TRACK

POLICY BRIEF

November, 30th 2020 - *VEGEPOLYS VALLEY*

The central role of clusters in empowering growers through digital innovation

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Tracking opportunities to develop and strengthen data collection and big data in agri-food chain to increase competitivity of SMEs - TRACK

Co-funded by the COSME programme of the European Union

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SUMMARY

The agri-food sector is subject to strong external pressures, such as a rising demand for food world-wide, competition for land, the globalisation of trade, threats from animal/plant diseases, environmental changes or public health considerations. The European agri-food industry must become more efficient and sustainable if it wants to survive and thrive; taking advantage of the opportunities offered by new technological developments is therefore essential.

In this context, digital innovation is a powerful tool to boost efficiency in all the stages of the agri-food sector. From the seeds to the farm and then to the fork, digital innovation can contribute to empower farmers and consumers, placing them as key players of the food-chain, in order to promote sustainable practices respectful of culture and environment.

The complex and urgent challenges we are facing demand supporting and developing tools for integrated action, engaging all the players, to proactively drive transformative change in the industry and policy making, providing comprehensive elements for evidence-based decision making. The much-needed innovation has to contribute to choosing intelligent and clean methods for producing healthy food in a short distance using the minimum resources and adapt consumption habits.

The Farm to the Fork Strategy[1] (F2F) and the European Green Deal[2] represent an extraordinary opportunity to connect digital innovation to the agri-food sector providing a holistic approach and preventing the focus on technology as a goal in itself. On the eve of a new programming period it is vital to build the path to meaningful transformation from the lessons learnt and avoid replicating missteps and redundant actions, risking the waste of opportunities.

The present policy brief is the contribution of 2-year work of the TRACK project. It demonstrates that clusters and their ecosystems have fully grasped and taken up the challenges of digitalisation in the plant-growing sector and, more generally, in the entire agrifood value-chain.

[1] Communication From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system COM/2020/381 final

[1] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

CONTEXT

Producing better does not mean eatingetter

As the human population grows and concentrates in the cities (more than half of humanity already lives in cities and, by 2050, this rate is expected to rise to two thirds[3] - out of a world population of 9.7 billion) the need increases for more food, produced with the minimum resources at a reasonable close distance to consumers. Without a significant leap in the efficiency of the agri-food sector, these needs will increase the pressure on the ecosystems (agricultural land already accounts for 42% of the UE land surface[4], and, even if we exclude the impact of transport and packaging, farming represents 80% of worldwide deforestation, 70% of the use of fresh water and 70% of the loss of terrestrial biodiversity. In return, the ecosystems deregulation also affects agriculture, threatening production all over the world (draughts, pest management, soil impoverishment, etc.).

The response to the rising needs has given priority to profit over sustainability, which has led to the development and prevalence of production practices and consumption patterns often having a strong negative impact on health, environment and, directly or indirectly, on the economy. In spite of agronomic and technological improvements, food wastage is increasing and malnutrition in Western countries has alarming indicators. Available data shows that already in 2012 about one fifth of the total food produced in the EU was being wasted[5]. In terms of public health, the World Health Organisation observed that the prevalence of obesity nearly doubled between 1980 and 2008, meaning that "over 50% of both men and women in the WHO European Region were overweight, and roughly 23% of women and 20% of men were obese"[6], with consequently diet related diseases and premature death.

Covid19, vulnerability and the change we need

More recently, the Covid19 pandemic and the restraining measures that followed confirmed the importance of robust and resilient EU food systems within a sustainable, circular bioeconomy to respond to global shocks and disruptions in supply chains, and to mitigate socio-economic impacts of crises notably as regards food poverty.

Up to a certain point, Covid19 has demonstrated the vulnerabilities of the food production in the EU, but has also had an impact in the consuming patterns that could contribute to push for more digital solutions, sustainable production systems and distribution chains both on agriculture and food industry (use e-platforms, drive-thru, buy local, seasonal and healthier products, respectful of the environment, closer to the producers, etc.). Nevertheless, it is still difficult to understand the extent and perennity of that shift.

In this context, plant production appears as an economic pillar in the frontline of all the contemporary challenges and it's a central arena of innovation in the agri-food sector, where two major trends emerge: high tech vs slow/organic techniques. These are mostly considered as mutually exclusive in the sense that, for example, vegetables produced without soil cannot be labelled as organic, although fulfilling to use less resources, reduce waste, etc.

In face of these apparently contradictory pathways, innovation in the agri-food sector has to balance efficient production, ecosystem preservation and respect for the cultural background of farming.

