



EUROPEAN COMMISSION

DIRECTORATE-GENERAL FOR HEALTH AND FOOD SAFETY

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## **Report of the workshop *Reducing exposure to pesticides – experience so far and next steps towards more sustainable plant protection* (17 January 2020)**

### **Executive summary**

DG Health and Food Safety organised a workshop on “*Reducing exposure to pesticides – experience so far and next steps towards more sustainable plant protection*” with experts from Member States, EFSA and various Commission services, on 17 January 2020.

This workshop was intended to contribute to the overall objective of reducing risks associated with the use of plant protection products as outlined in the Commission Communication on a European Green Deal<sup>1</sup>. It follows up on several earlier initiatives, projects and discussions on risk mitigation measures (RMM), in particular as regards more harmonisation at EU level and more integration in the regulatory processes of approval of active substances and authorisation of plant protection products.

The purpose of the workshop was to share experiences in view of understanding the challenges in deciding which risk mitigation measures to impose and how to secure their implementation in practice. It also aimed at informing participants about the available state-of-the-art technologies, and about the potential incentives to implement these risk reduction technologies and practices.

#### *The experiences so far*

Based on the detailed presentations by a number of participants at the workshop, it appears that RMM :

- receive special attention in many Member States, although with different levels of specification hence leading to difficulties in the mutual recognition of authorisations between Member States in the same zone;
- are not yet fully implemented by farmers, sometimes due to their complexity and/or their costs;
- are not yet fully integrated into the risk assessment and regulatory process at EU level.

The workshop identified that RMM are generally part of the authorisation process of PPP at national level, more rarely at zonal level, but are frequently not integrated in the GAP tables

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<sup>1</sup> [https://commission.europa.eu/document/daef3e5c-a456-4fbb-a067-8f1cbe8d9c78\\_en](https://commission.europa.eu/document/daef3e5c-a456-4fbb-a067-8f1cbe8d9c78_en)

presented by applicants in applications for approval of substances at EU level, except for operator exposure and protection of the water compartment. The representative uses in the GAP tables are often not detailed enough, which explains why EFSA is usually not assessing a wide range of RMM, although RMM are frequently applied at national level when assessing all uses in view of PPP authorisation.

The diversity of RMM set as authorisation conditions reflects the specific conditions and agricultural practices which are occurring in Member States, i.e. crops, field size and shapes, proximity to water flows, population densities, surrounding areas next to fields, etc. RMM comprises a huge variety on different measures e.g. buffer zones, timely and spatial restrictions, reduced application rates or technical measures.

The technical measures available today are mainly focusing on drift reduction but promising precision techniques combining digital tools and point application are developing. These would allow reduction of the volumes (and rates of) application while maintaining efficacy, and offer new opportunities to significantly reduce exposure if technologies become mainstream. At the same time, some Member States are reflecting on whether and how these technologies could be integrated into higher tier risk assessments.

Various standards to validate risk reduction factors for the most commonly available risk mitigation equipment and measures have been developed in several Member States but without any harmonisation.

Some Member States have integrated these measures in their regulatory framework (e.g. as part of the conditions of use), however some are considering to simplify them in order to increase the uptake by farmers.

It appeared that actual implementation by the farmers is unequal across the Member States and awareness raising tools and projects have been set up to ensure knowledge transfer and training of the final users in different Member States.

Farmers have been identified as the central actors to ensure the sustainable use of plant protection products as they are at the cross-road of the regulatory, financial, technical and knowledge/awareness raising policies to mitigate the risks from the use of PPPs.

The Common Agricultural Policy may help with its current and future instruments to foster implementation of RMM by farmers.

#### *Outcomes of discussions:*

Two rounds of discussions in smaller groups - under Chatham House rules<sup>2</sup> - took place during the workshop. The first mapped the common challenges the Member States face to use the RMM during risk assessments and when setting conditions for authorisations, while the second discussion aimed at finding solutions to increase the consideration of RMM in assessments at EU level.

The exchanges of experiences between participants resulted in identifying several challenges faced by Member States as regards RMM integration and implementation.

Participants confirmed that RMM are important tools to improve the level of protection of operators, consumers and the environment.

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<sup>2</sup> [https://en.wikipedia.org/wiki/Chatham\\_House\\_Rule](https://en.wikipedia.org/wiki/Chatham_House_Rule)

The tools should be more harmonised at EU and zonal level and better implemented at national level.

Challenges and improvements identified in the workshop need to be taken on board for the future steps.

As feedback, participants pointed out that the workshops provided a good platform to interact with other Member States' representatives in an open and constructive way. They perceived an open environment for discussions that fostered exchange of views among all parties involved.

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## 1. Who Participated in the Workshop?

Member States and EEA-States were invited to appoint two experts to attend the workshop “Reducing exposure to pesticides – experience so far and next steps towards more sustainable plant protection” on 17 January 2020 in Brussels. A total of 59 experts from 25 Member States and 2 experts from Norway and Switzerland were present. In addition, a total of 16 policy officers from different Commission services (SANTE, ENV, and AGRI), two EFSA experts and 7 experts from academia and research centres were also present.

Annex V contains the list of Member States having nominated experts.

## 2. What Happened during the Workshop?

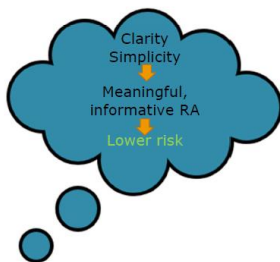
The workshop was designed alternating presentations and active discussions, as summarised below.

### 2.1. Introduction

**DG Heath and Food Safety** welcomed the participants and set the scene by explaining the objectives of the workshop and the links to the recently adopted Commission Communication on a European Green Deal and the future Farm to Fork Strategy. An expert from the Netherlands and an expert from EFSA outlined their points of view and expectations.

The Dutch expert introduced the **Member State perspective** as regards the relevance of RMM at different levels in the regulatory context: either, as one of the overall objectives of the Sustainable Use Directive, EU Green Deal or Member States’ policies, or to demonstrate one safe use in the assessment of active substances, or to mitigate risks to acceptable level for PPP authorisation. The outcome of the Central Zone Director’s Conference on how to better incorporate risk mitigation measures in the active substance approval process was presented. The importance and the challenges of precision techniques was also underlined.

