

Project INVALIDIS

Protecting European Biodiversity from Invasive Alien Species

Index Number: PGI05271

Activity A1.1 Comparative analysis of territorial policies on IAS management

Deliverable: Methodology for comparative analysis of existing IAS policies



Corsican Agency of Environment

October 2018

Table of Contents

1	Executive Summary	3
2	The INTERREG EUROPE Programme.....	5
3	INVALIS Project and Expected Impact	6
4	Project Partners.....	7
5	INVALIS Activity A1.1	8
6	What is a comparative analysis of policy measures	9
7	Invasive alien species: a threat to biodiversity.....	13
8	Spectrum of policies on invasive alien species and the European framework	15
9	Research questions.....	21
10	Data collection methods	23
	Part 1: Research in INVALIS territories	23
	10.1.1 External desk research	24
	10.1.2 Internal desk research	27
11	Data analysis & evaluation	32
	Data analysis methods	32
12	Quality specifications	36
13	References	37
14	Annex: Data collection tool	38

1 Executive Summary

This document represents the first part of activity A1.1 of the INVALIS project, funded by the Interreg Europe Programme. Activity A1.1 is named 'Comparative analysis of territorial policies on Invasive Alien Species management' and aims to deliver a comparative analysis of policy measures designed and implemented for the control and management of invasive alien species (IAS hereafter). The activity will conclude with highlighting all key aspects of successful policies for the control and/or eradication of invasive alien species.

This document comprises the methodological guidelines for this activity. It starts with a brief presentation of the Interreg Europe programme, and the INVALIS project alongside an outline of activity A3.4 and its work-plan, so as to provide the context of the research to be undertaken. More precisely, INVALIS is a project that brings together 7 partners from 7 countries, to improve their environmental policies, by supporting policy measures for the prevention, early detection and control of IAS. Biological invasions are considered to be one of the greatest threats to the biodiversity and natural ecosystems. Invasive Alien Species (IAS) can be especially detrimental to the environment, economy and society by e.g. acting as vectors for new diseases, causing native species' extinction, changing ecosystem processes, and reducing the value of land and water for human activities.

INVALIS will enable the participating territorial authorities to address common challenges associated with biological invasions such as a) knowledge gaps in ecosystems' vulnerability to biological invasions and species' distribution, b) lack of awareness about IAS environmental and socioeconomic risks, c) low level of cooperation between public authorities and key stakeholders for the implementation of IAS management measures, and c) conflicts of interests.

After presenting the project and the activity in detail, the document proceeds to the analysis of the thematic aspects of this research, i.e. the following:

1. Necessity and characteristics of conducting a comparative policy analysis, as an instrument for the location and description of key aspects of successful policies.
2. The invasive alien species in the European Union and their impact on biodiversity, ecosystem balance, the economy and society.

3. Key components of European Union policy making for preventing and controlling the spread of invasive alien species.

Following the thematic analysis, the document proceeds in presenting three research questions designed to guide this enquiry. Those are then followed by the presentation of the methodology and methods of this research. Data collection methods consist in the conduction of desk research. Data analysis methods will consist of the use of descriptive statistics and the open coding method for data derived from open-ended questions. Nevertheless, the comparison of distinct policies will be conducted according to specific criteria such as the following:

- The first criterion aims to evaluate whether or not proposed policy measures are congruent with European Union policies against the introduction and establishment of IAS. Congruence has a double meaning in this case.
- The second criterion aims to evaluate the applicability and transferability of each policy measure.
- The third criterion aims to evaluate the impact of policy measure.

The document concludes with the presentation of quality requirements for the research, in the form of KPIs, and the tools for data collection which can be found in the Annex.

2 The INTERREG EUROPE Programme

The INTERREG EUROPE programme (www.interregeurope.eu) promotes the exchange of experience on thematic objectives among partners throughout the Union on the identification and dissemination of good practices, to be transferred principally to operational programmes under the Investment for Growth and Jobs goal, but also, where relevant, to programmes under the European Territorial Cooperation (ETC) goal. This will be done via the support and facilitation of policy learning, sharing of knowledge, and transfer of good practices between regional and local authorities and other actors of regional relevance.

INTERREG EUROPE is one of the instruments for the implementation of the EU's cohesion policy. With this policy, the EU pursues harmonious development across the Union by strengthening its economic, social and territorial cohesion to stimulate growth in the EU regions and Member States. The policy aims to reduce existing disparities between EU regions in terms of their economic and social development and environmental sustainability, taking into account their specific territorial features and opportunities. For the 2014-2020 funding period, cohesion policy concentrates on supporting the goals of the Europe 2020 strategy, which targets to turn the EU into a smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion.

3 INVALIDIS Project and Expected Impact

Biological invasions are considered to be one of the greatest threats to the biodiversity and natural ecosystems. Invasive Alien Species (IAS) can act as vectors for new diseases, cause native species' extinction, change ecosystem processes, and reduce the value of land and water for human activities.

INVALIDIS "Protecting European Biodiversity from Invasive Alien Species" aims to contribute to tackling this issue, by improve the addressed policies on biodiversity and environmental protection, by supporting policy measures for the prevention, early detection, control and eradication of invasive alien species in natural ecosystems. INVALIDIS will allow the involved public authorities to share practices for a) evaluating natural ecosystems' vulnerability to biological invasions, b) managing/controlling IAS introduction, establishment and spread in their regions' natural environments and c) mitigating the associated environmental and socioeconomic risks.

INVALIDIS aims to achieve these goals by increasing the capacity of staff in public administrations to effectively implement IAS management policies, increasing awareness among stakeholders concerning the impact of IAS on the biodiversity, the economy and human health and finally by unlocking financial resources to support projects intending to increase the natural ecosystems' resilience to IAS and to carry out eradication/control actions for high priority species.

4 Project Partners

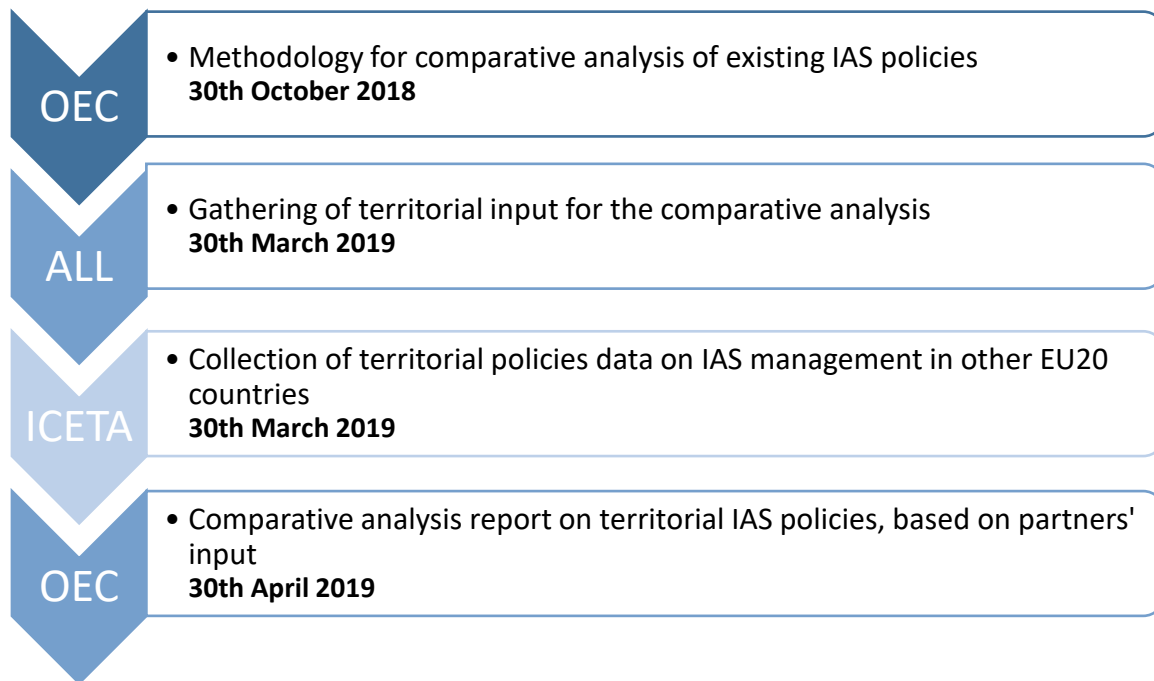
Figure 1: INVALIDIS partners

	National Center for Environment and Sustainable Development (Lead Partner) Greece
	Lombardy Foundation for the Environment Italy
	Regional Ministry for environment and rural, agricultural policies and territory – Regional Government of Extremadura Spain
	Corsican Agency of Environment France
	Bucharest-Ilfov Regional Development Agency Romania
	Institute of Sciences, Technologies and Agroenvironment of the University of Porto Portugal
	Zemgale Planning Region Latvia

5 INVALIDIS Activity A1.1

The aim of Activity A1.1 “Comparative analysis of territorial policies on IAS management” is to examine and comparatively analyse the existing policies on the detection and management of Invasive Alien Species (IAS) policies in partnership territories and beyond. All partners will gather input from their own country and ICETA will investigate the policies in EU28. The Activity will result in a comparative analysis report on IAS territorial policies, targeting policymakers and enabling them to understand the dynamics, potential and inhibitors related to IAS management.

