DESIRA POLICY BRIEF

Digital Services for Rural and Farmer Communities

This policy brief paper is based on a Living Lab formed within the scope of the EU DESIRA H2020 project and attempts to shed light on areas and aspects lacking adequate policy support. The mission of the Living Lab is to delve into the identification of digital services and functionalities in a group of farmers located in the rural area of the city of Katerini in central Greece and furtherly propose digital solutions and ways to implement them while minimising risks. For the purpose of this Living Lab, two future scenarios (one plausible positive and one plausible negative) were created based on a hypothetical scenario question related to the foreseeable future impacts of digital tools in the region's agricultural landscape and on farmers' income. The scenarios developed were used as basis on which a set of policy options are suggested taking into account the values, goals and specific traits of the Living Lab's 'ecosystem'. Policy interventions should focus on promoting support mechanisms and digital training programs for the farmer communities, establish public-private financial instruments to bolster the digital transition of agriculture at regional scale, and increase the transparency related to data handling, data ownership and rights.

CONTEXT

In terms of digital transformation, Greece lies well below the EU average and towards the bottom of the list of EU member states. The country's connectivity infrastructure and level of digital skills as well as the degree of digitalisation of businesses and public services score are among the weakest in the EU. However, Greece is making efforts to weather to a certain extent the Covid-19 after-effects with positive digital transformation actions that will contribute in the upgrade of the public sector, and facilitate the utilisation and further exploitation of the advantages of digital technology. On April 2021, Greece announced with the support of the European Commission the *'Greece 2.0, National Recovery and Resilience Plan*, which is expected to contribute significantly to the nation's digital transformation by devoting approxiately 25% of its intended budget to digital objectives. When it comes to the rural and agricultural areas of the country, Greece is experiencing one of the highest digital skill gaps between city and rural area residents. However, with the global uptake of agricultural ICT technologies, Greece can leverage ICTs diffusion in its agriculutral sector to further spark a broader rural digital capacity uptake.

This policy brief is based on the *'Digital Services for Rural and Farmer Communities'* Living Lab that operates in Trilofos, a village and community belonging to the municipality of Katerini, located in Northern Greece. This region has a long tradition with tobacco cultivation, though in the recent years the position of the local farmers in the supply chain has weakened. The Living Lab delves to the identification of digital services and functionalities and proposes digital solutions and ways to implement them to a group of local farmers that are gradually transitioning from tobacco to leek cultivation. The introduction of digital solutions is forming new interactions among farmers and the agricultural land, and introduces new agricultural processes that enable new information sharing and decision-making routines, while at the same time reshaping the local market dynamics.

RESEARCH APPROACH

For the purpose of the Digital Services for Rural and Farmer Communities, the following focal question was discussed in the Living Lab (LL): '**How digital tools in the upcoming decade will impact the agricultural processes and the local economic development of Trilofos?**' This scenario question was adopted with the aim to create a future vision (ten year from now) and was presented as a baseline for the development of the future scenarios.

THE SCENARIOS DEVELOPED HAVE ALLOWED THE PROJECTION OF REALISTIC FUTURE OUTCOMES THAT REVEAL FOCAL AREAS THAT WOULD BENEFIT FROM POLICY INTERVENTIONS.

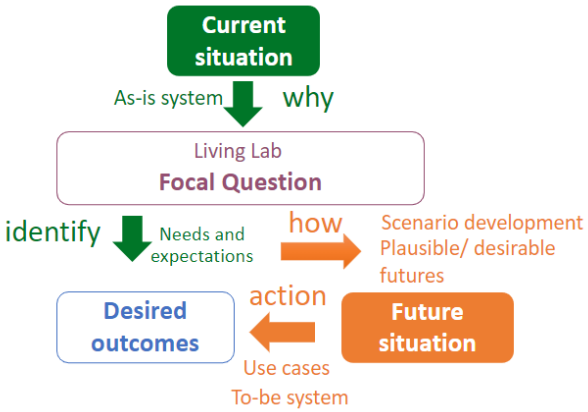
As a follow-up to the NEI (Needs, Expectations, Impacts) activities that led to the definition of an initial set of LL specific Drivers of Change, a further categorisation of the drivers took place that resulted in a new set of internal and external drivers based on their endogenous or exogenous impact on the LL's Socio-Cyber-Physical system (SCP). This refined set of drivers served as the basis of assumptions on which the participants of the workshop formulated the range of positive and negative future projections. Subsequently, each driver was transposed in its ten-year negative or positive future expression. The sum of plausible positive, Business as usual, plausible negative expressions of the drivers formed the probable range of future pathways that the future scenarios could follow. Through a series of team-based brainstorming and scenario building activities, the participants managed to formulate one positive and one negative future scenario based on the LL's scenario question.

SCENARIOS DEVELOPED

One of the main goals of this Living Lab's activities was the sketching of two distinct future pathways. The creation of the pathways was based on the past LL developments that formed the general LL's socio-cyber-physical context as well as the present needs and future expectations of the system and its actors. One positive and one negative pathway were outlined out of the range of identified future options, these two pathways served as the backbone on which the two future scenarios are based and as a reference point where the LL's SCP system strengths and weaknesses are projected.

