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Comparative Analysis of the Implementation of the EU
Renewable Energy Directive - Implications for Human Rights
and Biodiversity from a Regulatory Perspective

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Deutscher Abstract

Diese These untersucht die Umsetzung der Richtlinie zur Förderung der Nutzung von Energie aus erneuerbaren Quellen, insbesondere die Bestimmungen der Richtlinie (EU) 2018/2001 (RED II) in vier europäischen Mitgliedstaaten: Deutschland, Spanien, Finnland und die Niederlande. Die Studie konzentriert sich auf die Auswirkungen der Richtlinie auf die Menschenrechte und die Biodiversität innerhalb und nach der Lieferkette bei Projekten zur Nutzung erneuerbarer Energien in Europa. Durch die Analyse nationaler Gesetze, internationaler Verträge und der EU-Grundrechtecharta sowie Berichte und Nachrichten erforscht diese Forschung das Gleichgewicht zwischen dem öffentlichen Interesse an der Produktion sauberer Energie und dem Schutz der Menschenrechte. Die Ergebnisse zeigen signifikante Unterschiede in den Umsetzungsstrategien und deren Ergebnissen auf, was die komplexe Wechselwirkung zwischen ökologischer Nachhaltigkeit und menschenrechtlichen Verpflichtungen verdeutlicht. Diese These trägt zur laufenden Diskussion über nachhaltige Entwicklung bei, indem sie die Auswirkungen der Richtlinie auf die Menschenrechte und die Biodiversität innerhalb und außerhalb der EU analysiert. Darüber hinaus bietet diese These politische Empfehlungen zur Verbesserung der Übereinstimmung von Initiativen zur Nutzung erneuerbarer Energien mit dem Schutz der Menschenrechte und der Biodiversität.

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1. Introduction

This thesis analyses the impact of the RED directive on biodiversity and human rights, identifies gaps in regulations, and assesses whether these have been effectively addressed. Additionally, it seeks to evaluate the implementation of the directive in different member states and determine whether measures have been taken to safeguard biodiversity and human rights in renewable energy projects. It further, analyses the balancing of interests between acting in the public interest of producing clean energy and the human rights provided by the EU Charter of Fundamental Rights. The study aims to identify areas for improvement in ensuring the protection of both human rights and biodiversity in the regulation of renewable energy projects by examining regulatory frameworks, enforcement mechanisms, and potential disparities.

The European Union (EU) was founded with the primary aim of facilitating cooperation among its member states, particularly, in the energy sector.¹ Its origins can be traced back to the European Coal and Steel Community, as the foundation for broader collaboration in energy-related matters.² Over time, the EU expanded its focus to address contemporary challenges such as climate change and energy security.

In response to the need to mitigate climate change and reduce energy dependency, the EU adopted the Renewable Energy Directive (2009/28/EC) in 2009³. This directive represents a crucial step towards transitioning towards more sustainable energy sources and reducing reliance on carbon-intensive fuels. By setting ambitious renewable energy targets for each member state, the directive aims to drive investments in renewable energy infrastructure, and technologies.⁴

In recent years, the objectives of the Renewable Energy Directive have become increasingly urgent. The necessity to limit the effects of climate change has become ever more pressing, as

¹ Treaty on the Functioning of the European Union (Consolidated Version) [2008] OJ C115/47 (“TFEU”) art 194

² *ibid*

³ Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources [2009] OJ L140/16.

⁴ European Commission, 'Renewable Energy Directive' (European Commission, 14 December 2024) https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en accessed 14 December 2024.

demonstrated by rising global temperatures, extreme weather events, and melting ice caps.⁵ Additionally, reducing energy dependency from countries like Russia, particularly in light of geopolitical tensions and sanctions, has become a priority for the EU.⁶

The Renewable Energy Directive sets binding targets for each EU member state to increase the share of renewable energy in their overall energy consumption.⁷ The directive seeks to accelerate the transition towards cleaner energy solutions by aiming for 40% of all energy consumption to come from renewable sources by 2030.⁸ Wind, solar, hydroelectric, and biomass identified as key renewable sources to achieve these targets.

While renewable energy offers significant environmental benefits, its implementation can also bring challenges and have unintended consequences. Large-scale renewable energy projects, such as wind farms and solar power plants, often require extensive land clearance, leading to habitat destruction and displacement of communities.⁹ Similarly, the production of biofuels from crops can shift agricultural land away from food production, impacting food security.¹⁰ Further, the extraction of raw materials for renewable energy technologies can have harmful effects on local ecosystems and communities.

The implementation of the Renewable Energy Directive has a major impact on biodiversity and human rights globally due to the increase in mining activities or production of feedstocks in sourcing raw materials needed for the renewable energy solutions. It is crucial to critically examine how the directive and its implementation impact these aspects and whether existing regulations adequately address these concerns.

1.1. Research Gap and Objectives

Research in the field of renewable energy governance often focuses on environmental implications. However, there still is a noticeable gap of comparative studies that explore how the shift to renewable energy intersects with human rights and biodiversity conservation. This thesis aims to

⁵ Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources [2009] OJ L140/16. (“REDI”) Recital 1

⁶ European Commission, 'REPowerEU: A Plan to Rapidly Reduce Dependence on Russian Fossil Fuels and Fast Forward the Green Transition' (European Commission, 18 May 2022) https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en accessed 14 December 2024.

⁷ REDI

⁸ *ibid*

⁹ Stockholm Environment Institute, 'No Green Future Without Securing Indigenous Peoples' Rights' (Stockholm Environment Institute, 30 July 2021) <https://www.sei.org/features/no-green-future-without-securing-indigenous-peoples-rights/> accessed 14 December 2024.

¹⁰ Seita Romppanen, 'The Bioenergy 'Blind Spots' in EU Climate and Energy Law' (2020) 29 *Eur Energy & Env'tl L Rev* 150

bridge that gap by analysing the regulatory frameworks and evaluating how well they protect human rights and biodiversity in the context of renewable energy projects.

Key questions driving this research include:

- *How do different EU Member States implement the Renewable Energy Directive concerning human rights and biodiversity protection?*
- *What regulatory mechanisms exist to address conflicts between renewable energy development and human rights/biodiversity conservation?*
- *What challenges and opportunities Member States face in integrating human rights and bio-diversity considerations into renewable energy policies and regulations?*
- *How can the current regulatory framework for renewable energy development be improved at the EU level?*

The academic hypothesis posits that effective regulatory frameworks play a pivotal role in aligning the implementation of the Renewable Energy Directive with international and European human rights standards and biodiversity conservation goals. The study hypothesizes significant variations in the level of protection afforded to human rights and biodiversity in renewable energy projects by comparing regulatory approaches across EU Member States.

Expected results include an strengths and weaknesses of current regulatory frameworks in addressing human rights and biodiversity concerns within the EU. Additionally, the thesis aims to identify best practices and areas for improvement to enhance the integration of human rights and biodiversity considerations into renewable energy policies while limiting undesired effects of the directive. The aim of this thesis is to contribute to the academic understanding of the intersection between renewable energy development, human rights, and biodiversity conservation from a regulatory perspective within the EU. Through a comparative analysis, the research seeks to provide valuable insights for policymakers, regulators, and stakeholders involved in renewable energy governance. Methodologically, the research applies a comparative approach to examine differences among Member States implementing the RED directive regarding human rights and biodiversity protection. This analysis involves scrutinizing regulatory documents, policy documents, and scholarly articles and industry reports to identify regulatory gaps and best practices. Finally, the thesis aims to offer a comprehensive assessment of the regulatory landscape surrounding renewable energy development within the EU through the methods applied.

2. The Renewable Energy Directive, Human Rights and Biodiversity

2.1. The Renewable Energy Directive

The first version of the Renewable Energy Directive (“RED”) was adopted in 2009 as a part of the EU Climate and Energy package.¹¹ The framework aims to lower emissions by 40% below the 1990 levels by 2030.¹² This target further forms a part of the fulfilment of the commitments of the EU under the Paris Agreement of 2015.¹³

The directive’s objective aligns with the goals of the establishment and functioning of the internal market, laid down in the Treaty on the Functioning of the European Union (“TFEU”). Article 194 of the TFEU emphasizes the functioning of the energy market, and security of the energy supply in the union, promoting energy efficiency and energy-saving and the development of new and renewable forms of energy.¹⁴ The objective of the directive is to reduce greenhouse gas emissions, increase energy security, and promote innovation and competitiveness in the renewable energy sector.¹⁵

2.2. The Development of the RED Directive

The EU Renewable Energy Directive has been significantly amended over the years, reflecting the European Union's increasing commitment to combating climate change and ensuring energy security. Each version of the directive has set progressively higher targets and introduced new measures to promote the adoption of renewable energy across member states while acknowledging the gaps that have become visible during the implementation.

RED I (2009/28/EC)

The first version of the Renewable Energy Directive (RED I), adopted in 2009, aims to increase the EU's total energy consumption from renewable sources to 20% by 2020.¹⁶ This directive sets individual national targets for each member state, aligning with the Paris Agreement's objective of

¹¹ European Commission, 'Renewable Energy Directive' (European Commission, 14 December 2024) https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en accessed 14 December 2024.

¹² Ibid.

¹³ Paris Agreement (adopted 12 December 2015, entered into force 4 November 2016) UNTS 54113.

¹⁴ TFEU art 194

¹⁵ REDI

¹⁶ REDI art

setting Nationally Determined Contributions (NDCs) to reduce greenhouse gas emissions.¹⁷ RED I required member states to develop national renewable energy action plans, introduce criteria for biofuel sustainability, and implement mechanisms like guarantees of origin and cooperation mechanisms among member states in order to achieve these targets.¹⁸

Article 1 of the Directive defines the scope of the directive which requires mandatory national targets for the gross final consumption of energy and transportation coming from renewables. It provides a framework for “statistical transfers between Member States, joint projects between Member States and third countries, guarantees of origin, administrative procedures, information, training and access to the electricity grid for energy from renewable sources”.¹⁹ Further, forms a sustainability criterion for biofuels and bioliquids.²⁰

RED II (2018/2001/EU)

The European Parliament and the Council adopted RED II in 2018 as part of the Clean Energy for All Europeans Package.²¹ This directive raised the renewable energy target to 32% by 2030, with a provision for possible revision in 2023.²² RED II aimed to simplify administrative procedures for renewable energy projects, promote the use of renewable energy in heating and cooling, and set specific targets for advanced biofuels.²³ Additionally, it addressed the risks of indirect land-use changes (ILUC) by reducing support for biofuels with a high ILUC risk.²⁴

The directive’s scope has been broadened to include financial support for electricity generated from renewable sources, as well as self-consumption of such electricity.²⁵ Additionally, it covers the use of renewable energy in the heating and cooling sector, as well as the transport sector.²⁶ Furthermore, the directive aims to establish sustainability criteria for biomass fuels.²⁷

¹⁷ European Commission, 'REPowerEU: A Plan to Rapidly Reduce Dependence on Russian Fossil Fuels and Fast Forward the Green Transition' (European Commission, 18 May 2022) https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en accessed 14 December 2024.

¹⁸ REDI arts 4, 6, 11, 15, 17, and 19

¹⁹ REDI art 1

²⁰ *ibid*

²¹ European Commission, 'Clean Energy for All Europeans Package' (European Commission, 22 May 2019) https://energy.ec.europa.eu/topics/energy-strategy/clean-energy-all-europeans-package_en accessed 14 December 2024.

²² Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast) [2018] OJ L328/82. (“REDII”)

²³ REDII art 16

²⁴ REDII recital 75

²⁵ REDII Art 1

²⁶ *Ibid*.

²⁷ *Ibid*.

RED III (2023/2413)

The latest iteration, RED III, was adopted in October 2023.²⁸ This directive further increased the renewable energy target to 42.5% by 2030, with an aspirational target of 45%.²⁹ RED III introduced new requirements for the transportation sector, including a 14.5% reduction target in greenhouse gas intensity by 2030 and additional incentives for advanced biofuels, renewable fuels of non-biological origin (RFNBOs), and electrification.³⁰ It also set stricter sustainability criteria for biofuels, bioliquids, and biomass fuels to minimize negative environmental impacts such as deforestation, biodiversity loss, and carbon depletion.³¹ The certification process and reporting obligations have been updated to improve the traceability throughout the supply chain.³² High ILUC-risk biofuels, particularly those derived from palm oil and other high-risk feedstocks, are to be phased out by 2030.³³ Further, the permitting process has been updated to facilitate for a more efficient process for the permits for renewable energy projects and to strengthen sector-specific targets in various sectors.³⁴ This includes a single administrative contact point, clear time limits and simplified procedures.

The RED framework has evolved significantly since its initial implementation in 2009. The first directive set the foundation for increasing the share of renewable energy in the EU's energy mix. RED II, adopted in 2018, enhanced sustainability criteria, in particular for bioenergy, and introduced more stringent greenhouse gas (GHG) emission reduction thresholds. It also set a target of 32% renewables in the EU's energy consumption by 2030.

2.3. Renewable Energy under the RED Directive

After the amendments of the RED III, the directive defines renewable sources of energy under Article 2 as “energy from renewable non-fossil sources, namely wind, solar (solar thermal and solar photovoltaic) and geothermal energy, osmotic energy, ambient energy, tide, wave and other ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas, and biogas.”³⁵

²⁸ Directive (EU) 2023/2001 of the European Parliament and of the Council of 11 December 2023 on the promotion of the use of energy from renewable sources (recast) [2023] OJ L328/82. (“REDIII”)

²⁹ REDIII art 25

³⁰ Ibid.

³¹ REDIII art 29

³² Ibid.

³³ REDIII art 26

³⁴ REDIII art 16

³⁵ REDII art 2

In 2022 the renewables accounted to 43.2% of the total share of energy sources produced. Out of these bioenergy and waste accounted to 56.8% of the renewables, wind 14.9%, hydro 9.8%, solar 8.9%, ambient heat 6.8% and geothermal energy 2.8%.³⁶

Bioenergy and waste are mainly produced from agricultural, forestry, and organic waste feedstock. It is the main source of renewable energy in the EU. Out of bioenergy and waste 70.3% comes from primary solid biofuels, 12.9% from liquid biofuels, 10.1% from biogas and -methane and 6.6% from municipal waste.³⁷

This thesis primarily examines the following renewable energy sources and their impacts on biodiversity and human rights: wind, hydropower, solar energy, and biofuels. Wind power is typically harnessed from wind farms, which consist of groups of wind turbines spread over large areas on land (onshore) or sea (offshore).³⁸ These turbines convert the kinetic energy of wind into electricity.

