

Tool 8.1 Tool for the CAP Cross-Cutting Objective (CCO)

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The specific CAP objectives shall be supported by the “**Cross-Cutting Objective**”(CCO) which aims at **“fostering and sharing of knowledge, innovation and digitalisation in agriculture and rural areas, and encouraging their uptake by farmers, through improved access to research, innovation, knowledge exchange and training”** (Article 5).

The 3 key elements of the cross-cutting objective – (1) intensive knowledge exchange and competent advisors within the AKIS, (2) co-creating innovation and sharing it, and (3) using digitalisation – can be regarded as the motor behind the many transitions in the sector and as “enablers” to achieve all nine specific and the general objectives of the CAP in a more effective and/or efficient way. Moreover, the three key elements of the CCO interrelate and will positively affect each other. For instance, actions in the field of innovation and knowledge exchange might increase the uptake of digital technologies by farmers (e.g. knowledge databases for practice).

The three key elements are key drivers for modernisation and support the whole CAP. This tool describes how elements related to the CCO should be well embedded in a strategic way into the CAP Plans. This tool is divided into 3 parts, covering **Agricultural Knowledge and Innovation Systems (AKIS)** (Section 1), **Digitalisation** (Section 2), and **Modernisation of the administration and implementation of the policy** (Section 3). Please note some important info also in the Annexes.

1. AKIS strengthening the role of knowledge and innovation under the new CAP

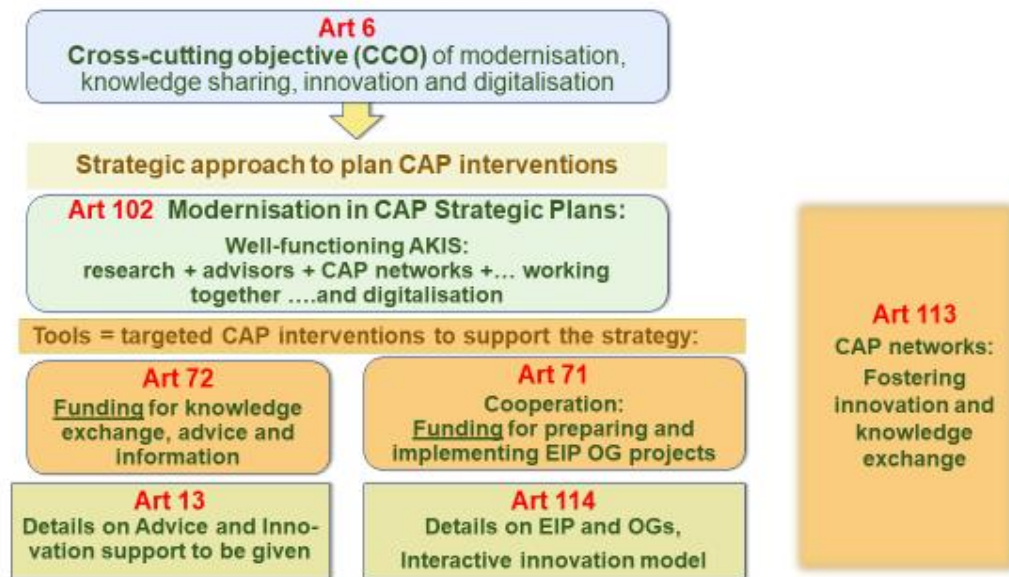
Agricultural Knowledge and Innovation Systems (AKIS) encompass **all people and organisations** (farmers, foresters, farmers’ and foresters’ organisations and cooperatives, advisors, researchers, businesses, NGOs...) **that generate, share and use knowledge and innovation for agriculture and interrelated fields:** rural areas, value chains, environment, climate, biodiversity, society, consumers, etc.¹. For a well-functioning AKIS contributing to modernisation, the AKIS components need to interact to make the AKIS actors more competent and ready for the transition to a smarter, more sustainable and competitive agriculture and rural areas. A **strategic approach is needed to interconnect the various interventions to reach an effective and efficient AKIS linking actors and actions to serve the cross-cutting objective**, and in consequence support all specific objectives. Co-creation of innovation in **EIP Operational Group (OG)** projects should link up with **interventions on training and farm advisory services**, ensuring that the **knowledge is intensively exchanged among the AKIS actors** through a variety of methods such as targeted one-to-one advice on farm, thematic multi-actor events, networking, on-farm demonstrations, training courses, knowledge databases etc. The **specific innovation related activities of the CAP networks** also play a key role in implementing those actions. They also help to build the bridge to actors and information in other Member States and to the dedicated innovation activities including those related to the EIP under the CAP network at EU level.

1.1 Legal references and their interaction

The AKIS’ strategic approach and its related interventions are based on **Article 102 “Modernisation”** of the SPR. Articles 3, 6, 7, 13, 68, 71, 72, 89, 95(1)(g), 97, 98, 99, 103(2), 113, 114 and Annex I of the SPR are building blocks for the CCO. The main objective is that **all 9 CAP specific objectives are served by the Cross-Cutting Objective**. The overview below illustrates the interrelations between various relevant articles. The CCO will be addressed in the same way as the other nine specific objectives, with a dedicated SWOT, assessment of needs and specific CCO interventions.

¹ Art. 3k: definition of AKIS

Overview of most relevant CCO provisions for knowledge and innovation (AKIS)



In Articles 95 and 102, reference is made to the modernisation of the agricultural sector and the CAP. **The requested CCO elements based on Article 102 SPR are obligatory, as well as the provision of advice and the integration of advisors in the AKIS system (Art. 13(2)).** Also the preparatory SWOT analysis is obligatory (Art. 103(2) last paragraph). Articles 95(1)(g) and 102 request Member States to design in their CAP Strategic Plan a **strategic approach to improve the efficiency and effectivity of their AKIS**. Consequently, Member States should list the resulting interlinked CCO **interventions and actions, which need to be coherent with this strategic AKIS approach**².

Note that AKIS innovative actions may also impact creation or changing of the national/regional CAP policy itself, e.g. through co-creating innovative agro-environmental-climate interventions or ecoschemes in OG innovative projects or through new knowledge sharing AKIS networks and technologies for regular knowledge exchange.

After the elaboration of a strategic AKIS approach based on the CCO SWOT, prioritisation of needs, and sound intervention logic, **the resulting AKIS interventions will mainly fall under Articles 72 (funding advice, knowledge exchange, training and information), and Articles 71 (funding EIP Operational Group innovation projects)**. The framework and details on farm advisory services are provided for in Article 13 , and for EIP and Operational Groups in Article 114.

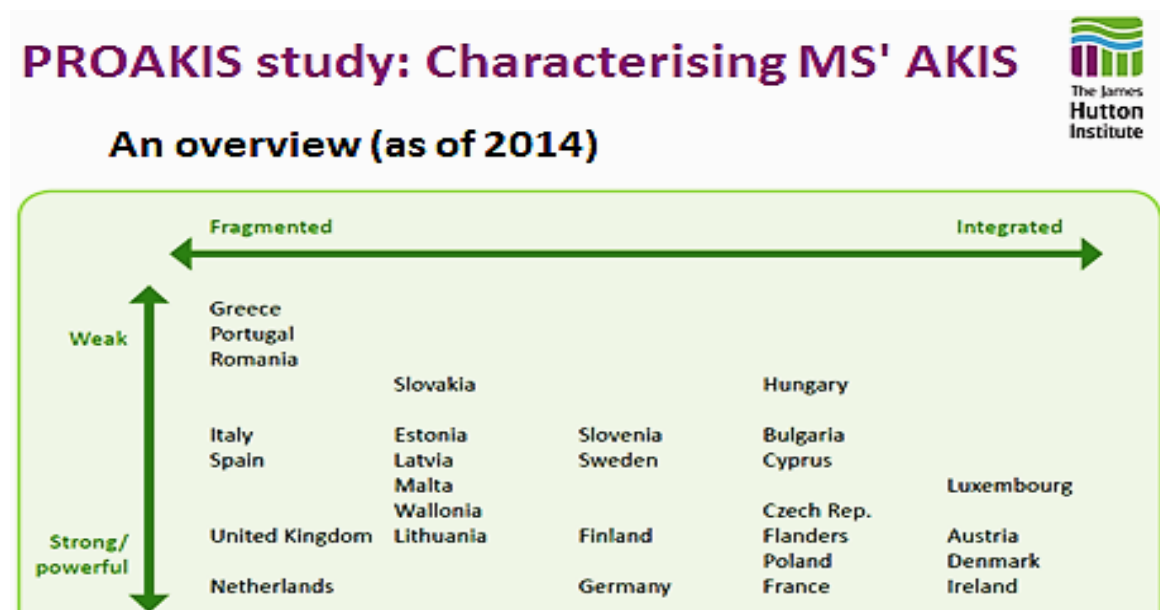
Also other interventions may have knowledge exchange, training or advice elements and contribute to the CCO, such as the **environmental, climate and other management commitments** referring to relevant training and advice, Art. 65(9), **innovative investments** - possibly by OGs - (Art. 68), or interventions for young farmers under first or second pillar (e.g. Art. 69(3) on conditions for installation of young farmers). Modernisation through knowledge sharing, innovation and digitalisation is also supported by certain types of **sectoral types of interventions** which contribute to the CCO objective on a sector by sector basis and can contribute to the relevant CCO indicators . All these knowledge and innovation interventions are complemented by the specific innovation **activities of the national CAP network** dedicated to speed up broad knowledge exchange and

² Art. 72(6) on knowledge exchange and information (including advice, training, demo etc) explicitly mentions that "Member States shall ensure that actions supported under this type of intervention *be based on and be consistent with*" the description of the future strategic AKIS approach provided in the CAP Strategic Plan in accordance with point (i) of Article 102(a)"

innovation (Art. 113). It will be important to highlight how different interventions and actions contribute to AKIS, and that a **sound strategic intervention logic should be the basis of any AKIS intervention** in the CAP Plan.

1.2 Why do we need well-functioning AKIS?

New combinations of knowledge and actors drive innovation. Therefore, we need to do efforts to interconnect people with different expertise, knowledge and competences who together are able to solve the challenges we face. The **national AKIS actors are however not sufficiently interconnected**. The current performance of the **AKIS varies greatly from one Member State to another** (see figure below), and often from one region to another within the same Member State. This is essential when assessing CAP plans and the necessary efforts and related budgets. Taking this into account and making use of the diversity of the EU to tackle the challenges and opportunities ahead, **each Member State now needs to strengthen its AKIS and organise it in a structured way to ensure regular and broad knowledge flows and to foster innovation processes**. This will ensure an offer of **more competent and qualitative advisors** working in synergy, increase their interaction with and within innovation projects and improve the communication of project results, making them widely used and saving costs³.



1.3 How to shape an AKIS fit for the future?

Supported by the specific innovation activities of the CAP networks at regional/national levels and between Member States, the variety of AKIS interventions will make all advisors, researchers and practitioners meet and collaborate on a regular basis around practical needs/opportunities and the potential solutions for them. This will enforce systemic links between researchers, practical knowledge (advisors) and practice (farmers, foresters, and their organisations). According to the SCAR SWG AKIS⁴, **setting a specific financial envelope for AKIS** is essential ("target"/ring-fence a part of CAP funding to knowledge and innovation of about 10%"), and such budget is also a CAP impact indicator. A substantial proportion of the CAP **budget** should be spent on the various ways of

³ The key role of AKIS is Member States (K. Rosenow): <https://www.youtube.com/watch?v=a-noBHFyJu8>

⁴ SWG SCAR AKIS: Strategic Working Group on AKIS of the Standing Committee on Agricultural Research, SCAR IV report, mainly pages 1-140): https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/key_policies/documents/report-preparing-for-future-akis-in-europe_en.pdf

improving the AKIS (see the 4 strands in the box below) to ensure that AKIS actions are sufficiently taken up in the CAP plans, so that changes and the sustainable transition will indeed happen and that the strategic AKIS approach is implemented with efficient interventions. It is essential to start spending early in the period, as many AKIS interventions require a learning period.

Successful AKIS strategies include 4 main groups of actions⁵:

- (1) Strengthening **knowledge flows** and **links between research and practice**
- (2) Fostering **all farm advisors' knowledge** and strengthen their **interconnections** within the **AKIS**
- (3) Enhancing cross-thematic and cross-border **interactive innovation**
- (4) Making effective use of **information and communication technologies** to improve knowledge sharing

1.3.1 Strengthen knowledge flows and links between research and practice

Key to do's for the overall AKIS governance enhancing knowledge flows are:

1. **Develop the strategic AKIS approach for the CAP plan in a transformative process together with different stakeholders.** Beyond researchers, advisors and networks, have also farmers and rural actors actively participating in the formulation of the plans. Involve the younger generation or women AKIS actors, e.g. young farmers, advisors, researchers.
2. **Well-functioning AKIS are dependent and need to link up with other relevant policies** beyond the CAP, as well as with the **regions** within the Member State. **National Ministries and administrations should do efforts to better coordinate** and make **collaboration agreements** among each other and collaborate intensively to foster knowledge and innovation (e.g. national Ministries of Agriculture, Research and Education, Environment, Agencies in charge of national or EU programmes such as Horizon Europe, ERASMUS+ etc.)⁶. This will give responsibility as well as visibility, and will allow the individual staff the leeway to engage with practice, not as an exception, but as valued part of their work.
3. **The AKIS coordination body⁷ is the contact point for all AKIS related issues towards the European Commission.** It should cooperate with AKIS multi-actor platforms across the geographical levels in the country, following day-to-day AKIS interventions and actions, asking for modification of the CAP plan if needed, while continuously supporting interaction and implementation of the AKIS plan. The body should **keep an overview on the progress** and performance foreseen in the CAP plan, using a dedicated framework for monitoring and evaluation, in particular those related to the CAP indicators (Annex I, see Section 2.6).
4. **Linking with the research institutes and rewarding** researchers for their efforts for practice is obviously a key action⁸. **Bringing knowledge in a concise and understandable way close to practice** is key. Also the media (agricultural journals etc.) have a role to play here. **National thematic networks⁹**, possibly under the lead of back-office advisors, can deliver materials for training, advice and education, while also interlinking a mix of actors. Organise bottom-up calls and do efforts to disclose the needs of farmers, regular face-to-face exchange thematic events, etc.
5. CAP networks and/or other AKIS actors/platforms should initiate **on a regular basis meetings between research, farmers and advisors**: researchers can share their work with practice, while learning to work more interactive and more solution oriented and getting informed on farmers' needs and opportunities. This which will bring them inspiration, get them to know advisors which

⁵ See full description of possible interventions in the 4th report of the Strategic Working Group (SWG) of the Standing Committee on Agricultural Research (SCAR) on AKIS on the DG AGRI website, in particular section 1.5 on p. 26-44

⁶ <https://www.youtube.com/watch?v=Z9YIDhmDCM>: example in "Preparing the Spanish AKIS strategy" (R. Wojski)

⁷ The AKIS coordination body as foreseen in the SFC template for CAP strategic plans

⁸ <https://www.youtube.com/watch?v=vw3Ly5X1jjo>: How to reward researchers beyond academic purposes (A. Fonts)

⁹ <https://www.youtube.com/watch?v=EPsVbkmnp9w>: Added value of thematic networks at national level (P. Bergeret)

can share practice needs and innovative ideas from practitioners, and farmers wanting to join innovative OGs.

6. **Informal ways also support knowledge flows e.g. co-location of research, advice and networks** (education, farmers' organization, food clusters, cooperatives etc.): lunching together or drinking a coffee in the same building is cheap, efficient and informal and encourages informal interaction and trust.

