



מחקר סוציו-אקולוגי ארוך טווח: הגרסה הישראלית

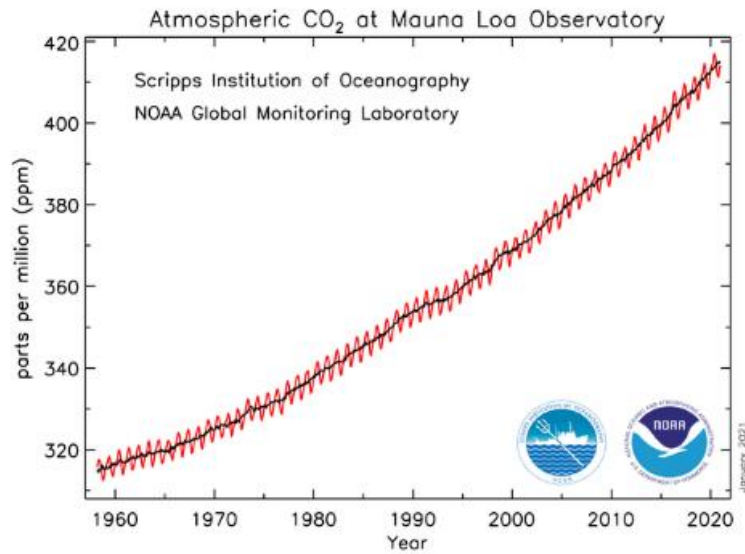
דניאל אורנשטיין
הטכניון – מכון טכנולוגי לישראל
רמת הנדיב
19 מרץ 2024



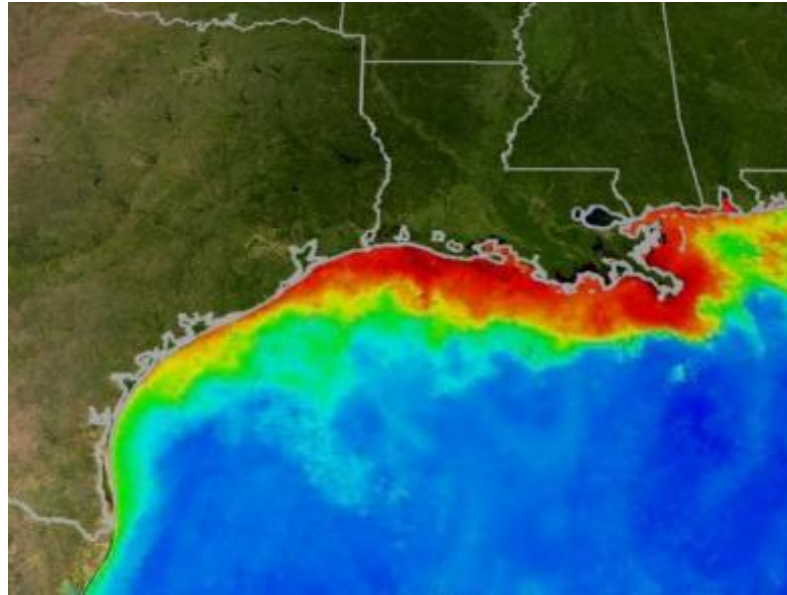
Overview

- Social ecology as a normative, problem-oriented science
- Applied social ecology in eLTER Research Infrastructure in Israel

Why?

