



D7.9 MOOC 3

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Revision History

Version	Date	Author	Organisation	Description
0.1	27/07/22	Pavel Kogut	21C	Summary of webinar 3
0.2	29/07/22	Sofia Cunha, Otakar Cerba	SPI, P4A	Review
1.0	29/07/22	Pavel Kogut	21C	Final version

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Executive Summary

PoliRural launched a four-part webinar series in June 2022, with the intention of promoting the project to a wider audience. Each event is dedicated to a specific concept: the foresight framework (first webinar), text mining (second webinar), system dynamic modelling (third webinar), and the mission oriented approach (fourth webinar). As well as explaining key concepts and results, we use webinars as an opportunity to demonstrate how they were achieved and implemented in practice. To that end, representatives of the regional foresight pilots are invited as guest speakers to share their experience. A quick overview of the four webinars is provided below.

	Webinar 1	Webinar 2	Webinar 3	Webinar 4
Date time	13 June 2022	22 June 2022	13 July 2022	19 July 2022
Time	11:00 - 12:00 CET	11:00-12:00 CET	15:00-16:00 CET	14:30 CET
Focus	Foresight framework	Semex and Text Mining	System Dynamic Modelling and SDT	Mission oriented approach
Moderator	21C	21C	21C	21C
Experts	CKA	KAJO	22Sistema AVINET	CKA
Case studies	Ireland North-Macedonia	Finland	Greece Italy	Slovakia Israel

This deliverable will present the second webinar in a textual and graphic form. Interested readers are invited to watch the recording on YouTube (<https://youtu.be/xsJF6PhL2XY>) to get a better grasp of the SDM concept, the web-based SDM tool built to explore policy options, and its use by regional teams in Central Greece and Apulia.

The third webinar is likely to appeal to people

- In regional administrations who are in charge of rural planning and regional development more generally
- Who are familiar with SDM and are looking for use cases in new domains like rural development
- Who are new to SDM (e.g. journalists) and are looking for simple, easy-to-use tools to generate catchy graphics for an article

After watching the recording, viewers are welcome to contact PoliRural through the main website (<https://polirural.eu/>) to share any feedback they might have about this or other webinars.

Description

Topic: System Dynamic Modeling for Enhanced Rural Planning

The first System Dynamic Model (SDM) was invented decades ago when the internet was still in its infancy. We have come a long way since then in terms of a tremendous increase in computing power, the availability of data, and ease of access to sophisticated tools and communication platforms. So, it is time to make SDM tools and the explanatory power of the SDM approach more widely available to those involved in policy and regional development. This is precisely what PoliRural has been doing for the past three years. Our SDM tool is based on a general rural model that contains 8 interconnected modules with over 300 parameters. This general model has been customised to 11 pilot regions, based on discussions with each pilot leadership team. With this tool, rural stakeholders can examine how trends may play out locally under the influence of different drivers of change. They can correct unwanted trends or achieve desired ones by tweaking policy interventions until an optimal mix is reached. This webinar will explain in more detail how the SDM tool was built, how it works, and how it is being used by stakeholders in PoliRural regions to improve rural planning. The event will feature an interactive session to allow participants to ask questions and/or respond to any of the points mentioned in the presentations.