1.3.2 Fostering all farm advisors' knowledge and strengthen their interconnections within the AKIS

1. Member States must ensure advice on a broad number of domains is available. All advisors need to be mobilised in order to cover all farmers and many more fields of advice than currently is the case. **Thanks to the AKIS interventions**, Member States now can and should **open up the current 2014-2020 farm advisory systems (FAS), including all public and private advisors, to strengthen provision of advice and increase advisory competences**.
2. **In particular, this means to include all trusted advisors** who have overall the strongest impact on farmers' behaviour.
3. All advisors should be empowered to design solutions **adapted to their specific farm context**¹⁰ in an approach tailored to the farm and farmer and this all *"along the cycle of the farm development"*¹¹.
4. **Therefore, all advisors must be fully integrated within the AKIS to step up their qualification¹², interaction and connections**. Main elements and key examples on interventions related to advisors' integration in the AKIS can be found in Annex V and are taken into account in result indicator R.2.
5. Pursuant to Art. 13(2), Member States shall ensure that **within their territory** all following **requirements for advisory services** are fulfilled (Art. 13(2)):
 - Covering economic, environmental and social dimensions
 - Delivering up to date technological and scientific information developed by research and innovation actions

Advisors' networking and cross-fertilisation across the EU can also upscale their competences¹³.
6. **The various interventions under Art. 72 form an integral part of the Member State's AKIS strategic approach**. Member States shall therefore according to Art. 72(6)) ensure that actions supported under Art. 72 **"be based on and consistent with" the Art. 102 AKIS strategic approach** provided for according to the CAP Strategic Plan.
7. **Advisors should take up a more interactive role and serve as innovation support services** (Art. 13(4) ("**one-stop-shops**" for innovation¹⁴), helping to reveal farmers' needs and to prepare and facilitate/implement EIP innovative projects. **There are no budget limitations concerning the maximum amount of support for advice or knowledge actions (Art. 72)**, except for the setting up of an advisory service (Art. 72(3)).
8. **Knowledge exchange and information interventions under Art. 72 could take many forms** such as: vocational or specific training courses for farmers and for advisors (or mixed). It is essential to **take into account the demand of the targeted audience** and not to programme the course fully top-down. Further actions are one-to-one on-farm advice to farmers or foresters; individual

¹⁰ "MS should ensure **farm advisory services tailored to the various types** of productions for the purpose of improving the sustainable management and overall performance of agricultural holdings and rural businesses"..."and to identify the necessary improvements as regards all **measures at farm level**". "MS should integrate all public and private advisors within the AKIS." (recital 24)

¹¹ Art. 13(2) second paragraph: "appropriate assistance **shall be offered along the cycle of farm development**"

¹² Art. 13(3): "MS shall ensure that advisors are suitable qualified"

¹³ <https://www.h2020fairshare.eu/>, <https://i2connect-h2020.eu/> are EU advisory networks on digital advisory tools and on supporting interactive innovation. They are financed by Horizon projects but will be of great support to the AKIS in MS

¹⁴ <https://www.youtube.com/watch?v=-BTua8oNeLo> : Develop innovation support services including innovation brokering, facilitation and innovation tools (M. Gysen)

coaching; innovation advice; the setting up of advisory services for instance for innovation support. Mobility budgets enable to send advisors abroad and afterwards spread the new knowledge among the local AKIS actors. The organisation of knowledge exchange workshops or discussion groups, on-farm demonstration activities¹⁵ short-term farm exchange and visit schemes, etc all profit from peer-to-peer effects, as well as information actions of all kinds (face-to-face, virtual, educational,...). Advisors may be good trainers or facilitators for those peer-to-peer events.

9. **The choice of supported advisors is free, on condition that the advisors have no conflict of interest and that the advice given is impartial** (Art. 13(2)). This may be secured by a formal contract/agreement between advisor and Managing Authority. Beyond this, **the status of advisors should not be regulated**. It is up to **the AKIS coordination body to organise the advice and advisors**. There is no obligation to follow other obligatory conditions nor for trainers, nor for advisors, as this may limit the provision of sufficient and adequate advice and knowledge provision in certain areas or fields where the necessity exists. Nevertheless, **regular obligatory training of advisors is obligatory**¹⁶.
10. **Certification or designation of advisors is thus not needed**. This will reduce the administrative burden as well for advisors as for the Managing Authorities. A transparent register of advisors on the Ministry's website including all impartial advisors could be helpful, also for monitoring the situation, such as the advisory offer in certain domains. Such website will help clients with their choice of advisor, by sharing the advisors' curriculum vitae, their education, their specialisation (if any) and the experience they gained over the years. Such website can even be an instrument to work with vouchers, as some MS already do.
11. Member States shall further ensure - pursuant to Art. 13(4) - that **within their territory the following specific fields of advice are covered**. The organisation should be the task of the AKIS coordination body which most probably will be part of the Managing Authority to ensure legitimacy:
 - All requirements, conditions and management commitments applying to CAP beneficiaries set in the CAP Strategic Plans. This includes all eligibility conditions for support schemes under the CAP (see fiches for CAP interventions) and obligations under SMRs and GAEC standards under conditionality (see fiche 4.2 Conditionality and Annex III for the specific regulations, numbers, percentages and Articles concerned);
 - Further requirements under environmental and climate legislation, as well as for plant and animal health, related to the agricultural activity: the Water Framework Directive, The Nature Directives (Birds and Habitats), the Clean Air Directive, the Net Emission Ceiling Directive, Art. 55 of the Plant Health Law, the Animal Health Law and the elements of the Sustainable use of pesticides Directive (SUD) which are not included into conditionality, in particular the voluntary practices under Integrated Pest Management (IPM). Note that the compulsory practices under the WFD and the SUD are covered under the first bullet.
 - Farm practices preventing the antimicrobial resistance (AMR) set under the Communication COM (2017) 339 on AMR.
 - Information on financial instruments and business plans established under the CAP Strategic Plans
 - Risk management according to Art. 70
 - Innovation support in particular for preparing and implementing the Operational Groups under the EIP-AGRI as referred to in Art. 114
 - Development of digital technologies in agriculture and rural areas as referred to in Art. 102(b)
 - Sustainable management of nutrients ("a Farm Sustainability Tool for Nutrients" by 2024)

¹⁵ <https://www.youtube.com/watch?v=O9ycYsCIKX0>: Organise farmer to farmer exchanges including on farm demonstrations and experimentation (T. Kelly)

¹⁶ Art. 13(3): "MS shall ensure that advisors are appropriately trained"

- Conditions of employment and employer obligations as well as occupational health and safety and social care in farming communities.

Further guidance can be found in the toolkit for knowledge exchange and information¹⁷ (Art. 72)

1.3.3 Enhancing cross-thematic and cross-border interactive innovation

1. Foresee **sufficient funding for a variety of regular OG calls, all linked to the CCO. OG projects may then tackle any subject serving one of the nine CAP specific objectives**, such as the development of new products or practices, pilot projects, supply chain cooperation, consumer-producer organisation, joint environmental project approaches or climate change actions, discussion groups or networks with a purpose, cooperation in biomass provision or renewable energy, forest management, social innovation, consumer-citizens' concerns, preparing generational renewal making the farm fit for the future, rural area related actions and much more.
2. Many issues can be solved with cooperation on new approaches. The EIP brings extra value in a region/MS thanks its interaction within OGs, with OGs across borders or with Horizon Europe projects: **contacts** can be made **and experience can be shared across the EU**, be it bilateral or at the occasion of dedicated events.
3. **A set ("family") of calls under the same single and broad OG intervention opens up to a variety of objectives for OGs and reduces administrative burden**: keep the **bottom-up calls** to capture grassroots innovative ideas and practice problems, and add further **"suggestive" thematic calls**¹⁸ if useful for specific national/regional reasons.
4. **Support continuously open OG calls**¹⁹, with several cut-off dates per year. **This incentivises farmers with an innovative idea** or an urgent problem, who find it hard to wait much more than 6 months. MS will have to describe the intervention on OGs to count their annual and 7 year budgets in their CAP plans. How they would organise the frequency of calls is essential and is obviously related to expectations of MS and their farmers.
5. **Provide for a 2-step system** for OGs including a **first** action to prepare the project: develop the initial idea, check the available information on the project objective, find the most relevant partners who can help to develop the solution, prepare the way to cooperate and the final project proposal ready for selection. **Use simplified costs wherever you can**. This first preparatory action is often paid with lump sums under the OG intervention (indicator O.1) and thus eases the administrative burden. It could as well be an advisory action (counting for indicator O.2). The **second** action is for implementing the project. Also here new opportunities have arisen: besides flat rates, up to 40% of the direct costs can be paid directly without invoices if activities are well described in the application. Overall, **the 2 step approach helps to save money on meaningless projects, improves the overall quality of the proposals** thanks to good support during this process **and simplifies the selection** of the projects because they are better prepared. However, 2 steps should not be an obligation, it should be seen case by case. If the OG has an already prepared project thanks to other means (e.g. other AKIS interventions such as innovation platforms, innovation support etc.), there may be no need for OG preparation funding. Note that the 2 actions count separately for output indicators and in the CAP plans.
6. **Make sure that a substantial part of the OG budget is spent on communication and demonstration during the project**. Some current OG projects manage to regularly attract up to 100 farmers to their events, who learn and mimic the new approaches in the OG project. Thanks to the peer-to-peer effects, this has impacts on farming practices beyond what any other type of innovation funding can deliver. Overall, it appears that OG need clear instructions to ensure broad communication.

¹⁷ <http://agriwiki.agri.cec.eu.int/Pages/AWFile.aspx?LISTNAME=AgriWikiDocuments&ITEMID=4046>

¹⁸ <https://www.youtube.com/watch?v=AaxZ1IE608k>: Use of a "family" of OGs & EIP network activities (Shane Conway)

¹⁹ <https://www.youtube.com/watch?v=zPkXbiVupgg> : Prepare interesting calls for Operational Groups (Åsa Broberg)

7. **Ensure a substantial communication budget beyond the project budgets for all OG projects, also after they finished, as well as for dissemination in other ways** or with other funding (e.g. demonstration programmes, advice, ...). Evaluation studies learn us that there is still much to gain by intensifying and possibly using **professional experts** for dissemination and communication of recent innovative practices. OGs should focus on the **existing channels which are the most used by the target audience** of end-users of project results, in particular those which also save the solutions on the longer term, beyond the project period (knowledge reservoirs/platforms).
8. Ensure **involvement of OGs in EU Horizon multi-actor projects**²⁰ (See Annex VI).
9. **Attract advisors in EIP OGs** and profit from the multiple roles they may play: helping to capture practice needs, preparing, facilitating, communicating and disseminating on OG projects and their outcomes.
10. CAP networks' innovation activities, EU advisory networks and knowledge reservoirs should help **facilitate cross-border OGs** (within one country and between countries). Timing and conditions of calls are often a hurdle. So why not synchronise within Europe one yearly fixed common timing and harmonise the selection criteria from Art. 114 (criteria for the interactive innovation model) to simplify cross-border OG calls, so that partners and CAP networks can timely prepare clustering exercises, brokering events, face-to-face encounters etc.?
6. Peer-to-peer learning is key: **organize cross-border or intra border visits for OGs** or for specific actors who can incentivize OGs (innovation support services, advisors, farmers' groups, cooperatives...).
7. **Avoid subjects without prospects** for effective implementation: ensuring application and impact are key to attract farmers and advisors. Chose a mix of evaluators with a good view on agricultural practice and an open eye to innovative (cross-over) ideas.
8. Use the relations within the AKIS and the EIP Operational Group projects **to test new practices/approaches that may become supported interventions under the CAP such as ecoschemes and environment-climate interventions**. Through such projects²¹, all will benefit from the practice knowledge and entrepreneurial skills of practitioners, while at the same time this will promote the future intervention at an early stage and motivate the future beneficiaries to take up the outcomes thanks to increased ownership of the co-developed interventions.
9. **Foster structural and regular specific innovation activities within the national CAP networks**²² to have a permanent platform and activities where all the knowledge created within and beyond the country can be shared and may inspire the implementation of new innovative practices and projects (section 1.5.2 and Annex IV).

1.3.4 Making effective use of information and communication technologies to improve knowledge sharing

1. **Interlink open public data to enable additional knowledge services**, e.g. Lithuania's RECAP app, Estonia's GIS/LPIS based layers combining soil fertility, erosion zones, spreading harmful organisms, irrigation needs etc.
2. Set up **multi-actor platforms** to discuss how to support the digital transition within AKIS, to find the most urgent needs, for instance on training/advice, involving practitioners such as farmers and advisors.
3. **Develop and share digital advisory tools, avoiding duplication** and reducing maintenance costs for the many advisors who can profit from it²³.

²⁰ See Annex VI for more details

²¹ <https://www.youtube.com/watch?v=AaxZ1IE608k>: Use of Operational Groups for testing out new CAP measures (S. Conway)

²² <https://www.youtube.com/watch?v=xjivPs5dRew> : Example: Promote collaboration and knowledge flows among OGs (J. Rohrhofer)

²³ The EU FAIRSHARE Horizon 2020 project (<https://cordis.europa.eu/project/id/818488>) is testing 240 such tools already

4. Organise **training on digital skills** for farmers, advisors etc, possibly combined with a satisfaction score of users of training or advice.
5. **Build digital knowledge reservoirs /knowledge hubs that are interactive, quality checked and serve your AKIS** (e.g. LT²⁴, EUREKA²⁵). Use their recommended common EU standards and programming language for Member States' practice knowledge databases to ensure translation and interoperability of all knowledge material and outcomes from within the EU as much as possible.

1.4 Main new elements in the post 2022 CAP related to AKIS and EIP

1.4.1 Obligations

1. Member States have the obligation to include in their CAP Plan **how they will be strategically organising their AKIS to improve knowledge flows, in particular how researchers, advisors and CAP networks will work together**, Art. 102 (a)(i)and (ii)
2. **Member States shall include in the CAP Strategic Plan an AKIS system providing advisory services** for farmers and other beneficiaries of CAP support, Art. 13(1)
3. Member States have the obligation to detail in their CAP Plan **how they will be providing advice and innovation support** for OGs, Art. 102 (a)(ii)
4. **Advice must be impartial** and advisors supported under the CAP should have no conflict of interest, Art. 13(3)
5. All advisors **must be integrated within the AKIS** (key examples are listed in Annex V)
6. Within the Member State a larger number of advisory **fields are obligatory**, see section 1.3.2 (mainly points 2-7 and 11)
7. **The EIP OGs shall contribute to achieving all nine CAP specific objectives**, Art. 114(1)
8. Operational Groups shall share both the **plan and a summary of the results of their project**, to enable early contacting, networking and clustering of groups with similar themes, Art. 114(4)
9. The principles of **interactive innovation** for EIP OGs are made explicit in Art. 114(4) and easy to use as common **selection criteria** across Member States. This will simplify the conditions for cross-border OG calls:
 - focus on practical farmers' needs
 - complementary knowledge in the OG is necessary
 - co-creation and co-decision all along the project

1.4.2 Opportunities

1. Possibility of **advance payments** for EIP OG projects (**up to 50%**), Art. 42(3) of the financing regulation²⁶.
2. In principle **maximum 7 years per project, but longer is possible** if justified for collective actions for environmental, climate and biodiversity objectives (specific CAP objectives 4, 5 and 6)
3. **Higher than normal EAFRD contribution rates** specifically for EIP OG projects (**up to 80%**, instead of the normal 43%), Art. 85(3)
4. **A State Aid derogation**²⁷ up to 350.000 Euro per OG project is in force from 23 July 2021

²⁴ <https://www.youtube.com/watch?v=H6JMN92Lc0k>: Establish knowledge centres and digital knowledge reservoirs (G. Kučinskienė)

²⁵ <https://www.youtube.com/watch?v=q9VlwGprzKk> : EU knowledge reservoir EURAKNOS and EUREKA (Pieter Spanoghe)

²⁶ COM(2018) 393 final - Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the financing, management and monitoring of the common agricultural policy and repealing Regulation (EU) No 1306/2013

²⁷ Commission Regulation (EU) 2021/1237 of 23 July 2021 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (Art. 19b): https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2021.270.01.0039.01.ENG&toc=OJ%3AL%3A2021%3A270%3AFULL

5. **Funding to provide innovation support** to OGs available through Art. 72 (Art. 13(4)(e)). Art. 72 intervention can both pay for individual innovation advice or for setting up innovation support services.
6. The introduction of the funding of (**new**) **cross-border OG projects** (Art. 114)
7. CAP networks now can **support** under their EIP networking the **cooperation of existing OGs** (e.g. meetings to exchange on a common theme, structured knowledge exchange on how to manage OGs or give incentives for developing common project proposals etc.), Art. 113(4). This could equally be funded by Technical Assistance e.g. for regions. Cross-fertilisation between OGs on similar or complementary topics can also be enabled by Art. 72. It could be useful as preparatory action to prepare cross-border OGs or for Horizon Europe multi-actor projects.
8. A number of **Horizon Europe projects** of calls 2021-2022 will support the various AKIS strands during the transition phase, for instance an AKIS co-creation project and one on innovation support, EU advisory networks and thematic networks. New in 2021 is a specific topic on Horizon Europe thematic networks for OGs: projects will be obliged to build themselves around a number of OGs working on a common theme. This can be the start for preparing cross-border OGs (Art. 114), after working together on a common theme in such Horizon Europe project (see Annex VI).

