



AdvisoryNet**PEST**

Deliverable 1.1

Conceptual framework and state-of-the-art mapping of advisory networks and initiatives to RURP across the EU





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Abbreviations

AKIS	Agricultural and Knowledge Innovation System
AN	Associated Network
ANL	Associated Network Leader
AdvisoryNetPEST	EU ADVISORY NETworks to reduce the use and risks of PESTicides
e.g.	exempli gratia – for example
EC	European Commission
EUFRAS	European Forum for Agricultural and Rural Advisory Services
IPM	Integrated Pest Management
MS	Member State
NA	Novel Approaches
NNL	National Network Leader
NSL	National Sector Leader
RURP	Reduce(ction of) the Use and Risks of Pesticides
SUD	Sustainable Use of Pesticides Directive
WPx	Work Package x



Executive Summary

The AdvisoryNetPEST project seeks to establish a comprehensive EU-wide network of networks for advisory services to reduce the use and risks of pesticides (RURP). The project aims to connect advisors, researchers, and other stakeholders to promote innovative, sustainable plant protection practices. Starting with 14 initiating countries (the project partners) and then following-up with their twining partners (the other 14 EU member states), the network will encompass all 27 EU member states and the UK and focus on key crop sectors, including arable field crops, vineyards, orchards, and horticulture (soft fruits and ornamental).

As a starting point for building the network, the deliverable at hand has realised a literature research, striving to understand the framework conditions: overall requirements, e.g. regulations, towards advisors who work in relation to RURP and literature findings on what impedes or supports the adoption of RURP practices in general and among advisory services in particular. Subsequently aiming to add more information relevant to the project, the project partners conducted a mapping exercise identifying relevant organisations, national networks and initiatives as well as projects, which could be used as a first source for contacts of potential network members.

The mapping resulted in the identification of 130 organisations of 36 networks as well as more than 70 projects (some national and some international), which provide a baseline from which the network building can start. Results from the mapping exercise only covered 10 countries, therefore, a widely distributed survey was created as well to aim to identify other potential actors in the member states, but also better understand motivators, barriers, preferred instruments and communication channels for knowledge transfer among advisors. The results of the mapping as well as the survey are presented in Chapter 5. Key roles defined in the conceptualisation of the project (e.g. National Network Leaders and Sectoral Network Leaders) are offered several practical ideas on how to identify, motivate and activate potential network members in Chapter 6.





1. Introduction

1.1 The AdvisoryNetPEST project

The main objective of AdvisoryNetPEST is the establishment and long-term expansion of a network of advisors throughout the EU for the exchange of knowledge in order to reduce the use and risk of plant protection products in agriculture. All existing agricultural knowledge and innovation systems (AKIS) are to be involved in this endeavor. The initiators are 14 countries, which are starting to set up national networks and will each contact a twin country from the other 13 Member States to expand the network.

Across the main crop sectors and all European pedo-climatic areas, novel approaches (NA) to reduce the use and risk of plant protection products will be identified and further developed. These NAs should be technically, economically, socially and environmentally viable and be adapted and replicated across the EU.

The next step is to exchange knowledge by means of farm demonstrations, training and education events for advisors and other stakeholders in order to enable and promote the adoption by farmers. In further succession, the project will be linked with other national and EU projects, initiatives and political decision-makers.

For the long-term success and manifestation of practices to reduce the use and risks of pesticides (RUP), innovative solutions for farmers and along the entire value chain should be promoted. A multi-stakeholder approach will enable the long-term exchange of technical and practical expertise at national and EU level (Grant Agreement, 2023)¹.

1.2 Aim of Task 1.1

T1.1 identifies national network leaders (NNL) and associated network leaders (ANL), as well as four sector leaders (SL), and maps relevant existing advisory networks working on RUP, both at local and at national level, describing the functions they are performing as well as the AKIS environment in which they operate. In addition, it collects insights into the current state-of-play, the context, needs, gaps, drivers, and barriers for implementing RUP practices in all 27 EU member states. The mapping is supported by previous projects and initiatives in which the partners of the project participate (such as i2Connect or EUFRAS), and employs a combination of desk research, data collection, literature research and a survey. T1.1 will cooperate with T7.1 to identify relevant actors and AKIS initiatives to be included in the mapping. The output reflects a state-of-the-art review/map for advisory networks and services in the EU (Grant Agreement, 2023)¹.

1.3 Scope of the Deliverable

The scope of the deliverable at hand is to provide insight into the initial conceptualization of the AdvisorsNetPEST network, considering the background of existing regulations and policies as well as the goals of the project. It includes a brief introduction to the current situation of the implementation of integrated pest management (IPM) and RUP practices in professional practice and addresses obstacles to their realization. These barriers are identified through both literature research and an online survey. Some insights are presented following the analysis of the mapping exercise and the survey conducted, supporting the project in building a strong

¹ <https://dopa.jrc.ec.europa.eu/kcbd/actions-tracker/> (10/07/2024)





sustainable network.

Subsequently, the deliverable outlines the results of a mapping exercise conducted by the project partners aiming to identify potential members for their national networks as well as the results of survey conducted at European level. Finally, the deliverable provides practical instruments for the NNLs and SNLs, supporting them in identifying and engaging actors beyond initial networks.



2. Methodology

2.1 Literature research

AdvisoryNetPEST established a network of networks that intends to run beyond the duration of the project. A well-founded concept for the establishment of the network is therefore a prerequisite for its success. To support the formulation of the value added through participation in the network, various OECD studies on the impact of pesticides on the environment and the implementation of IPM practices in practice are primarily used for the framework conditions. These are briefly described and supplemented by further studies that point out the various obstacles to the implementation of IPM and other sustainable approaches and provide possible recommendations for overcoming these. A brief summary of the i2connect cross-analysis of all AKIS country reports is provided to give the perspective of the integration of advisors and the European advisory systems into the respective AKISs. Chapter 4 addresses the conceptualization of the network. The literature consulted for this is primarily based on Horizon Europe projects such as [modernAKIS](https://modernakis.eu/)², [ATTRACTISS](https://attractiss.eu/)³, [ClimateSmartAdvisors](https://climatesmartadvisors.eu/)⁴ who focus on the AKIS, innovation support as well as network building for advisors, and analyses of the functional dynamics of technological innovation systems.

The description of the first steps in activating the AdvisoryNetPEST network is primarily based on the interactive approach and tools used by the task leaders and the NNL during the kick-off meeting and the first online meetings.

2.2 Mapping of actors and survey dissemination

As an initial step in setting-up the AdvisoryNetPEST network, we created a list of actors, organisations and networks as well as initiatives/projects who were either already involved or interested in RURP. At the first online meetings, held together with the NNLs and NSLs, break-out groups were used to gather information about the respective national structures and the activities of the advisors within them. Following this interaction, a data collection structure was created and guidelines designed for the NNLs to map existing actors, networks and organisations. In collaboration with Task 7.7 projects and initiatives depending on the country-specific structures were mapped and included in the excel file to keep the tasks demanded of the NNLs together. Projects were deemed useful in this context as they gather interested organisations/actors who may have been otherwise missed. This RURP actor map formed the basis of the overall network.

Key terms and definitions

Table 1 Definition of terms related to the mapping of actors

Actor	The term 'actor' is interpreted broadly in the context of AdvisoryNetPEST. It includes any person with an interest in the objectives of the network. It can refer to advisors, trainers or other persons. These people may be part of organisations or active as individuals. They may already be involved in relevant projects or networks, and are likely to focus on crop production
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² <https://modernakis.eu/>

³ <https://attractiss.eu/>

⁴ <https://climatesmartadvisors.eu/>





and crop protection. Actors can also be stakeholders and groups of actors can form a network.

Organisation In the context of AdvisoryNetPEST, an organisation refers to an institution or body that can be an employer for the actors. These can be, for example, Chambers of Agriculture, Research Institutes/Centers, and Private Industry in the field of plant protection or similar.

Network Networks are interest groups where a wide variety of actors come together with the same objectives and interests. Networks can have a presence via internet portals and online platforms or through an educational program. Networks can as well be formed by projects or initiatives.

Initiative An initiative is an effort to achieve something of value. A plan of action to improve something or solve a problem. Initiatives will have a beginning but may not have a foreseeable end. Initiatives include Projects, Product management efforts (development, evolution, operations, etc.), Business operations, Technical operations or Services provided to others. A strategic initiative can comprise multiple projects, and several initiatives may function together to reach a vision.

Project A project is a temporary endeavour conducted to reach a unique specific goal or result. Projects are more defined, with a definite beginning and an end. A project can be a part of an initiative, but not vice versa. Projects are run by organisations, institutions and stakeholders and use networks towards initiatives.

Data collection in the actors-list

The spreadsheets differentiate the contact data into organisations/networks/national initiatives and national projects. As the recording and evaluation of national initiatives and projects are part of WP7, detailed information can be found in Deliverable 7.1 and the related guidelines for the mapping of projects and initiatives. Further data recorded for the classification of organisations and networks are as follows:

Table 2 List of queried columns

Organisation	Networks
- Name of the organisation - Type of organisation - Topics/ Keywords - Website - Country - Level of activity - Contact - How involved is this organisation in RUP? - Do you consider this institution as priority to	- Name of the Network - Topic/keyword - Activity of network - Website - Country - Involved organisations in the network - Is this network strategic to reach in the first stage of the project? - Channels to reach this network





contact in the first stage of the project? • Identified channels to reach this organisation or institution • Comment	• Contact • Comment
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As the type of organisation can vary, several options can be selected for classification: Chamber of Agriculture, Farmers Association or Organisation, Independent Advisor, Industry Supplier, Private Consulting Company, Public Advisory, Research Center, University. There is also the option to enter further types.

Under the category 'Topics/keywords', the subject areas in which the organisations and networks are active are queried. Further key questions are asked to categorize how high the willingness to implement RUP practices and network activity can be assessed. These questions are aimed at filtering out key actors.



AdvisoryNetPEST
List of organisations/institutions/person acting on advisory on RUP

Name	Type of organisation	Topics/ Keywords	Website	Country	Level of activity	Contact person	e-mail	How involved is this organisation in RUP?	Institution as priority to contact in the first stage of the project?	reach this organisation or institution?	Comment
	(choose from drop-down selection)	(choose from drop-down selection or type other)			(national, regional or local level - choose from selection)			(not at all, a little, a lot, highly - choose from selection)	(Yes/No - choose from drop-down)	network, events - choose from	(if necessary)

Figure 1 Table content of actors list of organisations



AdvisoryNetPEST
List of networks related to ANP

Network	Topic/Keyword	Activity of network	Website	Country	Involved organisations in the network	Is this network strategic to reach in the first stage of the project?	Channels to reach this network	Contact person	e-mail	Comment
	(choose from drop-down selection or type other)	(national, regional or local level - choose from selection)				(Yes/No - choose from drop-down)	(forums, newsletters - choose from selection or type other)	(Mr./Mrs./ First Name, Last Name)		(if necessary)

Figure 2 Table content of actors list of networks

Data collection of the questionnaire

In order to collect data beyond those of actors and organisations whom NNLs can identify through the mapping, an online survey was created and distributed widely. To this purpose private advisory networks (e.g. CropLife), AKIS networks (e.g. the network of modernAKIS) as well as national networks available to the project partners are used for distribution. The survey, which is part of Task 1.1, targets advisors interested or specialized in RUP. Nine short questions aim to determine the current state-of-play of training programs and the implementation of acquired knowledge in the field of RUP practices in the field-service. The contact points of EUFRAS and AKIS networks, as well the NNLs, disseminated the survey throughout Europe. The questions included in the survey are available in Annex I.

2.3 Results

The results of the survey and those of the mapping are presented in Chapter 5. The results presentation is a mix of quantitative and qualitative analysis. The countries involved in the list entries and the survey are named and the ratio of the actors in relation to their working environment is shown for both the Actors List and the survey. From the Actors List, the level of activity in relation to regional or national presence and the focus of the keywords in relation to their relevance to RUP are also emphasized. Another key statement from the list of actors is the weighting, which illustrates the motivation of the respective actors in relation to their



interest in RUPP. Specific points from the survey results include: the level of motivation for practically applying RUPP practices, barriers that prevent the actors from doing so and which factors would facilitate uptake and implementation.