Promo materials

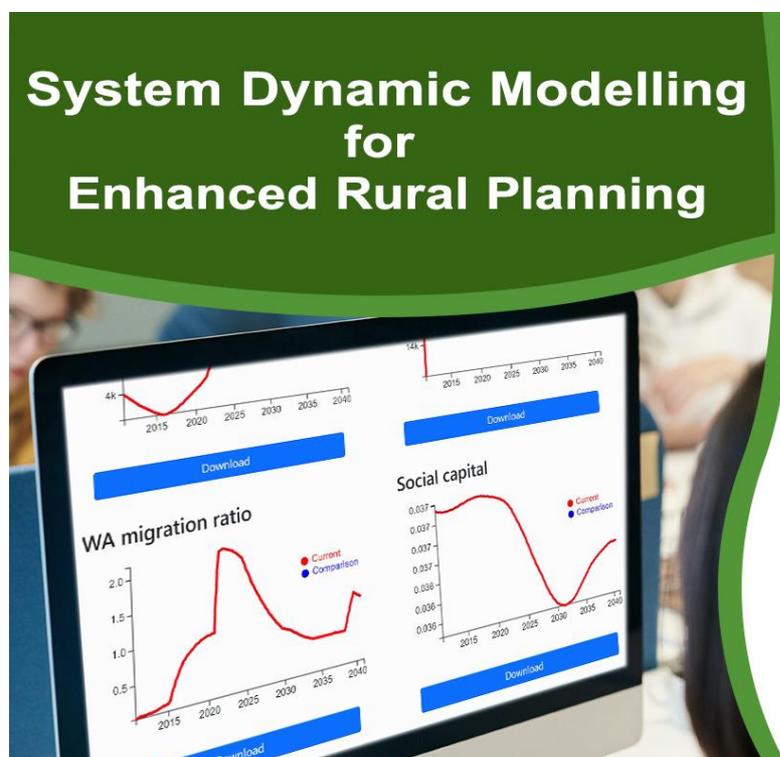


Figure 1. Promo flyer



WEBINAR

13 July 2022

15:00 CET

More info and registration



www.polirural.eu

POLIRURAL

WEBINAR SERIES

13 June 2022
11:00 CET | **Action Oriented Foresight for Rural Development**

Watch

Patrick Crehan
Founder and Director
Crehan Kusano & Associates

Blagoja Mukanov
Managing Director
AgFutura Technologies

John O'Flaherty
Technical Director
National Microelectronics Applications Centre

22 June 2022
11:00 CET | **Semantic Explorer: A Text Mining Tool for Smart Research**

Watch

Denis Kolokol
Data Scientist and Developer
KAJO

Tuula Löytty
CEO
Smart & Lean HUB

13 July 2022
15:00 CET | **System Dynamic Modelling for Enhanced Rural Planning**

Watch

Antoni Oliva
Founder
22SISTEMA

Nicoleta Darra
Research Associate
Agricultural University of Athens

Incoronata Langianese
PhD Student
University of Foggia

19 July 2022
14:30 CET | **Mission-Oriented Regional Development: Opportunities & Challenges**

Register

Patrick Crehan
Founder and Director
Crehan Kusano & Associates

Marieta Okenková
Researcher
Slovak University of Agriculture

Uri Marchaim
Head of Precision Agriculture and Regional Development
MIGAL Galilee Research Institute

www.polirural.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 818496

Figure 2. Webinar series poster

Speakers

Antoni Oliva is an Agricultural Engineer who specialises in environmental management and sustainability. He is a freelance researcher and consultant with more than 20 years of experience in projects for administrations (local, national and international) and corporations. Antoni uses System Dynamics as a tool to understand current situation and provide qualitative insights and meaningful participation. He is a founder of 22SISTEMA (www.22sistema.com).



Runar Bergheim manages research and development at Asplan Viak's Digital services division. Asplan Viak; one of the leading consultancy firms in Norway. When the world was young, Bergheim studied landscape management and spatial planning at Sogn og Fjordane University College. Since then, he has been working with technology, maps, simulation and modelling of problems related to spatial planning for more than 20 years across more than 300 projects in Norway, Europe and the Middle East.



Incoronata Langianese is a 3rd year PhD student in Health Economics at the University of Foggia, and she specializes in Economics and agricultural policy. Her work concerns not only research on international commerce and the impacts of trade policies on the regional and national agri-food sector but also rural studies and policies and their impacts. She is also a part of the crew at the Rural Development Laboratory at the University of Foggia and collaborates with Innovagritech, a spin-off of the same university.



Nicoleta Darra, Research Associate (Female). Nicoleta DARRA (F) is a PhD student in AUA, holding a M.Sc. degree in GIS and Spatial Analysis. Her research interests revolve around remote sensing applications, precision agriculture and data analysis. The last four(4) years, she has been involved in numerous research H2020 projects (IoF2020, Big Data Grapes, GATES, PoliRural, SHERPA, AgriCaptureCO2, FRIETS) related to rural development, smart farming and ICT technologies. Additionally, she has participated in several national projects as project manager (in research projects) and PA instructor (in educational projects). She has nine (10) papers, one (1) in international conference, five (5) in national conferences and four(4) in peer-reviewed journals.