1.5 Cornerstones for an AKIS fit for the future

1.5.1 EIP-AGRI Operational Group (OG) innovative projects - Art. 71 and 114

Support to EIP Operational Groups follows the general provisions of cooperation (Art. 71)²⁸. Details essential for the EIP and Operational Group projects are listed in Art. 114. Overall, there is major continuity with the period 2014-2020 with a number of extra incentives (see section 1.4.2). Lessons will have been learnt from the over 3000 OGs in that period. The 100% support rate and the State Aid derogation will be essential, to boost energy, biomass, environmental, climate, rural and social innovation projects. Such subjects also were possible in the 2014-2020 period but were hardly used as 100% support rate was not possible and no private parties were willing to put in budget.

Further important info is available in Annex III. For instance, it is important to remember the fact that the **envisaged innovation may be based on new but also on traditional practices in a new geographical or environmental context (Art. 114)**. There is no “definition” of innovation needed, so any project starting **new** initiatives is eligible.

1.5.2 CAP networking for innovation post 2022 - Art. 113 and Art. 102(a)

The new CAP cross-cutting objective calls for intensified knowledge exchange and co-creation of innovation. The CAP networks are privileged platforms for this and this is indicated in the regulation as such. Fostering innovation and facilitating the networking of EIP Operational Groups are specific objectives/tasks mentioned in Art. 113. In line with these objectives, MS - to the example of some active current NRNs²⁹ - should develop more specific innovation activities in their CAP network to fulfil the requirements of Art. 102(a). Plenty of examples are available³⁰ but the future AKIS strategic approach is even more ambitious. MS will be invited to describe in their CAP Plan how they intend to organise the specific innovation activities in their CAP network³¹. Regions can also take initiatives in this sense and are allowed to use Technical Assistance to do so, and also Art. 72 can fund similar actions. In this case, coordination within the Member State is expected. Key points to be brought to

²⁸ Further guidance can be found in the toolkit for the cooperation intervention:

<http://agriwiki.agri.cec.eu.int/Pages/AWFile.aspx?LISTNAME=AgriWikiDocuments&ITEMID=3047>

²⁹ <https://www.youtube.com/watch?v=NF5H7RR8MPU>: Innovation activities of the Nat. Rural Network Unit (J. Swoboda)

³⁰ <https://www.youtube.com/watch?v=GO9o0EMPnOk>: Networking meetings with Operational Groups (E. Frankhuizen)

³¹ <https://www.youtube.com/watch?v=x-MOMd3bFKg>: Preparing the role of CAP networks in strengthening the AKIS by promoting innovation and knowledge flows within the country and across the EU (I. Van Oost)

the MS attention before developing their CAP plan can be found in Annex IV, to ensure that the CAP Networks' requirements, objectives and tasks related to innovation are fulfilled.

1.5.3 New and more interactive functions for advisors, innovation support

Beyond the classical linear advising, three more recent types of interactive advisory functions will become main instruments for a well-functioning future AKIS. These types will ensure advisors' quality within a Member State to become more competent and involved in innovative knowledge and connected with participatory research. Thus, this should be considered for the AKIS strategic approach of every country:

1.5.3.1 A set of interactive innovation roles of advisors in Operational Groups:

Which new roles will advisors take up in EIP Operational Groups or other interactive innovation projects, such as Horizon Europe (HE) Multi-Actor projects or HE Thematic Networks?

- They can capture practice needs of farmers and pass this info to researchers and CAP networks (obligation in Art. 102)
- They can share up-to-date practical knowledge from a wide range of active farms
- They can broker to help prepare interactive innovation projects
- They can facilitate interactive innovation projects and learn from the AKIS actors involved
- They are key actors for communicating and disseminating the newly generated innovative knowledge, both to their clients, their back-office specialists as to the wider public
- They can bridge between CAP and Horizon Europe consortia as innovation support services

1.5.3.2 Which functions can an Innovation Support Service (ISS) provide as a “one-stop-shop”?³²

The experience of agricultural/rural innovation support services is that you need to have expertise in both the subject matter and in brokerage/facilitation. **Innovation support** can be funded under Art. 71 (if the person delivering the innovation support is a partner in the OG: use O.1) as well as under Art. 72 (innovation coaching/advice for a project, with the advisor not becoming a partner: use O.2). A typical operational example of an innovation support service working exclusively and effectively for Operational Group projects is the one in Schleswig-Holstein³³.

The following innovation support functions are key for a “one-stop-shop” ISS:

1. **Brokering** function: connecting actors around an bottom-up innovative idea³⁴
2. **Coordination and facilitation** of projects, as an intermediate between partners
3. **Promoting** innovation at large and raising **awareness** on its importance for transitions
4. **Coaching** farmers towards innovation (individual **innovation advice**)
5. Organising **thematic brainstorming events** to find possible solutions and link partners
6. Encouraging farmers with **an innovation prize**, to show their peers how normal or easy it is to innovate. This can be done e.g. with a biannual prize from which for instance 150 candidates are reduced to 10 nominees and one winner. All nominees are promoted in the most read practice oriented farm channels, and get also help to develop their innovation, which again promotes innovation
7. **Dissemination** of innovative results, specific events and campaigns
8. Keeping **closely connected** with other SMEs and other innovation services and funding bodies.

³² <https://www.youtube.com/watch?v=9FBi7Z410GE> : Innovation support services: the glue in AKIS (W. Ceulemans)

³³ Page 106: https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/key_policies/documents/report-preparing-for-future-akis-in-europe_en.pdf (K. Ketelhodt, innovation advisor in the Schleswig-Holstein Chamber of Agriculture)

³⁴ <https://www.youtube.com/watch?v=fbiAGzlf3IA> : Distrikempen – Logistic Innovation (P. Pasgang)

1.5.3.3 A “Back-office for advisors”³⁵:

To support their colleagues, as well as farmers, trainers, educators etc., some advisors specialise on the practical side of particular themes. This means that they are in close and regular contact with national and international researchers on that theme, as well as with OGs working on these themes and the CAP networks collecting information from theme-related projects. As such, these “specialist” advisors, thanks to their intensive knowledge on a particular subject, are of great help for the whole Member State, vocational training and education included and illustrate the strategic approach within the AKIS. Such specialists could be individual advisors (even a part time researcher that works as an advisor too), or part of a team within a larger advisory body³⁶, farmers’ organisation or an applied research institute having a group of advisors as part of the organisation. They may produce dedicated educational material serving to upskill many AKIS actors. They may also well placed to lead national multi-actor thematic networks^{37,38}.

1.6 How reflect the AKIS Strategic Approach in the CAP plan?

The following sections of the CAP plan template are dedicated to fill in the various elements of the AKIS approach in the CAP strategic plans:

Section 2 - Assessment of needs and intervention strategy

This section covers on the SWOT summary, needs assessment and interventions chosen for the CCO. It also indicates which are for the CCO the related result indicators and the target value for those indicators, including the justification of the targets and milestones and the financial allocation.

Section 4 - Elements common to several interventions

This section focuses on the work of the CAP networks and the possibility of using technical assistance. Key questions here concern the planned networking activities to strengthen innovation and knowledge flows within AKIS and the beneficiaries. The last question in section 4.6 is investigating on the coordination and complementarities between EAFRD and other Union funds (in particular Horizon Europe and ERASMUS+, but also EFRD and Interreg):

Technical Assistance (Art. 98(c)):

- **Objectives;**
- **Scope and indicative planning of activities;**
- **Beneficiaries.**

CAP Network (Art. 98(c) and Art. 102)

- **Summary overview and objectives of the National CAP Network, including activities to support the EIP and to increase knowledge flows and interaction within the AKIS;**
- **Structure, governance and operation of the National CAP Network, including the indicative share of technical assistance funding allocated to the network.**

Coordination, demarcation and complementarities between EAFRD and other Union funds active in rural areas (Art. 98(d))

- **Short description of demarcation and coordination mechanisms.**

Section 5.3 - Description of interventions under EAFRD

This section includes the set of CCO/AKIS interventions foreseen in the CAP plan, including the description of the design and requirements to ensure effective contribution to the CCO, the relevant output indicator to which the intervention contributes, the territorial scope, the needs addressed by the intervention, the result indicator(s) selected for this intervention, the eligibility conditions, the

³⁵ Page 101-103 of https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/key_policies/documents/report-preparing-for-future-akis-in-europe_en.pdf

³⁶ <https://www.youtube.com/watch?v=JTBwA4PPXbk> : Integration of Slovenian advisors in the AKIS (A. Jagodic)

³⁷ SWG SCAR AKIS Report page 29-31 https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/key_policies/documents/report-preparing-for-future-akis-in-europe_en.pdf

³⁸ <https://www.youtube.com/watch?reload=9&v=EPsVbkmnp9w> : Thematic networks at national level (P. Bergeret)

form and rate of support, the total indicative financial allocation and the planned unit amounts per year.

Section 7 - Governance systems and coordination systems

In section 7.1. the **formal AKIS coordination body** should be identified, including its contact details. This will be the contact point for the Commission as regards the **governance and coordination of the AKIS strategic approach. This includes farm advice and all other related AKIS interventions.** It is expected that this coordinator is in close and regular contact with the main AKIS (regional) coordinators and actors in the country which can help assess and guide the improvement of the AKIS in the country by giving suggestions for encouragement of more effective knowledge exchange activities (advice, training, ...), including in particular also the generation and co-creation of innovation (EIP OGs) and the broad sharing of it.

Section 7.2 requests a brief description of the monitoring and reporting systems established to record, maintain, manage and report the information needed for assessing the performance of the CAP Strategic Plan, and the annual performance for the CCO elements (Art.121).

Section 8.1 - Modernisation: AKIS and digital technologies

This is the section to describe the strategic AKIS approach on which the AKIS interventions are built. It summarizes the key elements by which the CAP plan will illustrate the planned improvement of the strategic approach related to the functioning of its AKIS and digitalisation. The knowledge exchange, advice, information actions and EIP Operational Group innovative projects need to contribute the CCO (Art. 5), and may also contribute to further specific objectives according to the specific interventions chosen. Member States shall explain:

- ***The overall envisaged organisational set-up of the improved AKIS: detailing how knowledge flows between the different actors forming part of the AKIS will be improved (Art.102)(a)(i), and including the specific interventions which serve this purpose;***
- ***The description of how advisors, researchers and CAP networks will work together within the framework of the AKIS (Art.102)(a)(ii):*** including potential inter-ministerial agreements and sufficient budget attribution to support the actions that regularly interlink researchers with all advisors and with the specific innovation activities of their CAP network, to increase knowledge flows;
- ***The description of the organisation of advice according to the requirements referred to in Article 13(2), 13(3) and 13(4):*** Explaining how advising farmers and other beneficiaries of CAP support will be organised and integrated within the AKIS ensuring the delivery of up to date technological and scientific information (Art. 13(2)) and that, within the Member State, advice all fields listed in Art. 13(4) are covered. Providing details on the inclusion of all impartial advisors (public and private). Illustrating that all CAP supported advisory, knowledge exchange and information actions are based on and consistent with the AKIS strategic approach as described in reply to the former questions;
- ***The description of how innovation support services are provided as referred to in Article 102(a)(ii):*** Explaining how innovation support is organised in order to capture grassroots innovative ideas and develop them into innovation projects of EIP Operational Groups, how it is ensured that these services are supported by the regular knowledge flows between researchers, advisors and the CAP network innovation activities, and also how this innovation support is organised within the AKIS: for instance as a “one stop shop for innovation” covering any possible theme, etc.

Please, note that in that Section of the CAP Strategic Plan, in addition to the AKIS plan, also the **strategic approach towards digitalisation** needs to be described (see Section 2 and 3).

1.7 AKIS related impact, result and output indicators

1.7.1 Impact indicator (Article 7, Annex I of the SPR)

- 1.1 **Sharing knowledge and innovation:** Share of CAP budget for knowledge sharing and innovation

1.7.2 Output indicators³⁹ (Article 7, Annex I of the SPR)

- O.1 Number of European Innovation Partnership (EIP) operational group projects
- O.2 Number of advice actions or units to provide innovation support for preparing and implementing European Innovation Partnership (EIP) Operational Group projects
- O.29 Number of supported training, advice and awareness actions or units

1.7.3 Main Result indicators⁴⁰ (Articles 7, 97 and Annex I of the SPR)

- R.1 **Enhancing performance through knowledge and innovation:** Number of persons benefitting from advice, training, knowledge exchange or participating in European Innovation Partnership (EIP) operational groups supported by the CAP in order to enhance sustainable economic, social, environmental, climate and resource efficiency performance
- R.2 **Linking advice and knowledge systems:** Number of advisors receiving support to be integrated within Agricultural Knowledge and Innovation Systems (AKIS) (for examples of how this can be done, see Annex V)
- R.24 **Environmental-climate performance through knowledge and innovation:** Number of persons benefitting from advice, training, knowledge exchange or participating in European Innovation Partnership (EIP) operational groups supported by the CAP related to environmental-climate performance (sub indicator of R.1).
- Several other result indicators will also be targeted by specific AKIS interventions.

1.8 Guidance questions for the assessment of the AKIS strategic approach

In blue: general questions that should fit for all types of intervention.

For the AKIS Strategic approach, interventions Art. 71/114 and 72 are key.

Referen- ce in the CAP Plan tem- plate	Item to be assessed
	Section 1 - Common elements to all types of interventions
	Does the title reflect sufficiently clearly the content of the intervention?
2 & 5	Objective(s) to which the intervention is linked
	<i>Please refer to the tool on the CCO (2.2.10)</i>
	Is the design of the intervention consistent with the CCO (and SOs) to which it contributes? Is the level of detail of the description of the intervention sufficient to answer the above issue?
5	Eligibility conditions and description of the intervention

³⁹ Note that some modifications of Annex I may still need adjustment according to the final legislation.

⁴⁰ Note that some modifications of Annex I may still need adjustment according to the final legislation.