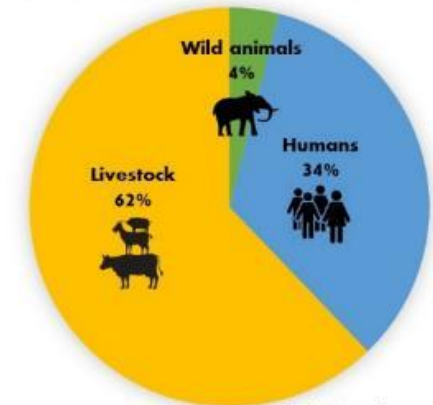


Climate change



Biogeochemical flows

Proportional representation of global terrestrial mammal biomass



Data from Bar-on et al. 2018

Biodiversity loss

Proposed solution: Social Ecological Research



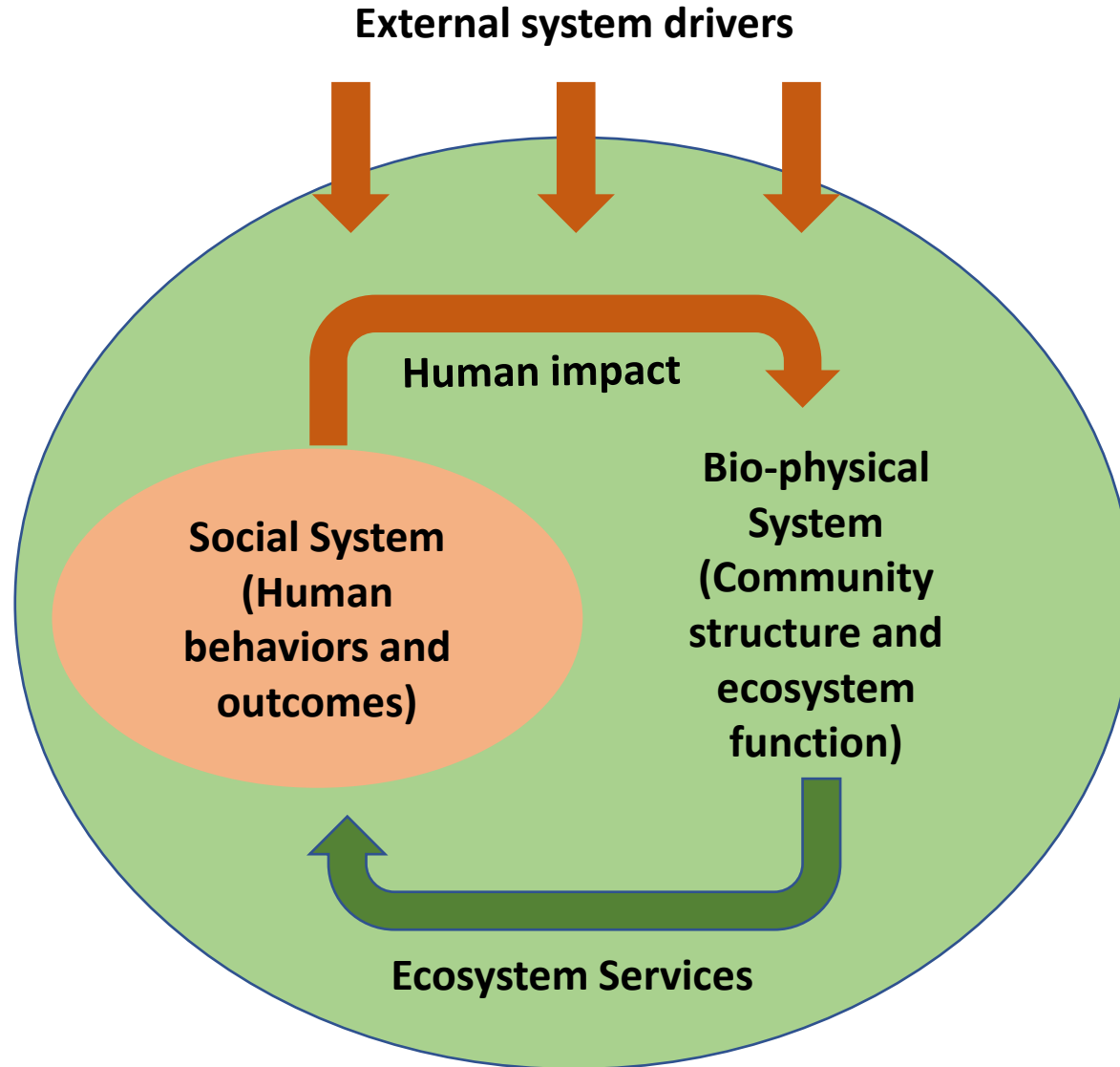
“Sound Science is **necessary** for commons governance, but **not sufficient**.”