Recording

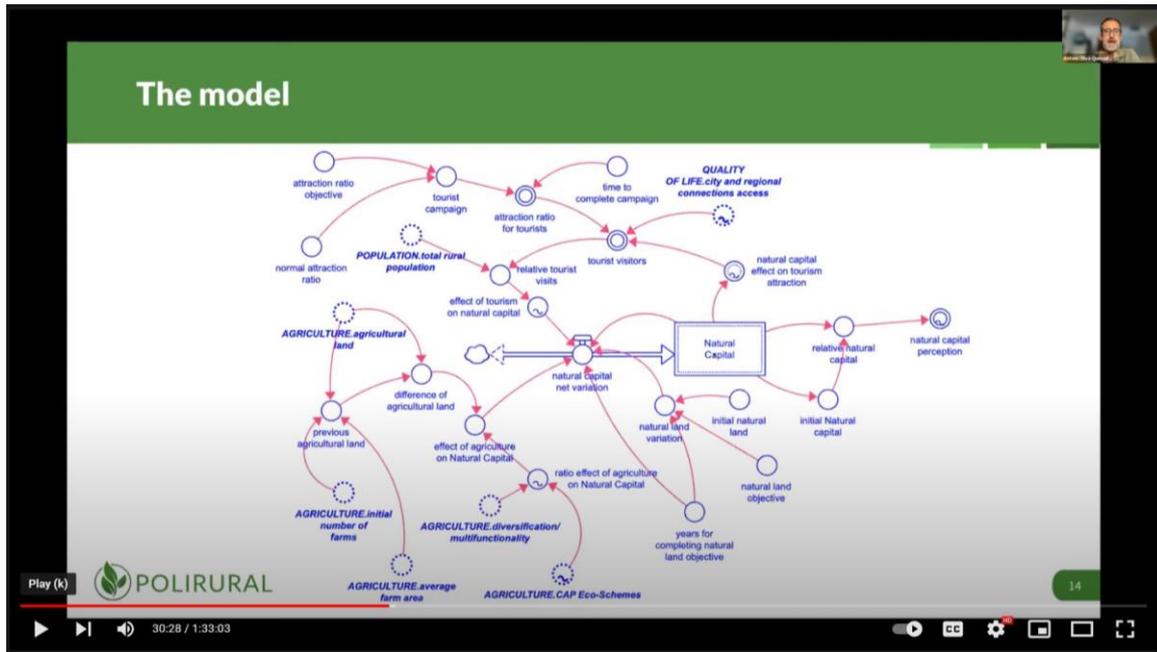


Figure 3. Screenshot of the webinar recording¹

¹ <https://youtu.be/xsJF6PhL2XY>

Slide deck



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 818496. This document reflects only the author's view and the Commission is not responsible for any use that may be made of the information it contains.

Guest speakers



Antoni Oliva
22Sistema



Runar Bergheim
Asplan Viak



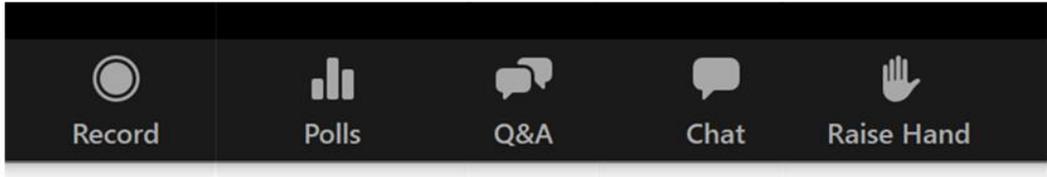
Nicoleta Darra
Agricultural University of Athens