	Do the eligibility conditions of the intervention respect the applicable legal provisions in the SPR? Are the interventions according to Article 72 based on and coherent with the AKIS strategic approach?
	Are the eligibility conditions consistent with the policy objective/goal of the type of intervention? Is the level of detail of the description of the intervention sufficient to answer the above question?
	If the intervention is 'territorialised': is the territorial targeting relevant to the identified needs and intervention logic? [see the fiche X.4 on regionalisation ⁴¹]
2 & 5	Result indicator(s) to which the intervention contributes
	Is/are the RI proposed consistent with the design of the intervention and its eligibility conditions? Is the level of detail of the description of the intervention sufficient to answer the above issue?
5 & 6	<i>Please refer also to the tool 5.0 on what is an intervention</i>
	Do the planned annual outputs fall under the relevant output indicator?
	Are the planned outputs consistent with the relevant planned milestones/targets?
	Are the planned outputs plausible in view of the design of the intervention, its eligibility conditions and thus its targeted beneficiaries? Is the level of detail of the description of the intervention sufficient to answer the above question?
5 & 6	<i>Please refer also to the tool 5.0 on what is an intervention</i>
	Are the planned unit amounts plausible in view of the design of the intervention and its eligibility conditions? Is the level of detail of the description of the intervention sufficient to answer the above question?
	Are the planned unit amounts consistent with the relevant planned milestones/targets?
5 & 8	Simplification
	<i>Please refer also to the tool 8.2 on simplification</i>
	Is the intervention designed in a way that would avoid unnecessary complexities or administrative burden for the beneficiaries (e.g. using SCO, vouchers, etc.)? This would be in particular need to be checked for advice under Art. 72
3	Consistency and accumulation of support
	<i>Please refer also to the tool 3.1 on intervention strategy and its consistency/coherence</i>
	Is the intervention consistent/not in contradiction with other interventions?(including with similar types of sectoral intervention chosen by MS) Is the level of detail of the description of the intervention sufficient to answer the above question?
	Is the intervention likely to create accumulation of support (i.e. overcompensation/double funding)?
	Section 2 - Items specific to the AKIS Strategic Approach
	<p><i>The following questions are designed to help assess the proposed Strategic Approach by MS and provide ideas for discussion with MS during informal phase, but often go beyond regulatory obligations in a way to enhance good practices.</i></p> <ul style="list-style-type: none"> • How will the MS fulfil each of the obligations under Art. 102, as listed in the 4 indents in section 8.1 of the CAP plan? • Overall, what are the main collaboration pathways to make researchers, advisors and CAP networks work better and more regular together to exchange knowledge? (see section 1.3 for examples) • With which interventions will the advisors be integrated in the AKIS (Annex V for best examples)

⁴¹ <http://agriwiki.agri.cec.eu.int/Pages/AWLibrary.aspx?LISTNAME=AgriWikiDocuments&ITEMID=1097>

- How will the MS fulfil the obligations for advice and advisors under Article 13? How will this be organised while at the same time avoiding administrative burden (such as designation, certification etc.) (see section 1.3.2, 1.5.3 and Annex V)
- In the case of Art. 72 types of intervention, are the intervention “based on and consistent with” the strategic AKIS approach as described in section 8.1 of the CAP plan? Are they helpful for the aim of improving the functioning of the AKIS?
- In the case of EIP OG interventions, do they fulfil the requirements and guidance (section 1.3.3 and 1.5.1, Annex III)?
- Are they helpful for the aim of improving the functioning of the AKIS?
- Are they designed in a way that the objectives are focusing on farmers’/foresters’ needs?
- Do they take a full multi-actor approach with criteria to get an appropriate mix of relevant actors? Do they request co-creation and co-deciding all along the project (Art. 114)?
- Will OGs share their plans and the summary of results (eligibility condition)?
- Will grassroots innovative ideas be captured and bottom-up OG calls be provided to develop them? Are sufficiently frequent EIP OG calls foreseen?
- Will OGs be used to test out and develop CAP interventions?
- Has the MS provided for adequate innovation support for EIP OGs as requested in Art. 13(4)? Does it cover the full territory in a rather equal manner?
- How will up-to-date knowledge and information be spread in the MS (advisory specialists’ back-office? Innovation support database? CAP network investing in innovation exchange? etc., see section 1.3.3 and 1.3.4, Annex IV)
- How is the MS bridging between research and practice? How is it making use of the outcomes of Horizon 2020 and Horizon Europe multi-actor projects, and in particular from the Thematic Networks compiling knowledge ready for practice, to design their interventions, for instance under Art.72, but also for other SOs (see section 1.3.1 and Annex VI)?
- Are the innovation activities of the CAP Network well developed in terms of specific actions planned and adequately budgeted (see sections 1.3.1 and 1.5.2 and Annex IV)?
- Do the specific innovation activities of the CAP network follow the guidance given in section 1.5.2 and Annex IV?
- Is it collecting and sharing up-to-date information and knowledge with the advisors and researchers? And with which other AKIS actors?
- Has the MS defined linkages with other EU support/programmes in particular with Horizon Europe (for knowledge produced in OGs and multi-actor projects), and possibly ESF+, ERASMUS+, ERDF (see section 1.4.2 point 10 and Annex VI)?
- Are regular contacts of OGs with Horizon Europe projects and consortia preparing proposals set up? (section 1.4.2 point 8)
- Has the MS taken steps to implement the interventions from the very beginning of the Programming period?
- Has the MS considered how to reach the various types of farmers, including the small farms and the socially excluded with knowledge exchange and advice?

2 Digitalisation in the new CAP

Digitalisation can help to streamline, facilitate and enhance processes and products across sectors. The proposal for the CAP post 2022 acknowledges that, just as for other sectors, agriculture and rural areas can make better use of new technologies, particularly of digital technologies. With the CAP post 2022, the potential of digitalisation for agriculture and rural areas is to be exploited in a strategic way.

Indeed, digital technologies and their uptake have also been supported under the current CAP in the one way or the other, e.g. investment support might have been granted to pursue precision farming equipment. However, with the new CAP more attention will be given to digitalisation: For the forthcoming period, the SPR foresees that Member States elaborate Digital Strategies. While the regulation does not provide detailed information, how exactly Digital Strategies are to be elaborated, Member States will have to elaborate a strategic approach towards digitalisation in agriculture and rural areas.

This part of the Tool provides an overview of the concept of digitalization (Annex VIII), how it can be approached in CAP implementation, and how the various interventions may contribute to boost digitalisation. Key for that ambition is the creation of an environment enabling farmers and rural communities to take up and effectively deploy digital technologies.

Boosting digitalisation, is not an end in itself, rather digital technologies facilitate to achieve other impacts, as it is also reflected in the set of CAP indicators ([Section 2.5](#)). Digital technologies can for instance enable rural areas and the agricultural sector to strengthen competitiveness and sustainability performance. Digitalisation is therefore, an inherent part of the cross-cutting objective, with the potential to support achieving the general and specific CAP objectives.

In the legal proposal, also the ambition to link up to the EU Digital Agenda is outlined. As in other policy fields, since 2018 a lot of has changed in the policy setting. Particularly under the Headline Ambition of the current Commission of a “Digital Age”, many strategic, investment and legal initiatives have been announced. It will be important, to use the opportunities offered by the portfolio of instruments available beyond the CAP to boost the digital transformation in agriculture and rural areas, and to achieve consistency with cross-sectoral aspects. This Tool therefore also reflects on the possibilities to achieve synergies with other programmes operating in the field of digitalisation.

Digitalisation is also subject of the Farm-to-Fork-Strategy, which stipulates targets for the roll-out of fast broadband internet⁴². The links between the Farm-to-Fork Strategy, the CAP recommendations, and the CAP Strategic Plans are elaborated in a Staff Working Document⁴³.

In Annex VIII further background information on digitalisation in agriculture and rural area and its concept are provided, including e.g. an overview on relevant digital policies, the explanation of the difference between digitalisation and digitisation as well as between precision farming and smart agriculture, aspects on 5G, and examples of factors enabling digital transformation, and examples how digital technologies can contribute to achieve environmental ambitions, such as stipulated the Farm to Fork Strategy.

2.1 Legal references

Article 102 “Modernisation” of the SPR forms the basis for digitalisation under the CCO, and requires to set up interventions related to digitalisation in agriculture and rural areas following a strategic approach. In addition, Articles 6 (b), 13(4) (f), and Annex I of the SPR are also directly relevant for it.

As many interventions supported under the CAP plans are potentially relevant to boost digitalisation, including e.g. investment support, advisory services (see Section 2.2.2 below), many articles in the SPR are indirectly relevant. Digitalisation can also be boosted through support to different sectors through sectoral interventions, e.g. in the field of wine (see e.g. Art. 51 (b) and (e) in combination with Art. 52 (1) (b) and (e), which must be consistent with other types of interventions.

⁴² The Commission aims to accelerate the roll-out of fast broadband internet in rural areas to achieve the objective of 100% access by 2025. (COM(2020) 381 final)

⁴³ See Staff Working Document (2020) 93 final on the “Analysis of links between the CAP reform and the Green Deal”.

2.2 Key aspects of digitalisation in the CAP plans

The CAP legal proposal foresees that the CAP Strategic plans include a description of the strategy for the development of digital technologies in agriculture and rural areas and for the use of these technologies to improve the effectiveness and efficiency of the CAP Strategic Plan interventions., However, the preamble of the regulation provides further guidance, pointing for instance to “investing in technological development **and digitalisation**, as well as improving the uptake and **effective deployment of technologies**, digital technologies in particular” (Rec. 12). Furthermore, Rec. 41a, stipulates that special attention is to be given to modernisation and digitalisation in the provision of support to investments, and that those are to be reflected in in the CAP Strategic Plan.⁴⁴ This is further supplemented in Rec 46 pointing to a strategy for the development of digital technologies and for the use of these technologies to demonstrate how digitalisation in agriculture and rural areas will be boosted.

There are some key elements, as outlined in Section 2.3.1, which can be expected to be considered in the elaboration of the subject digitalisation in the CAP Strategic Plans. In Section 2.3.2, it is described, how selected CAP interventions may contribute to digitalisation ambitions.

2.2.1 Digital strategy

Fields to be addressed: The SPR specifies that the Digital Strategies have to cover digitalisation in agriculture and rural areas. Despite not mandatory, Digital Strategies could also address aspects related to the policy implementation system and simplification. To some extent, digitalisation of the agricultural sector and that of the agricultural administration can go hand in hand (see Section 3). The Digital Strategy is not to be regarded as a part of the AKIS plans only: while digital tools can play a role, digital technologies looked at in the Digital Strategies in the CAP Plans go far beyond that, covering e.g. also support to broadband, precision farming, e-services etc.

Stocktaking: For the development of a strategic approach towards digitalisation in agriculture and rural areas, it is essential to take stock of the **status quo of digitalisation** as well as of **uptake barriers** and **existing enabling factors** (e.g. availability of broadband, presence of Digital Innovation Hubs – for examples of parameters, see Tool 2.10 on the SWOT Analysis for the CCO). For most countries, the bases of statistical data on digitalisation in agriculture and rural areas will be limited. Therefore, empirical and qualitative data might be considered in the stocktaking exercise.

SWOT-Analysis: A strategy should be based on or reference to a SWOT analysis on digitalisation (see [Tool](#) on SWOT for the CCO). As there is little reference data on digitalisation in agriculture and rural areas available at European level, benchmarking with other Member States might be challenging.

Needs assessment: Based on the SWOT Analysis for the CCO **and the SOs**, the **assessment of needs** is essential.

Relation to SOs: As digitalisation is expected to contribute to the SOs, it has to be mapped, how digitalisation can contribute to address needs, overcome threats or exploit opportunities identified in the assessment of the SOs. The expected contribution to the related impact indicators is to be outlined (at least in causal terms). Some examples, where digital technologies in agriculture can contribute to achieving environmental objectives, are illustrated in Annex VIII.

Choice and design of interventions: Under consideration of the results of the needs assessment and of the mapping of possible contributions of digitalisation to SOs, decisions on interventions under the CAP and under other EU or national programmes have to be taken. For CAP interventions, it will

⁴⁴ The text in the preamble, reads “When providing support for investments, Member States should pay particular attention to the cross-cutting general objective of modernising the sector by fostering and sharing of knowledge, innovation and digitalisation in agriculture and rural areas, and encouraging their uptake. Support for investments in installation of digital technologies in agriculture, forestry and rural areas, such as investments in precision farming, Smart Villages, rural businesses and ICT infrastructures, should be included in the description in the CAP Strategic Plans of the contribution of the Plan to the cross-cutting general objective.”

have to be outlined, how these interventions are tailored towards digitalisation, e.g. through eligibility or selection criteria (see also Section 2.6). In addition, the link to one or more SOs or General Objective needs to be specified.

Supplementary actions: To allow the reader a full overview of the strategic approach opted for, interventions foreseen under other EU or national programmes and other types of actions should be outlined in a digital strategy.

Sub-topics/Elements to be considered in a Digital Strategy: For the creation of an environment allowing for the uptake and effective deployment of digital technologies, at least the following elements are to be considered: Digital technologies and infrastructure, human capacities, data, data technologies and data infrastructure, and digital services.

Definition of objectives/targets: In the definition of objectives and targets in the Digital Strategy, as a minimum, the result Indicators related to digitalisation (see Section 2.5), need to be considered.

Link to the Farm to Fork Strategy and CAP recommendations: The Farm to Fork Strategy stipulates targets for the roll-out of fast broadband internet: 100 % access to fast broadband internet in rural areas by 2025. The Commission reflected on this subject in the recommendations for the CAP Strategic Plans. While both, targets set out in the Farm to Fork Strategy and CAP recommendations are not legally binding⁴⁵, Member States can be expected to elaborate within the CAP Strategic Plan – and for broadband in the Digital Strategy – on explicit national targets, and how these are intended to be achieved. For the roll-out of fast broadband, it has to be highlighted, that other EU programmes might be better suitable for establishing broadband access in rural areas (see Section 2.7). The links between the Farm-to-Fork Strategy, the CAP recommendations, and the CAP Strategic Plan are elaborated in greater detail in a Staff Working Document.⁴⁶

Description of expected effects: The quantification of the expected effects of digital technologies is often very challenging, as they not only depend on the socio-economic and environmental framing conditions, but also on the input data and specific equipment. Moreover, technological capabilities are developing fast. For instance, if a system of variable rate application for fertiliser is based only on freely available satellite data, the input reduction potential is lower in comparison to systems, which are based on close-to ground sensor data. Therefore, Member States might only be in a position to provide rough assessments on the expected effects.

Further aspects ideally to be considered in the development of a Digital Strategy

- **Technology evolution:** In the field of digitalisation, the evolution of technologies has a high pace, provisions, especially regarding the eligibility of actions and in the definition of targets have to be broad enough to allow to go along with the evolution of technologies.
- **Cross-sectoral national digital strategies:** If a Member State has a cross-sectoral digital strategy, that is ideally considered in the elaboration of the Digital Strategy in the CAP Strategic Plan.
- **Digital divide:** The aspect of a digital divide between rural and urban areas, between various rural regions, between types of farms or population groups is ideally to be reflected in a Digital Strategy.
- **Supply chain:** For boosting the digital transformation in agriculture and rural areas the supply of digital technologies and related support/repair services have to present in a country and its rural areas. Moreover, also the continuous development of innovative digital solutions suitable for the situation in a country has to be ensured (to be competitive).
- **SO2 and SO8:** While within the CAP Strategic Plan, digitalisation may also receive special attention in the context of SO2 and SO8, an overarching strategic approach, under consideration of all SOs is to be elaborated in the Digital Strategy.

⁴⁵ The recommendations documents covered the full scope of the specific objectives. Within that framework, they also requested Member States to set “explicit national values” (i.e. non-binding national targets) to reflect intended contributions to achieving selected EU-level targets arising from the European Green Deal.

⁴⁶ See Staff Working Document (2020) 93 final on the “Analysis of links between the CAP reform and the Green Deal”.

Examples of the development of a Digital Strategy: Inspiration for the development of a digital strategy for agriculture and rural areas not explicitly tailored to the CAP, can also be found in the [documentary of a 2019 EIP-Seminar](#) on this subject. In addition, the [digital declaration](#) ‘A smart and sustainable digital future for European agriculture and rural areas’, which was signed by most Member States in April 2019 (see Section 2.7) reflects on elements needed and outlines concrete actions to boost digitalisation in agriculture and rural areas across policy domains.

2.2.2 Relevant CAP interventions

Not all of the factors needed for the creation of enabling environment for the uptake and effective deployment of digital technologies in agriculture and rural areas might be supportable under the CAP Strategic Plans. However, a range of interventions of the CAP proposal under both pillars promises to effectively contribute to the digital transformation (See Table 1).

