



# A REGENERATIVE BIOECONOMY

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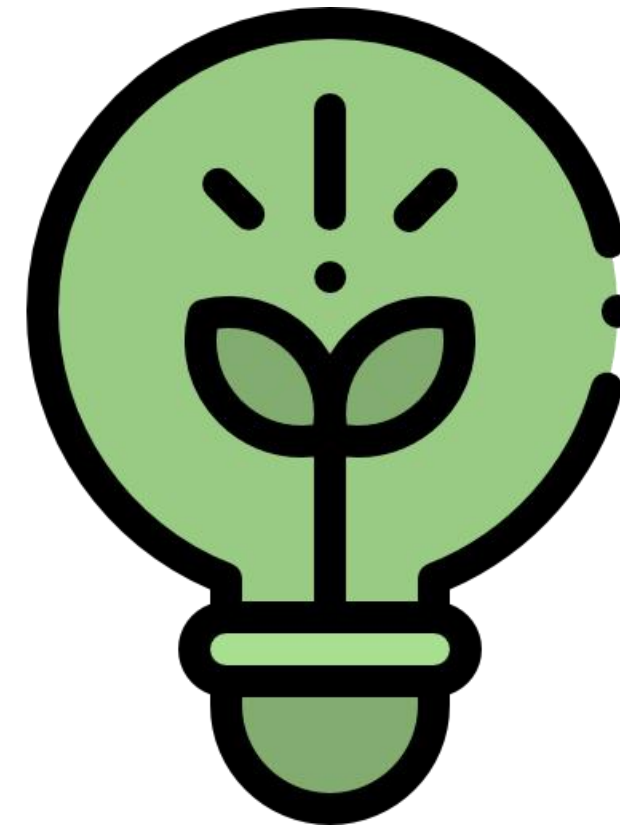
Nov, 6<sup>th</sup> 2019