Hydroelectric power generates electricity by utilizing the natural flow of moving water.³⁹ This usually involves constructing a dam or a diversion structure on a river to create an elevation difference. Water flows from a higher elevation to a lower one, driving turbines connected to generators, thus producing electricity.⁴⁰

Solar energy can be harnessed through two main technologies: photovoltaic (PV) systems, which use solar panels to convert sunlight directly into electricity, and solar thermal systems, which capture and concentrate sunlight to produce heat, which can then be used to generate electricity or provide heating.⁴¹

Biofuels, bioliquids, and biomass fuels are all derived from organic biomass. The primary difference lies in their applications: biofuels are typically liquid or gaseous and used mainly in the

³⁶ European Parliamentary Research Service, 'Renewable Energy in the EU' (European Parliament, 2023) EPRS_ATA(2023)745693_EN.

European Commission, 'Bioenergy Report Outlines Progress Being Made Across the EU' (European Commission, 27 October 2023) https://energy.ec.europa.eu/news/bioenergy-report-outlines-progress-being-made-across-eu-2023-10-27_en accessed 14 December 2024.

³⁸ European Commission, 'EU Wind Energy' (European Commission, 2023) https://energy.ec.europa.eu/topics/renewable-energy/eu-wind-energy_en accessed 14 December 2024

³⁹ European Commission, 'Hydropower' (European Commission, 2023) https://energy.ec.europa.eu/topics/renewable-energy/hydropower_en accessed 14 December 2024

⁴⁰ Ibid.

⁴¹ European Commission, 'Renewable Energy Directive' (European Commission, 2023) https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en accessed 14 December 2024

transport sector, bioliquids are used for other energy purposes such as heating and electricity, and biomass fuels are generally solid and used for heating and electricity generation.⁴²

The production of biofuels requires feedstocks including food and feed crops, which include all edible carbohydrates, waste and residues. To comply with the criteria set by the directive, renewable energy sources must contribute to the reduction of greenhouse gas emissions by having a lower carbon footprint compared to fossil fuels.⁴³ This is known as the Greenhouse Gas Emission Saving Criteria (GHG Savings).

The directive limits the use of certain types of feedstocks to limit the harm on the environment and on food security, also known as caps.⁴⁴ Biofuels produced from food and feed crops are capped at a maximum of 7% of the final consumption of energy in the road and rail transport sectors in accordance with Article 26 of the Directive. Waste based biofuels using feedstocks listed under Annex IX Part B of the Directive have a cap of 1.7%. Further, feedstocks that have a risk of change of indirect land use with a high carbon stock are capped to the levels of 2019 and must be reduced to 0% until 2030 unless certified as low risk.⁴⁵

Further, feedstocks can be categorised into two categories: feedstocks falling under Annex IX Part A and the ones falling under Annex IX Part B of the Directive. Annex IX A lists the feedstocks with the highest sustainability potential using advanced technologies, which may be counted twice their energy content. These include algae, biomass from municipal waste, biomass waste from agricultural and aquaculture industry not fit for use in the food or feed chain excluding feedstocks listed in part B of the Annex, and biomass from forestry.

Feedstocks under Annex IX B include used cooking oil and animal fats classified under categories 1 and 2 in accordance with Regulation (EC) No 1069/2009. Feedstocks under Annex IX B unlike the ones under Part A of the Annex are capped due to their lower sustainability potential.

All above mentioned sources of renewable energy deliver on the goals set by the EU in the TFEU aligned with the RED directive and address the current issues that climate change and energy security in a changing geopolitical landscape has brought. The directive further, aims to facilitate a transition from a more fossil fuels-centred energy consumption towards renewable sources such as solar, wind, hydro, and geothermal produce, as these options are less carbon-intensive energy

⁴² European Commission, 'Biofuels' (European Commission, 2023) https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/biofuels_en accessed 14 December 2024

⁴³ REDII Art 29, Annex V

⁴⁴ REDII art 26, Annex IX

⁴⁵ REDII art 26

sources.⁴⁶ However, even though the transition to renewable energy sources reduces greenhouse gas emissions, it also demands building new infrastructure e.g. wind turbines or solar panels. Therefore, it is important to note that while cleaner than fossil fuels, renewables have an environmental impact such as wildlife disruption by e.g. impacting the bird migration or altering habitats and reducing biodiversity.⁴⁷ Many renewable technologies utilize petrochemical products and minerals that need to be mined, leading to ecological damage, community displacement, and labor rights concerns in the global south.⁴⁸ Additionally, renewable energy projects for solar energy and wind farms requires significant land or sea areas, which creates challenges for the space used for agriculture, residential areas, loss of biodiversity, and indigenous people as seen in the Nordic countries with the court cases brought by Sámi people.⁴⁹ Similarly, in the biofuels sector, the use of agricultural products can compete with food production and encourage the expansion of agricultural lands, resulting in biodiversity loss and displacement of locals as seen in e.g. Brazil and other Latin American countries.⁵⁰ Therefore, it is crucial for legislation to mitigate these unintended consequences by safeguarding human rights and establishing sustainable standards. Over the years, as these unintended effects have become evident, the EU has updated the directive to enhance sustainability and limit its negative impacts.

2.4. Sustainability Criteria

The Renewable Energy Directive has set minimum greenhouse gas emission savings and sustainability criteria under Article 17 of RED I and Article 29 of RED 2018/L/2001. Initially, these criteria applied only to biofuels and bioliquids but were later expanded to include biomass fuels under the second amendment to the directive.⁵¹ Energy from biofuels, bioliquids, and biomass fuels is only considered towards the Union target set in Article 3, paragraph 1, fulfills the compli-

⁴⁶ REDI preamble, art 1

⁴⁷ Alexandros Gasparatos et al, 'Renewable Energy and Biodiversity: Implications for Transitioning to a Green Economy' (2023) <https://mhk.pnl.gov/publications/renewable-energy-biodiversity-implications-transitioning-green-economy> accessed 14 December 2024

⁴⁸ Deger Saygin and Dolf Gielen, 'Zero-Emission Pathway for the Global Chemical and Petrochemical Sector' (2021) *Energies* <https://doi.org/10.3390/en14133772> accessed 14 December 2024

⁴⁹ Business & Human Rights Resource Centre, 'Sweden: Locals Protest Wind Energy Construction Due to Concerns Over Impacts on Sami Reindeer Grazing Lands' (Business & Human Rights Resource Centre, 2022) <https://www.business-humanrights.org/en/latest-news/sweden-locals-protest-wind-energy-construction-due-to-concerns-over-impacts-on-sami-reindeer-grazing-lands/> accessed 14 December 2024

⁵⁰ Lina Patricia Vega, Karen Tatiana Bautista, Heliana Campos, Sebastian Daza, Guillermo Vargas, 'Biofuel Production in Latin America: A Review for Argentina, Brazil, Mexico, Chile, Costa Rica and Colombia' (2024) 11 *Energy Reports* 28.

⁵¹ REDII art 29

ance obligations laid down in Article 25, and ensures eligibility for financial support for the consumption of these fuels if it meets the sustainability and greenhouse gas emission saving criteria in accordance with Article 29, paragraphs 2, 7, and 10. These criteria apply regardless of the geographical origin of the biomass.⁵²

Article 29 outlines the sustainability and greenhouse gas (GHG) saving criteria for biofuels, bioliquids, and biomass fuels. These criteria are designed to ensure that the use of these fuels results in significant GHG savings compared to fossil fuels. The criteria include requirements for lifecycle GHG emissions reductions, sustainable sourcing of biomass, and protection of land with high biodiversity value. The aim is to ensure that biofuels, bioliquids, and biomass fuels contribute to climate goals without causing environmental harm.

For biofuels to contribute to the emission-saving targets set by the RED directive, they must be sustainable. The EU has developed comprehensive sustainability criteria for biofuels, bioliquids, and biomass fuels, which include land restrictions, grassland criteria, high carbon stock land restrictions, peatland restrictions, and criteria for agricultural raw materials.⁵³ Land with high biodiversity value such as primary forests, highly biodiverse forests, protected areas, or areas recognized for protecting rare or endangered ecosystems or species cannot be used for producing the agricultural biomass for biofuels.⁵⁴ However, if it can be proven that the production of the raw material does not interfere with these protection purposes, the restriction can be lifted.⁵⁵ The aim of these measures is to protect critical habitats and biodiversity and prevent the production of biofuels from causing the loss of valuable ecosystems.⁵⁶

Further, the use of biomass from land with high carbon stocks such as wetlands, continuously forested areas, or land with trees higher than five meters and a canopy cover between 10% and 30%, is restricted unless specific conditions are met.⁵⁷ These conditions prevent the conversion of such lands leading to carbon emissions and limit the benefits of using biofuels. Additionally, biofuels from raw materials obtained from peatland as of January 2008 are restricted to prevent the release of stored carbon from these carbon-rich ecosystems.⁵⁸

⁵² REDII art 26, Annex IX

⁵³ REDII Annex 9B

⁵⁴ Ibid.

⁵⁵ Ibid.

⁵⁶ REDII preamble

⁵⁷ REDII art 29

⁵⁸ Ibid.

Biofuels from forest biomass must meet criteria ensuring legal harvesting, forest regeneration, protection of designated nature areas, and maintenance of soil quality and biodiversity.⁵⁹ The country of origin must have appropriate laws and enforcement systems to ensure these criteria are met.⁶⁰ This ensures that forest biomass is sourced sustainably, maintaining the ecological functions of forests and their ability to capture carbon.⁶¹

Member States must establish monitoring and management plans for soil quality and soil carbon for biofuels, bioliquids, and biomass fuels from agricultural waste and residues to be considered sustainable.⁶² This includes a reporting requirement that ensures that the production of the fuels does not have a damaging impact on soil health or reduce soil carbon levels needed for maintaining agricultural productivity and mitigating climate change.⁶³

The directive emphasizes avoiding negative impacts on ecosystems, biodiversity, and agricultural land, balancing energy production with other land uses, and ensuring traceability and accountability throughout the production chain.⁶⁴ This holistic approach intends to ensure that renewable energy projects do not compromise environmental integrity and that all actors involved are accountable for meeting sustainability criteria.

RED II introduces additional criteria for forestry feedstocks to prevent deforestation and habitat loss, requiring biomass fuels to meet sustainability requirements, including emissions reduction.⁶⁵ It also includes recycled carbon fuels from waste or captured carbon, which must adhere to sustainability guidelines.⁶⁶ These measures aim to further enhance the sustainability of biofuels and bioliquids, ensuring that they contribute to climate goals while limiting environmental harm.

Article 26 of the RED addresses the use of biofuels derived from food and feed crops. It sets out criteria to ensure that the production of these biofuels does not negatively impact food security or lead to significant land-use changes that could harm the environment. This includes restrictions on the types of land that can be used for biofuel production, such as land with high biodiversity value or high carbon stock. The latest amendment maintains the cap on crop-based biofuels at 7% of

⁵⁹ Ibid.

⁶⁰ Ibid.

⁶¹ Ibid.

⁶² Ibid.

⁶³ Ibid.

⁶⁴ Ibid.

⁶⁵ Ibid.

⁶⁶ Ibid.

overall produced biofuels with a 1% flexibility, expanding the scope to include shipping and aviation, potentially increasing their use.⁶⁷ This cap is intended to limit the competition between biofuel production and food production, ensuring that the expansion of biofuels does not lead to food insecurity or significant land-use changes.⁶⁸ By including shipping and aviation, the directive aims to extend the benefits of renewable energy to more sectors, promoting a broader transition to sustainable energy sources.⁶⁹ However, this will also increase the overall production of biofuels including the risks to use of land.

2.4.4. Reporting Requirements

The Renewable Energy Directive sets a comprehensive reporting process for the sustainability criteria, social sustainability, and food availability. Member states are required to submit their first reports detailing these aspects, which include the sustainability grounds and schemes for biomass energy uses.⁷⁰ This ensures that all renewable energy projects adhere to the established sustainability standards and contribute positively to social and environmental goals. Article 30 further elaborates on the reporting requirements for these criteria. Member states are required to report on the sustainability of biofuels, bioliquids, and biomass fuels used within their borders.⁷¹ This includes amongst others data on GHG emissions savings compliance, the types of biomasses used, and the land from which the biomass was sourced.⁷² These reports help to ensure transparency and accountability in the use of biofuels and biomass fuels.

Member states must submit annual reports to the European Commission, detailing the progress made towards national renewable energy targets.⁷³ These reports include data on the share of energy from renewable sources, the measures taken to promote renewable energy, and the impact of these measures on greenhouse gas emissions.⁷⁴ For biofuels, bioliquids, and biomass fuels to be counted towards renewable energy targets, they must meet specific sustainability criteria. This includes demonstrating reductions in greenhouse gas emissions compared to fossil fuels and ensuring that the biomass is sourced sustainably in accordance with the provisions under Article 29.

⁶⁷ REDII art 26

⁶⁸ Ibid.

⁶⁹ REDII art 25

⁷⁰ REDII art 30

⁷¹ Ibid.

⁷² Ibid.

⁷³ REDII art 22

⁷⁴ Ibid.

Reports must include information on the lifecycle greenhouse gas emissions of the fuels, the type of biomass used, and the land from which it was sourced.

Reports must also address the social sustainability of biofuels, bioliquids, and biomass fuels.⁷⁵ This includes assessing the impact of biomass production on food availability and prices, particularly in developing countries.⁷⁶ Member states must ensure that the production of biofuels does not negatively impact food security. To ensure compliance with sustainability criteria, member states must implement verification and certification schemes.⁷⁷ These schemes involve third-party audits and certifications to verify that the biomass used meets the required sustainability standards.⁷⁸ Reports must include details of the verification processes and the results of these audits.⁷⁹ For biofuels, bioliquids, and biomass fuels derived from agricultural waste and residues, member states must implement monitoring and management plans to assess the impact on soil quality and soil carbon levels.⁸⁰ These plans ensure that the production of these fuels does not harm soil health or reduce soil carbon levels, which are crucial for maintaining agricultural productivity and mitigating climate change. The directive emphasizes the importance of traceability and accountability throughout the production chain.⁸¹ Member states must ensure that all actors involved in the production and use of biofuels, bioliquids, and biomass fuels are accountable for meeting sustainability criteria.⁸² This includes maintaining detailed records and providing transparent reporting on the sourcing and use of biomass.

