



Sustainability Integration by Global Regulators Impacting Oil & Gas sector

Petroleum and Natural Gas Regulatory Board



पी एन जी आर बी
PNGRB

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Global Peer Regulators Overview

National
Machinery for
Environmental
& Climate
Sustainability

Peer Energy
Regulators

UK

Department of
Energy Security &
Net Zero (DESNZ)

Office of the Gas
& Electricity
Market (OFGEM)

Australia

Department of
Climate Change,
Energy,
Environment &
Water (DCCEEW)

Australian Energy
Regulator (AER)

USA

Environment
Protection Agency
(EPA)

Department of
Energy

- Federal Energy
Regulatory
Commission
(FERC)
- State Public
Utility
Commission

Japan

Ministry of
Environment

Ministry of
Economy, Trade &
Industry (METI)

- Agency for
Natural
Resources and
Energy (ANRE)

Brazil

Ministry of
Environment &
Climate Change
(IBAMA)

Ministry of Mines
& Energy (MME)

- National Agency
of Petroleum,
Natural Gas &
Biofuels (ANP)

Sustainability Integration by OFGEM (UK):

Regulatory Initiative [with implementation year]	Document link
RIIO-2 environmental reporting for gas networks (AER, leakage, BCF, low-carbon gas, innovation) [2021]	RIIO-2 Environmental Reporting Guidance
Net-zero and decarbonization mandate for networks [2020]	Ofgem’s Decarbonization Action Plan
Consent for applying: Gas Pipelines [2023 revised]	The Public Gas Transporter Pipeline Works (Environmental Impact Assessment) Regulations 1999
Future of Natural Gas infrastructure: hydrogen, cost recovery and decommissioning [2024]	Multiyear Strategy RIIO-GD3

Business Carbon Footprint KPIs (RIIO-GD2 BP)

Buildings Energy Usage	Buildings - Electricity	Business Transport	Road (Diesel)
	Buildings - Other Fuels		Road (Petrol)
Operational Transport	Road (Diesel)		Road (Other)
	Road (Petrol)		Hire Car Diesel
	Road (LPG)		Hire Car Petrol
	Rail		Rail
	Sea		Sea
	Air		Air (Domestic)
	Air Miles European		Air Miles European
	Air Miles International		Air Miles International
Fugitive Emissions	Natural Gas	TNO Emissions	Scope 1
	Gases Other		Scope 2
Fuel Combustion	Diesel		Scope 3
	Natural Gas	Contractor Emissions	Scope 1
	Fuels Other		Scope 2
			Scope 3

Cadent Gas ER

RIIO-GD3 AER Guidance

Business Plan & KPI Template

Learning from UK:

Environment Reporting

- Mandates third-party assured Annual Environment Report on KPIs with Environment Action Plan (targets & achievement)

Gas pipeline Authorization

- Mandates Environmental Impact Assessment (Schedule 1: GHG emissions from commissioning to operations)

Business Carbon Footprint

- Entities and supplier’s data reporting on Scope 1, 2 and transport category of Scope 3 emissions.

Annual Reduction Target

- Operator wise carbon footprint reduction, biodiversity and shrinkage reduction targets with baseline

Financial KPIs

Annual investment in schemes to enhance/restore local environmental quality

Annual investment in innovation activities that are primarily supporting decarbonization and/or protecting the environment

Operation related KPIs

Greenhouse Gas Emissions

Waste/Pollution

Natural Resources Consumed

Mitigation Plan

Features of Environment Action Plan

30 commitment points (quantitative & qualitative)

Carbon Reduction Targets: 15-30% Scope 1+2 emissions cuts by 2026

Mandatory biomethane injection targets

Incentives to minimize unavoidable gas venting during operations, targeting <0.5%

Sustainability Integration by Australia:

Regulatory Initiative [with implementation year]	Document link
Inclusion of emission reduction expenses in capital and opex	Statutes Amendment (National Energy Laws) (Emissions Reduction Objectives) Act 2023
Publish data on greenhouse gas emissions and energy use	National Greenhouse Gas and Energy Reporting scheme
Unaccounted for Gas data reporting mandate (state level)	Gas Distribution code of Practice

Technical Standards	Scope	Related KPIs
AS 2885.1	Design & Construction of Gas Transmission Pipelines	• Number of environmental risk assessments completed • Compliance with habitat protection measures
AS 2885.3	Operation & Maintenance of Transmission Pipelines	• Frequency of leak inspections • Volume of fugitive emissions (tCO₂-e) • Pipeline integrity score
AS/NZS 4645.1	Gas Distribution Networks – Design & Construction	• Percentage of projects with environmental management plans • Compliance with vegetation clearance guidelines
AS/NZS 4645.2	Operation & Maintenance of Distribution Networks	• Annual UFG (Unaccounted-for Gas) percentage • Number of LDAR (Leak Detection and Repair) interventions

Category	Details
KPIs	• Scope 1 & Scope 2 GHG emissions (tCO₂-e) • Energy production (TJ) • Energy consumption (TJ) • Facility-level vs corporate totals • Uncertainty metrics
Eligibility Criteria	• Facility: ≥ 25,000 tCO₂-e OR ≥ 100 TJ energy • Corporate: ≥ 50,000 tCO₂-e OR ≥ 200 TJ energy
Emission Limits	• Safeguard Mechanism applies to facilities > 100,000 tCO₂-e/year • Baseline = production × emissions-intensity factor
Annual Baseline Reduction	• ~4.9% per year decline through 2029–30 • Aligns with national target: 43% reduction by 2030 (from 2005 levels)
Penalties	• Civil penalties for non-reporting or false data • Excess emissions require purchase of Safeguard Mechanism Credits (SMCs)
Safeguard Mechanism Features	• Facility-specific baselines • Production-adjusted limits • SMCs for emissions below baseline (tradable, bankable)
Targets	• Net emissions ≤ 100 MtCO₂-e in 2029–30 • Cumulative cap: ≤ 1,223 MtCO₂-e (2020–2030) • Net zero by 2050

Learnings from AER:

Development of Technical Standards

Technical Standards	Scope	Related KPIs
AS 2885.1	Design & Construction of Gas Transmission Pipelines	• Number of environmental risk assessments completed • Compliance with habitat protection measures
AS 2885.3	Operation & Maintenance of Transmission Pipelines	• Frequency of leak inspections • Volume of fugitive emissions (tCO₂-e) • Pipeline integrity score
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Policy Level Integration

Legal status to sustainability disclosure

- Laws/Acts linking sustainability to national energy security and consumer interest

Corporate level and Facility Level Disclosure

- Disclosures to identify whole value chain

Annual Reduction target

- Yearly reduction target for corporate as well as facilities

Integration with Carbon Credit Markets

- Leveraging carbon market linked incentives to implement emission mitigation plan

Sustainability Integration by USA:

Federal Energy Regulatory Commission (FERC)

Regulatory Initiative	Document link
Environment Report mandated for license approval under NEPA	Resource Report 9: Air Quality and Noise
Emissions estimates and project impacts may be required on a case-by-case basis	EIS and EA Requirements

IPIECA-API-IOGP

- International Petroleum Industry Environment Conservation Association (IPIECA)- American Petroleum Institute (API)- International Association of Oil & Gas Producers (IOGP) issued guidance on voluntary sustainability reporting in 2005.
- 5th edition launched in 2025 covering 22 sustainability issues and 43 indicators

