Towards a Holistic Approach to the measurement of Nature: Complementary Accounting Network framework for official statistics

Robert Kerry Turner [1], *Valentina Di Gennaro* [1], *Alice Bartolini* [2], *Tiziana Luisetti* [4], Silvia Ferrini [1,2,3]

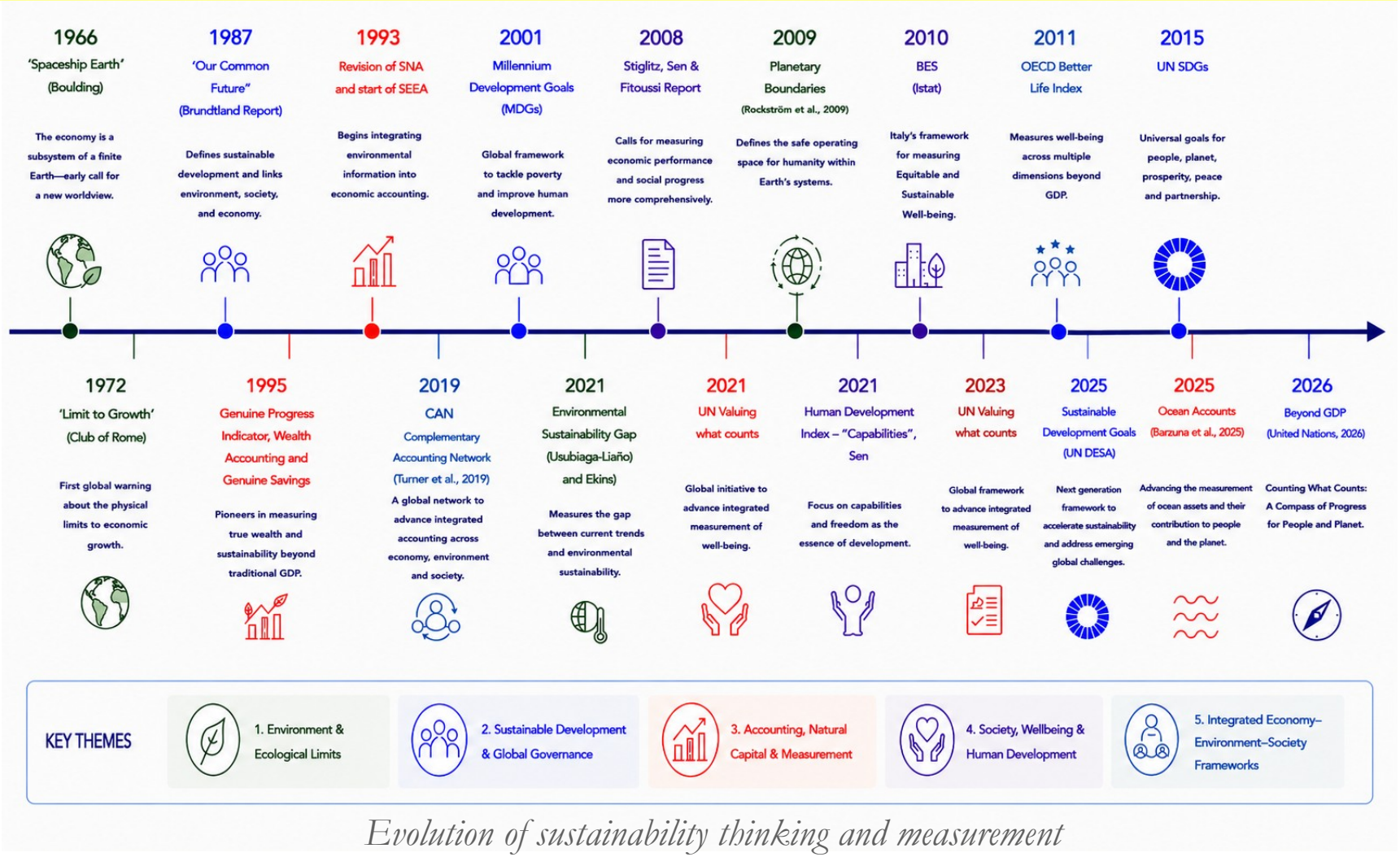
1 University of East Anglia, Norwich, United Kingdom
2 University College of London, London, United Kingdom
3 University of Siena, Siena, Italy
4 Centre for Environment, Fisheries and Aquaculture Science, *United Kingdom*