[3] https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html
[4] https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/trends-eu-agricultural-land-within-2015-2030
[5]http://www.eu-fusions.org/phocadownload/Publications/Estimates%20of%20European%20food%20waste%20levels.pdf
[6] https://www.euro.who.int/en/health-topics/noncommunicable-diseases/obesity/data-and-statistics

Farmers: the neglected key players in need for recognition and empowerment

As all aspects of human activity, digital innovation is transforming agri-food, introducing new functions, creating new value. These changes induce the replacement of human direct intervention for certain tasks and the lack of skilled workforce in others. In any case, the transformation of the entire food-chain has introduced or reinforced imbalances: farming remains a very conservative sector while cutting edge innovation is tested in the extremities of the value chain (e.g.: in seeds genetic studies and in food transformation and distribution). Plant growers, and farmers in general, are subject to important pressures from the big stakeholders that dominate food transformation and distribution. Often isolated in rural areas, their role in preserving cultural heritage, ecosystems and social cohesion is not sufficiently recognised.

The same happens regarding the need for specific technologic responses, and, since it is not possible to sort out systemic fits-all IT solutions, big IT companies have limited interest in agri-food. There is plenty of room for additional steps on the process of adjustment between supply and technological demand for the agricultural sector. Farmers are seldom involved as partners in digital innovation projects, hardly supported to take control of their data to improve and better use their knowledge, being mostly considered as potential clients of IT solutions. At the same time, agri-food SMEs often see digital innovation as mostly limited to online selling and marketing platforms. They reveal a lack of awareness regarding the importance of addressing digital transformation, but it should be noticed that customers of agri-food digitalisation are not only end-users (farmers, cooperatives): several players of the supply chain can have a relevant role in technology adoption.

SMEs need tailormade support, programmes improve with increased articulation, clusters maximize impacts

There can't be industry 4.0 solutions available at this moment that 100% fit the needs and requirements of all SMEs in the agri-food sector, as this is the case in other industrial sectors. To make the best of digital innovation, SMEs require optimised, tailored solutions in terms of coaching and training. The good knowledge of each cluster's capacities and competences combined with the good knowledge of each own territory allow cluster partnerships to efficiently address the various needs of SMEs at an international level. Clusters also play a pivotal role in the ecosystem approach by facilitating the connection with the S3 platforms. Nevertheless, this engagement and closeness to the S3 platforms needs to be reinforced in both senses, in particular, to effectively address the need for transferring, capitalising and also involving the policy making level.

There is a plethora of much useful programmes available across Europe to help companies digitalise. Still, innovation processes require complementary approaches and support schemes. In this scenario, clusters are the best positioned to help SMEs participating in these initiatives and capitalise and move forward the projects' results, searching for other type of supporting schemes, addressing policy making, transferring and mainstreaming... Nevertheless, there is still a low level of interfund schemes and articulation. Furthermore, the lack of programme-based strategies to promote exchanges and specific follow-up of COSME projects (e.g.: organised in thematic communities in view of cross-fertilisation, capitalisation of results and capacity building of project partners and beneficiaries) is manifest. Last, but not least, the lack of programme strategy or support to involve the policy-making level leaves mostly to the clusters (and project partners) the mission of effectively addressing people and institutions at policy level.