The proposal includes some specific elements and provisions directly or indirectly related to digitalisation:

- The Farm Sustainability Tool for Nutrients (FaST)⁴⁷, a digital application for farmers to better tailor the use of fertilisers, has – following the CAP proposal - to be offered by Member States, so that it is available to all farmers. With that impartial and cost-free offer to farmers, more farmers may get familiar with digital technologies.
- For Farm advisory services, the SPR predefines in Article 13 (f) that digitalisation has to be covered. For other interventions, such decision may be taken at the level of the CAP Strategic Plan.

Table 1: CAP interventions possibly considered in a Digital Strategy

CAP Interventions and link to tool	Description of relevance for digitalisation	Aspects to be considered in the development of the CAP Plan/ Digital Strategy
Sectoral Investment support (Pillars 1 and 2) in innovation consisting of development of innovative products, including products from and by-products of wine making, wine products’ processes and technologies and its digitalisation, as well as other investments adding value at any stage of the supply chain, including for knowledge exchange and contribution to adaptation to the	Support to tangible and intangible investments can enable farmers, and their organisations in specific sectors to purchase digital technologies or to benefit from investments for a group of farmers	Sectoral interventions, e.g. in the fruits and vegetables or wine sectors, to support investments must be applied in a coherent manner. Investment support is to be tailored to digital technologies if it is to contribute to Digital Strategies Member States may decide to make structural investments to the benefit of several farmers to boost digitalisation, they may e.g. invest into a network of weather stations in a region to generate input data for precision farming

⁴⁷ The FaST was proposed for the post 2020 CAP as a level playing field for all farmer in the use of new technologies for the management or fertilisers in agriculture. This initiative brings climate and environment benefits driven by economic convenience while it also enhance farmers’ digital skills and qualify interactions with advisors. For authorities this initiative allows simplification and e-government, direct communication with farmers, information and advice online. Similar initiatives have been implemented in several Member States and contributed to the reduction of pollution by nutrients originated in agriculture. Such applications are also offered by the private sector, and by R&I projects.

climate change		
Investment support (Pillar 2)	Enables farmers, their organisations and rural communities to purchase digital technologies, e.g. sensors or the development of applications for communal services Support to the establishment of broadband possible	Support to the roll-out of broadband in rural areas is also possible under other EU programmes
Young farmers	Enables young farmers to purchase digital technologies embedded in a strategic approach/business plan	Member States may require that young farmers consider digitalisation in their business plan or that they gain digital skills
Farm Advisory services	Human capacities development Increase of effectiveness in the deployment of digital technologies	Following the SPR, the development of digital technologies in agriculture and rural areas have to be covered by advisory services
Knowledge exchange & information	Increase of awareness of and knowledge about digital technologies Exchange of experiences with digital technologies	
EIP-AGRI	The application of the EIP-AGRI approach can contribute to the development and the deployment and communication of innovative digital technologies.	Note, that under the EIP AGRI not only innovation in the field of digitalisation are focussed.
Smart villages	The application of the Smart village approach can contribute to the deployment of innovative digital technologies as well as contribute to human capacity building	Note, that the Smart village concept does not only cover innovation in the field of digitalisation.
Cooperation	Cooperation may facilitate the establishment of data and digital infrastructure and its deployment	
Cooperation – LEADER	The application of the LEADER approach can contribute the deployment of innovative digital technologies as well as to human capacity building.	
Farm Sustainability Tool for nutrients (FaST)	FaST is a digital tool in the hands of farmers that provides advice on management of fertilisers integrating relevant data and knowledge.	
Eco-schemes – Precision farming	Boost of the use of digital technologies and sustainable production	Ex-ante assessment of effectiveness of precision farming applications as it regards the environmental and economic performance is challenging
Environmental, climate and other management commitment	Boost of the use of digital technologies and sustainable production	Ex-ante assessment of effectiveness of precision farming applications as it regards the environmental and economic performance is challenging
IACS	Potential of making data available, which can serve as input to digital applications	Digitalisation can also contribute to increasing the effectiveness and efficiency of IACS (see Section 3)

2.3 What's new in comparison to the period 2014-2020?

Digitalisation as element of the cross-cutting objective of the CAP, acknowledging the enabling potential of digital technologies is a new element for the CAP period 2014-2020. In particular, the **strategic approach towards digitalisation** is a novelty.

However, this does not imply that under the CAP 2014 – 2020, no support has been granted to digital technologies or their deployment. A survey among paying agencies and Managing Authorities revealed that, e.g. investment support was granted to purchase precision farming equipment and CAP funded trainings were dedicated to digitalisation.

In the new CAP, also an indicator directly reflecting on the digitalisation of the agricultural sector is foreseen. As there have been no context or impact indicators reflecting on digitalisation in agriculture and rural areas apart from broadband in the CAP 2014 – 2020 period, there will be **hardly reference data for drawing a baseline for the future CAP**.

2.4 Where to put digitalisation in the CAP strategic plan?

In the CAP Strategic Plans, the Digital Strategy covering digitalisation in agriculture and rural areas, are to be elaborated in Section 8.1.2.

It is foreseen that a Digital Strategy is elaborated, as specified in Art. 102 (b):

- *The digitalisation strategy for agriculture and rural areas and the use of technology and data-driven solutions to improve the effectiveness and efficiency of the interventions.*

In the sub-section, the following questions to be addressed are:

- What is the strategic approach to boost digitalization?
- Which CAP interventions are envisaged to contribute to the digital strategy, and in which way will they interact in a strategic approach?
- What is the approach to avoid/ mitigate digital divides between regions, types of businesses and population groups?

Either in Section 2 of the CAP Strategic Plan, or within the Digital Strategy itself, a SWOT-Analysis on digitalisation has to be elaborated.

In SO2 and SO8, digitalisation will play a role as well, and cross-referencing within the CAP Strategic Plan will be needed to avoid repetition (and to comply with the maximum length of the individual sections). However, it will be important that in the section, in which the Digital Strategy is elaborated, the strategic approach can be followed comprehensively supporting all SOs (the results of the SWOT Analysis for the SOs are to be considered in the elaboration of the Digital Strategy).

The individual interventions, which are expected to contribute to digitalisation, are described in the dedicated sections, including provisions making them identifiable as contributing to digitalisation.

2.5 Related specific objectives; impact, output and result indicators

Digitalisation is no end in itself, but instrumental to achieve other ambitions. This is also reflected in its relation to the specific objectives, impact, result, and output indicators.

Digitalisation is expected to contribute to the achievement of the SOs. SO2 and SO8 themselves will address certain aspects related to digitalisation.

The application of an impact indicator in the field of digitalisation would in many countries be challenged by a lack of baseline data.

Overall, the number of indicators linked to digitalisation included in the CAP proposal is limited. Member States can be encouraged to set up supplementary national indicators. Here, the indicators

presented in the SWOT Tool for the cross-cutting objective, may provide guidance to Member States in the selection of possible national indicators.

In addition, Member States might be reminded, that starting from 2023, the FSS will capture the uptake of precision farming technologies. This aspect may already be considered in the development of supplementary national indicators.

2.5.1 Specific objectives (Articles 7 and 99(c) of the SPR)

For interventions, their specific design or requirements that ensure an effective contribution to the specific objective(s) set out in Article 6(1) is to be described. This implies, that for interventions, which support the uptake and/or the deployment of digital technologies, it should be described, to which specific objective(s) the intervention contributes to.

For instance, support to investment in precision farming equipment supports the digitalisation in agriculture, but also contributes to achieve SO2 and SO4.

2.5.2 Impact indicators

There is no dedicated impact indicator linked to digitalisation. Digitalisation contributes to the impacts linked to other objectives. A share of the support to digitalisation can be assumed to be classified as innovation. Thus, a share of the interventions supporting digitalisation will also contribute to the impact indicator “Sharing knowledge and innovation: Share of CAP budget for knowledge sharing and innovation”.

2.5.3 Result indicators (Articles 7, 97 and Annex I of the SPR)

One result indicator linked to the cross-cutting objective and digitalisation in the agricultural sector has been set up:

- **R.3 Digitalising agriculture:** *Share of farms benefitting from support to digital farming technology through CAP.* In addition, the Commission proposal includes two indicators linked to digitalisation in rural areas. These indicators are however linked to SO8;
- **R.33 Smart transition of the rural economy;** Number of supported Smart Villages strategies
- **R.34 Connecting rural Europe:** *Share of rural population benefitting from improved access to services and infrastructure through CAP support*

See the [result indicator fiches](#) (note, that the fiches is under finalisation in the AGRIWIKI).

These indicators, include, however, at the current stage, some caveats:

- The first indicator will require a definition of “digital technologies”. However, the portfolio of available digital technologies is changing quickly. The indicator specification therefore has to be flexible so as to allow for an assessment of digital technologies in 2028 (2030).
- For the indicator R.33, it needs to be noted, that the smart village approach goes beyond innovation through the use of digital technologies; it also includes e.g. social innovation, and innovation in other fields, such as bioeconomy.
- R.34 can cover several types of infrastructure, and investments in broadband may only be a small part of what is covered under that indicator.

These three indicators only cover a part of the subjects to be addressed within a Digital Strategy. Member States are therefore encouraged to specify additional national indicators and/ or to establish sub-indicators of common result indicators to better reflect results in the field of digitalisation.

2.5.4 Output indicators (Article 7, Annex I of the SPR)

There is no output indicator dedicated to digitalisation in the CAP legal proposal.

Member States are encouraged to specify additional national indicators and/or to establish sub-indicators of common output indicators to better reflect results in the field of digitalisation.

2.6 Development of interventions tailored towards digitalisation

The SPR does not foresee one intervention explicitly dedicated to digitalisation. Therefore, interventions have to be tailored in a way that they serve the purpose of digitalisation. In this subsection, mechanisms to design interventions are introduced, and good practices of promising programming approaches presented.

2.6.1 Mechanisms to tailor interventions towards digitalisation

Examples

- **Use of eligibility conditions:** Certification of a successful accomplishment of a (professional) training in precision farming/ digital technologies to be eligible for investment support in digital technologies
- **Use of selection criteria:** A certain share of projects per call has to address digitalisation

2.6.2 Good practices for programming support to digitalisation

To be collected

2.7 Other EU Programmes supporting digitalisation in agriculture and rural area

The creation of an environment enabling farmers and rural communities will require a comprehensive approach, considering e.g. technical and human capacities as well as data related aspects. For effectively and efficiently achieving such comprehensive approach towards boosting digitalisation and the objectives of a Digital Strategy, also the use of policy instruments other than the measures under the CAP might be advantageous... Therefore, in a Digital Strategy it should be reflected

- a) with which policy instruments within or beyond the CAP, identified needs can be best addressed; and
- b) how synergies between different EU and national programmes can be achieved.

A comprehensive approach towards boosting the digitalisation of agriculture and rural areas and creating an enabling environment to facilitate the uptake of digital technologies, is the declaration on 'A smart and sustainable digital future for European agriculture and rural areas', which was signed by most Member States in April 2019.⁴⁸

The elements of that declaration can serve as an example of how other EU programmes can contribute to the digital transformation of agriculture and rural areas, particularly in the fields of digital and data infrastructure and technologies. Relevant programmes in the field of digitalisation are the Digital Europe Programme, which is a new programme in the funding period post 2020, the Connecting Europe Facility, and the Research and Innovation Programme Horizon Europe. In addition, under the Recovery and Resilient Facility (RRF), Member States have to dedicate at least 20% of the resources to digitalisation, which may also be used for digital and data infrastructure in rural areas or the enhancement of digital services.

These programmes can contribute to digitalisation in agriculture and rural areas for instance in the following ways:

- Support to the roll-out of broadband can be supported among others under the Cohesion policy or RRF;
- Tailored Research & Innovation actions under Horizon Europe, particularly to increase the cost-effectiveness of digital solutions for the agricultural sector;

⁴⁸ Bulgaria and Croatia have signed the declaration later. Denmark and Malta have not signed the declaration.

- Tailored deployment of the Digital Europe Programme to foster digitalisation in the sector, including support to advanced digital skills, Digital Innovation Hubs, the launch of actions in the field of artificial intelligence, and data spaces for pooling and sharing data.

It is to be considered that most elements of Digital Europe Programme and Horizon Europe are managed at EU level and are not under shared management. Thus, Member States have less room for manoeuvre to shape certain interventions to achieve synergies.

Examples of possible complementarity between EU programmes to boost digitalisation in agriculture and rural areas are e.g. the support of the roll-out of broadband and other large-scale digital and data infrastructure under the Recovery and Resilient Facility, supplemented by investment support for precision farming technologies under the CAP. Support to advanced digital skills under the Digital Europe Programme, from which e.g. farm advisors, who specialise in digitalisation, may benefit, can go hand in hand with training in digital skills under the CAP.

2.8 Guiding questions for the assessment of digitalisation

In blue bold: general questions that should fit for all types of intervention. Below each general question: possibility to develop additional and more specific questions for a considered type of intervention.

Note that the Digital Strategy does not present a stand-alone intervention, but provides an umbrella for a set of interventions. The questions in Section 1 in the table below, have to be raised for each intervention a Member State considers as contributing to the Digital Strategy individually. An intervention, e.g. EIP-AGRI, can be considered as an element of the Digital Strategy, but can at the same time fulfil other purposes. The guiding questions in the dedicated tools are to be applied.

Reference in the CAP Plan template	Essential/Ideal	Item to be assessed	Result (Y/N/NA) Comment
Section 1 - Common elements to all types of interventions			
Portfolio of intervention			
	E	Questions that are asked for the individual interventions – see dedicated Tools	
Section 2 – Digitalisation/ Digital Strategy			
Specific items			
8.1	E	Does the strategy address digitalisation in agriculture and rural areas?	
8.1	E	Does the strategy link interventions to digitalisation and to one or more SOs?	
8.1	E	Is the SWOT Analysis on digitalisation consistent with the needs identified and the interventions selected?	
8.1	E	Have the results of the SWOT analysis for the SOs been considered in the elaboration of the Digital Strategy?	
8.1	E	Does the strategy consider the use of other EU and national funding instruments?	
8.1	E	Does the strategy assess the coherence of different interventions (sectoral interventions and RD interventions) supporting digitalisation?	
8.1	E	Is/are the RI proposed consistent with the design of the interventions and the eligibility conditions? Is the level of detail of the description of the interventions sufficient to answer the above question?	
8.1	E	Does the Digital Strategy address broadband targets set out in the F2F strategy and the corresponding national CAP recommendations?	
8.1	I	Does the strategy address the needs of different farm types?	

8.1	I	Does the strategy address the digital divide(s)?	
8.1	I	Does the strategy address barriers to the uptake of digital technologies?	
8.1	I	Does the strategy address factors needed to create an environment enabling farmers and rural actors to take up and effectively deploy digital technologies?	
8.1	I	Does the strategy address the availability and further provision of digital and data infrastructure, data, and human capacities?	
Conclusion			
all		Is the Digital Strategy consistent with the overall CAP Strategic Plan?	

2.9 Additional material/ Background/ Links

- EIP Seminar report “**Multi-level strategies for digitising agriculture and rural areas**”
https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/eip-agri_seminar_digital_strategies_final_report_2019_en.pdf
- [Declaration](#) ‘**A smart and sustainable digital future for European agriculture and rural areas**’ (2019 Digital Declaration).
- **Digitalisation in rural areas** – socio-economic implications: [DESIRA](#) project.
- **Digital technologies in agriculture**: Use cases [here](#)
- **Catalogue of digital technologies in agriculture** [here](#) and [here](#)
- Results of a survey on the uptake of precision farming in the EU (*forthcoming*)

3 Modernisation of the administration and implementation of the policy

3.1 Administration and Implementation of the future CAP

In the post-2022 period, Member States will need to address the national and local concerns while ensuring modernisation of the CAP. The implementation of the future CAP should not focus only on the implementation of the rules. The performance approach introduced with the New Delivery Model (NDM) will require the implementation to be efficient in line with the underlying policy objectives and results. Modernisation, with the use of technology for management and administrative purposes, will play an important role in this aspect and in further simplifying administration without compromising on performance.