Dietz, Ostrom and Stern, 2009

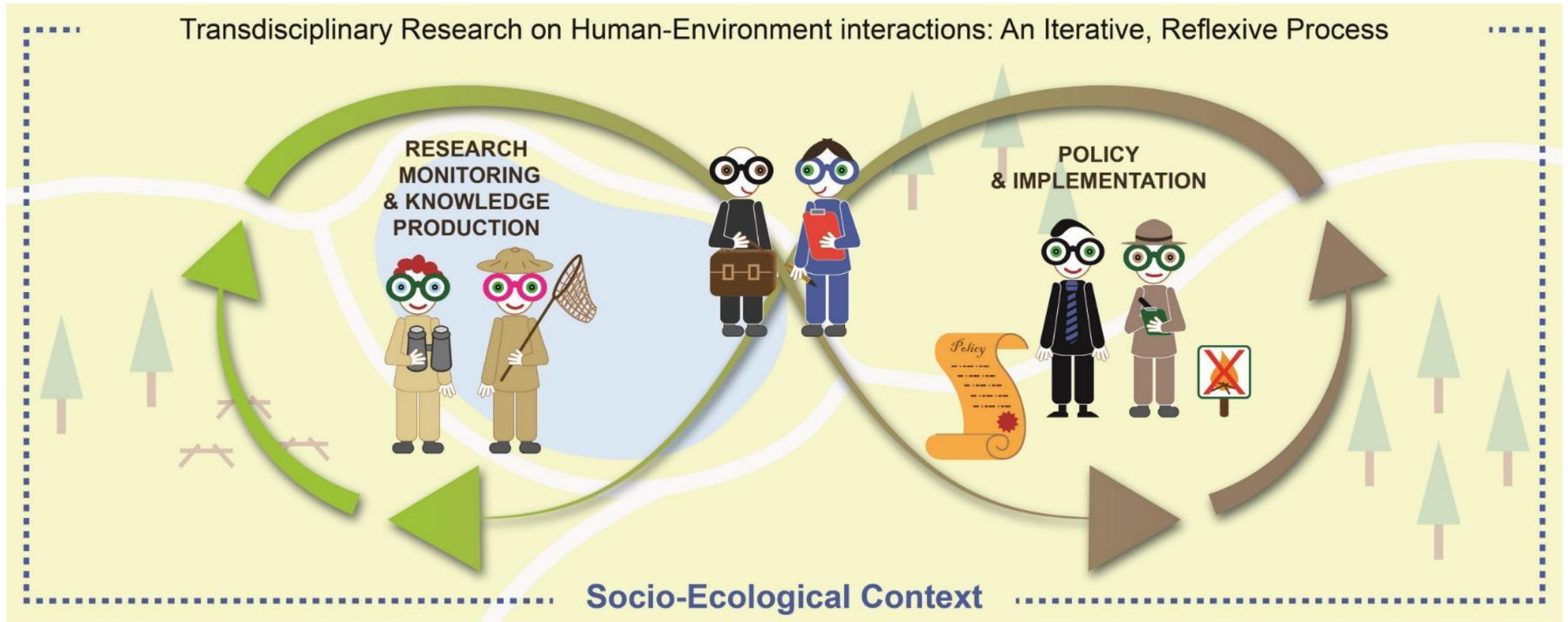
Also needed:

- **Monitoring**
- Knowledge about **ecological limits**
- **Communication** within communities for building trust
- **Participatory processes**

Social ecology as a discipline



Social ecology as a process



Collaborative • Reflexive • Integrative • Iterative • Relevant

The Technion Social Ecological Research Group

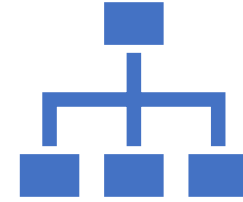
Three pathways



Research



Teaching



Administration

Two spatial scales



The Technion Social Ecological Research Group

Three pathways



Research



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Social Ecology research

- Focus on **interactions** between social and ecological systems
- Problem of **immediate importance** to land use managers, urban planners, administrators, citizens and others
- When possible, addressed in collaboration with an **interdisciplinary** team of researchers
- **Stakeholders** integrated into every step of scientific process, including methodologies, results, and conclusions.