The positive pathway revolves around a future where the farmer communities located in the region will be able to build on the existing digital development of the region and transition into a future where they would be able to upscale the digital infrastructure utilised and boost the overall capacity building of the region by increasing their digital skills and competences. This will attract younger individuals in the farming business, expand the infrastructure and services, reposition the local agricultural business in the agri-food value chains, foster an innovation culture in the region, increase their agricultural income, and ameliorate their working conditions.

The negative scenario revolves around a future where the transition to a digital future cannot be reached. The further development and adoption of ICTs is difficult either because of a lacking concrete business plan to support the provisions of digital services and infrastructure or because of the inability of: (1) the local communities to adapt to a digital agricultural environment, (2) create win-win collaborations with technology providers based on trust, or (3) foresee the added value of digital tools in their agricultural practices.



POLICY RELATED DISCUSSION

This Living Lab's future scenario development activities incorporated a multitude of actors, shaping a dynamic group of individuals coming from various backgrounds. Farmers, agronomists, agricultural extension services actors as well as agricultural technology providers contributed to the co-development of the future scenarios. The scenarios developed depict a form of an imaginary future carried out in a decade timespan with the purpose to capture how the identified strengths and opportunities as well as weaknesses and threats will evolve in the future and how they might affect the current stakeholders or create new unintended beneficiaries. The prevalent focal point that was brought up during initial discussions revolved around the local farmers' need to change their agricultural crops and methods to increase their income and break into new agro-food supply chains.

During the developmental phase of ICT adoption and digital uptake, the continuous support in the decision-making process and adequate training programmes are vital for the further development of digital skills of farmer communities to be able to meet the technical demands of digital agriculture and the market demands for providing the new agricultural products.

SUPPORT IN TERMS OF ADEQUATE TRAINING AS WELL AS TARGETED POLICIES TO ALLEVIATE MARKET ASYMMETRIES ARE VITAL FOR THE FACILITATION OF PRIVATE AGREEMENTS THAT WILL ENABLE FASTER AND LOCALISED DIGITAL UPTAKE.

While digitalisation has quickly brought noteworthy impacts in terms of agricultural efficiency, timely monitoring and risk mitigation, still, the farmers capabilities and skills to further exploit the agricultural data gathering is limited. Data processing and decision support are highlighted as primary factors that will allow the transition to a fully enabled digital agricultural system.
Another important aspect highlighted relates to the high dependency of farmers from the technology/extension service providers. This fact closely relates to the limited digital skills and training of farmers to utilise the digital interventions applied. The establishment of mechanisms to convey knowledge and skills from the data curators and processors towards the end users - farmers - can lead to the capacity building developments that will in turn trigger a faster technology uptake from the farmers' communities operating in the region.

Furthermore, local stakeholders that form the HORECA sectors along with farmers/producers and food processors operating in the region are showing an increasing interest on how they can position their agricultural and food sectors to make the most out of the opportunities created from future digital advancements. Supporting the local value chain should not be solely a matter of individual value adding activities. Enabling policies targeted in agriculture that will not distort market decisions are also important for allowing value generation of agri-food and related sectors. The local producer's decision to move down in the value chain and upgrade their agricultural outlook or extend sales into the existing agri-food networks should be a subject of achieving a fitting policy mix in parallel with the introduction of digital agricultural methods.

POLICY OPTIONS

Promoting training programmes and advisory support for farmers

- Connectivity, affordability, education on ICTs as well as supportive programmes that will enable the organised implementation of regional digital strategies are imperative to achieve the digital agricultural transition of the region.
- Deployment of targeted policies that will focus on providing incentives to the local community for inciting the adoption of digital technologies while providing supplementary educational programmes to increase the digital skills of the interested farmers.
- Policy actions need to set the foundation on which digital agriculture in rural areas will scale-up to increase the farm's productivity, boost the competitiveness of small farms and enable social inclusion through the modernisation of the agricultural sector.

Establishing public-private financial instruments that will allow a wider adoption of digital tools

- Widen the policy scope beyond direct EU and national payments, and provide incentives to the private sector with the prospect of creating profitable extension service, consulting and technology provision markets.
- Support the foundation of public-private partnerships at community level and facilitate complementarity between the provisions of the public and private sector to better address the needs of both farmers and rural communities. The private sector can provide more farmer-oriented delivery models in rural value chains that will in turn provide farmers with more choices.

Increasing transparency on agricultural data ownership and rights

- Design Policy frameworks with a clear focus on removing possible entry barriers that discourage the engagement of interested farmers with digital tools.
- Alleviate the asymmetries that arise between users and providers in ownership of digital infrastructure and data ownership, data management and data rights. Access and handling of information and data can lead to increased inherent value of digital ecosystems and new revenue streams.
- Design policies that treat data as an asset and ensure that data management is addressed in a clear, fair and non-discriminative manner while also ensuring the inclusion of private service providers, local actors as well as communities and public unions.

This policy brief is published in the frame of the EU-funded DESIRA project and aims to provide recommendations for policy makers on how to support digitalization in the context of Digital Services for Rural and Farmer Communities in Trilofos Pieria's, Central Greece.

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