In the future, even though basic mandatory tools are set at EU level, details will be set at MS level. In addition, the approach of “one size fits all” will no longer apply in the future; national administrations will need to define procedures and clear and simple rules targeted to the local needs of their Member State. This will give MS flexibility on how to implement CAP measures on their territory. CAP implementation will be driven by the tools, which MS will take up in their national strategies, as well as the national requirements and criteria.

As an example for the above, the eligibility requirements under each intervention will determine the administrative choices and decisions, since they will determine the amount and complexity of the information to submit, the evidence to attach to the application, the number and complexity of the checks to perform and the number of indicators to monitor and report on. This flexibility introduced with the NDM together with the potential of new technologies will provide a great potential for increased effectiveness since MS will have the possibility to define the eligibility requirements in a way that allows automate checks leading to faster and correct payments.

Thus, with the development of digital technologies, significant opportunities through digital solutions arise for administrative purposes. In the era of big data and artificial intelligence, administrative systems need to be modernised to allow the integration of the wide array of available

information as well as interconnectivity between administrative databases. Member States will need to invest resources for the transition towards digital solutions and e-tools to modernise the CAP and digitalise the public services.

3.2 Integrated administration and control system

The Integrated Administration and Control System (IACS) is the governance structure used by the national paying agencies to manage and control CAP payments under the European Agricultural Guarantee Fund (EAGF) as well as area- and animal-based aid under the European Agricultural Fund for Rural Development (EAFRD). When setting up their IACS, MS use appropriate technology with a view to reducing the administrative burden and ensuring efficient and effective controls.

In order to understand better how a MS can further modernise the implementation of the CAP interventions administered under IACS, a short description of the IACS cycle/process and IACS elements can be found in Annex IX.

3.2.1 Future period post 2022

In the future, even though details will be defined at MS level, the requirement for MS to set up basic systemic elements is maintained, as set out in Article 64 of the future HZR:

- (a) an identification system for agricultural parcels;
- (b) a geo-spatial application system and, where applicable, an animal-based application system;
- (c) an area monitoring system;
- (d) a system for the identification of beneficiaries of the interventions and measures referred to in Article 63(2);
- (e) a control and penalties system;
- (f) where applicable, a system for the identification and registration of payment entitlements;
- (g) where applicable, a system for the identification and registration of animals.

The new element introduced in IACS is the Area Monitoring System (AMS) as well as the option for MS to use a claimless system for area-related interventions.

3.2.2 Area Monitoring System

The Area Monitoring System (AMS)⁴⁹ is a procedure of regular and systematic observation, tracking and assessment of agricultural activities and practices on agricultural areas by Copernicus Sentinels satellite data or other data of equivalent value. It is a system of identification and recording of specific agricultural events and/or crop characteristics on the basis of systematic satellite observations acquired over a given agricultural area during the course of a year (or part of it). Monitoring is thus an information gathering process that delivers data relevant to multiple contexts. Monitoring results can, for example, be aggregated over appropriate spatial/ temporal/ administrative domains, in the context of statistical reporting, be used as evidence in decision-making processes, etc.

The AMS will be based on the same technology of Sentinels satellite images as the current system of Checks by Monitoring. This will allow MS to use the AMS also for the control of eligibility conditions of interventions.

3.2.3 Claimless application system/automatic claim for area-based interventions

In the future, MS will have the possibility to apply a claimless application⁵⁰/automatic claim for area-based interventions to establish automatically the payment a beneficiary is entitled to. This will be

⁴⁹ The non-paper on AMS can be used for further information.

<http://agriwiki.agri.cec.eu.int/Pages/AWFile.aspx?LISTNAME=AgriWikiDocuments&ITEMID=2076>

⁵⁰ The non-paper on the claimless system can be used for further information.

<http://agriwiki.agri.cec.eu.int/Pages/AWFile.aspx?LISTNAME=AgriWikiDocuments&ITEMID=2077>

possible thanks to the subsidiarity given to MS in the future as regards details on the aid application and controls and to the use of new technologies resulting in the integration of official administrative data into the application system.

3.2.4 Digitalisation in the future for CAP administration and implementation

In the future, the digitalisation strategy of the MS needs to include the development of digital technologies to improve the effectiveness and efficiency of the CAP Strategic Plan interventions.

In this context, administrations may use these technologies to improve the administration's infrastructures, to further modernise and simplify administrative processes and to better interact with farmers.

The digital technologies used by the national administrations may include:

- artificial intelligence, including machine learning;
- satellite data and its uses;
- drones;
- geo-tagged images.

MS should use these technologies in contexts such as further digitalisation of the application process, interconnectivity and interoperability of databases and the development of e-tools/applications for farmers.

3.2.5 Data sharing

MS shall record and keep any data (and documentation) on the annual outputs reported in the context of the annual performance clearance, and the reported progress towards targets as set out in the CAP Strategic Plan. The existing data and documentation relating to the current year and to the previous ten calendar years (when applicable; not applicable for data providing from the area monitoring system).

Beyond the reporting purposes, and given the high environmental (and climatic) ambition of the new CAP, MS data collected through IACS which are relevant for the purpose of INSPIRE Directive or relevant for monitoring policies are shared between the public authorities, made publicly available and ensure access to the data sets for the Union institutions and bodies. This obligation is also valid for the production of European statistics purposes and data sharing free of charge shall be ensured with the European and national authorities responsible for statistics production (in the full respect of privacy and data protection foreseen by the GDPR - Regulation (EU) 2016/679).

3.3 What do MS need to include in the CAP Plan

The approval of CAP plans is an essential safeguard to assess the completeness, consistency, coherence and effective contribution to the CAP objectives of the national strategy. CAP plans should include elements related to modernisation and digitisation of CAP implementation and administration.

As regards the assessment of the CCO in this context, the relevant information will be found under chapter **8.1.5** "Digitalisation Strategy". It is expected that under this chapter MS will describe their efforts to modernise further the CAP administration and implementation (e.g. aid application, controls etc.) compared to the period 2014-2020.

However, it has to be taken into account that in the current period, serious steps towards this direction have already been taken by the MS. In the future, MS should not abandon these efforts. The minimum level of modernisation in this context should be ensured at least by respecting the requirements for IACS as set out in the Articles 63-73 of future HZR (see also fiche 7.1).

3.3.1 Possible actions facilitating modernisation

It has to be noted that Member States are not expected to describe in detail all actions they intend to take to ensure modernisation in CAP administration and implementation; what matters is that

they cover the thematic scope of CCO in an appropriate way. More specifically, we could expect MS to explain what their modernisation strategy consists of (i.e. which technologies or areas of interest they will focus on) which could be also done by providing examples of what was done already or will do in the future. The modernisation efforts may require a certain period to become operational, so MS could also provide an estimated timeline of implementation or indicate progress with defined milestones.

Hence, a non-exhaustive list of possible actions to facilitate modernisation is provided below:

- increased use of single, smart (e.g. linked to other data sources, including from other administrative entities), pre-filled (e.g. based on previous year information) application forms and payment claims, automatically updated with information from other administrative databases, possibly combined with Sentinel images uploaded in the Land Parcel Identification System (LPIS);
- use of a claimless application system for area- and/or animal based interventions;
- use of Area Monitoring System;
- facilitated checks with remote sensing and satellite images (e.g. through the AMS), smart e-resolutions, geo-tagged photos, drones for area- and animal-based interventions;
- increased use of automatized procedures, e.g. for controls of the eligibility requirements of an intervention;
- increased use of technology, e.g. satellites/sentinels images uploaded in LPIS, for control of performance (instead of compliance);
- automated monitoring and possible automatic generation of data for reporting cross-linked with other existing data sources (e.g. administrative databases (aid application, LPIS, AMS) and registers maintained by MS);
- combination of data available in IACS with data from new technologies (satellite data, etc.) and other data (e.g. agri-environment-climate data, information submitted by beneficiaries elsewhere), allowing enhanced payment and performance monitoring, including with regard to the overall social, economic and environmental performance of the CAP;
- usage of e-services facilitating administrations and beneficiaries;
- e-tools for better communication with the farmers;
- promote data sharing in respect of the law protecting privacy/data by, first, implementing the INSPIRE legislation.

3.4 Guidance questions for the assessment of the cross-cutting objective as regards the CAP administration and implementation

Below, there is a list of questions to help geo-desks in assessing whether a MS has taken steps to facilitate modernisation in the CAP administration and implementation:

- *Does the MS mention new technologies (Sentinels satellite data, artificial intelligence, geotagged photos, drones etc.) to be used in the set-up of the administrative systems (e.g. update of databases, such as the LPIS)?*
- *Does the MS mention (re-)design of the IT systems in view of the interoperability of systems?*
- *Has the MS taken into account the availability of new technologies when designing the interventions?*
- *Has the MS designed the interventions in a way that the eligibility requirements are controllable through new technologies (e.g. with the AMS) without compromising the objective of each intervention?*
- *Does the MS mention whether a claimless application system/automatic claim will be used for area- and/or animal based interventions?*
- *Does the MS mention the set-up of the Area Monitoring System (AMS) and its uses?*

- *Does the MS mention whether remote sensing, Sentinels satellite data (e.g. the Area Monitoring System) or other technologies (e.g. geotagged photos, drones) will be used to control eligibility conditions of interventions?*
- *Does the MS mention whether AMS will be used for conditionality?*
- *Does the MS mention actions towards automated generation of data for managing, monitoring and reporting of interventions?*
- *Does the MS mention whether new technologies (e.g. e-services, web applications) will be used for the interaction with the beneficiary?*
- *Does the MS mention the actions towards sharing of data? In particular the framework of this data sharing (follows national strategy, EU legislation, etc.) is there information on webportals for sharing?*
- *Does the MS provide a calendar/set of milestones for implementing the proposed modernisation initiatives?*

Please note though, that in order to assess the CCO in the context of the above-mentioned questions, information included in Chapters 7.1 (whether MS have set up IACS as required by the legislation) and 8.2 (simplification of CAP implementation) as submitted by the MS should also be taken into account.

Annex I. Background information on AKIS

EIP seminar on AKIS in CAP Strategic plans – 16-18 September 2020:

<https://ec.europa.eu/eip/agriculture/en/event/eip-agri-seminar-cap-strategic-plans-key-role-akis>

(the full seminar was recorded and can be seen again via the weblinks on the webpage)

- *Inspiration from an experienced **innovation support service**, followed by a **panel discussion on AKIS policy***
- *Opening speeches from **Commissioner** and **Polish Ministers of Agriculture***
- *One very inspiring and **Rural Inspiration Award OG***
- *An overview on the **basic elements of AKIS + Q&A***
- *Section on advice: basics + 3 diverse examples of **advisory services***
- *Section on role of the **national CAP network for innovation**, again with good examples*
- ***Online discussions** which happened in the weeks before the seminar (on advisory services, on CAP networks and on the CAP plans), summarised by Mark Gibson*
- ***10 good examples of nice AKIS interventions that can be supported by the CAP***
- ***4 MS presenting their CAP plans**, already full of content*
- *After the breakout sessions, **Director General Burtscher** closed with a summary on the interactive discussions and expresses how he sees the future & AKIS*

EIP webinars on the role of the specific innovation activities of CAP networks (3, 8 and 10 June)

AKIS animated infographic: <https://ec.europa.eu/eip/agriculture/en/news/new-animated-video-akis-building-effective>

AKIS brief: https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/key_policies/documents/building-stronger-akis_en.pdf

AKIS brochure: <https://ec.europa.eu/eip/agriculture/en/publications/eip-agri-brochure-agricultural-knowledge-and>

Animated infographic on **innovation support**:

<https://www.youtube.com/watch?v=pTV6kLH0ykg&feature=youtu.be>

Brochure on **innovation support**: <https://ec.europa.eu/eip/agriculture/en/publications/eip-agri-brochure-innovation-support-services>

https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/key_policies/documents/report-preparing-for-future-akis-in-europe_en.pdf (SWG SCAR AKIS report, page 81-112 on advisory approaches)

https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/key_policies/documents/report-preparing-for-future-akis-in-europe_en.pdf (SWG SCAR AKIS report, see in particular **list of best AKIS practices** from MS on page 31-44)

Evaluation Study on the CAP's impact on knowledge exchange and advisory services:

[file:///C:/Users/oostiin/Downloads/KF0320756ENN.en%20\(2\).pdf](file:///C:/Users/oostiin/Downloads/KF0320756ENN.en%20(2).pdf)

https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/cmef/research-innovation-and-technology/caps-impact-knowledge-exchange-and-advisory-activities_en

Further reading:

<https://ec.europa.eu/eip/agriculture/en/event/eip-agri-seminar-promoting-creativity-and-learning>

<https://ec.europa.eu/eip/agriculture/en/publications/eip-agri-brochure-horizon-2020-multi-actor>

Annex II. Why do we need well-functioning AKIS?

Knowledge and innovation have a key role to play in helping farmers and rural communities meet the challenges of today and tomorrow. New combinations of knowledge and actors drive innovation. Therefore, we need to do efforts to interconnect people with different expertise, knowledge and competences who together are able to solve the challenges we face.

The **national AKIS actors are however not sufficiently interconnected**. Even if there is already a substantial amount of knowledge available, this knowledge is mostly fragmented and insufficiently known and applied in practice. That is why a more strategic approach is needed to break down the silos, to look for synergies and more intensive knowledge exchange among actors.

The Foresight study of the SWG SCAR AKIS 3rd mandate revealed that **open and impartial knowledge sources (people as well as data) are essential to combat the privatisation of knowledge** by an ever smaller number of multinational interlinked companies.

In short, well-functioning AKIS will help speed up innovation throughout the EU, **avoid duplication of efforts between Member States and thus save costs**. They will increase considerably the impact of EU and national/regional research & innovation funding. Overall, the CAP post 2020, supporting better AKIS approaches in Member States, will result in **EU added value and more cross-border spillovers of knowledge and innovation**.⁵¹

Annex III. Basics on EIP Operational Groups

Annex III lists the key elements on the EIP and its Operational Groups⁵² applicable in the 2014-2020 period, which stay still valid and are very much worth reminding.

1. **What is innovation? In short, innovation is: "an idea put into practice with success"**. Therefore it is important to have practitioners involved, not as a study-object, but in view of using their entrepreneurial skills and practical knowledge for developing the solution or opportunity and creating co-ownership for the end-users of the project results. Given the **impossibility of defining "innovation" ex-ante**, managing authorities should not programme an intervention by restricting eligible operations to the condition that they are "innovative". The CAP can support operations which have the potential be innovative, **without making the innovative character of an operation an eligibility criterion**.
2. **The envisaged innovation may be based on new but also on traditional practices in a new geographical or environmental context**. The intervention may cover all costs related to all aspects of the cooperation, including in particular the work of practitioners such as farmers and advisors. Note that Member States **shall not support** through this type of intervention cooperation **solely involving researchers**: cooperation should not replace classical research, not even if applied research. The intention is to cooperate with practitioners and advisors, so that **practical (tacit) knowledge** is taken into account also, to make outcomes easy applicable and ready for practice.
3. **Obligatory selection criteria for OG projects** (not new but now in post 2022 legislation): EIP OGs must draw up a plan for innovative projects based on the **interactive innovation model** which has as the key principles as listed in Art. 114(4)(2nd subpara (a), (b), (c)) . Besides the focus on farmers' or foresters' needs, the particular composition of the group should benefit the specific project and its outreach, making the best use of different types of knowledge (practical, tacit, scientific, technical, organisational, etc) in an interactive way. Mutual respect and putting partners at equal (decision) levels all along the project are essential to make it work.