Challenges in the Measurement of Nature in Official Statistics. Workshop, Italian National Institute of Statistics (Istat)
Rome, Italy, 25–26 May 2026

Progress in Natural Capital Accounting

Challenges:

1. Multiple "Genuine Progress" approaches: beyond GDP



Evolution of sustainability thinking and measurement

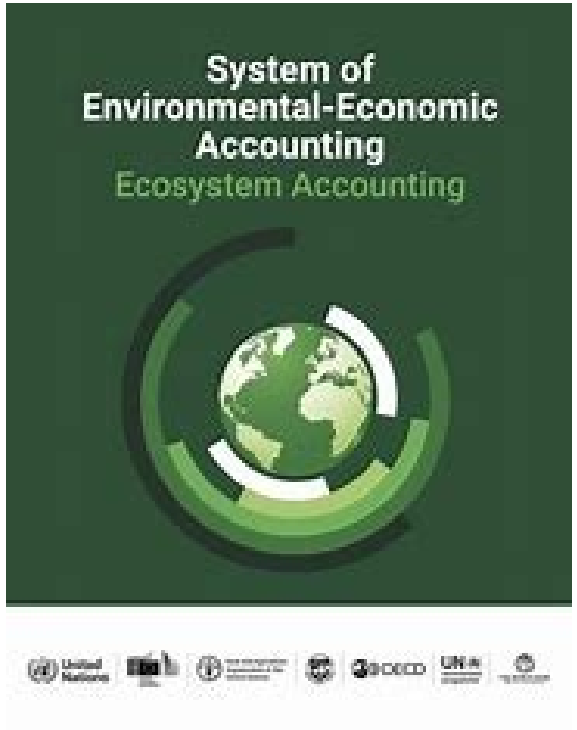
Progress in Natural Capital Accounting

Challenges:

2. Objective: harmonisation (?)

Shared definitions and ontology, data and standards

International standard approach SEEA EA



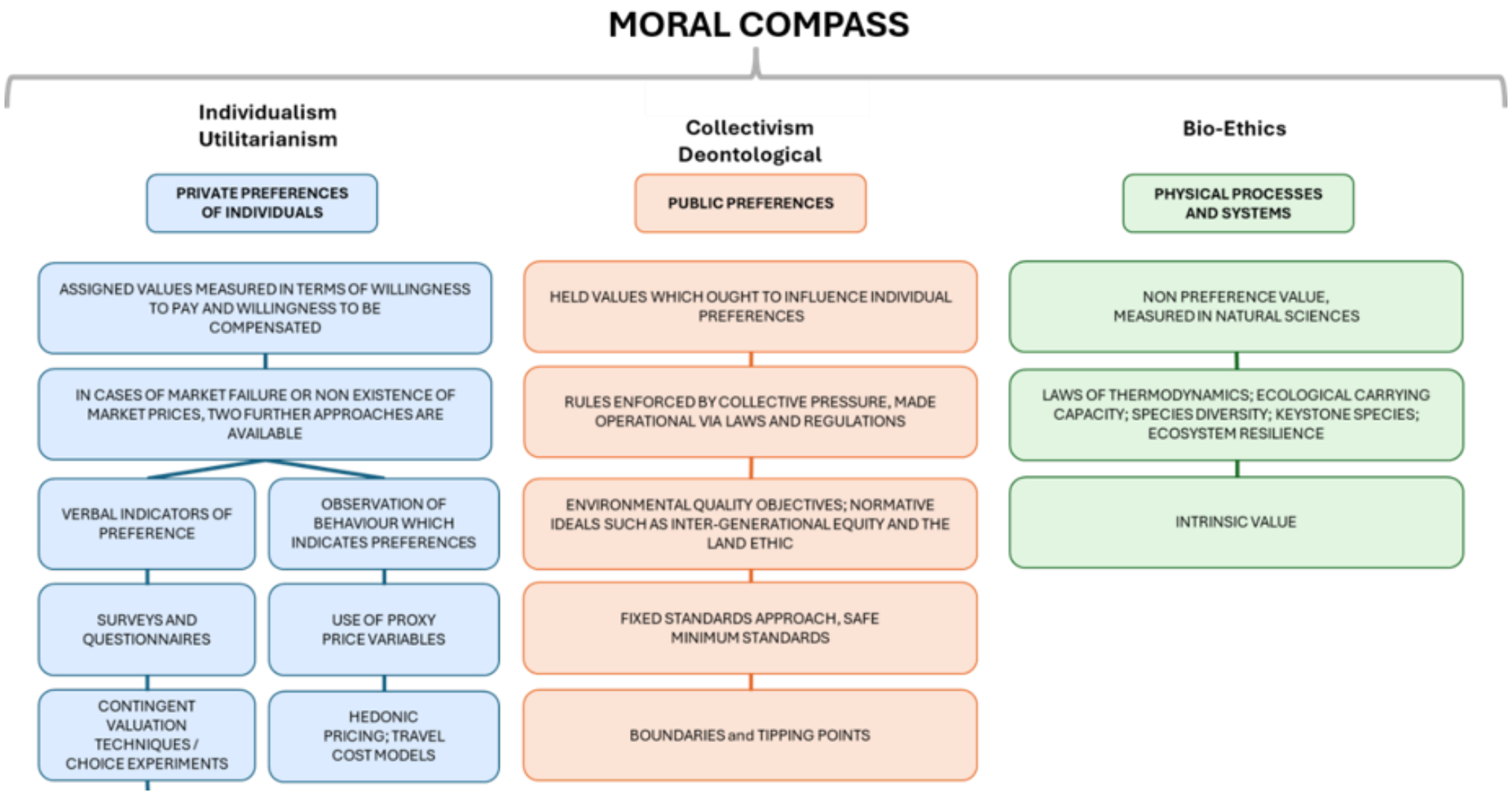
UN et al. (2024)

Economic:
Exchange Value vs Welfare Value

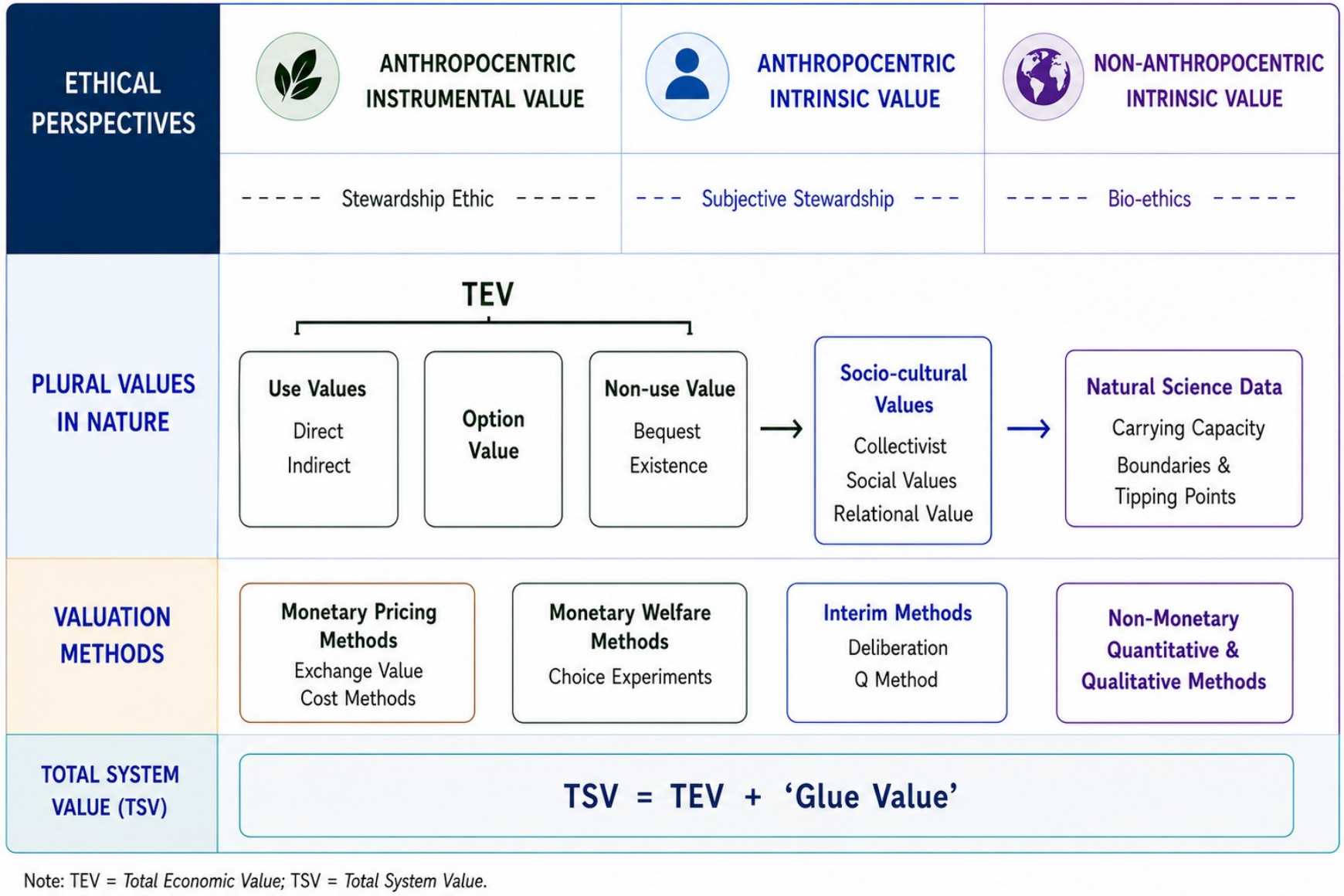
Multidisciplinary:
ecological, economic, socio-cultural values