**The expert from EFSA** presented an overview of RMM in the EU level assessment of active substance with a focus on measures applicable to the environmental risk assessment. Commonly used and agreed mitigation measures for terrestrial vertebrates, groundwater, aquatic organisms and bees were explained in light of the existing standard phrases for safety precautions (e.g. “Spe” phrases). The EFSA expert summarised the conceptual limits of reduction factors imposed in the FOCUS models to reduce spray-drift for water and non-target arthropods and plants (95%), run-off (90%), drainage (90%) and discussed some examples where technologies would allow to extend those reduction factors up to 99% by combining them. She also covered who should propose the RMM and how the suggested risk mitigation measures should be presented (e.g. need for higher tier data).



The future possible role of a more explicit GAP table was also underlined. Currently the provided information regarding the application technique and conditions are limited as it is linked to representative uses that cover scenarios/situations for one crop within a whole geographical zone. However, in reality, the same crop may be “managed” in very different conditions and sprayed with a wide variety of sprayers. Therefore, EFSA suggested to specify the representative application machinery and the typical good practices used by growers in the GAP table. This calls for acknowledging the

practicalities of enforcement and requires that applicants could propose ‘greener/safer’ uses and could present representatives uses involving RMM, that EFSA would then be able to peer review. The EFSA expert also suggested to improve regulatory guidance documents for assessing exposure and risks to new application technologies, to targeted application (e.g. precision techniques), ensuring a closer connection between the risk assessments performed for substances, PPPs and reality – one of the recommendation of the report from the Commission’s group of chief scientific advisors (SAM).

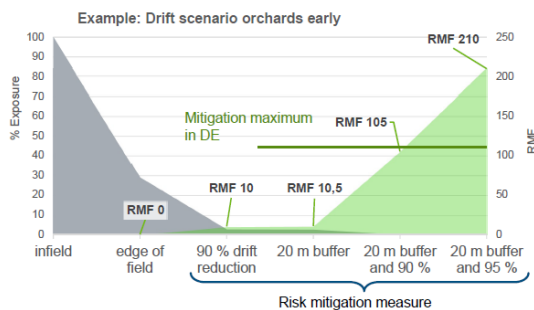
The introductory presentations made by the experts from Netherlands and EFSA can be found in **Annex I**.

## 2.2. Experiences of Member States

Four Member States experts presented their experiences. These presentations are summarised below and can also be found in **Annex II**.

After the presentations, a Panel of the speakers addressed clarification questions from participants and defined some common challenges and opportunities.

The **German expert** explained that about 243 different RMM are in place in Germany with a preference for technical solutions, if available (e.g. rather drift reducing nozzle compared to buffer zone) as long as they are practical, controllable and legally enforceable. Three categories of RMM were illustrated: (1) quantitative RMM with proposed risk mitigation factors, (2) geographically referenced RMM (e.g. ban in water abstraction areas), (3) qualitative RMM (e.g. more specific “Spe”).

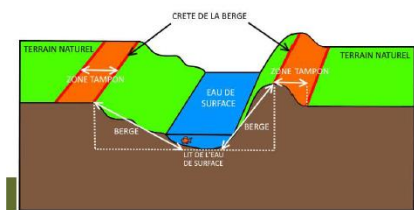


General conditions for success were outlined, among others, the need to communicate in a concise way and consistently to farmers to ensure acceptability of RMM. The need to harmonise RMM was underlined to secure mutual recognition of authorisation within a zone. In a stepwise approach the risk assessment should ideally determine the necessary **risk mitigation factors (RMF)**; risk managers at MS or zonal level would

then select RMM with defined risk mitigation potential from an EU wide agreed catalogue. A work plan was suggested with different levels of responsibility (Steering group, Subgroup to clarify legal aspects, Subgroup to develop SPe phrases for risk management topics).

The **Belgian expert** informed about the RMM implemented to protect:

- Aquatic organisms: where minimum distances (1m for arable and 3 m for orchard) are combined with specific buffer zones up to 30 m and other RMM (e.g. drift reduction nozzles): pragmatic conversion tables are established to allow flexibility for farmers depending on available technical materials. As the market is small, Belgium accepts mutual recognition of drift reduction factors for the nozzles validated by Germany and the Netherlands.



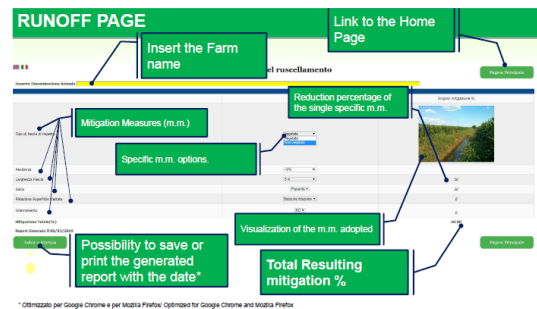
A **legal definition of buffer zone** is in place to avoid any misinterpretation.

- Non-target arthropods and plants: no buffer zone is imposed but an overall drift reduction factor (due to average small field size).
- Run-off and erosion: approaches can differ at regional level and exceptionally vegetated buffer strips are imposed in the conditions for authorisation.
- Residents/bystanders: obligations of using 50% drift reducing nozzles (with possibility to increase to 90%) as large non-cropped buffer zones would lead to unaffordable losses for the farmers.

The expert informed that the Belgian authorities are considering to apply a generalised fixed buffer zone (18 m or 6m + permanent hedge of 2 m high) in order to simplify the rules. It was stated that this could increase acceptability by farmers, facilitate controls but would not encourage substitution to lower risk products.

The Italian expert informed about a recent national guideline to implement RMM, which aims at addressing the challenges faced by risk managers due to the high variability in crop shapes, observed for one crop within the country (for instance, vineyards), the high number of minor (and very minor) crops, the diversity of application techniques, etc.

The guideline is a tool to translate in the field the exposure reduction percentages identified by the risk assessor by combining RMM which would fit the manifold scenarios that Italian farmers have to accommodate. Reasonable / affordable width of buffer zones were defined per group of crops (e.g. from 10 m in maize up to 30 m in orchards). RMM to address run-off risks were presented (e.g. if slope > 4 degree, 90 % reduction factor necessary). The Italian expert indicated that the presented **interactive tool** would be made available to users in addition to the indications for use appearing on the label which cannot address all specific conditions faced by the farmers.



The Dutch expert introduced the legally binding mitigation in place in the Netherlands where the use of 75% drift reduction nozzles is made compulsory for downward spraying equipment, possibly combined with buffer zones. Discharge of waste water from greenhouses for instance is limited by law (e.g. minimum 95% purification of water flows from glasshouse processes).



