Finanziato dall'Unione europea NextGenerationEU

Ministero dell'Università e della Ricerca

Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA

Università degli studi "G. d'Annunzio"

Consiglio Nazionale delle Ricerche

crea Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria

ECOWHEATALY

Evaluation of policies for enhancing sustainable wheat production in Italy

PRIN MUR 2022

Missione 4 Istruzione e Ricerca

Edmondo Di Giuseppe

Sara Quaresima

ECOWHEATALY

Programma dell'incontro del 30 Gennaio 2025

Agenda

10.00 - 10.15 Scadenze amministrative e rendicontazione (Sara Quaresima - CNR)

10.15 - 10.30 Descrizione degli obiettivi raggiunti e prossime scadenze. Aggiornamento su comunicazione e disseminazione (Edmondo Di Giuseppe - CNR)

10.30 - 10.50 Politiche agricole per il grano ed Ecoschemi (Ilaria Zappitelli - CNR)

10.50 - 11.10 Risultati della Cluster Analysis (Alessandro Ceccarelli - UNICH; Arianna Di Paola - CNR)

11.10 - 11.30 Comfort break

11.30 - 11.50 Implementazione ABM (Gianfranco Giulioni - UNICH)

11.50 - 12.10 Progettazione della GUI ed aggiornamenti sul sito web (Marco Simonetti, Alessandro Manna - CNR)

12.10 - 12.50 Discussione (Massimiliano Pasqui, Piero Toscano, Simona Tarra, Leandro Rocchi - CNR; Antonella Del Signore, Antonio Gattone - UNICH; Stanislao Esposito - CREA)

12.50 - 13.00 Programmazione attività successive (Gianfranco Giulioni - UNICH; Edmondo Di Giuseppe - CNR)

link to the meeting

ID: 348929512406

PASSCODE: ez9Pp6CC

Financial aspects

Financial aspects: costs and funding

Starting from 28/09/2023 — **Duration: 24 months** — **it can be extended to 3 months ahead** — **27/12/2025**

Project number:
202288L9YN

CUP master:
D53D23006260006

MUR Funding:
193 602,00 €

Co-funding :
90 200,00 €

Total grant:
283 802,00 €

	MUR Funding	Co-funding	Total Grant
University "G. d'Annunzio" CHIETI-PESCARA Principal Investigator : **Gianfranco Giulioni** CUP D53D23006260006	113 160,00 €	49 200,00 €	162 360,00 €
The National Research Council of Italy Associated Investigator : **Edmondo Di Giuseppe** CUP B53D23009770006	80 442000 €	41 000,00 €	121 442,00 €

Financial aspects: Research grants

		2023				2024												2025											
		S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
UDA	A.Ceccarelli 01/05/24 12 months																												
CNR	I.Zappitelli 03/06/24 12 months																												

Project duration in months Project extension Fellowship term in months

Financial aspects: Research grants

		2023				2024												2025											
		S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
UDA	A.Ceccarelli 01/05/24 12 months																												
CNR	I.Zappitelli 03/06/24 12 months																												
UDA	01/03/25 12 months																												

Project duration in months | Project extension | Fellowship term in months | New Fellowship term in months

Financial aspects: Research grants

Prior to the completion of the 12-month period, every research fellow is required to submit a **final report** detailing their **research activities**

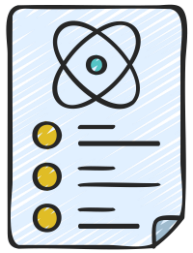
extension of the research grant contract

Financial aspects: a final report

Starting from 28/09/2023 — **Duration: 24 months** — **it can be extended to 3 months ahead** — **27/12/2025**

Reporting documentation:

- ✓ Final technical and scientific report outlining the work carried out and outcomes obtained
- ✓ Financial statement



No interim financial reports or scientific progress reports are required

A final expenditure report must be submitted within 60 days

Financial aspects: a final report

Starting from 28/09/2023

Duration: 24 months

it can be extended to 3 months ahead

27/12/2025

Finanziato dall'Unione europea NextGenerationEU

MUR

Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA

Consiglio Nazionale delle Ricerche

TIME-SHEET

TIMESHEET PER RENDICONTAZIONE PERSONALE		Mese:	Giugno	Anno:	2024

Titolo del progetto:	Evaluation of policies for enhancing sustainable wheat production in Italy - ECOWHEATALY
CUP progetto:	B53D23009770006 ECOWHEATALY
Codice del progetto:	202288L9YN
Denominazione soggetto:	Consiglio Nazionale delle Ricerche_Istituto per la Bioeconomia_sede di Roma Via dei Taurini 19
Figura professionale	

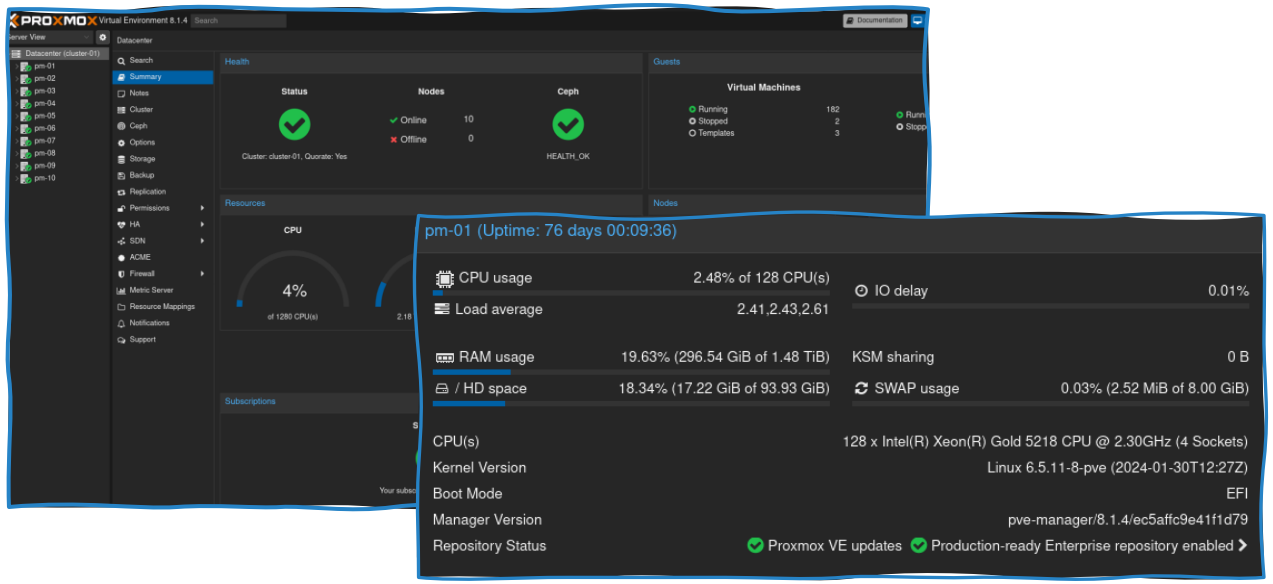
Nome:	**Edmondo**	Cognome:	**Di Giuseppe**
Codice Fiscale:	**DGSDND71L09H501K**	Ore totali rendicontate sul progetto per il mese in oggetto:	**10:00:00**

