



Food and Agriculture  
Organization of the  
United Nations

# Working Group Meetings **International Network** **on Soil Biodiversity** NETSOB

7-10 February 2022 | 14:00 hrs CET

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**Methodology for the economic valuation of  
ecosystem services provided by soil biodiversity**

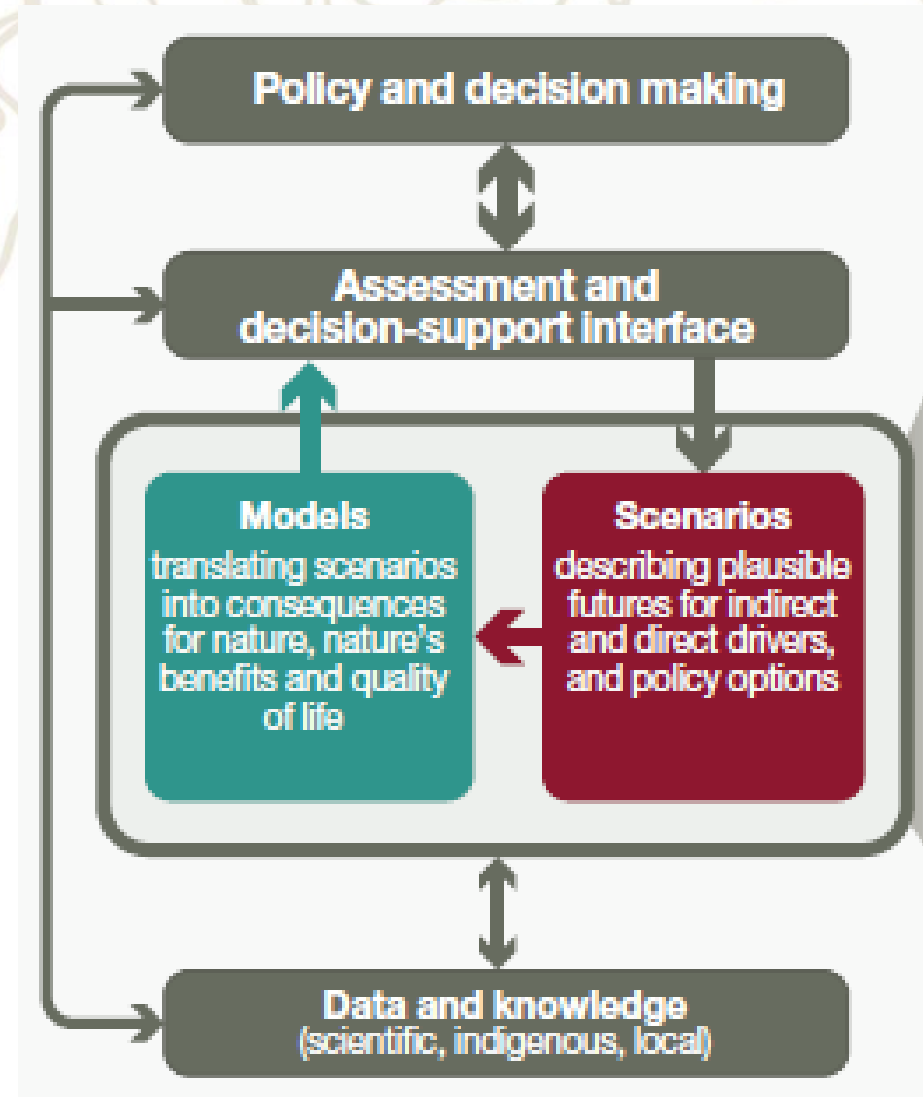


# Objectives and expected outputs of the activity

## WG 3: economics of soil biodiversity

Obj.:

- The importance of soil biodiversity for ecosystem services
- Development of the methodology for the economic valuation of ecosystem services provided by soil biodiversity