Figure 2: Structure and Timeline of Activity



6 What is a comparative analysis of policy measures

Generally speaking, the term **policy measure** is used to refer to actions taken by public organisations to control a specific system of functions within their jurisdiction, to resolve problems within it or caused by occurrences in it, or to help obtain benefits from it. In the case of regional policies, the problems and benefits generally relate to broad regional goals — for example, trade-offs among environmental, social and economic goals. Policy actions are intended to help meet such goals. It is necessary to bear in mind that the implementation of policies does not affect only the intended functions by policy makers, but also many and distinct other domains of life within an area. Hence, policy makers need to be aware of the full range of effects each set of policies can have in a specific area. Exploring the effects of alternative policies on the full range of the outcomes of interest under a variety of scenarios, and examining trade-offs among the policies, requires a structured analysis that supports the policymaking process.

This structured analysis is public policy analysis, which is a rational, systematic approach to making policy choices by the public sector. It is a process that collects information on the consequences of the adoption of various policy measures. A variety of methods and instruments are used to develop this information and to present it to the parties involved in the policymaking process in a way that will ultimately help them come to an informed decision. Policy analysis is firmly founded upon scientific methods. This means that:

1. The research process is open & transparent.
2. The analysis is objective & empirically founded.
3. The analysis starts from epistemological and methodological assumptions that are congruent with existing knowledge.
4. The analysis produces verifiable and reproducible results.

Of course, policy analysis should be understood as a research process that is not destined to replace policymakers' judgment. Rather, the main aim is to provide a factual pragmatic basis for the exercise of that judgment by helping to clarify complex problems, evaluating existing conditions, presenting the alternatives and comparing their consequences in terms of the relevant costs and benefits. Policies being examined deal with a system that includes a multitude of factors

such as people, social structures, aspects of nature, equipment and organizations. Hence, the system being studied contains so many variables and interactions that it is difficult to understand and predict the consequences of a policy change (Urry, 2003). The alternatives are often numerous, involving different mixes of various technologies and management policies and producing multiple consequences that are difficult to anticipate, let alone predict.

Within such complex and uncertain systems, it is often quite hard to analyse the strengths, weaknesses and potential effects of specific policies. Hence, at times it is more useful to try to compare the effects of specific measures within different areas/regions. The application of specific sets of measures in quite different contexts allows for the identification of effects that persistently correspond to specific policies, and policies that are more commonly used to address specific issues. Hence, it is useful to engage in **comparative analysis**.

However, comparative analysis needs to be distinguished from the juxtaposition of descriptions of a series of cases (Pickvance, 2005). While sequential presentations of descriptive data are undoubtedly informative about the cases concerned, they are only comparative in the weak sense of increasing the reader's awareness of differences and similarities. Comparative analysis in the strong sense is instead defined by the following characteristics:

1. An attempt to analyse and explain the observed similarities and differences between cases
2. The collection of data on two or more cases, ideally according to a common framework.

The primary reason for comparative analysis is the explanatory interest of gaining a better understanding of the causal processes involved in the production of an event, feature or relationship, in the case of public policy, the effects of the latter on specific issues. Conventional types of comparative analysis focus on the explanation of differences, and the explanation of similarities. This sounds like a straightforward contrast but is not. The reason is that what counts as a similarity or a difference depends not only on the observed values but also on the analyst and should therefore be regarded as a social construct rather than as an objective reality. In the case of INVALIDIS activity A.1.1, comparative analysis should focus on comparing the impact of diverse policies on invasive alien species in each Member State and how should these conform to different management measures that each country or region will implement. Considering that management measures for invasive alien species include processes such as identification (via

databases or inventories), risk assessment frameworks, reporting, monitoring and surveillance mechanisms and experts' networks, it is noticeable that generalising is not feasible. Especially because invasive alien species are highly affected by the geographical factor, it is certain that not all invasive non-native species have negative impacts to the new host environments, habitats and ecosystems. For example, management policies for the prevention of spread or eradication of the *Callosciurus erythraeus* (Pallas's squirrel) in Belgium, the Netherlands or France, may be found irrelevant and not applicable in Romania or Greece, as they have not been invaded by this species. However, using comparative analysis and juxtaposing data from all over Europe, it will be possible to surpass and transcend such subjective evaluations, and hence, develop a—to the extent that is possible—objective view of the data. The most important potential sources of bias in policy analysis that researchers should always take into account are the following (Bovens and t'Hart, 1996):

1. **Temporal bias:** A prime source of analytical biases in comparative policy analysis is the fact that policies affect people in different ways as time goes by. What was considered success in the first few years after the implementation of a policy can be considered a failure in the long-run. Policy objectives may differ in terms of their temporal scope (i.e. differentiating between short-term, medium-term, and long-term periods) and temporal quality (unique/ non-recurrent vs. permanent/iterative policies). In addition, short-term effects are also easier to analyse than long-term effects, which are likely to be complex.
2. **Spatial bias:** Spatial bias refers to the crucial difficulty to define and delineate the geographical or social system boundaries in determining and evaluating the outcomes of public policies. The spatial distribution of the effects of a policy or project generates highly “localized” opinions about its success or failure. This spatial dimension is particularly acute in the design and evaluation of regional policies, affecting the invasive alien species as well, especially because it requires the consideration of additional dimensions, such as the analysis of patterns of biological invasions and the analysis of available habitat features, regardless that climate is the major driver of species distribution at large spatial scales (Pearson and Dawson 2003, Bellard et al. 2013).
3. **Cultural bias:** All policy evaluations take place within in cultural frames and nexi of meaning which determine to a large extent the social expectations about government conduct.

In the case of this document, comparative policy analysis will evaluate measures aiming to address the problem of invasive alien species, which is outlined in the next sections.

7 Invasive alien species: a threat to biodiversity

The European Commission defines invasive alien species as (European Commission, 2018):

“...animals and plants that are introduced accidentally or deliberately into a natural environment where they are not normally found, with serious negative consequences for their new environment. They represent a major threat to native plants and animals in Europe, causing damage worth billions of euros to the European economy every year. As invasive alien species do not respect borders, coordinated action at the European level will be more effective than individual actions at the Member State level.”

As can be seen from the quote above, the EC defines IAS as a major threat to biodiversity and natural ecosystems. The reason is that their environmental impact can range from single-species interactions and reduction in individual fitness of native species to population declines or extinctions, changes in community composition and effects on entire ecosystem processes. In fact, many alien species become invasive, competing against or preying on native species, which can lead to their extinction and eventual ecological devastation. The reason for their ‘success’ is that IAS may lack natural predators in their new environment, thus allowing them to breed quickly and spread without constraints to eventually take over an ecological niche, habitat and/or natural area. This impact can also potentially transport disease, out-compete native species, alter the food chain, decrease biodiversity, and even change ecosystems by altering soil composition or creating environments that encourage wildfires. Thereby, the invasion of alien species has economic and human health implications. There is an upward trend in the establishment of new species in Europe’s ecosystems, which indicates that the problem is far from under control. This is due to the following factors:

- The increased international transport of foods and goods, including tourism.
- The intentional introduction of foreign species for economic reasons (e.g. aquaculture, farming).
- The increasing vulnerability of ecosystems, resulting from pressures such as degradation and climate change.