	sab	dom	lun	mar	mer	gio	ven	sab	dom	lun	mar	mer	gio	ven	sab	dom	lun	mar	mer	gio	ven	sab	dom	lun	mar	mer	gio	ven	sab	dom		
DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		Totale
Riferimento																																
Attività svolta sul progetto	00:00	00:00						00:00	00:00	00:00	02:00	03:00			00:00	00:00	01:00	02:00	02:00			00:00	00:00						00:00	00:00		10:00:00
Attività svolte su altri progetti MUR																																
CUP 1: B53D23026590001 NEUTRALISE	00:00	00:00	03:00	03:00	04:00			00:00	00:00						00:00	00:00						00:00	00:00	03:00	03:00	04:00			00:00	00:00		20:00:00
(Cup e acronimo progetto 2)	00:00	00:00						00:00	00:00						00:00	00:00						00:00	00:00						00:00	00:00		0:00:00
(Cup e acronimo progetto 3)	00:00	00:00						00:00	00:00						00:00	00:00						00:00	00:00						00:00	00:00		0:00:00
Attività svolte su altri progetti:	00:00	00:00						00:00	00:00						00:00	00:00						00:00	00:00						00:00	00:00		0:00:00
Attività ordinaria	00:00	00:00	04:12	04:12	03:12	07:12	07:12	00:00	00:00	07:12	05:12	04:12		07:12	00:00	00:00	06:12	05:12	05:12		07:12	00:00	00:00	04:12	04:12	03:12	07:12	07:12	00:00	00:00		99:36:00
Altro (Malattia, Ferie, Permessi)	00:00	00:00						00:00	00:00				07:12		00:00	00:00				07:12		00:00	00:00						00:00	00:00		14:24:00
Totale ore	0:00:00	0:00:00	7:12:00	7:12:00	7:12:00	7:12:00	7:12:00	0:00:00	0:00:00	7:12:00	7:12:00	7:12:00	7:12:00	7:12:00	0:00:00	0:00:00	7:12:00	7:12:00	7:12:00	7:12:00	7:12:00	0:00:00	0:00:00	7:12:00	7:12:00	7:12:00	7:12:00	7:12:00	0:00:00	0:00:00		144:00:00

ICT Facilities

CNR Centro Servizi

Owing to the resources offered by the **CNR URS office,** we are presently utilizing a **virtual machine** to execute computational model for data processing, and the **project's website** is also hosted on the same machine



Wheat production process coding

```
import bw2data as bd
#create a new dataset
ecowheatalydb = bd.Database("ecowheataly")
ecowheatalydb.register()
#create a new process called wheat_prod
wheat_prod=ecowheatalydb.new_activity(code='EcoWheataly production',
  name="EcoWheataly production",unit = "ha")
#tell that 900 units of work of ag. tractor is used
wheat_prod.new_exchange(input=('usda_item','tractor_use'),amount=900,
   unit="megajoule",type='technosphere').save()
#tell that 50 kg Nitrogen is used
wheat_prod.new_exchange(input=('bentrup_item','application of N fertilizer'),
   amount=50,unit="kilogram",type='technosphere').save()
wheat_prod.save()
```

Consortium HPC4DR

(High Performance Computing for Disaster Resilience)

12 consortium partners:

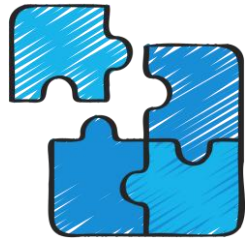
CNR, GSSI, INAF, INFN, INGV,
University of L'Aquila
University D'Annunzio - Chieti Pescara
University of Molise
University of Camerino
University of Macerata
University Politecnica delle Marche
University of Urbino