3 Background and context

3.3 European strategies

In the European Commission (EC)'s Green Deal, both within the "Farm-to-Fork" and the "Biodiversity Strategy" set an EU-wide reduction of pesticides by 2030 as a target. The 'Proposal for a Regulation of the European Parliament and of the Council on the sustainable use of plant protection products and amending European (EU) Regulation 2021/2115' of June 2022 mentions both existing shortcomings and long-standing difficulties in the implementation of the Sustainable Use of Pesticide Directive (SUD) of 2009 and stricter regulations that should lead to the reduction target⁵.

The proposal in the SUD sets out four main objectives. The first objective aims to reduce the use of plant protection products and the risks they pose, increasing the use of integrated pest management and increasing the use of less hazardous and non-chemical alternatives to chemical pesticides. The second objective focuses on improving the availability of monitoring data, the third objective is to improve implementation and enforcement in all Member States and the fourth objective is to support new technology to be deployed so that the first objective can be implemented more successfully⁵.

The Common Agricultural Policy (CAP) provides support for all member states, including the promotion of sustainable agricultural methods and precision farming applications. Investments and the development of expertise through training, advice, cooperation and knowledge exchange are used as effective means to this end⁶.

3.4 Framework conditions for the development of an advisor network

Risks of excessive pesticide use, hidden consequences

The use of chemical pesticides in agricultural production has led to higher income and prosperity by increasing the area output and saving time in labour measures and ensuring yields even under the growing influence of climatic consequences (Sud, M., 2020; Tudi, M. et al., 2021). On the other hand, negative consequences of the intensive use of pesticides for global ecosystems and the natural and drinking water balance have been widely documented (Sharma A., Kumar V. et al., 2019; Tudi, M. et al., 2021) and there is less awareness of the hidden costs of these impacts.

It includes loss of biodiversity, fitness and behaviour of organisms, quality of drinking water, and effects on the metabolism of living organisms, soil degradation and other factors (Sud, M., 2020, p. 8-10; OECD studies on water 2023). With their consequences on fertility and resilience of systems, not excluding human health, hidden costs can be in the billions. According to the Organisation for Economic Co-operation and Development (OECD) studies, the prevention of diffuse pollution is considered less cost-intensive than the elimination of consequential damage (Sud, M. 2020, p.12-13, Bourguet, D., Guillemaud, T. 2016).

Government responsibilities in hazard and risk management

⁵ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022PC0305#> (31/07/2024)

⁶ https://eu-cap-network.ec.europa.eu/common-agricultural-policy-overview_de (31/07/2024)





The 'Proposal for a Regulation of the European Parliament and of the Council on the sustainable use of plant protection products and amending Regulation (EU) 2021/2115' points out that there are still significant shortcomings in the implementation of the SUD in some member states. In this context, the Commission was called upon to introduce stricter rules, for example in the form of a regulation at EU level. The harmonisation of national measures is also aimed at improving the situation on the internal market and reducing trade distortions between member states¹.

Economic instruments for regulating environmentally hazardous substances include taxes, the demand for substitute substances or subsidies. On the one hand, such instruments are aimed at restricting and banning substances, imposing charges on products and the substances they contain, or pollution charges. On the other hand, instruments of good professional practice and subsidies for preventive education are listed. Their aim is to create a calculable basis for the long-term limitation of pollutants and to introduce alternative methods. These instruments should therefore be seen as an incentive. Moderate regulation creates long-term planning security for producers and developers and thus leads to innovation through predictable investments. Industrial suppliers in particular want clear legislation and standardised European framework conditions for long-term planning (OECD Risk Management Series No. 79, 2023).

It has been observed that active substances are continuously being removed from the EU authorisation list ([EU Pesticides Database - European Commission \(europa.eu\)](https://ec.europa.eu/pesticides/)). This mainly includes 'Hazardous Active Substances' and substances that are listed as so-called 'Candidates of Substitution'. The gaps are supplemented by the listing of 'Basic Substances' and 'Low-Risk Substances'. The proportion of EU-listed substances based on microorganisms is also increasing. This is evidenced by presentations given at symposia organised by the European Commission². The growing share of low-risk pesticides and the presence of basic substances in the shortlist of EU listed plant protection active substances, as they tend into a rather holistic approach, leads to an increased need for training to achieve efficient use.

Improving knowledge and creating risk awareness

Regulating the use of pesticides has been a global objective for many years. The OECD Report 2014 of the Series on Pesticides on the International Integrated Pest Management (IPM) Seminar in New Zealand, which took place in November 2012, reflects the efforts to reduce the use of pesticides at international level. The report summarises approaches to recording the effects and benefits of integrated pest management through the technical and methodological exchange between governments and interest groups (OECD, 2014).

The impact of implementing IPM strategies is visible in various areas, including the environment, human health, economy and social life. Interestingly, these areas are characterised to varying degrees depending on the level of society. The influence of the direct or latent impact of costs and personal affectedness varies at farm level, local or regional and national level. In all approaches to harmonising the procedure for sustainable plant protection and reducing the risk of plant protection products, the focus is on implementing this in consideration of the respective countries (OECD, 2014).

In any case, the results of the OECD Studies on Pesticides help to define the goals of sustainable crop protection and risk mitigation. The implementation of RURP strategies has a positive impact on the health of both individual users and society as a whole.





Reducing the exposure of pesticides to the environment results in cost savings from the treatment of drinking water and the regeneration of soils and biodiversity. This in turn translates into economic benefits for agriculture and society at local, regional and national level. Nevertheless, case studies will be needed, to bring the benefits of RUPP practices to farm level through positive economic effects (OECD, 2014).

In subsequent studies, Deguine J.P. et al. (2021) still see a rather pessimistic picture of the implementation of IPM strategies, due to a confusing number of different IPM definitions and inconsistencies in implementation in different countries. According to their analysis, chemical control still forms the basis of crop protection programmes. Creissen, H.E. et al. (2021) also agree with the statement that integrated methods have a negative impact on the success of pest control.

Lamichhane J.R. & Aubertot J.-N. et al (2016) summarise in their work that to advance RUPP practices, cross-border networking can be a means to overcome current challenges. These challenges include a lack of skilled labour, growing crop protection problems due to climate change, declining funding for sustainable crop protection and a lack of knowledge transfer combined with communication gaps at various levels. The importance of networking between research, policy makers, industry and farmers for the advancement of IPM strategies is also emphasised by Bakker L et al. (2021).

Barriers of implementing IPM strategies and how to overcome them

In general, reducing the use of pesticides in production is considered risky. However, the willingness to adopt RUPP practices increases as soon as other farmers also use them (L. Bakker, J. Sok et al., 2021). Finger R. & Möhring N. (2022) found in their study that the willingness of farmers to adopt pesticide-free production correlates with their understanding of the ecological consequences of pesticide use. Farmers are more willing to refrain from using pesticides if they are aware that avoiding the use of pesticides has a positive environmental impact.

Farmers who are already familiar with IPM also have a more optimistic attitude towards these practices. If the information for IPM or RUPP practices comes from neutral sources, the acceptance for implementation is higher and associated with greater commitment (Creissen, H.E. and Jones P.J. et al., 2021). In the conclusion of their study, Creissen, H.E. and Jones, P.J. et al. (2021) recommend measures that encourage farmers to become more involved in plant protection issues and to urgently promote proactive information seeking, e.g. through advisory professionals and more experienced peers at field walks, open days, discussion groups and the like.

Advisory and advanced training programmes due to a network as a basis for motivation

The OECD has been developing a functional program for sustainable plant protection for many years, starting shortly before the turn of the millennium. This is mainly done within the framework of data collections and international working groups. Various stakeholders are brought together in these working groups (OECD, 2014):

- Pesticide regulatory authorities of OECD countries
- Pesticide and biocontrol industry
- Grower's associations





- Consumer and environmental non-governmental organisations, and
- Other organisations with expertise in IPM

The following main questions are to be answered.

- To what extent are agricultural producers adapting to the sustainable use of plant protection products?
- What advantages result from this adaptation?

The Final Evaluation Report of the ‘Study supporting the evaluation of Directive 2009/128/EC on the sustainable use of pesticides and impact assessment of its possible revision’ includes extensive surveys on the implementation of SUD in the various member states. It states that the member states see the main advantage of the SUD in the definition of uniform standards; it is also emphasized that the introduction of the SUD will provide uniform training and advisory services in the MS for acquiring and maintaining user authorization (Ramboll & Arcadia International, 2021).

Educational programs aim to change values and ingrained behaviors. Educational programs offered by governments are intended to make people aware of the benefits of adapting to external change processes, such as the growing influence of extreme weather conditions and political decisions, and the personal change that this entails. The provision of appropriate information creates incentives to make it easier to implement measures to adapt to external change processes. Finally, by forming relevant interest groups, necessary changes can be evaluated. This results in possible ways of choosing the politically necessary measures and sending suitable signals to the public. (Wreford, A. et al., 2017).

When considering the costs and benefits of RURP practices, it is still valid that three levels need to be considered: farmers, society as a whole and also the different institutions with the role of intermediaries (OECD 2014). Horizon projects such as AdvisoryNetPEST (and many more) can help to strengthen the role of these institutions.

The cross-analysis of the AKIS country reports, drafted in the Horizon 2020 i2connect project indicates that the AKIS in the European countries have gained political importance for the implementation of IPM and RURP since 2014 with the implementation of the directive and should also be given greater importance in the future (Birke F.M. et al., 2022).

3.5 An overview of AKIS across Europe

Based on the data from the [i2connect Cross analysis](https://i2connect-h2020.eu/wp-content/uploads/2022/12/2022-12-02-AKIS-cross-analysis_updated.pdf) of AKIS country reports⁷, it can be stated that, due to the many challenges facing the agricultural sector today, advisory services and knowledge transfer have taken on very complex forms that go beyond the transfer of technical advice. In order to cope with the rapid changes caused by climate change and global influences, farmers must also be provided with tools such as self-optimisation and innovation skills.

The AKIS in the European member states have evolved over many years, as a result various organisational forms can be observed in each case.

The different distribution of the ratios of land area to agriculturally utilised area or of crop land to forest areas alone varies within the individual EU member states. In the majority of Europe,

⁷ https://i2connect-h2020.eu/wp-content/uploads/2022/12/2022-12-02-AKIS-cross-analysis_updated.pdf





the AKIS are organised in a centralised manner, while a few countries are organised in a completely or predominantly decentralised manner. Overall, there is a subdivision into education systems, advisory services, research, supporting services and administrative bodies across the AKIS. These structures originate from either private or public structures, such as farmer-based organisations, less frequently NGOs and, in the past ten years, increasingly also private economic advisors (Birke F.M. et al., 2022).

Based on the analysis conducted in the i2connect project, all surveyed countries emphasize the presence of public authorities, research and education institutions, and farmer-based organisations as actor categories. Only a few countries stand out by having a strong presence of private companies and farmer-based organisations, while public authorities play a less significant role. Non-governmental organisations (NGOs) are generally represented less in European AKIS'. The distribution of EU funding and the administration of subsidies also varies greatly from country to country, which leads to imbalances within European AKIS'.

Interestingly, a particularly 'frequently mentioned' weakness is the link between science and practice, i.e. between farmers and research, or more generally between research and other AKIS stakeholders'. Another conspicuous feature is that the advisors from the various sectors spend a lot of time providing advice in the field and imparting knowledge, but little time developing innovative approaches themselves. AdvisoryNetPEST can help to close these gaps - at least in the area of crop protection (Birke F.M. et al., 2022).



4 Network conceptualization

All advisors must be integrated into the AKIS and advisory organisations must cover economic, environmental and social dimensions as well as provide up-to-date technical and scientific information developed by Research and Innovation (art. 15, Reg. EU 2021/2115). To reach this goal advisory organisations, but also Managing Authorities, need to devise structures, methods and approaches that support advisors in acquiring a set of capacities and skills that allow them to achieve the objective set by the regulation. Specific regulations featuring technical obligations, like the reduction of pesticide use for plant protection, must be included in the need for skills and capacities of advisors.