Currently in Europe, there are over 12,000 alien species, 15% of which are invasive. IAS are the third most severe threat to European threatened species. According to a recent report, 354

threatened species (229 animals, 124 plants and 1 fungus) are specifically affected by IAS (which accounts for 19% of all threatened species in Europe). These conditions have caused damage worth of billions of Euros to the EU economy every year. In fact, the EU experiences annual damages worth EUR 12 billion as a result of IAS effects on human health, damaged infrastructure, and agricultural losses (IUCN, 2018).

To counter these losses, the European Union and its member states have developed a number of policies. Nevertheless, IAS, which have been introduced through different pathways and vectors in natural ecosystems, can easily move across the European territory (incl. marine environments); making thus IAS management a transnational issue. Taking into account the different pace and conditions among the INVALIDIS territories concerning the protection of natural ecosystems from invasive alien species (Environmental Review – 2017), interregional cooperation will allow exchange of experiences on determining efficient eradication/control methods, managing emerging conflicts of interests and engaging local communities in the management process, based on regional specificities and challenges. Hence, despite the relative success or failure of concurrent policies, all EU territories and regional authorities need to become more active so as to respond to the following regional challenges akin to the problem of invasive alien species:

- Lack of awareness about IAS impact on biodiversity & ecosystem services
- Low level of cooperation between regional authorities & local stakeholders for the implementation of regional operational programmes
- Conflicts of environmental and socioeconomic interests

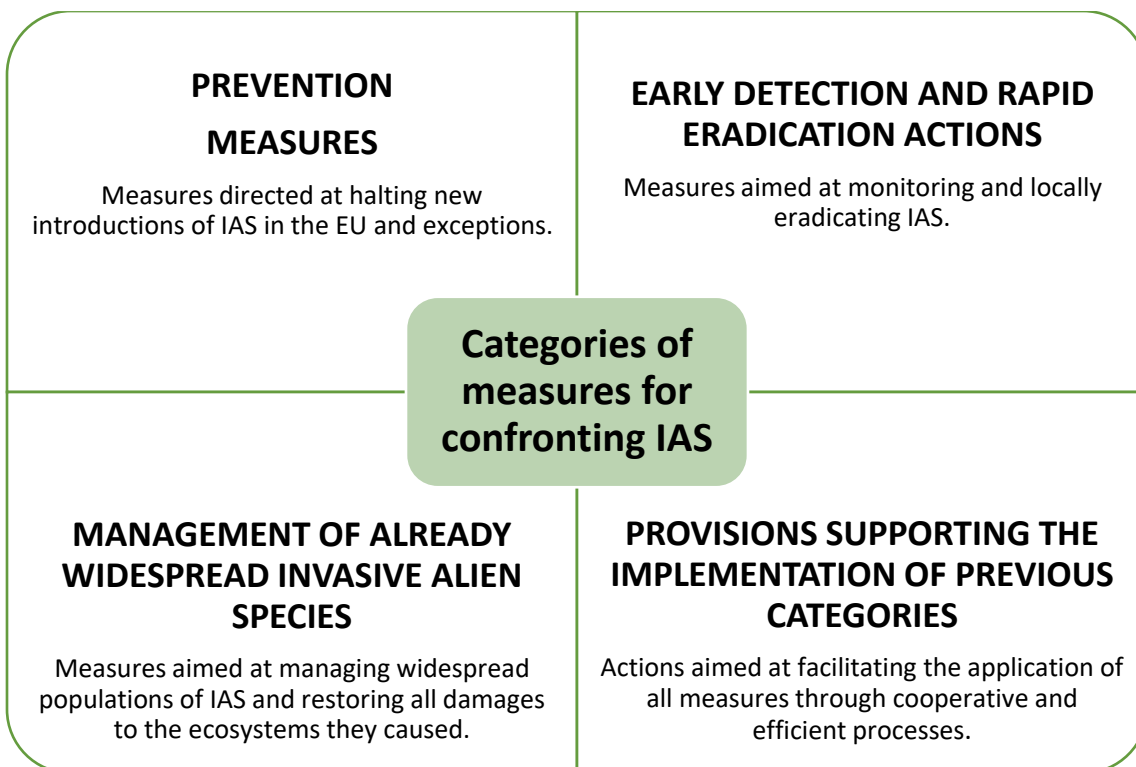
8 Spectrum of policies on invasive alien species and the European framework

To tackle the problem of IAS, public authorities need to take all the necessary actions for managing current and preventing new introductions of invasive species, including policy measures such as:

- Maintaining a surveillance system for the early detection of new biological invasions.
- Implementing immediate actions to achieve the complete removal of IAS.
- Taking up actions for increasing regional ecosystems' resilience to current and future invasions.
- Raising public awareness.

In general however, and following the example of policies for IAS developed by the European Union, such as the Regulation (EU) No 1143/2014 of the European Parliament and the Council (2014), measures aimed at controlling and preventing the invasion of alien species can pertain in one of the categories found in the following figure:

Figure 3: Categories of measures for confronting IAS



To facilitate the application of all these types of measures the European Union has already composed a list with all impactful IAS in Europe. The following two tables present the plants and animals categorised among the IAS in Europe:

Figure 4: Plant species categorised as IAS in the EU

Scientific name	English name	Entry into force
<i>Alternanthera philoxeroides</i>	Alligator weed	2 August 2017
<i>Asclepias syriaca</i>	Common milkweed	2 August 2017
<i>Baccharis halimifolia</i>	Eastern baccharis	3 August 2016
<i>Cabomba caroliniana</i>	Fanwort	3 August 2016
<i>Eichhornia crassipes</i>	Water hyacinth	3 August 2016
<i>Elodea nuttallii</i>	Nuttall's waterweed	2 August 2017
<i>Gunnera tinctoria</i>	Chilean rhubarb	2 August 2017
<i>Heracleum mantegazzianum</i>	Giant hogweed	2 August 2017
<i>Heracleum persicum</i>	Persian hogweed	3 August 2016
<i>Heracleum sosnowskyi</i>	Sosnowsky's hogweed	3 August 2016
<i>Hydrocotyle ranunculoides</i>	Floating pennywort	3 August 2016
<i>Impatiens glandulifera</i>	Indian balsam	2 August 2017
<i>Lagarosiphon major</i>	Curly waterweed	3 August 2016
<i>Ludwigia grandiflora</i>	Water-primrose	3 August 2016
<i>Ludwigia peploides</i>	Floating primrose-willow	3 August 2016
<i>Lysichiton americanus</i>	American skunk cabbage	3 August 2016
<i>Microstegium vimineum</i>	Japanese stiltgrass	2 August 2017
<i>Myriophyllum aquaticum</i>	Parrot's feather	3 August 2016
<i>Myriophyllum heterophyllum</i>	Broadleaf watermilfoil	2 August 2017
<i>Parthenium hysterophorus</i>	Whitetop weed	3 August 2016

<i>Pennisetum setaceum</i>	Crimson fountaingrass	2 August 2017
<i>Persicaria perfoliata</i>	Asiatic tearthumb	3 August 2016
<i>Pueraria lobata</i>	Kudzu vine	3 August 2016

Figure 5: Animal species categorised as IAS in the EU

Scientific name	English name	Entry into force
<i>Alopochen aegyptiacus</i>	Egyptian goose	2 August 2017
<i>Callosciurus erythraeus</i>	Pallas' squirrel	3 August 2016
<i>Corvus splendens</i>	Indian house crow	3 August 2016
<i>Eriocheir sinensis</i>	Chinese mitten crab	3 August 2016
<i>Herpestes javanicus</i>	Small Asian mongoose	3 August 2016
<i>Lithobates catesbeianus</i>	American bullfrog	3 August 2016
<i>Muntiacus reevesi</i>	Muntjac deer	3 August 2016
<i>Myocastor coypus</i>	Coypu	3 August 2016
<i>Nasua nasua</i>	Coati	3 August 2016
<i>Nyctereutes procyonoides</i>	Racoon dog	2 February 2019
<i>Ondatra zibethicus</i>	Muskrat	2 August 2017
<i>Orconectes limosus</i>	Spiny-cheek crayfish	3 August 2016
<i>Orconectes virilis</i>	Virile crayfish	3 August 2016
<i>Oxyura jamaicensis</i>	Ruddy duck	3 August 2016
<i>Pacifastacus leniusculus</i>	Signal crayfish	3 August 2016
<i>Percottus glenii</i>	Amur sleeper	3 August 2016
<i>Procambarus clarkii</i>	Red swamp crayfish	3 August 2016
<i>Procambarus fallax f. virginalis</i>	Marbled crayfish	3 August 2016
<i>Procyon lotor</i>	Raccoon	3 August 2016
<i>Pseudorasbora parva</i>	Stone moroko	3 August 2016

