr.gov/cgi-bin/text-idx?SID=7ab3da7ec6e85257eac7e49837f456b6&mc=true&node=pt7.5.318&rgn=div5> [Accessed 27/02/19]

⁸⁴ CFR 319 - Foreign quarantine notices <https://www.ecfr.gov/cgi-bin/text-idx?SID=7ab3da7ec6e85257eac7e49837f456b6&mc=true&node=pt7.5.319&rgn=div5#sp7.5.319.n> [Accessed 28/02/19]

In relation to soil used as a packing material (7 CF 319.69), soil containing an appreciable admixture of vegetable matter (distinguished from soil of purely mineral or earthy composition) is prohibited from all countries (exceptions may be authorized on the judgment of the inspector that no pest risk is involved in their entry), but peat, peat moss, and *Osmunda* fiber from all countries are authorised as safe for packing.

5.1.5.3. Canada - In relation to **soil as such**, Directive 95-26 *Phytosanitary requirements for soil and soil-related matter, and for items contaminated with soil and soil-related matter*, details the plant protection requirements for the import and domestic movement of soil and soil related matter and items contaminated with soil⁸⁵, but excludes plants and plant parts, which are covered by separate Directives. The Canadian Food Inspection Agency (CFIA) defines soil as ‘the loose surface of the earth in which plants grow, in most cases consisting of disintegrated rock with an admixture of organic material’, and soil related matter as humus, compost, earthworm castings, muck, plant litter and debris, either individually or in combination’⁸⁶. The following are examples of commodities that are not considered soil and soil-related matter and therefore not subject to the import or movement restrictions detailed in the directive; silica sand and pure minerals, sand from salt-water beaches, gravel, submerged seabed sediments and soil that originates from below the water level of the sea or permanent lake, peat originating from a non-agricultural area that has not been used previously for growing plants or other agricultural purposes, and moss that has been dried or treated. Directive 95-26 prohibits the import of soil and soil related matter into Canada from all countries except for scientific research, education, processing, industrial or exhibition purposes where a permit is required, which will only be issued once an inspection verifies that procedures are in place to sterilise the soil and/or to prevent the potential spread of soil pests, and that the operators have developed and implemented standard operating procedures. A Movement Certificate is required for the movement of soil and soil-related matter (and plants with soil, and items contaminated with soil and related soil-related matter) from a regulated area of Canada to non-regulated areas. This will only be issued if the soil originates from an area found to be free from regulated pests on the basis of official surveys; or has been treated (heat, steam, fumigation, irradiation, etc.) to render the material free from viable forms of the regulated pest(s); or is moving between facilities or to a facility approved.

Soil attached to or associated with plants, is regulated by Directive 08-04 *Plant protection import requirements for plants and plant parts for planting*⁸⁷ and Directive 94-26 *Phytosanitary import requirements for root crops (other than potato), mushrooms, and vegetables with attached roots for consumption or processing*. The CFIA states that soil in relation to plants for planting includes ‘soil, unapproved growing media, soil-related matter, such as humus; compost; earthworm castings; muck; plant litter; and plant debris’⁸⁸. Plants (and root crops) with soil cannot be imported into Canada, except from most areas of the continental USA as long as they are accompanied by a phytosanitary certificate stating that they are free of regulated soil-borne pests. Plants including those imported as

⁸⁵ D-95-26 Phytosanitary requirements for soil and soil-related matter <http://www.inspection.gc.ca/plants/plant-pests-invasive-species/directives/date/d-95-26/eng/1322520617862/1322525442569#a6> [Accessed 28/02/19]

⁸⁶ CFIA Plant health glossary <http://www.inspection.gc.ca/plants/plant-pests-invasive-species/directives/glossary/eng/1304730588212/1304730789969> [Accessed 28/02/19]

⁸⁷ D-08-04 Plant protection import requirements <http://www.inspection.gc.ca/plants/plant-pests-invasive-species/directives/imports/d-08-04/eng/1323752901318/1323753560467> [Accessed 28/02/19]