⁵¹ <https://www.youtube.com/watch?v=a-noBHfyJu8>

⁵² See also EIP guidelines 2014-2020 for further info: <https://ec.europa.eu/eip/agriculture/en/publications/guidelines-programming-innovation-and>

4. Member States may grant support to **prepare or to implement** Operational Group projects, or both. These actions request separate requests for grants and will be funded as separate operations, without an automatic link between them. To fund the **preparation** of an operational group, the application may be a relatively simple: a description of the rough project ideas and its relevance for practice, together with the targeted partner combination to be developed. A lump sum approach is very appropriate. For the funding of the **implementation** of an operational group project, a higher budget and a more thorough project description will be needed. The work plan and the agreements among partners on who does what and which activities will be undertaken should be clear in this stage. Such project description is important in case the foreseen solution cannot be achieved: auditors will then be able to find proof of activities planned and executed, and thus those payments allowed.
5. **Innovation support is an action** which should help to capture individual grassroots innovative ideas, understand the practice needs, bring the most relevant partners together, refine the project proposal, arrange sound working methods thanks to a clear cooperation agreement⁵³, and finally prepare a solid project proposal on which all actors of the operational group want to engage. As part of innovation support services, "**innovation brokering**" has an important role in discovering innovative ideas, facilitating the start-up of operational groups, notably by acting as a go-between who connects innovation actors (farmers, researchers, advisors, NGO's, etc.). The function of brokering may be combined with innovation advising and/or EIP networking.⁵⁴
6. **Operational groups (OGs) and Leader Local Action Groups (LAGs)**: Operational groups and LAGs have in common that they capture ideas from interested actors and foster the setting up of projects. However, LAGs act on the basis of a comprehensive local development strategy. LAGs will approve several projects to implement this strategy which are not necessarily multi-actor. In contrast, an EIP operational group builds itself around a single innovation project, targeted towards finding a solution for a specific issue. The operational group exists only to carry out that project and can seek help from partners or experts across the EU.
7. Operational Groups shall **disseminate their plans and the results of their projects**, within their country. They should also send them to SFC for publishing on EU CAP networks' website and enabling contacts with other projects (OGs, Horizon Europe, etc). **See Annex VII for the format in which this dissemination of plans and project results is to be done.**

Annex IV. Innovation related CAP networking elements to be brought to the MS' attention when developing their CAP plan

- How precisely will the **CAP network work closer together with advisors and researchers** within the AKIS (obligation in Art. 102 (a)(ii))? Which actions will directly deal with this?
- Is the contribution to the EU CAP network included in the planned innovation and knowledge exchange activities according to the **obligations** in Art. 102 covered by an **appropriate budget**?
- Which **high level agreements** between ministries of Agriculture, Research, Education, Innovation, Environment etc. will support this improved collaboration in the coming 7 years?
- **Which specific networking** structures/tools/activities are foreseen for innovation/AKIS support and the regular interactions between AKIS actors?
- Will the network's **governance** structure be organised in a way that **innovation/AKIS activities will be part of the network annual work plans**? How will this in turn support the other CAP network activities?

⁵³ <https://www.youtube.com/watch?v=-BTua8oNeLo> : innovation support services, including innovation brokering, facilitation and innovation tools and much more (M. Gysen)

⁵⁴ <https://www.youtube.com/watch?v=QkoQTH9Q5J8> : The Polish advisory service and EIP network (K. Janiak)

- How will the network support unit (NSU) ensure that the **outcomes of research and innovation projects under Horizon 2020/Europe are disseminated** through the network's tools? **How will translation and filtering of existing information (from EU OGs, Horizon Europe MA projects etc.) be organised? Is there sufficient capacity foreseen** for the website, publications, events...?
- How will the NSU ensure **availability of appropriate project datasytems** – an essential part for NSU support to support a good AKIS - based on the OG's information (laid down in the common EIP format) that will be interconnected in a single EU-level knowledge reservoir ?
- Is there a **dedicated support unit dealing with innovation**, and keeping an overview of all OG innovative projects in the Member State? (e.g. with OG databases)
- **Will this activity also actively promote OG participation and inclusion in Horizon Europe projects**, in particular in all Multi-Actor projects, Thematic networks or Advisory networks? (please be aware that for researchers it is not obvious to find farmers, advisors and other OG participants with whom they could collaborate in a Multi-Actor project, so extra networking efforts are essential)
- How will key research actors such as **Horizon Europe National Contact Points** and connection units within research bodies and universities be networked with farmers, advisors and other OG partners? How will they be **connected to the innovation support services**?
- Will support for **cooperation between existing OGs** become an essential activity of the specific innovation activities in their CAP networks?
- How will **cross-border OGs** within regionalised Member States as well as beyond the borders of Member States be encouraged?
- Is **transnational cooperation** between OG included in the network's activities and are there sufficient resources (budget, multilingual staff, sufficient knowledge and overview on the MSs' OG themes...) to cover it?
- **How will be (public and private) advisors be involved in networking activities**, considering that they are not usual actors of current NRN activities?
- Is the network promoting or **interconnecting innovation support services**?
- Will **peer-to-peer learning** for advisors and farmers be organized?
- What about the supporting and sharing of useful info with policymakers, e.g. the outcomes of test bed OGs for future CAP interventions?

Further guidance can be found in the toolkit for National CAP Networks⁵⁵

Annex V. Good practices to integrate advisors in the AKIS

A few examples of how advisors become more integrated within the AKIS system:

- Advisor giving holistic on-farm one-to-one advice on economic, environmental and social dimensions, capable of delivering up-to-date technological and scientific information developed by R&I (very broad scope)
- Specialist advisor on a certain theme or for a specific target group, on-farm or off-farm, or working for the "back-office" having regular exchanges with researchers and exploiting info from the EU from the CAP networks, collecting, managing and updating practical knowledge
- Providing individual innovation support: capture grassroots innovative ideas and accompany the preparation and implementation of a farmer-led EIP OG (the CAP networks can bring innovation brokers together to learn from each other)
- Development of an innovation support service, capturing bottom-up innovative ideas and helping preparation of OGs⁵⁶

⁵⁵ Add wiki link of the final version of toolkit 4.5

⁵⁶ <https://ec.europa.eu/eip/agriculture/en/publications/eip-agri-brochure-innovation-support-services> and <https://www.youtube.com/watch?v=pTV6kLH0ykg&feature=youtu.be>

- (Obligatory yearly) training of advisors on specific themes, or learning new approaches and skills (e.g. social farming, digital, short chains, ...)
- Advisors providing training to farmers, farm workers etc. , writing in agricultural journals
- Advisors joining/organising knowledge exchange events with researchers, farmers etc., making work programmes, exchanging practical needs, Advisors writing in agricultural journals, websites, social media, newsletter, acting as EIP event coordinator
- Advisors leading a multi-actor thematic network (e.g. RMT) at national/regional level, organizing a farm demonstration, a fair, winter event or another type of multi-actor event to bring AKIS actors together for all types of knowledge exchange
- Advisors as partner in a research project, communication event,...
- Advisors going abroad to learn and come back to train and disseminate new knowledge (“advisor mobility budget”)
- Giving innovation advice linked to investment aid for novel type of investments, fine-tuning the investment and supporting the farmer in his contacts with the company on the use of this investment

It is important to start early with these new approaches, as it might take time to make them known and fully develop the concepts, promote them and implement the knowledge exchange and information actions according to commitments.

Annex VI. Links to Horizon 2020 and Horizon Europe projects

1. Rural Development interventions under the CAP and the Union Research and Innovation Policy "Horizon 2020/Horizon Europe" complement each other in providing opportunities for EIP interactive innovation groups. The rural development interventions in a CAP plan are applied within a specific programme area, whilst research policy must go beyond this scale by co-funding innovative actions at transnational level.
2. European research policy has become more practice oriented since the introduction of multi-actor projects and thematic networks in the period 2014-2020. This is why it is so **important for NRNs/CAP networks to regularly connect with Horizon Contact Points before consortia are formed. It is equally essential for them to be proactive in promoting their OGs widely and through a searchable database so that researchers interested in finding OGs can be helped.**
3. **Synergies and complementarities have been developed between the research and CAP policy. The EIP network and the common format for informing and reporting on OGs and multi-actor projects** will continue to play an important connecting role between OGs with Horizon research consortia on specific topics.
4. **Horizon Europe Thematic networks**⁵⁷ are a particular format of multi-actor projects that aim to develop ready made material for practice or training/education, such as info sheets in a common format and audio-visual material. This material should be easily understandable, stay available beyond the project period, and is to be shared through the EIP network. Dedicated Thematic Networks can from 2021 be built on the collaboration of OGs acting upon a common theme.
5. A newly developed format are the **Advisory Networks**, which interconnect advisors across Europe on dedicated themes. This will help knowledge exchange across borders and Member States' AKIS.

⁵⁷ <https://www.youtube.com/watch?v=gV5fqGnKtMl>

Annex VII. Common format for the output of EIP OG projects

A common format for output from practice-oriented projects to end-users is considered useful both for dissemination of results after the project and for communication on a project while it is running, since it facilitates the contacting of farmers, researchers and all other actors involved. Such common format agreed at EU level will contribute to the visibility and rewarding of researchers' work in practice-oriented interactive projects (e.g. CAP OGs, CAP or Horizon Europe thematic networks, Horizon Europe multi-actor projects, etc), similar to the research abstracts in peer reviewed journals. The common format ("practice abstract") will be available for all projects that wish to connect with the EIP network and apply the interactive approach, including funding sources other than CAP rural development and H2020, e.g. national/ regional funding, other ESI funds, etc.

Common elements for information to be disseminated to practitioners:

1) Obligatory elements

- **Title** of the project in native language: short and easy understandable (one key sentence, max 150 characters, word count – no spaces)
- **Title** of the project in English: short and easy understandable (one key sentence, max 150 characters, word count – no spaces)
- **Editor** of the text (person/organisation responsible for delivering the text)
- **Project coordinator** (lead-partner) according to the cooperation agreement (name, address, e-mail, telephone)
- **Project partners** (name, address, e-mail, telephone, type of partner (farm holder, advisor, research institute, SME, NGO, or other)
- **Practice "abstract"**: short **summary** in native language according to the guidance above including objective, main activities, (expected) practical outcomes, ...): around 200 words/1200 characters (word count – no spaces)
- **Keyword category** (to be chosen from a pre-defined list of categories)
- **Project status**: ongoing (after selection of the project) /completed
- Main funding source (RD, H2020, other)
- **Project period** (starting date, end date)
- **Geographical location** (NUTS 3 level) where the main project activities take place (to enable contacting within/between climatic/regional entities)
- **Final report** including a substantial description of the results (obligatory when the project is completed)
- **Total budget** of the project

Practice "abstract":

- **Objective** of the project in native language: what problems/opportunities does the project address that are relevant for the practitioner/end-user, and how will they be solved? - (300-600 characters, word count – no spaces)
- **Objective** of the project in English: what problems/opportunities does the project address that are relevant for the practitioner/end-user, and how will they be solved? - (300-600 characters, word count – no spaces)
- **Short summary for practitioners** in native language on the (final or expected) outcomes (1000-1500 characters, word count – no spaces).

This summary should at least contain the following information:

- Main **results/outcomes** of the activity (expected or final)
- The **main practical recommendation(s)**: what would be the main added value/benefit/opportunities to the end-user if the generated knowledge is implemented? How can the practitioner make use of the results?

This summary should be as interesting as possible for farmers/end-users, using a direct and easy understandable language and pointing out entrepreneurial elements which are particularly relevant

for practitioners (e.g. related to cost, productivity etc). Research oriented aspects which do not help the understanding of the practice itself should be avoided.

Several practice abstracts may be needed for one project, depending on the size of the project and the number of outcomes/recommendations which are ready for practice.

2) Recommended elements

- **Description of project activities in native language:** (max 600 characters, word count – no spaces): short summary highlighting main project activities.
- **Description of project activities in English:** (max 600 characters, word count – no spaces): short summary highlighting main project activities.
- **Practice "abstract":** short **summary** according to the guidance above in English including objective, main activities, (expected) practical outcomes, ...): 1000-1500 characters (word count - no spaces)
- **Audiovisual material** which is useful and attractive for practitioners (YouTube,...)
- **Website** of the project (URL)
- **Website(s)** hosting information on the project (results) that stay available after the project has ended, by preference using the existing local/regional/national communication channels that practitioners most often use.
- Description of the context of the project (e.g. drivers in legislation/ markets that were at the origin of the project, etc)

3) Optional elements

- [additional fields are available for additional practice abstracts]: **Practice "abstract" in native language:** short summary according to the guidance in the text box above (max. 1500 characters, word count – no spaces)]
- [additional fields are available for additional practice abstracts]: **Practice "abstract" in English:** short summary according to the guidance in the text box above (max. 1500 characters, word count – no spaces)]
- **Description of the context of the project** (e.g. drivers in legislation/ markets or other causes that were at the origin of the project, etc.)
- **Additional information** on the project as required by the specific guidance at national/regional level (e.g. for detailed monitoring purposes)
- **Additional comments:** free text field which can be used by the editor, e.g. for listing facilitating elements or obstacles for the implementation of the produced results, suggestions for future actions/research, for message to consumers, etc...)

Annex VIII. Digitalisation in agriculture and rural areas - Key concepts and rationale

a) Context

In the original CAP legal proposal, reference is was e to the ambition of linking up to the EU Digital Agenda. Since 2018, when the CAP proposal was published, a lot of has changed in digital policies and overall, digitalisation is high on the Commission’s agenda. In the work programme of the new Commission, the importance of digitalisation is underpinned by the Headline ambition of the “Digital Age”. The so-called “Digital package” adopted by the Commission in February 2020, announced a range of strategic, investment and legislative initiatives, reflected in – among others - the Data Strategy and a White Paper on Artificial Intelligence. Forthcoming in 2021, is a Communication on the “Digital Decade”, which was announced by the Commission President in autumn 2020.

Digitalisation helps to streamline, facilitate, and enhance processes in all sectors. It can thus help to achieve sustainability ambitions and increase competitiveness, and plays a crucial role in achieving the objectives of the European Green Deal.

Digitalisation, with its huge implications for economy and society, goes along with the risk of a digital divide between regions, between urban and rural areas in particular, but also e.g. between types of farms, and population groups, as digitalisation does not only require connectivity, but also capacities, including digital technologies and skills. Overcoming and avoiding digital divides, is an ambition envisaged by the European Commission, as reflected e.g. in the Communication on the Digital Compass published in March 2021⁵⁸.

In the CAP legal proposal, one motivation to put digital technologies on the agendas mentioned is to use the emerging opportunities of the digital economy for agriculture and rural areas. This can be approached from two angles: On the one hand, the use of the products developed by the digital economy can help agriculture and rural areas. On the other hand, the digital economy can also contribute to value and job creation in rural areas, and digitalisation offers the opportunity to improve the quality of life in rural areas.

One inherent attribute to digital technologies is, that they are developing very quickly, which offers opportunities, but also presents a challenge in strategic planning exercises.

It is to be noted, that the definitions of “digitalisation” and “digitisation” differ (see Box 1), and that the CAP legal proposal is not consistent and correct in the use at all places. “Digitisation” is too limited in its scope, and only covers a part of digitalisation, namely the transformation of text/information into digital format, but not e.g. automation of processes.

Data and data technologies can increase the effectiveness of digital technologies as they can provide tailored input to digital applications and services. An example from our daily life is, that the more information Facebook, google or other digital platforms have about us, the more tailored advertisement we receive. In agriculture, for instance, more information about weather forecast and environmental conditions are analysed with data technologies, allow for more tailored production and advanced planning of interventions.

b) Digitalisation in Agriculture and Rural areas

Digitalisation of the agricultural sector and rural areas can be regarded as instrumental to strengthening their competitiveness and to make a contribution to several sustainability related policy objectives, including environmental and socio-economic sustainability.

Digital technologies can transform agriculture by helping farmers to work more precisely, efficiently and sustainably, and by making the job more attractive to younger generations. They can also offer consumers greater transparency as to how their food is produced.

For rural communities, digitalisation can enhance e.g. service provision (e.g. eHealth, public services), facilitate remote working and rural-urban linkages, help to create jobs, increase the attractiveness and enhance quality of life (for an overview of implications for rural areas, see e.g. the Horizon 2020 [DESIRA](#) project).