<i>Sciurus carolinensis</i>	Grey squirrel	3 August 2016
<i>Sciurus niger</i>	Fox squirrel	3 August 2016
<i>Tamias sibiricus</i>	Siberian chipmunk	3 August 2016
<i>Threskiornis aethiopicus</i>	Sacred ibis	3 August 2016
<i>Trachemys scripta</i>	Red-eared, yellow-bellied and Cumberland sliders	3 August 2016
<i>Vespa velutina nigrithorax</i>	Asian hornet	3 August 2016

Following the lists of IAS, European Union policy in the Regulation (EU) No 1143/2014, proposes a concrete prevention strategy for the introduction of IAS that consists of the following:

1. A number of compulsory restrictions imposed upon the intentional introduction of IAS or upon any actions that could introduce them unintentionally.
2. A system for granting permits, including methods and criteria, for the introduction of IAS under controlled conditions when there are specific economic, social or health related reasons.
3. A number of emergency measures to be taken when a member State has evidence concerning the presence in, or imminent risk of introduction into its territory of an invasive alien species, which is not included on the Union list but which the competent authorities have found, on the basis of preliminary scientific evidence.
4. Specific actions distinguishing the management of IAS concerning the EU as a whole and IAS concerning specific member states/territories
5. Elaboration of a process and criteria for the development of action plans for the efficient prevention of IAS introduction.

Similarly, Regulation (EU) No 1143/2014 outlines the measures that have to be taken for the early detection and rapid eradication of newly introduced IAS:

1. Establishment of a surveillance system of invasive alien species of Union concern which collects and records data on the occurrence in the environment of invasive alien species by survey, monitoring or other procedures.

2. Introduction of a system of official controls applied to the production and trade of specific categories of goods so as to minimise any possibility of introduction of IAS and eradicate any small populations already established.
3. Put in place of an early detection notification system that ensures the detection and report of the introduction or presence of invasive alien species of EU or member state concern.
4. Development and application of rapid eradication of IAS procedures that are effective in achieving the complete and permanent removal of the population of the invasive alien species concerned, with due regard to human health and the environment, especially non-targeted species and their habitats, and ensuring that animals are spared any avoidable pain, distress or suffering.

Nevertheless, as mentioned previously, there are IAS that have already spread widely in the territories of the European Union. Regulation (EU) No 1143/2014 proposes the following measures for the management of invasive alien species that are widely spread:

1. Lethal or non-lethal physical, chemical or biological actions aimed at the eradication, population control or containment of a population of an invasive alien species.
2. Appropriate restoration measures to assist the recovery of an ecosystem that has been degraded, damaged, or destroyed by invasive alien species of Union concern unless a cost-benefit analysis demonstrates, on the basis of the available data and with reasonable certainty, that the costs of those measures will be high and disproportionate to the benefits of restoration.

Finally, Regulation (EU) No 1143/2014 proposes the following provisions supporting the implementation of all aforementioned measures:

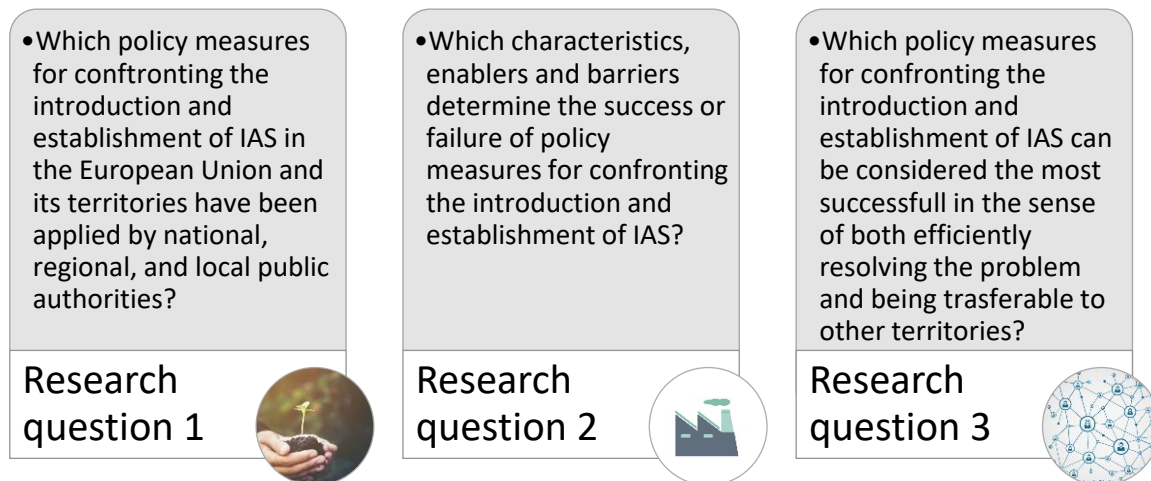
1. All member states should aim to recover the costs of the measures needed to prevent, minimise or mitigate the adverse impact of invasive alien species, including environmental and resources costs as well as the restoration cost.
2. All member states should, when complying with their obligations under this Regulation, make every effort to ensure close coordination with all other territories concerned and,

- where practical and appropriate, use existing structures arising from regional or international agreements.
3. All member states should try to maintain or lay down more stringent national rules with the aim of preventing the introduction, establishment and spread of invasive alien species.

9 Research questions

Following the thematic overview of the previous chapter, it is possible to define the following research questions:

Figure 6: INVALIDIS A1.1 activity research questions



Research question 1 states the first main target of this research. Activity A1.1 aims to locate all policy measures designed to confront the introduction and establishment of IAS, and to enquire the details of their implementation.

Research question 2 constitutes the first step towards comparing the policy measures identified in research question 1. By identifying the enablers and barriers that determine the success or failure of various policy measures, it will be possible to evaluate which have the greatest chances of success.

Research question 3 constitutes the second step towards the comparison of policy measures. Instead of focusing on the intricacies of implementing them and all observed enablers and barriers, the questions aims to develop an understanding of the impact of policy measures and the details that make them transferable to other territories. Combined with research question 2,

answering research question 3 gives the opportunity to have an integrated comparison of policy measures for confronting the introduction and establishment of IAS.

10 Data collection methods

After developing the research questions, it is time to start applying an approach that uses specific data collection methods that can provide sufficient data for answering these questions. Following the instructions found in the INVALIDIS application form, data collection will be divided in the following two parts:

- **Part 1** consists on data collection within the region and the country of each INVALIDIS partner. Each member of the INVALIDIS consortium will have to gather from his own region and country data capable of answering the research questions listed in the previous section.
- **Part 2** consists on gathering suitable data from EU members that are not represented in the INVALIDIS consortium, and will be conducted by ICETA.

The following methods of data collection will be used for both parts.

Part 1: Research in INVALIDIS territories

Data collected during Part 1 will comprise the main corpus of data. This is due to the proximity of INVALIDIS partners to the region/country being researched, which provides them with the opportunity to collect data from a number of sources, which would be unreachable elsewhere.

The basic method INVALIDIS partners will use to collect data will be **secondary desk research**. The main reason why desk research was chosen as the basal part of the investigation has to do with the fact that it is an efficient and cost-effective way to capitalise on already existing knowledge which does not require specialised personnel. Thus it makes easy the collection of all the relevant information about policies to stop the spread of IAS. Desk research that retrieves secondary data bears the advantage of providing perspectives based on already analysed and validated data. Hence, it can help accelerate this research by offering ready to be used rationale and categories to the data analysis of activity A1.1. On the other hand, if researchers rely completely on secondary data, there is always the danger of developing a biased perspective of the issue at hand due to the different objectives of past research. Research for INVALIDIS activity A1.1 will overcome this problem by utilising a number of different data sources. The first source of data consists on documents available online retrieved from external desk research. This source of data will be used

throughout the three parts of data collection. The second source of data will be the internal documents of the INVALIDIS partners. This source of data will be utilised only in part 1 of this research.

