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1.3.3 Environmental Footprint national and regional datasets for the main Italian production systems

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Introduction

This set of documents has been developed within the framework of the GRINS project (Growing Resilient, INclusive and Sustainable Extended Partnership), under Work Package 3 (WP3), with the objective of supporting the development of Environmental Footprint (EF) national and regional datasets for key Italian production systems. The reports contribute to the broader goal of enhancing resource efficiency, promoting circular economy strategies, and enabling robust environmental performance assessments across diverse sectors.

The three documents included in this deliverable address different production systems—namely, the agri-food sector (table grapes), the livestock sector (cattle breeding), and the industrial sector (aluminium foundries). Despite their sectoral differences, all studies adopt a common methodological framework based on Life Cycle Assessment (LCA), in accordance with ISO 14040 and ISO 14044 standards, and apply the Environmental Footprint 3.1 (EF 3.1) methodology for life cycle impact assessment. This ensures methodological consistency in the identification, quantification, and interpretation of environmental impacts.

The first document focuses on the table grape supply chain in the Apulia region, with particular emphasis on the agricultural production phase. It combines sectoral analysis with an LCA-based assessment, providing both a contextual overview of the supply chain and a detailed evaluation of environmental impacts associated with cultivation practices. The analysis is primarily limited to upstream and on-farm processes, reflecting the central role of agricultural inputs in shaping the environmental profile of this system.

The second document examines the Italian cattle breeding supply chain, adopting a more comprehensive system perspective that includes feed production, livestock farming, and slaughtering processes. This report provides a detailed characterization of the variability inherent in livestock systems, accounting for differences in production systems, animal categories, and feeding practices. The resulting datasets support a deeper understanding of the environmental implications of complex, multi-stage agri-livestock systems.

The third document addresses aluminium production in Italian foundries, representing an industrial application of the same methodological framework. Based on primary data collected from multiple facilities, the study analyses the environmental impacts of different production stages and technologies within a cradle-to-gate perspective. Particular attention is given to process-level contributions and the identification of environmental hotspots within manufacturing systems.

Taken together, these documents provide a comprehensive and cross-sectoral perspective on the environmental performance of Italian production systems. While differences in system boundaries, functional units, and levels of detail reflect the specific characteristics of each sector, the shared methodological foundation ensures the overall coherence of the deliverable. The environmental footprint results are intended to support both sector-specific analyses and broader comparative assessments, contributing to the development of targeted strategies for improving environmental sustainability across heterogeneous value chains.