# Draft: Table of Content

Foreword

Acknowledgements

Summary

1. Introduction

2. Theoretical framework on biodiversity economic valuation

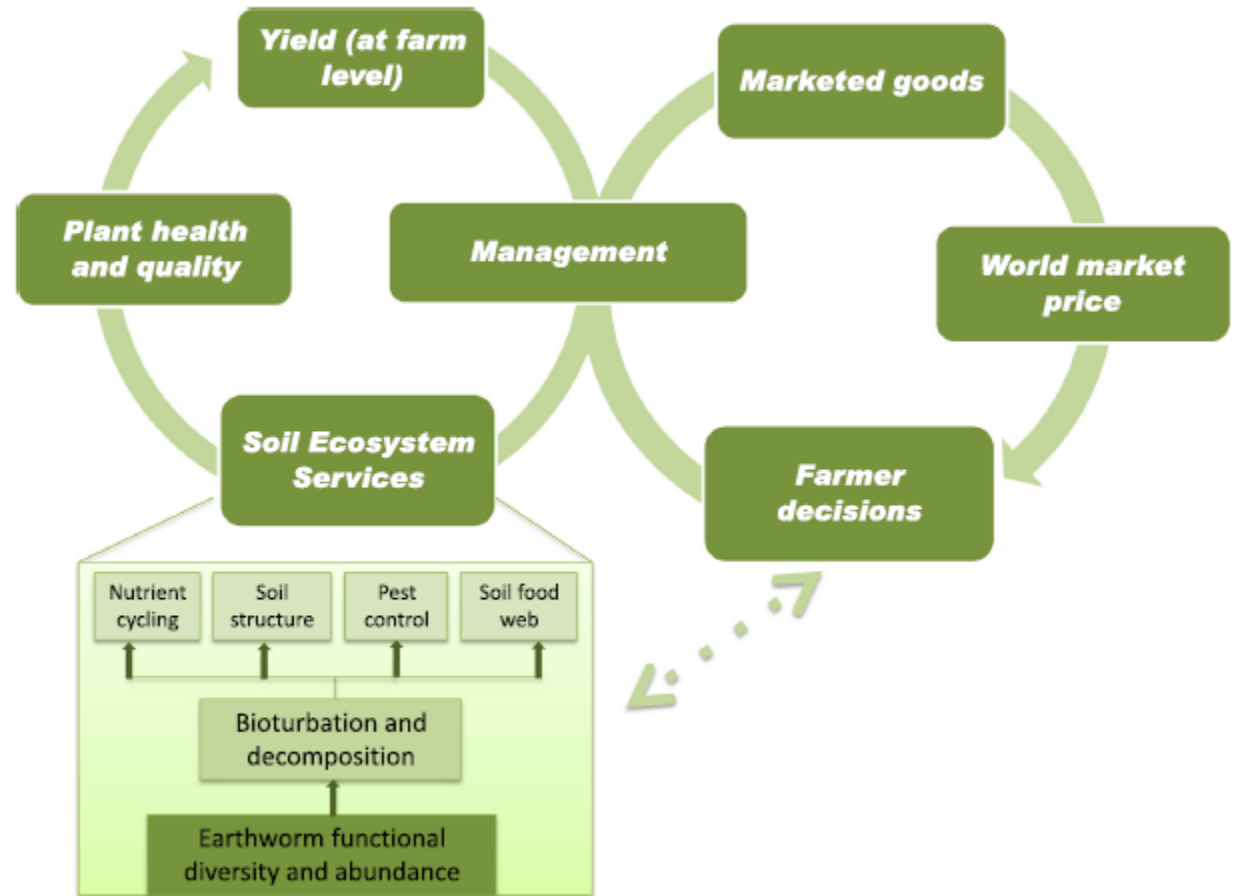
3. How to measure indicators affecting biodiversity in the soil and calculation

4. Conceptual model for understanding the linkage between soil ecology and biodiversity and economy: Choice modelling or contingent choice method