2.5. High-Risk ILUC Biofuels

The production of biofuels can lead to Indirect Land Use Change (ILUC), which refers to the unintended consequences of repurposing agricultural land for biofuel crops.⁸³ This shift often displaces food production to previously non-agricultural lands, such as forests, wetlands, or grasslands, resulting in significant carbon emissions due to the clearing of these carbon-rich areas.⁸⁴ The concept of ILUC emerged to account for these indirect environmental impacts, which were initially overlooked in early assessments of biofuel sustainability. As biofuel production increased,

⁷⁵ REDII art 30

⁷⁶ Ibid.

⁷⁷ Ibid.

⁷⁸ Ibid.

⁷⁹ Ibid.

⁸⁰ REDII art 29

⁸¹ REDII art 30

⁸² Ibid.

⁸³ Guidehouse, ILUC - High and low ILUC-risk fuels (Guidehouse 2024) <https://iluc.guidehouse.com> accessed 14 December 2024.

⁸⁴ Ibid.

it became clear that the total environmental impact included both direct emissions from biofuel use and the emissions from land use changes driven by biofuel demand.⁸⁵ The EU's RED II incorporates measures to account for and mitigate ILUC impacts, such as setting limits on high-ILUC-risk biofuels and promoting advanced biofuels that do not compete with food crops.⁸⁶

The RED Directive has been revised on two occasions to address some of the issues that have emerged from its implementation. However, the directive primarily provides sustainability and GHG emission saving criteria for biofuels, bioliquids, and biomass fuels, overlooking the potential negative effects that other forms of renewables pose to biodiversity and human rights. Additionally, while setting criteria for sustainability and GHG emission savings, the directive has not banned the use of crops for food and feedstock. Although it has set limitations on the use of these crops, the latest revision of the RED directive has expanded the scope of transportation that must comply with the targets of the legislation.⁸⁷ This expansion could lead to an overall increase in the use of crops for biofuels, which poses risks for both the environment and human rights, including increased deforestation, displacement of people, and threats to food security as demonstrated in Indonesia in connection with the production of Palm Oil or in Brazil in production of feedstocks for Ethanol.^{88 89} Before the latest revision of the directive in 2023, various environmental and human rights organizations expressed their concerns and pressed for these issues to be properly addressed.⁹⁰

3. Comparative analysis of Implementation in Member States

The implementation of the RED II directive in different Member States can have notable disparities amongst each country to tailor its legislation and policy framework to align with the national objectives and strengths while adhering to the overarching goals set by the EU.

While Germany has focused on legislative reforms and ambitious renewable energy targets emphasizing electric mobility, hydrogen, and advanced biofuels, Finland has amended its national

⁸⁵ European Commission, The land use change impact of biofuels consumed in the EU (Publications Office of the European Union 2016).

⁸⁶ REDII art 26

⁸⁷ REDIII art 25

⁸⁸ Simon Suzan et al, 'The Advanced and Waste Biofuels Paradox: Availability and Sustainability of Advanced and Waste Biofuels' (Transport & Environment, 2024) https://www.transportenvironment.org/uploads/files/202407_TE_advanced_biofuels_report-1.pdf accessed 14 December 2024

⁸⁹ Andreia Marques Postal et al, 'The impact of sugarcane expansion in Brazil: Local stakeholders' perceptions' (2020) 73 Journal of Rural Studies 147.

⁹⁰ Transport & Environment, 'NGOs to Demonstrate in Brussels to Demand European Lawmakers Choose Food Over Fuel' (Transport & Environment, 2022) <https://www.transportenvironment.org/articles/ngos-to-demonstrate-in-brussels-to-demand-european-lawmakers-choose-food-over-fuel> accessed 14 December 2024

legislation and implemented measures promoting mainly bioenergy and advanced biofuels. Spain similar to Germany, has enacted major legislative measures, including the Royal Decree-Law 23/2020 and developed an extensive regulatory framework to support energy communities. The Netherlands has introduced some more specific decrees in the transport sector to meet the targets set by the RED II directive while similar to Finland has amended its existing legislation to include the targets set by the RED directive. This chapter delves into the various approaches taken by the four different Member States – Germany, Finland, Spain and the Netherlands and analyses the different approaches and their advantages and disadvantages.

3.1. Germany

The main legislative acts implementing the RED II directive in Germany are the amended Federal Emission Control Act or *Bundes-Immissionsschutzgesetz* (BImSchG) and the Federal Emission Control Ordinance or *Bundes-Immissionschutzverordnung* (BImSchV).⁹¹ These establish the legal frameworks for environmental protection in Germany and regulate various aspects of environmental protection. Additionally, the Biofuel Sustainability Ordinance or the *Biokraftstoff-Nachhaltigkeitsverordnung* (Biokraft-NachV) sets the sustainability criteria and greenhouse gas reduction targets for the use of biofuels.⁹²

Bundes-Immissionsschutzgesetz

The German parliament passed the federal law on emission control already in 1974. It was further amended to implement the objectives under the RED directive. The BImSchG sets a legal foundation on more specific regulations while establishing general principles and objectives for controlling emissions.⁹³

The BImSchG's main objective is to regulate the prevention of harmful effects on the environment caused by different environmental hazards.⁹⁴ Some of the hazards regulated are airpollution, noise abatement and vibration control. The BImSchG sets standards to limit emissions, reduce noise

⁹¹ National Hydrogen Council, 'Position Paper on the Implementation of the RED II Directive' (2020) https://www.wasserstoffrat.de/fileadmin/wasserstoffrat/media/Dokumente/EN/2020-11-06_NWR_position_paper_RED_II.pdf accessed 14 December 2024.

⁹² Federal Office for Agriculture and Food, 'Sustainable Biomass Production' (BLE) https://www.ble.de/EN/Topics/Climate-Energy/Sustainable-Biomass-Production/sustainable-biomass-production_node.html accessed 14 December 2024.

⁹³ Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection, 'Federal Immission Control Act (BImSchG)' (2021) https://www.bmuv.de/fileadmin/Daten_BMU/Download_PDF/Luft/bimschg_en_bf.pdf accessed 14 December 2024.

⁹⁴ BImSchG §1, § 2

pollution and addresses the potential harms that vibration can have on humans and buildings. The BImSchG sets licensing requirements for certain industrial installations to ensure the compliance with environmental standards before they can operate.⁹⁵ The act further incorporates sustainability criteria for biofuels and other renewable energy sources to ensure the contributions to greenhouse gas reduction while preventing indirect land use change (ILUC).⁹⁶ Additionally, the BImSchG establishes precautionary measures to prevent environmental harm and reflecting a precautionary principle in environmental protection.⁹⁷

Bundes-Immissionsschutzverordnung

The BImSchV are the specific ordinances under the BImSchG providing detailed regulations and technical instructions to implement the BImSchG.⁹⁸ The federal government issued the ordinances with the aim to provide guidelines to ensure compliance with the BImSchG.

The BImSchV regulates the objectives under the BImSchG by setting precise standards and requirements. The BImSchV amongst others establishes a mandate for regular monitoring and reporting of emissions to ensure the compliance with the standards established.⁹⁹

Biokraftstoff-Nachhaltigkeitsverordnung

The Biokraft-NachV is an ordinance that implements the sustainability criteria and greenhouse gas reduction targets for biofuels.¹⁰⁰ According to the ordinance, obligated companies must ensure that biofuels placed on the market meet the sustainability and environmental standards and promote the use of renewable energy sources.¹⁰¹ The sustainability criteria under the Biokraft-NachV require biofuels to achieve significant greenhouse gas savings compared to fossil fuels, with specific thresholds depending on the operational start date of the production plant.¹⁰² Biofuels must not be produced from raw materials obtained from land with high biodiversity value, such as pri-

⁹⁵ Ibid.

⁹⁶ BImSchG § 37d

⁹⁷ BImSchG § 55

⁹⁸ Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection, 'Federal Immission Control Ordinance (BImSchV)' (2021) https://www.bmuv.de/fileadmin/Daten_BMU/Download_PDF/Luft/bimschg_en_bf.pdf accessed 14 December 2024.

⁹⁹ 44. BImSchV

¹⁰⁰ Verordnung über Anforderungen an eine nachhaltige Herstellung von Biokraftstoffen (Biokraftstoff-Nachhaltigkeitsverordnung - Biokraft-NachV), Nichtamtliches Inhaltsverzeichnis, Biokraft-NachV, Ausfertigungsdatum: 02.12.2021, Vollzitat: "Biokraftstoff-Nachhaltigkeitsverordnung vom 2. Dezember 2021 (BGBl. I S. 5126, 5143)", Ersetzt V 754-22-4 v. 30.9.2009 I 3182 („Biokraft-NachV“).

¹⁰¹ §2 Biokraft-NachV, § 37a para 4 BImSchG

¹⁰² Part 2 Biokraft-NachV

mary forests and highly biodiverse grasslands, or from land with high carbon stock, such as wetlands and continuously forested areas, unless specific conditions are met.¹⁰³ Additionally, biomass from forests must be sourced sustainably, ensuring legal harvesting, forest regeneration, protection of designated nature areas, and maintenance of soil quality and biodiversity.¹⁰⁴ Biomass must not be sourced from peatland that was undrained as of January 2008 to prevent the release of stored carbon.¹⁰⁵ These requirements align with the criteria under Article 29 of the RED Directive. Biofuels must be certified by recognized voluntary schemes such as the International Sustainability and Carbon Certification (ISCC) or national certification schemes to verify compliance with sustainability criteria, ensuring traceability and proper documentation of the biomass used.¹⁰⁶ Companies falling under the Ordinance are required to submit annual reports to the customs authorities (*Hauptzollamt*) detailing the progress made towards national renewable energy targets, including data on the share of energy from renewable sources and the sustainability of biofuels used.¹⁰⁷ Measures are also included to mitigate the impact of indirect land use change (ILUC) by setting limits on high ILUC-risk biofuels and promoting the use of low ILUC-risk biofuels.¹⁰⁸ These criteria ensure that biofuels produced and used in Germany under the Biokraft-NachV contribute to the EU's climate and energy goals while minimizing negative impacts on the environment and biodiversity.

Germany's implementation of the RED directive focuses also on GHG reduction targets, promoting advanced biofuels and green hydrogen, and incentivizing electric mobility.¹⁰⁹ The country has set specific GHG reduction quotas for the transport sector and limits the use of conventional biofuels, particularly those derived from food and feed crops in accordance with Annex IX of REDII.¹¹⁰ Germany's approach is unique due to its strong emphasis on integrating advanced technologies, such as green hydrogen, and providing significant incentives for electric vehicles by counting renewable electricity used in EVs three times towards GHG reduction quotas.¹¹¹ Additionally, Germany's comprehensive legislative framework, including the BImSchG and the Biokraft-NachV, ensures stringent sustainability criteria and robust certification processes. However,

¹⁰³ § 6 Biokraft-NachV

¹⁰⁴ § 4 Biokraft-NachV

¹⁰⁵ Ibid.

¹⁰⁶ §18 Biokraft-NachV

¹⁰⁷ §11 Biokraft-NachV

¹⁰⁸ §12 Biokraft-NachV

¹⁰⁹ Clean Energy Wire, 'CO2 Reduction and Biofuels: Germany's Transport Sector Implementing RED II Directive' (Clean Energy Wire, 15 December 2024) <https://www.cleanenergywire.org/factsheets/co2-reduction-and-biofuels-germanys-transport-sector-implementing-red-ii-directive> accessed 15 December 2024.

¹¹⁰ § 12 Biokraft-NachV

¹¹¹ Supra 108

this implementation has faced criticism for its use of multipliers, which some argue undermines the potential of biofuels by making electric mobility more attractive to fuel suppliers.¹¹² The waste biofuels industry has also criticized the limited promotion of cooking oil and animal fats, capped at levels seen as insufficient.¹¹³ Furthermore, the complexity and bureaucracy of the implementation process, including detailed rules and restrictive framework conditions, have been seen as hampering the ramp-up of new technologies.¹¹⁴ Additionally, despite ambitious targets, emissions from the transport sector have not fallen since 1990, raising concerns about the effectiveness of current policies.¹¹⁵

3.2. Finland

Finland has prioritised increasing the share of renewable energy in its energy mix and reducing greenhouse gas emissions to implement the RED II directive. In June 2024 Finland submitted a revised National Energy and Climate Plan (“NECP”) to the European Commission. The plan demonstrates the national targets and policy measures to achieve the 2030 energy and climate goals of the EU.¹¹⁶ The country has set a target to increase the share of renewable energy sources to a minimum of 62% of the total energy consumption by 2030.¹¹⁷ Additionally, Finland has enacted laws and policies to support renewable energy. This includes promoting bioenergy, wind power, solar energy, and hydropower.¹¹⁸

The most relevant legislative acts on the topic are the Act on Biofuels, Bioliquids, and Biomass Fuels Act (Act 393/2013) or also known as *Kestävyyslaki*. The Act on the Promotion of the Use of Biofuels in Transportation (446/2007) or *Jakeluvelvoitelaki* that regulates the distribution obligation of taxable distributors of the share of biofuels of the consumption of transport fuels.

¹¹² Ibid.

¹¹³ International Council on Clean Transportation (ICCT), 'Germany's RED II Implementation Plan Supports the Country's Ambitious Climate Goals' (ICCT, 15 December 2024) <https://theicct.org/germanys-red-ii-implementation-plan-supports-the-countrys-ambitious-climate-goals> accessed 15 December 2024.

¹¹⁴ Ibid.

¹¹⁵ Kathleen Meisel and others, 'Future Renewable Fuel Mixes in Transport in Germany under RED II and Climate Protection Targets' (2020) <https://pdfs.semanticscholar.org/c701/3706f685aab510514206cc68ab383a07a663.pdf> accessed 15 December 2024.

¹¹⁶ European Commission, 'Finland: Final Updated National Energy and Climate Plan 2021-2030' (European Commission, June 2024) https://commission.europa.eu/document/download/069886e9-7a50-4df1-b523-9eb7bf7308c3_en?filename=FI_FINAL%20UPDATED%20NECP%202021-2030%20%28English%29.pdf accessed 15 December 2024.

¹¹⁷ Ibid.

¹¹⁸ Ibid.

Sustainability Act or Kestävyyslaki

The Kestävyyslaki applies sustainability criteria to biofuels, organic mass from agriculture, and organic mass from forestry, regardless of whether the product is produced within the European Union or outside of it.¹¹⁹ The Act includes several specific requirements to ensure the sustainable production and use of these materials. For agricultural biomass, Section 7 outlines biodiversity requirements, ensuring that the cultivation of biomass does not negatively impact biodiversity. Section 10 addresses similar criteria for forestry biomass, emphasizing the need to protect forest ecosystems.

