



**KASHMIR**  
INTELLIGENCE

**INDUSTRY REPORT**

# India's Refinery Landscape: Sustainability Trends and Metrics



# Introduction

As India continues to grow and its economy expands, there is an increased need and demand for energy production in the country, energy that will be fueled by oil and gas. However, this demand is balanced by India's commitments to sustainability, particularly in light of the Paris Agreement.

India's downstream oil and gas sector is undergoing a significant transformation, largely influenced by these global sustainability mandates and the increasing importance of corporate responsibility. To gain a deeper understanding of these shifts, we conducted a focused survey among industry professionals, specifically within the downstream segment. Our aim was to uncover current sustainability practices, explore how they are being implemented, and identify emerging trends that are shaping the future of refinery operations.

## Survey Overview

This report delves into the sustainability efforts of Indian refineries, offering a comprehensive analysis based on the feedback from key industry players. The survey captures a broad spectrum of perspectives, including insights from senior executives, project leaders, and operations managers. The findings reflect the industry's commitment to reducing its environmental impact through initiatives such as emission control, energy efficiency improvements, and the integration of renewable resources.

## Respondents from the following organisations

(and their affiliated refining operations)



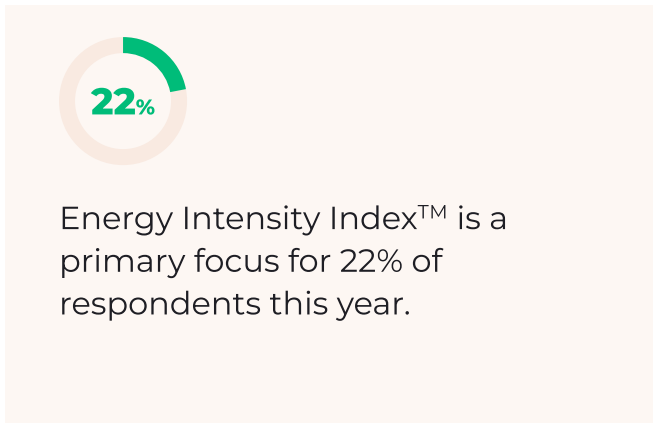
## Report Highlights

Indian refineries are increasingly prioritising metrics that measure and manage their environmental impact, with particular attention to Carbon Emissions Intensity (CEI) and the Energy Intensity Index (EII®). These indicators are central to the industry's strategy for lowering greenhouse gas emissions and boosting energy efficiency. Additionally, the survey highlights a growing trend toward the adoption of biofuels and renewable energy, underscoring the sector's shift towards a more sustainable and environmentally conscious operational model.

## Key Trends

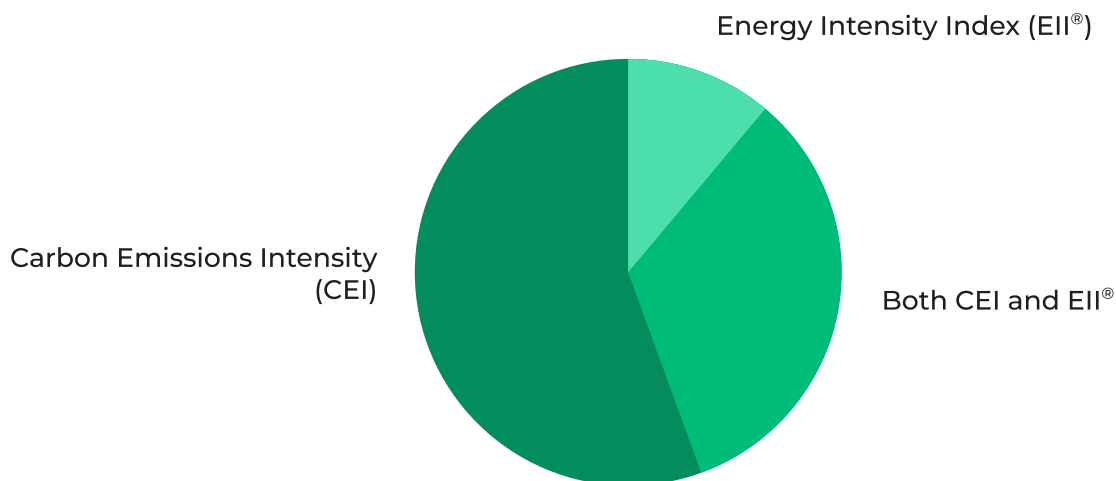
### Sustainability Metrics at the Forefront

The focus on sustainability metrics like CEI and EII<sup>®</sup> reflects the industry's commitment to reducing its carbon footprint. Refineries are actively working to improve these metrics through various initiatives, including the optimisation of energy use and the integration of cleaner technologies.



This trend is indicative of a broader shift toward environmental stewardship within the industry, as companies seek to align with international standards and regulations.

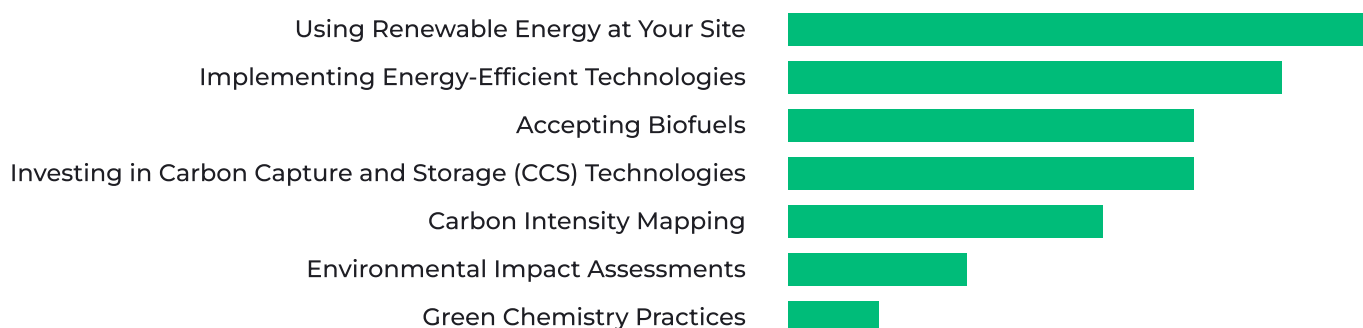
#### What **sustainability** focused metrics are you focusing on at your site?



