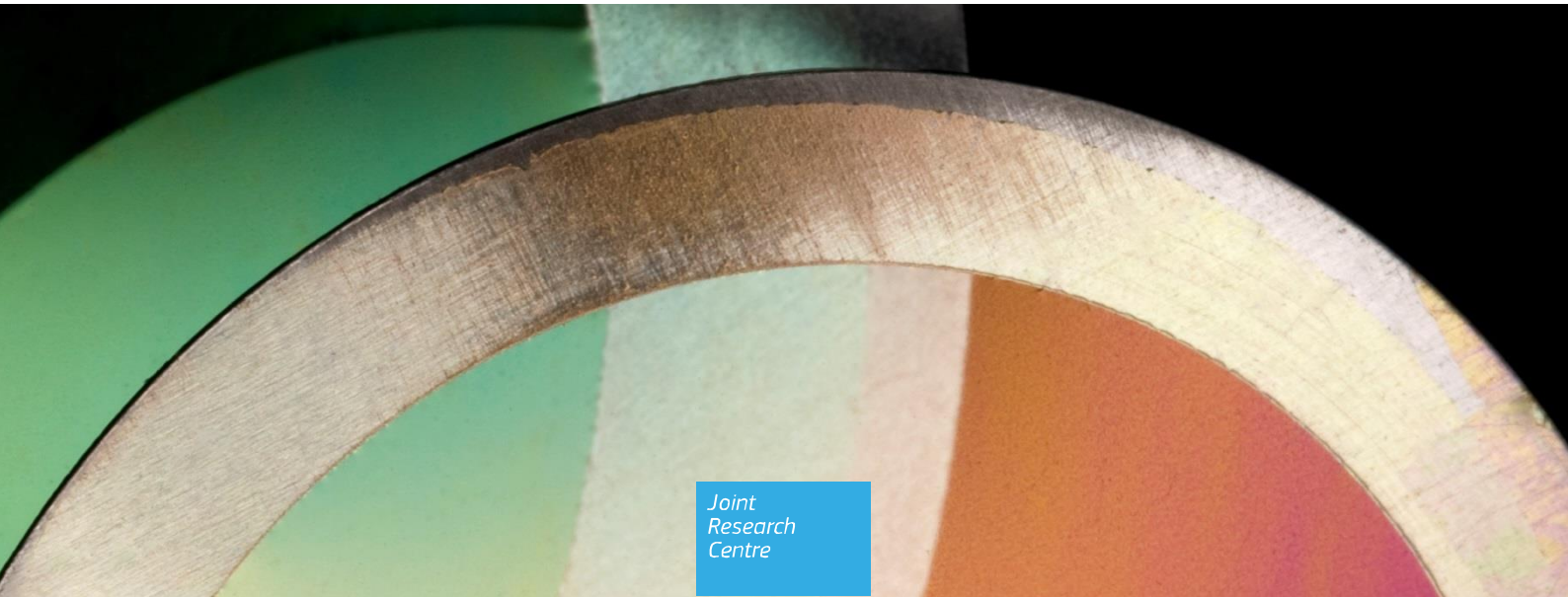
European Commission

RIS3 MONITORING SYSTEM IN GREECE

PILOT STUDY

Michalis Metaxas,
Innovatia Systems,
Thessaloniki, Greece.
Email: metaxas@innovatiasystems.eu

2020



Joint Research Centre

TABLE OF CONTENTS

1 INTRODUCTION AND SCOPE

This study was commissioned by the European Commission's Joint Research Centre (JRC) in the framework of the “Lagging Regions Project, launched in 2016.

The goal of the study was to acquire a clear understanding of what has to be done with respect to monitoring RIS3 in light of the new programming period and the enabling conditions attached to Smart Growth policy objective. Therefore, the author had to audit the RIS3 Monitoring Systems at the national and regional level to understand what’s in place, what is missing and identify gaps in monitoring data. That was accomplished by selecting two Greek regions and the national body responsible for the monitoring of national RIS3 and implementing the appropriate methodology. The latter aimed at supporting and consulting the participants in addition to data gathering and consolidation. The process lasted from April to October 2019.

Section 2 describes the status of RIS3 Monitoring Systems in Greece as of the end of 2018.

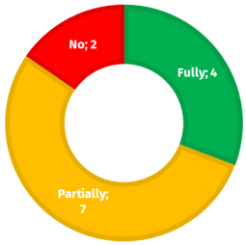
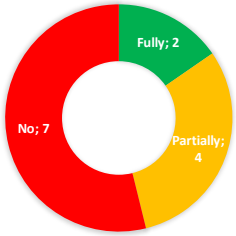
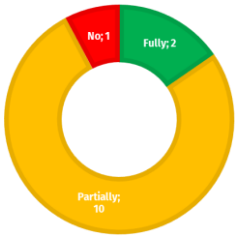
Section 3 deals with the implementation stages of the study followed by the presentation of the main results in Section 4. Finally, Section 5 seeks to identify fast gains and provide suggestions to monitoring teams to achieve higher readiness for next programming period.

2 Current State of RIS3 Monitoring System(s) in Greece

The main source for reviewing the key issues associated with RIS3 Monitoring Systems (MS) is the survey report that was conducted in late 2017 (covered the period up to 30.09.2017) and early 2019 (covered the period up to 31.12.2018) within the framework of the JRC Lagging Regions Project [2]. The survey assessed three main areas of RIS3 implementation in Greece (namely governance, activation degree and monitoring) in all 13 Greek Regions and on national level respectively.

The survey assessed the readiness level of each of the monitoring systems in three key topics: (a) administrative structures and resources; (b) indicators and data; (c) reporting and communication of the results. The outputs of the survey regarding the first issue showed that there are different levels of readiness among Greek regions (figures in pies represent number of regions replied).