# WHAT TO DO: A CHANGE OF PARADIGM DEPLOYING CIRCULAR BIOECONOMY



TRANSFORMATIVE  
TECHNOLOGIES



REGENERATIVE  
PROJECTS



CONTRIBUTIVE  
SOCIETY





# SOIL A NON RENEWABLE RESOURCE

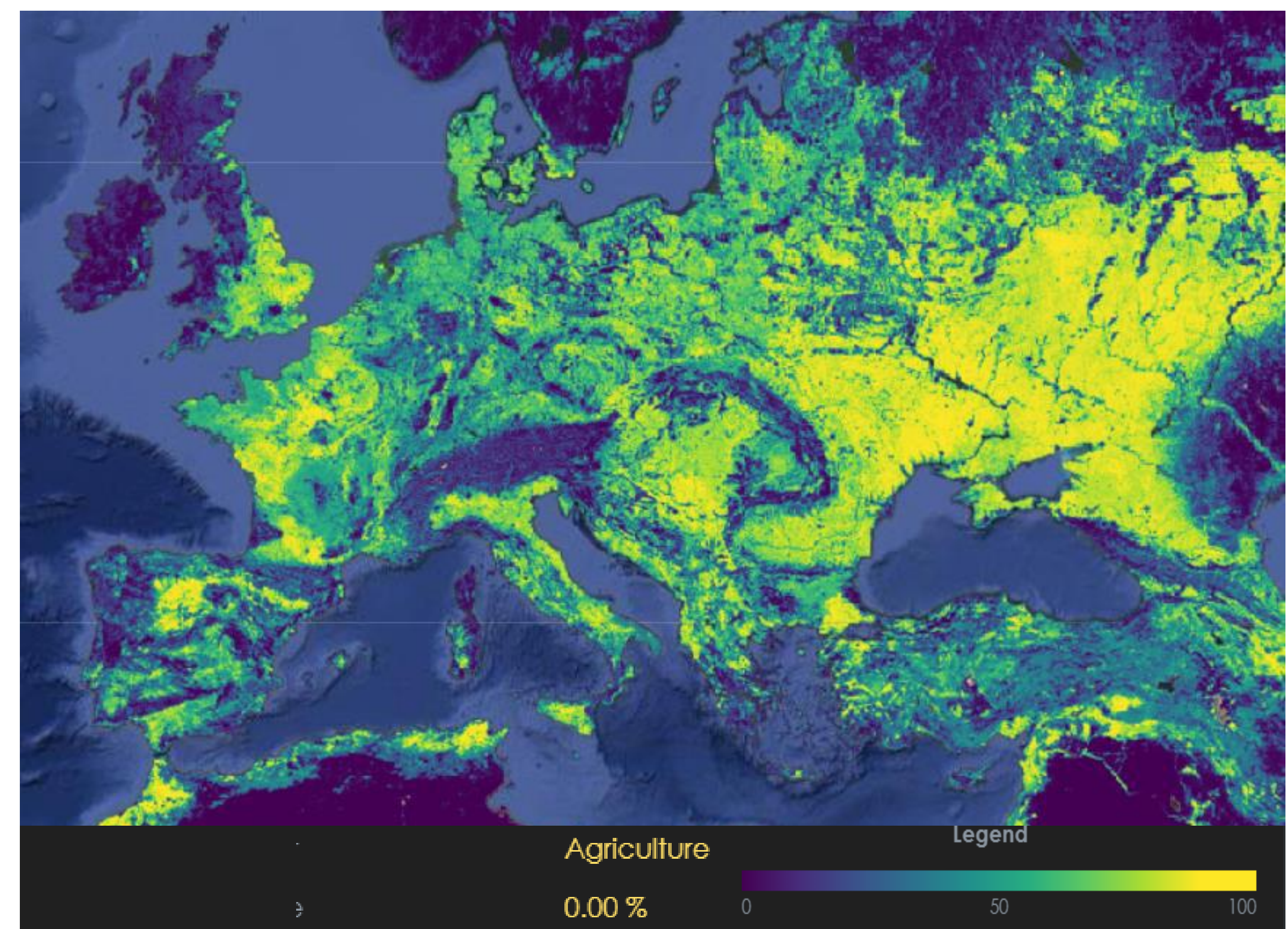
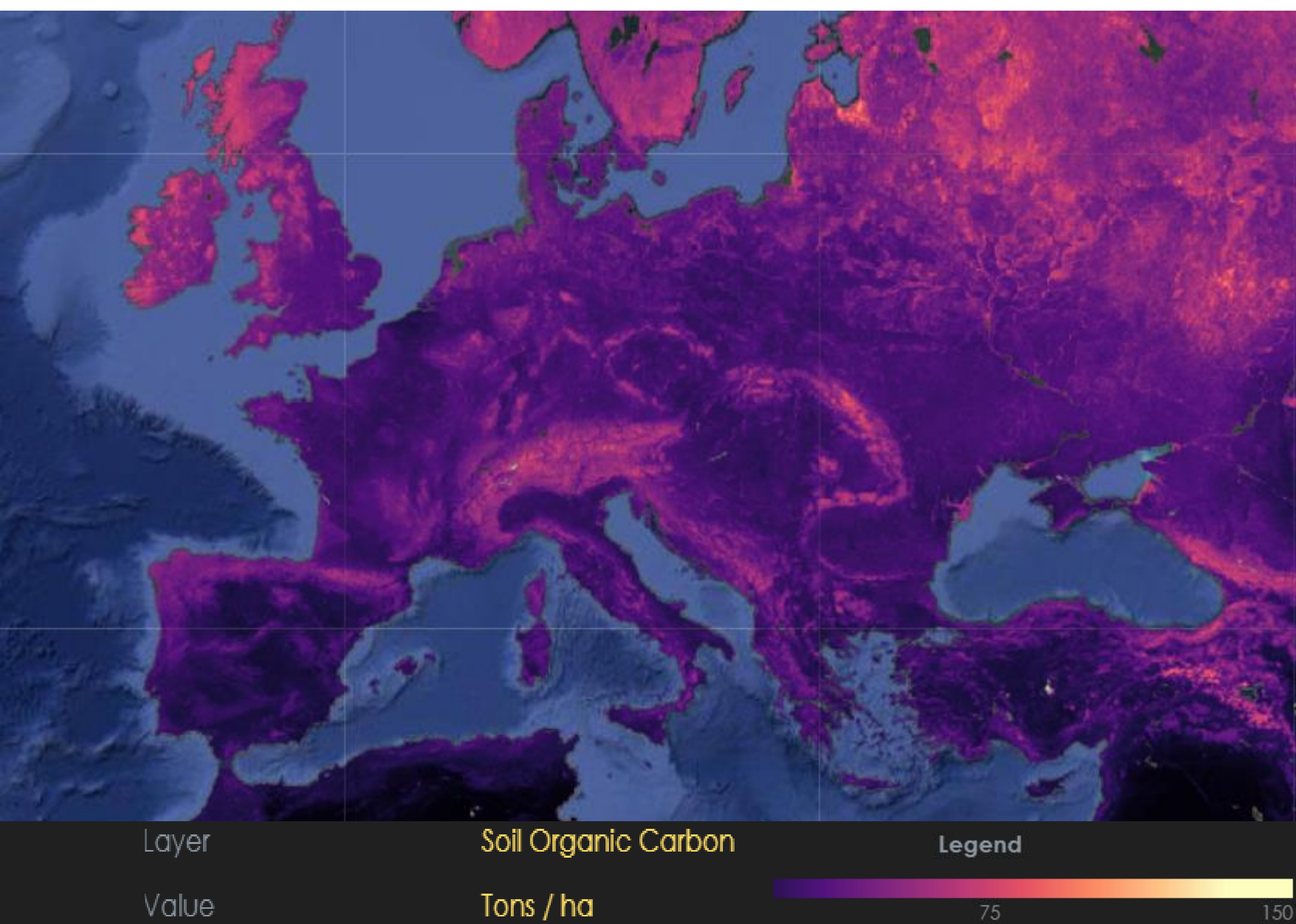
## WHAT HEALTHY SOIL MEANS -THE 5 FUNDAMENTAL FUNCTIONS OF SOIL-