⁸⁸ CFIA Questions and answers – import requirements for soil on plants intended for planting <http://www.inspection.gc.ca/plants/horticulture/imports/soil-questions-and-answers/eng/1396453190750/1396453225939> [Accessed 28/02/19]

'bare-root', and root crops, can have, at most, a fine film of dust, such as what might be left by dirty wash water, but any plants with clumps/aggregates, patches or thicker films of soil are not allowed. In addition, for root crops, no loose soil may be present inside or adhering to the outside of shipping containers, bins or packaging. Plants planted in other growing media are not allowed unless it comes from an approved facility under the Canada Growing Media Program. Organisms (other than plants) imported into Canada must also be free of soil or soil-related matter (e.g. plant debris, sand, etc.), except when originating from a non-regulated area of the continental United States (Directive 12-02)⁸⁹.

In relation to packing material, peat is approved, but mosses can only be used if they are non-viable and free of plant debris, soil and soil related matter.

5.1.5.4. Australia - The Australian Department of Agriculture defines soil as 'the unconsolidated material on the earth's surface. They are aggregates of minerals, water, decomposed animal and plant material and micro-organisms.' Commodities that may be covered by this term include subsoil, aquatic or marine soil, sediments, silt and soil-like samples without evidence of origin.

Soil as such is also prohibited from being imported, but permits can be applied for soil samples for analysis, culturing of microorganisms, subjected to heat or gamma radiation treatments on shore. In addition, an import permit (based on ingredients and location of origin) is required for all plant based fertilisers (incl. peat and coir peat), potting mixes and soil conditioners⁹⁰.

Soil attached to or associated with plants needs to be removed before being imported, this applies to all growing media (soil, peat, etc.)⁹¹. The Australian Department of Agriculture prefers that all plants are imported bare rooted, however accepted packing material can be used, which includes peat moss and sphagnum moss⁹².

There are also **interstate quarantine rules** that regulate the movement of goods between states and within states⁹³. They establish quarantine zones where the movement of products (including soil) can be restricted, for example soil is not allowed to be taken out of Phylloxera Infested Areas (a pest of grape vines).

5.1.5.5. New Zealand - The New Zealand Biosecurity Act 1993 (the Act) provides the legal basis for regulating the import of risk goods, and Import Health Standard (IHS) issued under the Act specify the requirements to be met for goods that pose a biosecurity risk.

⁸⁹ D-12-02: Import Requirements for Potentially Injurious Organisms <http://www.inspection.gc.ca/plants/plant-pests-invasive-species/directives/imports/d-12-02/eng/1432586422006/1432586423037> [Accessed 28/02/19]

⁹⁰ Importing plant products applied to soils and plants <http://www.agriculture.gov.au/import/goods/plant-products/information-about-importing-plant-products-for-environmental-uses> [Accessed 28/02/19]

⁹¹ Australian Dept. Agriculture, Importing live plants into Australia <http://www.agriculture.gov.au/import/goods/plant-products/how-to-import-plants> [Accessed 28/02/19]

⁹² Biocon Packing materials and packaging of plants <https://bicon.agriculture.gov.au/BiconWeb4.0/ImportConditions/Conditions?EvaluableElementId=340085&Path=UNDEFINED&UserContext=External&EvaluationStateId=14fc3e72-6a52-44a0-a4b6-184d8048dd0c&CaseElementPk=981960&EvaluationPhase=ImportDefinition&HasAlerts=True&HasChangeNotices=False&IsAEP=False> [Accessed 28/02/19]

⁹³ Australian Interstate Quarantine <https://www.interstatequarantine.org.au/> [Accessed 28/02/19]

According to the IHS for importing soil, **soil is defined** as ‘the upper layer of earth containing a mixture of organic material, sand gravel, clay, and silt and includes sediment, silt, sludge, clay, gravel, rock and sand contaminated with organic material’⁹⁴.

