

In December 2019, the European Commission presented "The European Green Deal" roadmap, aimed at making the European Union's economy more sustainable, turning climate and environmental challenges into opportunities and making the transition fair and inclusive for all. The European Green Deal has specified the types of actions to be implemented, focusing on four challenges: (i) boosting resource efficiency, (ii) tackling global warming by limiting greenhouse gas emissions and the use of fossil fuels, (iii) reversing the collapse of biodiversity, (iv) reducing chemical pollution (especially fine particles and aerosols) and waste. The Green Deal also describes the investments required and the financing tools available. The European Green Deal covers all sectors of the economy, including transport, energy, agriculture, buildings and industries such as steel, cement, ICT, materials, textiles and chemicals. Within the EU's monitoring framework for the circular economy, 5 thematic areas received attention: (1) production and consumption patterns, (2) waste management, (3) secondary raw materials, (4) competitiveness and innovation, 5) global sustainability and resilience. Numerous indicators are now used to assess the material footprint, resource productivity, total waste production per capita, municipal waste production, share of plastic in packaging waste, waste recycling rates, contribution of recycled materials to the demand for raw materials, end-of-life recycling rates for raw materials, private investment and employment in circular economy sectors, patents relating to waste management and recycling, dependence on imported materials and EU self-sufficiency in raw materials. Since 2021, the European Commission has focused on two important pillars of the circular economy: eco-design and packaging reduction.

This book entitled *Green Deal, Circular Economy and Industrial ecology* aims to look at research, experimentation and evaluation of circular economy projects and industrial ecology case studies related to the EU Green Deal. All the contributions have been presented to the symposium Green Deal, Circular Economy and Industrial ecology organized in December 2024 at Clermont-Ferrand. This publication is one deliverable of the different activities of the *Jean Monnet Chair 'Europe, Circular Economy and Industrial Ecology'* (JMC3E). The book has been divided into two parts. The first part presents theoretical and methodological challenges of the Green Deal. The second part introduces the implementation of circular economy tools and methods for different case studies and supply chains.

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Funded by the
European Union



Prix: 10 euros

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Editions
Oeconomia

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