Incoronata Langianese
University of Foggia



Housekeeping



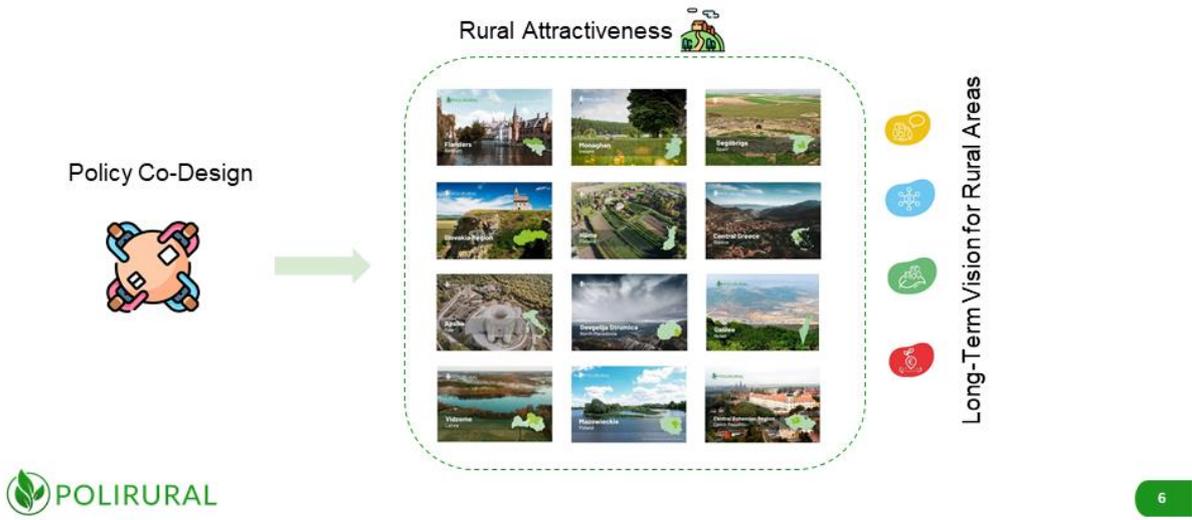
Poll



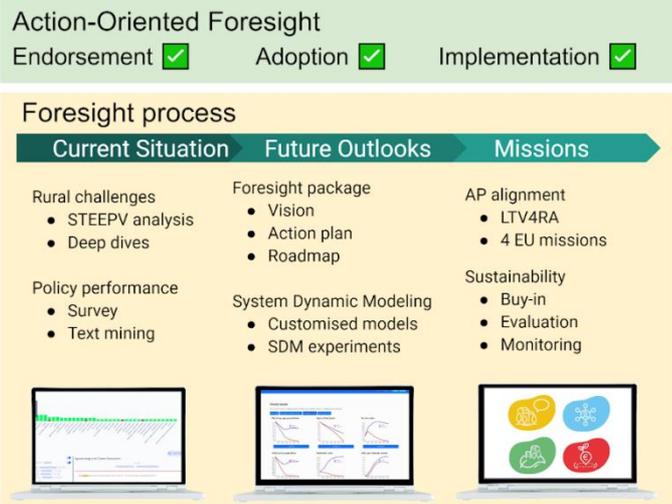
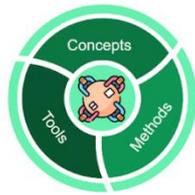


Intro to PoliRural

Pavel Kogut, 21c



PoliRural in a nutshell



7



System Dynamic Modelling

Antoni Oliva, 22SISTEMA



SDM Objective

OBJECTIVE:

To show you how systems modelling can help us



1) understanding what is happening in rural areas
interrelations between ENVIRONMENT, SOCIETY, ECONOMY
dynamic relations: effect and cause have continuous interaction



2) envisioning possible scenarios to reach goals

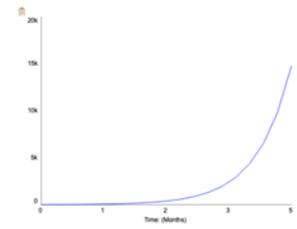
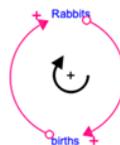
“Applying systems thinking principles and tools enables you to achieve better results with fewer resources in more lasting ways”
 Systems Thinking For Social Change



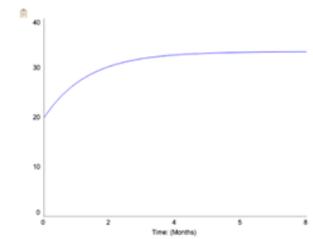
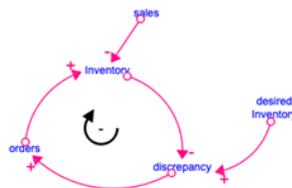
SDM: Method