In support of a better integration of advisors into AKIS as well as the development of capacities and skills to innovative practices for the reduction and use of pesticides AdvisoryNetPEST will set-up and operate a network of networks. The project has chosen the national dimension as a key level for the implementation of network activities, by mobilising in each country the key AKIS stakeholders in a multi-actor setting, allowing for efficient knowledge exchange at farm, regional and national level. All these national networks will then exchange at European level aiming to transfer RURP practices in different crop sectors across Europe. The crops sectors have been carefully selected in terms of their importance and in terms of area of production and economic weight. These resulted in a focus on networks on arable crops, vineyards, orchards and horticulture (soft fruits and ornamental).

4.3 The AdvisoryNetPEST Network

Research findings of the last decade have moved away from the concept of the linear process of transferring new knowledge (from research) into practice to transfer as a non-linear process, which happens in knowledge networks or systems. In this kind of settings instruments like experiential learning and exchanges, can be more easily realised and results indicate that they are more productive in terms of learning and knowledge acquisition than attending a seminar or a training course. In addition, these technical networks need to be integrated into the Agricultural Knowledge and Innovation System (AKIS) system, where innovation is conceptualised as being co-produced by all or different actors in the agri-food chain (AKIS, 2019).

In total, AdvisoryNetPEST will establish 28 national networks, which are built by sectoral sub-networks – one sub-network in fourteen associated countries, two sub-networks in eleven partner countries, and three sub-networks in three partner countries (Spain, France, and the United Kingdom).

What is a national network?

A national network is a structure, which connects individuals and organisations who work together as co-creating, acquiring and sharing knowledge for the reduction of pesticide use and risk practices. At the centre of each national network are advisors working on a specific topic/in a specific sector in RURP, who are connected to AKIS actors like researchers, farmers and farmer organisations, educators, industrial actors, managing authorities, etc., and their facilities.

A national network involves actors, who can be either independent or part of an organisation and or initiative/project. The national network may also involve relevant existing networks,



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where an actor between the two networks does the connection. The connecting actor facilitates the knowledge flows between the members of the two networks.

Each national network is coordinated by a national network leader, who is supported by 2 or 3 sectoral leaders (depending on the number of crop sectors covered by the respective country).

National Network Leaders (NNL) are project partners who manage the activities connected to the national network as the main interface between the EU project level and the national level. They will animate and coordinate the activities of the National Sector Leaders (NSLs). The NNLs will support the advisors and the NSLs in networking, identifying analyzing and adapting the Novel Approaches (NA), scaling up the NAs, connecting the network with other projects and policy makers and disseminating the results at national level.

Because AdvisoryNetPEST is built out of a consortium of 14 countries, resources have been allocated to project partners from these countries to identify, liaise and engage with advisory service providers from the other 13 EU-Member States. Within the scope of the project, this is defined as twinning. It is the task of the NNLs to connect with the affiliated twinning country for the nomination of the Associated Network Leaders (ANLs). The ANL will have some of the tasks that NNL have, for those countries who are not project partners. His/her main contact in the project will be the NNL of the twinning country.

A National Sectoral Leader (NSL) is a national expert in science or technology who oversees coordination and networking within one of the four crop sectors in their country. Their responsibilities include:

- Identifying relevant advisors and their networks at the national level.
- Connecting national advisors within a specific crop sector and supporting the NNL in building a cohesive national network.
- Identifying Novel Approaches (NAs) in their country and selecting the most suitable ones for testing and scaling within their crop sector and country.
- Organising and participating national events related to their sector and the NAs selected.
- Disseminating results at the national and regional levels.

An Associated Network Leader (ANL) is a national expert in science or technology who oversees coordination and networking within one of the four crop sectors in their country. Within AdvisorNetPEST they have the following tasks:

- Identify relevant advisors at the national level and engage them to participate in project activities
- Participate in the identification of 3 NAs per crop sector and year at the national level
- Organisation of one training and education event per year at the AN level, back-to-back with farm demonstrations
- Participate in the mapping of related projects, thematic networks, initiatives, relevant EIP-Ogs, and national projects
- Organisation of one farm demonstration event per year at the AN level, back-to-back with training and education events



What is the EU-level AdvisoryNetPEST network?

As mentioned above networks are structures which enable the flow of knowledge by providing a flat structure which enables the sharing/dissemination of information, access to resources, ideas and capabilities as well as access to other relevant actors. The EU-level network will link all national networks across all the four crop sectors and enable a transnational exchange, by facilitating several types of peer to peer learning activities in addition to trainings. The EU-level network will enable both formal and informal interactions between network members allowing those interested to connect directly with each other and foster bi-directional interactions. Due to its openness, (see next section) the network will foster a diversity of actor types thus enabling co-creation and circulation of knowledge across the AKIS. Finally, yet importantly, the network members will be embedded in several networks (sectoral network, national network, EU-level network) which will support the circulation and cross-fertilization of knowledge.

For each of the networks (sectoral, national, EU-level) to work well, beyond the initial registration phase, to have an organic growth and potential for sustainability they need to provide an environment where exchange, peer-learning, sharing and dialogue can happen, with members feeling both challenged and safe at the same time (modernAKIS D2.1, 2023). In addition, the networks need to clearly communicate their purpose and their reason for existence. To this end they need to address who the network is for, what problem is it working on, and what type of collaborative activities the network undertakes. In conclusion, and no less significant, the network needs a clear structure, which enables transparency, inclusiveness but also ease of connection among members.

Who are the network members?

While advisors are at the centre of the network and its main actors, they will co-create in interaction with the other AKIS actors, who are the “second” layer of the network. Therefore, the network is open to all actors and organisations (cf Chapter 2.2) who work in RUP and who comply with its code of conduct. The assumption driving the open approach towards the national networks, is that only individuals who are motivated and derive a benefit from participation will register and engage on an ongoing basis in the network.

Farm advice is delivered by a plurality of functions, which means that the advisor function may be found in other organisations than farm advisory services. The following types of actors have been identified in the mapping and the survey as potentially those providing advice related to RUP to farmers:

- private and public advisors
- business organisations and suppliers
- farmer(-based) organisations and their representatives
- researchers and academics
- educational organisations
- public authorities
- non-governmental organisations

The list is open ended and will be extended during the duration of the project as warranted.



What is the AKIS?

AKIS stands for Agricultural Knowledge and Innovation Systems. It represents the combined organisation and knowledge flows between persons, organisations and institutions who use and produce knowledge for agriculture and interrelated fields (Regulation (EU) 2021/2115). The aim of the AKIS is to create a regional/national innovation ecosystem by enhancing knowledge flows between the AKIS players as well as strengthening links between research and practice.

For an AKIS to work well, four different components or perspectives need to be worked on and continuously developed (modernAKIS D1.1., 2023)

- Structures – which include a wide array of actors, institutions, interactions and infrastructures
- Processes – which foster the collaboration activities between actors to create knowledge flows. They include change and innovation development, knowledge development, knowledge diffusion through networks, guides of search, market formation, resources mobilization, creation of legitimacy/counteracting resistance to change.
- Enablers and disablers of AKIS functioning and performance – these are processes that pertain to the interactions of different structures and that are hindered by various dynamics (virtuous and vicious cycles) and possible failures/blocks/enabling mechanisms that need detection in order to allow the AKIS to function well (Bergek et al., 2008; Bergek et al., 2015).
- Capacities for change – which require the presence of technical capacities in addition to adaptive, collaborative and innovative (functional) capacities which lead to long-term transformative change at individual level.

AdvisoryNetPEST focuses strongly on the last three perspectives of a well-functioning AKIS and aims to improve them through specific activities throughout the project for advisory and advisory services but also the AKIS in general.

What is the purpose of the network?

For AdvisoryNetPEST the purpose of the network is to be a structure of different AKIS actors, with primary focus on the reduction of pesticides, which acts as an implementation structure for the different project activities. The network is organised around the topic of plant health and reduction of the risk and use of pesticides with the purpose to engage AKIS actors to co-produce new knowledge by creating the conditions for communication, sharing of research and cooperation around common initiatives (Moschitz and Home, 2012).

While the initial purpose is defined, the long-term purpose should not be imposed top-down, but co-created with the members. Otherwise, it risks becoming difficult to sustain highly energized and productive member engagement.

To this end, the project partners will organise several online co-creation sessions with the NNLs, NSLs and ANLs (e.g. online workshops, interactive surveys etc.) to better understand their motivations. Beyond these expressed motivations, the partners will analyse from the data provided by the different activities in the project, where correlations between engagement and project activities can be drawn in order to support the network towards its highest possible impact.

By motivations we identify those triggers that drive one to take an action – in our case engage





in the network and its activities. These are different than rewards who come as a result of an action that has been performed. Motivations are either intrinsic, i.e. they do not depend on rewards and are inherent to the action or the person, or extrinsic, i.e. they are award dependent. Examples for extrinsic motivators access to specific funds (e.g. funding for trainings, funding for cross-visits, funding demonstration events), knowledge acquisition (e.g. training courses, access to different Novel Approaches and other RUP supporting instruments) or contacts and community. Because intrinsic motivations are quite difficult to accurately identify and capture across a large group, the main focus of AdvisoryNetPEST will be on the extrinsic motivators and how they can be most effectively linked with the project activities.

Actions to engage and activate network members as devised and co-created during the modernAKIS network creation for key AKIS actors (modernAKIS, D2.1):

Table 3 Figure 2 – Table content of actors list of networks

It's all about...

Needs	⇒ Actions
...Attitude	
1. Mutual trust amongst all	⇒ cultivate trust, not control
2. Engagement of participants	⇒ collaborate generously
...Purpose	
3. Win-win relations	⇒ emphasize “return on relationships”
4. Common purpose and principles	⇒ clarify your shared purpose
5. Common focus on target group(s)	⇒ define your target groups
6. Shared knowledge needs	⇒ assess user needs
...Organisation	
7. Joint capacity building and learning	⇒ employ co-creative methodologies
8. Complementary knowledge and capacities	⇒ convene the right people
9. Continuous interaction	⇒ organise nodes not a hub
10. Cooperation framework and methods	⇒ coordinate your actions

Mutual trust among all

Strong relationships amongst network partners and a culture in which actors routinely invest resources into building long-term, trust-based relationships are critical to collaborative success. Trust generates openness for sharing knowledge and ideas. Trust shouldn't be confused with people liking each other or agreeing. Instead, trust within a network is about finding common ground and working together to achieve mutual goals. A network may be tempted to quickly “get to the action” and let relationships develop naturally over time. However, it is proven that trust is the single most important factor behind successful impact networks. Networks move at the speed of trust. Therefore, trust should be cultivated intentionally, rather than passively.

Engagement of participants

Generous collaborators do not count transactions, giving only as much as they get in return. They assume positive intent, communicate frequently, and consistently look for opportunities to work with others in support of shared goals, not personal gain. They are “successful givers”. Givers play a valuable role in networks with other network members correctly perceiving them as selfless and agenda-less. “Givers” share credit without demanding any in return, which spurs networkers to flock to their ideas. Their generosity earns them deep and lasting respect,





which translates into potency.

Win-win relations

Win-win is a strategy in which all the parties benefit one way or another. There are no losers. In a conflict situation, when the participants are trying to work out a resolution, a win-win strategy is one in which everybody is accommodated. Instead of focusing on what each individual member of the network wants, by aiming at how much can be accomplished together, all participants come out winning. This is only possible by constantly engaging in efforts to build strong relationships. Unless built on a foundation of mutual respect and integrity, collaborations are unlikely to succeed, regardless of how much formal structure or strategic planning went into them.

Common purpose and principles

A network's purpose is its reason for being. It's what inspires people to join and contribute their time and energy. Clarifying a common purpose is an essential early step in forming an impact network and is how a network stays coherent, even as it grows. Purpose must be clear enough initially to identify the right partners and encourage them to meet. As a network clarifies its purpose, articulating its shared principles is also helpful. Principles are fundamental beliefs about how network members intend to conduct themselves and work together in pursuit of the network's purpose. They guide members' behaviour and decision-making by linking values with action. Together, purpose and principles create a foundation for vibrant and coherent self-organisation of the network.