1. **Soil biodiversity** and habitat provisions (adverse factors: tillage, monoculture, nitrogen input, low SOC)
2. **Water purification and regulation** (adverse factors: high N, pesticides, microplastics, low SOC)
3. **Provision & cycling of nutrients** (adverse factors: low SOC, low mixed farming, low soil cover)
4. **Climate regulation & carbon sequestration** (adverse factors: dominance of animal crops; tillage, low SOC)
5. **Primary production** (adverse factors: reliance on external input, lack of resilience, reduction of biodiversity, low SOC, pollution)

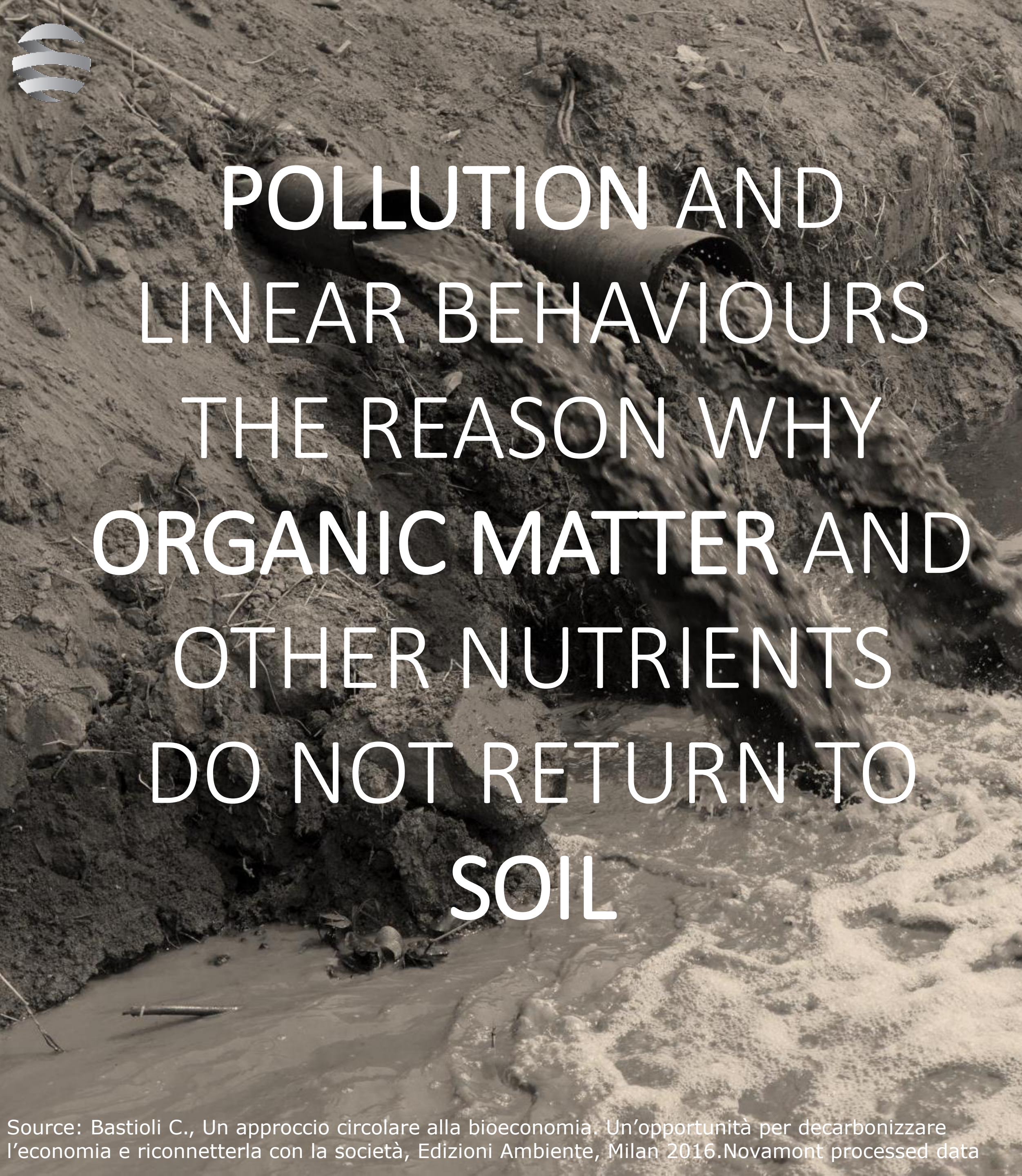




# CORRESPONDENCE BETWEEN LOW PRESENCE OF CARBON AND AGRICULTURAL USE IN THE EUROASIAN AREA







# POLLUTION AND LINEAR BEHAVIOURS THE REASON WHY ORGANIC MATTER AND OTHER NUTRIENTS DO NOT RETURN TO SOIL

- **96 million tons of organic waste** are generated each year in Europe, but **64 million tons are not recovered.**
- **Phosphates** from sewage or from animal manures can be industrially recycled into either fertilisers or into industrial phosphate applications
- Globally, it is estimated that **only 20% of all wastewater is treated.**

ALL THESE SECTORS CAN HELP RESTORE SOIL FERTILITY  
AND PROMOTE SUSTAINABLE AGRICULTURE,  
EVEN IN MARGINAL AREAS

**Organic waste in Europe that ends up in landfills could create:**

- additional **68,000 jobs** as opposed to the current 23,000.
- potential saving of **50 million tons CO<sub>2</sub>eq.**
- investments for construction of plants
- for Italy **10,000 jobs** and savings of **5 million tons CO<sub>2</sub>eq**