Table 1: RIS3 Monitoring - Structure and Resources (number of replies)

Question 1: Key functions of the Monitoring System have been defined	
Question 2: The core unit that will be responsible for data collection and reporting is in place	
Question 3: Analysis & Reporting Tools have been selected	
Question 4: Adequate availability of know-how for running the MS	

The monitoring teams seemed quite familiar with the functions of the MS, since they have experienced similar functions within Regional Operating Programmes (ROPs). Although feeling confident, they had not (at the time) chosen the tools and methods for analyzing and reporting relevant data and half of them had not selected the teams that would be responsible for carrying out the MS tasks.

Regional respondents were more confident on the indicator selection task than other tasks associated with MS. The following chart is mapping the responses from the 13 Greek regions (figures in bars represents number of regions replied).

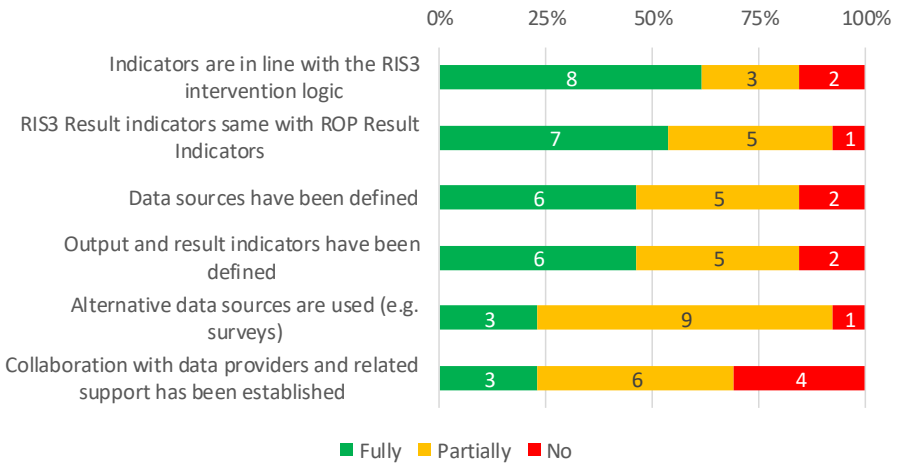


CHART 1: RIS3 MONITORING: INDICATORS AND DATA SOURCES (NUMBER OF REPLIES)

Indicators (output and result) were reported to have been identified and were in line with RIS3 by the vast majority of the regions. The interviews with regional representatives gave the impression that this statement was true for output indicators (almost identical to ROPs'), however they were not so clear for result indicators. The latter should be defined for RIS3 strategic priorities and this was in question. It is obvious that if result indicators had to be re-examined, sources of data had to be re-examined too.

Finally, in terms of reporting of the MS results, attitudes for longer term tasks are more positive than for short term tasks.

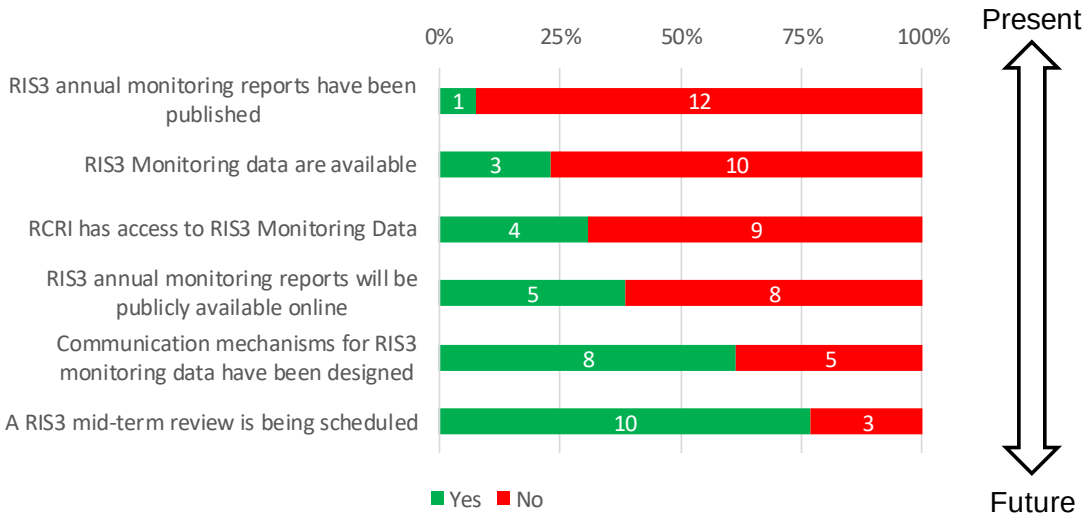


CHART 2: RIS3 MONITORING: REPORTING AND COMMUNICATING ACHIEVEMENTS (NUMBER OF REPLIES)

Based on the above findings, the main issues on regional RIS3 Monitoring Systems *as recorded in 31.12.2018* are the following:

- Delays or other problems of the implementation of RIS3 governance structure have led to respective delays of Monitoring Systems.
- 11 regions have not yet assigned the RIS3 monitoring function.
- No region has a fully operational MS (in the sense that it comprehensively covers all RIS3 monitoring elements including people, tools, method of data gathering and processing and finally reporting framework).
- Main gaps reported included personnel, skills and financial resources shortages.
- There were some ambiguities on indicators (especially result indicators) for RIS3 vs OPs.
- It seemed hard to have monitoring results capable for informing policy learning in time for the interim evaluation as planned by the regional authorities.

An additional drawback at the time was the absence of the national RIS3 MS that would be “regionalized” therefore assist regional MSs. That specific point was taken into consideration when designing the methodology for the pilot study.

3 METHODOLOGY AND IMPLEMENTATION

Given our time and resource constraints, two regions and the national authority responsible for the monitoring function of RIS3 had to be selected. The three Authorities selected and agreed to participate in the study were the Region of Central Macedonia (RCM) the Region of Western Greece (RWG) and the General Secretariat of Research & Technology (GSRT). Both RCM and RWG are considered as important regions in terms of the triple helix dynamics with significant potential of Academia and Research Organisations.