**POSITIVE FEEDBACK LOOP:
 EXPONENTIAL GROWTH**

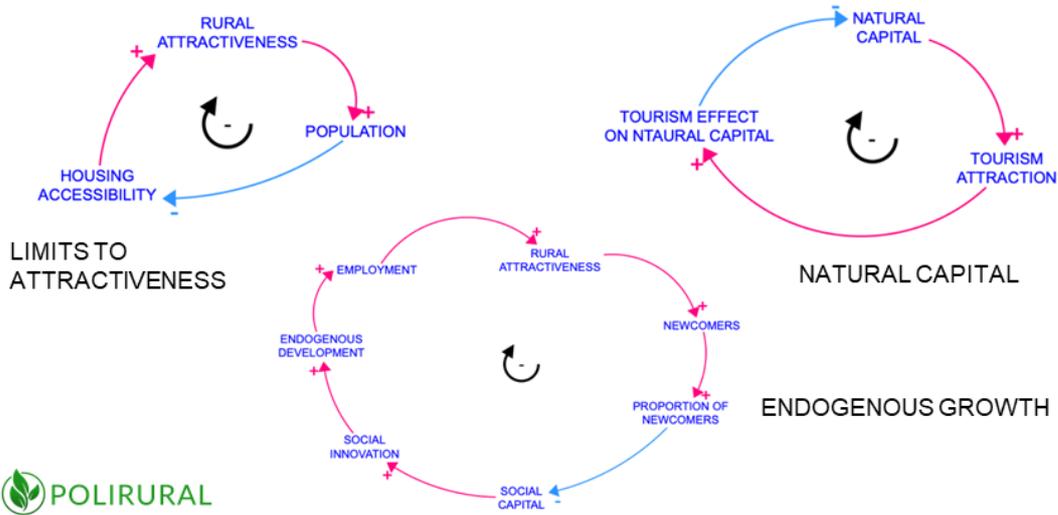
TRENDS → BEHAVIOUR
 RELATIONS → STRUCTURE



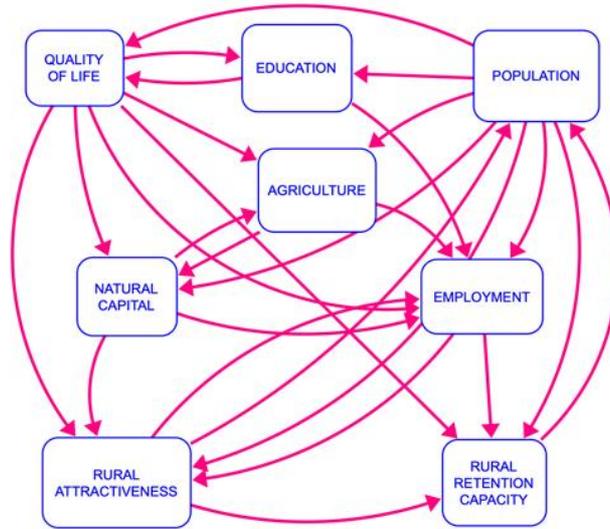
**NEGATIVE FEEDBACK LOOP:
 GOAL SEEKING**



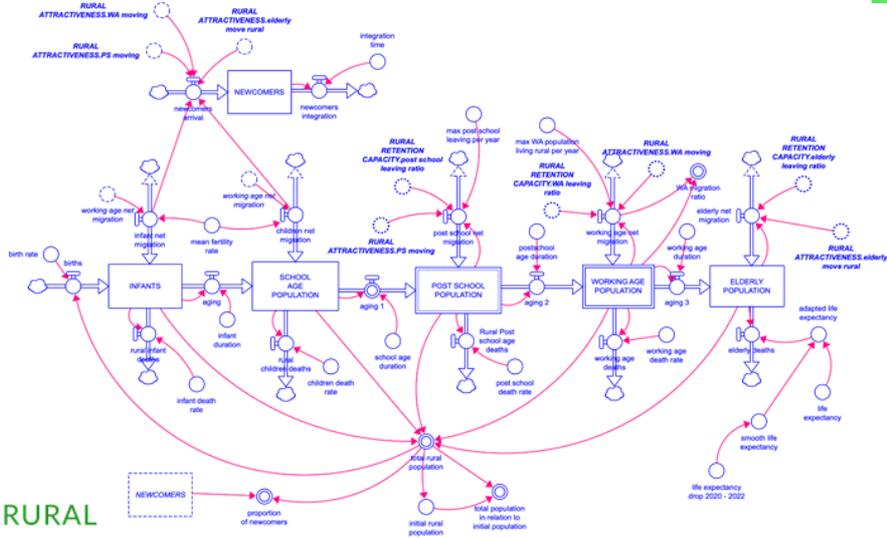
Main Loops Considered



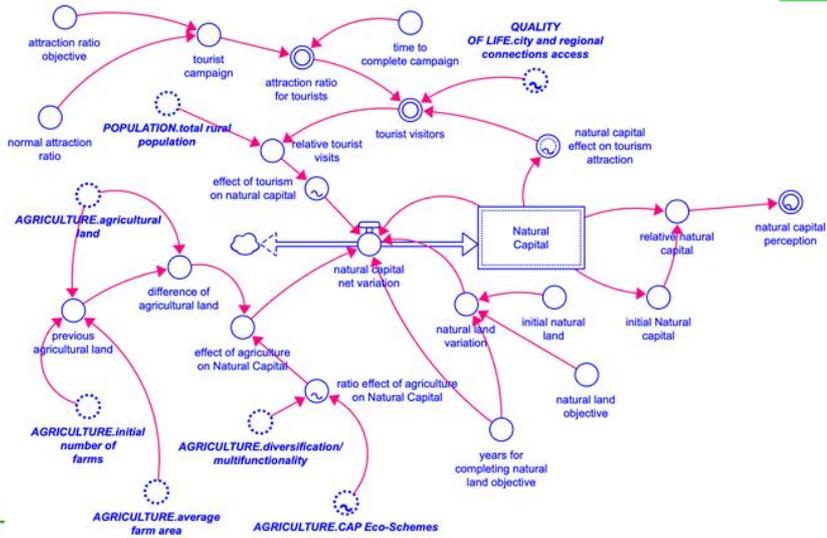
The model



The model



The model



Next step

How can we reduce complexity and make the model more user-friendly?



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System Dynamic Web-Tool

Runar Bergheim, Asplan Viak



Making system dynamics available to non-experts

If we're able to build sensible models, System Dynamics is useful

System Dynamics remains an expert discipline

Policy makers cannot presently apply system dynamics without:

- an expert at hand (or being an expert themselves)
- specialized software
- significant costs

The experiment Polirural has done is: what if we made built generic models that could be made available to policy and decision makers?



