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Community Acceptance of Anaerobic Digestion in Ireland

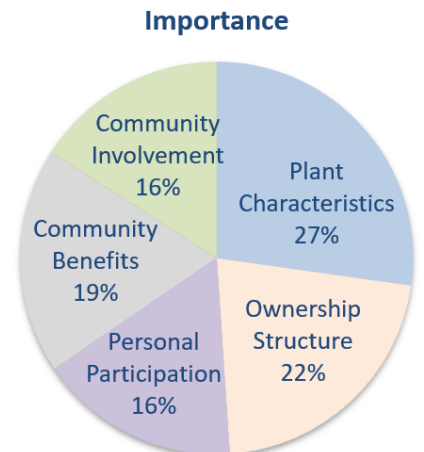
Abstract

The circular bioeconomy has been identified as a cornerstone of Europe's low-carbon transition, with anaerobic digestion (AD) offering dual benefits in renewable energy generation and sustainable waste management. Ireland has committed to producing 5.7 TWh of biomethane annually and cutting emissions by 51% by 2030, yet deployment remains slow. While the environmental and economic case for AD is strong, research consistently shows that its success depends on navigating complex social acceptance challenges at the community level.

This study employs choice-based conjoint analysis with 685 Irish citizens, uncovering distinct public preferences regarding plant size and location, ownership structures, participation opportunities, benefit distribution, and governance. By recognising the distributive and procedural justice dimensions, underpinning acceptance, this research provides evidence-based recommendations for designing AD projects that can gain legitimacy and contribute meaningfully to Ireland's climate ambitions.

Research Outcomes

What really matters for community acceptance of AD?



■ Plant Characteristics ■ Ownership Structure
■ Personal Participation ■ Community Benefits
■ Community Involvement

Summary of Findings

Size & Distance: Support exists for *small/medium sized plants >2 km from residences*; Less support exists for *large facilities* near residences.

Ownership: Trust levels are highest for *community/farmer AD cooperatives*; Lower trust exists in *privately developed AD plants* or *Public Private Partnership models*.

Benefits: People value *direct, tangible benefits* (reduced energy bills, local jobs).

Participation: Communities want a *voice in decisions*, not merely passive roles as investors or resource suppliers.

Governance: *Information-only* approaches are rejected; *community-led management* or *joint boards* build legitimacy.

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Participation: Communities want a *voice in decisions*, not merely passive roles as investors or resource suppliers.

Governance: *Information-only* approaches are rejected; *community-led management* or *joint boards* build legitimacy.

Opposition arises from concerns about distributive justice (who receives the benefits versus who bears the costs) and procedural justice (whether decision-making processes are fair and inclusive).



Recommendations

Design Standards

Support small/medium plants (<1 MW). Consider implementing a minimum 1-2 km buffer from nearby residences. Allow larger/closer plants if communities hold ownership stakes or if benefit-sharing arrangements are equitable.

Support community and farmer-led ownership

Consider expanding grant schemes and planning pathways for cooperative or community-owned plants. This builds local buy-in and aligns with Ireland's tradition of cooperative farming.

Encourage structured community engagement

Consultation must go beyond one-off meetings. Formal mechanisms such as joint oversight committees or community board representation for AD governance.

Frame as Opportunity-Sharing

Instead of framing AD as something communities must "tolerate," policy should frame projects as local development opportunities: new income for farmers, cheaper energy for households, and investment in rural infrastructure.

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