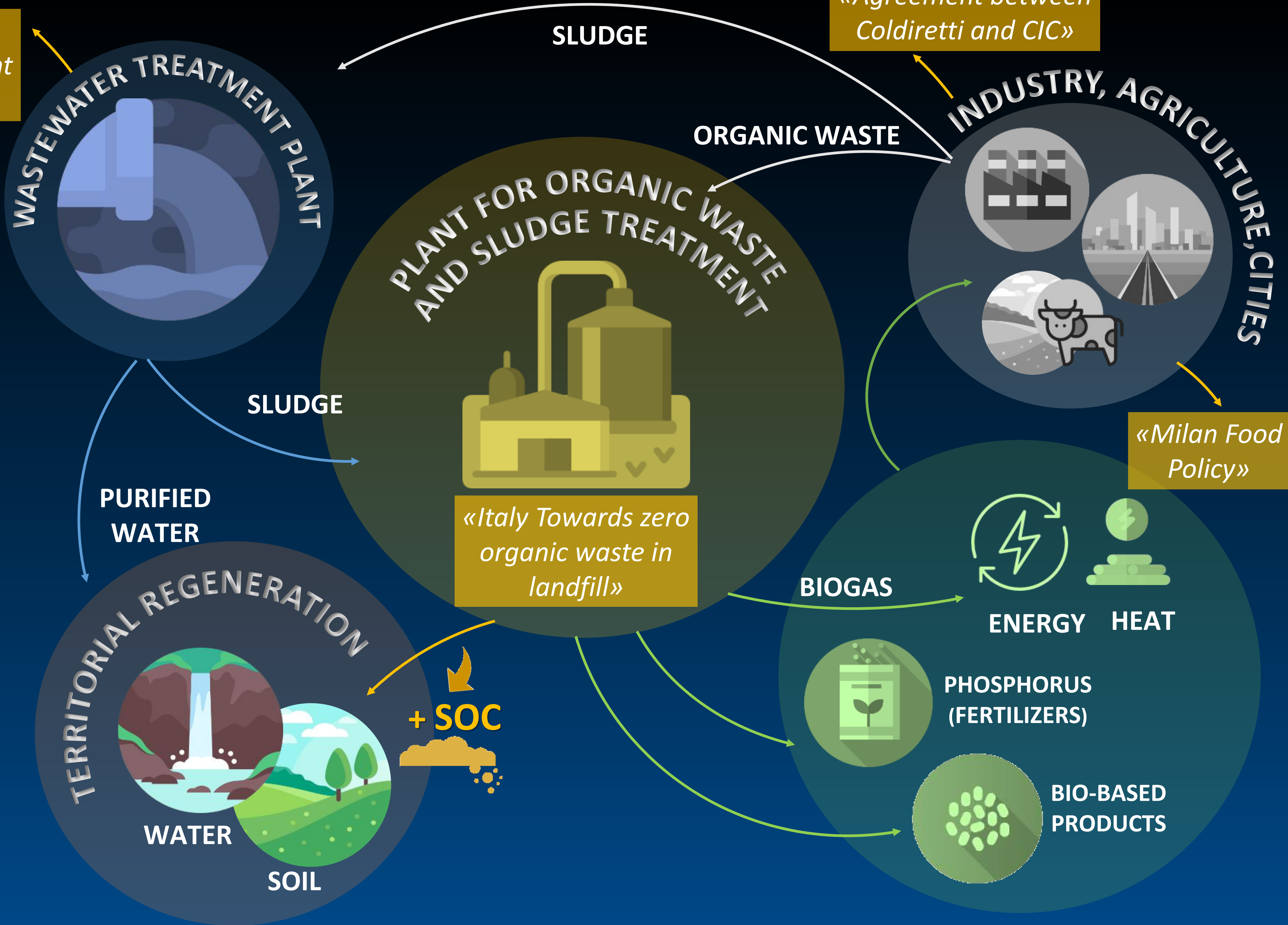




«Agreement between Novamont and Gruppo CAP»

«Agreement between Coldiretti and CIC»

REGENERATION IN A FULL PLANET NEEDS EFFICIENT/ INNOVATIVE/ INTERCONNECTED **ORGANIC CARBON TREATMENT INFRASTRUCTURES**, RELIABLE STANDARDS AND MONITORING SYSTEMS AMBITIOUS LOCAL PROJECTS AND PARTNERSHIPS







# TRANSFORMATIVE TECNOLOGIES TO OVERCOME ACCUMULATION OF POLLUTANTS IN WATER AND SOIL:

## THE ADDED VALUE OF BIODEGRADATION

IN SOIL



for all those products for agricultural use that **create problems of accumulation** (i.e. herbicides, mulch, slow release devises, seeds/ fertilizers coatings etc.)

IN WATER



for those products with accumulation problems in sewage sludge and water, as in the case of non-biodegradable additives for cosmetics and detergents