The second filter was the selection of a key RIS3 strategic priority that was common to the three participants. The agrifood value chain which was a common strategic priority for 12 of the 13 Greek Regions was selected (agrifood here refers to the so-called agriculture and food and drinks production thematic priority, comprising of relevant economic strengths, underlying technologies and science base).

The methodology adopted, communicated to and accepted by the participant bodies involved three steps:

1. DESK RESEARCH

The author collected and analysed the documentation of the RIS3 monitoring system at the national and at the regional level (by the 2 regions) and perform a pre-assessment in terms of effective description of the intervention logic, use of indicators, definition of indicators, data sources, collection and analysis.

A common observation from the documentation provided was that there was not a clear intervention logic for RIS3 priorities, simply because RIS3 in Greece in its early development was seen (and managed) as a programme rather than a comprehensive research and innovation-driven regional development strategy, therefore all regions had followed the intervention logic of the respective ROP.

2. COLLABORATION - CONSULTING

At least two site visits were planned, and a number of teleconferences were made to assess the degree of deployment of the MS and to reconstruct the intervention logic for the agrifood RIS3 priority in particular.

The **first theme** that was examined was **the reconstruction of the intervention logic**. This is regarded as an important step since it allows stakeholders to reflect on critical issues and construct their own thinking blocks rather that give them ready to use material. For this specific step the instructions provided by the JRC's MOOC [1] on Monitoring Smart Specialisation Strategies were our main guidance.

[1] Available here: https://iversity.org/en/courses/monitoring-smart-Specialisation-strategies

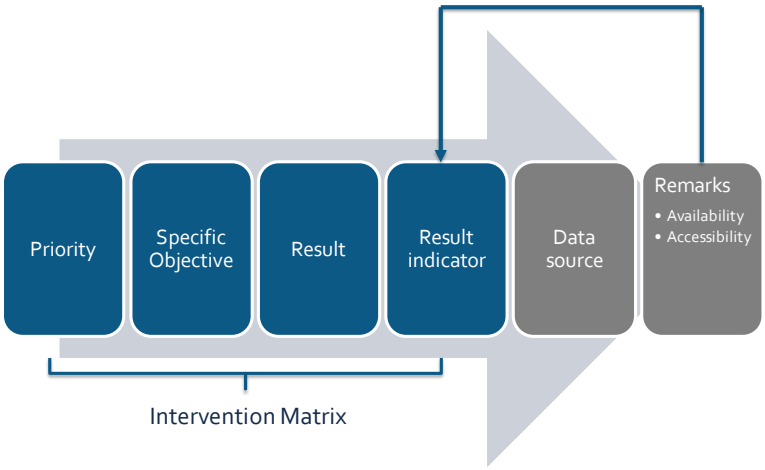


FIGURE 1: METHODOLOGY IN ACTION BASED ON THE MOOC

This is illustrated by the four blue blocks of Figure 1. The policy instruments and the associated output indicators were skipped since they are well reflected in the respected OPs. However, an additional task was performed to close the loop, that is to determine for each result indicator the possible data sources as perceived by the stakeholders. Each time they could not nominate a specific data source we had to reflect again on the chain and come up with a new set of indicators and data source. The same happened when they proposed a field research as a possible data source because it is a costly method of data collection comparing to the scale of data required at the regional level. A total of 2-3 iterations per participant body were performed until the participants felt that the matrix is full, and all indicators represent the initial logic of intervention expressed in their current RIS3s.

Once the three sets of indicators, one for each participant, were in place, the author then consulted with the National Documentation Centre - EKT (the National Authority of the Hellenic Statistical System for European statistics on Research, Development and Innovation since 2012) on the proposed sources of data and possible improvements. A similar consultation was made with the national co-ordination authority (the Special Service for Strategy, Planning and Evaluation, known as “EYSSA” from its acronym in Greek) of the Ministry of Development and Investments.

An example of the specific integrated task is given in the following picture. The Appendix contains the full set of the intervention matrices.

PRIORITIES	SPECIFIC OBJECTIVES	RESULTS	RESULT INDICATORS
Support for the introduction of innovative technologies in agrofood sectors	Development of new innovative products including green products	Introduction of new products to existing markets	1.3 Value of new products sales / value of total sales (%)
			1.4 Agrofood SMEs innovating in-house to total SMEs innovating in-house ratio
		Introduction of new products to new markets	1.5 New products to new markets exports / total new products exports (%)
			1.6 New products to new markets exports / new products to existing markets exports (%)
		Innovations patented or copyrigthed	1.7 Patent applications PCT to GDP of agrofood
		Improvement of balance of trade of agrofood products	1.8 Exports to imports ratio of agrofood products
		Penetration to enviromentally friendly products markets	1.9 Value of green products exports / value of total exports (%)
	Assurance of health and security of food and drinks	Impovement of hygiene standards in agrofood products; promotion of high quality and/or traditional products with local identity	1.10 SMEs producing bio products / total agrofood SMEs ratio

#	RESULT INDICATOR	DATA SOURCE	REMARKS
1.3	Value of new products sales / value of total sales (%)	NDC	So far available for manufacturing and services. An addition of new NACE codes regarding agrofood is required
1.4	Agrofood SMEs innovating in-house to total SMEs innovating in-house ratio	NDC	So far available for manufacturing and services. An addition of new NACE codes regarding agrofood is required
1.5	New products to new markets exports / total new products exports (%)	Field research by SEVE (Greek Exporters Association)	Not available for the moment
1.6	New products to new markets exports / new products to existing markets exports (%)	Field research by SEVE	Not available for the moment

PICTURE 1: EXAMPLE OF EXTENDED INTERVENTION MATRIX

The **second theme** examined was the **degree of readiness** in terms of organization, human resources, tools used and other relevant issues. The method used was the one developed during the Lagging Regions II project[2], which is a function-based model of governance that is trying to identify the different roles of stakeholder groups in each process. Only the functions linked to RIS3 Monitoring were used for the Management & Monitoring body (regional or national). Representation of the results was plotted in a Responsibility Assignment Matrix (RAM) also called a RASCI matrix (an acronym for the five possible roles performed by each stakeholder: Responsible, Accountable, Supporting, Consulted, Informed), an example of which is presented in the following table.