Common focus on target group(s)

The ultimate goal of a knowledge network is to co-create the knowledge needed by its target group(s) to overcome challenges or to respond to opportunities. To this end, the co-creation between network actors needs a demand-driven approach based on the needs of the target group(s). It is thus important to define the target group as sharply as possible through a detailed target group analysis, since not only the outcome of the network development process, but also the development and dissemination approach, the communication channels, language and information must match with the one's used by the target group in order to realize uptake of results. Ideas are born, checked with the target group, and then further optimized. Finding a sharp target group definition will help create a tone of voice that really speaks to those envisaged to advance. Ideally, the target group is well represented in the network, appointed in the formal role of the "guardian of the focus".

Shared knowledge needs

Knowledge needs assessment can be defined as determining if gaps exist between "what is available" and "what should be available" in terms of the knowledge needed to achieve its purpose. It is essential that distinctions are made between needs, wants and interests. Network members undertaking efforts to assess knowledge needs should understand that "needs" refer to something considered necessary or required to accomplish the networks' purpose. "Wants", on the other hand, are considered desirable or useful, but not essential. "Interests" indicate an individual's concern or curiosity about something. If real knowledge needs are determined but are not available in the network, either new network members should be actively recruited... or the purpose ambition level should be reassessed.





Joint capacity building and learning

Tackling the purpose of the network requires mapping the system, examining the problem from diverse perspectives, finding challenges and potential solutions. It also requires understanding the context, societal, political or sectoral trends, dynamics, existing assumptions and related evolutions. By bringing people together, we can address an issue from many angles at once, see the big picture, and make decisions that benefit the whole system, not just part of it. Through a joint learning process, a network and its members bring the pieces together so the group can jointly make sense of the whole puzzle. Different roads towards viable solutions must be sought. Co-creation plays a key role in stakeholders' engagement towards this endeavour.

Complementary knowledge and capacities

Fundamentally, cultivating a network is about bringing people together to create a more interconnected whole. Connections are central to what makes a network work. Successful connection amongst the “right people” creates a generative space where people interact, think, talk, and collaborate in new ways. It creates moments where participants envision and build a solution to a challenge together. The “right people” collectively represent all parts of the system, have the ability to get things done, and are willing to cross boundaries and work with people who may have very different perspectives and priorities. Real progress on complex problems requires uncommon collaboration across divides.

Continuous interaction

Impact networks aren't just about relationships, they're also about flows: getting information, knowledge, and resources to where they're needed most. When flows are accelerated across a network, people are better able to coordinate their actions, sharing new or promising practices with one another, and reducing unnecessary duplication. A node network - unlike hub-and-spoke networks- enables continuous interaction amongst all network nodes, thus making communication faster and more resilient. In addition, in a node network all partners are peers mobilizing a constellation of resources and skills that enables the achievement of a shared vision. The network itself becomes the primary vehicle for delivering mission impact.

Cooperation framework and methods

By identifying and coordinating work, participants can leverage organisational resources, collaborate around common goals and avoid duplication of efforts. Because emergent collaborative solutions are dynamic, the most effective networks assign and coordinate roles as well. Network roles may include a “core team” to handle certain governance decisions and a facilitator to design and lead the convenings and to serve the network's emergent needs.

What activities are planned for the network?

Currently the following activities are planned and will be offered to the network members for engagement:

- Developing an EU network of advisors to reduce the use and risks of pesticides (RURP), built on existing advisory networks and the national AKIS in all MSs
- Identifying, selecting, and shaping novel approaches (NAs) to be adapted and replicated across the EU
- Exchanging knowledge and training advisors to promote the adoption of the NAs by





farmers

- Linking the network with other projects, initiatives, and policy makers, increasing the knowledge flows across the AKIS and the CAP Networks, at EU and national level, and provide policy recommendations
- Scaling up the NAs, fostering the adoption of innovative solutions by farmers.



5 Results and analysis of mapping and survey

5.3 Mapping

The data collection in the mapping table including the list of actors, which is populated by the NNL and NSL, records data entries from 10 countries, with Bulgaria, Croatia, Latvia and Denmark missing. Several reminders to the missing countries were sent and there is continuing effort to collect relevant data. At the time of evaluation, the survey on the other side recorded 134 responses from 16 countries. There were no responses from Malta, Luxembourg, Cyprus, Romania, Slovenia, the Czech Republic, Lithuania, Estonia, Croatia, Latvia and Denmark. This means that in total we managed to cover 24 countries (23 EU member states and the UK), until the 30th of September 2024, when looking at the answered combined from the mapping and the survey.

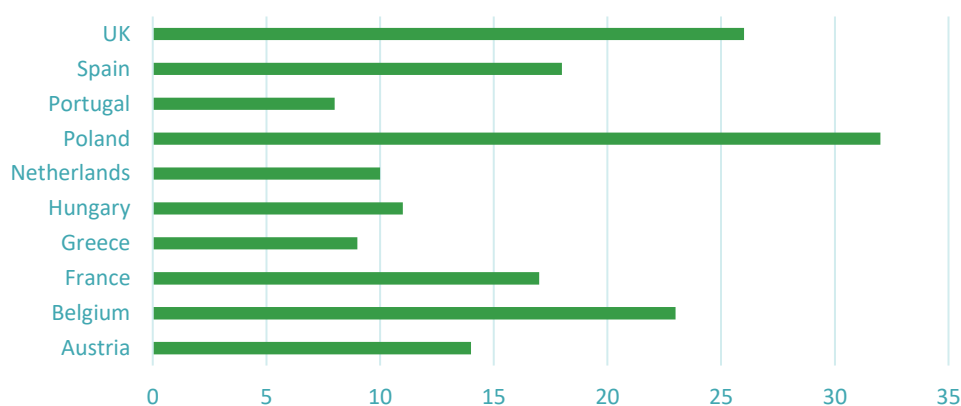


Figure 3 Countries included in the mapping

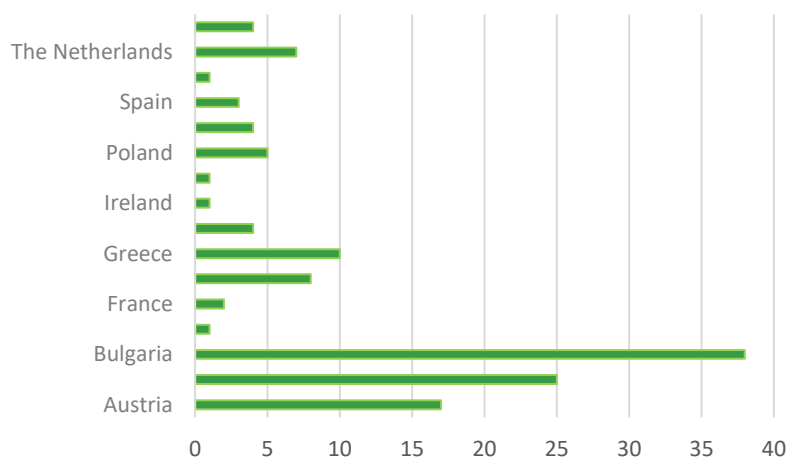


Figure 4 Country distribution survey respondents

When looking at the mapping provided by the project partners, 170 data records are entered under the organisations and 35 lists of networks are given. 90 organisations operate nationally, over 60 organisations operate regionally and ten organisations are listed as internationally active companies. Companies with international activities were only named by Poland.

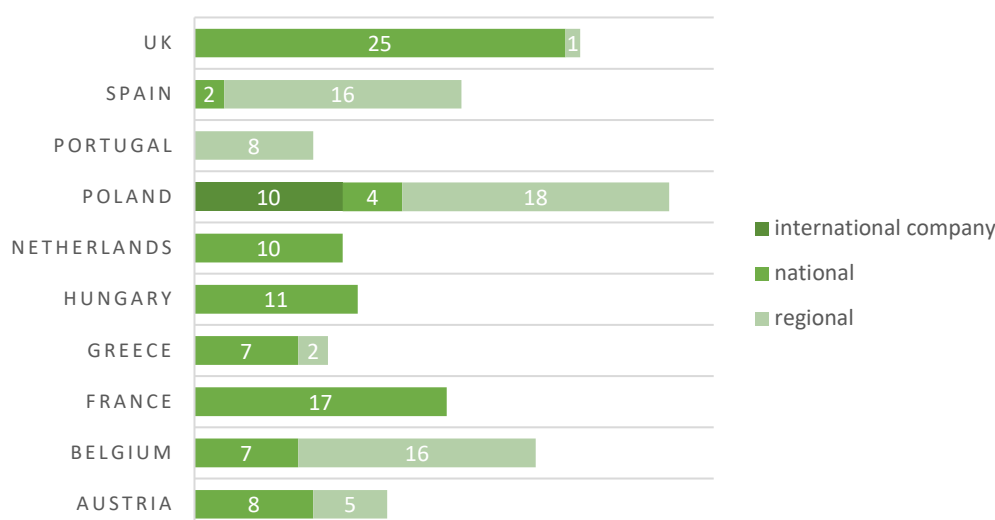


Figure 5 Level of activity on RURP

Under the column of the type of organisation in the actors list, the majority of affiliations are with Research Centers and Universities, Industry Suppliers and Farmers Organisations equal to Chambers of Agriculture. Private Consulting Companies and Independent Advisors are also represented. Both Research Centers and Industrial Suppliers are named in higher proportions, but in general the proportions of these seven types of organisations from the actor list do not differ greatly.

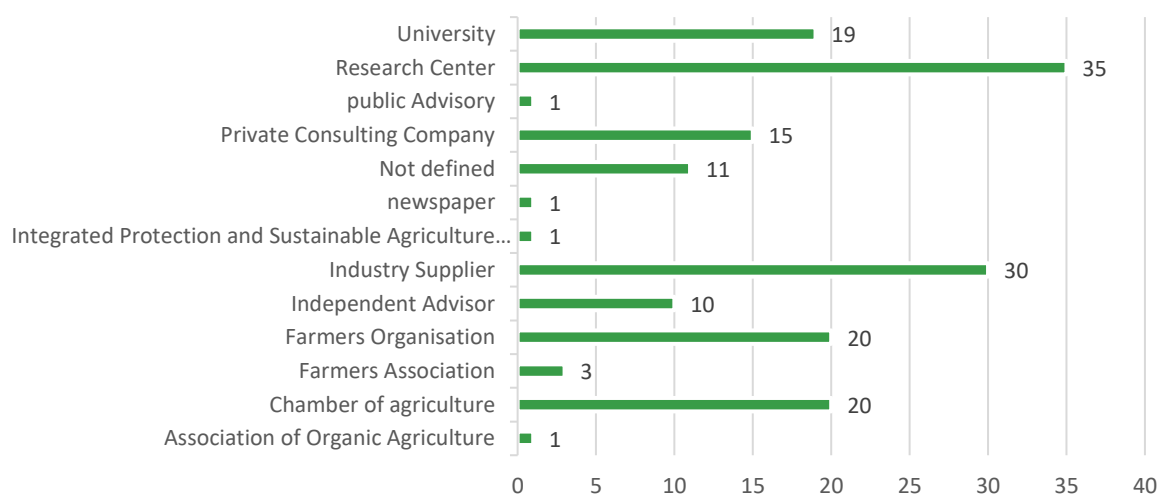


Figure 6 Allocation of actors in their work environment in the actors list

This result can be compared with the values of the survey, where more than 60% of the entries apply to advisors from the extended circle of public or private advisory bodies, but also the affiliation to Chambers of Agriculture or Research Centres are mentioned to a significant extent.



I am an actor who works

148 Responses

I'm an advisor who works for....