In addition to obligations, voluntary initiatives to set up **training** schemes and demo-projects about good practices preventing the emissions into the environment are an important tool to reach the political objective set by the Dutch authorities to reach ‘almost no emissions into the environment by 2030’.

The competent authorities are assisted by a Committee in charge of the evaluation of risk reduction techniques proposed by academics, industry, government or the registration committee to validate the **reduction factors** of these innovative techniques. It resulted in two lists (“TCT-list” for outdoor applications and “BZG-list” for greenhouses).

The TCT is a tool allowing to reduce the sizes of buffer zones to a minimum (avoiding losses for farmers). The expert identified some challenges: how to consider precision techniques in the risk assessment (when ‘the area considered for the evaluation actually

Driftreducerende spuitdop	DIRD-klasse bij maximale spuitdruk (bar)			
	50%	75%	90%	95%
Agrotec AirMix 80-025 Hollow Cone (HC)	3	3		
Agrotec AirMix 110-02	4,5			
Agrotec AirMix 110-025	5			
Agrotec AirMix 110-03	4,5	2		
Agrotec AirMix 110-04	6	4		
Agrotec AirMix 110-05	7	4	2	
Agrotec TurboDrop HiSpeed 110-02	5	3		
Agrotec TurboDrop HiSpeed 110-025	6	3	2,5	
Agrotec TurboDrop HiSpeed 110-03	4	2,5		
Agrotec TurboDrop HiSpeed 110-04	6	3	2	
Agrotec TurboDrop HiSpeed 110-05	6	3		
Agrotec TurboDrop ID 110-02	4			
Agrotec TurboDrop ID 110-025	4			
Agrotec TurboDrop TD 110-03	6			
Agrotec TurboDrop TD 110-04	3			
Agrotec TurboDrop DXL 110-02	3			
Agrotec TurboDrop DXL 110-025	6			
Agrotec TurboDrop TDXL 110-03	7			
Agrotec TurboDrop DXL 110-04	10	3	3	
Agrotec TurboDrop DXL 110-05	10	7	3	2

*exceeds the treated area*)? How to cope with lack of harmonisation between Member States in a zone? How to provide support to the actual implementation of RMM by the farmers?

### 2.3. Popular RMM implemented by Member States and challenges faced

In the next part of the workshop participants discussed their experiences in their respective Member States as regards the use and implementation of RMM in order to identify shared practices and challenges. The exchanges occurred in 10 small groups of maximum 5 Member States experts to stimulate sharing experiences and discussion. The groups were supported in their discussion by an expert and one Commission staff member in case there were questions.

Each participant had received in advance of the meeting a set of 4 questions in order to prepare the discussion:

- Q1 “Are RMM part of the authorisation of Plant Protection Products (PPP) at the national level?”
- Q2 “Are RMM part of the risk assessment when acting as a Rapporteur Member State (RMS)?”
- Q3 “What are the most frequently recommended RMM in your country?”
- Q4 “Identify challenges your country faces to implement RMM”

The questions were answered individually by the participants and collected by the organisers during the workshop, and then a group discussion followed. Replies to Q1 to Q3 can be summarised as follows:

**Q1: Are RMM part of the authorisation of Plant Protection Products (PPP) at the national level?**

A very large majority of experts replied “Yes” to the question.

**Q2: Are RMM part of the risk assessment when acting as a Rapporteur Member State (RMS)?**

A very large majority of experts replied “Yes” to the question.

**Q3: What are the most frequently recommended RMM in your country?**

The replies from individual participants were allocated to their Member State of origin in

Buffer zones Surface water	22
Drift Reduction Nozzles	15
Vegetated Buffer Strips	12
Frequency of use restriction	11
Application rate restriction	10
PPE	9
Water Abstraction Zone Ban	8
Spe Phrases	5
Sprayers cleaning/filling	4
Bystanders distance zone	4
Training of users	2
Re-entry period	2
Wind Speed	1

order to derive the most popular RMM applied (multiple replies were possible).

The indicative results obtained from this workshop survey showed (see ranking on the left) that a majority of Member States are imposing buffer zones (22 MS) and drift reduction nozzles (15 MS) followed by vegetated buffer strips, use restriction (frequency and application rate), personal protective equipment and restriction of use in water abstraction areas.

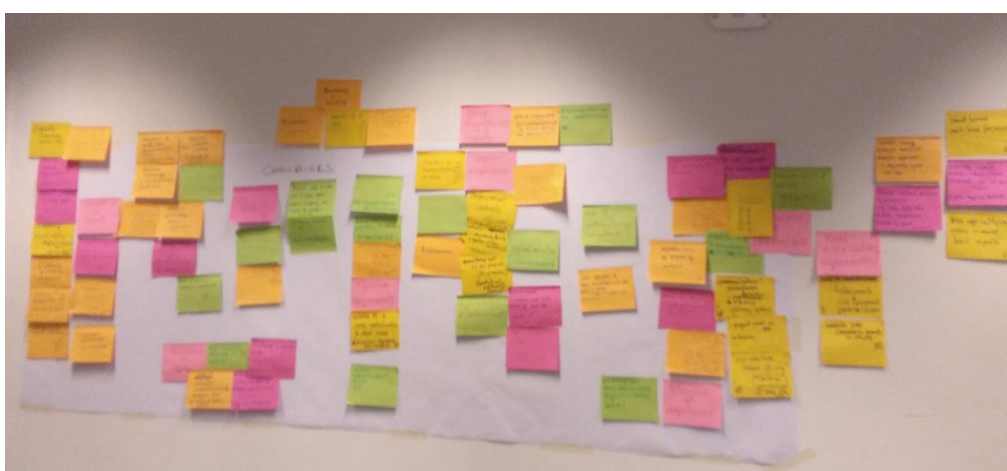


#### **Q4: Identify challenges your country faces to implement RMM? Group discussion to identify the common challenges**

Each participant wrote its answers to Q4 on post-its. This was followed at each table by a group discussion where participants presented the challenges in their Member States, and then they selected those challenges that are in common by two, three, four or by all the five Member States from which experts were at the table.

At the end of the group discussion, the groups were asked to report to plenary the challenges that were identified as common to at least three Member States. Those challenges were discussed and categorised in plenary (Figure 1).

Finally, the challenges that were specific to some countries were also added to the “mapping”. Some clustering of the challenges happened in the plenary session per topics/themes which was finalised by the organising team in order to allow finding solutions/actions.