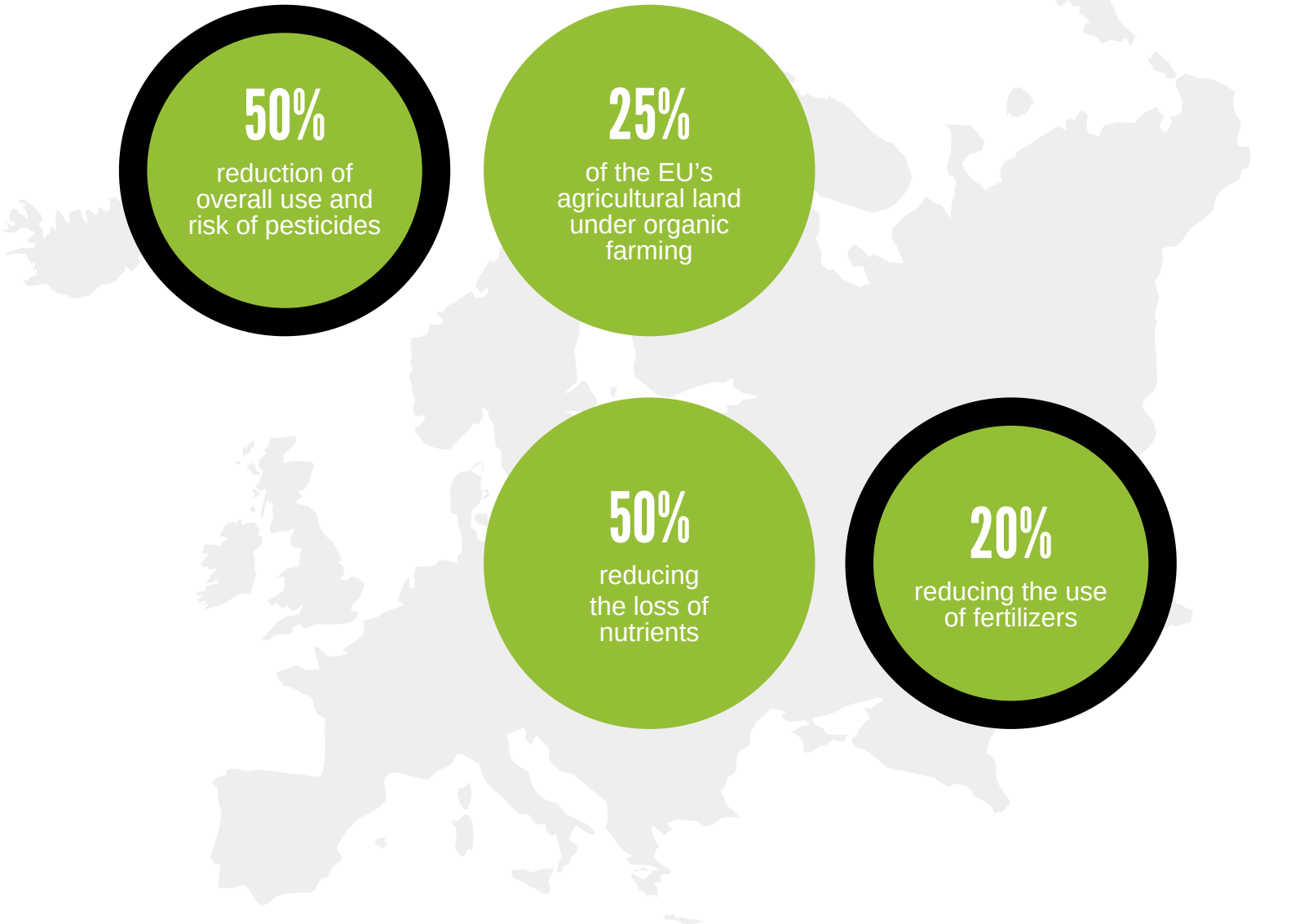
Meaningful innovation from the seeds to the farm to fork

Hopefully, F2F Strategy draws a comprehensive framework which may contribute to efficiently address some of the above-mentioned issues. F2F Strategy, which is at the heart of the European Green Deal, is a milestone for many aspects of our life. It aims at a "healthy future": with healthy people, healthy society in a healthy planet. F2F puts emphasis on enabling a "just transition" for all players of the food systems, in which also social inequalities are reduced, food poverty is addressed, and a fair income for all is ensured. Its mindset is supported by a long-term perspective, launching social and environmental foundations of food and nutrition security not to be compromised for current and future generations.

Its targets, to be reached by 2030, are very ambitious. E.g.: a reduction by 50% of overall use and risk of chemical pesticides and of more hazardous pesticides, to be accompanied with the achievement of at least 25% of the EU's agricultural land under organic farming. Always in relation to agriculture production, attention is placed on ensuring no deterioration on soil fertility, while reducing the loss of nutrients by 50% and the use of fertilizers by 20%.

In that sense, the F2F implementation sets a framework coherent with the above-mentioned context. It requires and builds on innovative solutions that can be scaled up, such as agro-ecological and organic practices, alternative sources of protein (e.g.: plant-based, ocean-based, insect-based, etc.), sustainable food from the oceans and aquaculture, and personalised advice relating to sustainable healthy diets.

Such an ambitious and comprehensive approach needs to test joint efforts, demonstrate and scale-up innovative systemic solutions to achieve the F2F targets and objectives in this decade. Its feasibility will necessarily rely on our capacity of integrating digital innovation in an effective manner.



TRACK PROJECT

Financed by the EU through COSME.ESCP-S3 - European Strategic Cluster Partnerships for smart specialisation investments, TRACK is the acronym for "Tracking opportunities to develop and strengthen data collection and big data in agri-food chain to increase competitivity of SMEs". Five European clusters implemented the project activities from October 2018 to November 2020.