Social Ecology research



Characterization of Human-Boar relations in the urban setting



Mapping trade-offs between cultural and regulating ecosystem services when addressing fire risk



Defining characteristics that strengthen societal resilience to pandemics

Nature and Parks Authority



Ministry of Environment



Jewish municipality



Regional education program



UNESCO-MAB committee



Druze municipalities



Advocacy organization



Stakeholder engagement in regional ecosystem service assessment



Facilitating a sustainability transition in Israeli Vineyards

Environmental Challenges: Water loss, Soil loss, Biodiversity loss, Herbicide use

INITIATORS

The trigger



The funder



The economic interests

Farmers



Winery



Sustainability Hero (Winery Viticulturist)



RESEARCH TEAM

Ecologists



Policy analyst

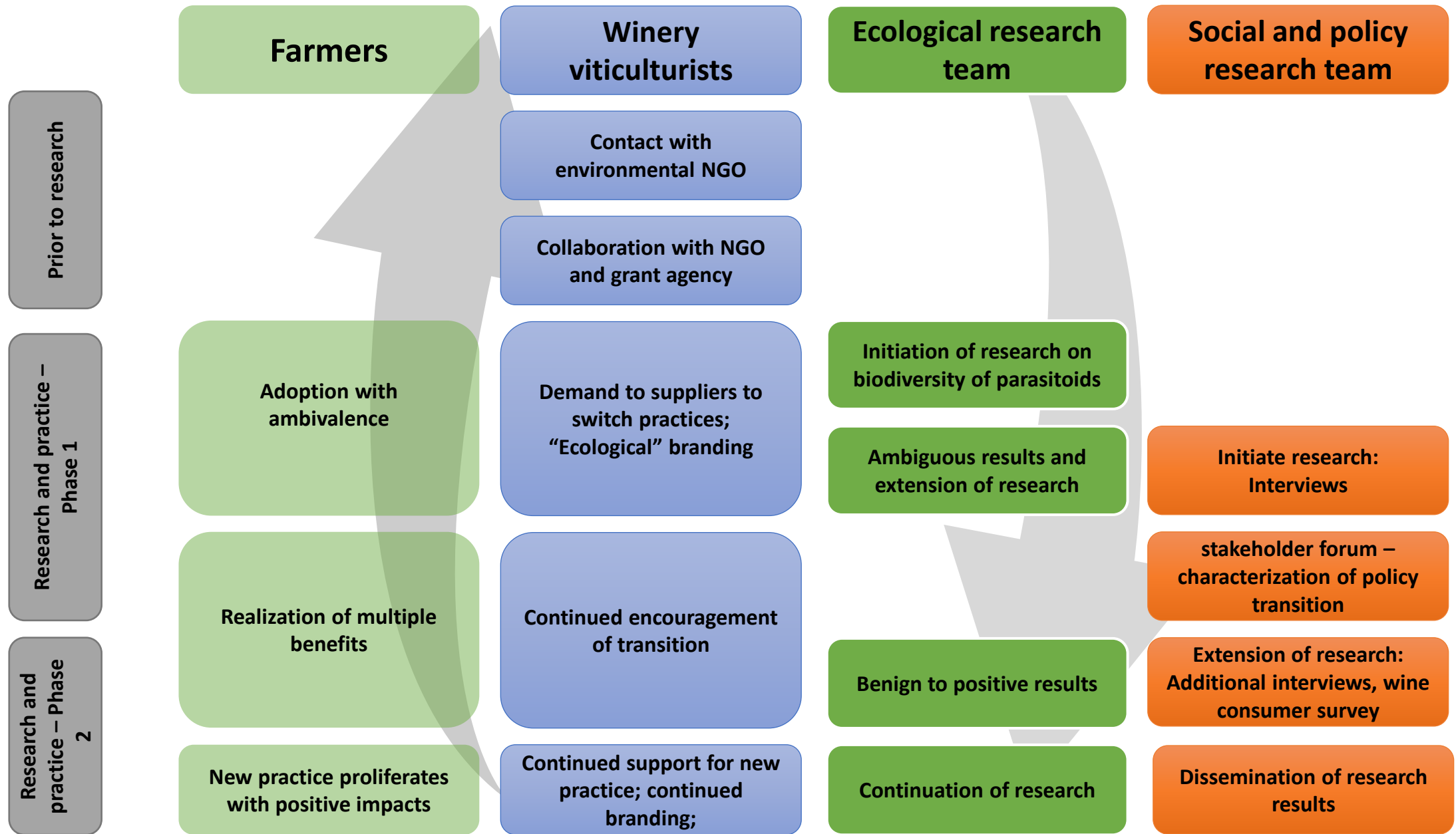


Socio-Ecologist



Other stakeholders

Ministry of Agriculture
Other wineries
Other farmers



Social ecology in a research consortium



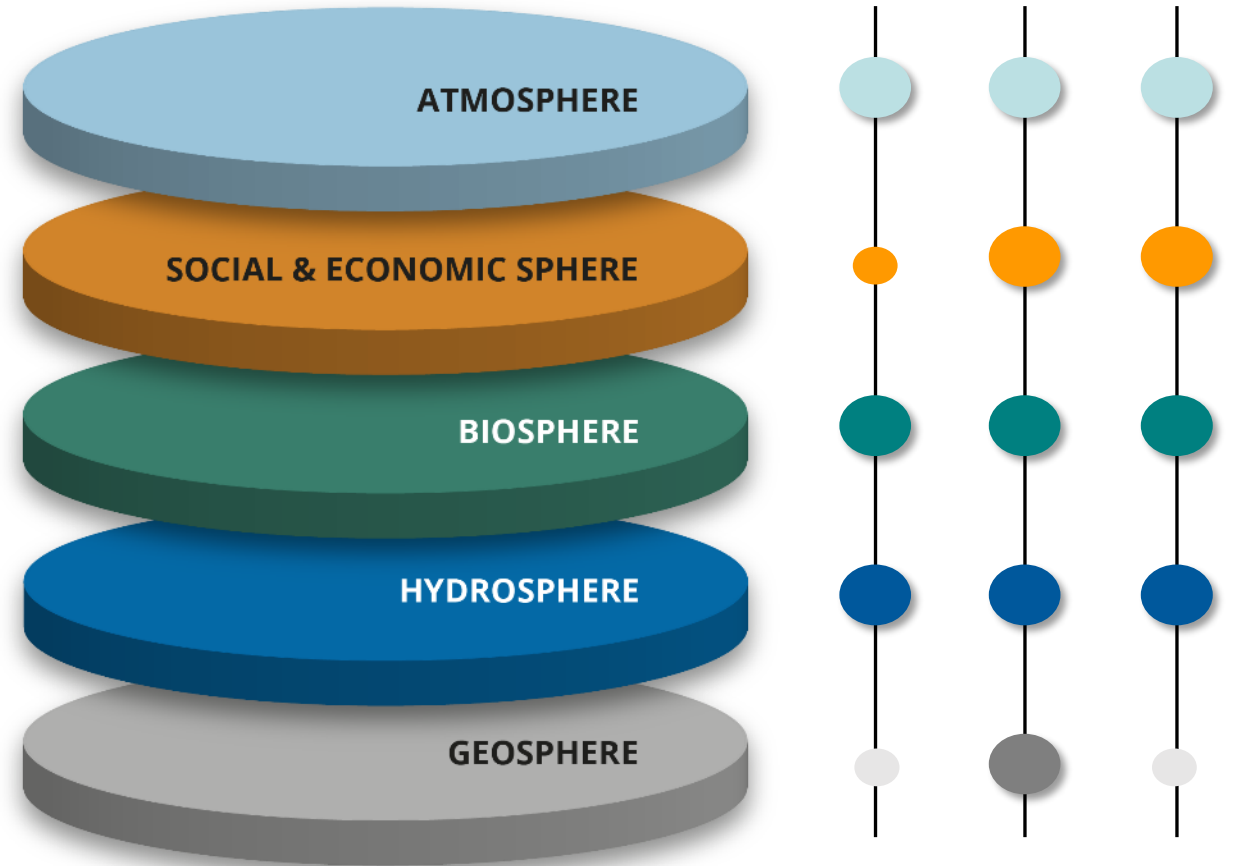
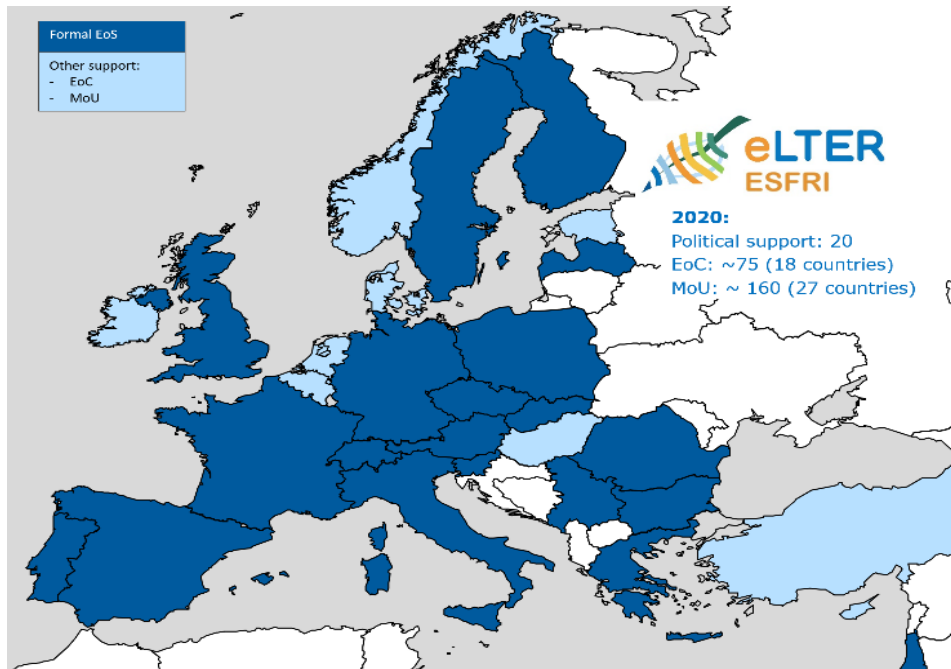
Sustainable eLTER RI: The grand challenges