The Act imposes restrictions on the use of organic mass from biologically diverse forests, protected areas, and large biodiverse grasslands to ensure that these critical habitats are preserved.¹²⁰ It also sets legal requirements for logging, forest regeneration, and maintaining long-term production capacity.¹²¹ These requirements include sustainable logging practices, mandatory forest regeneration, and measures to maintain soil quality and biodiversity.

Additionally, Section 9 prohibits the use of biomass from peatlands that have been dried after 2008, to prevent the release of stored carbon from these carbon-rich ecosystems. Section 8 covers regulations related to land use changes, ensuring that any conversion of land for biomass production does not lead to significant environmental degradation.

Chapter 3 of the Act discusses the process for demonstrating compliance with the sustainability criteria. It requires operators to apply for the acceptance of their sustainability protocols from the national energy agency and adhere to strict reporting requirements.¹²² This process includes regular monitoring and verification to ensure that all sustainability criteria are met.

By imposing these stringent criteria and requirements, the Kestävyyslaki aims to protect biodiversity by preventing habitat destruction, promoting sustainable land use practices, and ensuring that biomass production does not lead to significant environmental harm. These measures help maintain ecological balance and support the conservation of biodiversity in both agricultural and forested areas.

Distribution Obligation Act or Jakeluvuotoelaki

¹²⁰ Finlex, 'Laki biopolttoaineiden käytön edistämisestä liikenteessä 393/2013' (Finlex, 2013) <https://finlex.fi/fi/laki/ajantasa/2013/20130393> ("Kestävyyslaki") accessed 15 December 2024.

¹²¹ 6a § Kestävyyslaki

¹²² 10 § Kestävyyslaki

The Distribution Obligation Act similar to the BImSchV applies to taxable companies distributing fuels for transportation purposes. It establishes reporting requirements regarding the annual fuel sales and the percentage of renewable fuels included.¹²³ The Act sets specific targets for the inclusion of renewable fuels such as advanced biofuels and biogas produced from certain raw materials.¹²⁴ Additionally, it specifies annual targets for the percentage of renewable fuels that must be included in the total fuel sales.¹²⁵ The target for 2024 is 13,5%.¹²⁶ The Finnish Energy Authority (*Energiavirasto*) oversees the implementation and compliance with this law.¹²⁷

Finland's implementation of the RED II is characterized by ambitious renewable energy targets, a strong focus on advanced biofuels, and the integration of biogas and electrofuels into its energy mix. High-ILUC risk fuels have been capped at 0% since 2021.¹²⁸ The country has established comprehensive sustainability criteria and a robust certification system overseen by the Finnish Energy Authority. However, this implementation has faced criticism for its complexity and bureaucracy, high costs, limited promotion of certain waste-based biofuels, slow progress in the transport sector, and potential environmental impacts on biodiversity and forest ecosystems.¹²⁹

3.3. Spain

Spain has taken several legislative measures to implement the RED II directive. The focus of Spain has been to streamline administrative procedures and promote renewable energy projects.¹³⁰ This includes solar energy projects and hydrogen projects. Further, Spain has introduced various support schemes to encourage investment in renewable energy sources.¹³¹ These schemes include financial incentives, subsidies, and competitive auctions.

¹²³ 5§ Finlex, 'Laki uusiutuvilla energialähteillä tuotetun sähkön tuotantotuesta 446/2007' (Finlex, 2007) <https://www.finlex.fi/fi/laki/ajantasa/2007/20070446> accessed ("Jakeluvelvoitelaki") 15 December 2024.

¹²⁴ 15§ Jakeluvelvoitelaki

¹²⁵ §5 Jakeluvelvoitelaki

¹²⁶ Ibid.

¹²⁷ Ibid.

¹²⁸ ePURE, 'Overview Report January 2024' (ePURE, 2024) <https://www.epure.org/wp-content/uploads/2024/01/240115-REV8-REP-Overview-Report-January-2024-COMPILED.pdf> accessed 15 December 2024.

¹²⁹ International Energy Agency (IEA), 'Finland: Country Task Report 2022' (IEA, 2022) https://iea-amf.org/app/webroot/files/file/Country_Task_Reports_2022_pdf/3b_Finland_final.pdf accessed 15 December 2024.

¹³⁰ European Parliamentary Research Service, 'Renewable Energy Directive II: Implementation in the EU Member States' (European Parliament, 2021) https://www.europarl.europa.eu/Reg-DATA/etudes/BRIE/2021/698781/EPRS_BRI%282021%29698781_EN.pdf accessed 15 December 2024.

¹³¹ Ibid.

Royal Decree Law 23/2020 or Real Decreto-Ley 23/2020

The Royal Decree Law 23/2020 is one of the measures that Spain has introduced to implement the RED II directive. The decree aims to ease the administrative process by simplifying the permitting process and facilitate the development of renewable energy projects.¹³² Further, the decree introduces measures to improve the integration of renewable energy into the grid to ensure stability and reliability, as this is often an issue encountered with the use of renewables.¹³³ To ensure that local ecosystems are protected, the decree mandates environmental impact assessments.¹³⁴ This includes the promotion of the use of degraded and less productive lands for the use of renewable projects to minimize the impact on high biodiversity areas.¹³⁵

Biofuel Quota Obligation - Royal Decree 1085/2015

Spain has similar to other EU Member States also introduced a biofuel quota obligation through the Royal Decree 1085/2015. The obligation requires fuel suppliers to add biofuels in their fuel mix. Compliance with the minimum requirements is ensured through a certification system managed by the Ministry for Ecological Transition and Demographic Challenge.¹³⁶ While non-compliance leads to penalties, to encourage over-compliance with the obligation, Spain has introduced financial rewards.¹³⁷ The Quota Obligation sets a sustainability criteria. Amongst this criteria food and feed crops are capped at 3% for 2024 to prevent negative impacts on food supply and biodiversity.¹³⁸ Further, the production of advanced biofuels is encouraged.

¹³² Herbert Smith Freehills, 'Analysis of Royal Decree-Law 23/2020, of 23 June: its impact on renewable energy' (Herbert Smith Freehills, 2020) <https://www.herbertsmithfreehills.com/notes/energy/2020-07/analysis-of-royal-decree-law-23-2020-of-23-june-its-impact-on-renewable-energy> accessed 15 December 2024.

¹³³ Title I, Royal Decree-Law 23/2020, of 23 June, on measures in the field of energy and other areas for economic recovery, BOE-A-2020-6621 (BOE, 24 June 2020) <https://www.boe.es/buscar/pdf/2020/BOE-A-2020-6621-consolidado.pdf> ("Real Decreto-Ley 23/2020") accessed [accessed 15 December 2024].

¹³⁴ *ibid*

¹³⁵ Real Decreto-Ley 23/2020 art 6

¹³⁶ Royal Decree 1085/2015, of 4 December, on the promotion of biofuels, <https://www.global-regulation.com/translation/spain/1427321/royal-decree-1085---2015%252c-december-4%252c-from-promotion-of-biofuels.html> accessed 15 December 2024.

¹³⁷ ePURE, 'Overview Report January 2024' (ePURE, 2024) <https://www.epure.org/wp-content/uploads/2024/01/240115-REV8-REP-Overview-Report-January-2024-COMPILED.pdf> accessed 15 December 2024.

¹³⁸ Ministry for the Ecological Transition and the Demographic Challenge, 'Hydrogen Roadmap: Executive Summary' (2020) https://www.miteco.gob.es/content/dam/miteco/es/ministerio/planes-estrategias/hidrogeno/h2executivesummary_tcm30-513831.pdf accessed 15 December 2024.

Hydrogen Roadmap

In 2020 Spain approved the Hydrogen Roadmap to promote hydrogen as a pivotal component in the energy transition. The roadmap established measures for the support of production, distribution, and use of hydrogen.¹³⁹ Further, it sets specific targets for hydrogen-powered vehicles and infrastructure by 2030.¹⁴⁰ The roadmap provides further initiatives to enhance investment in hydrogen technologies and to foster innovation in the sector.

Spain has been actively implementing the REDII through various initiatives, including expanding solar and wind energy projects, promoting biomass and bioenergy, and fostering energy communities. However, the country has faced criticism for issues such as policy reversals undermining investor confidence, and forced expropriation of land for renewable projects, which has led to protests and concerns about the impact on local communities and agricultural land.¹⁴¹ Critics also highlight environmental concerns and the lack of transparency and fairness in the land acquisition process.¹⁴²

3.4. The Netherlands

The Netherlands introduced multiple legislative measures and policy updates to implement the RED II. The country amended its Environmental Management Act. The Energy for Transportation Decree was adopted which outlines the annual targets for renewable energy in the transport sector. The Netherlands also updated its Energy for Transport legislation and regulation through the Dutch Climate Agreement.

The Environmental Management Act (Wet Milieubeheer)

The Act aims to integrate environmental policies and regulations effectively by providing a legal framework of nearly all national environmental laws in the Netherlands.¹⁴³ The act defines the roles of national, provincial, regional and municipal governments.¹⁴⁴ Further, the act streamlines

¹³⁹ *ibid*

¹⁴⁰ *ibid*

¹⁴¹ AP News, 'Spain Faces Lawsuit from Renewable Energy Investors' (2023) <https://apnews.com/article/spain-renewable-energy-investors-lawsuit-d80cb685af42bf537175643c1d893665> accessed 15 December 2024.

¹⁴² InSpain News, 'Protest Against Expropriation for Solar Parks in Córdoba' (2023) <https://inspain.news/protest-against-expropriation-for-solar-parks-in-cordoba/> accessed 15 December 2024.

¹⁴³ Government of the Netherlands, 'Environmental Management Act' (2023) <https://www.government.nl/topics/environment/roles-and-responsibilities-of-central-government/environmental-management-act> accessed 15 December 2024.

¹⁴⁴ *ibid*

the permitting processes and sets reporting standards for companies. It contains provisions on environmental plans and programs at different governmental levels. The act sets a standard for emissions and discharges of harmful substances such as greenhouse gases and heavy metals into the air, water and soil.¹⁴⁵ The Environmental Management Act also includes provisions on environmental impact assessments. Projects such as building a refinery, nuclear power plant or a chemical plant must undergo an assessment to evaluate their effects on the environment.¹⁴⁶ The Dutch House of Representatives amended the Act to implement the RED II in 2021. The amendments allow the Dutch Emissions Authority (*Nederlandse Emissie Autoriteit, NEa*) to enforce the new legislation.¹⁴⁷ Further, the amendments include targets for renewable energy in the transport sector. The annual targets are outlined in the Energy for Transport Decree. The sustainability criteria for biofuels and bioliquids is also outlined in the Act. It is aligned with the RED II aiming to limit the harm that biofuels cause to the environment while contributing to greenhouse gas reductions.

The Energy for Transportation Decree – Besluit Energie voor Vervoer

The main objectives of the Decree are to increase the use of renewable energy in the transport sector and reducing greenhouse gas emissions.¹⁴⁸ The Decree sets annual obligations to fuel suppliers that need to meet these targets through the share of renewable energy in their fuel deliveries.¹⁴⁹ The targets increase every year incrementally to ensure the goal of reaching a 14% share of renewable energy in the transportation sector by 2030.¹⁵⁰ To count towards the targets, renewables and other renewable fuels must meet the set sustainability criteria including certifications under recognized sustainability schemes.¹⁵¹ The energy content of biofuels made from feedstocks listed under the Annex IX A and B of the REDII can be counted twice towards the targets to incentivize the use of advanced biofuels, commonly known as double counting biofuels.¹⁵²

¹⁴⁵ *ibid*

¹⁴⁶ *ibid*

¹⁴⁷ Argus Media, 'Netherlands Adopts Renewable Energy Directive II' (2021) <https://www.argusmedia.com/en/news-and-insights/latest-market-news/2230234-netherlands-adopts-renewable-energy-directive-ii> accessed 15 December 2024.

¹⁴⁸ 'Besluit Energie voor Vervoer' (2024) <https://wetten.overheid.nl/BWBR0040922/2024-04-06> accessed 15 December 2024. Art 2

¹⁴⁹ 'Besluit Energie voor Vervoer' (2024) <https://wetten.overheid.nl/BWBR0040922/2024-04-06> accessed 15 December 2024. Art 3

¹⁵⁰ *ibid*

¹⁵¹ *ibid*

¹⁵² Emissions Authority, 'Registering Deliveries' (Emissions Authority, 2024) <https://www.emissionsauthority.nl/topics/registering-deliveries> accessed 15 December 2024.

The Dutch Climate Agreement

The goal of the Dutch Climate Agreement is to reduce greenhouse gas emissions in the Netherlands by 49% by 2030 compared to the 1990 levels. Further, its long-term target is to reduce emissions 95% by 2050.¹⁵³ The agreement includes most sectors each with specific commitments. Some of the main objectives are to transition towards renewable energy and phase out coal fired power plants, enhancing energy efficiency in buildings and technologies, increasing the use of electric vehicles and biofuels and promoting sustainable farming practices and improving land use.¹⁵⁴

The measures established aim to promote renewable energy projects, streamline administrative procedures, provide financial incentives to facilitate the transition to a low-carbon economy and encourage the development and adoption of innovative technologies.¹⁵⁵ The agreement considers the social and economic impact by ensuring the cost-effectiveness and affordability of the transition for households and businesses while aiming to fairly distribute the financial burden between citizen and businesses.¹⁵⁶ However, this implementation has faced criticism for its complexity and administrative burden, the feasibility of achieving high targets, challenges in aligning with other EU regulations, and the impact on fuel suppliers.¹⁵⁷

Each country has taken a different approach to implement REDII. The distinguishing factors are influenced by the different industrial landscapes and challenges each country faces. Germany has a comprehensive legislative framework that sets a stringent sustainability criterion emphasising advanced biofuels and green hydrogen. However, its approach is criticised for the complexity and limited promotion of certain biofuels. Finland on the other hand, prioritises increasing its renewable energy share and advanced biofuels that has its roots in the agricultural and forestry sector. The country faces challenges due to the high costs and is criticised for its slow progress in the transport sector. Spain is promoting solar projects and emphasising the simplification of administrative procedures. Lastly, the Netherlands aims for the use of renewables in the transport sector but is encountering difficulties with administrative burden and aligning with other EU regulations.

¹⁵³ Ministry of Infrastructure and Water Management, 'Climate Policy' (Government of the Netherlands, 2024) <https://www.government.nl/topics/climate-change/climate-policy> accessed 15 December 2024.