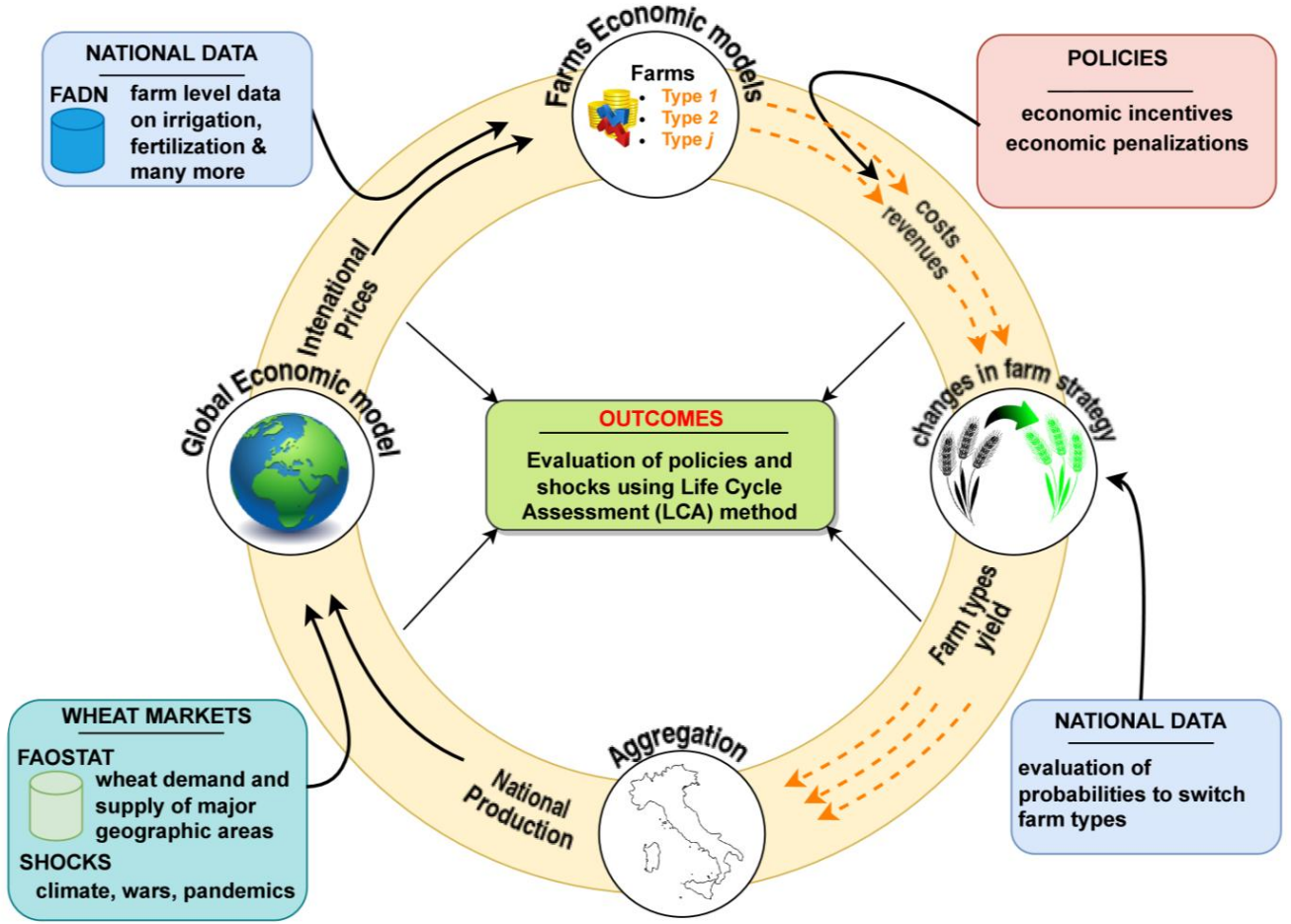
The consortium will have access to a high-performance computing infrastructure made available by the INFN Gran Sasso National Laboratories. This infrastructure includes 400 computers donated by CINECA, a leading Italian computing center, along with additional storage and network equipment funded by the Gran Sasso Labs

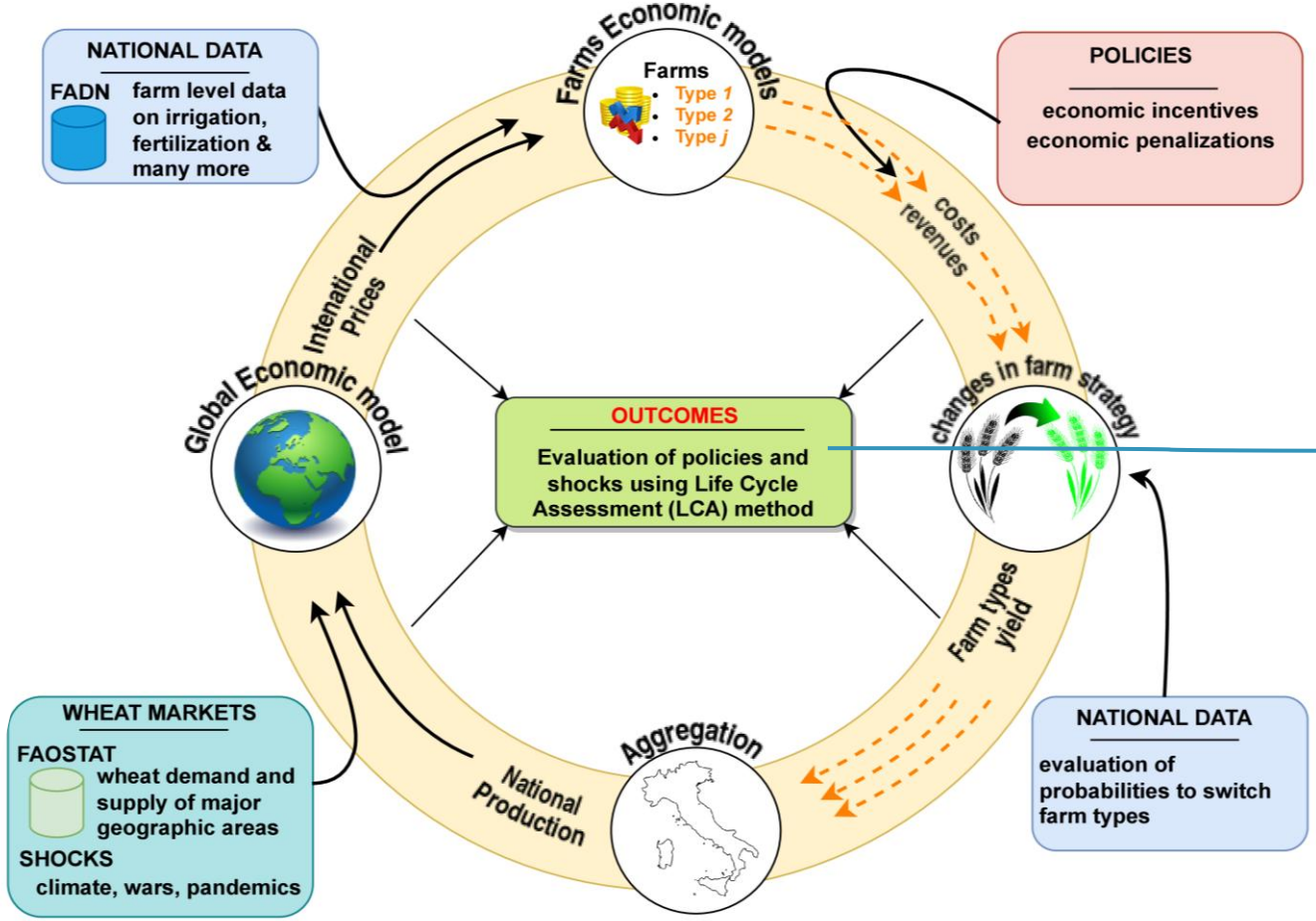
The PI Gianfranco Giulioni has asked to use this computer resource for about a year

DURATA DEL PROGETTO	Termine del progetto : 28/09/2025 possibile proroga di 3 mesi.
DATABASE DISPONIBILI PER IL PROGETTO	Banca dati RICA italia https://bancadatirica.crea.gov.it/default.aspx
RISORSE DI CALCOLO NECESSARIE E DURATA DI UTILIZZO DELL'INFRASTRUTTURA	3-5 nodi Durata: circa 1 anno (alcune ore a settimana)
SOFTWARE/HARDWARE NECESSARIO	Mpi4py Repast for python (https://repast.github.io/repast4py.site)