1. **Biodiversity loss**
2. **Biogeochemical controls of ecosystem functions**
3. **Climate-water-food nexus**
4. **Socio-ecological systems**

Addressing these challenges exemplifies the need for **interdisciplinarity**, **large spatial and temporal coverage** and a **Whole Systems Approach**

“Whole System” Approach & cross-disciplinarity for Life Supporting Systems

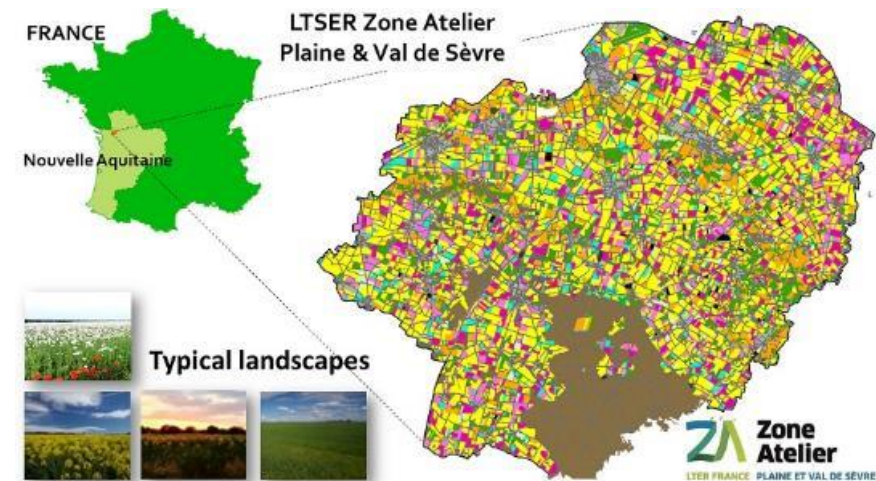
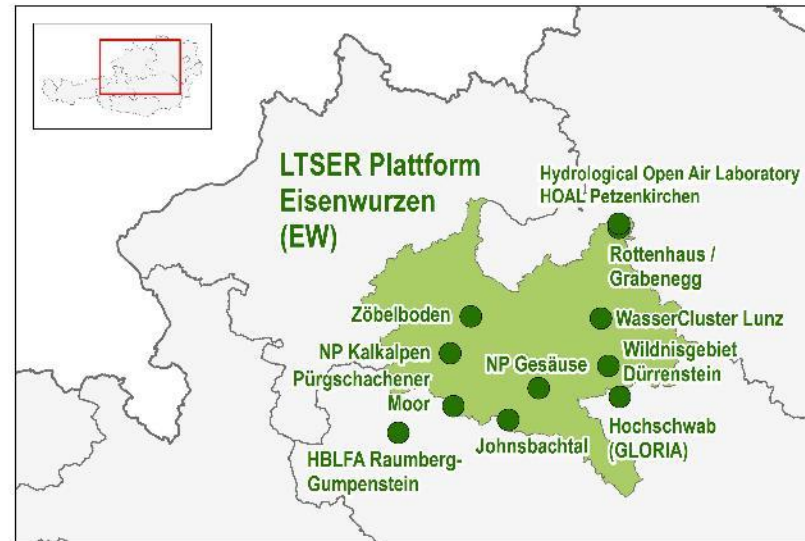