[2] https://s3platform.jrc.ec.europa.eu/ris3-in-lagging-regions

TABLE 2: EXAMPLE OF RASCI MATRIX FOR RIS3 MONITORING SYSTEM

FUNCTION	S3 technical body	S3 strategic level	Bottom-up body	ERDF Managing Authority - Regional	ERDF Managing Authority - National	Other body for complementary policy	GSRT	DG REGIO
Developing the conceptual model of the monitoring system	RA	CI	CI	CI	CI		C	C
Developing the methodology to collect the data	RA	CI	CI	CI	CI		C	C
Develop/Manage the information system for quantiative data collection	RA	I	I	CI	I		C	C
Develop/Manage the qualitative-data collection process	RA	I	S	I	I		S	C
Implement the monitoring process (including writing the monitoring report)	RA	I	I	S	CI		CI	
Monitor quality of implementation of the monitoring system	I	RA	I	I	I		I	
Escalate risks and opportunities emerged from the monitoring procesess to governing body	R	A	S	S	I		I	
Communication and discussion of monitoring results with quadruple helix	RA	I	I	S	I		I	

R The stakeholder is responsible for executing the process
A The stakeholder is accountable for the process outcome
RA Both the above
S The stakeholder supports the execution of the process
C The stakeholder is consulted before or during the execution of the process
I The stakeholder is informed of the output of the process
CI Both the above

3. Consolidation and further Analysis

During the third stage of the pilot study a gap analysis was made aiming at the identification of fast gains and to identify possible actions to overcome the recorded barriers for the effective operation of the regional RIS3 Monitoring Systems. The author:

- assessed the results of the previous two stages,
- identified needs and proposed actions to meet them at the regional level,
- identified needs and proposed actions to meet them at the national level and
- identified transversal needs (regional + national, i.e. common data requirements, data flows that need to be established) and proposed actions to meet them.

4 Presentation of main Outcomes

Intervention Logic – indicators – sources of data

Comparing the 3 Intervention Logic Tables in the Appendix, there are some common strategic priorities and objectives and some different ones. Thirty-four (34) result indicators were recorded by all three bodies. Six of them were common (i.e. proposed at least by two of the participants) resulting to twenty-six (26) *unique result indicators – URI* for the agrifood sector.

The second issue examined was the source of data for the set or the URIs.

Table 3: Sources of data for the URIs

Source of data	Count
EKT (National Documentation Centre)	14
ELSTAT (Hellenic Statistical Authority)	8
Ad hoc field research	4
SEVE (Greek Exporters Association)	3
Ministry of Environment and Energy	2
RAE (Regulatory Authority for Energy)	1
OBI (Hellenic Industrial Property Organisation)	1
Ministry of Rural Development and Food	1
GEMI (General Commercial Registry)	1
Genereal Secretariat of Trade and Commerce	1

It is encouraging that the majority of the data can be provided by EKT and ELSTAT; significant progress has been made since 2013 in relevant data availability. Field research is required to obtain data to calculate four URIs and this means that additional estimations have to be made by the stakeholders regarding the cost effectiveness of the specific exercise.

In terms of data availability, estimations during the consultation with EKT gave a mixed status: some of the datasets are already available, for some an extra aggregation effort is required since they come from different databases and for another part a considerable effort is required in order to have meaningful datasets.

Table 4: Availability of Data

Availability	Count
Currently available	6
Small scale addaption is required	6
Serious addaptation is required	6
Planning from scratch is required	4
Ad hoc field research	4
Total	**26**

An important result of the exercise was the acknowledgement by all participants that RIS3 requires a large number of unique result indicators due to its inherent complexity. Although there is a higher number of relevant data sources than five years ago, not all of them are open and machine readable yet, to be processed by a potential aggregator.

Organisation and Resources

The consolidated RASCI matrix for the RIS3 Monitoring System of the three participants is presented in the next Table *only for the "Management & Monitoring body"*[3] of their RIS3 Governance Scheme. Full illustration of the combination of functions and roles for monitoring systems is presented in the respective tables in the Annex.

Table 5: RIS3 Monitoring Functions and the role of the Management & Monitoring body

FUNCTION	RCM	RWG	GSRT
Developing the conceptual model of the monitoring system	RA	R	RA
Developing the methodology to collect the data	RA	R	RA
Develop/Manage the information system for quantitative data collection	RA	RA	RA
Develop/Manage the qualitative-data collection process	RA	RA	RA
Implement the monitoring process (including writing the monitoring report)	RA	RA	RA
Monitor quality of implementation of the monitoring system	I	I	RA
Escalate risks and opportunities emerged from the monitoring processes to governing body	R	C	RA
Communication and discussion of monitoring results with quadruple helix	RA	RA	RA
Map ERDF monitoring to RIS3 monitoring	RA	R	n/a

R The stakeholder is responsible for executing the process
A The stakeholder is accountable for the process outcome
RA Both the above
S The stakeholder supports the execution of the process
C The stakeholder is consulted before or during the execution of the process
I The stakeholder is informed of the output of the process
CI Both the above

It is obvious that the Management & Monitoring body has the main responsibility for monitoring S3. However, there are some differences in the roles reported by the three participants.

- GSRT reported complete responsibility of the whole lifecycle of the monitoring process.
- RWG reported responsibility to execute but not to be accountable for some of the functions.
- The two regional teams have different view on the escalation of risks from the monitoring processes.

