Expanded abstract

Economic analysis of EU Regulation 2020/852 on sustainable investments from the perspective of agricultural cooperatives: The case of rice cultivation

Objectives

The transition toward sustainable economic models has become a cornerstone of European policy, crystallizing in the Regulation (EU) 2020/852 (the Taxonomy Regulation). This legal framework aims to reorient capital flows toward activities that promote economic development while respecting planetary boundaries. Within this context, agricultural cooperatives emerge as key actors due to their intrinsic link to social economy values, such as solidarity, democratic participation, and deep roots in rural communities.

The primary objective of this study is to conduct an economic and legal analysis of the environmental objectives established by the Regulation to identify specific opportunities and barriers for agricultural cooperatives seeking sustainable finance. A secondary goal is to address the current regulatory uncertainty arising from the postponement of technical selection criteria for the agricultural sector under Delegated Regulation 2021/2139. Finally, the study aims to provide practical tools, specifically carbon footprint, to help these organizations integrate sustainability into their operational and financial strategies.

Methodology

The study's methodological approach comprises three steps. Firstly, we provide a legal analysis of Regulation 2020/852 to determine the four simultaneous requirements for an activity to be considered environmentally sustainable. Secondly, we propose carbon footprint calculation as the most suitable metric for agricultural cooperatives to demonstrate climate change mitigation. This methodology is chosen for its scientific robustness and its ability to cover the entire product life cycle. Thirdly, we describe an application of this methodology to rice cultivation. This case quantifies the impact of different agricultural practices on greenhouse gas emissions and analyzes how these results align with the Regulation's criteria.

Results

From the legal analysis, we find that Article 9 of Regulation (EU) 2020/852 establishes six fundamental environmental objectives that guide the classification of sustainable economic activities. These objectives include climate change mitigation and climate change adaptation,

which focus on reducing greenhouse gas emissions and increasing resilience to climate impacts. Furthermore, the framework prioritizes the sustainable use and protection of water and marine resources, as well as the transition to a circular economy through waste prevention and recycling. Lastly, the regulation targets the prevention and control of pollution, as well as the protection and restoration of biodiversity and ecosystems.

On the other hand, Article 3 of Regulation (EU) 2020/852 establishes the cumulative requirements that an economic activity must fulfill to be classified as environmentally sustainable. According to this article, an activity must contribute substantially to one or more of the six environmental objectives defined in Article 9, such as climate change mitigation or the transition to a circular economy. Simultaneously, the activity must not cause significant harm to any other environmental objectives and must be conducted in accordance with the minimum social safeguards. Finally, the activity must comply with the specific technical selection criteria established by the Commission.

As a result, for an agricultural cooperative to access sustainable finance, its activities must meet the "Do No Significant Harm" principle across all objectives simultaneously; partial compliance is not permitted. In other words, for an agricultural cooperative to qualify for sustainable finance under Regulation (UE) 2020/852, its activities must strictly adhere to the cumulative requirements established in Article 3. This framework mandates that an activity must simultaneously fulfill four conditions: it must contribute substantially to at least one environmental objective while not causing significant harm to any of the other five objectives. For example, a project designed to favor the circular economy through agricultural waste recycling would fail to be classified as sustainable if its processes, such as residue incineration, release greenhouse gases that undermine climate change mitigation. Consequently, this "all-or-nothing" regulatory approach requires cooperatives to conduct a comprehensive analysis of their operations to ensure that pursuing one environmental benefit does not generate negative externalities that violate the other protected objectives.

The analysis of rice cultivation reveals that agricultural practices significantly influence GHG emissions (Scope 1 and 2). Specifically, the management of rice straw is a decisive factor. Comparing the removal, burning, and incorporation of straw shows that removing the straw is the most sustainable option, reducing emissions by 55% compared to the worst alternative (incorporation). In addition, a cooperative that chooses straw removal contributes substantially to Climate Change Mitigation (Objective 1). Furthermore, it supports the circular economy (Objective 4) by repurposing straw into products such as paper or biomass, without harming water resources or biodiversity. Finally, the carbon footprint acts as a technical selection criterion (Art. 19), providing a verifiable, quantitative, and science-based indicator that facilitates access to green bonds and other financial instruments.

Implications

A critical implication for cooperatives is the current regulatory gap. While other sectors have defined technical criteria, agriculture has been postponed. This lack of specificity creates uncertainty, hindering strategic planning and investment. However, the study argues that co-

operatives are uniquely positioned to lead this transition because their decision-making is multi-criteria, prioritizing social and environmental value over purely financial gain (shared value). Aligning with Regulation 852 offers several economic advantages for cooperatives, including sustainable finance (access to funds at lower interest rates or with more flexible terms for projects that demonstrably reduce GHG emissions), operational efficiency (technologies such as precision irrigation or regenerative agriculture reduce water and energy consumption, thereby lowering production costs), income diversification (reusing by-products like rice straw for biomass creates new revenue streams), access to markets (compliance with environmental standards allows cooperatives to enter international markets with premium prices for low-impact or organic products), and reputational gains. Improving Corporate Social Responsibility (CSR) serves as a competitive advantage, reducing conflicts with stakeholders and enhancing the brand image.

Conclusions

The study concludes that despite the current lack of specific technical criteria for agriculture in EU regulations, agricultural cooperatives are better positioned than traditional commercial companies to benefit from sustainable finance. Their democratic structure and rural presence make them natural drivers of the ecological transition. The carbon footprint is identified as the essential tool for bridging the current regulatory gap, providing the scientific evidence needed to prove a substantial contribution to environmental goals. Finally, the research highlights that the "all-or-nothing" nature of the Regulation (requiring compliance with all objectives and no harm to any) demands a rigorous approach to sustainability within the cooperative sector. Future research should delve into specific tax incentives and the implementation of international sustainability labels based on these criteria.