5. Case studies and applications

6. Outlook

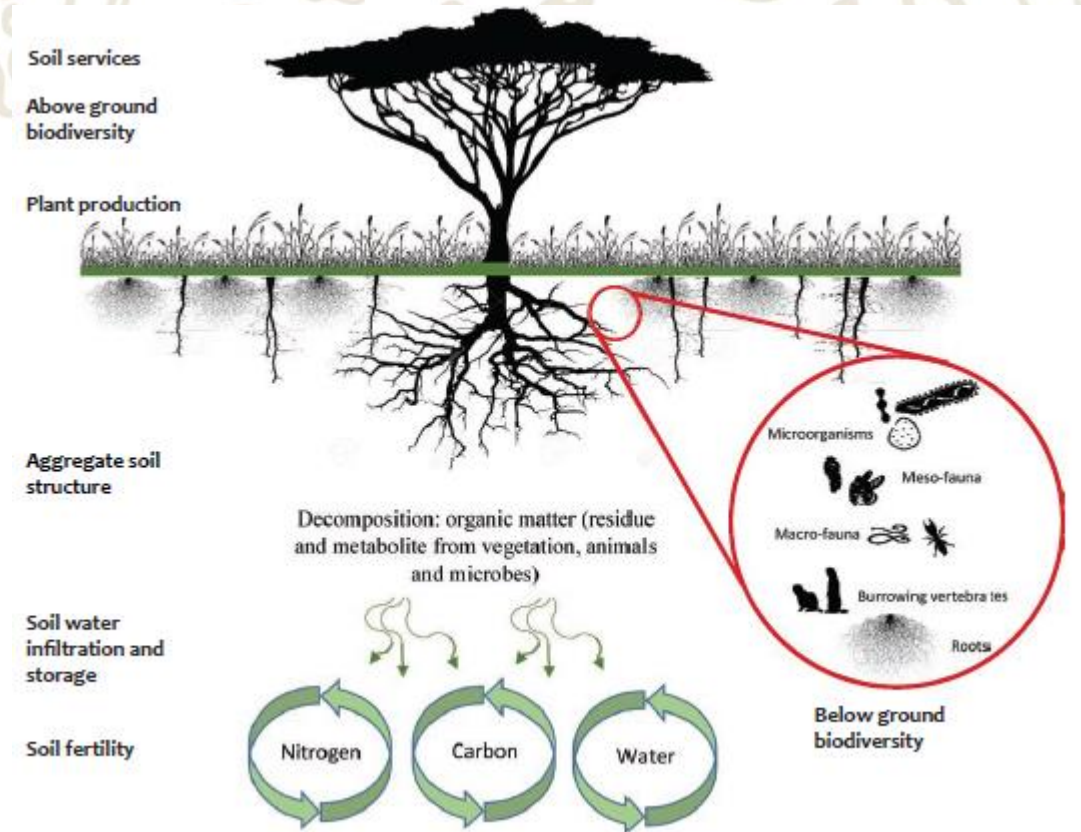
Conceptual model for understanding the linkage between soil ecology and biodiversity and economy



Source: E. Plaas, et al. *Ecological Economics* 159 (2019)

# 1. Introduction

- a. Why is biodiversity valuable
- b. Soil biodiversity, soil organic matter and soil organic carbon: overview
- c. The importance of soil biodiversity for ecosystem services
- d. Ecosystem services and disservices provided by soil organisms in agroecosystems



## 2. Theoretical framework on biodiversity economic valuation

### a. Cost-benefits

Delivering biodiversity values/costs on land or methods for integrating biodiversity valuation into economics

### c. Market-based techniques

Where a benefit generated by biodiversity is bought and sold directly in markets

### d. Revealed preference techniques

When market data are available for goods and services that are in some specific way related to the biodiversity value in question, e.g. relationship between the costs of travel and the number of people visiting a national park