10.1.1 External desk research

The first source of data is comprised by those documents that are publicly available either online or in libraries. Hence, INVALIDIS partners will engage in **external desk research**. External desk research involves research conducted outside the organizational boundaries and collecting relevant information. It is almost always comprised by secondary data research, during which researchers have to read and examine various texts that usually contain data congruent with the rationale of various institutions and/or researchers. In the case of INVALIDIS, external desk research refers to data collection based on documents and/or other resources (e.g. video and audio files) produced by organisations other than the INVALIDIS partners. Due to the immense availability of data in the internet, external desk research in INVALIDIS activity A1.1 consists of **Online Desk Research**. It's important for INVALIDIS partners to look for specific information online as there are billions of pages available on internet. There are three approaches for digging out the relevant information from the internet, outlined below.

10.1.1.1 Utilising search engines

The first approach is using the various search engines like www.google.com, www.yahoo.com, www.infoseek.go.com, www.altavista.com etc., for modulated searching. The important aspect here is to refine the searching techniques in such a way that results are promising and relevant. For this purpose, it is necessary for the researcher to develop a list of keywords or key phrases based on the research questions outlined above. Using search engines should be based on using these key words or phrases. Finally, if researchers look for secondary data in academic sources, they should search in specialised academic databases such as Google Scholar, Science Direct and Jstor. The following figure provides an indicative list of such key words and phrases:

Figure 7 Online research key words and phrases

Key words and phrases	Invasive alien species
	Biological invasions
	IAS
	Aquatic invasions
	Ballast water
	Ship biofouling
	Invasive native range
	Ignorant possessions
	Stowaway
	Assisted transport through trade via road vehicles
	Assisted transport through trade via trains
	Assisted transport through trade via boats
	Assisted transport through trade via planes
	Natural dispersal
	NOBANIS
	Floating vegetation debris
	Industrial ecology

10.1.1.2 Academic journals

The second approach indicates that INVALIS partners should look for data in specialised academic journals which treat the issue of 'greening' public policy. Academic journals are essential as sources of data for this research because:

- They can provide detailed accounts of IAS and corresponding policies to confront them in various EU countries, including the ones where INVALIS partners are based.
- Regardless of the case studies they analyse, they provide a scientific evaluation of policy which can lead to an improved understanding of its strengths, weaknesses and impact.

In the following table, INVALIS partners can find a non-exhaustive list of such journals:

Figure 8 Academic journals

Journals
<u>Biological Invasions</u>
<u>Diversity and Distributions</u>
<u>Frontiers in Ecology</u>
<u>Ecological Economics</u>
<u>Ecology Letters</u>
<u>Marine Policy</u>
<u>Aquatic Invasions</u>
<u>Handbook of alien species in Europe</u>
<u>Global change biology</u>
<u>Frontiers in Ecology and the Environment</u>
<u>Journal of Environmental Management</u>
<u>Environmental Science and Technology</u>
<u>Regional Studies</u>
<u>Resources, Conservation and Recycling</u>
<u>Restoration Ecology</u>
<u>International Journal of Sustainable Development & World Ecology</u>
<u>Sustainability Science</u>
<u>Ecological Economics</u>
<u>Progress in Industrial Ecology</u>

Finally, each INVALIS partner can use the following scientific journals as sources for the further thematic preparation of their own public dialogue event:

10.1.1.3 Expert websites

The third approach is browsing the specific information from academic, governmental, industrial, marketing or business sites and extracting the information out of these sites. Especially government agencies usually publish a great extent of social, financial and economic data, usually online, which can be used in the research process. The greatest advantages of researching

government published data are accessibility and quality of information. In the case of INVALIS activity A1.1, data published by the European Union could also be a highly important source of data, since the control and management of IAS is determined to a greater or smaller extent by EU initiatives. Hence, researching government and EU published data could be the ideal cost-effective medium of gathering data. The following table presents a non-exhaustive list of websites and pages that contain relevant information for this research for each country of the European Union where an INVALIS partner is based.

Figure 9 Online Sources of Data

EU member	Document title
<i><u>General</u></i>	EU Commission – Invasive Alien Species IUCN – Invasive Alien Species Council of Europe – Group of Experts on Invasive Alien Species WWF Global – Impact of Invasive Alien Species Bird Life International - How do Invasive Alien Species impact on biodiversity in the EU? IEEP - Is the EU's new Invasive Alien Species Regulation set for success?
<i><u>Greece</u></i>	Ministry of Environment and Energy – Protection of biodiversity from invasive alien species CIHEAM – Alien challenges in Greece: an overview of the terrestrial species
<i><u>Italy</u></i>	Legambiente - Specie aliene invasive, sai quali sono? WWF Italy – Arriva il decreto sulle specie aliene
<i><u>Spain</u></i>	INVASEP – Situación De Las Especies Exóticas Invasoras En España Junta De Extremadura – Curso: “LUCHA CONTRA LAS ESPECIES EXÓTICAS INVASORAS EN EXTREMADURA”
<i><u>France</u></i>	INPN - Espèces Exotiques Envahissantes UICN – Espèces Exotiques Envahissantes
<i><u>Romania</u></i>	SMDRSI - Sistem de Monitorizare și Detectare Rapidă a Speciilor Invasive Ministerul Mediului - Agenția Națională pentru Protecția Mediului – Specii invazive
<i><u>Portugal</u></i>	Invasoras ICNF - Espécies exóticas invasoras – breves apontamentos
<i><u>Latvia</u></i>	Dabas aizsardzības pārvalde Latvian Biodiversity Clearing-House Mechanism – Latvijas svešzemju sugu saraksts

10.1.2 Internal desk research

The second source of data will be the internal documents of the INVALIS partners and will be utilised if this type of data is available. Hence, INVALIS partners will engage in **internal desk research**. Internal desk research refers to the collection of data by members of one organisation within their organisation. These data are easily accessible and this is the reason why researchers

conducting desk research should consider finding data within their own organisations as one of the starting points of their research. If INVALIDIS partners have already regulated or participated in a project akin to the control or management of invasive alien species, then they should have reacted to the existing regulation that defines policies in relation to these projects. Their interactions with this regulation (which they have either formed or received) should be noticeable in their actions as they are represented by their archives of the following documents. Since INVALIDIS partners are institutions involved in one way or another in policy making, it is highly possible that they have already produced data found in documents, capable of shedding light to the research questions on IAS-related policy.

The rationale for focusing on internal documents as a source of data lies in the immense value of documents in case study research, and their usefulness as a standalone method for specialised forms of qualitative research. As a research method, document analysis (Bowen, 2009) is particularly applicable to qualitative case studies—intensive studies producing rich descriptions of a single phenomenon, event, organisation, or program. Non-technical literature, such as reports and internal correspondence, is a potential source of empirical data for case studies; for example, data on the context within which the participant operates (Mills et al., 2006). More precisely, documents of all types can help significantly the researcher discover meaning, develop understanding, and shed light to the research problem'. In fact, for cross-cultural research, relying on prior studies may be the only realistic approach (Merriam, 1988), something that justifies their choice as the main research method in this comparative analysis.

Since internal research necessarily includes accessing the personal files of employees within INVALIDIS partners, those in charge of the research should make sure that they and their personnel abide by the following research ethics' rules:

Figure 10 Internal research ethics principles

Principle 1: Compliance with protocol.

- Research conducted by INAVLIS partners' employees should be aware of the range of research ethics on the subject of how valid consent to participate is sought, gained and recorded, how data are collected, stored and accessed, and how participants are informed of their rights within the study. The only exception to this requirement shall be where any reasonable judgement would suggest that no harm could possibly arise to any person, living or dead, in connection with the proposed research.

Principle 2: Valid consent

- Owners of documents used in the research should always be informed in advance and in understandable terms of any potential benefits, risks, inconvenience or obligations associated with the research that might reasonably be expected to influence their willingness to participate. Consent should always be gained in a consistent manner. This should normally involve the use of an information sheet about the research and what participation will involve, and a signed consent form.

Principle 3: Openness and integrity.