PLURAL VALUES IN NATURE

Plural environmental values



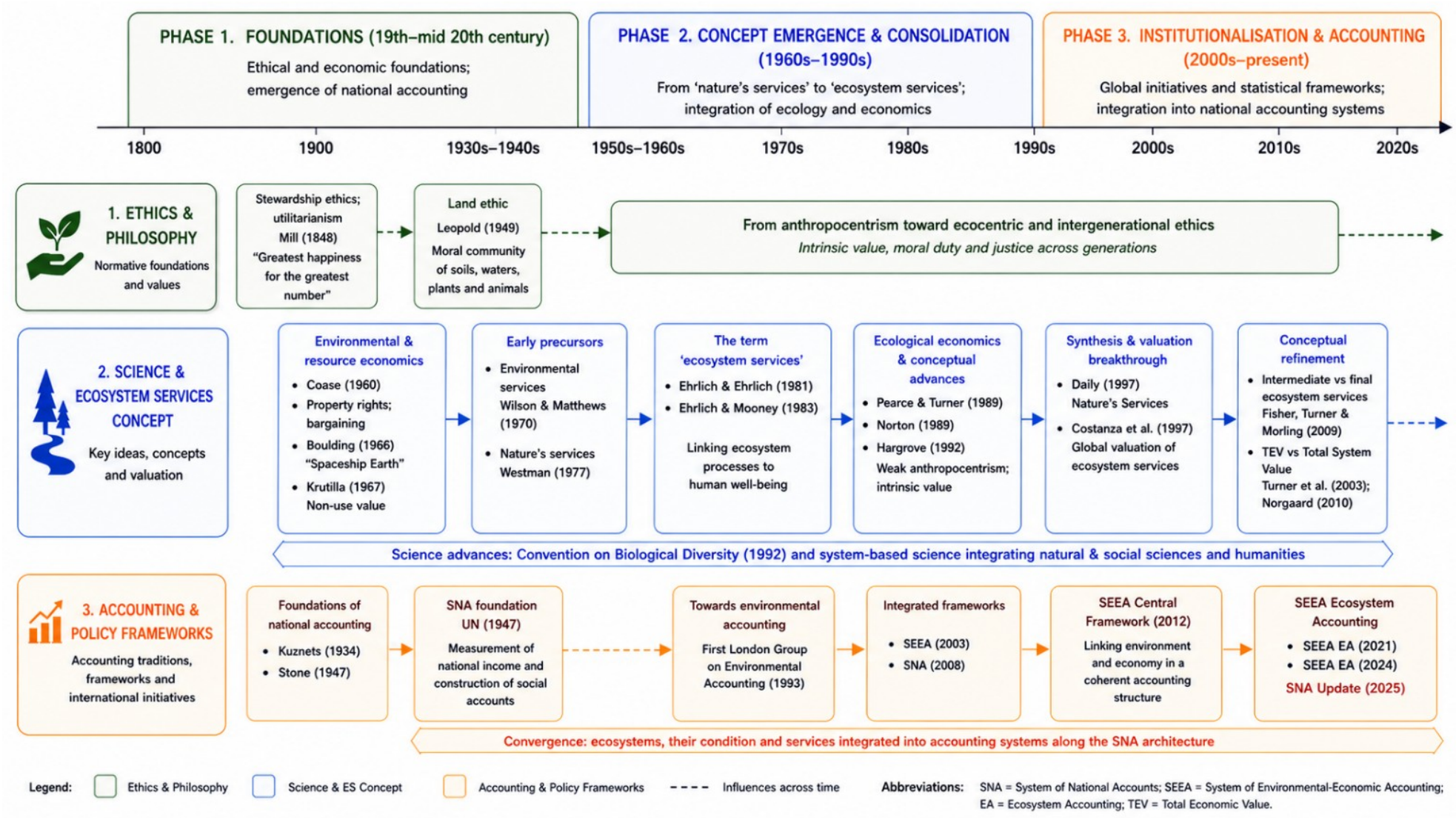
Plural values in nature: ethics and valuation methods