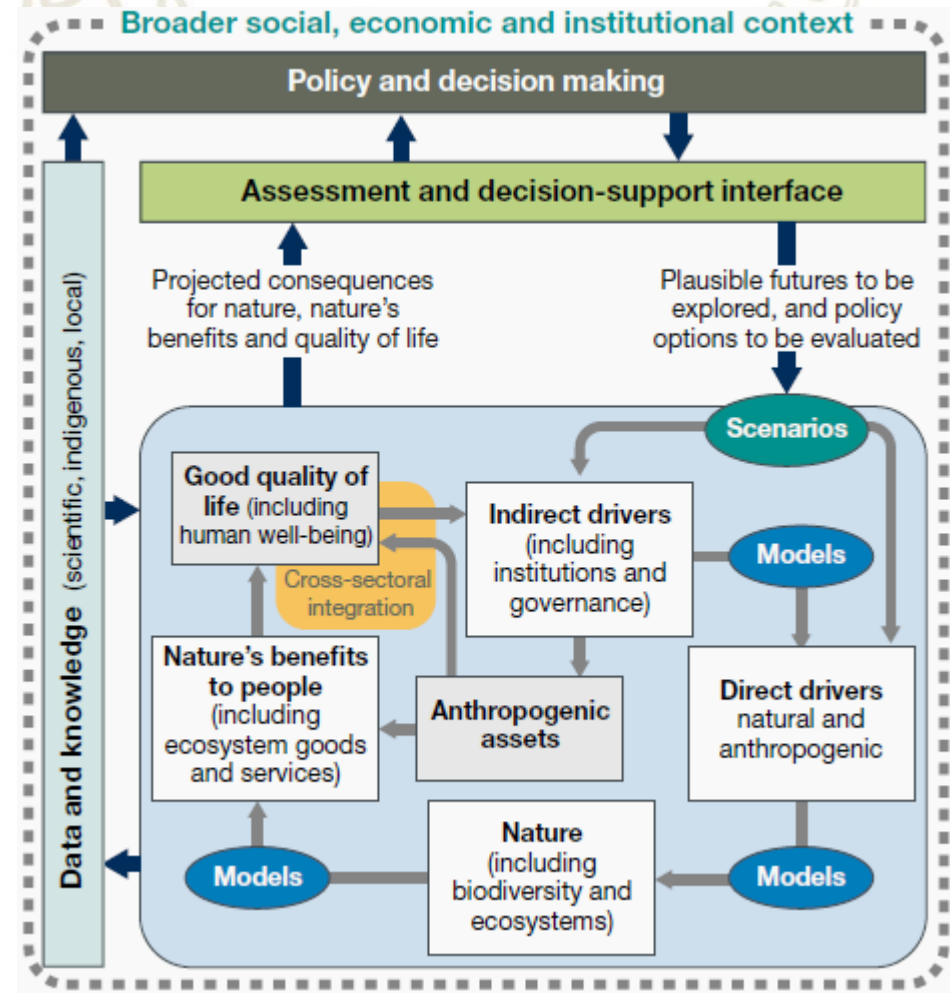
### e. Hedonic value

estimate economic values for ecosystem or environmental services that directly affect market prices. The basic premise of the hedonic pricing method is that the price of a marketed good is related to its characteristics, or the services it provides

### f. ....

### 3. How to measure indicators affecting biodiversity in the soil and calculation

- links to WG1 e WG2
  - input-output matrix
  - water, agricultural input, agronomic practices, etc..)
- market failures related to biodiversity
  - ecosystems provide services that are public goods or peoples' enjoyment
  - ecosystem services are affected by externalities (the side effects of human actions) negative or positive.
  - ecosystems services are often not clearly defined