Continuous long-term operation of ~200 innovative hubs



The eLTSER Platform

- Spatially explicit living laboratories for **transdisciplinary, long-term, socio-ecological research**
- Research conducted at the **landscape scale** using diverse disciplinary, interdisciplinary, and transdisciplinary approaches in **tight coordination with local and regional stakeholders.**
- **Supported by long-term environmental, social and economic data.**



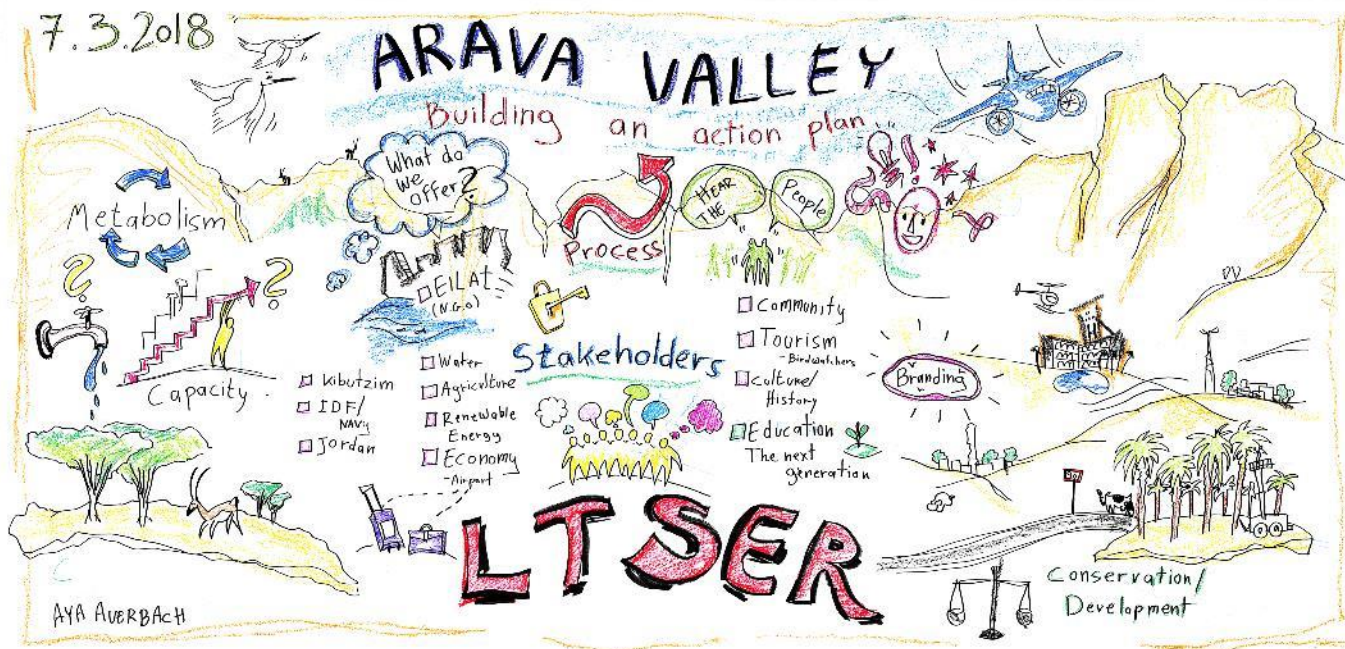
Israeli eLTSER platforms

- Ramat Hanadiv
- Northern Negev
- Negev Highlands
- Arava



Arava

Stakeholder engagement, regional sustainability challenges (agriculture, energy production, tourism)



