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Boosting the adoption of Bio-Based Technologies

The Potential of Biomass in Greece's Regions: Challenges and Opportunities

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Article information

Title	The Potential of Biomass in Greece’s Regions: Challenges and Opportunities
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Brief summary	This article explores Greece's potential in biomass utilization and its transition to a circular economy, highlighting regional strengths and challenges. Regions like Central Macedonia, Crete, and the Peloponnese demonstrate diverse approaches to biomass, from agricultural residues to advanced waste management and energy production, though governance and technological gaps persist. The transition to a circular economy, essential for sustainability, emphasizes resource efficiency, circular entrepreneurship, and sustainable consumption. While Central Macedonia and Crete lead regional initiatives with bioeconomy action plans, regulatory gaps and limited consumer awareness hinder broader adoption. By leveraging European funding, fostering partnerships, and implementing cohesive national strategies, Greece can unlock the economic, social, and environmental benefits of renewable resources, paving the way for sustainable development and enhanced competitiveness.
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The Potential of Biomass in Greece's Regions: Challenges and Opportunities

Biomass has emerged as a cornerstone of sustainable development in Europe, offering a pathway toward energy independence, waste management, and environmental protection (Bentsen and Felby, 2012). With its diverse geography and agricultural resources, Greece has vast potential for biomass utilization. Central Macedonia, Crete, and the Peloponnese showcase unique approaches to leveraging biomass in their local economies (Alatzas et al., 2018). By examining these regions, we can uncover the opportunities and challenges they face in embracing this renewable resource.

In Central Macedonia, biomass sources primarily consist of agricultural and forestry residues, livestock waste, energy crops, and biodegradable industrial and municipal waste. The region benefits from its rich agricultural landscape, with prominent crops like cereals, cotton, and corn (Moulogianni et al., 2017). Areas such as Chalkidiki and Imathia are particularly notable for olive groves and fruit trees. However, despite the abundance of resources, the bioeconomy in Central Macedonia remains in its early stages. Limited governance models and a lack of knowledge regarding innovative bioproducts pose significant obstacles. Yet, the potential for European funding and the growing interest in sustainable practices offer a hopeful outlook. Efforts to reduce CO2 emissions and enhance soil fertility are already showing promise, highlighting the region's potential to lead in sustainable agriculture and waste management.

Crete, known for its olive oil production, generates significant biomass from olive pits and pruning residues (Vourdoubas, 2015). The island's geography facilitates the development of centralized collection systems, enabling efficient utilization of agricultural waste. A pioneering biogas and electricity production unit in Heraklion showcases advanced technologies for waste management, including deodorization and liquid residue treatment. This facility not only supports the local community by creating jobs but also reduces environmental impacts, aligning with Crete's broader goals for sustainable development. Furthermore, initiatives to transition traditional olive mills from three-phase to two-phase systems aim to lower waste moisture content, enhancing the efficiency of biomass processing. Such efforts underscore Crete's innovative approach to addressing both environmental challenges and energy needs.

The Peloponnese has emerged as a leader in waste management, transforming from a region lagging in this area to a national and European exemplar. With a 167-million-euro investment funded partially by the National Strategic Reference Framework (NSRF), the region has implemented state-of-the-art waste management units (WMUs). These facilities recover over 80% of biodegradable materials, recycle high-quality recyclables, and generate green energy sufficient for 6,000 households. The Arkadia Waste Processing Unit, the largest of its kind, manages over half of the region's urban solid waste. The integration of innovative gasification technology converts olive residues into electricity and thermal energy (Alatzas et al., 2018). Additionally, the introduction of "green spots" in Kalamata facilitates composting, further promoting a circular economy. These advancements not only reduce greenhouse gas emissions but also generate significant economic and social benefits, including hundreds of jobs and substantial cost savings for local residents.

The potential of biomass in Greece is undeniable. Central Macedonia, Crete, and the Peloponnese each demonstrate distinct strengths and opportunities in utilizing this resource, despite facing

challenges such as governance gaps and technological adoption. By leveraging European funding, fostering public-private partnerships, and promoting community engagement, Greece can unlock the full potential of its biomass sector. The success of these regions serves as a blueprint for sustainable development, proving that investment in renewable energy and waste management can drive economic growth while preserving the environment for future generations.

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Document information

Title	BBioNets - Creation and promotion of Forest and Agriculture Networks to boost Bio-Based Technologies adoption and Value Chain development (GA No 101133904)
Start - end date	1/11/2023 – 31/10/2026 (36 months)
Project type	Coordination and Support Action
Programme	Horizon Europe – Cluster 6
Funding	1,998,636.20 €
Coordinator	Munster Technological University Ms. Carmen Girón Domínguez (carmen.dominguez@mtu.ie)
Project overview	**BBioNets** will constitute a thematic network that will rely on, promote, and further advance the work carried out by EIP AGRI Operational Groups (OGs) with respect to **management and/or processing of agricultural and forest biomass with Bio-Based Technologies (BBTs).** The project will set up 6 regional Forest and Agriculture Networks - FANs (IE, ES, IT, GR, PL, CZ) that will identify local needs, prioritise specific BBTs and share BBT knowledge ready for practice to farmers and foresters, boosting the (re)definition of value chains, stimulating cross-fertilisation beyond borders, and bringing Europe to the forefront of farming, forestry, and bioeconomy with economically viable and sustainable practices.
Consortium	MTU Ollscoil Teicneolaíochta na Mumhan Munster Technological University cagasc iung Institute of Soil Science and Plant Cultivation State Research Institute TEPRO Consultores Agrícolas, S.L. CTA crea American Farm School Thessaloniki - Greece FOCUS Bio East

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