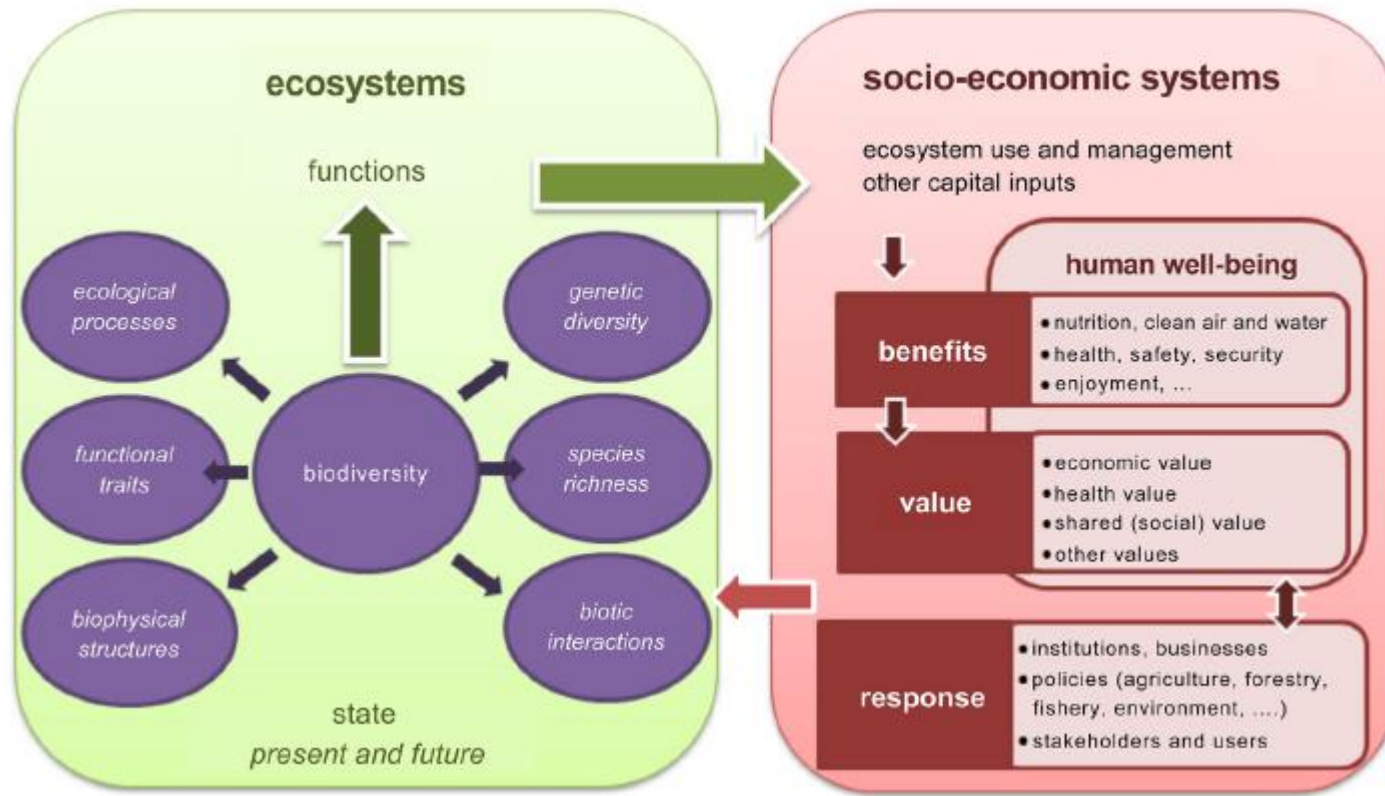


IPBES (2016): The methodological assessment report on scenarios and models of biodiversity and ecosystem services.



# 4. Conceptual model for understanding the linkage between soil ecology and biodiversity and economy: Choice modelling or contingent choice method