Finally, in terms of the resources identified and/or deployed for the monitoring system to be operational the reactions of the participants are mixed.

Table 6: RIS3 Monitoring Resources Deployment

ISSUES	RCM	RWG	GSRT
Key functions of the Monitoring System have been defined	Fully	Partially	Fully
The core unit that will be responsible for data inputs and reporting is formed	Fully	Partially	Partially
Tools that will be used in MS have been selected	Fully	No	Partially

[3] "Management & Monitoring Body" is a formal term of the middle layer of a typical RIS3 governance structure, known as "RIS3 Technical Office" or "Management Team" in most of relevant EU documentation.

HR needs for the MS have been identified	Yes	No	Yes
Existing know how is adequate for running effectively the MS	Partially	Partially	Fully

The author compared the participants' responses with the ones submitted in the 2018 survey [2] and the main points are the following:

- The Region of Central Macedonia has proceeded to the establishment of a team that will be fully responsible for the management and monitoring of regional RIS3, therefore they feel much more confident than the 2018 survey.
- The Region of Western Greece is facing the exact same issues as recorded in the 2018 survey.
- Finally, GSRT has made some progress in terms of the know-how and the HR needs for the functions of monitoring.

5 IDENTIFICATION OF POSSIBLE FAST GAINS

Both the 2018 survey and the consultations in the course of the present study suggest that Greek regions cannot cope with personnel, skills and financial resource requirements of a comprehensive S3 monitoring system. The obvious solution would be to create a framework that could generate **economies of scale** for RIS3 monitoring. The following points could be taken into consideration during the planning process of the forthcoming Programming Period:

- RIS3 in Greece was developed following a hybrid model both at national and regional level (13 regional plus 1 national smart specialisation strategies). Each strategy had to include a separate section on Monitoring & Evaluation with references to the features of the monitoring system that would be developed in the implementation stage. Since 85% of the earmark of the TO1 is attributed to the national RIS3 and the necessary resources for developing an effective MS can be found easily at the national level, the first point for fast gain would be the development of a set of result indicators suitable for the national RIS3. This would be based on the intervention matrix model containing the proposed RIS3 strategic priorities as expressed by the EDP and, in view of the broad inter alia similarity among the priorities of the 13 regional RIS3s would likely reflect many of the regional priorities as well. In this way a **nationally common set of result indicators** would be available for each RIS3 strategic priority and could be provided to regional authorities to use accordingly. In the case that some regions would need additional indicators they could include them in their regional set and if proposed by several regions the specific indicators could be added to the national set.
- This would be the first step for achieving economies of scale for the collection of data and should be combined with the appointment of a **national data aggregator.** The specific organisation should be in the position to collect and process data in a scientifically sound method and provide “regionalized” and “sectoral” data to the regional RIS3 monitoring teams for further processing and analysis. Given that EKT is the National Authority of the Hellenic Statistical System for European statistics on Research, Development and Innovation and as such possesses all relevant expertise and resources, might be considered as a potential aggregator to play the specific role.
- The third step would be the analysis and the agreement on the **taxonomic issues** regarding data granularity. The case of agrifood showed that at the moment it is impossible to comprehensively consolidate and classify the necessary data because it is not clear which are the sectors (i.e. relevant NACE codes) that constitute the value chain of the agrifood complex. The same applies for other complex value chains, like tourism industries.
- Another issue that affects data collection is that at the moment in Greece, public and third-party data are not open and/or machine-readable. The first challenge (openness) requires all the necessary technical and political steps in order to make non-confidential data **publicly available** in an easy to use manner (e.g. central Information System of State Aid). The second challenge (scattered heterogeneous datasets) can be tackled by transforming scattered data into interconnected ones, hence making them **open and more readily usable for analysis**.
- Finally, in the case of regions that would like to exercise *ad hoc* field research exercises to gather data that are not available by the central aggregator, they should take all necessary actions to **comply with international rules and standards** (e.g. following

the OECD/Eurostat Oslo manual, Frascati manual, and using established practice in Community Innovation Survey). Otherwise, there is the risk of collecting data in non-standard ways which might limit their comparability and their usefulness for evidence-based policy making.

6 CONCLUSIONS

- The resource requirements of a comprehensive RIS3 monitoring system are considerable, and it is doubtful that regional authorities have the capacity to meet them. This is very important since absence of reliable data cancels the evaluation task that follows monitoring function.
- There was a high degree of convergence among the three Management and Monitoring bodies examined with respect to their respective roles and responsibilities in monitoring RIS3.
- Efforts to develop a monitoring system have led to a greater appreciation of its true complexity and cost.
- Data relevant to RIS3 monitoring is becoming more readily available over time. But important gaps remain.
- A major obstacle that needs to be overcome is that regions should decide in a homogenized manner the indicators that are required to be collected. If not, the issue of non-conformity between indicators will block cross-regional comparability
- Ad hoc data collection from field surveys at a regional level are costly and might present limited value if it is not done in a manner that is compatible with established international practice (e.g. following international taxonomies and good practices).
- RIS3 requires a large number of result indicators to its inherent complexity; most of them are different than the ones used in the OPs.
- Respective datasets are required for the computation of the indicators. A higher number of relevant data sources than 5 years ago has been identified; further issues mainly regarding openness and data processing are yet to be tackled.

Economies of scale for RIS3 regional and national MSs should be the primary target of Greek Authorities. By achieving this target, a list of fast gains could be created (for the effective operation of MSs). Some of them are the following.

1) A national common set of result indicators should be compiled by taking into consideration the common RIS3 strategic priorities as expressed within national and regional EDPs. This set of indicators would be available to regional planners. The initial set would contain full definition, calculation, data source and all relevant details for every indicator.
2) Additions to the above-mentioned list of result indicators would be possible if proposed by enough regions and sustain a common strategic priority.
3) In terms of data gathering and processing, a national point of reference should be appointed as the national aggregator. After collection and initial processing, the aggregator should provide regional MSs with “regionalized data” for further processing and analysis. A suitable aggregator is the National Documentation Center (EKT) with proven expertise and resources (human and IT) to play that role.
4) The national aggregator will be in the position to follow all developments and changes on indicators (e.g. the ‘marketing or organizational innovation’ classification according to the new Oslo manual). They also be in the position to estimate possible breach of statistical privacy according to regional characteristics and consult regional RIS3 monitoring teams.