*Figure 1. Challenges identified during the workshop.*

The main challenges reported by Member States experts about the implementation of RMM are of different nature:

- **Lack of knowledge/awareness of key actors:**
  - **Farmers:** as a general trend, the smaller the farm the less time the ‘semi-professional’ farmers can dedicate to training. In addition, the training schemes that the farmers may attend are not necessarily focusing on RMM. Small farmers have less money to invest in up-to-date technologies or application tools, therefore small farmers may not be able to take up this innovation and that the use of RMM will not be taken over easily across the EU due to lack of awareness of farmers. Misconception among the farmers was also reported: drift reduction is wrongly perceived as reducing efficacy (“*crops need to be wet*”). There are very few modern and cheap tools in place to reach farmers (such as e-learning tools), to convince about the benefits of RMM. Even with the best techniques/nozzles, participants reported that some farmers are unable to calibrate properly their machines.
  - **Regulators:** the set of techniques available to mitigate risks is wide, but the lack of practical knowledge of ‘efficiency’ of measures/techniques by

assessors explains the hesitation to include them in the risk assessment. A lack of harmonisation of reduction factors associated to those techniques keeps them as mostly theoretical tools.

- Controllers: for authorities controlling that farmers are using PPP in line with conditions imposed by the authorisations, the complexity of combinations of RMM makes their enforcement activities difficult.
- General public: spraying of PPP even if RMM would be put in place, is often not accepted by the neighbouring habitants due to lack of knowledge and because in general the society is fearing pesticides.

- **Economic/financial factors:**

- Investments required: most of the technical tools can be considered as relatively low-cost investments but they must be convincing enough for the farmers. Savings on quantities of PPP applied might be a decisive factor. Some innovative techniques will require very expensive investments by the farmers.
- Costs inferred: for many farmers in several Member States, abandoning some surfaces as buffer zones or as vegetated buffer strips to mitigate risks is generating economic losses or reduces yields per hectare of arable land and hence it hinders uptake by farmers. This is even more true if farmers have a feeling of no level playing field across the EU (“*why should I whereas others don't?*” feeling), in particular with the global market pressures exerted on farmers.
- Resources/funding: some participants reported that farmers do not get financial support for vegetated buffer strips, hence their low popularity. Also funding would be needed for official training schemes of farmers/assessors/regulators or demonstration projects (or round tables). Research funding for RMM techniques/efficiency was considered as missing.

- **Methodological/technical factors:**

- Risk Assessment Guidance Documents: some guidance documents are limiting theoretically the possible/plausible reduction factors in the exposure models. Precision techniques are generating new challenges for risk assessors as the area considered for the evaluation actually exceeds the treated area (e.g. overestimation of exposure). Exposure for certain active substances is either overestimated or underestimated: volatile active substances (e.g. fumigants) are not yet considered properly. Treated seeds application was considered as a very difficult case (e.g. removal of spillages does not consider treated seeds). Some participants stated that, in their opinion, no sufficient risk mitigation options would be available for birds protection.
- Technical hindering factors: small farmers have older equipment (not always duly inspected) which cannot be easily adapted in order to reduce risks (e.g. one set of nozzles mounted, no cabin on the tractor) and which are incompatible with new techniques (container automatic transfer). Participants considered that working with these “obsolete” machines could never be compensated by any combination of RMM. Some new drift reduction nozzles have been identified as not delivering the expected reduction performance,

either due to poor quality due to absence of compliance check with standards, or because farmers cannot properly calibrate their spraying equipment.

Some participants reported about a discrepancy between maps used in agriculture and protected areas (e.g. water areas and Natura 2000) generating confusion for farmers who do not always know whether their field is within a protected area.

- Risk reduction factors unknown or non-harmonised: performance of techniques is tested in a couple of Member States but according to different testing methodologies leading to uncertainties as regards actual reduction factors for the risk assessment. Not all materials in use are yet benefitting from such risk reduction performance characterisation/classification. Not all RMM can be quantified for use in risk assessment (e.g. bees – Spe8).
- Lack of data on monitoring results: effects of RMM in the real world are hardly ever confirmed with monitoring results to validate their efficiency in practical application (except the data from monitoring of drinking water).

- **Regulatory factors**:

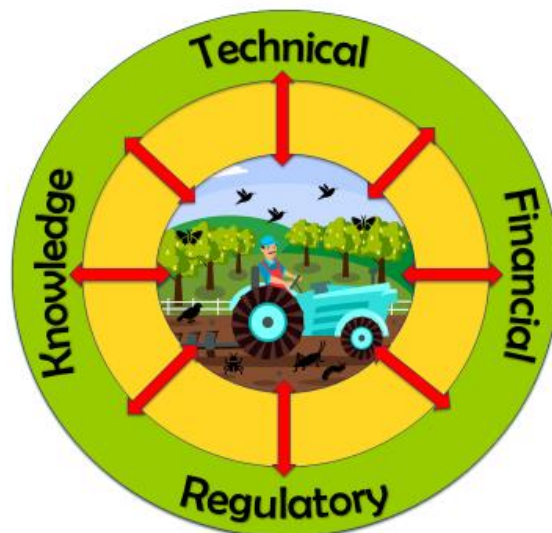
- Legislative framework: some participants underlined the complexity to combine provisions of Regulation (EC) No 1107/2009, with those of Directive 2009/128/EC on Sustainable Use of Pesticides, the EU Water Framework Directive 2000/60/EC, the Council Habitats Directive 92/43/EEC, local policies, which are all affecting farmers but different competent authorities are responsible for their implementation (federal, regions, municipalities). Some other participants considered that the regulations are not adapted to the reality or too complex for an efficient communication to the farmers.
- EU level: integration of RMM in the approval of active substances is supported by a majority of participants but a few of them were of the opinion that the Member State level is more appropriate for risk management and that the EU decision making process should leave some flexibility to Member States' risk managers. "Spe"/"Spo" sentences have been developed at Member State level outside the few ones available at EU level (Reg 547/2011). Wording used in the Spe/Spo is not always 'farmer friendly', as farmers do not see the reasons for the measures.
- No harmonised approach when defining RMM at zonal level: participants acknowledged differences in regulatory practices (some Member States preferring technical tools more than land management), but also intrinsic differences in the "size and shapes" of agricultural fields (small plots, sloped fields, water courses proximity,...) which trigger different approaches. Member State in the zone cannot all enforce the same RMM as would be required for mutual recognition of authorisations. This generates also difficulties for farmers working on two sides of a border.
- National requirements: some extra rules (from SUD national action plans) are adding complexity to the compliance with RMM. Space on the label is limited and an issue when texts must be translated in two or three linguistic versions.
- Enforceability of measures: participants stressed that it is not easy to pass practical messages through the labels (limited space) and that it is difficult to translate in simple words a combination of RMM. It is difficult to check that all farmers cropping the same crop are compliant with the "must have" regulatory obligations. Participants acknowledged that the implementation of the RMM is not sufficiently controlled.