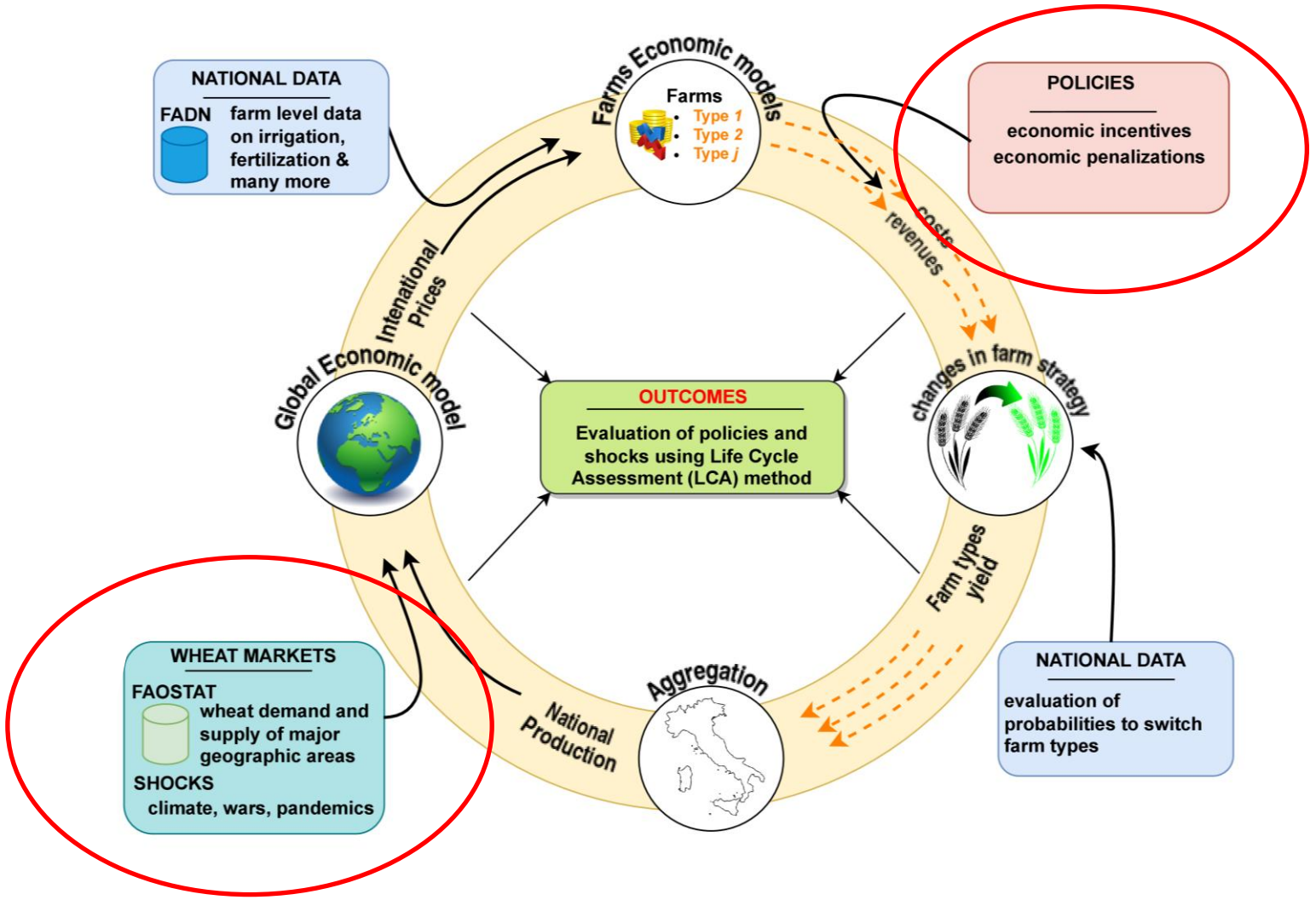
Tasks - State of the work




NATIONAL DATA
FADN
farm level data on irrigation, fertilization & many more
Farms Economic models
Farms
Type 1
Type 2
Type j
POLICIES
economic incentives
economic penalizations
costs
revenues
changes in farm strategy
Farm types yield
NATIONAL DATA
evaluation of probabilities to switch farm types
Aggregation
National Production
WHEAT MARKETS
FAOSTAT
wheat demand and supply of major geographic areas
SHOCKS
climate, wars, pandemics
Global Economic model
Intenational Prices
OUTCOMES
Evaluation of policies and shocks using Life Cycle Assessment (LCA) method