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Overcoming the cost barrier

Assumption: Building models requires an expert

- Models can be built in commercial tools like Stella Architect
- Or models can be built in more flexibly licensed tools like Vensim
- But models don't have to change ALL the time

Objective: Running a ready-built model shouldn't cost anything or require extensive training in SDM

- Commercial players offer free hosting/execution of "public" models
- Models may contain sensitive data and should not necessarily be exposed to *all and sundry*



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Overcoming the "language barrier"

System Dynamics comes with its own terminology and visual language

- Stock-flow charts, valves, auxiliary variables, stocks etc.
- Enough to nurse forth a moderate headache

Polirural has therefore tried to come up with an alternate user interface that "reduces" the complexity of traditional system dynamics output while allowing end-users to simulate the outcome of any number of scenarios.

Outlook and future potential

The models we've built are extensible and can form the basis for additional models anywhere

The software we've built is generic and can be applied not only to our model - but to any system dynamics model

As simulation and system dynamics grows into prominence as a decision support tool, our software will enable seamless integration of SD-models with existing platforms such as INSPIRE geoportals

Conversion and server code will be released under permissive Open Source licenses

The licensing of the Polirural sample client will be determined presently



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SD for the Central Greece region

Nicoleta Darra, Agricultural University of Athens



Central Greece - Mission

Mission

Introduction of new interventions focused on **improvement of training opportunities and digital & innovation skills, especially in the agri-food sector** (e.g. smart farming, ICT skills) and development of collaborations between regional/national actors to **effectively exploit the many key regional strengths such as tourism.**



Central Greece - SDM

Long time series of statistical data were deployed:

- Population
- Employment
- Education
- Agriculture
- Natural Capital
- Quality of life

		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
6	Agriculture, forestry and fishing (thou From 15 to 64 years	36100	31200	34700	39600	42600	37800	39900	38000	38100	35100	
7	Construction (thousands) From 15 to 64 years	15600	11100	7400	6000	8000	7200	8600	7300	6300	7000	
8	Industry (except construction) From 15 to 64 years	37200	33300	33500	33100	36400	32200	30400	33600	40200	37800	
9	INDUSTRY	52700	44400	40900	39000	42400	39600	37000	40900	46500	44600	
10	Information and communication (tho From 15 to 64 years											1400
11	Professional, scientific and technical - From 15 to 64 years		8500	7800	5600	6700	7700	8300	9000	11300	9900	6500
12	Financial and insurance activities (thc From 15 to 64 years		2100	2000	2800	2500	2300	2300	1800	2600	2800	1500
13	Public administration, defence, educ From 15 to 64 years		35200	26500	30500	27800	28200	29300	33100	33800	33200	36800
14	Arts, entertainment and recreation; c From 15 to 64 years		7100	5600	5100	3800	5400	6100	6100	5300	3800	4700
15	Wholesale and retail trade, transport From 15 to 64 years		50900	47300	47700	50300	47500	51500	56900	54800	56800	53500



Central Greece - Policy scenarios

1. Development of the tourism sector

Vocational training
Percentage of population finishing school and continuing to vocational training

Broadband coverage objective
Percentage of population to be covered by broadband after broadband campaign

Time to complete broadband campaign
Time to complete broadband campaign in years after 2023

Attraction ratio objective for tourists
Percentage of tourists coming to Central Greece yearly as a fraction of total potential*

The total potential is a calculation based on the natural capital of the region.

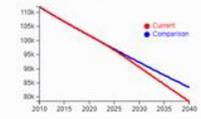
Time to complete tourism campaign

Model results

The current scenario is displayed with a red line, the compare scenario is displayed with a blue line

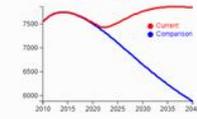
[Run model](#) [Compare to default *](#) [Download to Excel](#) [Start Y-axis at zero](#)

Unskilled workers



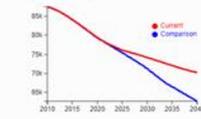
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Vocational training students



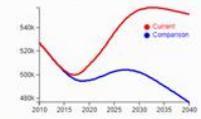
[Download](#)

Agricultural jobs



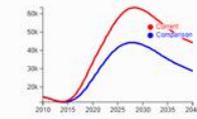
[Download](#)

Total rural population



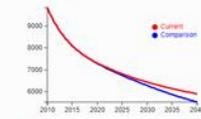
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Newcomers



[Download](#)

University students



[Download](#)



Central Greece - Policy scenarios

1. Development of the tourism sector

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Percentage of population finishing school and continuing to vocational training

Broadband coverage objective
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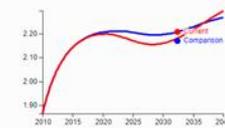
Time to complete broadband campaign
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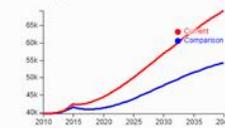
Time to complete tourism campaign

Social innovation



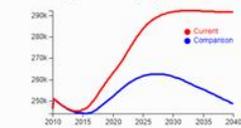
[Download](#)

Service jobs



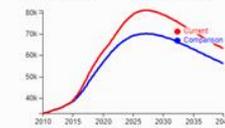
[Download](#)