Note: TEV = *Total Economic Value;* TSV = *Total System Value.*

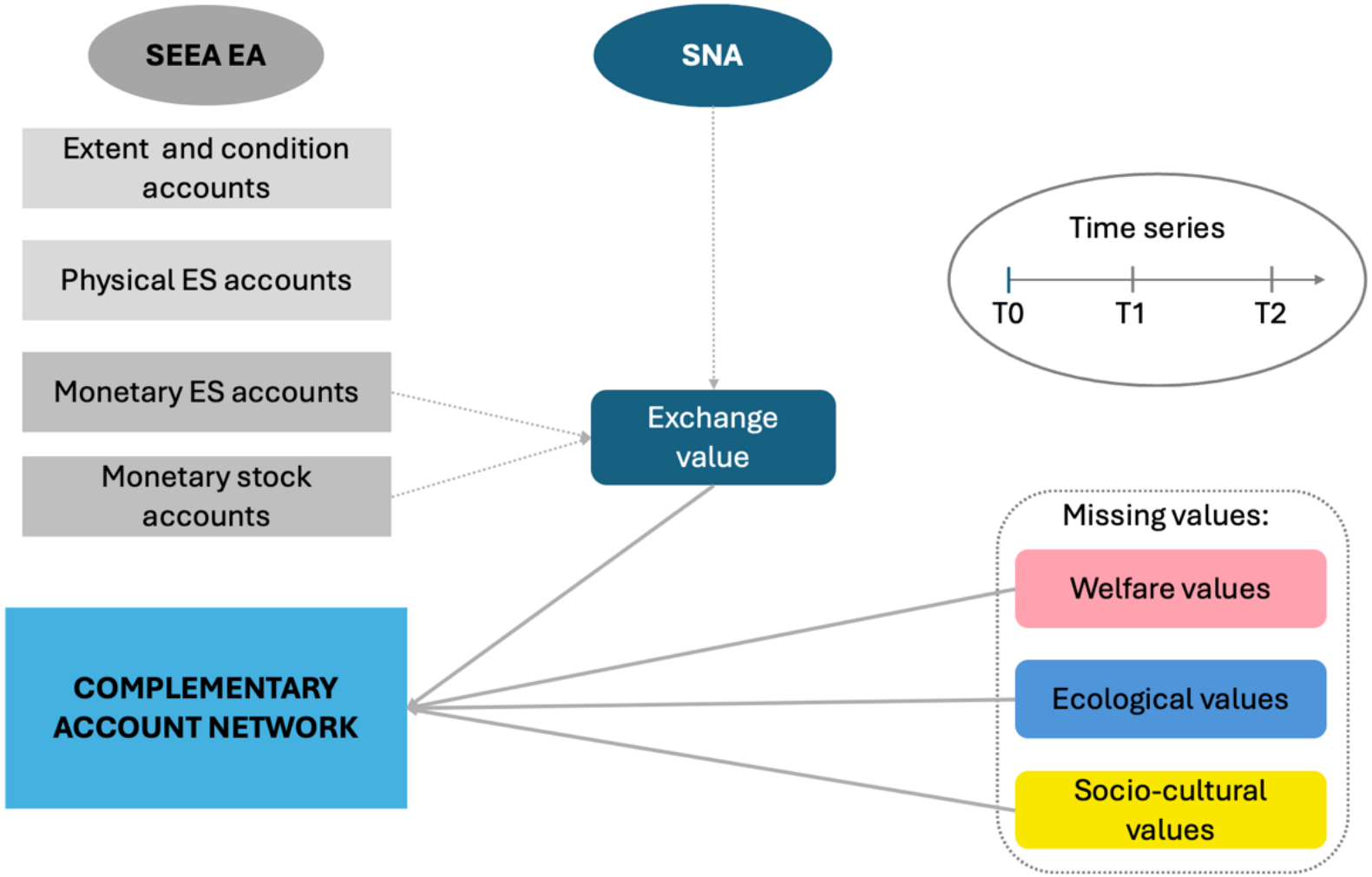
Plural value in nature: ethics and valuation methods