- **Monitoring results:** in general no or very few monitoring data are collected in protected environments and no collection of incidents about possible failure of RMM is organised by Member States. Hence it is difficult to validate RMM via monitoring. Participants considered that RMM and monitoring are not going hand in hand (as provided by Article 6 (i) of Regulation 1107/2009) in the current decision making.

### Conclusions of the morning session:

The implementation of RMM varies in intensity and in practice between Member States. It was generally acknowledged that awareness of farmers is not satisfactory and a lot of efforts remain to be done to convince them about the efficiency and benefits of RMM. Training needs have been identified for all actors, e.g. farmers, assessors, controllers. Financial support to implement some of the RMM affecting the competitiveness of farmers is needed. Harmonisation of regulatory practices, adaptation of risk assessment guidelines, better definition of conditions of use (GAP table), harmonised validation of performance (exposure reduction factors) appeared to be necessary to ensure clarity, affordability, practical implementation and a level playing field throughout the EU.

DG Health and Safety summarised that the **central player** to succeed in reducing risks is the **farmer**, as illustrated by the figure on the right.



## 2.4. Technologies, practices available and under development

The participants were then invited to examine through presentations prepared by several experts some possible solutions of technical, financial, regulatory and knowledge-related nature. The experts' presentations can be found in [Annex III](#).

**Prof. Emilio Gil**, University Polytechnics of Catalunya, addressed the question “*Hi-Tech on spray application process. Is that the solution?*”, via the story of an ‘average’ farmer confronted with the calculation of the uncertainties regarding the optimal volume of sprays for his vineyards, which illustrated the discrepancy between regulatory good intentions translated somehow on the label with the “practical reality” faced by farmers. As researcher, Prof. Gil identified the need to transfer knowledge acquired by funded research projects to the farmers by incorporating tips to the farmers.

With the project OPTIMA, a “smart” sprayer version 2.0 is under development and combines satellite data, sensor detection, mechanical adjustment of the spraying parameters and storage of application data in the cloud. Even if the savings on PPP quantities can be significant with this kind of technologies, farmers hesitate to invest in such highcost technology, because their farm is too small, and they are lacking information or training or because of the age of the farmers. These observations confirm some of the conclusions of the morning session. The second EU research project, INNOSETA, is trying to compensate the deficit in **training** of many farmers on spraying equipment and advice. Training of users and officials is a top priority to improve PPP use.



**Ir. Jan Langenakens**, formerly official in charge in Flanders (BE) of the mandatory inspection of spraying equipment, now advising authorities and farming communities on sprayer calibration and inspection, reported on the significant differences amongst the Member States as regards the inspection of sprayers in use. Applying PPP with a spraying equipment which has been duly inspected and calibrated is a “must have” and the situation is far from satisfactory across the EU.

Inspection activities, when conducted properly, leave the farmers with advice about maintenance and operation of the equipment. This would increase awareness and interest in training schemes where the priorities should be set on operation, maintenance, cleaning, conditions of use, mixing and loading, driving speed, boom height, selection of nozzles, etc. all details that many users are not respecting leading to many problems of diffuse and point pollution. Inspection of sprayer is not only an obligation but also an opportunity to stimulate farmers to get interested in RMM by showing how it works, can be applied, and what benefits for the famers and the society it can generate.



**Ir. Antoine Thijs**, representing CEETTAR, the European Organisation of Agricultural, Rural and Forestry Contractors, explained that many farmers cannot afford the investment for acquiring the most up to date machines while contracting companies can offer this equipment to apply PPPs under optimal conditions, in full compliance with the product labels and all other (local) regulations. The proportion of agricultural land sprayed by contracting companies exceeds 20 % in the EU. In Thijs' view this practice also simplifies reporting obligations for the farmers as contractors benefit from all modern software to ensure traceability of the spraying events. CEETTAR is currently looking for a recognition of this service by the Common Agricultural Policy (CAP).



In his presentation, **Ir. Jan van de Zande**, Wageningen University and Research (NL), developed the challenges that implementation of precision techniques is facing vis-à-vis risk assessment. He illustrated the results obtained with orchards sprayers where a combination of drift reduction nozzles (90% reduction) with a lower level of air assisted flow delivers a 51% increase in spray deposition (more efficient, less loss). With the 'Canopy Density Sprayer' he showed that, thanks to a scanner measuring the distance and the density of leaves, up to 65 % reduction in quantities used can be obtained in orchards due to the optimised spray/canopy interception.

These sprayed volume reduction have been developed for flowerbulbs (based on detection of biomass), for potatoes (based on measured crop reflection – for a leaves dessicant) and on fruit crops (based on disease detection) with promising reduction of the spray drift, of the PPP input as well as a reduced level of residues.

Reduced spray volume/dose (%)	
standard	E
0-10	D
10-20	C
20-30	B
30-40	A
40-50	A+
50-60	A++

Van de Zande called for a **classification and certification scheme** acknowledging the resulting emission reduction levels similar to the energy efficiency classification. He proposed a stepwise approach starting by ensuring the exchangeability of performance classification of the drift reduction techniques (DRT) across the EU, followed by a harmonisation of spray volume reduction technology classification (VRT) at EU level allowing eventually a generic risk reduction classification with risk reduction factor (RRF) as a fonction of DRT,

efficient application technique, precision application technique, buffer zone, edge of field filter,...

**Dr Dirk Rautman**, Julius Kühn Institute (JKI, DE), presented the testing procedures of drift reduction technologies put in place in Germany on a voluntary basis, coming on top of the CE declaration of conformity of the new sprayers (Directive 2009/127/EU). CE-tests costs range between € 1500 (for nozzles) and € 10,000 (for a complete sprayer).