IN COMPOSTING



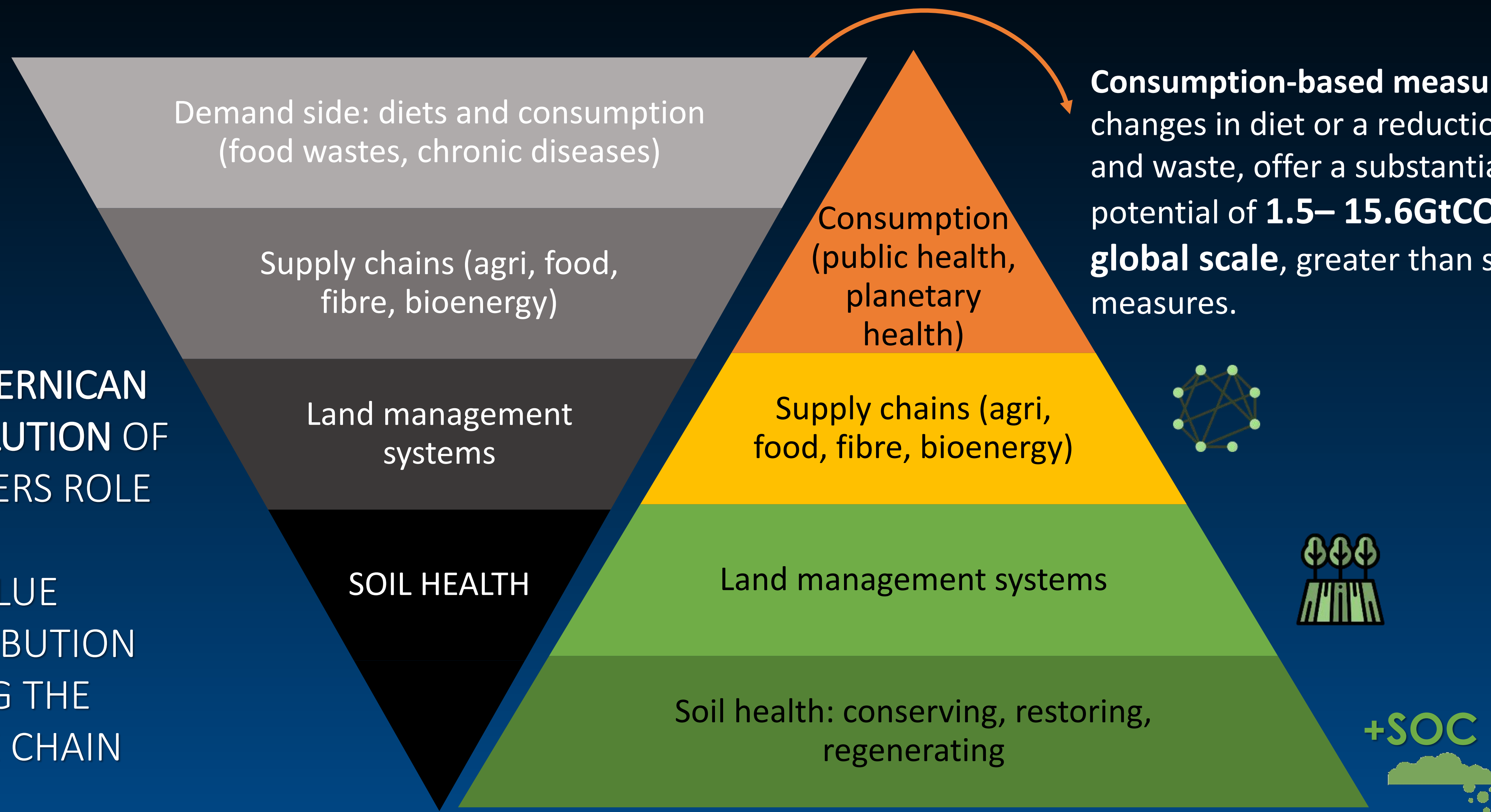
for all applications highly likely to be polluted by food residues or which would pollute organic waste that would then end up in landfills



