



Low-Carbon Investment Tracker: Corporate Spending Shifts

Executive Summary

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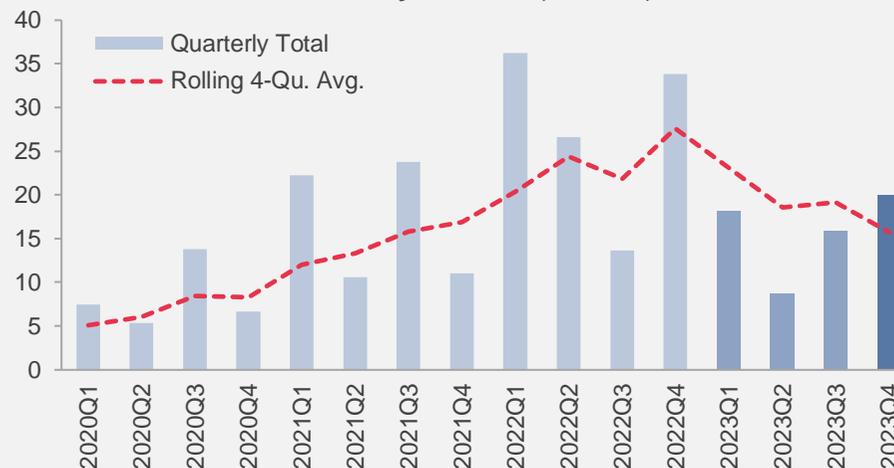
Low-Carbon Investment Tracker: Corporate Spending Shifts

Key findings by segment and technology

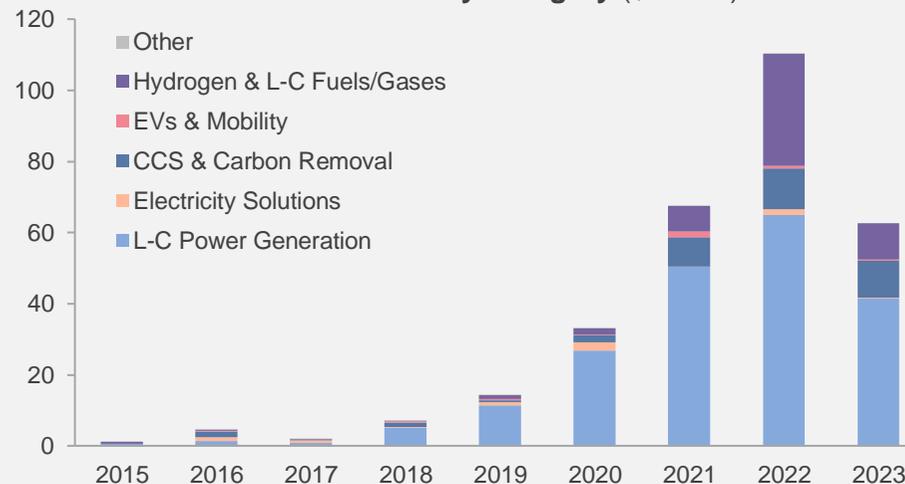
Stabilization in Activity; Spending Trends Evolve

- Low-carbon spending announced and approved by oil and gas firms totaled \$63 billion in 2023, but – at 40% below 2022 levels – confirmed a broader slowdown.
- Yet Q3-Q4’23 data shows consecutive quarters of growth, pointing to a wider stabilization, even as the industry investment landscape continues to evolve.
- This new dynamic reflects strategic shifts as western majors seek to balance conflicting priorities, boost low-carbon returns, and streamline project pipelines.
- The mix of investments by technology is evolving. Low-carbon power generation remains the largest area of tracked activity, making up 66% of 2023’s total, but new announcements fell 40% versus 2022.
- Strong 2023 interest in CCS* and carbon removal including DAC continued into Q4’23, led by US firms (Exxon, Oxy) and Mideast NOCs (Adnoc).
- New hydrogen investments fell to \$7.2 billion in 2023, with a notable lull in activity in Q1-Q3’23, amid doubts over project feasibility, policies, and future demand. However, activity picked up in Q4’23 with major projects unveiled by Asian firms (Inpex, Petronas).