5) Taxonomy is a key issue for effective and homogenous monitoring, since RIS3 deals with value chains rather than single sectors. This applies for complex value chains like agrifood, tourism etc. Taxonomic issues should be a topic for discussion between National Authorities responsible for planning RIS3 and the national aggregator.

6) Finally, data access and data quality should be resolved by each of the data providers with the guidance of the national aggregator. This also requires political steps in order to make non-confidential data publicly available

ACKNOWLEDGEMENTS

Results reported in the pilot study are based on the interviews and working sessions with the representatives of the three participant organizations, namely: Alkistis Stathopoulou, Nikos Thomopoulos and Aris Mamasioulas from the Region of Western Greece, Kostas Michailidis and Maria Goulaptsi from the Region of Central Macedonia and Asterios Hatziparadisis from the General Secretariat of Research and Technology.

Nikos Karampekios and Nena Malliou from EKT, Smaro Zisopoulou and Petros Stavrou from EYSSA contributed with their valuable comments and proposals to the first draft of the study.

Finally, Dimitris Pontikakis shared his valuable expertise through his comments for this report to take its final version.

REFERENCES

[1] European Commission. (2012). *Guide to Research and Innovation Strategies for Smart Specialisation (RIS 3)*. Brussels: European Commission.

[2] Metaxas, M. (2019). *Summary Report on RIS3 implementation status in Greece.*

[3] European Commission. (2016). *Implementing Smart Specialisation Strategies – A handbook.*

[4] Tolias, I. (2019). *Guidance for S3 Governance in the Period 2021-2027.*

APPENDIX

For each of the three participant organisations, 3 tables are presented: the intervention matrix and its extension associated with data source, availability of data and other remarks and the respective RASCI matrix.

Table 7: Region of Central Macedonia - Intervention Matrix

PRIORITIES	SPECIFIC OBJECTIVES	RESULTS	RESULT INDICATORS
1. Response of agrifood industries to climate change challenges	Improvement of market positioning	Reduced environmental footprint; promotion of regional branding; decrease of greenhouse air emissions	1.1 Investment for waste management and environmental protection / total investment (%)
		Productivity gains with emphasis on cost cutting of energy due to introduction of renewable energy resources	1.2 Consuption in Gwh per MEur of production
2. Support for the introduction of innovative technologies in agrifood sectors	Development of new innovative products including green products	Introduction of new products to existing markets	1.3 Value of new products sales / value of total sales (%)
			1.4 Agrifood SMEs innovating in-house to total SMEs innovating in-house ratio
		Introduction of new products to new markets	1.5 New products to new markets exports / total new products exports (%)
			1.6 New products to new markets exports / new products to existing markets exports (%)
		Innovations patented or copyrigthed	1.7 Patent applications PCT to GDP of agrifood
		Improvement of balance of trade of agrifood products	1.8 Exports to imports ratio of agrifood products
		Penetration to enviromentally friendly products markets	1.9 Value of green products exports / value of total exports (%)
	Assurance of health and security of food and drinks	Impovement of hygiene standards in agrifood products; promotion of high quality and/or traditional products with local identity	1.10 SMEs producing bio products / total agrifood SMEs ratio
3. ICT introduced to agrifood value chain	Improvement of competitiveness	Agrifood SMEs addopting innovative ICT tools	1.11 Investment for ICT / total investment
			1.12 SMEs collaborating with others / total agrifood SMEs
			1.13 SMEs introducing marketing or organisational innovation

Table 8: Region of Central Macedonia – Extension of the Intervention Matrix

#	RESULT INDICATOR	DATA SOURCE	REMARKS
1.1	Investment for waste management and environmental protection / total investment (%)	Possible aggregation by EKT (National Documentation Centre)	Not available for the moment. It could be added to existing datasets of EKT
1.2	Consuption in Gwh per MEur of production	RAE (Regulatory Authority for Energy)	Not available for the moment
1.3	Value of new products sales / value of total sales (%)	EKT	In relation to CIS survey results. So far available for manufacturing and services. An addition of new NACE codes regarding agrifood is required
1.4	Agrifood SMEs innovating in-house to total SMEs innovating in-house ratio	EKT	In relation to CIS survey results. So far available for manufacturing and services. An addition of new NACE codes regarding agrifood is required
1.5	New products to new markets exports / total new products exports (%)	Field research by SEVE (Greek Exporters Association)	Not available for the moment
1.6	New products to new markets exports / new products to existing markets exports (%)	Field research by SEVE	Not available for the moment
1.7	Patent applications PCT to GDP of agrifood	OBI (Hellenic Industrial Property Organisation)	Not available per sector/industry for the moment
1.8	Exports to imports ratio of agrifood products	SEVE / ELSTAT (Hellenic Statistical Authority)	Combined data sources - needs good timing
1.9	Value of green products exports / value of total exports (%)	Ministry of Environment and Energy - Field Research ("Guide of products and services with environmental friendly characteristics") and SEVE	Combined data sources - needs good timing
1.10	SMEs producing bio products / total agrifood SMEs ratio	Ministry of Rural Development and Food & GEMI (General Commercial Registry)	Combined data sources - needs good timing
1.11	Investment for ICT / total investment	EKT	In relation to CIS survey results. Not available per sector/industry for the moment
1.12	SMEs collaborating with others / total agrifood SMEs	EKT	In relation to CIS survey results. Not available per sector/industry for the moment