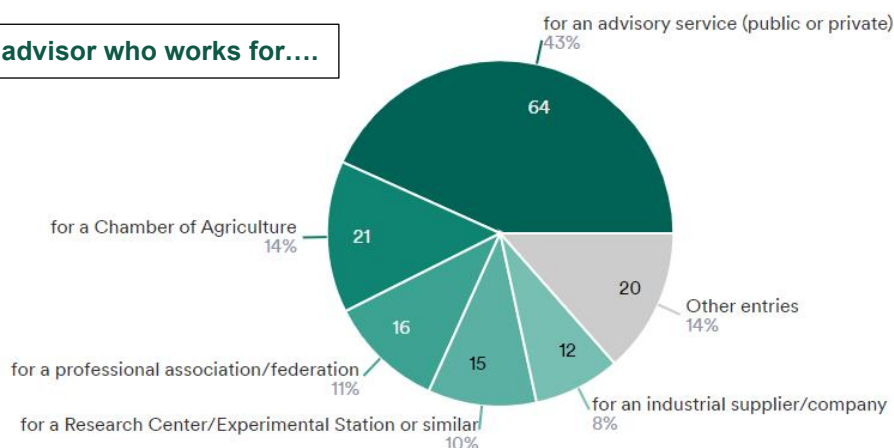


Figure 7 Survey responds on the allocation of survey participants to their work environment

There are two observations, which need consideration from this first set of results:

- when initiating the national networks, it will be important for the NNLs and NSLs to focus also on the advice function not only on the nominal advisor role title although this should be the first priority, because a significant amount of people who provide relevant advice to farmers are located in research centres and universities; this might be especially relevant for member states who have weak or fragmented advisory services in their AKIS.
- the relatively high number of industrial suppliers identified in the mapping (less so in the survey) require for the project partners and subsequently the NNLs/NSLs to understand well the role of advisors who work for industrial companies and to make sure that activities in the network are not skewed towards the distribution of specific products and solutions aligned with commercial interest. Avoiding this will enable more trust in the network. This issue should be considered also in the governance guidelines of the overall network but also in a potential code of conduct.

Among the topics and keywords in the actor list, integrated pest management (IPM) dominates with 75 mentions. This was followed by holistic approaches (19), conservation agriculture (11) and organic methods (10). Furthermore, keywords such as soil science, technology and machines were mentioned in small numbers. In the survey, no topics or keywords were queried or assigned.



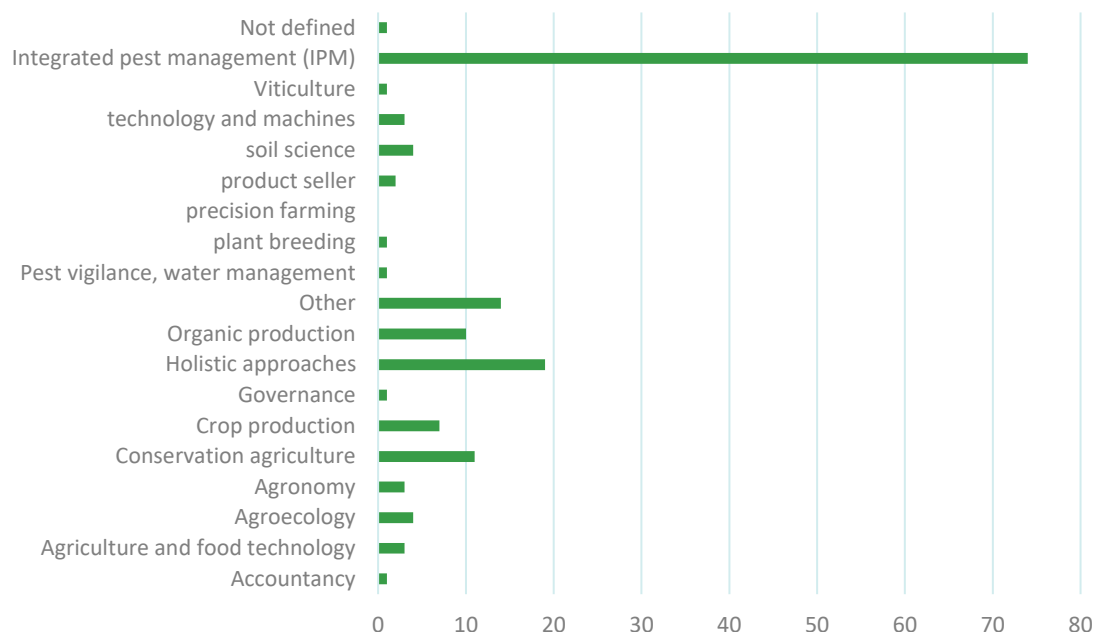


Figure 8 Topics addressed by mapped organisations relevant for RUPR practices.

This result might be an indicator of which topics could be searched for by>NNLs and NSLs when trying to identify other potential network members. However, this list is far from being complete or representative and should be completed with the keywords from the Novel Approaches identified in WP3 at a later point in time.

Looking at the information provided by the organisations regarding their involvement in RUPR, at least 77 actors state this as a lot (73) or highly (4) and 61 of these contacts are also predestined to be involved in the start phase of the project.

Only 23 organisations are slightly involved in the implementation of RUPR, but 13 of these express an interest in being involved at the start of the project. This group mainly includes farmers' organisations, industry suppliers and private consulting companies. No information on RUPR activity was entered for 42 organisations.

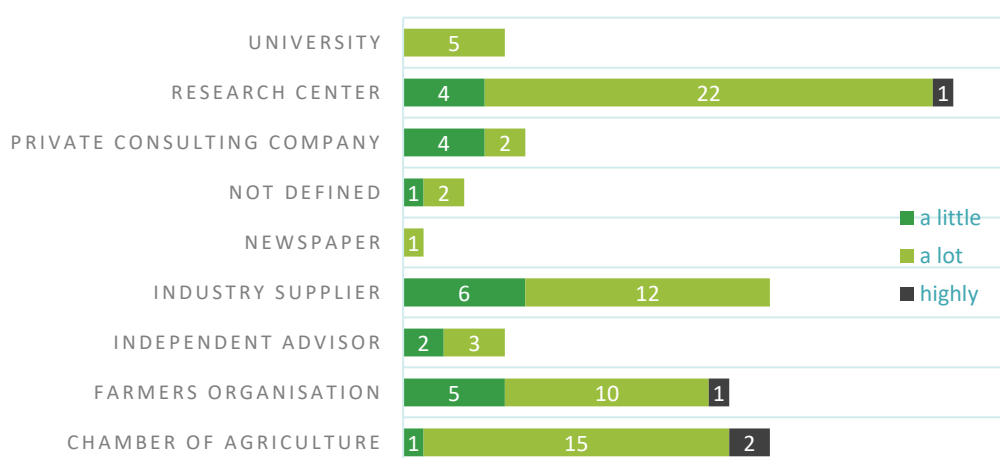


Figure 9 Allocation of interest in participation in AdvisoryNetPEST





Among the submissions on the networks collected in the mapping, there are entries from six countries. Of the 36 networks mentioned, 35 are active at national level and one of the networks mentioned operates internationally. If we look at the keywords relating to the activities in which these networks are active, we find a high degree of diversity in the fields of activity. However, the activity in the field of integrated pest management clearly stands out. Thus, already existing networks – if addressed with well-targeted information tailored to their focus – can be an interesting channel for growing the AdvisoryNetPEST network (potentially through collaboration).

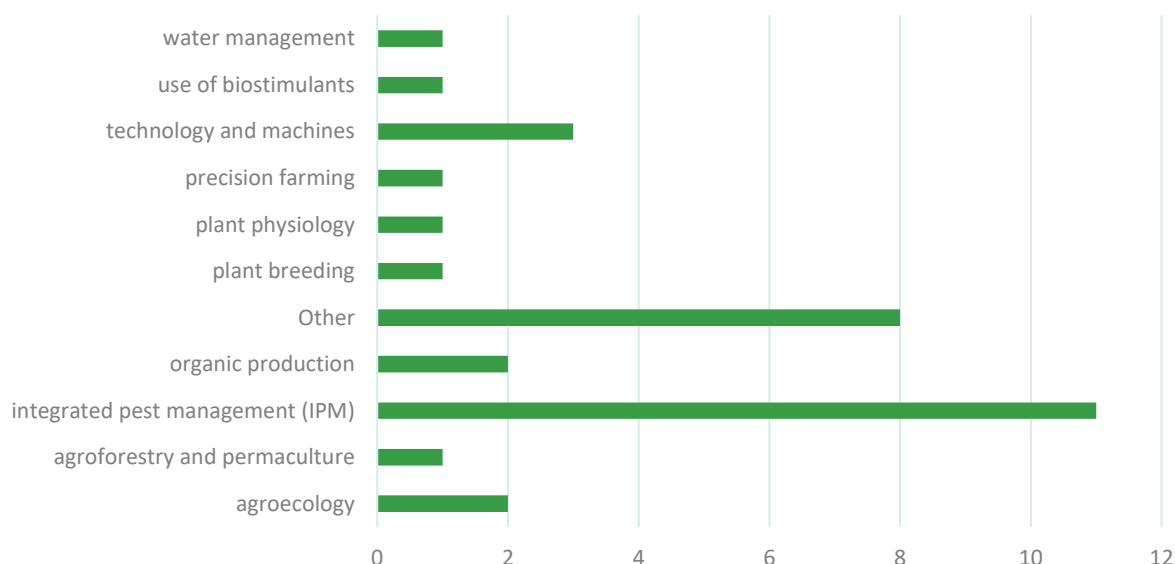


Figure 10 Topics addressed by mapped networks relevant for RURP practices

5.4 Specific results out of the survey

The survey was designed specifically for individual actors and included additional questions that could not be covered in the mapping process. Its goal was to explore aspects such as advisors' awareness of RURP practices, the current level of training advisors receive, and how RURP is implemented in practice. The results are detailed below.

Three quarters of all survey participants are aware of other activities, projects or initiatives aimed at reducing the use and risk of pesticides.

Do you know one or more activities/projects/initiatives/networks that aim to reduce the use and risks of pesticides?
134 Responses

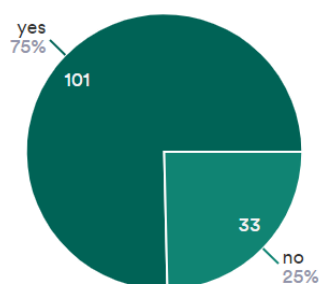


Figure 11 Awareness of RURP activities



Information and knowledge advisors receive on measures or methods for RUPR practices from these activities/projects/initiatives/networks come in equal measure from newsletters or blogs, mediated methods or solution approaches as well as training programmes. Working materials for practical application and networking opportunities are utilized and are not far behind the other offers. Other sources of information are also used, but these are not described in detail in the responses.

It will thus be relevant for NNLs and NSLs to understand and use the most suitable means of communication (i.e. channels) and format that aligns with their network members. This information will be discussed at project-wide NNLs/NSLs meetings and conveyed to the other working areas of the project.

What benefits do these activities/projects/initiatives/networks offer you (multiple selections possible):
430 Responses - 18 Empty

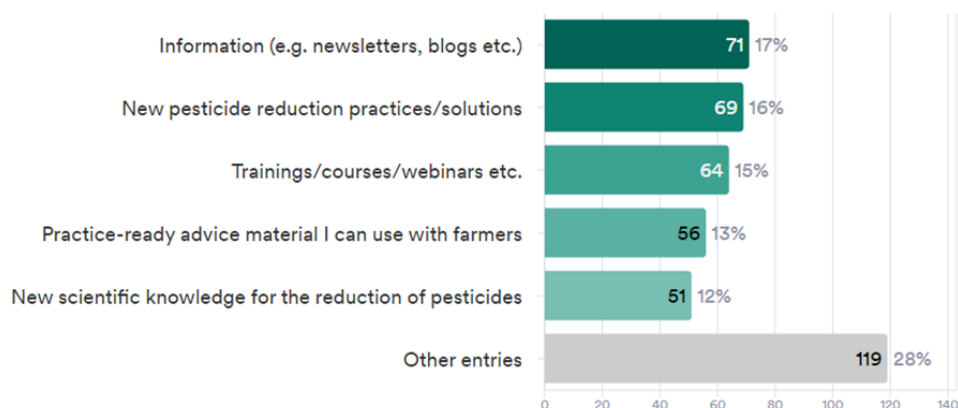


Figure 12 Survey responds on the question “What benefits do these activities offer you?”

Most survey participants do express the motivation to put the knowledge they have learnt into practice.