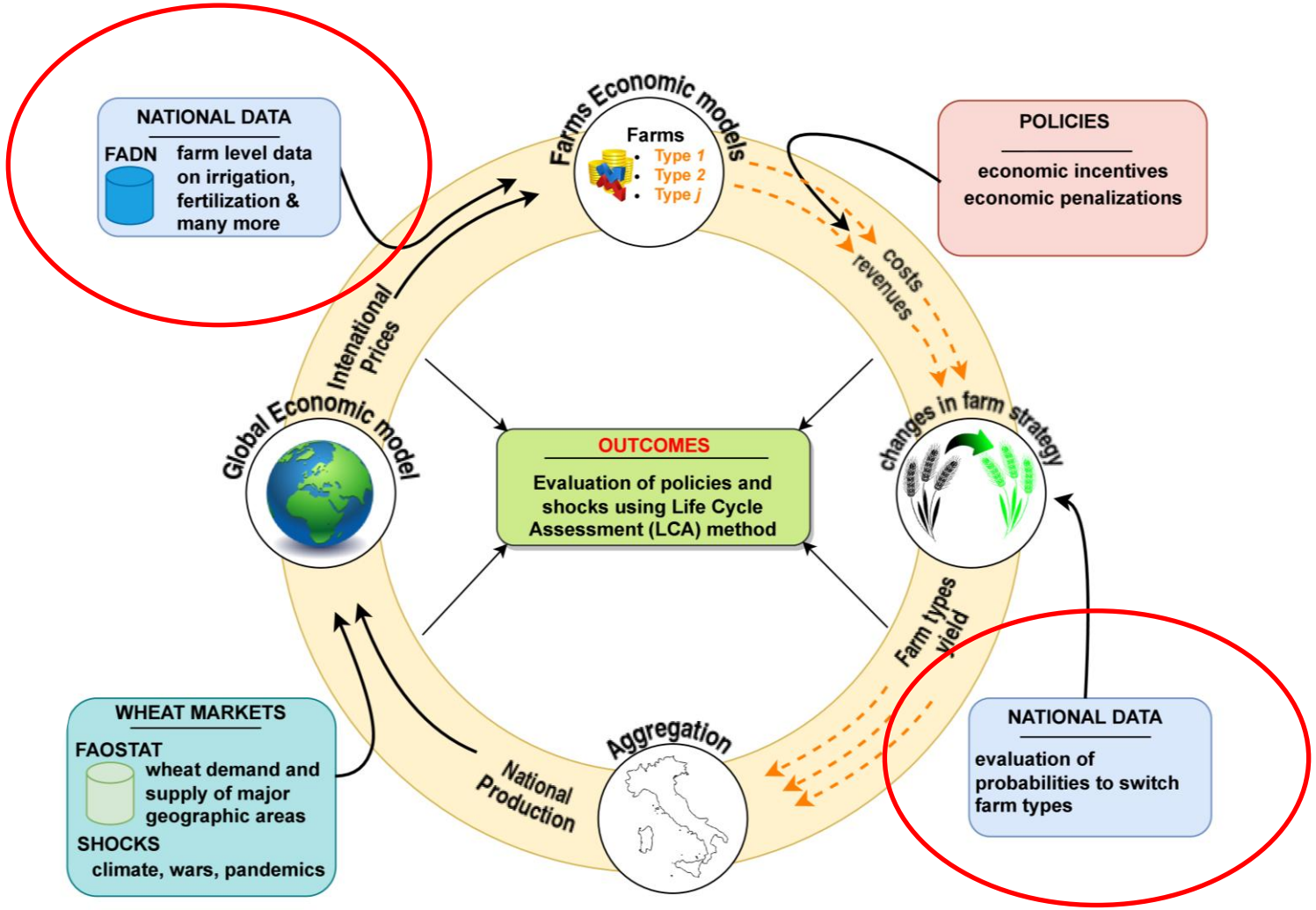
- **Task 1.2** Life Cycle Assessment (**LCA**)
  - set up of the methodology for the wheat production system
  - set up **Brightway** software



Ilaria's presentation

➢Task 1.1

- Gathering information and data about the **Italian wheat production system** (IWS)
- the list of national and EU regulations in terms of external inputs usually used