In parallel, JKI is in charge of the **registration procedure** for the 'loss reducing equipment' (e.g. drift reduction techniques, "DRT") which are either tested in a wind tunnel (€1000-2000/nozzle) or in field (€1500-5000). Rautman confirmed that DRT are quite distributed in DE (acceptance up to 95% in

field crops, 60% for orchards, 30% in vineyards), because plant protection products authorised with spray drift reducing RMM may only be applied with such JKI registered spraying equipment. Furthermore the distribution of spray reducing equipment is improved due to the fact that information from JKI and from Regional Plant Protection Services are provided through **mandatory training courses** and communication materials for **farmers**.

In order to “upgrade” sprayers in use with drift reduction nozzles, costs for farmers are not that high (€ 5/m for boomsprayer; max. € 300 for air-assisted sprayers; max. € 150 for vineyard).

Until now JKI did not register any complaints from farmers about reduction of efficacy or spray spots on fruits. Rautman also presented several innovative DRTs delivering significant exposure reduction, as the separate injection with sensors for herbicides (60 % reduction), or vertical hail nets (50% reduction).

**In conclusion, the technological session** showed that many technologies are available to reduce exposure/risks for a relatively low investment costs for the farmers.

Pre-requisites would be to inspect spraying equipment in use to ensure an overall good functioning and calibration of the machines. Validation of reduction factors would be possible if testing protocols are harmonised allowing mutual recognition of categorisation approach proposed by different Member States experts. Training of users remains crucial for uptake of these new technologies: this requires connections between the certification/testing bodies and extension services at local level.

## 2.5. The "user": training, engagement, support and incentives

**Dr Dara O'Shea**, from DG Health and Food Safety, Unit F.3. in charge of the implementation of Directive 2009/128/EC on sustainable use of pesticides (SUD) and audits, explained that RMM most frequently required by Member States concern hazard and precautionary statements on labels, training on safe use & PPE, buffer zones (residential or drinking water catchment areas or Natura 2000 sites), use restrictions in public areas, warnings before aerial spraying and restrictions on tank-mixing, warnings prior to PPP use (to inform beekeepers), use restricted to certain times of day/night, signs around field boundaries, limited use when soil conditions (waterlogging) or weather forecasts (X hours before rainfall) are not optimal.

Some basic recommendations such as maximum wind speed for spraying, guidance on container triple rinsing/disposal, schemes for disposal of containers/old PPPs, promotion of safe disposal of spray solution and of good filling/loading practices are **good practices** besides the promotion of low-drift nozzles.

As regards **financial support** to the farmers, CAP Rural Development funds are used for capital projects and buffer zones, but also for specific crop rotations, cover crops and sometimes to encourage lower-risk PPP use (biological vs. chemical).

As regards **training** activities, an obligation for the users, advisors and distributors, SANTE F.3. was observing that effective training should be practical, conducted in small groups and inclusive ("learning by doing"): RMM are also part of the relevant subjects described by the SUD. In terms of enforceability the audits revealed the difficulties for Member States to prove that the controls at farm levels for all aspects regarding use, including RMM are effective: if RMM are not clearly mentioned on the labels/authorisation it is difficult to conclude that farmers implement them. Dr O'Shea concluded that new types of data should perhaps be collected with modern tools in order to ensure an optimal level of enforcement across the EU.

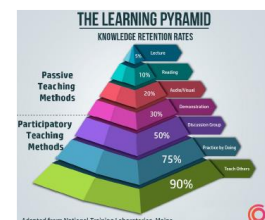
**Ms Eva Kerselaers and Ms Greet Riebbels**, representing the Flanders Research Institute for Agriculture, Fisheries and Food (ILVO, BE), explained their recent experiences with involvement of farmers in order to change their behaviour towards more sustainable agricultural practices.



The EU-funded WaterProtect project covering 7 scenarios of water governance was engaging communities of farmers applying different methods. The project concluded on the importance of the awareness of the farmers, in particular that the problem (e.g. water quality results) is local and that the best management practices can be defined by a "peer to peer learning" process.

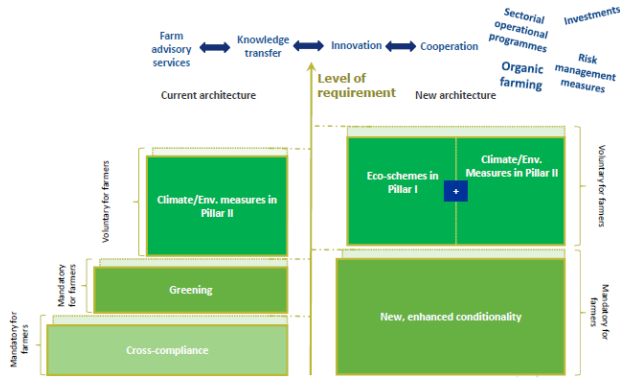
Water governance could improve through a process called **RESET**, for **Regulation&Enforcement, Education&Communication, Social Norms&Values, Economic incentives and Tools** approach. Greet Riebbels presented a systemic analysis of the best way to achieve a successful uptake of RMM by the farmers.

First, the reasons/motivations for implementing RMM may vary and the "**why**" from citizens, farmers, environment activists, consumer, politics, regulators must be streamlined before designing an appropriate plan. Second, in order to catch the attention of farming communities, 3 rules should be observed when designing the **learning pathway**: (1) relate the learning content with the farming practices; (2) engage participants in active knowledge sharing; (3) use a variety of learning tools.





**Aymeric Berling** (DG Agriculture, Unit D.2) outlined the Common Agricultural Policy (CAP) instruments which may help to promote RMM among the farmers under the current and the future “green architecture” of the CAP. Currently, several CAP direct payments may be conditioned on the compliance with Food Law or the PPP Regulation but also no Good Agricultural and Environmental Condition (GAEC), including buffer strips along water courses or measures to protect groundwater. Some measures of the “Greening” envelope may also help, such as the ban of pesticides use in “ecological focus area”. Under the “agri-environmental measures” heading, more specific conditions may be imposed to reduce pesticides inputs on top of IPM obligations in sectorial programmes, such as fruits and vegetables. He also reminded of the role of CAP-funded farm advisory system to explain all obligations regarding PPP use.



The Commission proposal to reform the CAP intends to simplify the current green infrastructure and reinforce compliance with the two main regulatory instruments for PPP (Regulation (EC) No 1107/2009 and Directive 2009/128/EC) with a possibility for Member States to introduce in the conditionality the IPM principles. Under the Eco-Scheme (CAP Pillar I), support to voluntary set up of non-productive areas on agricultural land

around water courses (beyond the legal obligation) or to conservation agriculture without pesticides or maintenance of organic farming would be allocated by Member States if they decide so.