#	RESULT INDICATOR	DATA SOURCE	REMARKS
1.13	SMEs introducing marketing or organisational innovation	EKT	In relation to CIS survey results. Not available per sector/industry for the moment

Table 9: Region of Western Greece - Intervention Matrix

PRIORITIES	SPECIFIC OBJECTIVES	RESULTS	RESULT INDICATORS
1. Enhancement of RTDI to the techological, sectoral and intersectoral priority areas of smart specialisation of RWG	1.1 Increase of expenditure in knowledge and excellence in science	Maintain or improve the regional researchers' headcount	2.1 Researchers by scientific domain 2.2 Publications / total academic and research staff 2.3 GERD_PERS per Frascati manual research areas 2.4 Education personnel + PhD students per year / per department
		Upgrading current Research Centres and Centres of Excellence	2.5 Relative Citation Index in Agro-/Vet- Sciences and Food Technology
		Decentralise the intra-regional distribution of research infrastructure	2.6 Number of HEI departments per NUTS3 regions
	1.2 Promotion of R&I in business sectors of agrifood	Increase of R&I expenditures of SMEs	2.7 % R&D expenses / turnover 2.8 Intramural R&D expenditure (GERD) by sectors of performance and NUTS 2 regions for agrifood
2. Facilitate access, adoption and exploitation of ICT in the techological, sectoral and intersectoral priority areas of smart specialisation of RWG	2.1 Changes in Productivity and GVA due to the adoption of ICT applications and services by the agrifood sector	Increase of use of Internet and ICT by SMEs	2.9 SMEs introducing marketing or **organisational** innovation in agrifood value chain

PRIORITIES	SPECIFIC OBJECTIVES	RESULTS	RESULT INDICATORS
		Improvement of competitiveness and extroversion of SMEs as a result of the adoption of ICT tools	2.10 % exports / GDP of agrifood
3. Improvement of competitiveness of the SMEs by restructuring, modernisation and differentiation of the regional economy with focus at the techological, sectoral and intersectoral priority areas of smart specialisation of RWG	3.1 Support for the modernisation of SMEs in the agrifood sector	Transition to the production of high added value and/or differentiated products	2.11 SMEs introducing product or process innovation
	3.2 Reinforcement of extroversion of agrifood SMEs	Integration of enterprises to international value chains and increase of their exports	2.12 First time export companies
		Upgrade of competitive position of RWG within the agrifood value chain	2.13 Value of total exports (EU & non EU) in current prices
	3.3 Technology Transfer and improvement of the linkages between SMEs, enterprises and HEIs/PROs for the development of new products and services	Accelerated transition to the production of new and/or differentiated competitive products	2.11 SMEs introducing product or process innovation

Table 10: Region of Western Greece – Extension of the Intervention Matrix

#	RESULT INDICATOR	DATA SOURCE	REMARKS
2.1	Researchers by scientific domain	EKT	Initial complex indicator to be split into 2.1 & 2.2
2.2	Publications / total academic and research staff	EKT	Currently available
2.3	Total R&D personnel and researchers by sectors of performance, sex, **field of science and technology** and NUTS 2 regions (rd_p_persreg)	None	Outputs (publications see 2.2) instead of inputs (personnel)
2.4	Education personnel + PhD students per year / per department	ELSTAT (Hellenic Statistical Authority)	Currently available
2.5	Relative Citation Index in Agro-/Vet- Sciences and Food Technology	EKT, periodic bibliometric researches	Currently available
2.6	Number of HEI departments per NUTS3 regions	ELSTAT	Territorial classification is required
2.7	R&D expenses to turnover ratio (%)	EKT	An addition of new NACE codes regarding agrifood is required. Also, turnover data should be incorporated with existing EKT's data
2.8	Intramural R&D expenditure (GERD) by sectors of performance (BES) and NUTS 2 regions	EKT	An addition of new NACE codes regarding agrifood is required
2.9	SMEs introducing marketing or organisational innovation in agrifood value chain	EKT	Not available per sector/industry for the moment
2.10	Exports to regional GDP of agrifood (%)	ELSTAT (structural business statistics)	SEVE (Greek Exporters Association) is an alternative source of data
2.11	SMEs introducing product or process innovation	EKT	Not available per sector/industry for the moment
2.12	First time export companies	Not available. A field research is required	Adhoc field research
2.13	Value of total exports (EU & non EU) in current prices	ELSTAT (structural business statistics)	SEVE (Greek Exporters Association) is an alternative source of data

TABLE 11: NATIONAL RIS3 - INTERVENTION MATRIX

PRIORITIES	SPECIFIC OBJECTIVES	RESULTS	RESULT INDICATOR
1. Promotion and enhancement of the characteristics of local products of the primary sector	1.1 Promotion of the nutritional value of the traditional outputs of the primary sector to best harness their characteristics for the production of value added processed food and drinks	Improvement of positioning of agrifood companies within international value chains	3.1 Exports to GDP of agrifood (%)
	1.2 Strengthening new knowledge production especially on understanding the relation between nourishment and health; identification of positive implications for agrifood products (primary sector, food and drinks)	Upgrading of existing Research Centres and Centres of Excellence	3.2 Relative Citation Index in Agro-/Vet- Sciences and Food Technology
2. Reduction of inputs / Rational management of natural resources	2.1 Productivity gains with emphasis on cost cutting of energy	Reduction of energy cost	3.3 Energy consuption per production value (KWh / K€)
	2.2 Improvement of environmental footprint of agrifood sectors	Improvement of waste management and exploitation of residual waste; reduction of air emissions	3.4 Waste disposal per production volume
3. Increase in productivity of farming and animal husbandry products	3.1 Introduction of new innovative systems and methods in all production stages of the primary sector aiming at the improvement of productivity and/or cost factors	Increase of added value of primary sector producers	3.5 GVA of primary sector
4. Improvement of the quality of agriculture and animal husbandry products	4.1 Introduction of new methods for improving the quality, preservation and safety of the primary sector products	Escalate introduction of new innovative production methods for quality improvement	3.6 Producers introducing product or process innovation / total units of the primary sector (%)
5. Introduction of new technologies for "first stage" processing of agrifood products	5.1 Development and implementation of integrated technologies and systems in agriculture and husbandry with significant effect to national economy aiming at the productivity increase of agrifood	Increase of added value of primary sector	3.7 GVA of primary sector