Total regional employment



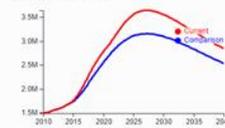
[Download](#)

Total jobs in the tourism sector



[Download](#)

Tourist visitors



[Download](#)



Central Greece - Policy scenarios

2. Accelerate agricultural digitilisation

Vocational training

Percentage of population finishing school and continuing to vocational training

Broadband coverage objective

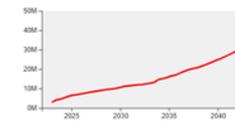
Percentage of population to be covered by broadband after broadband campaign

Time to complete broadband campaign

Time to complete broadband campaign in years after 2023

Investment into entrepreneurship and innovation

Direct investments in € made into entrepreneurship targeted at companies and individuals

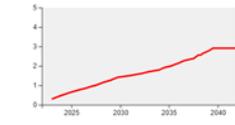


[Use template *](#)

[Clear](#)

AKIS improvement

A number between 0 and 5 expresses how AKIS improves entrepreneurship and innovation over time

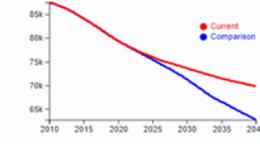


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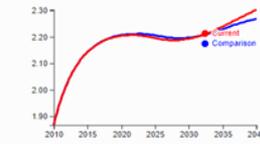
0 = zero improvement from AKIS developments, 5 = maximum improvements from AKIS developments

Agricultural jobs



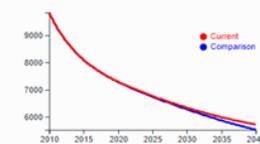
[Download](#)

Social innovation



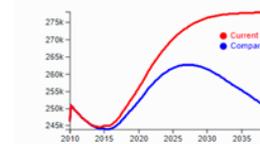
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University students



[Download](#)

Total regional employment



[Download](#)



Central Greece - Policy scenarios

2. Accelerate agricultural digitilisation

Vocational training

Percentage of population finishing school and continuing to vocational training

Broadband coverage objective

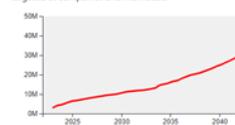
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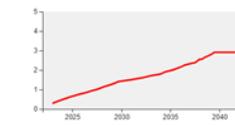


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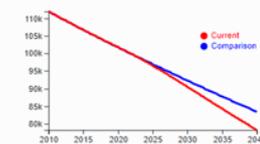


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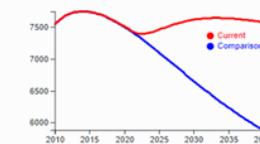
0 = zero improvement from AKIS developments, 5 = maximum improvements from AKIS developments

Unskilled workers



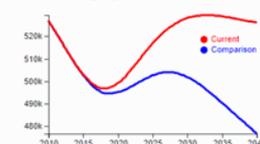
[Download](#)

Vocational training students



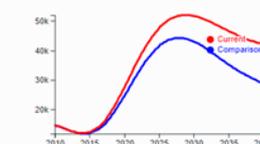
[Download](#)

Total rural population



[Download](#)

Newcomers



[Download](#)



Central Greece - Impact

SDM workshop

- Meetings with regional authorities (2 people)
- Meetings with stakeholders from academia (10 people)
- Event with stakeholders from policy and entrepreneurship covered by local press (20 people)

Impact

- Better understanding of changes
- Predict future development
- Design Interventions

Experts and policy makers will be able to identify what trends will affect the sustainable regional development in the fields of interest such as agriculture and tourism



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Central Greece - Recommendations

SDM model

- Additional statistical data provide the potential to expand the model in other areas of interest
- Raise awareness regarding this tool, through webinars and dissemination activities
- The selection method for input and display indicators could be adjusted to the specificities of each area.

It provides significant potential to assist in Rural Development planning and get insights in how certain policy changes can influence the region