Alessandro's presentation

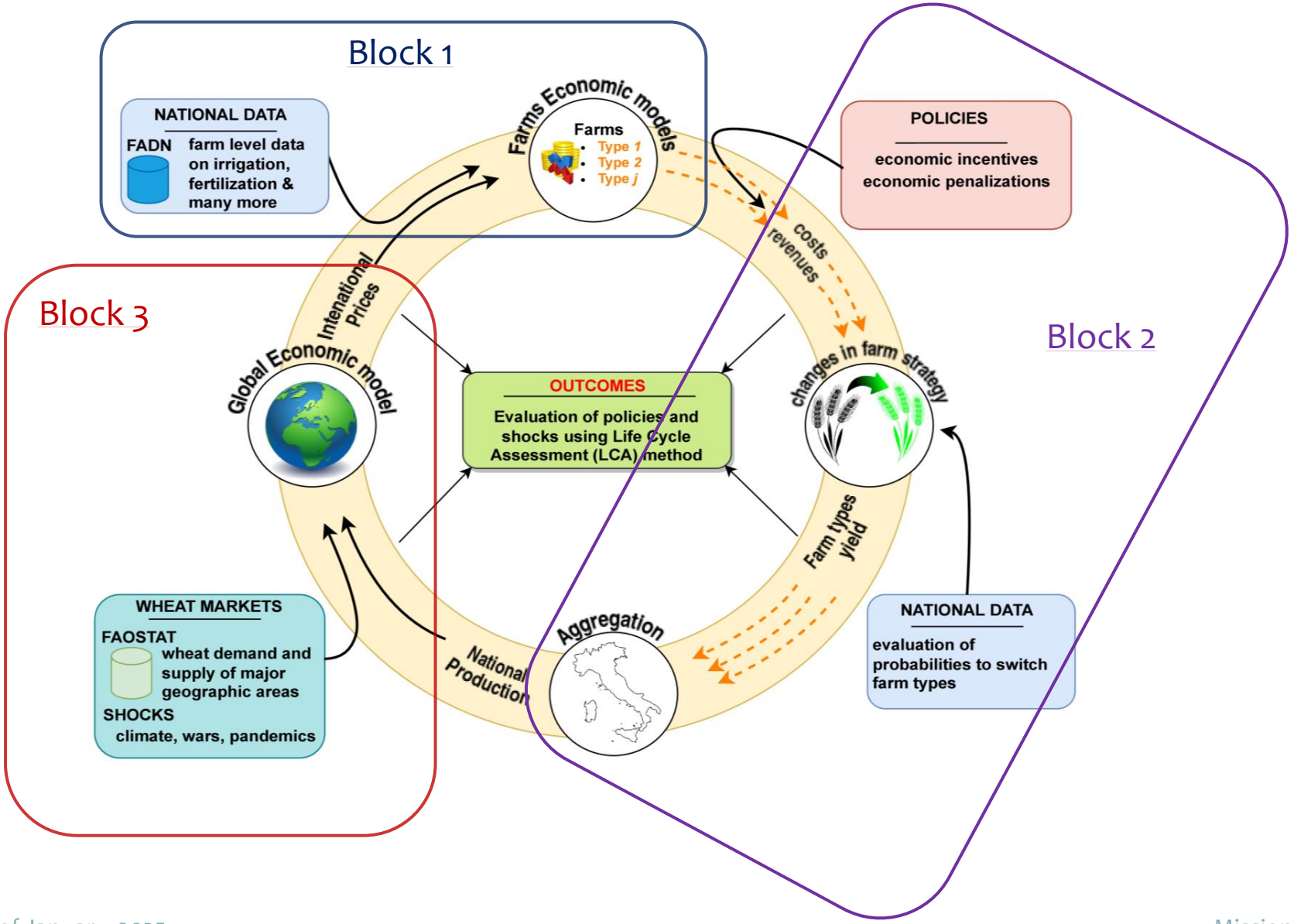
➢**Task 1.1**

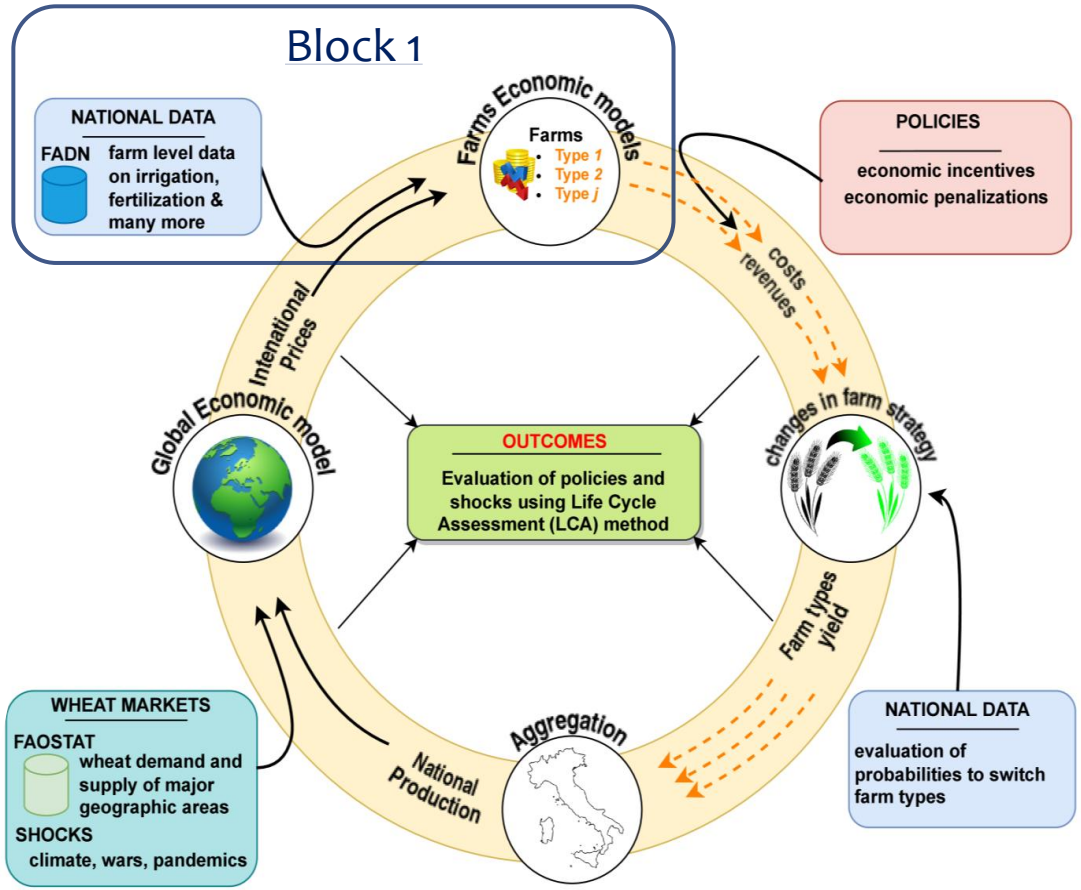
- Classification of farms according to the **care they take for the environmental and natural resources**

10.30 - 10.50 Politiche agricole per il grano ed Ecoschemi (Ilaria Zappitelli - CNR)

10.50 - 11.10 Risultati della Cluster Analysis (Alessandro Ceccarelli - UNICH; Arianna Di Paola - CNR)

Comfort break

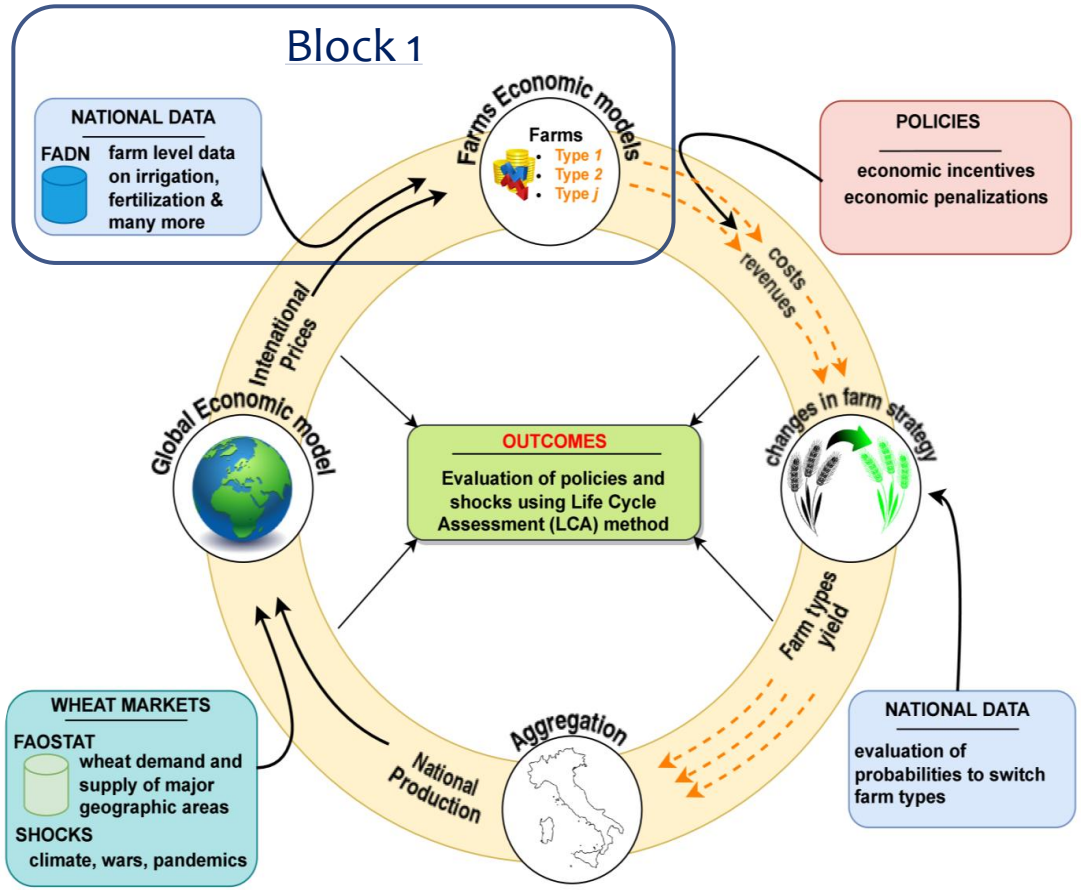

Block 1
NATIONAL DATA
FADN
farm level data on irrigation, fertilization & many more
Farms Economic models
Farms
Type 1
Type 2
Type j
POLICIES
economic incentives
economic penalizations
costs
revenues
Block 3
Block 2
Intenational Prices
Global Economic model
OUTCOMES
Evaluation of policies and shocks using Life Cycle Assessment (LCA) method
changes in farm strategy
Farm types yield
WHEAT MARKETS
FAOSTAT
wheat demand and supply of major geographic areas
SHOCKS
climate, wars, pandemics
National Production
Aggregation
NATIONAL DATA
evaluation of probabilities to switch farm types