Environment Protection Agency

EPA instruments	Segment covered	Sustainability lever	Implementation
GHGRP Subpart W (e-GGRT & XML formats)	Gathering & boosting, transmission, compression, underground storage, LNG import/export, natural gas distribution	Standardised annual GHG reporting, with segment-specific equations and QA/QC; electronic formats (web forms/XML) for consistent methane and CO ₂ data	Initial reporting for 2010 emissions (rule 2009); major methane-focused amendments May 2024
NSPS / EG Subparts OOOOb & OOOOc (“methane rule”)	Production, processing, transmission & storage , some downstream-adjacent equipment	Performance standards for CH ₄ /VOC: LDAR, compressor and pneumatic controls, storage tank controls; drives technology upgrades and leak reduction	Final rule issued 2023 and implemented 2024 onward
Methane Super Emitter Program	Oil & gas sector broadly, including midstream compressor and storage sites	Rapid detection and remediation of very large methane releases; integrates into Subpart W reporting	Established as part of the 2023/2024 methane rule and 2024 Subpart W amendments

Learnings from USA:

License Approval Mandate

- Resource Report Requirement includes greenhouse gas emissions during construction and operation phase

Project Environmental Impact Statement

- Review of Environmental Impact Statement (EIS) and publishing assessment of such EIS for public access

Voluntary disclosure

- Voluntary disclosure on key sustainability metrics followed by industry body/sectoral alliance (top 50 oil & gas companies)

Methane Super Emitter Program

- Real time detection of methane leaks, targeted timely arrest of leaks (within 24 to 48 hrs of detection)
- Target: 30% reduction of methane emissions by 2030 (baseline :2020)

Sustainability Integration by Japan:

Ministry of Economy, Trade and Industry (METI)

- **Seventh Strategic Energy Plan (2025)**
 - S+3E: Safety, Energy Security, Economic Efficiency and Environment Suitability
 - GHG Emission Target: Reduction with baseline of 2013
 - 46% by 2030 (**22% reduction achieved by 2022**)
 - 60% by 2035, 73% by 2040
- **GX Promotion Act (2023)**
 - Legal Framework for promoting **Green Transformation (GX)**, supporting decarbonization, innovation, investment and holistic energy policy
 - Large gas utilities must submit and update their **decarbonization strategies, detailing targets and specific measures**
- **Hydrogen Society Promotion Act (2024)**
 - Promotes supply and use of low-carbon hydrogen and its derivatives (ammonia, e-methane, etc.)
 - Gas sector firms are incentivized to join **“hydrogen supply chain clusters”** located at ports, industrial bases, or city-gas conversion hubs
- **CCS Business Act (2024)**
 - Legal basis for carbon capture, use, and storage—defines business models, regulatory oversight, and safety standards
 - **Gas producers and importers are obligated to participate in CCS;** comply with permitting/safety; report captured CO₂; provide financial guarantees; engage in CCS technology sharing

Green Transformation (GX) Policy Vision 2040

Decarbonization Initiative

- Promoting **Energy efficiency improvement**
- Restructuring the manufacturing industry (fuel and feedstock transition)
- Facilitating introduction of **hydrogen and ammonia**
- Establish electricity and gas markets to achieve net-zero GHG emissions
- **Carbon Recycling and CCU/CCS mandates**

Pro-Growth Carbon Pricing Concept

- GX Economy Transition Bonds
- Carbon pricing-based incentives (ETS)
- Green Finance instruments

Supportive Legislation

- Act on Promotion of **Global Warming Countermeasures**
- Act on Rationalizing Energy Use and special measures concerning promotion of New Energy Usage
- **Environmental Impact Assessment Act**
- GX Emission Trading Scheme (mandatory by 2026)

Learnings from Japan:

Green Transformation Policy

- Sector agnostic legal framework to promote sustainability initiatives with supported legislations for implementation

Environmental Impact Statement (EIS) integration

- Amendment for including project lifecycle emissions in EIS mandated for project approvals

Decarbonization

- Mandating CCS integration for gas producers and importers, infrastructure upgradation for hydrogen and ammonia

Financial Instruments

- Integrating carbon market-linked incentives, green investments and fiscal incentives to decarbonization mandates

Sustainability Integration by Brazil:

Ministry of Mines and Energy

- **National Energy Transition Plan (2024)**
 - Natural gas infrastructure adaption to accommodate biogas and biomethane blending
 - The **Energy Transition Acceleration Program** provides financial tools to reduce cost for low-carbon and efficient gas technologies
- **Fuel of the Future Law (2024)**
 - **National Decarbonization Program for natural Gas through Biogas integration**
 - Incentives for biogas production & use; annual target of 1% integration by 2026 and potentially to **10% by 2036**
 - Mandates Biomethane Guarantee of Origin Certificate (CJOB) use for compliance by natural gas producer and importers
 - Low Carbon Mobility: **Vehicle Emission Control Program** based on lifecycle assessment to mitigate greenhouse emissions
- **RenovaBio Program (2017)**
 - Fuel Distributors with high fossil fuel shares are assigned mandatory decarbonization targets
 - Reduce carbon intensity in Brazil's transportation fuel matrix by use of biofuel and creating demand in decarbonization credit market

National Petroleum, Gas and Biofuels Agency (ANP)

- **Oil & Gas Decarbonization Roadmap** (2025) implementation
- **CCUS Framework**: Storage authorization, safety protocols and monitoring with opportunities for carbon credit certification
- **Zero Routine Flaring**: Embed flare reduction technology to adopt World Bank's Zero Routine Flaring by 2030 initiative
- **1% clause**: Enforce oil & gas companies to allocate 1% of gross revenue for energy transition R&D (\$ 1.5 billion in 2023-25)
- **Low-Carbon Hydrogen Law**: Authorization & oversight on hydrogen & its derivative value chain, market-based and tax-based incentives

National Council for Energy Policy (CNPE)

- Annual GHG reduction target for gas sector (**1% in 2026**)
- Methane Mitigation regulations based on OGMP 2.0 framework and Global Methane Pledge (**30% reduction by 2030 of 2020 baseline**)
- Integrate **ESG considerations** across concession terms and operational licensing ensuring impact-reduction reporting as per **OGMP 2.0 standards**

Brazilian Greenhouse Gas Emissions Trading System (SBCE)

- **Regulated**: Targets large industrial emitters, required to report and offset emissions with certified credits
- **Voluntary**: For private corporates offset initiatives (carbon removal)
- **Penalties**: In case of non-compliance, 3% of annual gross turnover

Learnings from Brazil:

Mandatory decarbonization target

- Fuel Distributors with high fossil fuel shares are assigned mandatory decarbonization targets with integration along GHG emission credit scheme

Project Approval Terms

- ESG related KPIs with impact-reduction report mandated for project approvals/licenses

1% Clause

- Enforce oil & gas companies to allocate 1% of gross revenue for energy transition R&D
- Annual GHG reduction target for gas sector

Zero Routine Flaring Initiative

- Routine flare reduction to mitigate methane emissions in alignment with global pledges/initiatives
- Target: 30% reduction of methane emissions by 2030 (baseline :2020)

Natural Gas Sector (Transmission & Distribution) Sustainability Integration Summary



Sustainability tools	UK	Australia	USA	Japan	Brazil	India
Environment Action Plan/report (Assured/Verified)	✓	✓	✓	X	X	SEBI Mandated BRSR
Project lifecycle emissions in Authorization mandate through EIS	✓	✓	✓	✓	✓	MoEFCC draft EIA notification 2020
Annual Reduction targets (with financial incentives/penalties)	✓	✓	X	X	✓	Under CCTS
Integration with emission trading schemes	✓	✓	X	✓	✓	Not in CCTS Phase 1
Activity level and corporate level disclosures	✓	✓	✓	X	X	SEBI Mandated BRSR
Low-carbon methane blending mandates with linked incentives	✓ (bio-methane)	✓ (bio-methane)	X	✓ (e-methane)	✓ (bio-methane)	✓ (bio-methane, no blending incentives linked)
Linking financial instruments to support implementation	✓	✓	✓	✓	✓	RBI Sovereign Green Bonds

Thank you



Sustainability Cell
Petroleum and Natural Gas Regulatory Board
Email: sustainability@pngrb.gov.in