Under Pillar II, it will be possible for Member States to fund voluntary reduction or ban of use of pesticides (beyond GAEC 9) and more use of IPM (beyond SUD obligations), conversion to organic farming but also payments for investments for pesticides management and point spraying and payments for training and advice. In conclusion Member States would have the opportunity to improve consistency between the pesticides national policies (beyond the National Action Plans established under the SUD) and their CAP Strategic Plans.

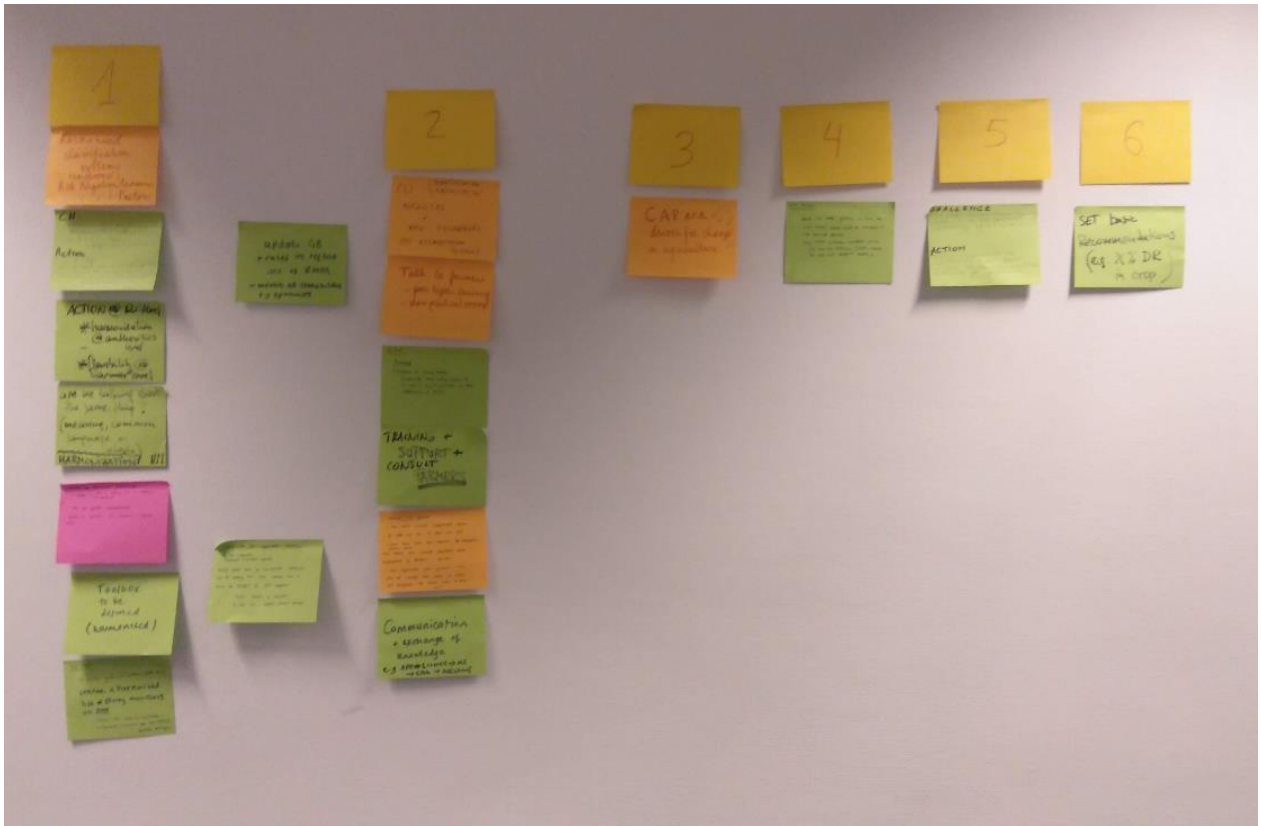
The experts’ presentations can be found in **Annex IV**.

**Discussion of options to increase the use of RMM**

During the last part of the workshop participants discussed the technical, financial, regulatory and knowledge-based options to increase the uptake of RMM at EU and Member States levels.

The discussion groups were constituted in a different composition than the morning discussion rounds to stimulate exchanges across the whole group.

Many solutions surfaced from the groups’ discussion. Each group summed up some ideas which were then presented to the other groups and then immediately clustered in 6 groups of actions pinned on a wall as presented in Figure 2.



*Figure 2. Actions/solutions identified during the workshop.*

After reconsideration of the messages noted on the post-it's the options for further work could be grouped into 4 sets, as follows:

1. Harmonised classification of RMM performance (risk mitigation factors): it was suggested to proceed:
  - a. First, with the most comprehensive list of RMM (in line with the draft list presented by the Commission in previous PAFF meetings), grouped without risk mitigation factors as existing Member States classification differ and only qualitative evaluation of RMM would be available;
  - b. Then, invite all Member States to make use of risk mitigation factors determined by existing classification approaches developed by several Member States;
  - c. Should there be several validated techniques to reach the same risk mitigation factors, a table of equivalence of those techniques should be developed to facilitate the choice of the other Member States, depending on their local scenarios;
  - d. Finally, where possible, set a list of clearly defined risk mitigation techniques with harmonised classification of risk mitigation factors at EU level.

This last step would require a mandate to a standardisation body (e.g. CEN) to finalise the long standing discussion on standardisation of the testing protocols to measure performance of RMM. Testing bodies should be certified at EU level (e.g. accreditation).

2. Update of Guidance Documents (and rules) to reflect the use of RMM in the risk assessment process:
  - a. The GAP table format should be re-discussed with EFSA, applicants and Member States to allow inclusion of proposals for RMM where relevant. This could include innovative precision techniques as one of the pesticide application scenarios if relevant.
  - b. Existing risk assessment guidance documents should be re-examined in light of the evolution of the harmonised classification of risk mitigation factors presented above under point 1. This could include innovative precision techniques as one of the scenarios to be considered. It was suggested to involve all stakeholders, also agronomists with experience from the field to take the agronomical/practical aspects into account.
  - c. The level of necessary risk mitigation for a given non-target organism group or for an environmental compartment should be reflected in the EFSA conclusions. It should be for the Member States to adopt or not the recommended RMM at EU level at the approval stage.
3. Training of actors: a specific training scheme should be defined according to an agreed EU template. Farmers would then benefit from similar levels of independent information. Practical examples should be provided to stimulate peer to peer learning processes and feedback about the practicality/affordability based on the farmers' experiences shall be collected by trainers to adjust RMM where necessary.
4. Support to farmers through the CAP instruments: when elaborating their strategic plans Member States should reflect the needs for supporting the farmers with their investments in RMM tools/techniques, but also to compensate the losses encountered through the ad-hoc field-based mitigation tools (when fields margins are left uncropped). Furthermore CAP could also support the training schemes for the farmers (and the related certification procedure for trained farmers). Finally, if the farmers would take part in reporting activities about the RMM applied, they should benefit from some support as well.