Soil as such can be imported into New Zealand for research analysis, for isolation of organisms, and for other reasons, but needs to follow biosecurity requirements. According to the IHS, samples up to 10kg must be treated by heat (at 100°C for at least 25 minutes at 40% relative humidity, or 85°C for at least 15 hours at 40% relative humidity) or irradiation (at 50kGy), on arrival, by an approved treatment supplier. Soil samples/consignments over 10kg (where treatment is not an option) need an import permit that details the origin and purpose of use, and requires the certification that it contains no new organisms (as defined by the Hazardous Substances and New Organisms Act 1996). On arrival into New Zealand, treatment certificates may be needed, and the consignment may be inspected to check that it is free from contaminants like organic matter, diseases and pests (both products and packaging)⁹⁵. There is an additional IHS for importing growing media and fertilisers of plant origin, which includes processed and raw peat (note growing media associated with imported nursery stock is out of scope of this IHS)⁹⁶. It states that all fertilisers, growing media and bioremediation products must be free from regulated pests and contaminants (e.g. seeds, soil, animal or plant material) and be commercially packaged. Processed fertilisers require an import permit and a phytosanitary certificate, and if suspected to contain viable seed, need to be treated for seed devitalisation (raising the core temperature of the product to a minimum of 85°C for at least 15 hours at approximately 40% relative humidity, or autoclaving at 120°C core temperature for 30 minutes at 100kPa). If the soil or fertiliser consignment import does not comply with the standards (e.g. contains seeds, insects or algae), it will need to be treated by an approved provider, returned to the country of origin, or be destroyed.

In terms of **soil attached to or associated with plants**, the IHS for the importation of nursery stock states that consignments contaminated with soil will be treated, reshipped or destroyed, and that only inert/synthetic material may be used for protection, packaging and shipping materials⁹⁷. For whole plants, the phytosanitary certificate must state “The plants were raised from seed/cuttings in soil-less rooting media in containers maintained out of contact with the soil”, or “the roots of the plants have been dipped in fenamiphos at 1.6g a.i. per litre of water for 30 minutes”. In addition, all whole plants (and cuttings) must be treated for insects and mites using methyl bromide (dormant material only), or hot water treatment/chemical treatment (dormant material only), or chemical treatment (see IHA for details of the treatments). The IHS for the importation of fresh fruit and vegetables states that all commercial consignments will be inspected for soil, and that lots contaminated with soil in excess of 25g per 600 units (or an equivalent proportion e.g. 50g per 1200 units) sampled, shall be washed free

⁹⁴ Min. for Primary Industries. 2018. Import Health Standard Soil, rock, gravel, sand, clay, and water <https://www.biosecurity.govt.nz/dmsdocument/1651-soil-rock-gravel-sand-clay-and-water-import-health-standard> [Accessed 28/02/19]

⁹⁵ Biosecurity New Zealand, Steps to importing soil, rock, gravel, sand, clay or water. <https://www.biosecurity.govt.nz/importing/soil-rock-and-water/steps-to-importing-soil-rock-gravel-sand-clay-or-water/> [Accessed 28/02/19]

⁹⁶ Min. for Primary Industries. 2018. Import Health Standard Soil Fertilisers and Growing Media of Plant Origin <https://www.biosecurity.govt.nz/dmsdocument/1654-fertilisers-and-growing-media-of-plant-origin-import-health-standard> [Accessed 28/02/19]

⁹⁷ Min. for Primary Industries. 2018. Import Health Standard Importation of Nursery Stock <https://www.biosecurity.govt.nz/dmsdocument/1152-nursery-stock-import-health-standard> [Accessed 28/02/19]

of soil or reshipped or destroyed at the importer's option and expense; also private consignments need to be free of soil⁹⁸.

5.1.5.6. India - The Ministry of Agriculture classifies soil as a regulated article and defines it as 'earth, sand, clay, silt, loam, compost, manure, peat or sphagnum moss, litter, leaf waste or any organic media that support plant life and shall include ship ballast or any organic medium used for growing plants'⁹⁹. In **terms of soil as such**, imports of soil, earth, clay and similar material for microbiological, soil-mechanics, or mineralogical investigations, and peat for horticultural purposes, may be permitted, but only through the regional plant quarantine stations, where they will be inspected, fumigated, disinfected or disinfested by an approved agency¹⁰⁰. In terms of **soil attached to or associated with plants**, the imports of nursery stock, bulbs, need to be free from soil.