¹⁵⁴ Ministry of Infrastructure and Water Management, 'National Measures' (Government of the Netherlands, 2024) <https://www.government.nl/topics/climate-change/national-measures> accessed 15 December 2024.

¹⁵⁵ Ibid.

¹⁵⁶ CPB Netherlands Bureau for Economic Policy Analysis, 'Climate Change and Intergenerational Distribution of Financial Burdens' (CPB, 2024) <https://www.cpb.nl/sites/default/files/omnidownload/CPB-Publication-Climate-change-and-intergenerational-distribution-of-financial-burdens.pdf> accessed 15 December 2024.

¹⁵⁷ PBL Netherlands Environmental Assessment Agency, 'What Are Just and Feasible Climate Targets for the Netherlands?' (PBL, 2024) https://www.pbl.nl/system/files/document/2024-06/pbl-2024-what-are-just-and-feasible-climate-targets-for-the-Netherlands_5594.pdf accessed 15 December 2024.

Each country reflects its key industries e.g. Germany with its automotive sector driving electric mobility incentives, Finland having a strong forestry sector with biomass fuel and biofuel policies, Spain taking advantage of the sun that shines using solar power, and the Netherlands having a strong traditional fuel refinery sector that it is adjusting for the REDII.

4. Case studies: Implementation of the Renewable Energy Directive in specific contexts.

The transition to renewable energy is a crucial for the global efforts to address climate change and ensure sustainable development. However, this shift comes with challenges, particularly in the realm of human rights.

The RED Directive has a far-reaching impact on human rights and biodiversity not only in Europe but also in the global south due to the increase in sourcing of raw materials required in renewable energy solutions.¹⁵⁸ This has led to various human rights violations such as community displacement and violence towards indigenous communities. Further, it has had severe impact on the environment due to pollution and deforestation and biodiversity loss.¹⁵⁹

In Europe, the implementation of renewable energy projects has sparked a range of human rights concerns, from land rights and displacement to labour conditions and environmental justice. For instance, the construction of wind farms and solar parks can result in the displacement of communities, raising questions about the adequacy of compensation and the right to adequate housing. Land grabbing, a phenomenon associated to happen mainly in the global south, has emerged in European countries often in connection with renewable energy projects.¹⁶⁰ Land grabbing can be defined as the legal or illegal control of lands that are larger than locally-typical amounts of land by a person or entity for extraction, resource control or commodification at the expense of locals, agroecology, land stewardship, food sovereignty and human rights.¹⁶¹ In the context of renewable energy projects this phenomenon is referred to often as green grabbing. The prime examples of this are land grabbing to produce biofuels with prominent examples in Brazil and renewable energy projects such as wind or solar farms in EU Countries requiring large-scale acquisitions of land and changing the purposes of the use of the land.

¹⁵⁸ Andreia Marques Postal et al, 'The impact of sugarcane expansion in Brazil: Local stakeholders' perceptions' (2020) 73 *Journal of Rural Studies* 147.

¹⁵⁹ Ibid.

¹⁶⁰ Eco Ruralis, 'What Is Land Grabbing?' (Eco Ruralis, 2016) <https://edepot.wur.nl/265047> accessed 14 December 2024.

¹⁶¹ *ibid*

Moreover, the environmental benefits of renewable energy projects often come at the expense of local ecosystems and the rights of indigenous peoples. The encroachment on protected lands and the disruption of traditional livelihoods are significant concerns that must be addressed to ensure that the transition to renewable energy is both just and equitable. This chapter explores these issues, highlighting specific examples where the pursuit of green energy has intersected with the rights of local communities.

4.1. Wind turbine farms disrupting traditional reindeer herding

One example of human rights issues concerning renewable energy projects in Europe concerns wind farms in the Nordics. The indigenous people in the Nordics known as the Sámi people, have protested renewable energy projects in Norway, Sweden and Finland due to its impact on traditional reindeer herding.¹⁶² The cases concerning the Sámi have brought up the discussions around *green colonialism* as these disputes are making old colonial structures visible again.¹⁶³ The Sámi have been known for their nomadic lifestyle. Moving together with their reindeers and the seasons across the borders of northern parts of Finland, Sweden, Norway and before the border was placed, Kola Peninsula in Russia. They experienced the ban on speaking their own language, were the subjects of racial studies, went through displacement due to forced assimilation and war.¹⁶⁴ During the 20th century Sámi children were forced to attend state run schools far away from their families where speaking their language would be punished. The language has survived but only few have continued the nomadic life and adapted to a new way of living while doing their best to preserve their traditions. These traditions are now once again threatened by the green transition. One of the most prominent cases has been the *Fosen wind farm case* in Norway.¹⁶⁵

The parties in the case were Sámi reindeer herders as claimants arguing that the wind farm project disrupts their livelihood and traditional way of living due to the impact of the project on traditional reindeer herding.¹⁶⁶ The Sámi further argued that this violates their rights under Norwegian law

¹⁶² Business & Human Rights Resource Centre, 'Sweden: Locals Protest Wind Energy Construction Due to Concerns Over Impacts on Sami Reindeer Grazing Lands' (Business & Human Rights Resource Centre, 2023) <https://www.business-humanrights.org/en/latest-news/sweden-locals-protest-wind-energy-construction-due-to-concerns-over-impacts-on-sami-reindeer-grazing-lands/> accessed 14 December 2024.

¹⁶³ LSEUPR, 'Wind Turbines, Reindeer, and Green Colonialism: A New Era of Sami Resistance Against Norwegianisation' (LSE Blogs, 5 March 2024) <https://blogs.lse.ac.uk/lseupr/2024/03/05/wind-turbines-reindeer-and-green-colonialism-a-new-era-of-sami-resistance-against-norwegianisation/> accessed 14 December 2024.

¹⁶⁴ Jess Shankleman, 'Sweden's Indigenous Sami Fight Green Energy Projects' (Bloomberg, 2023) <https://www.bloomberg.com/features/2023-sweden-indigenous-sami-green-energy/> accessed 14 December 2024.

¹⁶⁵ IWGIA, 'Press Release: Fosen Case' (IWGIA, October 2023) <https://iwgia.org/en/news/5278-press-fosen-oct2023.html> accessed 14 December 2024.

¹⁶⁶ *ibid*

and international treaties aiming to protect indigenous people.¹⁶⁷ The defendants of the case were both the Norwegian government and a company called Fosen Vind who emphasized the importance of renewable energy project for meeting climate goals.¹⁶⁸ The defendants highlighted the economic advantages and the public interest of the wind farm including job creation and energy production. The wind farm authorised by the Norwegian Water and Resources and Energy Directorate is the biggest onshore wind plant in Europe.¹⁶⁹ The Supreme Court of Norway ruled that the wind farms violated the rights of the Sámi people.¹⁷⁰ The court saw the project violating the Sámi people's rights under Article 27 of the International Covenant on Civil and Political Rights ("ICCPR") by disrupting the reindeer herding. Article 27 of the ICCPR states that "... *ethnic, religious or linguistic minorities... shall not be denied the right, in community with the other members of their group, to enjoy their own culture...*" The court established that the traditional herding practices differ significantly from artificial feeding of the reindeer herd to compensate for the lost winter pastures based on free and natural pastures.¹⁷¹ The court establishes that the Sámi people have the right to practice their culture through ancestral reindeer herding and that this right is absolute.¹⁷² Further, the court rules out a proportionality assessment of this right assessing the minority's interest against the interest of the majority of society regardless of whether this interest would be to produce renewable energy. The court found that other less intrusive options to produce wind energy were not pursued.¹⁷³

The agreement between the government and the Sámi people was reached after a three-year dispute. However, following the ruling the wind farm has continued its operations leading to Sámi people protesting the operations. In January 2024 the Norwegian authorities criminally charged 20 Sámi activist and their supporters for protesting by blocking the access to multiple government buildings in Oslo, Norway.¹⁷⁴ The Norwegian government has emphasised the notion that the green transition is more important than the preservation of indigenous culture by ignoring the calls

¹⁶⁷ *ibid*

¹⁶⁸ *ibid*

¹⁶⁹ LSEUPR, 'Wind Turbines, Reindeer, and Green Colonialism: A New Era of Sami Resistance Against Norwegianisation' (LSE Blogs, 5 March 2024) <https://blogs.lse.ac.uk/lseupr/2024/03/05/wind-turbines-reindeer-and-green-colonialism-a-new-era-of-sami-resistance-against-norwegianisation/> accessed 14 December 2024.

¹⁷⁰ *ibid*

¹⁷¹ *ibid*

¹⁷² IWGIA, 'Green Colonialism, Wind Energy, and Climate Justice in Sápmi' (IWGIA, 2024) <https://www.iwgia.org/en/news/4956-green-colonialism,-wind-energy-and-climate-justice-in-sápmi.html> accessed 14 December 2024.

¹⁷³ *ibid*

¹⁷⁴ JURIST, 'Norway Ends Dispute with Sami People Over Construction of Wind Farm on Indigenous Land' (JURIST, 2024) <https://www.jurist.org/news/2024/03/norway-ends-dispute-with-sami-people-over-construction-of-wind-farm-on-indigenous-land/> accessed 14 December 2024.

to suspend the project by the United Nations already in 2018.¹⁷⁵ However, this green transition does not consider the impact of the project not only on the indigenous rights but also on biodiversity of the area.¹⁷⁶ Reindeers have a crucial role as a carbon retainer in the ecosystem, this is threatened by the increased human activity and destruction of pasturelands.¹⁷⁷ These pasturelands have already been impacted due to the warming winters. The renewable energy project has therefore an additional negative impact on the sensitive ecosystem already struggling due to the impact of warming winters in the arctic.

Similar although less prominent cases concerning the Sámi people rights to their ways of living have emerged in neighbouring countries Sweden and Finland.¹⁷⁸ The Sámi Council of Finland and the municipality of Utsjoki have opposed a wind farm project 20km from the border of Finland in Norway.¹⁷⁹ The project is planned close to a fell that is said to be invaluable in terms of nature and the livelihood of the locals.¹⁸⁰ The locals stress that the old forests are crucial for the feeding of their reindeers and that much of the land has already been used for similar projects such as hydro-electric power plants.¹⁸¹

Free, Prior, and Informed Consent (“FPIC”) is a principle that requires that the ones impacted are adequately informed about projects affecting their lands and livelihoods. Further, it requires prior consultation and that consent is obtained without coercion. The principle is reflected in various international instruments such as the United Nations Declaration on the Rights of Indigenous Peoples (“UNDRIP”) under EU law the principle is reflected through concepts under the EU Charter

¹⁷⁵ Business & Human Rights Resource Centre, 'Norway to Build Wind Farm Despite UN Calls to Suspend Project Over Concerns of Impact on Indigenous Herders' Livelihoods' (Business & Human Rights Resource Centre, 2023) <https://www.business-humanrights.org/en/latest-news/norway-to-build-wind-farm-despite-un-calls-to-suspend-project-over-concerns-of-impact-on-indigenous-herders-livelihoods/> accessed 14 December 2024.

¹⁷⁶ Klein DA and others, 'Community-Based Participatory Research in the Context of Environmental Justice: A Case Study of the Navajo Nation' (2023) 52(1) Journal of Community Psychology <https://onlinelibrary.wiley.com/doi/epdf/10.1002/jcop.22422> accessed 14 December 2024.

¹⁷⁷ Henriques M, 'How Reindeer Help Fight Climate Change' (BBC Future, 19 December 2023) <https://www.bbc.com/future/article/20231219-how-reindeer-help-fight-climate-change> accessed 14 December 2024.

¹⁷⁸ Øyvind Ravna, 'The Draft Nordic Saami Convention and the Assessment of Evidence of Saami Use of Land' (2020) 11 Arctic Review on Law and Politics <https://arcticreview.no/index.php/arctic/article/view/2293/4808> accessed 14 December 2024.

¹⁷⁹ Maaailman Kuvalehti, 'Vihreän siirtymän hankkeet kaventavat alkuperäiskansojen tilaa – avainkysymys on, kuka projektista hyötyy' (Maaailman Kuvalehti, 2024) <https://maailmankuvalehti.fi/2024/1/pitkat/vihrean-siirtyman-hankkeet-kaventavat-alkuperaiskansojen-tilaa-avainkysymys-on-kuka-projektista-hyotyy/> accessed 14 December 2024.

¹⁸⁰ MTV Uutiset, 'Energia-yhtiö St1 suunnittelee Saamenmaalle valtavaa tuulivoimapuistoa – saamelaiset vastustavat' (MTV Uutiset, 2024) <https://www.mtvuutiset.fi/artikkeli/energia-yhtiö-st1-suunnittelee-saamenmaalle-valtavaa-tuulivoimapuistoa-saamelaiset-vastustavat/8818108#gs.fffv4v> accessed 14 December 2024.

¹⁸¹ Saami Council, 'Rastigaisa Fell Area Must Not Be Turned into an Industrial Area' (Saami Council, 2024) <https://www.saamicouncil.net/news-archive/rastigaisa-fell-area-must-not-be-turned-into-an-industrial-area-suomi> accessed 14 December 2024.

of Fundamental Rights and within the REDII under provisions specifying stakeholder consultation and public participation.¹⁸²

In the context of the Sámi people and renewable energy projects, FPIC ensures that their rights to land, culture, and self-determination are respected. The failure to obtain FPIC in the Fosen wind farm case exemplifies the broader issue of green colonialism, where the pursuit of renewable energy projects disregards the rights and traditions of indigenous communities. Ensuring renewable energy projects respect the principle of FPIC can help prevent conflicts, protect indigenous rights, and promote more equitable and sustainable development practices.