2020-23 Investment Value by Quarter (\$ billion)



Low-Carbon Investment Value by Category (\$ billion)



Source: Energy Intelligence; Note: L-C = Low-Carbon

*Note: See Appendix in full report for glossary of abbreviated company names and terms

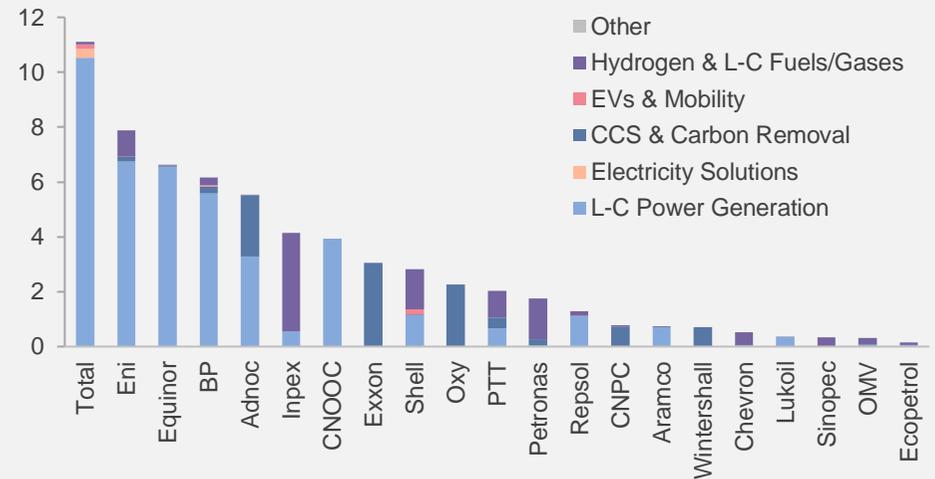
Low-Carbon Investment Tracker: Corporate Spending Shifts

Key findings by company and peer group

Mixed Trends in Europe; Bright Spots Elsewhere

- European Majors remain most active, announcing nearly \$37 billion of low-carbon spending in 2023. But their share of tracked activity fell below 60% for the first time in five years, reflecting shifts in transition strategies for many key industry players.
- Some European firms stuck with their renewables-focused approach. In 2023, Total reached top spot with over \$11 billion of announced activity, followed by Eni (nearly \$8 billion), then Equinor and BP.
- By contrast, after shifting strategy, Shell (the 2022 leader) slid to ninth, with announced spending falling from ~\$24 billion in 2022 to under \$3 billion in 2023. Repsol also saw a sharp fall in new tracked activity.
- Activity elsewhere is growing fast, led by UAE’s Adnoc, which jumped into the top five with over 50 new announcements in 2023, at an estimated value of ~\$5.5 billion. This surge reflected ambitious new transition goals, the impact of Adnoc’s stake in Masdar, and added impetus of UAE hosting COP28.
- Several Asian firms also accelerated their activity, including Inpex (in hydrogen and renewable power) CNOOC (offshore wind), and PTT (multiple areas).

2023 Investment Value by Company and Category (\$ billion)



Low-Carbon Investment Value by Peer Group (\$ billion)



Source: Energy Intelligence; Note: L-C = Low-Carbon; upper chart shows firms with >\$100 million announced.

Low-Carbon Investment Tracker: Essential Information

Proprietary, data-driven analysis of fast-growing green spending plans

- Our Low-Carbon Investment Tracker provides valuable data-driven insights into where leading energy firms are directing their expanding low-carbon spending.
- Investments are covered in five key categories, named: Low-Carbon Power Generation, Electricity Solutions, Hydrogen and Low-Carbon Fuels and Gases, EVs and Mobility, and CCS and Carbon Removal (see right).
- We do not track low-carbon oil-field expenditure (like efficiency improvements or flaring reduction) or investments in petrochemicals or natural gas, even if these do form part of a company’s wider decarbonization strategy.
- Our low-carbon investment database covers 34 top oil and gas firms and now contains over 1,600 announced and approved investments, with values totaling over \$300 billion, since 2015.
- We also publish regular, downloadable Low-Carbon Investment Tracker data files. These, as well as our wider research into energy transition trends and technologies, can be found [here](#).

Low-Carbon Investment Tracker: Methodology*

- Covers announced low-carbon investments of 34 major oil and gas companies† across five categories (see below).
- Tracks projects based on the date initially announced but makes updates as projects reach FID. Historical data may thus evolve.
- Reported investment values are used where available, with estimates made for other cases. Values are the share of total project cost before the impact of project finance is considered.

Category	Main Subcategories
Low-Carbon Power Generation	<ul style="list-style-type: none"> • Solar • Wind • Other
Electricity Solutions	<ul style="list-style-type: none"> • Grid-level storage • Electricity distribution and retail • Battery technology • Demand management services
Hydrogen & Low-Carbon Fuels/Gases	<ul style="list-style-type: none"> • Hydrogen and ammonia • Biofuels and biogases • Sustainable synthetic fuels
EVs & Mobility	<ul style="list-style-type: none"> • Electric vehicle (EV) charging • Other EV services • Other transport
CCS & Carbon Removal	<ul style="list-style-type: none"> • Carbon capture, utilization and storage • Direct air capture • Nature-based solutions

Notes: * See Appendix in full report for further methodology notes; † See Appendix for full list of companies.