How highly do you rate your motivation to put the knowledge you have learnt into practice?
124 Responses - 10 Empty

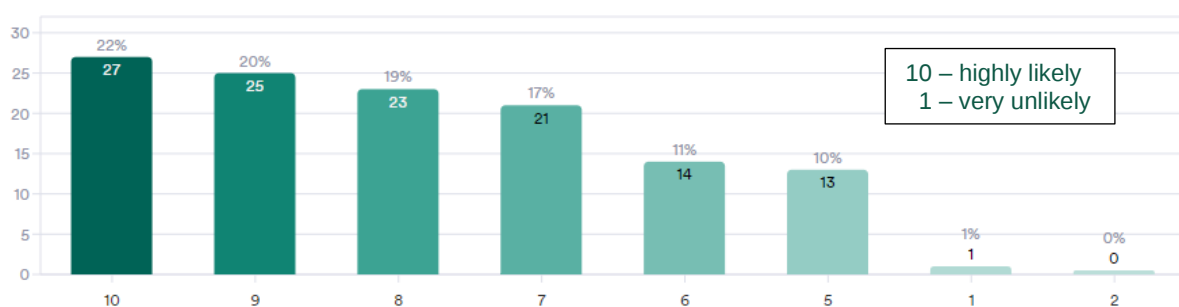


Figure 13 Survey responds on the motivation to put gained RUPR knowledge into practice

The result for the question of obstacles to the introduction of RUPR processes is as expected. The statement that the risk associated with the reduction of pesticides is too high clearly stands out here. This is followed by the lack of resources and the fact that scientific recommendations from research are not practicable to implement.



Figure 14 Survey responds on the question about the barriers to prevent from implementing practices

In response to the open question about the factors that would promote the implementation of RURP, financial support and funding were mentioned several times. The motivation of the farmers themselves was also mentioned as a factor for implementation. There were also requests for better networking with demo farms and further in-depth training on the specific topics. There was also a desire for clear and practical legislation that ensures long-term planning. Lastly, many expressed the need for consumers to recognize and value sustainable production processes is expressed, especially in the form of fair pricing.

The option to leave contact details was offered so that interested survey participants could be contacted for inclusion in the project list of actors.

A pleasing proportion of survey participants also provided contact details for participation in the network of AdvisoryNetPEST and thus expressed interest in the common objective.



6 Network activation through national responsibilities

6.3 Target group

The most relevant target group for the AdvisoryNetPEST project consists of all actors active in agriculture and industry who are involved in advisory services, teaching, and research and as other multipliers. Ideally, these actors will bring experience and knowledge of Best Practices from various crop sectors and specialised knowledge in the field of plant protection, particularly with IPM and RURP practices. The various stakeholders may already be active in ongoing projects and initiatives or networks.

6.4 Initializing the Network

Conceptual information about networks, network roles and their function as such, as described in Chapter 4, are the fundament of the AdvisoryNetPEST network. In AdvisoryNetPEST, the roles of NNL and NSL are designated as the central contact point for the potential members in the respective countries. The following organisations and responsible specialist divisions (sectors) are behind them, with the respective European Sector Leaders (EU SL) highlighted in color under the NSLs:

Table 4 Allocation of NNL to country organisations

NNL	
Organisation	Country
ADAS	United Kingdom
AKI	Hungary
CDR	Poland
CONSULAI	Portugal
CRAO	France
GAIA	Greece
INAGRO	Belgium
INTIA	Spain
LK STMK	Austria
LLKC	Latvia
NAAS	Bulgaria
SEASN	Croatia
SEGES	Denmark
ZLTO	Netherlands

Table 5 Allocation of NSL to country, organisation and sector

NSL		
Organisation	Country	Crop Sector
CRAO	France	Arable Crops
CRAO	France	Vineyards
GAIA	Greece	Horticulture, soft fruits and ornamental
GAIA	Greece	Vineyards
INAGRO	Belgium	Horticulture, soft fruits and ornamental
INAGRO	Belgium	Arable Crops
INTIA	Spain	Arable Crops
SEGES	Denmark	Arable Crops





SEGES	Denmark	Horticulture, soft fruits and ornamental
ADAS	United Kingdom	Arable Crops
ADAS	United Kingdom	Horticulture, soft fruits and ornamental
ASTREDHOR	France	Horticulture, soft fruits and ornamental
AKI	Hungary	Arable Crops
AKI	Hungary	Orchards
CONSULAI	Portugal	Vineyards
CONSULAI	Portugal	Horticulture, soft fruits and ornamental
ZLTO	Netherlands	Horticulture, soft fruits and ornamental
ZLTO	Netherlands	Horticulture, soft fruits and ornamental
CDR	Poland	Horticulture, soft fruits and ornamental
CDR	Poland	Arable Crops
CDR	Poland	Orchards
LLKC	Latvia	Orchards
LLKC	Latvia	Arable Crops
LKO	Austria	Orchards
LKO	Austria	Arable Crops
SEASN	Croatia	Vineyards
SEASN	Croatia	Arable Crops
Agriculture University of Plovdiv	Bulgaria	Horticulture, soft fruits and ornamental
Bulgarian Agriculture Academy	Bulgaria	Orchards

6.5 Identifying relevant actors for the ANP network

A first step for this identification can be the mapping already done, as well as the contact information collected in the survey, under the participants' agreement. However, there will be a need to go beyond these two data collections that already exist in the project and identify other candidates for network membership.

To support NNLs with this, online meetings were organised as part of Task 1.1 and NNLs shared their initial country-specific experiences. Through the professional exchange, it can be stated that there is also a large overlap of actors with mixed influence between actors in the private and public environment. The distribution of the focus of the relocation differs from one member state to another.

Table 6 List of Organisations collected from NNLs

public		private
- Ministry of Agriculture - Chamber of Agriculture - Chamber for Plant Protection - Governmental research - Agricultural organisations - Academic institutes - Agrarian university - IPM group at regional/national level: public technical group making trials on crops	- Farmer organisations - Biotech and science University - AKIS stakeholders - National network of advisors working on RURP - Scientific institutes - Certification organisation - Research institutes/university	- Industry employed advisors and other industrial actors - Employees of farmers - Private self-employed advisors - Private advisory system - Cooperatives, companies who produce crops/vineyard/orchard - Research Industry - Farmer related advisors - Private companies





To help the NNLs in identifying relevant actors for their national network, one tool that is recommended to use is the Network Analysis Tool from i2connect Toolbox⁸.

Network Analysis Tool

The network analysis tool provides a visual representation of where the potential players and those interested in the network can be located in comparison to the position of an NNL in order to establish contact. The tool's visualization should make it clear that potential actors for ANP should not only be activated within their own organisation, but also in other external environments. An example of this: An NNL active for the ANP-network as an employed advisor of a chamber of agriculture contacts employees of a university who are involved in thematically interesting projects with a scientific background in order to become involved in the network. The same NNL also networks with independent advisors known to him who are familiar with IPM or RUPR activities in the field service.

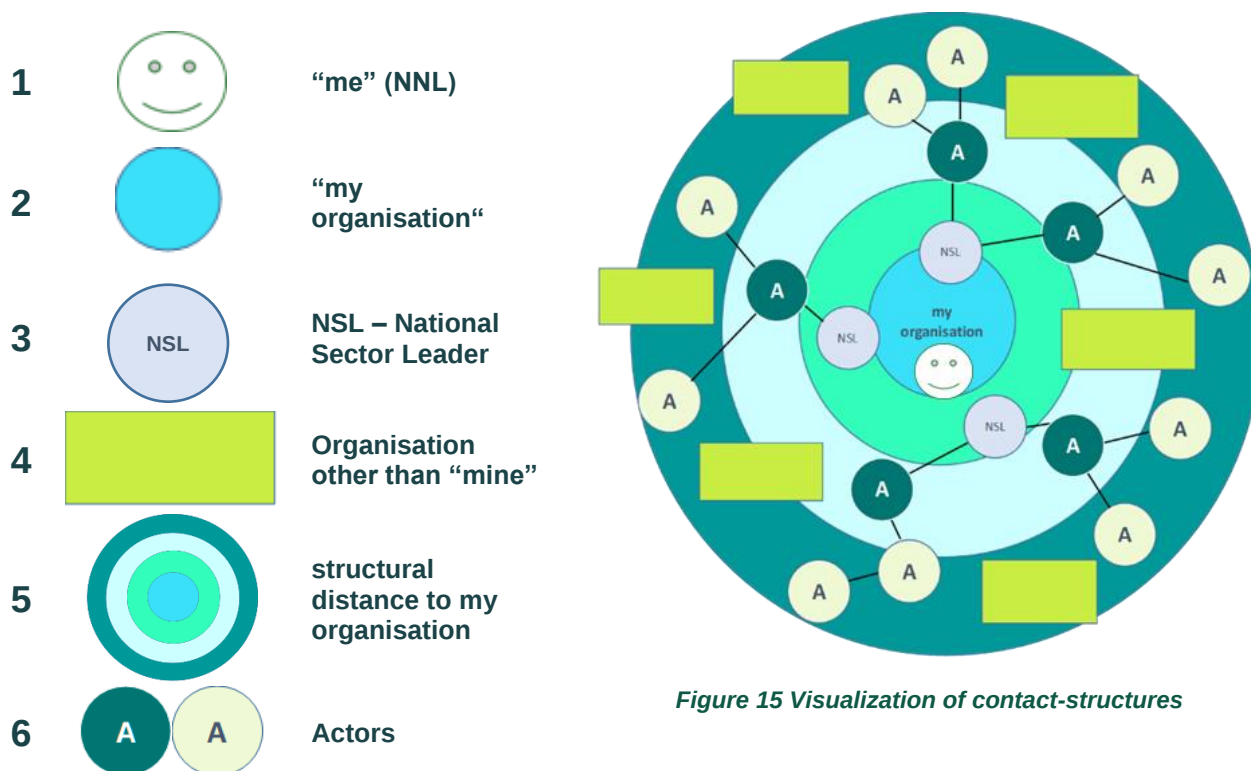


Figure 15 Visualization of contact-structures

- 1 "me" describes the function of an NNL (or ANL) in a specific country. 14 national NNLs start by mapping and recording the advisory structures in order to contact interested stakeholders. Subsequently, 14 ANLs from the twin countries are consulted.
- 2 "my organisation" stands for an institution related to agricultural production that is active in the field of plant protection. These institutions can be Chambers of Agriculture, Universities or Research Institutes and the like.
- 3 An NSL as a representative for a crop sector establishes contact with the stakeholders

⁸ <https://i2c-toolbox.fibl.org/network-analysis.html> (20/08/2024)

who are closest to the practice. The NSL can be active within the own organisation among colleagues, but can also have links to external institutions. These institutions may be close or distant to the own organisation. Usually, the NSLs are already personally known to the NNLs or their organisation.

- 4 Potential actors can be within the own organisation, but they can also be stakeholders from the fields of research, education, the private sector or politics. These stakeholders can be part of an Initiative or Project, they can be employees of Universities, Chambers of Agriculture, or act as independent consultants. Stakeholders can be active via Networks, Research Institutions or the Plant Protection Industry.
- 5 The colored circles symbolise the proximity or distance to one's own organisation. This can be interpreted both spatially and structurally. Examples of this would be 'the Chamber of Agriculture in the other federal state', the private sector compared to purely public organisations, individual private consultants compared to institutes with many employees. The professional colleagues you already know personally or people you only get to know at events, for example.
- 6 Finally, the "Actors" stand for all advisors or other stakeholders in and around "my" organisation. They are active in various crop sectors or higher-level systems as knowledge brokers or multipliers.

Another relevant source of information for potential actors who could be contacted and activated are organisations presented in the different AKIS country reports available in the i2connect project - [AKIS country reports](#).



Figure 16 Screenshot of i2connect AKIS country reports website

In addition, NSLs and NNL can approach the networks identified in the mapping (cf. Annex II) or select relevant partners from national or international partners (cf. list in Annex III).



6.6 Activating and motivating actors for engagement in the ANP network

For initial contact and as motivation to participate in the AdvisoryNetPEST project, actors can be approached according to their interests. Young people, students, especially advisors who are interested in implementing RUP practices from the outset.

→ **Catch actors by their interests (for example young people, students, next generation of farmers)**

Another method is to inform the advisors about the most persistent crop protection problems they are confronted with and look for solutions.