Together, the five clusters involved their local partners to attain the following specific objectives:

- Creating a favourable interregional ecosystem to stimulate:
  - new innovative solutions fitting specific requirements of agri-food chain
  - associated joint investments toward advanced agri-food industry 4.0.
- Intensify cross-pollination between ICT / traceability and big data (TBD) sectors, in priority SMEs, and actors of the agri-food industry.

TRACK

Number of SMEs having directly and indirectly benefitted from the supported actions

<400

Joint activities Over 15 bilateral meetings, 3 public deliverables prepared in consultation with other initiatives, and 6 joints events

21

10 Interregional collaboration established

8 Horticultural sectors that benefit from TRACK actions

TRACK provided coaching to "Bankable Projects", i.e. innovative and high-impact projects led by an SME which propose to bring a "digital solution", primarily linked to traceability and big data, to the agri-food sector. The requested criteria for receiving support was that the solutions:

- be completely new or validated and used in non-agri-food applications and requiring adaptation to suit the needs of the agri-food sector;
- be at least of Technology Readiness Level 6: i.e. a technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies).

Almost 400 SMEs were directly or indirectly impacted, of which around fifteen (at least one in each country) received close support throughout the project, with partner clusters providing:

- Technical/testing/validation support;
- Business planning/ business development/ marketing support;
- Legal/IP support;
- Identifying investors (only for the most advanced projects, min TRL 7-9).

POLICY RECOMMANDATIONS

From the partnership experience and the debates with other COSME.ESCP.S3 projects (Connsensys and DigiClusters), TRACK partners are calling for action considering three main axioms:

- Plant production is an economic pillar in the frontline of many contemporary challenges, for which innovation has to balance efficient production, ecosystem preservation and respect for the cultural background of farming.
- Clusters' capacities and competences combined with the good knowledge of each own territory allow cluster partnerships to efficiently address SMEs needs at international level.
- Integration, articulation and capitalisation are the fundamentals to deploy any sustainable strategy to the sector.
- Support for closing the gap between TRL 6 and the real implementation and business impact of an innovation is needed.

In particular, TRACK partners recommend that programmes and policies in the upcoming programming period:

- consider a specific focus on agri-food and food processing sector and its specific requirements - food safety, working with life products, quality, etc. – underlining the importance of plant and flowers in the environment to have a healthy and happy life ("Feeding and Greening the world").

- respond to the need for empowering growers at all levels (training, working conditions, living conditions, market, social recognition...) without losing their cultural heritage and tremendous knowledge of farming. They need support through finance and training as well as being involved in the technology development, as partners and not only as (potential) clients of IT businesses.

- recognise and promote the role of farmers and sustainable agricultural practices in preserving cultural heritage, ecosystems and social cohesion.

- develop a cooperation environment favouring open and inclusive innovation and peer association to scale up, assume ownership and/or control of tools like, for example, digital marketplaces.

- enhance "Learning by seeing" activities: ready to use (ICT) solutions should be shown and tested by end-users (e.g.: the "demofarm" model, with available plots of land cultivated or not, with fruit/horticultural/extensive crops on which are implemented IT solutions, disposing of specialized technical and agronomic staff always in contact with production companies and their wishes, to allow ICT companies that design and implement IT solutions for agriculture to verify and demonstrate to farmers in real situation the functionality of the IT/technology solution they are implementing).

- increase the existing capacity of clusters to implement operational actions with the SMEs in their territories, namely in project engineering and cascade funding (through innovation vouchers, collaborative projects and platforms, communities of practice, identification and sponsoring of projects by the clusters, through labelling or other systems, favouring the financing of these initiatives and the matchmaking with sponsors and private financers, ...).

- facilitate close linkage and interaction between funds and programmes from the beginning of the projects (COSME (Information, identification) - 2 years; INNOSUP (Involvement, Investment) - 3/4 years; ERDF, ESIF and regional funds to address capacity building and territorial development in complementary ways).

- organise programmes' actions and tools (COSME/EASME in particular) in order to efficiently ensure:
  - involvement of policy makers
  - interaction and capitalisation between projects
  - transfer and implementation of project results by S3 platforms and other initiatives
  - time and resources adapted to the mobilise and support SMEs

- support integrated approaches to digital innovation in the agri-food sector, involving the entire food chain, from the researchers to consumers (from the seed to the farm to the fork).

- favour digital innovation as a tool to add value to products and practices.

- use digital innovation to proactively drive transformative change in the industry and policy making, providing comprehensive elements for evidence-based decision making. It has to address the physical nature of human existence and practices and contribute to territorial cohesion and rural development, new production and business models for the rural areas and from the farmer's perspective, new jobs and skills, etc.

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