- Researchers should be open and honest about the purpose and content of their research and behave in a professional manner at all times.

Principle 4: Maximising benefit and protection from harm

- Researchers should make every effort to maximise the benefits of research while minimising the risks of any harm, either physical or psychological, arising for any participant, researcher, institution, funding body or other person or community.

Principle 5: Confidentiality

- Except where explicit written consent is given to reveal identities, researchers should respect and preserve the confidentiality of the identities and data of the owners of documents.

Principle 6: Professional codes of practice and ethics.

- Where the subject of a research project falls within the domain of a professional body with a published code of practice and ethical guidelines, researchers should explicitly state their intention to comply with this code and guidelines.

During internal desk research, INVALIS partners should focus on deriving data from the following categories of documents:

Figure 11: Types of Internal documents

Types of internal documents		
Type	Description	Contribution
E-mails and Memoranda	Co-workers typically use email to convey information to each other. Before email became prevalent, memorandums were used for intraoffice messages. Memos are still used in situations where a message is meant to accompany a specific file and in cases that require more privacy than an email. Both a memo and an email identify the sender and recipient and contain a subject line. The text is formatted in one or more paragraphs.	E-mails and memos can provide information about how the INVALIDIS partners' personnel are affected by projects about the policies designed to control the spread of IAS in which they participate.
Letters	Business letters are used to communicate with individuals outside of the office. Recipients may include customers, colleagues in other businesses, service providers, professionals who advise the business, government officials and job applicants. A business letter is usually formatted in block style, in which all of the elements of the letter, except the letterhead, are aligned with the left margin. It can be emailed or delivered by mail. If a letter is sent in the text of an email, the sender includes his name, job title and contact information at the bottom of the email.	Letters can be used to see how partners try to take advantage or overcome obstacles of existing policies during their interactions with other collaborators in projects to control the spread of IAS.
Reports	Business reports convey information in a format that is more formal and usually longer than a letter. Reports cover a variety of topics, such as safety compliance, sales figures, financial data, feasibility studies and marketing plans. They may include statistics, charts, graphs, images,	Business reports can provide data about the official position of the partners with regards to specific policies, as well as provide information about the overall

	case studies and survey results. Some reports are published for the benefit of investors. If a report is periodic, such as a monthly sales report, a template is used for convenience and to enable comparison with previous reports.	strategy of partners in relation to IAS control and management.
Transactional Documents	An organisation uses documents to transact business with others. To save time, these documents may be formatted as a form, such as an order form, transmittal page, invoice or receipt. The types of transactional documents used vary somewhat by the nature of a business. An insurance agent, for example, generates insurance applications and policies, while a lender uses loan applications and mortgage documents. In some fields, businesses enter into agreements and contracts with others; these documents might be drafted by the company's lawyer.	Transactional documents can provide data about the business methodology of an organisation.
Financial Documents	A business uses financial documents to stay within its budget, prepare budget proposals and file tax returns. These documents include receipt records, payroll reports, paid bills, bank statements, income statements, balance sheets and tax reporting forms. These documents may be prepared by the company's accountant. A business owner uses these documents to determine the financial success of the company and to identify areas that are unproductive. A department head might use financial documents to prepare a budget proposal.	Financial documents are especially important for gathering data about the impact of existing policies.

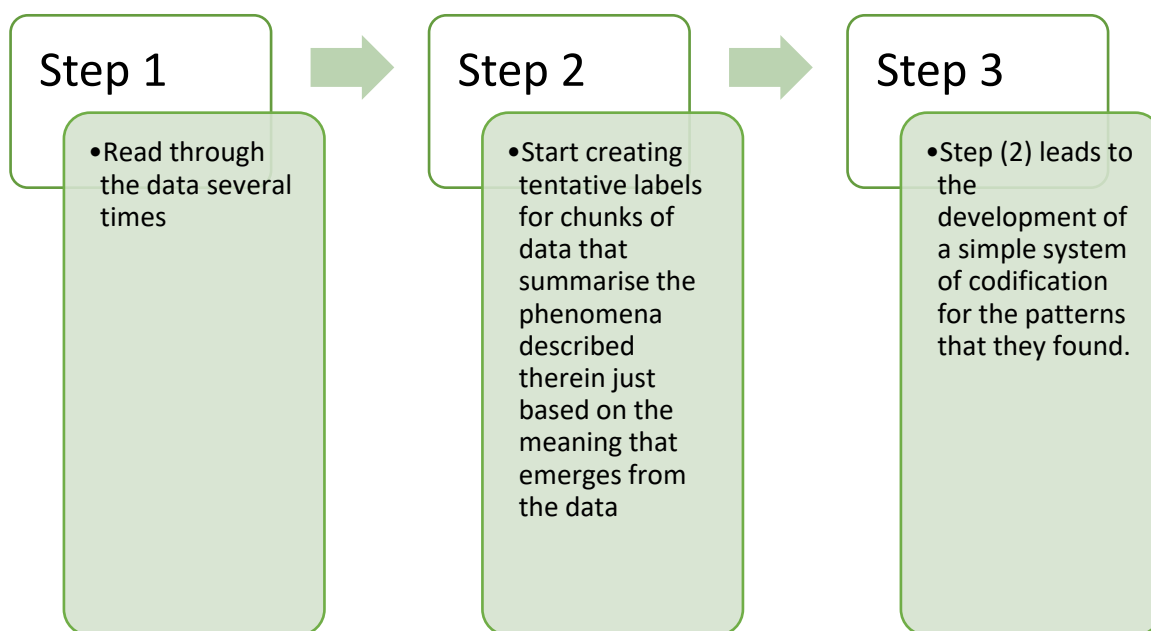
11 Data analysis & evaluation

INVALIS partners will have to analyse the data derived from desk research, so that they can develop a detailed account of specific policies that are a) related to the objectives of the policy instruments that correspond to each partner, b) related to other additional major policy goal in relation to confronting the invasion of alien species. Each partner is welcome to use the data collection tool found in Annex 1 to report one or more policies aimed at countering the spread of IAS.

Data analysis methods

The data analysis will be based on a combination of the open coding method, a criteria-based evaluation and descriptive statistics. Open coding is a type of data analysis that is not guided by researchers' theoretical assumptions, but by the data per se (Glaser, 1992). Researchers do not chose to pick and code the patterns that fit their own theoretical assumptions, but on the contrary they have to identify, note and code all patterns that emerge from the data, even if they contradict the researchers' assumptions. To achieve this, they will conduct the following:

Figure 12 Open coding data analysis procedure



As can be seen in the figure above, open coding is a process that is based on a process that starts from reading data in textual form. In fact, after collecting data up to the point of saturation, i.e. up to point where more research does not provide data with significantly different additional information, partners will have to assemble all data in the same—textual—form. This is the reason why the input form that will be used as a tool for data collection processes by INVALIDIS partners will include open ended questions capable of delivering descriptions of the characteristics of policy measures for the control of IAS.

After assembling all data, partners will have to read through them several times and then start to match similar data and create categories for chunks of data that summarise various policies for the control and management of IAS (or the reasons for the absence of such policies). INVALIDIS partners will have to find and provide examples of that best represent the characteristics of various policies to confront the spread of IAS. Finally, all categories emerging from the data should be codified for easier reference at later stages of the research. Since this research relies on open coding, codes will emerge from reading and analysing the data.

Despite the fact that open ended questions can bring to the fore many qualitative details for measures akin to the control and management of IAS, there is the danger that it will not be possible to compare different policy measures if open coding is the only data analysis method used. This is the reason why it is necessary to include some questions that will allow for carrying out a comparison of policies based on specific criteria. Hence, in the case of INVALIDIS A1.1 activity, partners will analyse the results of desk research so as to find which policy measures satisfy the following evaluation criteria:

The **first criterion** aims to evaluate whether or not proposed policy measures are congruent with European Union policies against the introduction and establishment of IAS. Congruence has a double meaning in this case. If the measure under the evaluation is a single action, then congruence means that it a) conforms to the components of relevant EU-widely applied policies, as presented in the previous sections of this document, and/or b) it builds upon and complements these policies so as to achieve a more holistic protection of the environment and economy from IAS. If the measure under evaluation comes in the form of a multi-faceted policy, addressing all

the issues of confronting IAS, then congruence means that it includes actions that cover all aspects of hindering the invasion of alien species, as reflected in European Union policies.