Republic of South Korea - Both **soil as such**, and **plants attached with soil** are prohibited for import¹⁰¹.

5.2. Soil moved as waste

5.2.1. International legal tools

5.2.1.1. Basel Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal

The Basel Convention (UNEP 1989) is the most comprehensive international legislation regulating transboundary movements of hazardous and other wastes. It largely focuses on prohibiting the export of hazardous wastes from OECD to non-OECD countries, which often do not have the facilities to process them, in order to protect human health and the environment. More broadly, it aims at limiting and imposing restrictions to transboundary movements of waste, requiring parties to control and notify imports, exports and transits of hazardous and other wastes across international borders (EEA 2012). It also sets restrictions and underlies procedures regarding the transboundary import and export of wastes, which have to be followed by the contracting parties, so that waste is managed and handled in an environmentally sound manner. The Basel Convention has 187 partners¹⁰², with the European Union and all its Member States being contracting parties to this convention. Every party has to submit a yearly report to the Secretariat on the annual amounts of hazardous waste generated, imported and exported (EEA 2012).

Annexes I to III of the Convention list the types of waste that are defined as hazardous, or as other wastes (to be controlled or requiring special consideration), attributing different Y-code categories to

⁹⁸ Min. for Primary Industries. 2018. Import Health Standard Importation and clearance of fresh fruit and vegetables <https://www.biosecurity.govt.nz/dmsdocument/1147-importation-and-clearance-of-fresh-fruit-and-vegetables-into-new-zealand-import-health-standard> [Accessed 28/02/19]

⁹⁹ Dept. Agriculture, Dir. of Plant Protection. 2015. Standard operating procedures for phytosanitary inspection and plant quarantine clearance of plants/ plant products & other regulated articles <http://plantquarantineindia.nic.in/PQISPub/pdf/SOPimpfinal25.pdf> [Accessed 01/03/19]

¹⁰⁰ Plant Quarantine (Regulation of Import into India) Order 2003 [https://www.forestry.gov.uk/pdf/IndiaPQ.pdf/\\$FILE/IndiaPQ.pdf](https://www.forestry.gov.uk/pdf/IndiaPQ.pdf/$FILE/IndiaPQ.pdf) [Accessed 01/03/19]

¹⁰¹ Plant Protection Act 2 No. 14299, Dec. 2, 2016 https://elaw.klri.re.kr/eng_service/lawView.do?hseq=40168&lang=ENG [Accessed 01/03/19]

¹⁰² <http://www.basel.int/Countries/StatusofRatifications/PartiesSignatories/tabid/4499/Default.aspx#enote1>

them (UNEP 1989). However, as these codes address very broad categories, soil (contaminated or not) is not specifically mentioned, although probably being included under category Y18, referring to *Residues arising from industrial waste disposal operations*.

5.2.1.1. OECD Council Decision C(2001)107/FINAL on the control of transboundary movements of wastes destined for recovery operations

This Decision, enacted by the Organisation for Economic Co-operation and Development (OECD)¹⁰³, provides guidelines to control transboundary movements of wastes destined for recovery operations within the OECD area, in an environmentally sound and economically efficient manner (OECD 2009). Its provisions have been harmonised with those of the Basel Convention, in order to avoid duplication between these two international instruments. However, compared to the Basel Convention, it provides a simplified and more explicit means of controlling movements of such wastes, also including certain procedural elements that are not covered by the Basel Convention (e.g. time limits for approval process, tacit consent and pre-consent procedures). All OECD member countries are signatories to the Basel Convention (OECD 2009).