- **Task 2.2**
  - design and implementation of an **agent-based model** for the IWS

Deliverable (D1)

January 2025

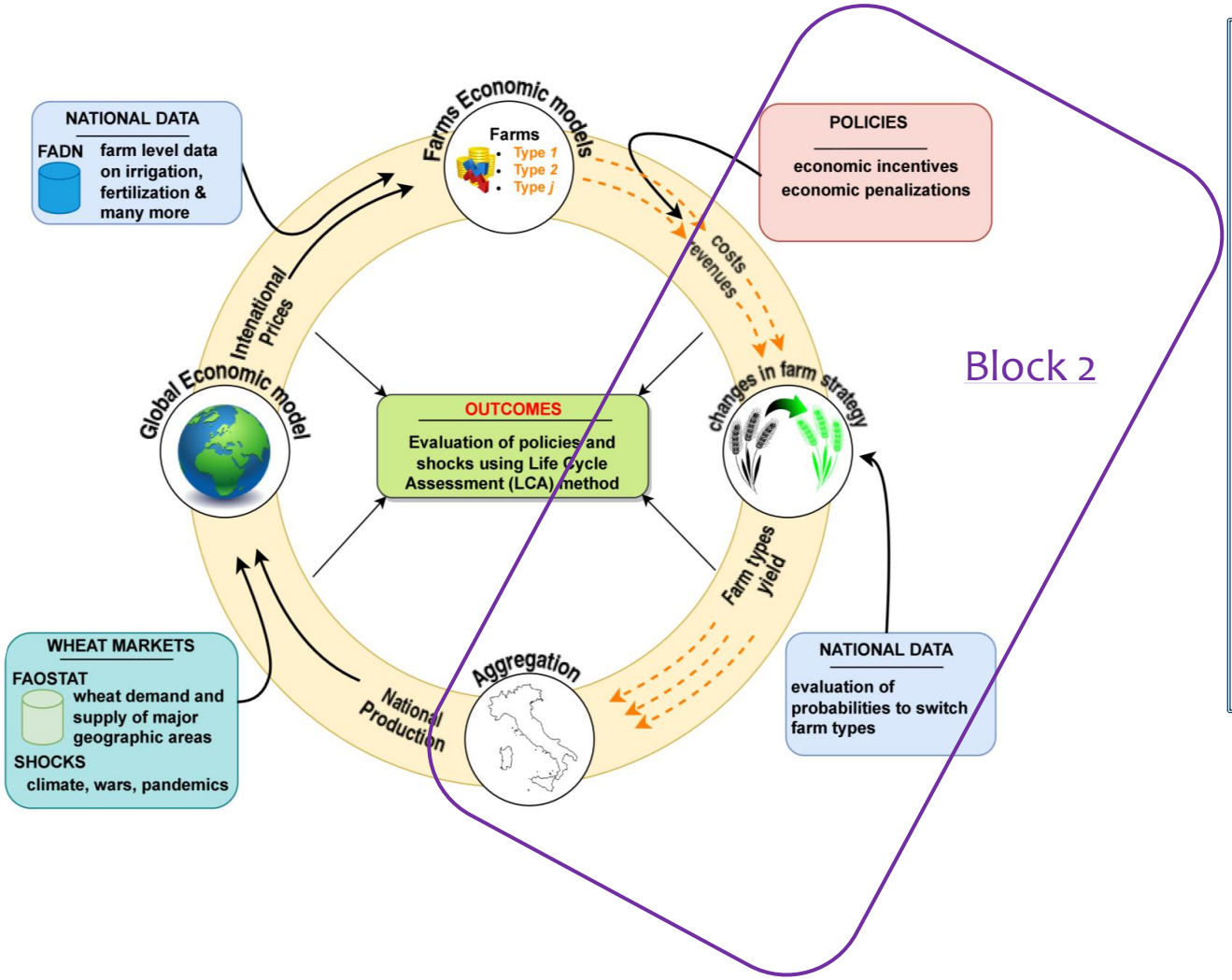


- **Task 3.2**
  - improve farmers' awareness of sustainability
  - **GUI 1:**

    farm economic model + LCA

Deliverable (D2)