4.2. Yes, to Renewables, but not like this

Spain has streamlined the administrative processes for renewable energy projects, facilitating expedited project approvals and encouraging investments in solar power. However, these initiatives have not been without controversy. Local communities have raised significant concerns about habitat destruction, soil erosion, and water contamination, which have disrupted their lives and environments. This has led to the popular protest slogan “renovables sí, pero así no” (renewables yes, but not like this), echoing the sentiment of rural residents who support renewable energy but oppose the current implementation methods.¹⁸³

Several large-scale renewable energy projects have been at the centre of controversies related to the expropriation of land from local communities. The projects have faced significant opposition from local landowners and communities due to the contentious process of acquiring land.¹⁸⁴ Many of these projects have not adequately consulted with or compensated the affected landowners, leading to legal battles over the legality and fairness of the expropriations.¹⁸⁵ These disputes have highlighted issues related to property rights and the adequacy of compensation offered to those whose land is taken.¹⁸⁶

The legal basis is grounded in Spanish expropriation law, particularly the Ley de Expropiación Forzosa (Forced Expropriation Law). The Legislative Act allows for the expropriation of private

¹⁸² Charter of Fundamental Rights of the European Union [2012] OJ C326/391, arts 21, 41, 42 and REDII arts 15, 16

¹⁸³ Manuel Pimentel, 'Energías Renovables Sí, Pero No Así' (The Objective, 11 December 2024) <https://theobjective.com/elsubjetivo/opinion/2024-12-11/energias-renovables-si-pero-no-asi/> accessed 15 December 2024

¹⁸⁴ Olive Press News, 'Protests in Spain Over New Law That Will Allow Companies to Seize Land for Solar Power Projects' (3 November 2024) <https://www.theolivepress.es/spain-news/2024/11/03/protests-in-spain-over-new-law-that-will-allow-companies-to-seize-land-for-solar-power-projects/> accessed 15 December 2024

¹⁸⁵ *ibid*

¹⁸⁶ *ibid*

property in case of public or social interest. Fair compensation must be given to the affected landowners based on the law. Further, the law outlines the procedures and conditions under which expropriation can occur, ensuring that the process is legally justified.¹⁸⁷ Additionally, the Ley del Sector Eléctrico (Electricity Sector Law) and Royal Decree-Law 23/2020 have a pivotal role in facilitating the expropriation process for renewable energy projects. The Electricity Sector Law provides a framework for the development and integration of renewable energy sources into the national grid, emphasizing the importance of such projects for achieving Spain's energy and climate goals.¹⁸⁸ This law supports the expropriation of land by defining renewable energy projects as activities of public utility, thereby justifying the need for land acquisition. Royal Decree-Law 23/2020 further streamlines the expropriation process by simplifying administrative procedures and setting clear guidelines for the development of renewable energy projects.¹⁸⁹ This decree-law aims to accelerate the deployment of renewable energy by reducing bureaucratic hurdles and ensuring that projects can proceed efficiently.¹⁹⁰ It includes provisions for the expedited processing of permits and the establishment of specific timelines for obtaining necessary approvals.

Spain's process of expropriating land for renewable energy projects has faced several criticisms. The expropriation process is said to lack transparency and fairness. Landowners often feel inadequately informed and consulted about the projects, leading to a perception that their rights and interests are not sufficiently considered.¹⁹¹ There are concerns that the compensation offered to landowners is not always fair or reflective of the true market value of their property, leading to disputes and dissatisfaction among affected landowners.¹⁹² The expropriation of land for renewable energy projects can have significant impacts on local communities, including the loss of agricultural land and disruption of traditional livelihoods.¹⁹³ This is particularly problematic in rural areas where communities rely heavily on the land for their economic and social well-being while

¹⁸⁷ Guiote Abogados, 'La Expropiación Forzosa en Beneficio de Promotoras Fotovoltaicas Privadas: El Control Sobre su Utilidad Pública y Sobre la Necesidad de Ocupación Coactiva de los Bienes y Derechos Afectados por las Instalaciones' (2023) <https://guioteabogados.com/la-expropiacion-forzosa-en-beneficio-de-promotoras-fotovoltaicas-privadas-el-control-sobre-su-utilidad-publica-y-sobre-la-necesidad-de-ocupacion-coactiva-de-los-bienes-y-derechos-afectados-por-las-in/> accessed 15 December 2024

¹⁸⁸ *ibid*

¹⁸⁹ *ibid*

¹⁹⁰ *ibid*

¹⁹¹ Daniel Iglesias Márquez, Clara Esteve-Jordà, and Beatriz Felipe Pérez (eds), *Legal Challenges at the End of the Fossil Fuel Era: Shaping a Just and Clean Energy Transition* (Springer 2024) <https://doi.org/10.1007/978-3-031-61766-9> accessed 14 December 2024. p 253

¹⁹² *ibid*

¹⁹³ *ibid*

statistically often forming the poorest part of society.¹⁹⁴ The thoroughness of the environmental impact assessments conducted as part of the expropriation process are often questioned by critics.¹⁹⁵ There are worries that renewable energy projects may harm local ecosystems and biodiversity, especially when large areas of land are converted for solar or wind farms.¹⁹⁶ The complexity and bureaucracy of the expropriation process can lead to delays and legal challenges. Which increases costs and creates uncertainty for both developers and landowners.¹⁹⁷

The legal framework provided by the Ley de Expropiación Forzosa, the Ley del Sector Eléctrico, and Royal Decree-Law 23/2020 is essential for facilitating the transition to renewable energy while safeguarding the interests of affected landowners. However, the effectiveness of this process for both developers and landowners is currently under the lens.

One project that has gained significant attention due to major environmental concerns is a wind farm development by the company Forestalia.¹⁹⁸ This project required extensive deforestation to make way for wind farms and other renewable energy installations. The construction of a large wind farm in Aragon involved cutting down approximately 98,000 trees, raising serious concerns about the impact on local biodiversity and ecosystems.¹⁹⁹ Additionally, the development of large-scale renewable energy projects has had social impacts on local communities, with reports of inadequate public participation in the decision-making process leading to strong opposition from residents who feel their voices are not being heard.²⁰⁰

Despite these controversies, Forestalia has received environmental approvals and support from the government for its projects.²⁰¹ This has led to accusations of favouritism and insufficient scrutiny of the environmental and social impacts of the projects.²⁰² To facilitate the development of renewable energy projects, there have been calls for political, regulatory, and administrative measures

¹⁹⁴ I Antořová, N Hazuchová and J Stávková, 'Income situation of agricultural households of EU countries' (2021) 67 Agric Econ – Czech 121.

¹⁹⁵ The Objective, 'Energías renovables sí, pero no así' (The Objective, 11 December 2024) <https://theobjective.com/elsubjetivo/opinion/2024-12-11/energias-renovables-si-pero-no-asi/> accessed 15 December 2024.

¹⁹⁶ *ibid*

¹⁹⁷ *ibid*

¹⁹⁸ La Vanguardia, 'Spain Government Authorizes Largest Wind Farm Amid Opposition' (27 August 2024) <https://www.lavanguardia.com/mediterranean/20240827/9893684/spain-government-authorizes-largest-wind-farm-opposition-environment-energy-green-bird-turbine-windmill.html> accessed 15 December 2024

¹⁹⁹ *ibid*

²⁰⁰ *ibid*

²⁰¹ *ibid*

²⁰² *ibid*

to streamline the approval processes. This has included merging projects to exceed certain thresholds, allowing them to follow national rather than regional procedures which often have more strict requirements in comparison to the national procedures.²⁰³

Spain has been actively utilising solar energy projects as part of its commitment to renewable energy and reducing carbon emissions.²⁰⁴ The focus has been on large-scale solar installations, particularly in rural areas.²⁰⁵ However, this approach has led to several social and environmental challenges. The implementation of solar panels on agricultural land leads to the degradation of the land's agricultural, ecological, and productive value for as long as the installation exists.²⁰⁶ Large-scale renewable energy projects concentrated in specific areas have a greater impact on territory and biodiversity.²⁰⁷ The infrastructure required for generating and transmitting renewable energy, such as solar farms, increases pressure on the territory and biodiversity if implemented wrong.

There has been strong opposition from local communities due to the lack of public participation in the decision-making process for renewable energy projects.²⁰⁸ The Decree-law 16/2019 has been criticized for preventing public participation and not providing a clear plan for the deployment of renewable energy projects. The concentration of renewable energy projects in specific areas, the potential social and environmental impacts, and the fact that the energy produced is not necessarily consumed in the proximity of the affected area have generated strong opposition from certain sectors of the community.²⁰⁹ The deployment of renewable energy projects in rural areas has raised concerns about the risk of depopulation. Many municipalities with wind farms have experienced population loss, escalating the issue of rural depopulation. The fact that energy generation facilities are located far away from consumption areas makes this renewable energy deployment model inefficient, with potential energy losses of over 15%.²¹⁰

²⁰³ Daniel Iglesias Márquez, Clara Esteve-Jordà, and Beatriz Felipe Pérez (eds), *Legal Challenges at the End of the Fossil Fuel Era: Shaping a Just and Clean Energy Transition* (Springer 2024) <https://doi.org/10.1007/978-3-031-61766-9> accessed 14 December 2024. p 254

²⁰⁴ European Investment Bank, 'Renewable Energy Autonomy in Spain' (2023) <https://www.eib.org/en/stories/renewable-energy-autonomy-spain> accessed 15 December 2024

²⁰⁵ Daniel Iglesias Márquez, Clara Esteve-Jordà, and Beatriz Felipe Pérez (eds), *Legal Challenges at the End of the Fossil Fuel Era: Shaping a Just and Clean Energy Transition* (Springer 2024) <https://doi.org/10.1007/978-3-031-61766-9> accessed 14 December 2024. p 6

²⁰⁶ Daniel Iglesias Márquez, Clara Esteve-Jordà, and Beatriz Felipe Pérez (eds), *Legal Challenges at the End of the Fossil Fuel Era: Shaping a Just and Clean Energy Transition* (Springer 2024) <https://doi.org/10.1007/978-3-031-61766-9> accessed 14 December 2024. P254

²⁰⁷ *ibid*

²⁰⁸ Daniel Iglesias Márquez, Clara Esteve-Jordà, and Beatriz Felipe Pérez (eds), *Legal Challenges at the End of the Fossil Fuel Era: Shaping a Just and Clean Energy Transition* (Springer 2024) <https://doi.org/10.1007/978-3-031-61766-9> accessed 14 December 2024. p 253

²⁰⁹ *Ibid.*

²¹⁰ *Ibid.*

Developers have called for political, regulatory, and administrative measures to favor the development of renewable energies, especially projects of more than 5 MW.²¹¹ They argue that large projects must be encouraged to meet the targets set by the government. To streamline administrative processes, developers have started to merge projects to exceed the 50 MW threshold, which allows them to follow national procedures rather than regional ones.²¹²

In Catalonia, the expansion of wind and photovoltaic projects concentrated in specific rural areas has led to environmental and landscape impacts, resulting in social opposition movements that have manifested in the courts. The comarca of Terra Alta, which concentrates 25% of the installed wind power in Catalonia, has experienced significant population loss, highlighting the demographic impact of renewable energy projects.²¹³

While solar energy projects in Spain are crucial for achieving renewable energy targets and reducing carbon emissions, they also pose significant challenges to human rights and biodiversity. The lack of opportunity for public participation resulting social opposition highlight the need for more inclusive and sustainable approaches to renewable energy implementation. Further, leaving public concerns unaddressed provides grounds for more general opposition fuelling movements that oppose the transition to a more sustainable future of energy production. Addressing these issues requires balancing the benefits of renewable energy with the protection of local communities and biodiversity.

4.3. Biofuels fuelling green grabs in the global south

Biofuels have emerged as a promising alternative to traditional fossil fuels in Europe, offering a potential pathway to reduce greenhouse gas emissions and enhance energy security. The International Energy Agency states that the demand of biofuels is expected to expand by 30% until 2028.²¹⁴ However, the production of biofuels has had significant adverse impacts on both the environment and human rights, particularly in regions of the global south.²¹⁵ The following sections

²¹¹ Daniel Iglesias Márquez, Clara Esteve-Jordà, and Beatriz Felipe Pérez (eds), *Legal Challenges at the End of the Fossil Fuel Era: Shaping a Just and Clean Energy Transition* (Springer 2024) <https://doi.org/10.1007/978-3-031-61766-9> accessed 14 December 2024. p 254

²¹² *ibid*

²¹³ Daniel Iglesias Márquez, Clara Esteve-Jordà, and Beatriz Felipe Pérez (eds), *Legal Challenges at the End of the Fossil Fuel Era: Shaping a Just and Clean Energy Transition* (Springer 2024) <https://doi.org/10.1007/978-3-031-61766-9> accessed 14 December 2024. p 253

²¹⁴ International Energy Agency, 'Renewables 2023: Transport Biofuels' (IEA, 2023) <https://www.iea.org/reports/renewables-2023/transport-biofuels> accessed 6 December 2024.

²¹⁵ Lina Patricia Vega, Karen Tatiana Bautista, Heliana Campos, Sebastian Daza, Guillermo Vargas, 'Biofuel Production in Latin America: A Review for Argentina, Brazil, Mexico, Chile, Costa Rica and Colombia' (2024) 11 *Energy Reports* 28.

elaborate on the different types of biofuels, impacts they have on the environment and human rights, and the measures taken by the EU to address them.

Biofuels under the REDII

The regulation of biofuels contains various categories, each with defined requirements and limitations aimed at balancing environmental sustainability with economic feasibility. Conventional biofuels, such as biodiesel and bioethanol, are subject to a minimum greenhouse gas reduction of 50–65%, depending on the operational start date of the production plant.²¹⁶ These biofuels do not benefit from any multipliers and are capped at 7% as previously mentioned, with a planned reduction to 0% by 2030 for those identified as high Indirect Land Use Change (ILUC) risk biofuels. Should member states decide to lower this limit, the overall renewable energy target of 14% will be correspondingly reduced.²¹⁷

Advanced biofuels falling under Annex IX Part A, including biomethane, are also required to achieve a minimum GHG reduction of 50–65%, contingent on the plant's operational start date.²¹⁸ These biofuels are incentivized through a multiplier that doubles their energy content. Additionally, there are mandated minimum quotas for advanced biofuels: 0.2% by 2022, 1% by 2025, and 3.5% by 2030.

Waste-based biofuels, such as those listed in Annex IX Part B derived from used cooking oil, must meet the same GHG reduction criteria of 50–65%.²¹⁹ They also benefit from a multiplier that doubles their energy content. However, their production is capped at 1.7%, or 0.85% if the multiplier is applied, with exceptions for Cyprus and Malta due to the limited availability of feedstocks in these countries. This cap may be increased if justified by the member state and approved by the Commission.

Renewable fuels of non-biological origin (RFNBOs), including hydrogen and powerfuels, are required to achieve a minimum GHG reduction of 70% since 2021.²²⁰ These fuels do not have a multiplier or a minimum quota but must adhere to sustainability criteria for their electricity sources, ensuring renewability, temporal and geographical correlation, and additionality.

²¹⁶ REDII art 26.

²¹⁷ Richard Vincent Asase, Queency N. Okechukwu, Maria N. Ivantsova, 'Biofuels: Present and Future' (2024) 11 Environment, Development and Sustainability 28.

²¹⁸ REDII arts 25, 27, Part A of Annex IX.

²¹⁹ REDII arts. 27, Part B of Annex IX

²²⁰ Ibid.

