



LENSES 2nd LENSES WEBINAR

NEW TECHNOLOGIES AND AI TOOLS **VS** NATURAL BASED SOLUTIONS: TRADE OFF AND SYNERGIES FOR SUSTAINABLE AGRICULTURE

Minutes of Meeting

Date: April 4, 2024

Time: 09:30 - 12:10

Location: Virtual (Online)

09:40-10:00: Welcome and Introduction

- At the start of the meeting, all participants are warmly welcomed, Stefano Fabiani, the LENSES Coordinator from **CREA**, provides an overview of the LENSES activities and goals. This introduction sets the context for the discussions that follow.

10:00-10:40: The Role of Participatory Approach in WEF Nexus Implementation

- Alessandro Pagano, representing **IRSA-CNR**, delves into the significance of a participatory approach when implementing the Water-Energy-Food-Ecosystem (**WEFE**) nexus. This approach emphasizes involving stakeholders, local communities, and experts in decision-making processes related to these critical interconnected systems. Participatory System Dynamics Modelling (**PSDM**) is a methodology used for systems thinking an understanding complex issue related to water, energy, and food (**WEF**) systems. **PSDM** involves group model building and aims to unravel the intricacies of **WEF** systems, enhancing our understanding of their behavior. Nature-Based Solutions (**NbS**) play a pivotal role in addressing the intertwined challenges of biodiversity loss and climate change. He also shared the results from LENSES case studies, specially focusing on the Pinios Basin (Greece, pilot area) and on the lessons learned.

10:40-11:10: Nature-Based Solutions (NBS) for Integrated Resource Management

- Andreas Panagopoulos, a speaker from **SWRI**, focuses on **Nature-Based Solutions (NBS)**. These solutions leverage natural processes and ecosystems to address resource management challenges. Andreas discusses how NBS can enhance the sustainable use of natural resources. He also explains the importance of practices such as agroforestry, cover cropping, and crop rotation, which promote biodiversity also using “[Serious Game](#), a Lenses web-application”. Andreas emphasizes the critical role of maintaining close communication with stakeholders, particularly the authorities, in ensuring the success of these practices (**NbS**).

11:10-11:45: New Technologies and AI Tools for Agriculture Sustainability

- Guido Bonati, a representative from **CREA**, explores cutting-edge technologies and artificial intelligence (AI) applications in agriculture. Guido sheds light on how these innovations can contribute to sustainable farming practices, resource efficiency, and improved yields.

Artificial intelligence has revolutionized various industries, and agriculture is no exception. Here are some ways AI tools are making an impact:

1. **Precision Farming:** AI-driven sensors, drones, and satellite imagery allow farmers to monitor crop health, soil moisture, and pest infestations with unparalleled accuracy. This precision minimizes resource wastage and maximizes yields.
2. **Crop Prediction Models:** Machine learning algorithms analyze historical data to predict crop yields, disease outbreaks, and optimal planting times. These insights empower farmers to make informed decisions.
3. **Automated Machinery:** Smart tractors, robotic harvesters, and autonomous irrigation systems streamline labor-intensive tasks. By reducing manual labor, AI-driven machinery increases efficiency and reduces costs.

11:45-12:00: Open Discussion: Trade-offs and Synergies and Closing Remarks

- In this interactive session, all speakers and some participants engage in a lively discussion. The topic centers around the delicate balance between different approaches: traditional technologies, AI-driven tools, and Nature-Based Solutions. The moderator, Stefano Fabiani, facilitates the exchange of ideas, exploring trade-offs and potential synergies.

While AI offers immense potential, challenges persist:

1. **Data Dependency:** AI models require vast amounts of data for training. Access to reliable and diverse datasets can be a hurdle for small-scale farmers.
2. **Cost and Infrastructure:** Implementing AI tools demands investment in technology, connectivity, and training. Affordability remains a concern.

Challenges of NBS

NBS faces its own set of obstacles:

1. **Time-Intensive:** Natural processes evolve gradually. Implementing NBS requires patience and long-term commitment.
2. **Scale Limitations:** While effective, NBS practices may not match the scale of industrial agriculture. Scaling up NBS can be challenging.

Finding Synergies

The Middle Ground

Rather than an either-or scenario, a balanced approach is essential. Consider these synergies:

1. **AI-Assisted NBS:** Combine AI tools with NBS. For instance, use satellite imagery to identify optimal locations for tree planting or monitor wildlife habitats.
2. **Local Context:** Tailor solutions to local conditions. Some regions may benefit more from NBS, while others thrive with AI-driven interventions.
3. **Education and Collaboration:** Educate farmers about both approaches. Collaborate across sectors to bridge the gap between technology and nature.

In the quest for sustainable agriculture, we need not choose sides. Instead, let's harness the strengths of AI and NBS, recognizing that nature's wisdom and technological innovation can coexist harmoniously. As we tread this path, let's cultivate a future where our fields flourish, our ecosystems thrive, and our plates remain abundantly filled.

12:00-12:10: Conclusion

4. Stefano Fabiani concludes the meeting, summarizing key takeaways and expressing gratitude to all participants for their valuable contributions.