The **second criterion** aims to evaluate the applicability and transferability of each policy measure. This will be achieved by developing an understanding of the following factors:

1. How many kinds of invasive alien species (from those listed as invasive by the EU) can be confronted by each measure, and in how many types of ecosystems is it applicable?
2. How many barriers are there for the application of each measure, and are there any enablers to ease their application and to foster their effectiveness?

The **third criterion** aims to evaluate the impact of policy measure. This will be determined by the extent of the application of each policy measure and its success so far, as defined by the decrease in the de novo introductions of IAS and the reduction of the populations of those already established. In addition,

The criteria above are further articulated into specific evaluation questions that will determine whether or not a policy measure will be considered better than others. In the end, it will be possible to synthesise a complete picture of the most successful types and aspects of policies that address the issue of IAS. On the contrary, this analysis will allow for an open evaluation and interpretation of the answers to the questions so as to manage to compare case-specific policies.

What is more, since these evaluation questions will not be open-ended but instead utilise Likert scale and multiple choice/response formats, it will be possible to derive descriptive statistics for the analysis of policies against the spread of IAS. Such descriptive statistics will comprise a first benchmark that can be used to develop an understanding of the characteristics of successful policies for the control of IAS.

More precisely, introductory, multiple choice and rated scale questions are amenable to statistical analysis, and to the development of descriptive statistics. The latter are to be used to describe the basic features of the data in the survey. Descriptive statistics are excellent at providing simple summaries about the sample and the measures. Combined with simple graphics analysis, they form the basis of virtually every quantitative analysis of data (Trochim, 2006).

Descriptive Statistics will be utilised to present quantitative descriptions of participants' information in a manageable form that simplifies the large amount of data gathered. Each descriptive statistic reduces lots of data into a manageable and sensible summary. To give an example, think of a simple number used to summarise how frequently the problem of conflicts of interest can deter the application of a measure for the control of invasive alien species in a territory. This single number is simply the number of positive responses for the existence of this problems divided by the sum of private sector stakeholders.

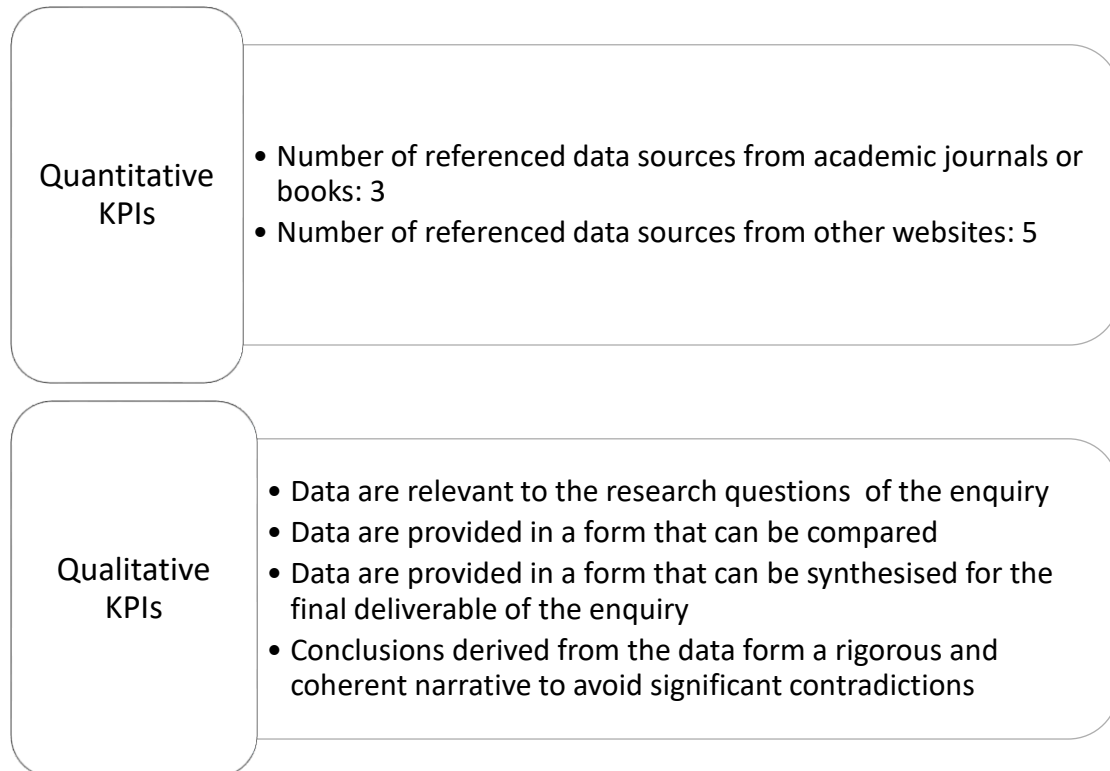
If possible (depending on the amount and type of data gathered) and if considered meaningful, descriptive statistics will be accompanied by the use of inferential statistics. The latter move one step beyond descriptive statistics by not simply describing what is or what the data shows, but rather attempting to reach conclusions that extend beyond the immediate data alone. For instance, we use inferential statistics to try to infer from the sample data what the population might think. Or, we use inferential statistics to make judgments of the probability that an observed difference between groups (in this case the three categories of stakeholders) is a dependable one or one that might have happened by chance in this study.

12 Quality specifications

To achieve the aims of this research, it is necessary to abide by specific quality criteria. If INVALIDIS partners do not conduct the research by respecting these criteria, it is possible that the data collected will be of low quality.

Quality criteria for this research comprise a number of quantitative and qualitative key performance indicators. The following figure presents the key performance indicators per partner for INVALIDIS activity A1.1.

Figure 13 Key Performance Indicators



13 References

Bovens, M., and 't Hart, P., 1996. "Assessing Policy Outcomes: Social and Political Biases". In *Understanding Policy Fiascoes*, New Brunswick, NJ: Transaction Publishers, 21–51.

Bowen, G., 2009. "Document Analysis as a Qualitative Research Method". In *Qualitative Research Journal*, Vol. 9, DOI 10.3316/QRJ0902027.

European Commission, 2018. *Invasive Alien Species*. Available at:
http://ec.europa.eu/environment/nature/invasivealien/index_en.htm

Glaser, B., 1992. *Basics of grounded theory analysis*. Mill Valley, CA: Sociology Press.

IUCN, International Union for Conservation of Nature, 2018. *Invasive Alien Species*. Available at:
<https://www.iucn.org/regions/europe/our-work/invasive-alien-species>

Merriam, S. B., 1988. *Case study research in education: A qualitative approach*. San Francisco, USA: Jossey-Bass.

Mills, J., Bonner, A. & Francis, K. 2006. "The development of constructivist grounded theory". *International Journal of Qualitative Methods*, Vol. 5, No. 1, pp. 25–35. Retrieved 12 January 2009, from <http://ejournals.library.ualberta.ca/index.php/IJQM/article/view/4402/3795>.

Pickvance, C., 2005. "The four varieties of comparative analysis: the case of environmental regulation". Working Paper for the *Conference on Small and large-N comparative solutions*, University of Sussex.

Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1417443504720&uri=CELEX:32014R1143>

Urry, J., 2003. *Global Complexity*. Cambridge: Polity

14 Annex: Data collection tool

Criterion 1:	
Question 1	
Could you describe the problems addressed by the policy under evaluation?	
Question 2	
How would you describe the policy found in the data?	
A. As a single action	
B. As a multifaceted policy	
Question 3 (A)	
If (A) which is the aspect of policies for addressing the issue of invasive alien species that the policy under evaluation builds upon?	
Prevention policies:	
1. A number of compulsory restrictions imposed upon the intentional introduction of IAS or upon any actions that could introduce them unintentionally.	
2. A system for granting permits, including methods and criteria for the introduction of IAS under controlled conditions when there are specific economic, social or health related reasons.	
3. A number of emergency measures to be taken when a territory has evidence concerning the presence in, or imminent risk of introduction into its territory of an invasive alien species, which is not included on the EU list but which the competent authorities have found, on the basis of preliminary scientific evidence.	
4. Elaboration of a process and criteria for the development of action plans for the efficient prevention of IAS introduction.	
Early detection and rapid eradication policies:	
5. Establishment of a surveillance system of invasive alien species of concern of the territory or the EU as a whole which collects and records data on the occurrence in the environment of invasive alien species by survey, monitoring or other procedures.	