Lastly, recycled carbon fuels (RCFs) have not yet defined a minimum GHG reduction requirement. They do not benefit from any multipliers and can optionally be credited towards the 14% renewable energy target, though not towards the overall 32% goal.²²¹

Land Grabbing and Displacement

The expansion of biofuel production has led to an increase green grabbing and the displacement of local communities in the global south. In many Latin American countries, such as Peru and Brazil, farmers and indigenous peoples have faced the expropriation of their lands to make way for biofuel crop production.²²² This process, often conducted without adequate consultation or compensation, has resulted in the loss of livelihoods and cultural heritage for these communities. Additionally, land has been acquired for carbon offsetting projects, further displacing local populations and exacerbating food insecurity.²²³

Land grabbing in the case of production of biofuels is driven by the expansion of agricultural production, particularly for biofuels, and the establishment of carbon offsetting projects.²²⁴ The lack of community engagement and free, prior, and informed consent from local communities, intensifies the issue. The environmental and social impacts include deforestation, loss of biodiversity, and soil degradation, as well as increased food insecurity and displacement of local populations.²²⁵

The EU has addressed some of these concerns by setting sustainability criteria for biofuels and bioliquids under Article 29 of the RED Directive. RED II mandates that biofuels must not be produced from raw materials obtained from land with high biodiversity value or high carbon stock, such as primary forests and peatlands.²²⁶ Additionally, RED II requires that biofuel production must not lead to significant environmental harm and must respect land-use rights, including the rights of indigenous peoples.²²⁷ However, while capped, the use of ILUC risk biofuels have not

²²¹ REDII arts 25, 28

²²² Richard Vincent Asase, Queency N. Okechukwu, Maria N. Ivantsova, 'Biofuels: Present and Future' (2024) 11 Environment, Development and Sustainability 28.

²²³ Human Rights Watch, 'Carbon Offsetting's Casualties: Violations of Chong Indigenous People's Rights' (Human Rights Watch, 29 February 2024) <https://www.hrw.org/report/2024/02/29/carbon-offsettings-casualties/violations-chong-indigenous-peoples-rights> accessed 6 December 2024.

²²⁴ Miroslav Hájek and others, 'Biofuels: Is Growing Food for Energy a Good Idea?' (2020) 12 Sustainability <https://www.mdpi.com/2071-1050/12/8/3395> accessed 14 December 2024.

²²⁵ BBC News, 'Food versus fuel: The biofuel debate' (BBC News, 2021) <https://www.bbc.com/news/59387191> accessed 14 December 2024

²²⁶ REDII art 29

²²⁷ REDII art 26

been banned. This means that the use of high ILUC risk crops is allowed as long as it is certified as low-ILUC crops.

Food Versus Fuel

The "food versus fuel" debate underscores the inherent conflict between utilizing agricultural land for food production versus biofuel crops. The diversion of essential crops such as corn, soy, and palm oil for biofuel production can lead to increased food prices and reduced food availability, particularly in regions already grappling with food insecurity.²²⁸ This trade-off poses a significant challenge to achieving both energy and food security, as the prioritization of biofuel crops can undermine efforts to combat hunger and malnutrition through competition for land use and resource allocation. Arable land used to produce crops for biofuels directly competes with land needed for food production.²²⁹ Economic incentives often make it more attractive to cultivate crops for biofuels rather than for food, exacerbating food price volatility, especially in regions already facing challenges with stable food supplies.²³⁰ Additionally, regions with scarce water, arable land, or other resources face the challenge of allocating these resources equitably.²³¹

The European Union has addressed these concerns by introducing sustainability criteria under the Articles 25 and 27, and Part A of Annex IX of the REDII. The sustainability criteria specifies which feedstocks may be used for biofuel production, aiming to mitigate the negative impacts on food security and the environment. Furthermore, Article 26 of the Directive sets a cap on the amount of crop-based biofuels that can be used, limiting their contribution to the overall renewable energy targets. This cap is set at 7% and will gradually decrease to 0% by 2030 for high Indirect Land Use Change (ILUC) risk biofuels unless they are certified as low ILUC-risk.²³²

Moreover, the Directive mandates the phasing out of high ILUC-risk biofuels, while promoting the use of advanced biofuels and waste-based biofuels, which are subject to different sustainability criteria and multipliers to encourage their adoption.²³³ However, the overall demand for biofuels

²²⁸ Richard Vincent Asase, Queeny N. Okechukwu, Maria N. Ivantsova, 'Biofuels: Present and Future' (2024) 11 Environment, Development and Sustainability 28.

²²⁹ FoodUnfolded, 'Biofuels: Is Growing Food for Energy a Good Idea?' (FoodUnfolded, no date) <https://www.foodunfolded.com/article/biofuels-is-growing-food-for-energy-a-good-idea> accessed 14 December 2024.

²³⁰ Ibid.

²³¹ Ibid.

²³² REDII art 26

²³³ REDII arts 25, 27, Part B of Annex IX)

is expected to increase by 20% due to their use in other sectors such as Sustainable Aviation Fuels (SAF) and marine biofuels.²³⁴

Environmental Degradation

The environmental impact of biofuel production is a critical concern. The cultivation of biofuel crops often involves deforestation, soil erosion, and the use of fertilizers and pesticides, which can contaminate soil and water sources.²³⁵ In regions of the global south, large-scale biofuel production has led to the destruction of natural habitats, resulting in significant biodiversity loss.²³⁶ The conversion of forests and grasslands into agricultural land for biofuels not only affects local ecosystems but also contributes to global carbon emissions, thereby undermining the climate benefits of biofuels.²³⁷

The RED II aims to mitigate these environmental impacts through several mechanisms such as its sustainability criteria and certification schemes as discussed under Chapter 2. The directive sets stringent sustainability criteria for biofuels and bioliquids under Article 29.²³⁸ These criteria require that biofuels must not be produced from raw materials obtained from land with high biodiversity value or high carbon stock, such as primary forests and peatlands.²³⁹ This provision is intended to prevent deforestation and protect biodiversity. Additionally, to ensure compliance with sustainability criteria, RED II requires biofuels to be certified by recognized schemes. These certification schemes must verify that biofuels meet the environmental and social standards set by the directive.²⁴⁰

EU Measures and Their Impact

The European Union has implemented several measures to address the negative impacts of biofuel production, focusing on the distinction between first-generation and advanced biofuels. First-generation biofuels are produced from food crops, while advanced biofuels are derived from non-food

²³⁴ Transport & Environment, 'Advanced Biofuels: The Sustainable Alternative?' (Transport & Environment, 2024) https://www.transportenvironment.org/uploads/files/202407_TE_advanced_biofuels_report-1.pdf accessed 14 December 2024

²³⁵ IFPRI, 'Food Versus Fuel v2.0: Biofuel Policies and the Current Food Crisis' (IFPRI, 2023) <https://www.ifpri.org/blog/food-versus-fuel-v20-biofuel-policies-and-current-food-crisis/> accessed 14 December 2024

²³⁶ Canary Media, 'Biofuels Are Accelerating the Food Crisis and the Climate Crisis Too' (Canary Media, 2023) <https://www.canarymedia.com/articles/food-and-farms/biofuels-are-accelerating-the-food-crisis-and-the-climate-crisis-too> accessed 14 December 2024

²³⁷ Ibid.

²³⁸ REDII art 29

²³⁹ ibid

²⁴⁰ REDII art 30

feedstocks such as agricultural residues and waste.²⁴¹ The EU's Renewable Energy Directive sets a cap on the use of first-generation biofuels to a maximum of 7% of the final energy consumption in the transport sector.²⁴² This cap aims to limit the adverse impacts on food security and biodiversity associated with first-generation biofuels. The use of conventional biofuels is planned to be phased out until 2030. However, this means high ILUC risk fuels, as mentioned before, are not banned from use but will no longer be counted towards the renewable energy target.²⁴³ Further, the use of high ILUC risk feedstocks is still allowed if certified as low-ILUC risk.²⁴⁴

The target for advanced biofuels requires a minimum of 3.5% of the energy used in transport to come from advanced biofuels by 2030.²⁴⁵ This target encourages the development and use of more sustainable biofuel alternatives that do not compete with food production.

As mentioned above, the directive includes a sustainability criterion to ensure that biofuels contribute to greenhouse gas savings and do not cause significant environmental harm. These criteria cover aspects such as land use, biodiversity, and carbon stock, aiming to mitigate the negative impacts of biofuel production. To further enhance transparency and traceability, the EU has established the Union Database for Biofuels, which tracks consignments of renewable and recycled carbon fuels from their origin to their final consumption in the EU market.²⁴⁶ This database helps prevent fraud and double counting, ensuring that biofuels meet the required sustainability standards.²⁴⁷ Further, the EU has introduced a regulation to address deforestation in 2023. The Regulation (EU) 2023/1115 on deforestation-free products, also known as the EUDR, applies to commodities linked to deforestation such as soy, coffee and palm oil amongst others.²⁴⁸ The regulation will set into force in December 2025. The impact of the regulation remains to be seen after the implementation in member states. However, it acknowledges and aims to address the impact on biodiversity due to commodities that are often used in biofuels such as palm oil and soy.²⁴⁹

While these measures represent significant steps towards addressing the challenges associated with biofuel production, their effectiveness remains a subject of ongoing debate. The impact of these

²⁴¹ European Commission, 'Biofuels' (European Commission, 2024) https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/biofuels_en accessed 14 December 2024

²⁴² REDII art 26

²⁴³ European Commission, 'Report on the Status of Production Expansion of Relevant Food and Feed Crops World-wide' COM (2019) 142 final.

²⁴⁴ REDIII art 26

²⁴⁵ REDII Annex IX

²⁴⁶ REDII art 28

²⁴⁷ *ibid*

²⁴⁸ Regulation (EU) 2023/1115 of the European Parliament and of the Council of 31 May 2023 on deforestation-free products [2023] OJ L150/1.

²⁴⁹ *ibid*

policies will depend on comprehensive enforcement, and continuous monitoring to ensure that the transition to renewable energy does not come at the expense of human rights and environmental sustainability.

5. Cross-cutting issues:

The renewable energy sector is associated with various human rights violations, including land grabbing, forced displacement, child labour, poor working conditions, and adverse effects on food, health, and water resources as demonstrated in the examples discussed. The human rights and biodiversity concerns in connection to the implementation of the RED can be divided roughly in two groups; issues taking place during the supply chain e.g. when mining the materials for the solar panels or sourcing the crops for biofuels and issues taking place post-supply chain.

5.1. During Supply Chain

The supply chain for renewable energy projects often involves significant human rights and biodiversity issues. These challenges arise at various stages, from the extraction of raw materials to the production of biofuels. This chapter explores these issues in detail and examines the legal frameworks designed to address them.

Environmental and Social Impacts of Mineral Extraction

The mining of minerals such as lithium, cobalt, and nickel is essential for the production of batteries used in renewable energy technologies. However, this process can have severe environmental and social impacts. Mining activities can lead to deforestation, soil erosion, and contamination of water sources.²⁵⁰ The extraction process often involves the use of harmful chemicals, which can leach into the environment and affect local ecosystems.²⁵¹ The destruction of habitats due to mining operations can result in significant biodiversity loss, displacing species that rely on these habitats and potentially leading to their extinction.²⁵² Moreover, mining operations, particularly in developing countries, have been associated with human rights abuses, including poor working

²⁵⁰ Mohsen Moghimi Dehkordi and others, 'Soil, Air, and Water Pollution from Mining and Industrial Activities: Sources of Pollution, Environmental Impacts, and Prevention and Control Methods' (2024) <https://doi.org/10.1016/j.envpol.2024.115678> accessed 14 December 2024

²⁵¹ *ibid*

²⁵² *ibid*

conditions, child labor, and the displacement of local communities.²⁵³ Workers often face hazardous conditions with inadequate safety measures, highlighting the need for stringent regulatory oversight and enforcement.²⁵⁴

Challenges in Biofuel Production

As discussed in the previous chapter, the production of crops for biofuels, such as corn, soy, and palm oil, also presents several challenges. Large-scale biofuel production requires extensive land, which can lead to conflicts with local communities and indigenous peoples. These communities may be displaced from their ancestral lands, leading to the loss of livelihoods and cultural heritage. Diverting crops for biofuel production can impact food availability and prices, exacerbating food insecurity, particularly in regions already facing food shortages.²⁵⁵ The cultivation of biofuel crops often involves the use of fertilizers and pesticides, which can contaminate soil and water.²⁵⁶ Additionally, converting forests and grasslands into agricultural land for biofuels can lead to deforestation and loss of biodiversity.²⁵⁷

Legal Frameworks Addressing Supply Chain Issues

Climate change mitigation and renewable energy policies are crucial for the survival of humanity. However, the global south should not be the one paying for the transition towards a less carbon intense society. The RED directive in the current form has

The Corporate Sustainability Due Diligence Directive (CS3D) aims to address these issues by mandating companies to identify, prevent, and mitigate adverse human rights and environmental impacts within their operations and supply chains.²⁵⁸ The directive's scope covers various sectors

²⁵³ IUCN Netherlands, 'Mining's Impact on Forests: A Growing Threat to Biodiversity and Climate' (IUCN Netherlands, 2024) <https://www.iucn.nl/en/news/minings-impact-on-forests-a-growing-threat-to-biodiversity-and-climate/#:~:text=From%202001%20to%202020%2C%20mining,dense%20and%20biodiverse%20ecosystems%20globally> accessed 14 December 2024

²⁵⁴ World Economic Forum, 'Energy Transition: Critical Minerals and Technology' (World Economic Forum, 2024) <https://www.weforum.org/stories/2024/01/energy-transition-critical-minerals-technology/> accessed 14 December 2024

²⁵⁵ IFPRI, 'Food Versus Fuel v2.0: Biofuel Policies and the Current Food Crisis' (IFPRI, 2023) <https://www.ifpri.org/blog/food-versus-fuel-v20-biofuel-policies-and-current-food-crisis/> accessed 14 December 2024

²⁵⁶ Food and Agriculture Organization, 'The State of Food and Agriculture 2008: Biofuels: Prospects, Risks and Opportunities' (FAO, 2008) <https://www.fao.org/4/i0100e/i0100e05.pdf> accessed 14 December 2024

²⁵⁷ BBC News, 'Food versus fuel: The biofuel debate' (BBC News, 2021) <https://www.bbc.com/news/59387191> accessed 14 December 2024

