

FACTSHEET - Carbon Dioxide Removal

Country Report: Italy

Italy is in the process of building a comprehensive framework for carbon capture, utilisation and storage (CCUS) and, to a lesser extent, carbon dioxide removal (CDR). The current approach is characterised by a strong alignment with European climate objectives and a clear focus on developing large-scale infrastructure, most notably the Ravenna CCS hub. At the same time, important elements of the governance framework—particularly with regard to CDR-specific targets, monitoring systems, and social policy integration—remain underdeveloped. The result is a system that is relatively advanced in legal and technical preparation for CCS, but still incomplete as a fully operational CDR policy framework.



Legal Framework & Targets

Italy's climate policy is embedded in the European Climate Law, which sets the binding objective of achieving climate neutrality by 2050 and subsequently moving towards net negative emissions. Within this context, Italy's long-term climate strategy foresees emission reductions of 20 to 40 million tonnes of CO₂ per year by 2050, explicitly including the contribution of CCS technologies.¹ At the national level, the Integrated National Energy and Climate Plan defines Italy's 2030 CO₂ reduction target of 40.6 % for sectors covered under the EU Effort Sharing Regulation, lacking

an economy-wide emissions target.² While Italy has begun to incorporate both technical and nature-based removals into its policy landscape, it has not yet established explicit quantitative targets for CDR. Nature-based approaches are addressed through the National Climate Adaptation Plan³ and the National Forest Accounting Plan⁴, which introduced a voluntary carbon credit registry that was launched in October 2025.⁵



Economic Instruments

Italy's economic framework for CCUS and CDR is primarily shaped by European instruments and national public investment programmes rather than by dedicated domestic carbon pricing mechanisms. The country relies on the EU Emissions Trading System as its main carbon pricing tool and has not defined a national carbon price trajectory. Public financial support is largely channelled through the Italian National Recovery and Resilience Plan, which allocates a substantial share of its budget to the green transition.⁶

A study on CCUS in Italy conducted by the Italian Ministry of Environment and Energy Security (MASE) identifies the need for additional targeted instruments to enable large-scale deployment, particularly Carbon Contracts for Difference, which could help bridge the cost gap for carbon capture and storage technologies.⁷

1 Ambiente e della Tutela del Territorio e del Mare, Ministero dello Sviluppo Economico, Ministero delle Infrastrutture e dei Trasporti, Ministero delle Politiche agricole, Alimentari e Forestali, Strategia Italiana di lungo termine sulla riduzione delle emissioni dei gas a effetto serra (2021), 19.

2 Ministero dell'Ambiente e della Sicurezza Energetica, Integrated National Plan for Energy and Climate (2024), 16.

3 Ministero dell'Ambiente e della Sicurezza Energetica, Piano Nazionale di Adattamento ai Cambiamenti Climatici (2023).

4 Ministero dell'ambiente e della Tutela del Territorio e del Mare, National Forestry Accounting Plan Italy (2018).

5 Ministro dell'Agricoltura, della Sovranità Alimentare e delle Foreste, Ministero dell'Ambiente e della Sicurezza Energetica, Decreto 15 ottobre 2025.

6 Piano Nazionale di Ripresa e Resilienza (2021), 120.

7 Ministero dell'Ambiente e della Sicurezza Energetica: Dipartimento Energia, Studio CCUS - Analisi degli aspetti tecnici, economici e normativi funzionali allo sviluppo della filiera CCUS (2025), 86 ff.



Infrastructure & Permitting

Infrastructure development is a central pillar of Italy's CCUS strategy, with the Ravenna CCS hub serving as the flagship project. This initiative follows a hub-and-cluster model that connects industrial emission sources to offshore storage sites in depleted gas reservoirs beneath the Adriatic Sea. The project is being developed in phases, beginning with an experimental stage in 2024 with a capacity of 25 kilotonnes per year, followed by a scale-up phase aiming for approximately 4 million tonnes annually between 2027 and 2030, with the potential to reach 16 million tonnes after 2030. The transport system combines pipelines as the backbone infrastructure with shipping as a complementary mode, particularly for distributed emission sources and potential cross-border CO₂ flows. The infrastructure is designed to operate on an open-access basis, potentially serving not only Italy but also industrial emitters across Southern Europe.

The legal permitting framework for CCS is relatively advanced and is primarily based on Legislative Decree 162/2011 and its amendment through Law Decree No. 181/2023. The amended framework establishes a structured, lifecycle-based permitting process that includes exploration, experimental storage, and full-scale storage phases. Environmental protection is an integral component of the highly detailed permitting process, requiring environmental impact assessments and compliance with both national legislation and the EU Environmental Liability Directive. Liability provisions are clearly defined, with ongoing monitoring obligations during operation and after closure. In addition to the Legislative Decrees, the MASE issued a decree on technical rules intended to govern the entire CO₂ value chain.⁸ These rules cover the design, construction, testing, operation, and monitoring of transport and storage infrastructure, with the objective of ensuring safety, interoperability, and standardisation.



Monitoring, Reporting, Verification & Transparency

Italy's approach to monitoring, reporting, and verification is well developed for geological CO₂ storage but remains incomplete for broader CDR activities. The legal framework does not yet provide a distinct classification for negative emissions, and carbon removal is primarily treated within the context of CCS. The CCS Decree establishes detailed monitoring requirements, including

the need to detect leaks, track CO₂ migration, and ensure the long-term integrity of storage sites. These requirements extend into the post-closure phase and are closely linked to liability provisions. While this creates a robust MRV system for CCS, significant gaps remain for other forms of carbon removal, such as direct air capture and nature-based solutions.



Just Transition & Equity

The Italian CCUS and CDR framework places relatively limited emphasis on social equity and just transition considerations. The policy documents do not explicitly identify vulnerable worker groups or regions that may be affected by the transition, nor do they establish targeted mechanisms to address potential socio-

economic impacts. Instead, social considerations are addressed indirectly through broader economic and industrial policy objectives, particularly the aim of maintaining competitiveness in hard-to-abate sectors.⁹

8 Decreto del Ministero dell'ambiente e della sicurezza energetica, Regola tecnica per la progettazione, la costruzione, il collaudo, l'esercizio e la sorveglianza delle reti di trasporto di cui all'articolo 3, comma 1, lettera aa), del decreto legislativo 14 settembre 2011, n. 162.

9 Ministero dell'Ambiente e della Sicurezza Energetica: Dipartimento Energia, Studio CCUS - Analisi degli aspetti tecnici, economici e normativi funzionali allo sviluppo della filiera CCUS (2025), 29, 80; Ministero dell'Ambiente e della Sicurezza Energetica, Integrated National Plan for Energy and Climate (2024), 84, 86.

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