PRIORITIES	SPECIFIC OBJECTIVES	RESULTS	RESULT INDICATOR
6. Adoption and exploitation of new technologies in all agrifood production systems	6.1 Increase in adoption of new innovative methods and technologies	Increase of expense for innovation adoption	3.8 Innovation expenses excluding R&D to turnover ratio (private sector)
	6.2 Introduction of new competitive products into international value chains	Transformation of agrifood production to new differentiated and competitive products	3.9 Exports of new products to new markets to total sales ratio (%)
	6.3 Development of new methods for the production of agrifood products to preserve and strengthen their identity and secure all health and safety standards	Increase research spending	3.10 R&D expenses to GDP of agrifood ratio (%)

TABLE 12: NATIONAL RIS3 – EXTENSION OF THE INTERVENTION MATRIX

#	RESULT INDICATOR	DATA SOURCE	REMARKS
3.1	Exports to GDP of agrifood (%)	ELSTAT (structural business statistics)	SEVE (Greek Exporters Association) is an alternative source of data for exports
3.2	Relative Citation Index in Agro-/Vet- Sciences and Food Technology	EKT (National Documentation Centre), periodic bibliometric researches	Currently available
3.3	Energy consumption per production value (KWh / K€)	RAE (Regulatory Authority for Energy)	Not available for the moment
3.4	Waste disposal per production volume	Ministry of Environment and Energy	Not available for the moment
3.5	GVA of primary sector	ELSTAT	Currently available
3.6	Producers introducing product or process innovation / total units of the primary sector (%)	EKT	So far available for manufacturing and services. An addition of new NACE codes regarding primary sector is required. Also, data on the primary sector's units should be incorporated with existing EKT's data
3.7	GVA of primary sector	ELSTAT	Currently available
3.8	Innovation expenses excluding R&D to turnover ratio (private sector)	EKT	Not available per sector/industry for the moment
3.9	Exports of new products to new markets to total sales ratio (%)	EKT	Not available per sector/industry for the moment
3.10	R&D expenses to GDP of agrifood ratio (%)	EKT	An addition of new NACE codes regarding agrifood is required. Also, data on GDP on agrifood should be incorporated with existing EKT's data.

Table 13: RASCI Matrix for RIS3 Monitoring System – Region of Central Macedonia

FUNCTION	S3 technical body	S3 strategic level	Bottom-up body	ERDF Managing Authority - Regional	ERDF Managing Authority - National	Other body for complementary policy	GSRT	DG REGIO
Developing the conceptual model of the monitoring system	RA	CI	CI	CI	CI		C	C
Developing the methodology to collect the data	RA	CI	CI	CI	CI		C	C
Develop/Manage the information system for quantiative data collection	RA	I	I	CI	I		C	C
Develop/Manage the qualitative-data collection process	RA	I	S	I	I		S	C
Implement the monitoring process (including writing the monitoring report)	RA	I	I	S	CI		CI	
Monitor quality of implementation of the monitoring system	I	RA	I	I	I		I	
Escalate risks and opportunities emerged from the monitoring procesess to governing body	R	A	S	S	I		I	
Communication and discussion of monitoring results with quadruple helix	RA	I	I	S	I		I	

Table 14: RASCI Matrix for RIS3 Monitoring System – Region of Western Greece

FUNCTION	Regional Assembly	S3 technical body	S3 strategic level	Bottom-up body	ERDF Managing Authority - Regional	ERDF Managing Authority - National	Other body for complementary policy	GSRT	DG REGIO
Developing the conceptual model of the monitoring system	A	R	C	C	C	C	C	C	I
Developing the methodology to collect the data	A	R	C	C	C	C	C	C	I
Develop/Manage the information system for quantiative data collection	I	RA	C	C	C	C	C	C	I
Develop/Manage the qualitative-data collection process	I	RA	C	C	C	C	C	C	I
Implement the monitoring process (including writing the monitoring report)	I	RA	I	I	I	I	I	I	I
Monitor quality of implementation of the monitoring system	A	I	R	I	I	I	I	I	I
Escalate risks and opportunities emerged from the monitoring procesess to governing body	I	C	RA	I	I	I	I	I	I
Communication and discussion of monitoring results with quadruple helix	I	RA	I	I	I	I	I	I	I

Table 15: RASCI Matrix for RIS3 Monitoring System – General Secretariat of Research & Technology

FUNCTION	S3 technical body	S3 strategic level	Bottom-up body	ERDF Managing Authority - Regional	ERDF Managing Authority - National	Other body for complementary policy	GSRT	DG REGIO
Developing the conceptual model of the monitoring system	RA	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Developing the methodology to collect the data	RA	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Develop/Manage the information system for quantiative data collection	RA	n/a	n/a	n/a	S	n/a	n/a	n/a
Develop/Manage the qualitative-data collection process	RA	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Implement the monitoring process (including writing the monitoring report)	RA	n/a	n/a	C	n/a	n/a	n/a	n/a
Monitor quality of implementation of the monitoring system	RA	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Escalate risks and opportunities emerged from the monitoring procesess to governing body	RA	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Communication and discussion of monitoring results with quadruple helix	RA	n/a	n/a	n/a	n/a	n/a	n/a	n/a

The European Commission's science and knowledge service

Joint Research Centre

JRC Mission

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent evidence throughout the whole policy cycle.

EU Science Hub
ec.europa.eu/jrc

@EU_ScienceHub

EU Science Hub - Joint Research Centre

EU Science, Research and Innovation

EU Science Hub