April 2025



Block 2

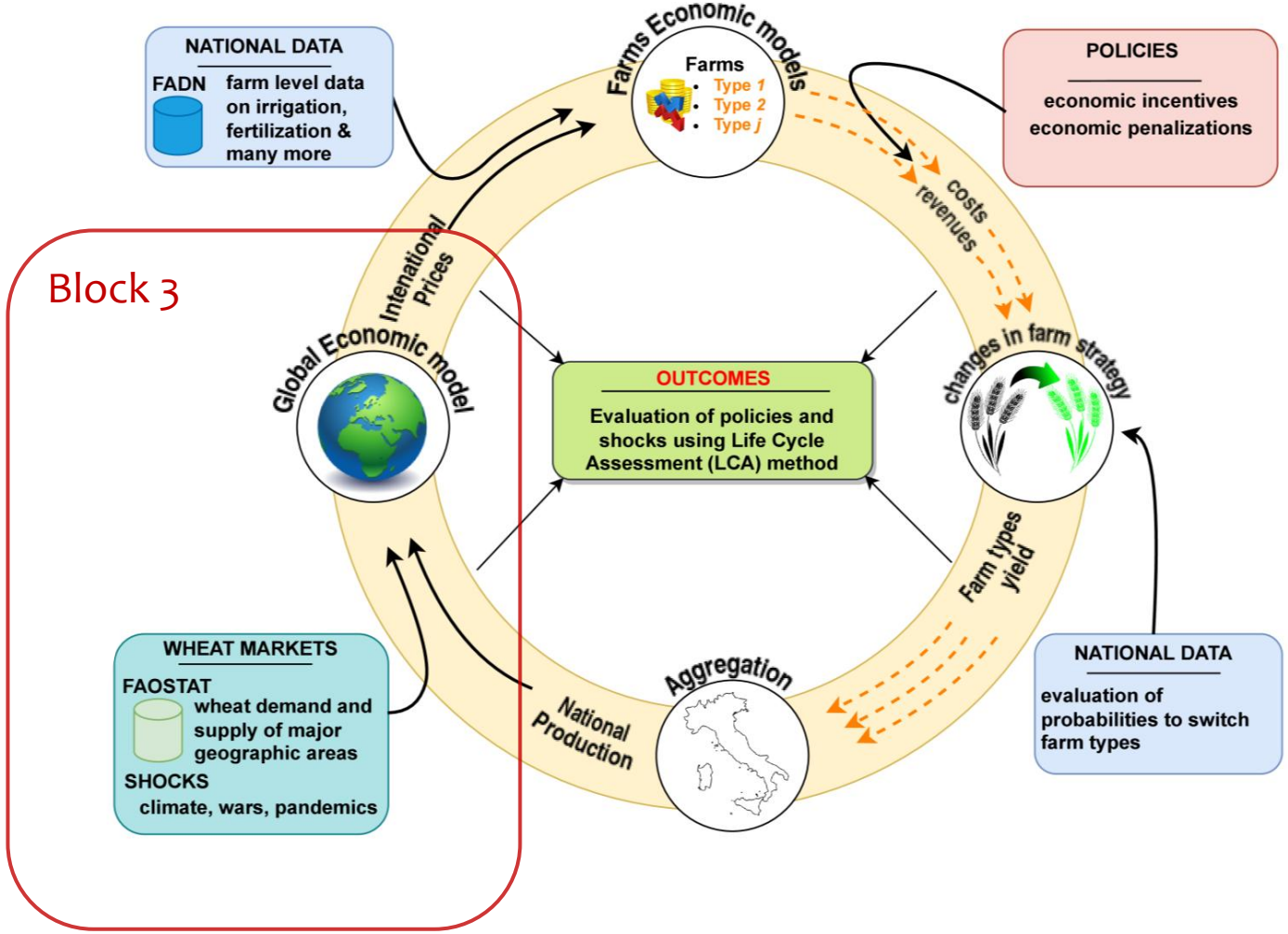
- **Task 3.2**
  - improve policy makers' awareness of sustainability
  - **GUI 2:**

  [green policies + farm economic model + LCA] * ~320000 + aggregation =

  Policy impact at the national scale

Deliverable (D2)

June 2025



- **Task 2.3**
  - Global and Italian model integration

Task report (I23)

March 2025

11.30 - 11.50 Implementazione ABM (Gianfranco Giulioni - UNICH)

11.50 - 12.10 Progettazione della GUI ed aggiornamenti sul sito web (Marco Simonetti, Alessandro Manna - CNR)

EGU General Assembly 2024

EGU24-19756, updated on 20 Mar 2024
https://doi.org/10.5194/egusphere-egu24-19756
EGU General Assembly 2024
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Towards Sustainable Agriculture: Classifying the Environmental Impact of Italian Wheat Farming

Gianfranco Giulioni[1], Concetta Cardillo[2], Antonella Del Signore[1], Edmondo Di Giuseppe[3], **Arianna Di Paola**[3], Antonio Gattone[1], Massimiliano Pasqui[3], Sara Quaresima[3], Marco Simonetti[3], and Piero Toscano[3]

10/05/2024 Talk @Pescara

G. & L. E. R., Vol. X, No. X, 20XX

Antonella Del Signore* - Ilaria Zappitelli‡ - Concetta Cardillo† - Alessandro Ceccarelli* - Edmondo Di Giuseppe‡ - Arianna Di Paola‡ - Antonio Gattone* - Massimiliano Pasqui‡ - Sara Quaresima‡ - Marco Simonetti‡ - Piero Toscano§ - Gianfranco Giulioni*

EVALUATION OF POLICIES FOR ENHANCING SUSTAINABLE WHEAT PRODUCTION IN ITALY

Abstract

Reducing the environmental impact of food production is one of the greatest challenges to achieving sustainability. The ECOWHEATALY project focuses on the role of policies in providing economic incentives for farms to move from less to more sustainable wheat production techniques, both during stable economic times or periods of crisis. In this context, ECOWHEATALY addresses the complex interactions among socio-economic and environmental factors. This paper provides an overview of both the global and Italian frameworks for wheat production and trade. Additionally, it reviews EU and national regulations related to agricultural policies. Finally, the paper presents an example of how life cycle assessment is applied to illustrate the methodology used for evaluating sustainability.

JEL CLASSIFICATION: F18; Q02; Q11; Q18; Q56.

KEYWORDS: Intensification of agriculture; Ecosystems; Green policies; Life Cycle Assessment; Food prices.

05-07/06/2024 Poster presentation @AIAM24

Atti del XXVI Convegno Nazionale di Agrometeorologia

Approcci innovativi a supporto delle produzioni agrarie in un contesto climatico in evoluzione

L'AQUILA, 5 - 7 Giugno 2024

02/12/2024 Poster presentation @Berlin

FREIE UNIVERSITÄT BERLIN

ZIB

Scaling Complexity: High-Performance Computing at the Intersection of Agent-Based Modeling and Complex Networks

THE SOCIETY FOR MODELING & SIMULATION INTERNATIONAL

Task Name	Task #	Year 1	Year 2	Year 3
Identification of farm type and green policies	1.1	I11		
LCA setup	1.2	I12		
Global Economic Model adaptation	2.1	I21		
Modeling Italia wheat system	2.2		D1	
Global and Italian models integration	2.3		I23	
Simulation in tranquil times	3.1		D2	
LCA evaluation in tranquil time	3.2		D2	
Simulations with global shocks	4.1		D3	
LCA evaluation with shocks	4.2		D3	
Project coordination and amministration	5.1	GA	GA	GA
Communication, dissimination and exploitation	5.2	M1	M2	M3

UDA

CNR

UDA + CNR

April 2025

30 January 2025

27 Sept 2025
(project ending)

Finanziato dall'Unione europea NextGenerationEU

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Università degli studi "G. d'Annunzio"

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crea Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria

Thank you for attending

Missione 4
Istruzione e
Ricerca

ECOWHEATALY

Evaluation of policies for enhancing sustainable wheat production in Italy

PRIN MUR 2022