Overall, digital and data technologies are regarded as “enablers” in several Commission strategies and initiatives, including e.g. in the Farm to Fork Strategy (for examples, see Table 2 below).

As intervention, digitalisation has the advantage that it allows for linking efforts in increasing both - sustainability and competitiveness and other efforts. This aspect is not only relevant in the assessment of the efficiency of interventions, but also in the context of the motivation of farmers to participate in sustainability schemes.

In the agricultural sector, there is a huge portfolio of digital technologies and application cases (for examples across Europe and types of production see [here](#)). Frequently, in the context of digitalisation in agriculture, it is only referred to “precision farming”. However, the use of digital



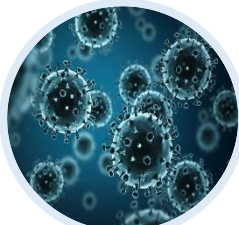

⁵⁸ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, 2030 Digital Compass: the European way for the Digital Decade (COM(2021) 118 final).


technologies goes beyond precision farming, as digital technologies do not only allow for more precise processes, such as fertilising, application of herbicides, or planting. Digital technologies also allow for e.g. facilitated multi-tasking, e.g. through automation. Thus, it is better to refer to “Smart agriculture” (see Box 1).

A classification of digital technologies in agriculture is challenging not only because of the high number of applications, but also because the fast pace with which digital innovations evolve. For an example of a catalogue of digital technologies in agriculture, see [here](#).

While there is wide agreement that digital technologies can increase competitiveness and environmental performance of the sector, the quantification of the impacts still presents a challenge as the effectiveness and efficiency depends on multiple factors, beyond the biogeographic context. For instance, the efficiency of variable rate technologies strongly depends on the type, amount and granularity of data on environmental and crop conditions fed into an application to steer e.g. tailored irrigation.

Table 2: Possible contribution by digital technologies in agriculture to sustainability ambitions exemplified with the F2F targets

	2030 Targets for sustainable food production	Possible contribution of digital technologies
	Reduce by 50% the overall use and risk of chemical pesticides and reduce use by 50% of more hazardous pesticides	+++ Reduction of use of pesticides through more tailored application (as regards time and location). For examples, see e.g. the SUD web-portal at https://webgate.ec.europa.eu/europhyt/cgi-bin/sud_europa.cgi#/
	Reduce nutrient losses by at least 50% while ensuring no deterioration in soil fertility; this will reduce use of fertilisers by at least 20 %	+++ Reduction of use of fertiliser through more tailored application – variable rate applications (as regards time and location). Internet of Food and Farm
	Reduce sales of antimicrobials for farmed animals and in aquaculture by 50%	+++ Reduction of use of antimicrobials through more tailored application – variable rate applications (as regards time and location) and monitoring and adjusting the stable/environmental conditions, and health status of animals through sensors and thus applying preventive measures.
	Achieve at least 25% of the EU’s agricultural land under organic farming	+/- Digital technologies can support organic farming as they support conventional farming. However, the decision to convert to organic farming cannot directly be supported by digital technologies

	Bring back at least 10% of agricultural area under high diversity landscape features by 2030	+/- Digital technologies and precision farming cannot replace actions to increase structural diversity. Digital technologies can help to manage agricultural land with high structural diversity more cost-effective
Overall	<i>Quantification of emission reduction potential through digital technologies still challenging</i>	

A field, where currently many new applications evolve (across sectors, not only in agriculture), are 5G technologies, which require 5G network access (see Box 2). The roll-out of 5G is a benchmark used in EU's Digital and Cohesion policies. However, at the current stage, the quantification of the added value in terms of economic and environmental benefits of 5G for agriculture and rural communities in comparison to high-speed broadband is still challenging. Moreover, in many countries it is still important to achieve a general coverage of fast internet, and avoid digital divides between regions, between rural and urban regions, in particular, as well as between e.g. types of farms. The general coverage of fast internet in household level should go hand-in-hand with closing gaps on farms (beyond farm buildings).

Box 1: Good to know/ Must knows

Digitalisation / Digitisation

There is a difference between "digitalisation" and "digitisation". The term "digitisation" captures only a small part of digitalisation, namely the transformation of information into digital format. In other words to digitise is to convert analogue data into digital form. Digitalisation refers also to e.g. the transformation of processes in societal and business life, e.g. the holding of virtual meetings or the automation of apple picking. The use of the term "digitisation" in the original legal proposal for the CAP post 2020 (including in the name of one indicator) is too narrow, and needs to be corrected.

Smart Agriculture/ Precision farming

The terms "Smart Agriculture" and "precision farming" are frequently used as would they be synonymous. However, while "Smart agriculture" refers to the use of digital technologies in any agriculture related process, including e.g. farm logistics, precision farming refers to the more precise execution of farming processes, in particular a more tailored application of inputs, through the use of data and digital technologies. Precision farming exists in both, crop and livestock production.

Box 2: 5G – a non-technical snapshot⁵⁹

5G and 5G technologies allow for the deployment of more complex digital applications, and to run various applications in a concerted way in **real-time**. It allows to further exploit the Internet-of-Things (IoT). In farming, the IoT applications can facilitate e.g. fertilisation under consideration of data generated with several sensors or the running of unmanned robots and other machinery, e.g. for weeding purposes. However, for exploiting the potential of 5G technologies not only the 5G network has to be rolled out, but also the corresponding devices or machinery have to be bought. As a rule of thumb, devices cannot simply be upgraded to be 5G enabled. Thus, huge initial investments are needed on a farm to fully deploy 5G and 5G technologies. The assessment of costs and benefits of smart farming with and without 5G technologies are not straightforward, as revealed by current Research & Innovation projects under Horizon 2020. Therefore, the Commission foresees further Research & Innovation activities on 5G for agriculture and rural areas under the forthcoming Horizon Europe programme.

A digital divide is also to be avoided between types of farms. Small farms tend to make less use of digital technologies. Among the reasons for this are not only a lack of investment capacities, but also

⁵⁹ For more information on 5G, see 5G for Europe's Digital and Green Recovery | Shaping Europe's digital future (europa.eu).

the fact, that some types of digital technologies work more effective and efficient on larger farms/field structures, for instance, because the resolution of freely available satellite data is not that high to add much added value to the production on small parcels.

Overall, while digital technologies for the agricultural sector are available, there is a “gap”. On the one hand, a portfolio of innovative technologies has been developed in research, and is offered on the market.⁶⁰ On the other hand, the use of these technologies in the sector and by farmers is still relatively low (despite steadily increasing). There are uptake barriers, such as a lack of awareness of the potential of digital technologies, or a lack of digital skills or of investment capacities, but also a lack of cost-effectiveness of some digital solutions.

Against this background, a key ambition, which may guide the preparation of digital strategies in CAP Plans, is the creation of an environment, enabling farmers, their organisations and rural communities to take up and effectively deploy digital technologies (see Section 2.2.3).

c) Creating an enabling environment for the uptake of digital technologies in agriculture and rural areas

The **creation of an environment enabling farmers and rural communities to make best use of digital technologies** is crucial to drive the digital transformation responsibly. The creation of an enabling environment may entail multiple factors, including

- Supporting the development of digital skills and digital literacy
- Supporting the exchange of information and experiences, including the sharing of (real-life) demonstration cases, and in-depth analyses of the economic and environmental benefits
- Providing advisory services
- Facilitating investments
- Promoting targeted Research & Innovation
- Providing data and facilitating data sharing
- Creation of trust in data sharing
- Strengthening broadband capacities.

While some of these factors can be well addressed under CAP strategic plans, as it is discussed in Section 2.3, other might be better supported under other EU programmes, e.g. the roll-out of broadband, (see Section 2.7) or require actions, which not directly require funding (e.g. making public data available). Some actions require cross-sectoral coordination. For instance, to increase the level of digital skills and deploy digital applications effectively, not only the end user, e.g. the farmers, needs basic digital skills, but also advisors or ag-engineers need advanced digital skills.

To achieve an effective interplay of such a portfolio of actions, a strategic approach to boost digitalisation in agriculture and rural areas is needed.

Annex IX. IACS in the current period 2014-2020

The Integrated Administration and Control System (IACS) is the governance structure used by the national paying agencies to manage and control CAP payments under the European Agricultural Guarantee Fund (EAGF) as well as area- and animal-based aid under the European Agricultural Fund for Rural Development (EAFRD). It covers 94 % of expenditure under the EAGF and 40 % of expenditure under the EAFRD.

IACS prevents irregularities, detects non-compliances by controls and allows the appropriate action to be taken, if they do occur. It ensures that payments are made correctly and allocated to the right

⁶⁰ Note, that not all digital technologies in agriculture require a high amount of investment costs. Simple applications, can be used free of charge and require little investment costs. However, the effectiveness of those applications might be limited in comparison to more advanced systems.

farmer. Furthermore, it is also used to manage the controls put in place to ensure that the conditions and requirements are respected.

When setting up their IACS, MS use appropriate technology with a view to reducing the administrative burden and ensuring efficient and effective controls.

In order to understand better how a MS can further modernise the implementation of the CAP interventions administered under IACS, a short description of the IACS cycle/process and IACS elements are provided below for better understanding of the system.

1.1 Current period 2014 - 2020

1.1.1 IACS process

Typically, IACS covers an annual process, which starts with farmers lodging their **online aid application** for income support. In order to support farmers in this process, national administrations have to provide them with pre-established information that they can confirm, correct or complete.

National administrations then **check** if farmers meet the conditions for income support, through administrative checks of all applications and on-farm checks of a sample of farmers.

This is followed by **payments** to farmers where any findings following the administrative and on-farm checks are taken into consideration. Finally, the national administration updates the pre-established aid applications for the following year with information collected during the current year's process.

1.1.2 IACS elements

Although IACS basic framework rules and elements are the same for all Member States, in fact each Member State sets up its own IACS, which is operated under the responsibility of the paying agencies. The same principle will apply in the future.

IACS consists of a number of interconnected databases and IT systems that help national administrations to grant the correct payment to the right beneficiary. More specifically, it consists of:

- a number of computerized and interconnected databases, in particular:
 - a system for the identification of all agricultural parcels in Member States: the **Land Parcel Identification System (LPIS)**;
 - a system for the identification and registration of animals, the so-called **Computerised database for animals** in countries opting for animal-related direct payment schemes (otherwise called voluntary coupled support measures (VCS));
 - a system for the identification of farmers benefiting from aid, the so-called **farmers' register**, which contains all the relevant data to identify the farmer who is applying for direct payment (in particular, his name, birth date, address, holding number, etc);
 - a **system for the identification and registration of payment entitlements** in countries applying the Basic Payment Scheme(BPS);
- IT systems, facilitating the smooth running of the IACS, in particular:
 - an IT system/tool for **submitting/receiving aid applications**, including a database of current and past applications;
 - an IT system/tool enabling the administration to perform **controls** including cross-checks of data received from applicants;
 - an IT tool for the calculation of administrative **penalties and the payments**.

1.1.3 Modernisation efforts in the current period

- **Land Parcel Identification System**

The LPIS is built on the basis of maps, particularly aerial or satellite ortho-images, as well as land registry documents and other data which provide information on a certain parcel.

LPIS uses the geographical information system (GIS) technology, which enables capturing, storing, checking, and displaying data related to positions on Earth's surface. Thanks to this technology, LPIS contains many different kinds of data on one map (e.g. agricultural parcels, eligible areas, land cover, information on ecological focus areas, areas with natural constraints, self-maintained areas etc.).

National administrations perform regular reviews of the LPIS to update, upgrade and complete the information included in the system. These updates are based on information coming from controls, indications of beneficiaries and new imagery etc.

- **Computerised database for animals**

The computerised database for animals is an essential element of the whole animal traceability system. It is used in particular in the framework of the animal health checks for the detection and eradication of diseases, but also in the context of the controls of animal-related direct payment schemes, with the view of clearly identifying the animals to be paid for. This computerised database, which is in most of the cases hosted by administrative services in charge of animal identification, registration and health, is used by the paying agency, via IT inter-connection between the two administrations' systems, during the application and the control of eligibility processes.

- **Aid application**

With respect to the area-related schemes, in order to support farmers when filling in and submitting their applications⁶¹, the national administrations have to provide 'pre-established information to the farmer, which he/she has to confirm, correct or complete. Pre-established information come from various data sources such as, controls, indications from beneficiaries and cross-checking of data between administrative databases (not only within IACS but from other administrations too, such as tax administration).

In addition, thanks to cross-checking of data, preliminary checks during the application process aim at supporting farmers when lodging their aid application preventing errors that could lead to reductions and penalties.

With respect to the animal-related aid schemes, Member States have the possibility to set up either a 'traditional' aid application procedure, which takes the form of an application form, or an aid application system, which is based on the data contained in the computerised database for animals, the so-called "claimless system".

By using the claimless system, the farmer has simply to declare he is applying for payment under a animal-related direct payment scheme for all animals, which, at a date or during a period determined by the Member State, qualify for the payment, on the basis of the data contained in the computerised database for animals.

- **Controls**

Member States, through the paying agencies or the bodies delegated by them, have to verify that eligibility criteria or requirements linked to a certain payment scheme are fulfilled before proceeding to payment. This is done by means of:

- systematic administrative checks of all aid applications submitted by farmers, normally done with the use of IT solutions in the office by the paying agency (e.g. **automated cross-checks of data** between included in databases such as LPIS, database of animals, beneficiaries register etc.)
- on-the-spot checks (OTSC) performed on a sample of aid applications, carried out in a number of farms selected randomly and/or through risk analysis techniques.

In the current period, for area-related schemes, MS have the possibility to perform the OTSC by using **remote sensing technology** instead of going to the field to do the control. These so-called **Controls with Remote Sensing (CwRS)** are done by photointerpretation of very high spatial resolution (e.g., 0.25 - 0.5m) satellite images or aerial images, that are typically acquired for only one or a few moments in time during the agricultural year due to their associated cost. CwRS are used for **area measurements** of parcels as well as for verifying eligibility criteria.

⁶¹ As from 2018, the online geo-spatial aid application form (GSAA) is obligatory for most MS (Derogation exist for certain MS). In the future, the online application form will be obligatory for all.

In addition, since 2018, MS have the possibility to introduce a new system of controls to replace the *in situ* checks for area-based aid schemes or support measures managed under IACS with an automated process utilising modern technologies, the so-called **Checks by Monitoring (CbM)**. These technologies primarily include the **Sentinel family of satellites under the EU Copernicus programme**, which provides full, free and open access to satellite imagery on a continuous basis throughout the agricultural year. This new and innovative IACS process for checking farmers with respect to CAP eligibility conditions is based on the regular and **systematic collection of Earth Observation (EO) data**. This is achieved, first and foremost by analysing the Copernicus Earth Observation (EO) data streams in a fully automated manner to identify whether a given eligibility criteria is met with or not. For the basic payment scheme (BPS), for example, this automatic analysis typically yields conclusive results for more than 95% of all eligible parcels. In cases where the analysis of the satellite data does not permit a conclusive answer, so called 'follow-up' procedures are triggered. These may involve requesting evidence from beneficiaries (in the form of geotagged photos), the use of drones, expert advice or as a last resort visits in the field to collect the missing evidence.

- **Data sharing**

The computerised database contains for each beneficiary the data obtained from aid applications and payment claims (Art. 69 – 1306/2013). The database allows consultation of the data through the competent authority of the data relating to ongoing calendar and/or marketing years and to the previous ten such years (generally the access to the data goes up to previous ten years).

As regards personal data, Article 117 frames the management and processing of such data for monitoring, evaluation and/or statistical purposes. For spatial data, Member States have the obligation to implement INSPIRE Directive (Directive 2007/2/EC) of the European Parliament and of the Council of 14 March 2007 by establishing an Infrastructure for Spatial Information in the European Community.

DG AGRI supports the Member States to implement IACS data sharing (especially data from LPIS and GSAA) that are relevant for the environmental policy as well as for monitoring, evaluation and statistical purposes following the rules laid down in INSPIRE Directive.