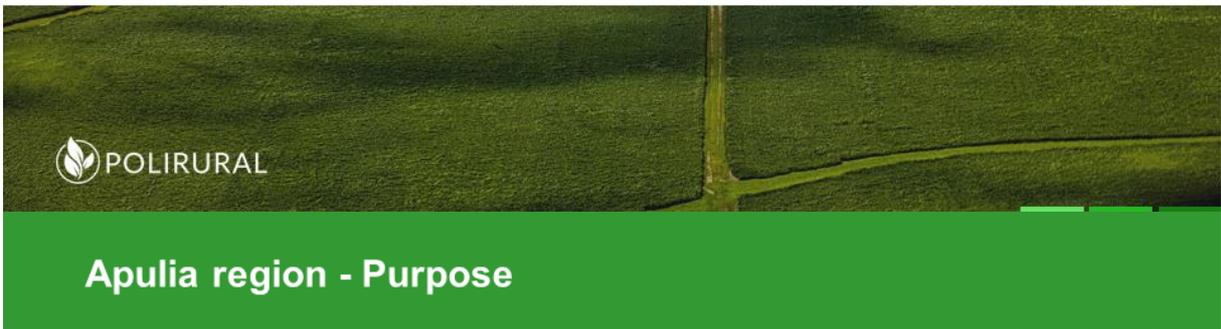


30



SD for the Apulia region

Incoronata Langianese, University of Foggia

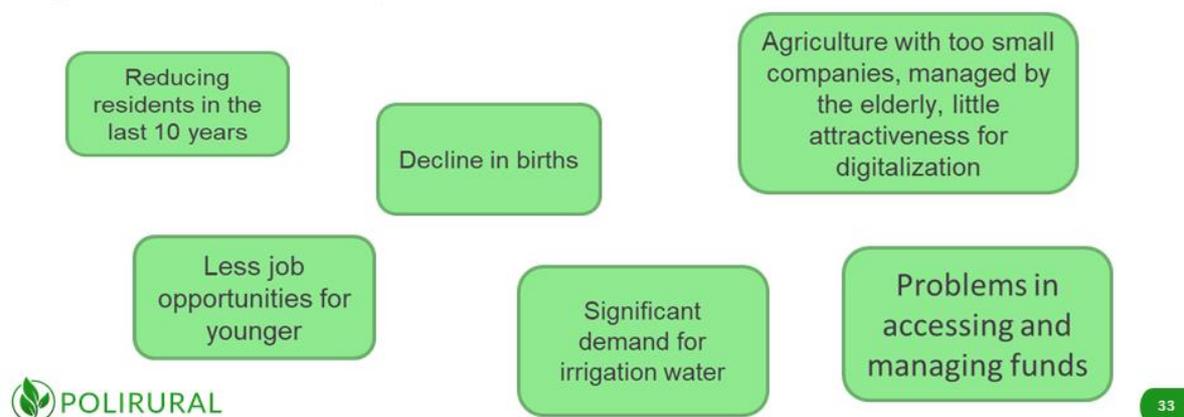


Purpose

1. to assist the regional and local policymakers in the definition of appropriate lines operating more performing to implement EU and national strategic planning in Apulia with the creation of the Strategic Plan;
2. **to promote the digitization of the agricultural sector in the rural areas of Puglia by reinforcing the links with research and innovation and encouraging learning and professional training of existing and new farmers, thanks to constant interaction between technology experts, decision-makers, and users, and between different sectors of administration.**

Apulia region - Data

Collecting statistical data about: Population, Employment, Education, Agriculture, Natural Capital and Quality of Life.



Apulia region – Policy scenario

The digitalization of the agricultural sector

Control parameters – policy scenario	Display parameters
1. Remote workers potential	1. Total service job
2. University education <i>Percentage of students starting university as a fraction of students completing «school»</i>	2. Agriculture Jobs
3. Vocational training <i>Percentage of students starting training as a fraction of students completing «school»</i>	3. Total Primary Sector
	4. Jobs per tourism
	5. Total employment
	6. Total Regional Employment
	7. Total Rural Population
	8. Unskilled workers

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Apulia region – Policy scenario

Polirural System Dynamics Tool

Apulia SD-model

Show wizard Hide help Load defaults

Remote workers

Vocational Training
Percentage of students starting training as a fraction of students completing «school»

University Studentes
Percentage of students starting university as a fraction of students completinf «school»

Total services job

Download

Agriculture Jobs

Download

Total Primary Sector

Download

Jobs per tourism

Download

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Apulia region – Policy scenario

Polirural System Dynamics Tool

Apulia SD-model

Show wizard Hide help Load defaults

Remote workers

Vocational Training
Percentage of students starting training as a fraction of students completing «school»

University Studentes
Percentage of students starting university as a fraction of students completinf «school»

Total employment

Download

Total Regional Employment

Download

Total Rural Population

Download

Unskilled workers

Download

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Apulia region – Impact

SDT meetings:

- SDT training
- Stakeholders: academia, political representatives, LAG representatives, farmers, and agronomists.

Impact:

This software will not allow us to predict an exact result, but it will enable us to understand which parameters have the most significant influence on modifying the output based on the model used:

- Help policymakers in future decisions



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Apulia region – Feedback & Recommendations

Feedback:

- Lack of Apulia data
- Appreciated the free access to the SD
- Initial difficulties overcome
- Long-term training
- Beneficial in planning

Recommendations:

- Dissemination
- Simple instructions
- Continue to invest in improving SDT



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Time for...



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Thanks for your attention!

Register for the next webinar: **19 July @ 14:30 CET**

Mission-Oriented Regional Development: Opportunities & Challenges



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