²⁵⁸ Directive (EU) 2024/1760 of the European Parliament and of the Council of 13 June 2024 on corporate sustainability due diligence and amending Directive (EU) 2019/1937 and Regulation (EU) 2023/2859 [2024] OJ L1760/1

and supply chain stages. Its implementation may vary across Member States while establishing a common standard aiming to increase corporate accountability and sustainable investment. The new legislation requires large companies to align with the 2050 climate neutrality object by adopting climate change mitigation plans.²⁵⁹ The effectiveness of CS3D will depend on how rigorously it is enforced and monitored. Early examples of implementation, such as the German Supply Chain Due Diligence Act (LkSG), provide insights into potential challenges and successes. The LkSG requires companies to conduct risk assessments and take preventive measures, but its impact on reducing human rights abuses and environmental harm remains to be seen.²⁶⁰ The success of CS3D will also depend on meaningful engagement with stakeholders, including local communities, workers, and civil society organizations. Ensuring that these voices are heard and considered in decision-making processes is crucial for addressing the root causes of supply chain issues. An example of the impact of the LkSG legislation can be seen in the automobile industry in Mexico.²⁶¹ Due to the requirements of the LkSG multinational companies with more than 3000 employees operating in Germany and sourcing materials or having productions in Mexico are setting policies in place with their Mexican subsidiaries and business partners in the supply chain to comply with the German legislation.²⁶² A complaint mechanism was set in place to provide for automobile companies to comply with the LkSG while utilising their supply chain in Mexico.²⁶³ However, companies falling under the scope of the legislation are facing challenges at competing against companies that do not have to comply with the legislation.²⁶⁴

The Renewable Energy Directive (RED II) limits the share of crop-based biofuels to a maximum of 7% of the final energy consumption in the transport sector. This cap is intended to prevent excessive use of agricultural land for biofuel production, which could otherwise impact food security and biodiversity.²⁶⁵ The directive sets a target for advanced biofuels, which are made from non-food feedstocks such as agricultural residues and waste. By 2030, at least 3.5% of the energy

²⁵⁹ European Commission, 'Proposal for a Directive of the European Parliament and of the Council on Corporate Sustainability Due Diligence and amending Directive (EU) 2019/1937' COM (2022) 71 final, art 15(1)

²⁶⁰ Bundesgesetzblatt, 'Gesetz über die unternehmerischen Sorgfaltspflichten in Lieferketten (Lieferkettensorgfaltspflichtengesetz - LkSG)' (2021) BGBl I 2959 („LkSG“)

²⁶¹ Friedrich-Ebert-Stiftung, Die Lieferkettensorgfaltspflicht in der mexikanischen Automobilindustrie, (Friedrich-Ebert-Stiftung, 2023) <https://library.fes.de/pdf-files/bueros/mexiko/21730.pdf> accessed 14 December 2024

²⁶² LkSG section 3

²⁶³ Deutsches Institut für Menschenrechte, 'Menschenrechtsschutz entlang der Automobil-Lieferkette in Mexiko verbessern' (Deutsches Institut für Menschenrechte, 2024) <https://www.institut-fuer-menschenrechte.de/aktuelles/detail/menschenrechtsschutz-entlang-der-automobil-lieferkette-in-mexiko-verbessern> accessed 14 December 2024

²⁶⁴ Galina Kolev-Schaefer and Adriana Neligan, Due Diligence - Effect of Supply Chain Regulation. Data-based Results on the Effects of the German Supply Chain Act (IW-Report, Nr. 8, 2024).

²⁶⁵ REDII art 26

used in transport should come from advanced biofuels.²⁶⁶ RED II includes stringent sustainability criteria to limit harm significant environmental harm caused by the production of biofuels. These criteria cover aspects such as land use, biodiversity, and carbon stock.²⁶⁷

To enhance transparency and traceability in the biofuels supply chain, the EU has established the Union Database for Biofuels.²⁶⁸ This database tracks the supply chain of renewable and recycled carbon fuels from their origin to their final consumption in the EU market. It helps prevent fraud and double counting, ensuring that biofuels meet the required sustainability standards. The EU continues to refine its policies to address the challenges associated with biofuels. Ongoing debates aim to ensure that future regulations effectively balance the need for renewable energy with the protection of human rights and the environment.

5.2. Post-Supply Chain

Renewable energy projects, such as wind farms in the Nordics and solar farms in Spain, are crucial for Europe's transition to a sustainable energy future. However, if implemented wrong these projects pose a harm towards local communities and the environment that can lead to an overall opposition of renewable sources of energy.

As illustrated in the cases concerning wind and solar projects in Europe have encountered various issues, including environmental concerns and human rights violations. For instance, the construction of large wind turbines can disrupt local wildlife habitats and migration patterns preventing indigenous people from practicing their traditions. Similarly, in Spain, solar farm projects have faced challenges related to land use and agricultural displacement. The vast areas required for solar panels can lead to conflicts with agricultural activities, potentially displacing local farmers and affecting food production. Moreover, the installation of solar farms can alter the natural landscape, raising concerns about biodiversity and ecosystem balance and being a cause for fires.

One of the critical aspects of implementing renewable energy projects is balancing the public interest in producing green energy with the protection of the rights of individuals under the EU Charter of Fundamental Rights, such as the right to property. The European Union's commitment to human rights necessitates that renewable energy projects do not infringe upon individuals' property rights without due process and fair compensation.²⁶⁹

²⁶⁶ REDII art 25

²⁶⁷ REDII art 29

²⁶⁸ REDII art 24

²⁶⁹ Jelle Marijn Honing, Leaving no one behind: EU climate action, human rights and a 'just transition' (Master Thesis, Utrecht University 2022).

When deciding between public interest and the rights of an individual or minority, several factors must be taken into account, including legality, proportionality, and compensation.²⁷⁰ National laws often provide for the expropriation of private property under certain conditions, such as public interest and proportionality as in the case of Spain. Public interest in EU law refers to objectives that are deemed essential for the welfare of the community, such as environmental protection, public health, and energy security.²⁷¹ The criteria for determining public interest involve assessing whether the measure serves a legitimate objective recognized by law, such as sustainability or climate change mitigation.²⁷²

Proportionality, a fundamental principle in EU law, requires that any measure taken must be suitable to achieve the desired objective, necessary in the absence of less restrictive alternatives, and balanced in terms of its impact on individual rights versus the benefits to the public.²⁷³ This principle ensures that actions taken in the public interest do not impose excessive burdens on individuals. The Council of the European Union has emphasized that renewable energy projects are of overriding public interest due to their role in ensuring sustainability, enhancing energy security, and mitigating climate change.²⁷⁴ However, when evaluating the proportionality of such projects, it is crucial to ensure that the measures taken are appropriate and necessary to achieve these goals and that they do not disproportionately affect the rights of individuals or communities. Further, it is important that the quality of the project justifies the impact it has on local communities and the environment.

This hierarchy means that such projects are prioritized in legal and policy frameworks, often facilitating their approval and implementation. However, the principle of proportionality must still be applied to ensure that the benefits of these projects justify any potential infringements on individual rights. This involves a careful assessment of whether the renewable energy project is the least restrictive means to achieve the public interest goal and whether the benefits to the public outweigh the costs to individuals. In this context, compensation plays a critical role in addressing

²⁷⁰ Paul Craig and Gráinne de Búrca, *EU Law: Text, Cases, and Materials* (6th edn, Oxford University Press 2015) p. 552

²⁷¹ Koen Lenaerts, 'Proportionality as a Matrix Principle Promoting the Effectiveness of EU Law and the Legitimacy of EU Action' (ECB Legal Conference 2021, 25 November 2021) https://www.ecb.europa.eu/press/conferences/shared/pdf/20211125_legal/ECB-Symposium_on_proportionality_25_November_2021.en.pdf accessed 14 December 2024.

²⁷² *Stichting Varkens in Nood and Others v Minister van Landbouw, Natuur en Voedselkwaliteit* (Case C-826/18) [2021] ECLI:EU:C:2021:7.

²⁷³ Consolidated Version of the Treaty on European Union [2012] OJ C326/13, art 5(4)

²⁷⁴ Council of the European Union, 'Renewable Energy Projects as Overriding Public Interest' (2024) <https://www.consilium.europa.eu/en/press/press-releases/2024/12/14/new-rules-for-renewable-energy/> accessed 14 December 2024.

any adverse impacts on property rights, ensuring that affected individuals receive fair compensation for any expropriation or disruption caused by the project. This becomes especially important when considering that large-scale projects are more likely to impact lower income communities in rural areas where the value of the property might not be visible monetarily but through the impact on the individual. A balanced approach is required to harmonize the advancement of renewable energy with the protection of individual rights, ensuring that the transition to sustainable energy is both equitable and just.

In the case of expropriation of land for wind or solar farms, the process must be conducted transparently and justly, ensuring that affected landowners are adequately compensated. This balance is essential to ensure a fair energy transition that maintains public trust and support for renewable energy initiatives. To address these challenges, it is vital to involve local communities in the planning and decision-making processes of renewable energy projects to understand the full impact that these projects might have on the communities. The principle of free, prior, and informed consent (FPIC) is crucial in this context. FPIC ensures that communities are fully informed about the potential impacts of projects and have the opportunity to voice their concerns and preferences before any decisions are made.

Engaging local communities through consultations and participatory assessments can help identify and mitigate potential negative impacts. This approach not only fosters community support but also enhances the social and environmental sustainability of renewable energy projects.

In conclusion, while renewable energy projects in Europe are essential for achieving climate goals, they must be implemented with careful consideration of environmental, social, and human rights impacts. By balancing the public interest with the protection of fundamental rights and ensuring the involvement of local communities, Europe can pave the way for a more sustainable and equitable energy future.

6. Conclusion: Recommendations for enhancing regulatory frameworks and future research directions.

The transition towards a less fossil fuel-centered economy is crucial for addressing the ecological and climate crises that harms human livelihoods, and biodiversity. The Renewable Energy Directive is a crucial component of the EU's Green Deal. It aims to reduce greenhouse gas emissions, enhance energy security, and promote sustainable development. However, it has severe negative effects on human rights and biodiversity in countries in the global south that produce the raw materials needed for renewable energy solutions. The global south should not bear the costs for

Europe's need for energy with loss of biodiversity and human rights violations. This does not contribute to the goals of the directive to mitigate climate change and will drastically weaken the credibility of the EU when advocating for sustainable practices. Further, the implementation of the RED across different member states takes various regulatory approaches and including their effectiveness in safeguarding human rights and biodiversity.

This thesis has highlighted the complex interconnection between renewable energy development, human rights, and biodiversity conservation. The comparative analysis of Germany, Finland, Spain, and the Netherlands demonstrates that while each country has made efforts in promoting renewable energy, challenges remain in balancing these efforts with the protection of human rights and biodiversity. Issues such as land grabbing, displacement of local communities, and environmental degradation underscore the need for more robust and inclusive regulatory frameworks.

The findings suggest that effective regulatory frameworks are essential for aligning the implementation of the Renewable Energy Directive with international and European human rights standards and biodiversity conservation goals. The variations in national approaches highlight the importance of tailored strategies that consider local contexts and priorities while adhering to overarching EU objectives.

To address these challenges, it is crucial to have comprehensive legislation in place and implemented to address issues throughout the supply chain. The Corporate Sustainability Due Diligence Directive (CS3D) and Deforestation Regulation (EUDR) are steps in the right direction, but proactive measures are needed to ensure their effectiveness. This includes stringent reporting standards and the consideration of a full ban on the use of certain crops for biofuel production to prevent negative impacts on food security and biodiversity. Simultaneously, setting higher targets for advanced biofuels and providing incentives for the adoption of innovative technologies that minimize environmental impacts. This has partially been addressed by REDIII. However, the use of feedstocks that could encourage land use changes are still permitted for use if meeting the sustainability criteria. As the aviation and marine sector has been added to the scope of the directive, this could lead to the increase of harmful impact due to the increase in production of biofuels. Many human rights organisations are calling for a full ban on food- and feedstock-based biofuels, this should be considered if innovative technologies provide for advanced biofuel production options.

Ensuring that local communities are fully informed and engaged in the decision-making process through free, prior, and informed consent (FPIC) is key. This approach fosters community support

and mitigates potential conflicts. Engaging local communities through consultations and participatory assessments can help identify and mitigate potential negative impacts, enhancing the social and environmental sustainability of renewable energy projects. Further, penalties could be introduced for the use of materials that contribute to deforestation and human rights infringements.

The EU should develop clear guidelines for Member States on how to balance fundamental rights with the public interest of generating renewable energy is essential. This includes ensuring a fair and transparent process, fair compensation for land use and protecting property rights. The principle of proportionality must be applied to ensure that the benefits of renewable energy projects justify any potential infringements on individual rights. Further, the production of renewable energy should not come at the cost of the minority groups that contribute the least to emissions and follow a sustainable way of living and working. It should be considered to establish incentives to encourage a sustainable lifestyle that lowers the consumption of energy.

Establishing mechanisms for enhanced transparency and accountability in the implementation of renewable energy projects is also necessary. This includes determining existing gaps, rigorous environmental impact assessments, robust certification processes, and regular monitoring and reporting to ensure compliance with sustainability criteria. Systematically integrating climate and biodiversity objectives in electricity planning and policy is crucial. This involves identifying suitable and nature-compatible areas for renewable energy projects such as France has done with utilizing parking lots for solar panel instalments. Further, avoiding the use of highly destructive sources such as hydropower and large-scale forest biomass or projects that require the cutting of large-scale forest areas as we currently see happening in Spain.

While EU has currently one of the most comprehensive regulatory frameworks to transition towards a more sustainable energy production, the measures are introduced to lower the emission levels of 1990s.²⁷⁵ The society is continuously increasing its energy consumption, which creates an overall increase in need for energy sources.²⁷⁶ It is important to consider not only the increase of production but also to address the root causes by implementing holistically sustainable solutions such as moving towards a circular society and aiming to lower the overall consumption. This includes promoting sustainable and circular practices that lower the need for energy and raw materials.

²⁷⁵ Jos G.J. Olivier, Trends in Global CO₂ and Total Greenhouse Gas Emissions: 2021 Summary Report (2022) https://www.pbl.nl/sites/default/files/downloads/pbl-2022-trends-in-global-co2-and_total-greenhouse-gas-emissions-2021-summary-report_4758.pdf accessed 20 December 2024.

²⁷⁶ *ibid*

By implementing these recommendations, the EU can achieve a more sustainable and equitable energy transition, balancing the need for renewable energy with the protection of fundamental human rights and biodiversity. This approach will not only contribute to the EU's climate goals but also ensure that the transition to renewable energy is both inclusive and just.

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