Conceptual framework for EU-wide ecosystem assessments



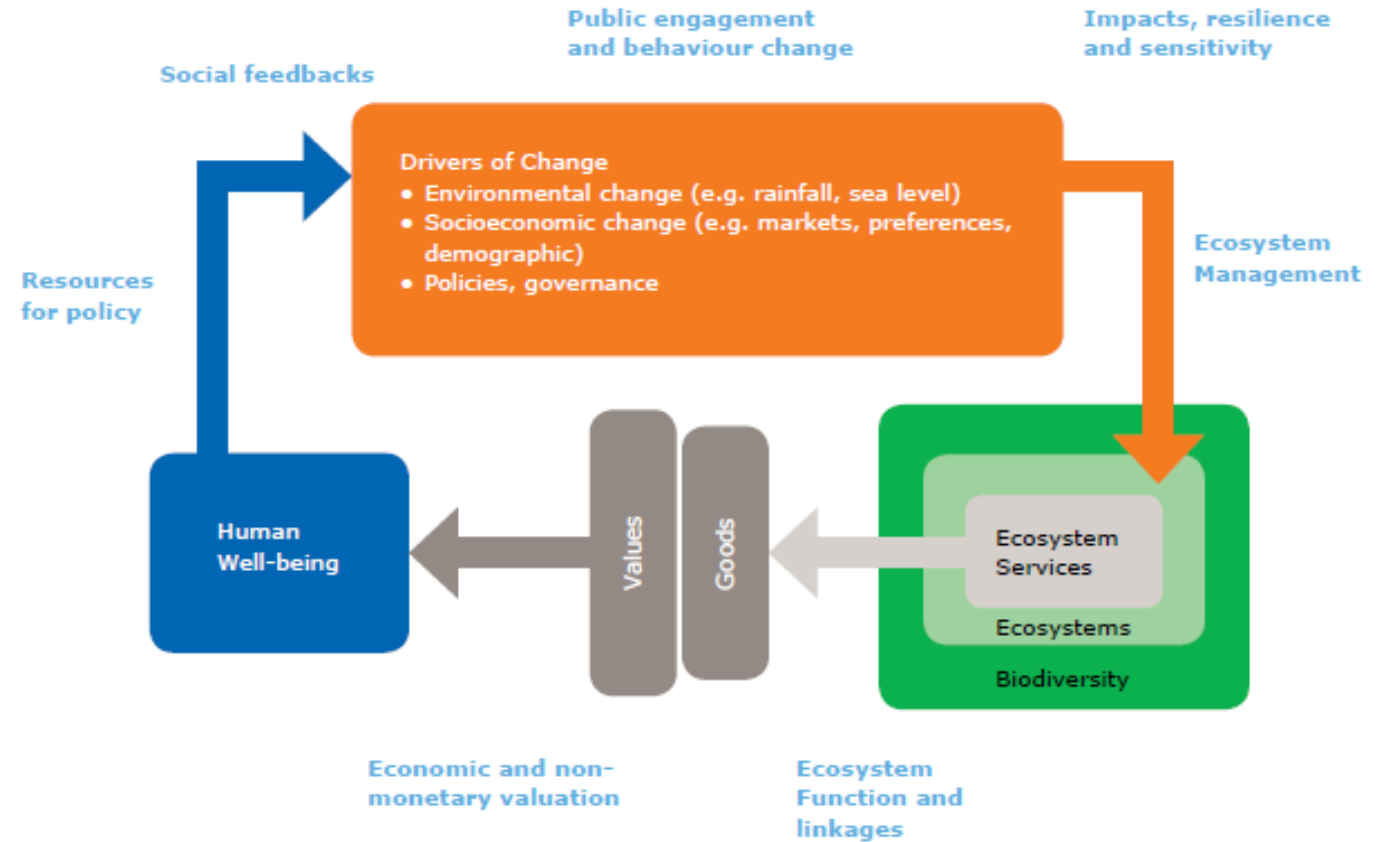
(Maes et al. 2013)

- Soil ecosystem services (nutrient cycling; soil structure; pest control;.. )
- Plant health and quality
- Yield at farm: level, variation, etc..
- Farm management and farmer decision
- Marketed goods and markets
- Environmental benefits
- Calculation of variables: provide tools to farmers
- .....

## 5. Case studies and applications

## 6. Outlook:

- Investing in soil biodiversity and soil organic carbon
- Integrating soil biodiversity and ecosystem services into the Economic Analysis of Agricultural & Livestock Systems
- Policy integration: schemes, etc.
- Communication



Ecosystem services in the policy sphere. Source: DEFRA, 2010.





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