



SCALE UP

community-driven
bioeconomy development

WS7 Training Programme Protocol

Strategies to Address Social, Ecological, and Economic Trade-offs in Regional Bioeconomy Development

Session #2: Biomass Utilization and Food Security: Synergies and Challenges

21 November 2024

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On 21 November 2024, the online training titled "**Biomass Utilization and Food Security: Synergies and Challenges**" was organized by WIP Renewable Energies. The session focused on exploring the synergies and challenges between biomass utilization and food security. Key topics included identifying the most promising synergies, uncovering opportunities, and addressing the challenges in realizing these synergies within the bioeconomy framework. The session was attended by 66 bioeconomy stakeholders from SCALE-UP's focal regions and beyond.

The session was opened by Ingo Ball from WIP Renewable Energies, who welcomed participants and provided a brief overview of the training's objectives. The facilitator highlighted the need to balance diverse bioeconomy priorities—from ensuring global food security to developing sustainable bio-based products—while navigating persistent trade-offs in land use, biomass supply, and economic viability.

Dr. Klaus Thuneke from Technologie- und Förderzentrum im Kompetenzzentrum für Nachwachsende Rohstoffe (TFZ) gave a presentation entitled "Multi-Purpose Oilseed Crops for more Food Security". He discussed the role of multi-purpose oil-seed crops, particularly rapeseed, in enhancing food security while contributing to renewable energy production. He highlighted that replacing fossil diesel fuel with vegetable-based fuels is feasible without significantly impacting food production. In Germany, for instance, substituting agricultural diesel with rapeseed oil would require only about 6 to 9% of the country's agricultural land. Dr. Thuneke emphasized the flexibility of reallocating rapeseed oil from fuel to food markets during crises, as demonstrated during the onset of the Ukrainian war. This adaptability ensures a buffer in food supply without compromising energy needs. The presentation concluded with the acknowledgement that while multi-purpose crops can contribute positively, they must be integrated thoughtfully into local contexts.

Following this, Flore Millet from Collectivité Eau du Bassin Rennais (CEBR) presented "Building regional supply chains to support producers in the Agri/Agro transition: the example of 'Terres de Sources' hemp supply chain". She explained the strict regulatory environment governing hemp cultivation in France, including THC content restrictions and the necessity for farmers to have contracts with seed producers and processors before cultivation. Hemp offers significant environmental benefits, such as improving soil and water quality. Ms. Millet emphasized the importance of increasing market demand for hemp fiber to enhance economic viability for farmers, ensuring that cultivation remains sustainable and does not lead to overproduction.

Next, Dr. Gernot Zwegtlick from University of Applied Sciences Wiener Neustadt gave a presentation on "By-Products as a Resource: Opportunities and Challenges for Food Supply Security". from identifying high-value compounds suitable for food, feed, and specialty chemicals, to implementing circular production models that reduce waste and bolster economic viability. He emphasized the importance of overcoming technical, regulatory, and market hurdles to scale these valorization efforts effectively and strengthen overall food supply security. Concluding on a lighter note, he remarked, "One person's garbage is another's gourmet meal for their livestock—or even their lab fermentation tank."

Amparo Manso from Andalusian Energy Agency talked about "Biomass and Biofuels in the Andalusian Context", highlighted the significant role of biomass and biofuels in Andalusia's

sustainable agri-food sector and bioeconomy development. She outlined the region's abundant biomass resources, particularly from olive oil production, and addressed challenges such as water scarcity that influence crop selection. Emphasizing the utilization of residual biomass rather than dedicated energy crops, she explained how this approach avoids competition with food crops and makes efficient use of existing resources. She underscored the importance of residual biomass in meeting energy needs while supporting environmental sustainability and economic development in the region.

Following the presentations, a plenary discussion was held, moderated by Ingo Ball, to delve deeper into the synergies and challenges of biomass utilization and food security.

Dr. Thuneke addressed concerns regarding the potential competition between food and fuel production. He argued that dedicating a portion of agricultural land to oilseed crops like rapeseed for fuel does not significantly impact food production due to the small percentage of land required. The ability to shift rapeseed oil from fuel to food markets during crises provides a safety net for food security.

Participants discussed the role of public policies and market mechanisms in addressing trade-offs between biomass utilization and food security. Dr. Thuneke suggested that taxation systems might be more effective than compulsory biofuel quotas in balancing market demands without creating undue competition between food and fuel uses of biomass. The design of policy instruments significantly impacts market dynamics and the sustainability of biomass utilization.

The discussion touched on the European Union's Renewable Energy Directive and its strict regulations concerning high Indirect Land Use Change (ILUC) risk biofuels. Participants noted that certain crops, like palm oil, are excluded from counting towards renewable energy targets due to their ILUC impacts. The directive's focus on sustainability criteria affects the types of biomass that can be used for energy purposes within the EU.

Ms. Millet emphasized the importance of regional solutions and the environmental benefits of hemp cultivation. Strict regulations in France ensure controlled expansion and prevent overcultivation of hemp. The crop's benefits for soil health and water quality make it a valuable addition to sustainable agricultural practices.

Participants raised questions about involving various stakeholders, including farmers, industry, government, and neighboring regions. Holger Gerdes inquired about collaboration across administrative boundaries, particularly concerning environmental impacts like water management. Ms. Manso discussed the challenges in Andalusia, noting that water scarcity influences collaboration and crop choices. Cross-sector and cross-regional collaboration are essential for addressing shared environmental challenges.

Ms. Manso elaborated on Andalusia's focus on utilizing residual biomass, such as olive pruning and pomace, for energy production. Due to water scarcity, growing dedicated energy crops is impractical. Utilizing residual biomass avoids competition with food crops and leverages existing agricultural by-products, contributing to a circular bioeconomy.

The economic aspects of biomass utilization were discussed, with emphasis on ensuring that farmers and producers receive adequate income from alternative crops like hemp. Increasing market demand for hemp fiber and residual biomass products is crucial for the economic sustainability of these initiatives.

Conclusions

The session highlighted several key insights:

1. **Integrating multi-purpose crops:** Integrating multi-purpose crops such as rapeseed can meet energy needs while maintaining food security. Flexible allocation and the ability to shift resources based on market conditions are essential strategies.
2. **Regional Solutions Tailored to Local Conditions:** Regional approaches that consider specific environmental conditions, resource availability, and regulatory frameworks are crucial. Crops like hemp offer environmental benefits and can be integrated sustainably when managed appropriately.
3. **Utilizing Residual Biomass:** Focusing on residual biomass for energy production maximizes resource efficiency and avoids competition with food crops. This approach supports a circular economy and leverages existing agricultural by-products.
4. **Cross-Sector Collaboration and Stakeholder Engagement:** Effective bioeconomy strategies require collaboration across sectors, including agriculture, energy, environment, and industry. Engaging stakeholders at all levels ensures that diverse perspectives are considered and that initiatives are sustainable and socially acceptable.

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