# A BIOECONOMY OF THE VALUE

FIRST PRIORITY: BRING BACK CLEAN ORGANIC MATTER TO SOIL

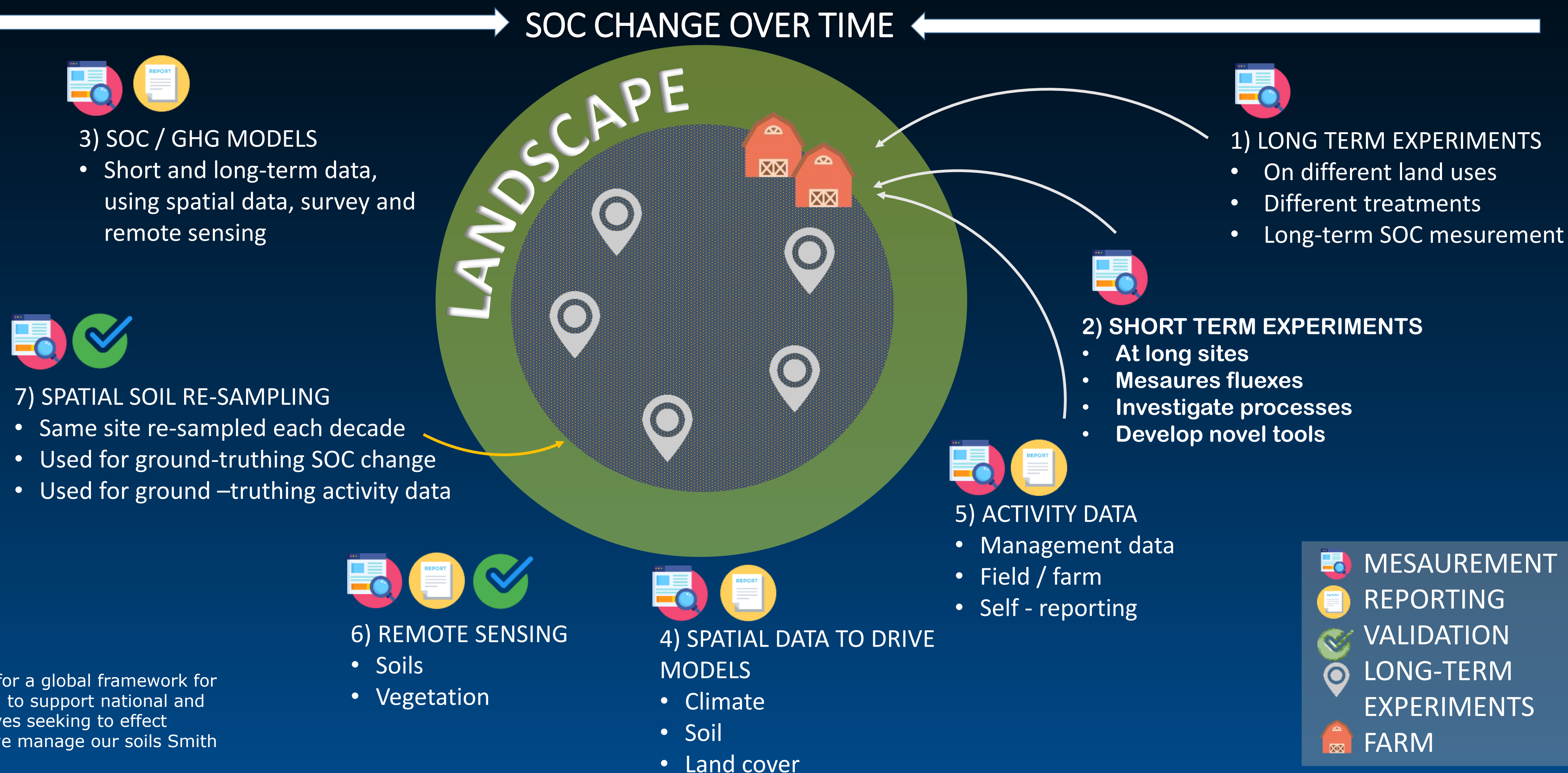
A COPERNICAN  
REVOLUTION OF  
FARMERS ROLE  
AND  
OF VALUE  
DISTRIBUTION  
ALONG THE  
VALUE CHAIN