This 4 groups of solutions/actions should be complemented by the replies to the challenges and needs identified in the morning session.

The feedback received post-workshop from participants showed that the discussion on solutions would have required more time. Participants called for a structured dialogue to be continued.

### **3. Outcome of the workshop and feedback from participants**

The feedback provided by all the participants during the workshop was summarised after the workshops by DG Health and Food Safety, Unit E4). The main outcomes are presented above.

Participants expressed positive opinions regarding the participatory approach taken for this first workshop, highlighting that this approach had allowed to identify many practices in place in the Member States but also the numerous challenges at stake.

They appreciated the very illustrative presentations from experts as well as their support during the discussion rounds. The systematic approach based around the 4 main challenges/solutions structured around the central player, e.g. the farmer, was considered as

relevant to organise the way forward towards harmonised solutions for an improved uptake of RMM by the farmers.,

However the amount of time allocated to this last part, due to the dense agenda was not entirely satisfactory for a majority of participants who would have preferred to continue the discussions on solutions.

## 4. ANNEXES

### 4.1. Agenda of the Workshop

Timing	Topic	Speaker	Objective
<b>8.30-9.00</b>	<b>Registration + welcome coffee</b>		
9.00-9.10	Welcome and Introduction	Klaus Berend, SANTE E.4.	To present the objectives of the day, the policy context and supporting works so far
9.10-9.20	RMM in Different Regulatory Contexts	Rob Van Drent, Ctgb (NL)	To explain the different purposes of RMM depending on the regulatory framework (SUD, MS policy, approval of a.s., national or zonal authorisation of PPP)
9.20-9.35	Risk mitigation in risk assessment models under Reg.1107/2009	Rachel Sharp, EFSA	To remind about current models and guidelines where RMM are part of higher tier risk assessment
<b>Session 1</b>	<b>Reduction of Exposure – experience in Member States</b>		
9.35-9.55	Implementation of RMM in Germany: Experiences and challenges	Dr Achim Gathman, BVL (DE)	To explain the German experience and share some suggestions
9.55-10.15	RMM in the authorisation procedure and in practice	Ir Maarten Derudder, FPS Heath (BE)	To explain the Belgian experience: success and opportunities for improvement, incentives and barriers
<b>10:15-10:30</b>	<b>COFFEE AND TEA</b>		
10.30-10.50	RMM in Italy: criteria and application	Dr Giovanna Azimonti, ICPS (IT)	To explain the Italian experience and the Guidelines addressed to farmers
10.50-11.10	Exposure reduction by mitigation - Dutch experiences	Michiel Heuser, Ctgb (NL)	To explain the Dutch experience with RMM, their challenges including with upcoming precision farming
11.10-11.30	Q&A on 4 MS experiences		Questions for clarifications
11.30-13.00	Round-tables (name of table on your badge) Other MS discussing their experiences  Wrap-up of round tables	Member States representatives discussed in small groups (5 MS participants + speaker)	Discuss the situation in MS about the use of RMM and to identify challenges in common as regards implementation of RMM
<b>13.00-14:00</b>	<b>BUFFET LUNCH</b>		
<b>Session 2</b>	<b>Exposure reduction technologies today and tomorrow – how to boost uptake by farmers</b>		
14:00 – 15:15	<b>Technological session</b>		
	Hi-Tech on spray application	Prof. Emilio Gil,	To explain through the OPTIMA and

	process. Is that the solution?	UPC (ES)	INNOSETA Projects which technologies are available or in the pipeline and how to close the gaps between research and professional users?
	Machines in use	Dr. Jan Langenakens, AAMS (BE)	Actual status of spraying equipment in EU How familiar are RMM for the farmers?
		Ir. Antoine Theijs, CEETTAR (BE)	Accessibility to innovative machines, the role of contracting companies
	Machines of the future	Dr. Jan Vandezanden, WUR (NL)	Precision techniques: challenges for the risk assessment of PPP's
		Dr. Dirk Rautmann, JKI (DE)	Drift Reduction Technologies – Test procedure and experiences in German Agriculture?
15.15 - 16.00	<b>User session</b>		
	Observations and experiences from audits, training, enforcement activities	Dara O'Shea, SANTE F.3.	To share the observations of Commission officials in charge of audits, training (BTSF), enforceability and need for data
	Participation! How to involve farmers and change their behaviour?	Greet Riebbels or Eva Kerselaers, ILVO (BE)	To share lessons learnt from 'Water Protect' (Interreg) and other EU research projects on how to involving/convincing the users
	Pesticides and the CAP	Aymeric Berling AGRI D.2.	To explain how can the Common Agricultural Policy promote risk management measures?
<b>16.00 - 16:15</b>	<b>COFFEE AND TEA</b>		
16.15-17:50	Discussion	All	Discuss the different options to increase the use of RMM on EU level and on national level
17:50 –18:00	Closing remarks	Karin Nienstedt, SANTE E.4.	To conclude on the next steps

#### **4.1. Annex I. Introductory presentations of Zonal and EFSA experiences (morning session)**

#### **4.2. Annex II. Presentations of 4 Member States (morning session)**

#### **4.3. Annex III. Presentations of Technologies, Available Practices and future innovations (1<sup>st</sup> Afternoon Session)**

#### **4.4. Annex IV. Presentations on Users-centered approach (2<sup>nd</sup> afternoon session)**

#### **4.5. List of Member States, EEA-States, and stakeholders' participating at the workshop**

Austria  
Belgium  
Czechia  
Denmark  
Estonia  
Finland  
France  
Germany  
Greece  
Hungary  
Ireland  
Italy  
Latvia  
Lithuania  
Luxembourg  
Malta  
Netherlands  
Norway  
Poland  
Portugal  
Romania  
Slovakia  
Slovenia  
Spain  
Sweden  
Switzerland