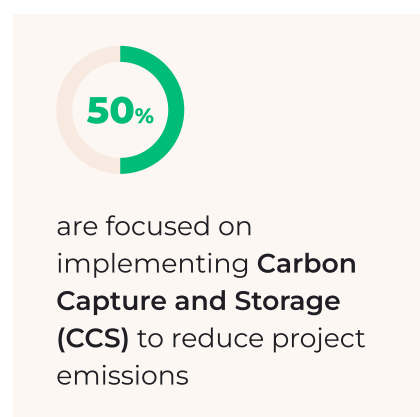
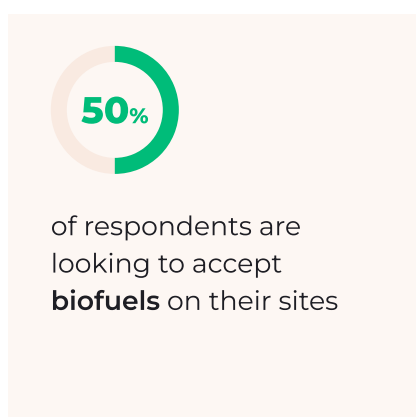
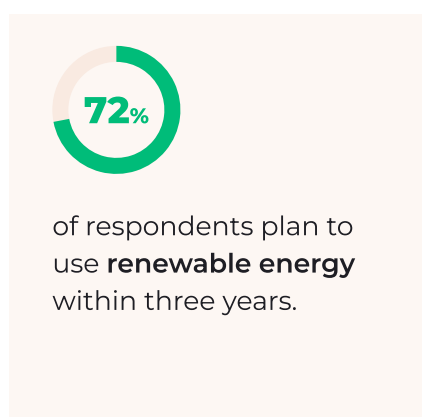
# Refineries are Investing in Sustainable Projects

Refineries are steadily embracing a variety of sustainability initiatives aimed at reducing their environmental footprint. While investing in renewable energy offers long-term financial returns and benefits the planet, adopting greener chemicals in processes, though unlikely to provide a financial payback, is pursued because it reduces the impact on the environment.

Which of these **sustainability-based** initiatives are you currently implementing or planning to implement on your site in the next three years?



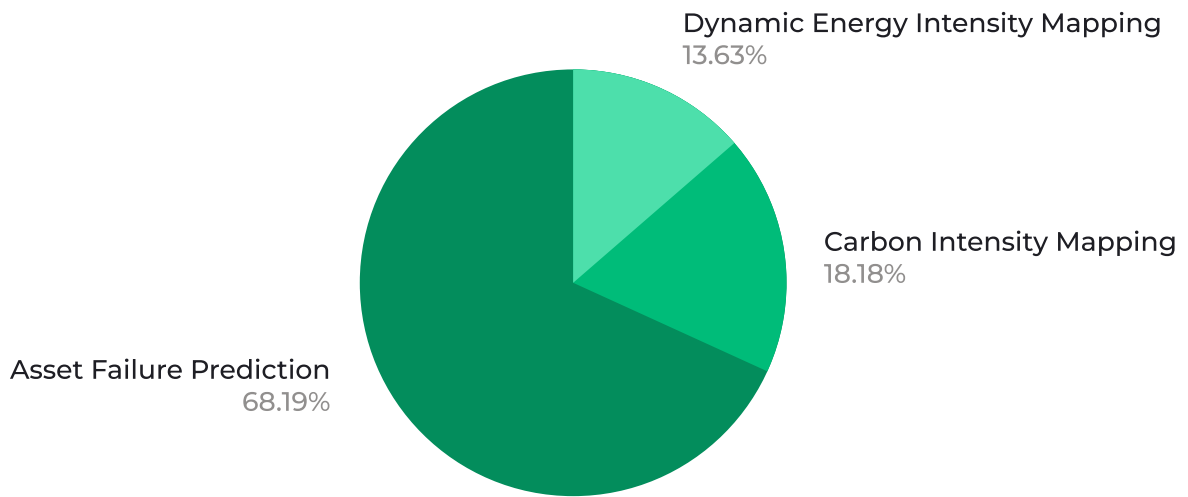
Key priorities among these initiatives include adopting biofuels, utilizing renewable energy, and upgrading to more energy-efficient assets. These efforts are driving significant changes in refineries as they adapt to the demands of a sustainable future.



# AI's Role in Enhancing Sustainability

AI and digital technologies are playing a pivotal role in advancing sustainability initiatives within refineries. From measuring and mapping emissions to reducing spills - AI is enabling refineries to achieve their sustainability goals more effectively.

## Where will AI have the **biggest** impact on downstream sustainability



## Standout Stats

**83%**

of respondents anticipate a significant impact from AI in predicting asset failures, contributing to sustainability and reducing unplanned downtimes.

**11%**

of respondents are focused on implementing Green Chemistry practices on site to reduce environmental impact

**39%**

are actively engaged in mapping carbon intensity, showing a proactive approach to monitoring and managing emissions.

**22%**

believe AI will play a crucial role in carbon intensity mapping efforts

**17%**

of participants see AI driving advancements in dynamic energy intensity mapping, which could lead to more efficient energy management.







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