Underling ethics and world views



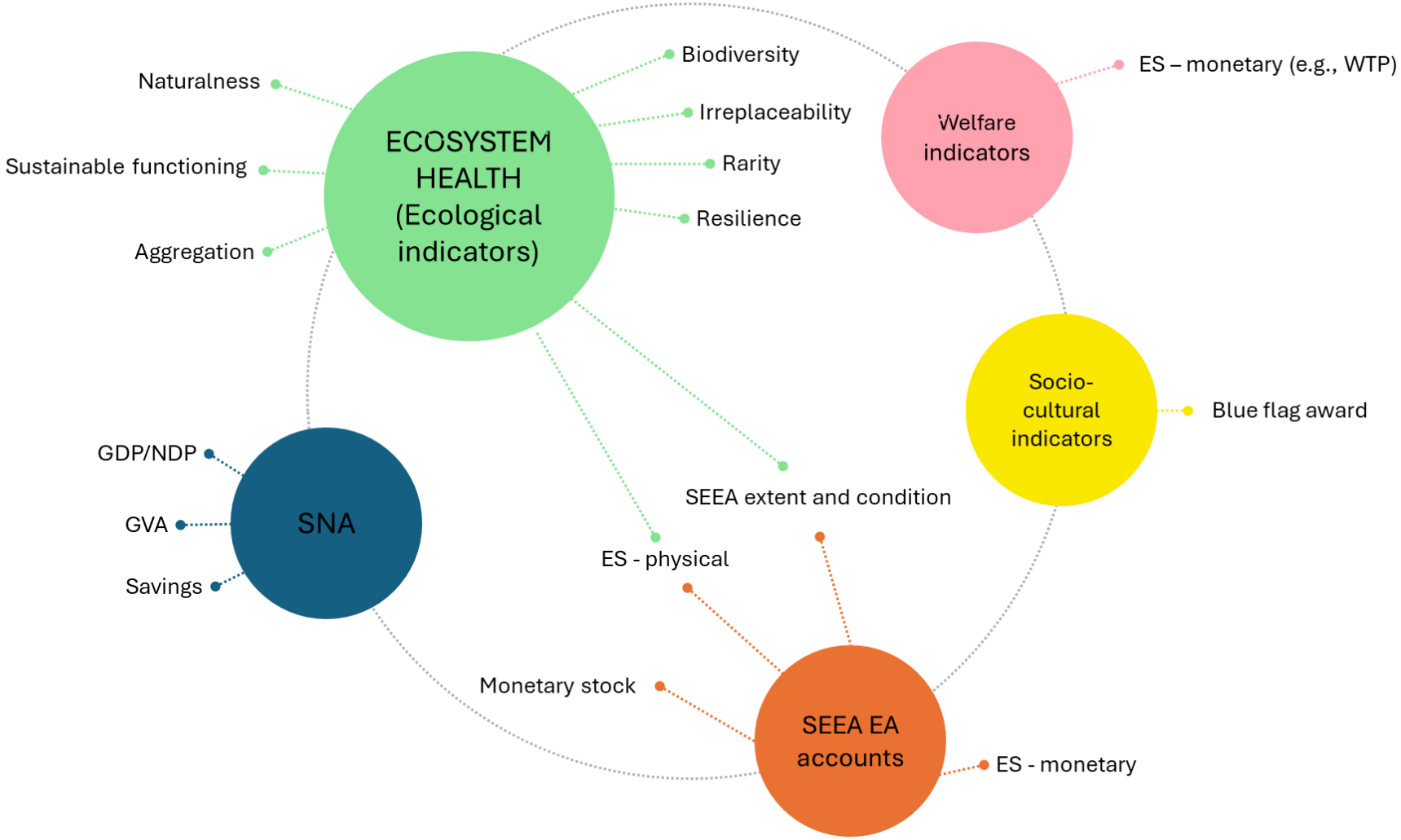
Co-evolution of environmental ethics, ecosystem services and ecosystem accounting (19th-21st century)