# A SYSTEM MONITORING FOR CARBON SEQUESTRATION



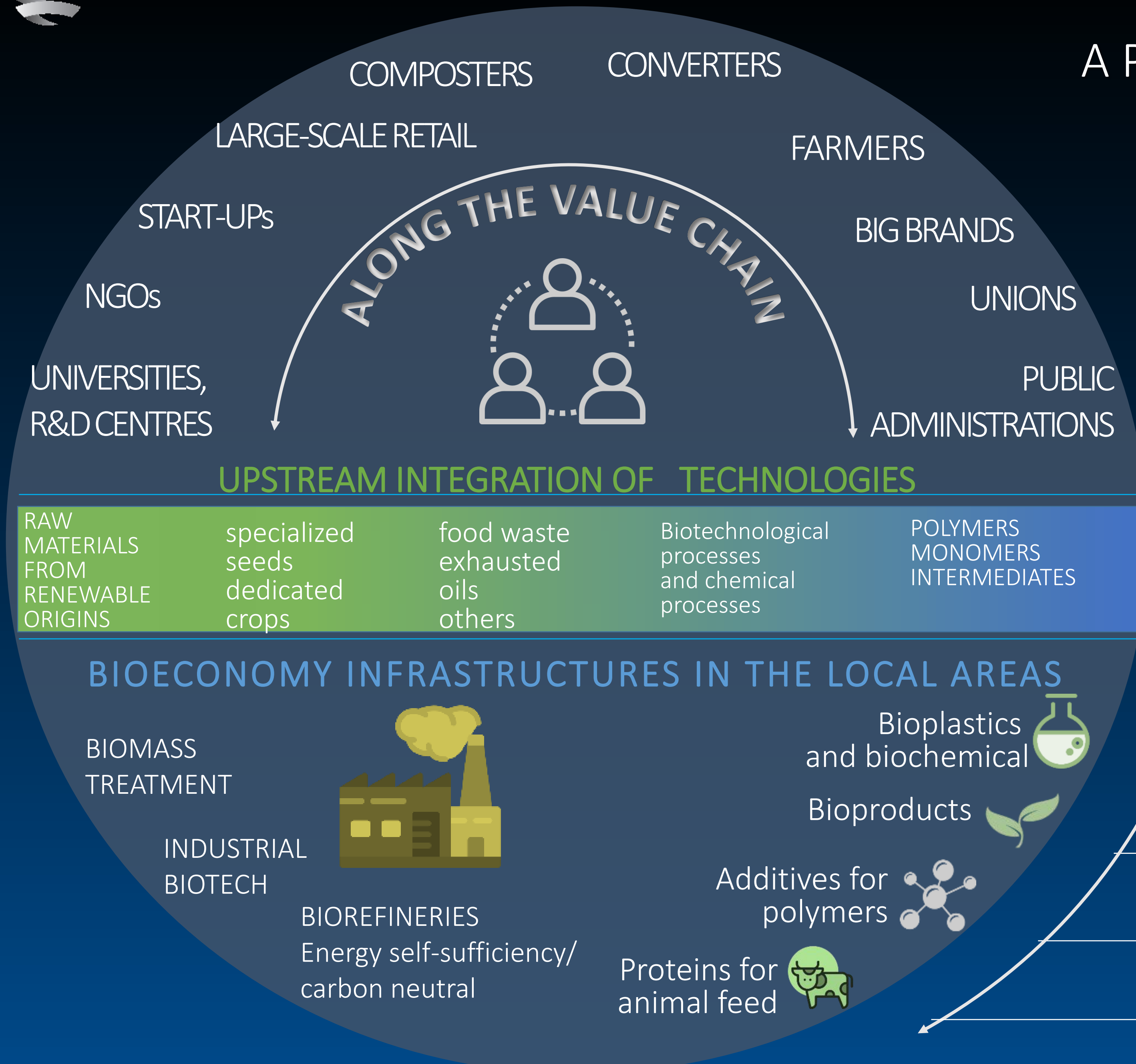
Source: New vision for a global framework for MRV of SOC change, to support national and international initiatives seeking to effect change in the way we manage our soils Smith et al, 2019.





# ITALY'S BUSINESS MODEL

A PLATFORM READY FOR MULTIPLICATION OF  
LOCAL PROJECTS AND FOR ACCELERATION



## FACTORS INFLUENCING THE ACCELERATION RATE

KPIs FOR TERRITORIAL REGENERATION  
EFFECTS STARTING FROM SOIL HEALTH

### POLICY / LEGALITY

- Soil Directive is needed as it was needed for air and water
- Right Incentives Accounting of Externalities (i.e. top priority for bringing back high quality organic matter to soil to decarbonize air and maintain/improve fertility.)

ADEQUATE INNOVATIVE INFRASTRUCTURES FOR THE  
TREATMENT OF HIGH QUALITY ORGANIC MATTER

SOCIAL ENGAGEMENT, EDUCATION, TRAINING, GREEN  
JOBS, ETC.

GPP, STRUCTURAL FUNDS, R&D FUNDS, CAP, BIOWASTE  
DIRECTIVE, SUP, BIOECONOMY STRATEGY ETC

ETHICAL FINANCE





# THE SAFE OPERATING SPACE TREATY A NEW APPROACH TO MANAGING OUR USE OF THE EARTH SYSTEM

Paulo Malhaes, Will Steffen, Klaus  
Bosselmann, Alexandre Aragao, Viriato  
Soromenho-Marque

Cambridge Scholars Publications

## «THE TRAGEDY OF COMMON GOODS»

### WITHOUT LEGAL EXISTENCE







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WITH LEGAL EXISTENCE







*“We need a new age of enlightenment in the definition of policies, characterised by a better balance between man and nature, markets and law, private consumption and public goods, short and long-term thinking, social justice and incentives for excellence”.*

THANK YOU FOR YOUR ATTENTION



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