→ **Ask them about their major plant protection problems to awake the interests in finding solutions together**

Participation in training courses and international cross-visits can be communicated as motivation. Specialised events and the exchange of information via networks on relevant crop protection topics can encourage stakeholders to participate in AdvisoryNetPEST. The first focus is on the 'easy-to-win partners' and organisations.

→ **Offer events on interesting key topics**

Furthermore, some of the benefits of participating in AdvisoryNetPEST can be illustrated for the actors involved. These are shown in the table below.

The benefit of participating in AdvisoryNetPEST network can be emphasised as follows:

Table 7 Terms of benefits for motivation

BENEFITS FOR MOTIVATION

Contacts	→ Building networks	New contacts within shared interest groups help you to no longer feel alone. Being part of a network gives you courage and encourages you to be active.
Networks	→ Knowledge transfer	Expertise and facts can be disseminated and expanded more quickly within networks. Shared exchange promotes brainstorming.
Trainings	→ Learning → knowledge and teaching → salary	Knowledge gained from contacts and networks can be passed on by multipliers in the form of training courses. This allows new players to be found and addressed. Newcomers can learn important basics more quickly and remuneration can be earned in the position of teacher or lecturer.
Self-Promotion	→ Increased demand for advisory and education services	Speakers or multipliers in the field can use events as a platform for disseminating specialist knowledge and their own experiences in order to spread their interests and raise awareness.
Knowledge	→ Technical data share in networks and	Knowledge and experience can be distributed to a larger group of recipients via shared information portals, online platforms, networks and events. Data





platforms

collections of technical reference values can be created, knowledge learnt can be implemented directly at the farms or passed on by offering advice.

Efficient solutions

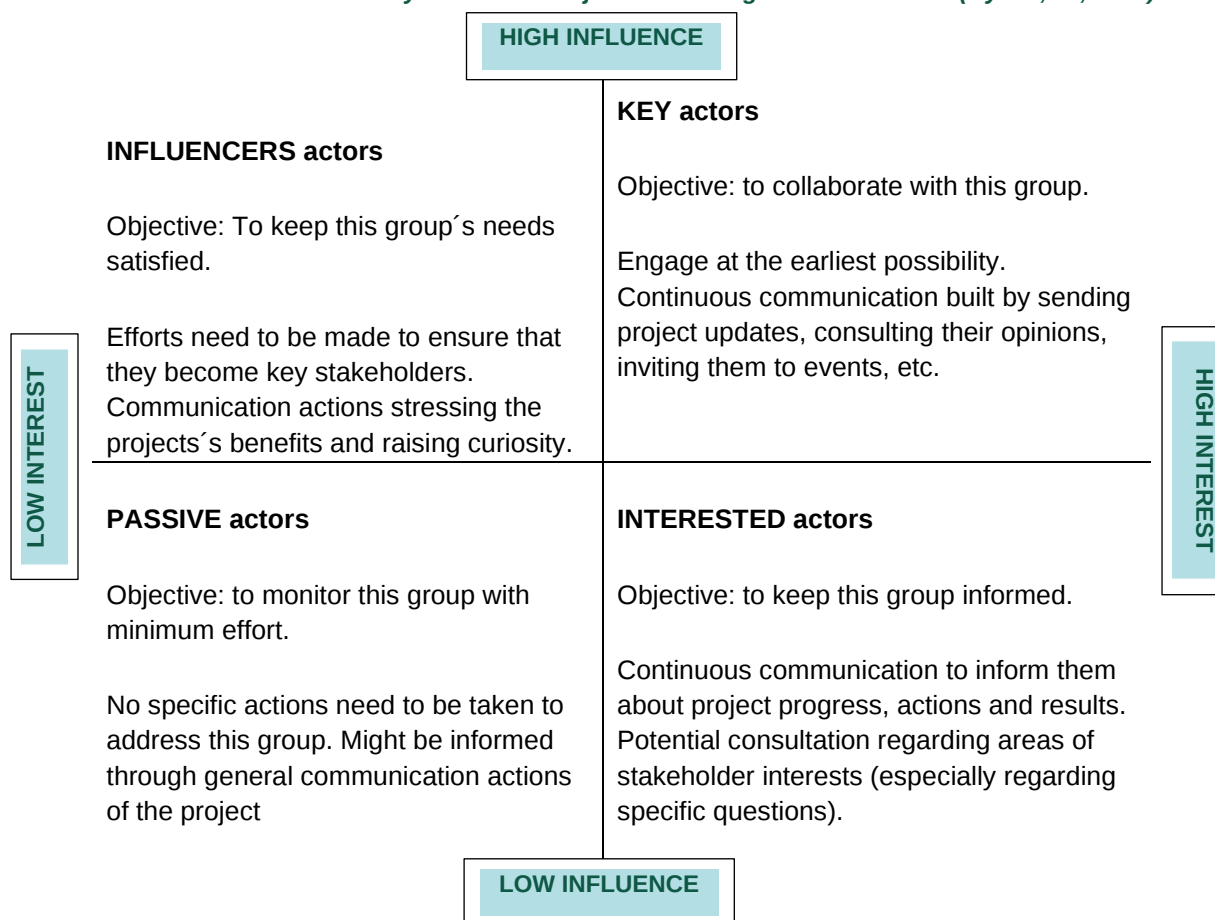
→ Profit through production success

Efficiently implemented approaches can lead to economic success through secure earnings.

Depending on the type of actor, the way in which the relevant contacts are involved in the project should be assessed and organised. While key actors should be approached first on the basis of their own motivation, as they are easy to convince to become active in the project, passive actors can be provided with information at the beginning, but it is not to be expected that they will be enthusiastic about the project.

The CSA Stakeholder Analysis Matrix from Deliverable 6.1 from the Climate Smart Advisors project, appropriately summarises the categorisation in connection with the extent to which the actors concerned should be involved in the network (Gysen, M., 2024):

Table 8 Stakeholder Analysis Matrix – objective and degree of interaction (Gysen, M., 2024).



In order to establish the network, it is essential to involve the stakeholders according to their type and degree of interaction.



7 Conclusion

The activities carried out in this Deliverable as part of T1.1 include a literature research, the development of a data list to collect organisations and networks with the intention to activate in the AdvisoryNetPEST network and the creation of an online survey, which was sent out via various existing networks across the EU.

The literature research showed that there is a correlation between educational provision and motivation to implement RURP practices. The relevance of AKIS and networks in general is emphasised in the main part of the deliverable, highlighting the importance of WA1 for the success of AdvisoryNetPEST.

The analysis of the data from the Actors List and the survey shows a high level of motivation to put the RURP practices learnt into practice. It is also pointed out that obstacles in the form of risks with different focal points, a lack of resources or a lack of practical relevance of scientific studies can certainly stand in the way of implementing RURP or IPM.

To initialise the network, the first steps involving the NNL and NSL are described. It is therefore of great importance for successful progress in network development that key actors are first activated to participate in AdvisoryNetPEST.

Motivated players are particularly important for the internal stability of a future network. Actors who are potential drivers for others. A list of possible benefits is provided in chapter 6 in order to find clues to convince actors to participate in the network. Depending on the stakeholder's field of activity, this may be a different benefit. The driver for the future network arises from the desire to be trained in IPM or RURP practices and can be found in keywords of professional specialization or in the collection of novel approaches.



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Annex I – State-of-play survey



AdvisoryNetPEST | State-of-play survey

The AdvisoryNetPEST network aims to bring advisors and stakeholders across Europe together to reduce the use and risks of pesticides. For the first steps, the creation of the network, we ask you help with in this short survey (approx. 5 minutes).

*I am an actor from **

Select country

*I am an actor who works **

- ☐ for a Chamber of Agriculture
- ☐ for a professional association/federation
- ☐ for an advisory service (public or private)
- ☐ as an individual/independent advisor
- ☐ for a university
- ☐ for a Research Center/Experimental Station or similar
- ☐ for a public administration (e.g. regulating the use of pesticides)
- ☐ for an industrial supplier/company
- ☐ for an NGO
- ☐ other

Are you aware of any advisory services in your country? If yes, please list approx. 5 of them:

Do you know one or more activities/projects/initiatives/networks that aim to reduce the use and risks of pesticides?

- ☐ Yes
- ☐ no

If "yes", please name max. 3 activities/projects/initiatives/networks which are most relevant to you in the context of reducing the use and risks of pesticides. If possible, please include a link to their website or other public information e.g. IPMWORKS (project – <https://ipmworks.net>).





What benefits do these activities/projects/initiatives/networks offer you (multiple selections possible):

- Trainings/courses/webinars etc.
- Ready-to-use training materials
- Practice-ready advice material I can use with farmers
- Networking opportunities (events etc.)
- Information (e.g. newsletters, blogs etc.)
- New pesticide reduction practices/solutions
- New scientific knowledge for the reduction of pesticides
- Cross-visits on demo-farms
- Other

How highly do you rate your motivation to put the knowledge you have learnt into practice?

very unlikely 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10 highly likely

What barriers prevent you from implementing practices to reduce the use of plant protection products into your practice? (Select up to 3 most important ones)

- Risk too high (e.g. costs for preventive methods, crop failure, etc.)
- Lack of resources (e.g. time, money, personal energy, network etc.)
- Lack of specialised knowledge
- Scientific useful data missing
- Recommendations/results from science are not practical
- No personal interest
- Other

What factors would support you in implementing new plant protection knowledge? (e.g. regulation, funding, farmer motivation, farmer knowledge, consumer behaviour, personal support etc.)

Thank you for your participation!

Thank you for your interest in our survey. If you are interested in the AdvisoryNetPEST network and further information on integrated pest management and good professional practice, we invite you to leave your contact details.



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Annex II – List of identified networks

List of identified networks (as per October 2024)

Network	Topic/keyword	Activity of network	Country
Organic Farm Knowledge platform	organic production	international	n.a.
Pesticide Action Network	integrated pest management (IPM)	national	UK
Nature friendly farming network	integrated pest management (IPM)	national	UK
BOFIN	Other	national	UK
Sustainable Farm Network	integrated pest management (IPM)	national	UK
LEAF Network	integrated pest management (IPM)	national	UK
AHDB Farm Excellence Network	integrated pest management (IPM)	national	UK
Agroforestry	agroforestry and permaculture	national	UK
YEN	plant physiology	national	UK
ADAS farming associations	Other	national	UK
Netzwerk Zukunftsraum Land	integrated pest management (IPM)	national	Austria
DEPHY Ferme	integrated pest management (IPM)	national	France
DEPHY EXPE	integrated pest management (IPM)	national	France
UMT Fiorimed	integrated pest management (IPM)	national	France
UMT GenoVigne	plant breeding	national	France
UMT EcoTech	technology and machines	national	France
UMT SEVEN	integrated pest management (IPM)	national	France
UMT SIBIO	organic production	national	France
RMT BESTIM	use of biostimulants	national	France
RMT BIOREG	agroecology	national	France
RMT Naexus	precision farming	national	France
AGRYA	Other	national	Hungary
Hungarian National Rural Network	Other	national	Hungary
KITE	technology and machines	national	Hungary
AXIÁL	technology and machines	national	Hungary
Innovation Support Unit	Other	national	Hungary
Ethiko Agrotiko Diktio		national	Greece





Ecophyto plan regional	integrated pest management (IPM)	national	France
Coordination of farmer group results and findings	agroecology	national	France
Animation captage	water management	national	France
Polish Rural Network	other	national	Poland
Polish Innovation Network	other	national	Poland
Network of Research Institutes (Łukasiewicz Network)	other	national	Poland





Annex III – List of identified relevant projects

List of identified relevant projects (as per October 2024)

Project Acronym	Project title	Crop sector	Project website	Project summary (objectives, activities)
IPM NET	IPM Knowledge exchange network	Arable Field Crops	https://adas.co.uk/projects/ipm-net-knowledge-sharing-network-to-improve-the-effectiveness-of-ipm/	IPM NET aims to improve the practical understanding and application of IPM for farmers, and inform policy design promoting IPM strategies.
PPPG	Praktijkprogramma Plantgezondheid	Arable Field Crops	https://groenkenisnet.nl/dossier/weerbaar-telen-in-de-praktijk-dossier	Accelerate further development and application of resilient, virtually emission-free cultivation systems in practice
		Horticulture, Soft fruit and Ornamental		
Colorado Beetle Catcher		Arable Field Crops	https://projecten.netwerkplatteland.nl/nl/project/colorado-beetle-catcher-duurzame-machinale-plaagbestrijding	A prototype of the Colorado Beetle Catcher - an innovative machine for sustainable mechanical pest control of the Colorado beetle - is being tested and developed. This is a pest control machine that uses the behavior of the beetle. In fact, when the plant is touched, they drop down and remain 'for dead' for a while. We are developing this machine with growers in Flevoland.