Jessica Schäckermann



Oded Keinan

מרכז מדבר יום המלח
 Dead Sea & Arava
 Science Center
 בחסות אוניברסיטת בן גוריון בנגב
 Under the auspices of Ben-Gurion University of the Negev



Arava

Stakeholder engagement, regional sustainability challenges (agriculture, energy production, tourism)

Chapter 18
Using the Ecosystem Services Framework in a Long-Term Socio-Ecological Research (LTSER) Platform: Lessons from the Wadi Araba Desert, Israel and Jordan

Daniel E. Orenstein and Elli Groner



Jessica Schäckermann



Oded Keinan



Negev Highlands

Stakeholder engagement, regional sustainability challenges (agriculture and flooding, grazing and nature conservation)



Noa Avriel Avni



Negev Highlands

Stakeholder engagement, regional sustainability challenges (agriculture and flooding, grazing and nature conservation)



Noa Avriel Avni

Chapter 12 Using Transdisciplinary Action Research Toward Sustainable Management and Tourism in the Negev Highlands

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Technion, Israel

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CHAPTER FIVE

Differing perceptions of socio-ecological systems: Insights for future transdisciplinary research

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Ramat Hanadiv

Stakeholder engagement, regional sustainability challenges (transportation, nature conservation, human-nature interactions, השותפות לקיימות אזורית)



Liat Hadar



Ramat Hanadiv

Stakeholder engagement, regional sustainability challenges (transportation, nature conservation, human-nature interactions, השותפות לקיימות אזורית)



Liat Hadar

Example: The Partnership for Regional Sustainability as a Collaborative Governance Arrangement

[Naomi Apel](#) & [Lihi Lahat](#)

Chapter | [First Online: 01 October 2020](#)

A Comparative Framework for Assessing Sustainability Initiatives
at the Regional Scale

DANIEL E. ORENSTEIN and DALIT SHACH-PINSLEY*
Technion – Israel Institute of Technology, Haifa, Israel



Northern Negev

Stakeholder engagement, regional sustainability challenges (dryland forestry, grazing and nature conservation, אדום אדום)



Shayli Dor Haim



Lessons learned

Successes

- Out of the ivory tower
- Support for sustainability initiatives
- Reaching across disciplines
- Tangible contribution to sustainable solutions
- Agents of change

Challenges

- Inconsistent leadership and funding
- 'Non-promotable' activities
- Demand for mediation skills
- Demand for engagement skills (בגובה עיניים)
- Time consuming

Mandatory criteria for eLTSER platforms

- ***Spatial design and physical infrastructure***
 - *Explicit boundaries*
 - *Includes >1 LTER site*
- ***Management and Financing***
 - *Binding agreement for long-term operation by coordinating institution*
 - *Memoranda of Understanding (MoU)*
- ***Staff and human resources***
 - *Directorate and council of advisors*
 - *Platform director, research coordinator, data manager, coordinator of stakeholder communication and activities*
- ***Stakeholder engagement***
- ***Data*** - *Collects/collates key socio-ecological variables (Standard Observations)*

Customizable criteria for eLTSER platforms

- **Data (category 1 and category 2 sites – definitions in development)**
 - *All platforms responsible for the collection of eLTSER Standard Observation(SO)*
 - *Variables Demographic and Economic*
 - *Land cover*
 - *Ecosystem services*
 - *Governance and stakeholders*
 - *Two levels of harmonized collection methodologies (basic and prime)*
 - *A **category 2** platform will commit to collection of SOs using **basic** methods*
 - *A **category 1** platform will commit to collection of SOs using **prime** methods*

Thanks...

- To the LTSER platform leads (Noa, Jessica, Liat)
- To my colleagues in eLTER (Shayli, Elli)
- To you!



<https://orenstein.net.technion.ac.il/>