6. Introduction of a system of official controls applied to the production and trade of specific categories of goods so as to minimise any possibility of introduction of IAS and eradicate any small populations already established.				
7. Put in place of an early detection notification system that ensures the detection and report of the introduction or presence of invasive alien species of EU or territorial concern.				
8. Development and application of rapid eradication of IAS procedures that are effective in achieving the complete and permanent removal of the population of the invasive alien species concerned, with due regard to human health and the environment, especially non-targeted species and their habitats, and ensuring that animals are spared any avoidable pain, distress or suffering.				
<i>Policies for the management of invasive alien species that are already widely spread:</i>				
9. Lethal or non-lethal physical, chemical or biological actions aimed at the eradication, population control or containment of a population of an invasive alien species.				
10. Appropriate restoration measures to assist the recovery of an ecosystem that has been degraded, damaged, or destroyed by invasive alien species of Union concern unless a cost-benefit analysis demonstrates, on the basis of the available data and with reasonable certainty, that the costs of those measures will be high and disproportionate to the benefits of restoration.				
Question 4 (A)				
If (A) to what extent do you think that the policy measure under evaluation can further specify and optimise the application of EU regulation?				
Not at all	A little	Somewhat	Significantly	Greatly
Could you justify your opinion and describe how the policy measure under evaluation can further specify and optimise the application of EU regulation?				
Question 3 (B)				
If (B) which of the following aspects of policies for addressing the issue of invasive alien species are addressed by the policy under evaluation?				
<i>Prevention policies:</i>				

1. A number of compulsory restrictions imposed upon the intentional introduction of IAS or upon any actions that could introduce them unintentionally.	
2. A system for granting permits, including methods and criteria, for the introduction of IAS under controlled conditions when there are specific economic, social or health related reasons.	
3. A number of emergency measures to be taken when a member State has evidence concerning the presence in, or imminent risk of introduction into its territory of an invasive alien species, which is not included on the Union list but which the competent authorities have found, on the basis of preliminary scientific evidence.	
4. Elaboration of a process and criteria for the development of action plans for the efficient prevention of IAS introduction.	
<i>Early detection and rapid eradication policies:</i>	
5. Establishment of a surveillance system of invasive alien species of Union concern which collects and records data on the occurrence in the environment of invasive alien species by survey, monitoring or other procedures.	
6. Introduction of a system of official controls applied to the production and trade of specific categories of goods so as to minimise any possibility of introduction of IAS and eradicate any small populations already established.	
7. Put in place of an early detection notification system that ensures the detection and report of the introduction or presence of invasive alien species of EU or member state concern.	
8. Development and application of rapid eradication of IAS procedures that are effective in achieving the complete and permanent removal of the population of the invasive alien species concerned, with due regard to human health and the environment, especially non-targeted species and their habitats, and ensuring that animals are spared any avoidable pain, distress or suffering.	
<i>Policies for the management of invasive alien species that are already widely spread:</i>	

9. Lethal or non-lethal physical, chemical or biological actions aimed at the eradication, population control or containment of a population of an invasive alien species.					
10. Appropriate restoration measures to assist the recovery of an ecosystem that has been degraded, damaged, or destroyed by invasive alien species of Union concern unless a cost-benefit analysis demonstrates, on the basis of the available data and with reasonable certainty, that the costs of those measures will be high and disproportionate to the benefits of restoration.					
Question 4 (B)					
If (B) to what extent do you think that the policy measure under evaluation can further specify and optimise the application of EU regulation?					
Not at all	A little	Somewhat	Significantly	Greatly	
Could you justify your opinion and describe how the policy measure under evaluation can further specify and optimise the application of EU regulation?					
Question 5					
Could you provide a description of the policy?					
Criterion 2					
Question 6					
How many kinds of invasive alien species (from those listed as invasive by the EU that are relevant to your territory) can be confronted by the policy under evaluation?					Number of species controlled through the policy
Can you provide a list with the IAS the spread of which is tackled through the policy?					
Question 7					
Does the policy under evaluation address IAS spread in terrestrial, marine ecosystems or both?					
A. Terrestrial					
B. Marine					
C. Terrestrial & Marine					
Question 8 (A)					
If terrestrial, which types of terrestrial ecosystems are protected through the policy under evaluation?					
1. Inland surface waters					
2. Mires, bogs and fens					

3. Grasslands and land dominated by forbs, mosses or lichens	
4. Heathland, scrub and tundra	
5. Woodland, forest and other wooded land	
6. Inland unvegetated or sparsely vegetated habitats	
7. Regularly or recently cultivated agricultural, horticultural and domestic habitats	
8. Constructed, industrial and other artificial habitats	
Question 8 (B)	
If marine, which types of marine ecosystems are protected through the policy under evaluation?	
1. Littoral rock and other hard substrata	
2. Littoral sediment	
3. Infralittoral rock and other hard substrata	
4. Circalittoral rock and other hard substrata	
5. Sublittoral sediment	
6. Deep-sea bed	
7. Pelagic water column	
8. Ice-associated marine habitats	
9. Estuaries and coastal lagoons	
10. Coastal habitats (Coastal dunes and sandy shores, coastal shingle, rock cliffs, ledges and shores)	
Question 8 (C)	
If both, which types of ecosystems are protected through the policy under evaluation?	
1. Inland surface waters	
2. Mires, bogs and fens	
3. Grasslands and land dominated by forbs, mosses or lichens	
4. Heathland, scrub and tundra	
5. Woodland, forest and other wooded land	
6. Inland unvegetated or sparsely vegetated habitats	
7. Regularly or recently cultivated agricultural, horticultural and domestic habitats	

8. Constructed, industrial and other artificial habitats				
9. Littoral rock and other hard substrata				
10. Littoral sediment				
11. Infralittoral rock and other hard substrata				
12. Circalittoral rock and other hard substrata				
13. Sublittoral sediment				
14. Deep-sea bed				
15. Pelagic water column				
16. Ice-associated marine habitats				
17. Estuaries and coastal lagoons				
18. Coastal habitats (Coastal dunes and sandy shores, coastal shingle, rock cliffs, ledges and shores)				
Question 9				
To what extent do you think the policy under evaluation has a negative impact on the economy?				
No impact at all	Small impact	Moderate impact	Large impact	Immense impact
Could you briefly describe the economic impact?				
Question 10				
Which of the following barriers do you think constrain the implementation of the policy under evaluation?				
1. Low public awareness and/or opposition to government intervention				
2. Shortage and inaccessibility of scientific information (for species identification, risk analysis, detection and mitigation techniques etc.)				
3. Absence of clear and agreed priorities for action				
4. Ease of introduction and movement (e.g. through the post)				
5. Inadequate inspection and quarantine				
6. Inadequate monitoring capacity				
7. Lack of effective emergency response measures				
8. Outdated or inadequate legislation				
9. Poor co-ordination between government agencies, states and other stakeholders				
Could you please briefly describe the barriers?				

Question 11					
Are there any enablers that facilitate the application of the policy under evaluation?					
No enablers at all	A few enablers	Moderate number of enablers	Significant number of enablers	Large number of enablers	
Could you please briefly describe the enablers?					
Criterion 3					
Question 12					
Did the policy under evaluation lead to a decrease to the de novo introductions of invasive alien species?				YES	
				NO	
If yes could you please describe how?					
Question 13					
To which extent did the policy under evaluation lead to a decrease in the population/diffusion of invasive alien species?					
No decrease at all	Slight decrease	Moderate decrease	Considerable decrease	Large decrease	
Could you please describe the reasons why this policy led to this result?					
Question 14					
Did the policy under evaluation have a positive or a negative impact on the economy of the territory?					
Largely negative	Slightly negative	Neutral	Slightly positive	Largely positive	
Could you please describe the type of impact this policy had and the reasons why this policy led to this result?					
Question 15					
Did the policy under evaluation have a positive or a negative social impact in the territory?					
Largely negative	Slightly negative	Neutral	Slightly positive	Largely positive	
Could you please describe the type of impact this policy had and the reasons why this policy led to this result?					