Companion planten in consumptie aardappelen		Arable Field Crops	Companion planten in consumptie aardappelen Projecten Netwerk Platteland	During potato planting, leguminous and buckwheat (companion plants) are sown simultaneously. Companion plants (CP) are plants that are not sown for harvest, but because of other benefits. They benefit the environment as well as the growth and development of potatoes. For example, they help control weeds and other pests and improve soil fertility. The seeding depth should be such that potato plants and CP emerge above ground at the same time. Weed control will have to be done mechanically because if herbicides are used, the CP will not survive. So the CP will line up with the potatoes and grow up at the same time as the potato plants. Both below and above ground they will reinforce each other. This will increase biodiversity above and below ground and will attract many more insects than a monoculture of potatoes. Buckwheat flowers contain a lot of nectar and thus attract many pollinators and other insects. These include: wild bees, honey bees and hoverflies. Furthermore, buckwheat is known to have a certain suppressive effect on pests such as lice. Buckwheat is also known to be a good weed suppressor.
Innovatie luizendetec		Arable Field Crops	https://projecten.netwerkplatteland.nl/nl/project/innovatie-luizendetec	Ana Vita wants to develop a system with a number of cooperation partners that counts, identifies and analyzes aphids. For this purpose, an infrastructure will be built in the crops and software developed. The software is not only faster and more efficient, but it can also immediately determine where the most aphids are on the crop and thus where more protective agent should be administered locally or natural enemies should be used. Where the aphids are not on the crop, no spraying is done. In addition, algorithms are being developed to identify other (new) insects that may also have a negative effect on the crops. These insects can be controlled (preventively or otherwise). Also, natural enemies of aphids can be registered and can be included in the control plan. The advice may then be not to spray if that would mean a decrease in the population of natural enemies.
DEPHY EXPE 2. ZERHO	ZERo pesticides and telematics tools for HOrticultural systems	Horticulture, Soft fruit and Ornamental	https://ecophyto.pic.fr/dephy/outils-daide-la-decision/projet-2zerho	The main aim of the 2.ZERHO project is to achieve a significant 50-100% reduction in the use of pesticides in horticultural systems by developing a decision-support tool (BACO) and studying breakthrough horticultural cropping systems by taking risks in order to ultimately propose robust, pesticide-efficient cropping patterns. Three research station demonstration sites (ARMEFLHOR, CREAM, ASO) and three company demonstration sites in three different climatic contexts (tropical, Mediterranean and oceanic).





HEALTHI 2	Supporting growers in the use of semiochemical against thrips in greenhouse	Horticulture, Soft fruit and Ornamental	https://institut-vegetal.fr/programmerecherche/healthi-2/	The aim is to develop the use of 'odours' in crop protection to modify insect behaviour and develop push-pull strategies in greenhouses. Laboratory work to formulate a repellent compatible with biocontrol, in-station trials on sweet peppers and verbena, in-company trials with a socio-economic survey.
HOPPAMALT	herbicide-free cultivation itinerary for perfume and horticultural plants	Horticulture, Soft fruit and Ornamental	https://institut-vegetal.fr/programmerecherche/hoppamalt/	Developing, testing and disseminating herbicide-free cultivation methods for perfume and horticultural plants
Groupe 300	Possibilities for minimizing mycotoxins during popcorn cultivation and processing	Arable Field Crops	https://ec.europa.eu/eip/agriculture/en/find-connect/projects/popcorn-termeszt%C3%A9s-feldolgoz%C3%A1s-sor%C3%A1n	As a popcorn grower-producer, integrator, and trader we face an anomaly in the allowed mycotoxin level of food regulation. Regarding the European law, corn used for human consumption DON toxin level is not allowed to be higher than 1750ppm. In case the same corn is packed and used in microwave bags the standard limit is 750ppm, it is considered as "SNACK". For this reason, microwave and ready to eat popcorn processing plants set up a limit as 750ppm, with 20% measurement error the actual limit is 600ppm. In our research program, we try to select the plant protection technology during popcorn growing and in the processing plant, we try to minimize the mycotoxin levels of the popcorn.
	Development of site- and cultivar-specific cultivation technologies as well as the production of pathogen-free propagating material of sweet potato	Horticulture, Soft fruit and Ornamental	https://ec.europa.eu/eip/agriculture/en/find-connect/projects/az-%C3%A9desburgonya-term%C5%91hely-%C3%A9sfajtaspecifikus	The main objective of the project is to eliminate the yield stability problems regularly occurring in sweet potatoes, by elaborating site- and cultivar-specific technological solutions based on experimental results covering all aspects of cultivation. In parallel, the cultivar-specific adaptation and integration of the in vitro micropropagation method can establish a pathogen-tested production system of the propagating material.
	Work out of the herbicide free production technology of phacelia at the Kisalföld region	Arable Field Crops	https://ec.europa.eu/eip/agriculture/en/find-connect/projects/fac%C3%A9lia-gyomirt%C3%B3szer-mentes	The target of the consortium is the work out, fixing and gives more of the production technology for the cultivation. In Győr-Moson-Sopron county we have a significant tradition of the production of this plant, the under the, cooperation reached results, could be utilized widely.



	Precision plant protection system development and efficiency testing	Arable Field Crops	https://ec.europa.eu/eip/agriculture/en/find-connect/projects/prec%C3%ADzi%C3%B3s-n%C3%B6v%C3%A9ny%C3%A9delmi-rendszerfejleszt%C3%A9s-%C3%A9s	The target of the project is to test new precision crop protection technologies on commonly grown crops. The project compares and analyzes conventional and precision plant protection activities and procedures.
	Research on advanced prediction of the apple moth	Orchards	https://palyazat.gov.hu/tamogatott-projektkereso?id_palyazat=33094150781581	
	Herbal root drug cultivation process and plant conditioning formulation	Horticulture, Soft fruit and Ornamental	https://palyazat.gov.hu/tamogatott-projektkereso?id_palyazat=30238509931581	
	GMO-free soy with high nutritional value (PROFAT) Pesticide-free cultivation technology	Arable Field Crops	https://palyazat.gov.hu/tamogatott-projektkereso?id_palyazat=33508937131581	
	Viticulture			
	Alternativitimed			
PARC	PARTNERSHIP FOR THE ASSESSMENT OF RISKS FROM CHEMICALS		https://www.eu-parc.eu/ ; https://ios.edu.pl/projekt/parc-partnership-for-the-assessment-of-risks-from-chemicals/	PARC aims to develop next-generation chemical risk assessment to protect human health and the environment. It supports the European Union's Chemicals Strategy for Sustainability and the European Green Deal's "Zero pollution" ambition with new data, knowledge, methods and tools, expertise and networks. Get a quick overview of PARC in this leaflet in English, Croatian, Czech, Danish, Dutch, Estonian, Finnish, Flemish, French, German, Greek, Hebrew, Hungarian, Icelandic, Latvian, Lithuanian, Polish, Portugal, Slovak, Slovenian, Spanish and Swedish.
Lider XIII	Growth and development stimulants with immunity-inducing effect as an innovative product for use in the cultivation of agricultural		https://radon.nauka.gov.pl/dane/prafil/65b26515e57d3a5a699fb748	





	consumer plants			
NOVATERRA		Vineyards	About us – Novaterra (novaterraproject.eu)	NOVATERRA aims to create a more holistic approach to future farming. Using precision farming, new natural protection products and soil management strategies the project aims to reduce environmental pollution and reduce damage to non-target organisms as well as better economic sustainability for Mediterranean farmers. This practical and integrative approach is based on a series of multivariate case studies which will explore the use of biopesticides adjuvants and formulations, smart farming techniques, robotics, alongside novel soil management and functional biodiversity. At the same time, the project aims to gather the insights from a wide range of stakeholders and to leverage them to maximise the adoption of successful solutions obtained from the case studies.
HortiCover		Horticulture, Soft fruit and Ornamental	https://horticover.webnode.pt/	
Smart Farm 4.0		Vineyards, Orchards and Horticulture	Notícias (compete2020.gov.pt)	
Stafileos	Stafileos	Vineyards	https://stafileos.gr/	The Stafileos project leverages a set of information in innovative smart farming applications such as telemetric data and field monitoring to create specialized models for optimal vineyard management, providing expert advice to agronomists and producers. By optimizing weather forecasting, irrigation, fertilization and plant protection, the project aims to reduce production costs and enhance vineyards quality while minimizing pesticide residues and environmental impact of the crop. This approach enhances the competitiveness of table and wine grapes in national and international markets.





Microbiofarm	Microbiofarm	Horticulture, Soft fruit and Ornamental	https://www.microbiofarm.gr/	The MICROBIOFARM project aims to create an automated system for comprehensive monitoring of greenhouse environments, enhancing pesticide effectiveness while reducing their side effects on humans and other living organisms. It will use advanced nano/biosensors for reliable detection of pesticide residues, alongside electronic systems and software for automated analysis. The integrated prototype will be connected to an IoT platform and tested in laboratory and greenhouse settings by non-specialized users.
AcID	Active Ingredient Detector	Horticulture, Soft fruit and Ornamental	https://activeingredientdetector.gr/	The use of pesticide chemicals is directly linked to public health and environmental protection. The primary focus and goal of the Acid project is to conduct research for the development of necessary technologies for the automated detection and identification, in near real-time, of pesticide chemicals applied via spraying in greenhouse crops, as well as the integration of these technologies into a comprehensive and functional smart agriculture system. The development of automated mechanisms for detecting these substances in greenhouse environments will have multiple benefits, protecting the environment, human health, and flora and fauna by preventing the pollution of natural resources.
KOTINOS	KOTINOS	Orchards	https://kotos-og.gr/	The "Kotinos" project aims to reduce production costs for olive farmers through representative pilot applications. This will be achieved by analyzing and adapting smart agriculture models and services during the first growing season, as well as implementing effective recommendations in the second growing season. A key component is the new research infrastructure of telemetric stations and an enhanced precision station to be installed in the areas, aimed at highlighting the comparative advantages of cost reduction and the environmental footprint of production.





SustainablePeach	SustainablePeach	Orchards	https://sustainablepeach.gr/	The project aims to reduce production costs in peach cultivation through pilot applications of intelligent agriculture (IA) models, tailored to local conditions. Key outcomes include a 25% reduction in overall production costs, a 30% decrease in fertilizer use, a 20% decrease in pesticides and 20% in water, and improved product quality with reduced pesticide residues. Additionally, the initiative will enhance soil moisture control and minimize nutrient leaching, benefiting both the economy and the environment.
Precision Wheat	Precision Wheat	Arable Field Crops	https://www.precision-wheat.gr/	The project involves implementing precision agriculture practices in wheat cultivation through the preparation and analysis of climatic and soil zones, establishing a network of telemetry stations, and conducting field measurements for irrigation, fertilization, and pest control during critical growth stages. Specialized models for irrigation, pest protection, and nutrition will be developed. The implementation of a smart agriculture system in the field aims to improve product quality by reducing irrigation, pest control, and fertilization by 20%, while increasing the product's value by 10%.
Bio-Crimson	Bio-Crimson	Vineyards	https://bio-crimson.gr/	The main purpose of the work of the "BIO-CRIMSON" Operational Group is the qualitative and quantitative upgrading of the production of table grapes through the development of a modern personalized vine plant protection program based on biostimulators, which will lead to the reduction of inputs. This will be achieved by the application of the innovative methodology of metabolomics and is expected to lead to a reduction of production losses and inputs from Plant Protection Products, contributing to the support of the improvement of the quality and sustainability of the crop.