5.2.2. EU legal tools

5.2.2.1. Regulation 1013/2006/EC (Waste Shipment Regulation)

The EU Waste Shipments Regulation (EC 2006), amended through Regulation (EU) No 660/2014, addresses the problem of uncontrolled transport of waste, by transposing the provisions of the Basel Convention and OECD 2001 Decision into EU law. The Regulation establishes supervision procedures and control regimes for the transboundary shipment of waste imported into the European Community, moved within the EU or exported out of the Community (EC 2006). Different provisions apply to shipments of wastes destined for disposal or recovery, with the former considered a bigger environmental problem (EEA 2012). Title V of the Regulation sets out the prohibitions or special requirements relating to the import of wastes into the EU from third countries. Import into the Community of waste for disposal from third countries is prohibited, except when the exporting country is a Party to the Basel Convention, when there is a bilateral or multilateral agreement in place between the concerned countries, or when there are exceptional situations of crisis or war. In these cases, shipments of all types of waste are subject to prior written notification and consent of all competent authorities involved in the process (at points of dispatch, transit and destination) (EEA 2012). Similarly, imports into the Community of waste for recovery from third countries are generally prohibited, and only permitted if the exporting country is one to which the OECD Decision applies, is a Party to the Basel Convention, is bound by a bilateral or multilateral agreement compatible with Community legislation or is under exceptional situations of crisis or war. In these cases, shipments of waste have to follow special procedural requirements similar to, but less stringent than those mentioned above, which vary depending on the type of waste being imported, and mainly refer to hazardous wastes (EC 2006). Non-hazardous wastes destined for recovery can be imported into, and moved within, the EU without undergoing a notification procedure (EEA 2012).

The Waste Shipment Regulation requires MS to report any notified movement of waste to the Commission, using the Basel Convention's Y-codes for classifying waste (and detailed codes therein).

¹⁰³ [https://one.oecd.org/document/C\(2001\)107/FINAL/en/pdf](https://one.oecd.org/document/C(2001)107/FINAL/en/pdf)

However, because notification procedures usually require much more detailed information, EU countries have been increasingly using the European List of Waste (LoW) codes to classify waste (EEA 2012). This list of codes is set out by Commission Decision 2000/532/EC (EC 2000), which was revised in 2014 and 2017, and which establishes a common terminology throughout the EU for waste products. The EU LoW codes are much more detailed than the Basel Convention's waste codes, providing a better understanding of the type of wastes under management or transportation (EEA 2012). Part 2 of Annex V of the Waste Shipment Regulation refers to the EU LoW codes to indicate some of the types of waste for recovery that are subject to an export prohibition from the Community to non-OECD countries, according to Article 36, and indicating if they are considered hazardous or not. Soil and stones are represented under two different categories: category *17 Construction and demolition wastes (including excavated soil from contaminated sites)*, as soil, stones and dredging spoil; and category *20 Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions*, as garden and park wastes, including cemetery waste.

All imports or exports of waste by Member States, as members of the European Union, have to apply both the requirements of the Basel Convention and the provisions of EU Regulation 1013/2006/EC, which will not be explored in further detail in this note.

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EC (2006) Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste. *Official Journal of the European Union* L190.

EC (2008a) Commission Directive 2008/61/EC of 17 June 2008 establishing the conditions under which certain harmful organisms, plants, plant products and other objects listed in Annexes I to V to Council Directive 2000/29/EC may be introduced into or moved within the Community or certain protected zones thereof, for trial or scientific purposes and for work on varietal selections. *Official Journal of the European Union* L158.

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7. Annex I

Email for consultation sent to the Wider Expert Network (established by IUCN under this contract, ca. 50 experts) and to the Aliens-L mailing list (run by the IUCN Invasive Species Specialist Group).

Dear Expert network/Aliens list members,

We have recently been asked by the EC to investigate the intentional movement of soil as a pathway of unintentional introduction of invasive alien species mainly in Europe, but also in third countries (e.g. USA, Australia, Canada and New Zealand). Note we are not covering instances of unintentional movement of soil e.g. attached to machinery etc.

The main goals are to understand which types of soil are mostly imported into the EU (e.g. soil in plants in pots, construction, etc.), and what standards and regulations on soil import are imposed by different European countries and third countries as well.

Therefore, we would be very grateful if you could provide us with any information on the two points mentioned below:

1. Does your country have and regulations/legislation that addresses the import of any type of soil, either as a commodity (e.g. as potting mixes, for construction purposes), or as an intended substance accompanying other commodities (e.g. with potted plants)? Can you please provide its name and a link to it?
2. Are you aware of any website or report where we can find information on trade volumes - of any type of soil imported into the EU/your country, either as a commodity or accompanying other commodities?

Thank you very much,