Complementary Accounting Network (CAN)



Complementary Accounting Network setting

Complementary Accounting Network (CAN)



Complementary Accounting Network (CAN) and information nodes

Complementary Accounting Network (CAN)

MONETARY

SNA INDICATORS (national/regional) • GDP	**EXTENDED SNA/ SEEA-EA** (national/regional) • Ecosystem Services/Monetary Accounts • Extended Genuine Savings
CULTURAL INDICATORS (national/regional) • Blue Flag award	**ECOLOGICAL INDICATORS** (national/regional) • SEEA EA/Physical Accounts • Sea turtle nests

NON-MONETARY

CAN matrix

Thanks for your attention!

r.k.turner@uea.ac.uk

Ecosystem Services 79 (2026) 101864

Contents lists available at ScienceDirect

Ecosystem Services

journal homepage: www.elsevier.com/locate/ecoser

Full Length Article

Towards a holistic approach to natural capital accounting: The CAN – Complementary Accounting Network- for marine and coastal resources

R. Kerry Turner [a], Valentina Di Gennaro [a,*], Alice Bartolini [b], Silvia Ferrini [a,b,c]

[a] University of East Anglia, United Kingdom
[b] University College London, United Kingdom
[c] University of Siena, Italy

ARTICLE INFO

Keywords:
Complementary accountings network
Ecosystem services
SNA
Ecosystem accounting
Biodiversity
Marine indicators
Sustainability assessment

ABSTRACT

The System of National Accounts (SNA) and the System of Environmental Economic Accounting Ecosystem Accounting (SEEA EA) frameworks have advanced efforts to integrate environmental information into economic measurement. Yet both remain limited by the principle that all measures must be expressed in monetary exchange (market) value terms, thereby overlooking other forms of values (e.g. ecological, socio-cultural, welfare). To address this gap, we operationalise the Complementary Accounting Network (CAN) framework as a parallel system that combines economic, ecological, and socio-cultural indicators over a common timescale. We illustrate the CAN using marine natural capital data at national (Italy) and regional (Sardinia) scales, including the marine habitat of *Posidonia oceanica* meadows. The illustration highlights CAN's strengths in accommodating non-monetary values and complementing SEEA EA, while also identifying limitations related to data availability and indicator harmonisation. Overall, CAN promises a more inclusive approach to capturing nature–economy interactions.

Read and download the paper here:

https://www.sciencedirect.com/science/article/pii/S2212041626000525

MARBEFES project has received funding from the European Union's Horizon Europe research and innovation programme under Grant Agreement no 101060937

Grant Number 10041354