Low-Carbon Investment Tracker: Data Download

Accompanying data download file published quarterly

Sample Extract

Energy Intelligence		Energy Transition Research					
<p>Low-Carbon Investment Tracker Update: November 2023</p> <p><small>Copyright © 2023 Energy Intelligence Group. All rights reserved. Unauthorized access or electronic forwarding, even for internal use, is prohibited.</small></p>		<p>Contact Details:</p> <p>Alex Martinos (London)</p> <p>amartinos@energyintel.com</p>					
Low-Carbon Investment Tracker - Data							
Company	Peer Group	Asset Name	Asset Region	Asset Country	Investment Type	Project Category 1	Project Category 2
CNPC	NOC	Singapore CCUS MOU	Asia-Pacific	Singapore	MOU	CCS & Carbon Removal	CCS
CNPC	NOC	Yumen Solar PV	Asia-Pacific	China	Capex Investment	L-C Power Generation	L-C Power: Solar
CNPC	NOC	Hainan Province Regional CCS Center	Asia-Pacific	China	MOU	CCS & Carbon Removal	CCS
CNPC	NOC	Junggar Carbon-Neutral Forest	Asia-Pacific	China	Capex Investment	CCS & Carbon Removal	Nature-based Solution
CNPC	NOC	Ningxia CCUS Phase 1	Asia-Pacific	China	Capex Investment	CCS & Carbon Removal	CCS
CNPC	NOC	Ningxia CCUS Phase 2	Asia-Pacific	China	Capex Investment	CCS & Carbon Removal	CCS
CNPC	NOC	Ningxia CCUS Phase 3	Asia-Pacific	China	Capex Investment	CCS & Carbon Removal	CCS
CNPC	NOC	Yumen Green Hydrogen Phase 1	Asia-Pacific	China	Capex Investment	Hydrogen & L-C Fuels/Gases	L-C Gas: Green H2
Conoco	Independent E&P	Faster Forests	North America	Canada	Capex Investment	CCS & Carbon Removal	Nature-based Solution
Conoco	Independent E&P	Timor Leste Reforestation Program	Asia-Pacific	Timor-Leste	Capex Investment	CCS & Carbon Removal	Nature-based Solution
Conoco	Independent E&P	Battery-hybrid Propulsion	Europe	Norway	Capex Investment	Electricity Solutions	Battery Technology
Conoco	Independent E&P	Clean Ammonia Export Project	North America	US	Capex Investment	Hydrogen & L-C Fuels/Gases	L-C Gas: Blue H2
Conoco	Independent E&P	Penglai Offshore Wind Pilot Project	Asia-Pacific	China	Capex Investment	L-C Power Generation	L-C Power: Wind
Conoco	Independent E&P	Avnos	North America	US	VC Investment	CCS & Carbon Removal	Direct Air Capture
Ecopetrol	NOC	Castilla Solar Park	Latin America and the Caribbean	Colombia	Capex Investment	L-C Power Generation	L-C Power: Solar
Ecopetrol	NOC	San Fernando Solar Park	Latin America and the Caribbean	Colombia	Capex Investment	L-C Power Generation	L-C Power: Solar
Ecopetrol	NOC	Solar Plants	Latin America and the Caribbean	Colombia	Capex Investment	L-C Power Generation	L-C Power: Solar
Ecopetrol	NOC	Wind Plants	Latin America and the Caribbean	Colombia	Capex Investment	L-C Power Generation	L-C Power: Wind
Ecopetrol	NOC	Brisas Solar Energy Supply Contract	Latin America and the Caribbean	Colombia	Other	L-C Power Generation	L-C Power: Solar
Ecopetrol	NOC	Green Hydrogen Pilot Project	Latin America and the Caribbean	Colombia	Capex Investment	Hydrogen & L-C Fuels/Gases	L-C Gas: Green H2
Ecopetrol	NOC	Villanueva Biomass To Electricity	Latin America and the Caribbean	Colombia	Capex Investment	Hydrogen & L-C Fuels/Gases	Bio-based Products
Ecopetrol	NOC	HO0Y	Latin America and the Caribbean	Colombia	VC Investment	Hydrogen & L-C Fuels/Gases	Bio-based Products
Ecopetrol	NOC	Rubiales Solar PV Park	Latin America and the Caribbean	Colombia	Capex Investment	L-C Power Generation	L-C Power: Solar
Eni	European Major	Gela Bio Refinery	Europe	Italy	Capex Investment	Hydrogen & L-C Fuels/Gases	Bio-based Products
Eni	European Major	Gela Waste-to-Fuel Pilot Plant	Europe	Italy	R&D	Hydrogen & L-C Fuels/Gases	Bio-based Products
Eni	European Major	Saline Conti Vecchi	Europe	Italy	Capex Investment	L-C Power Generation	L-C Power: Solar
Eni	European Major	Bir Rebaa North-1	Middle East and North Africa	Algeria	Capex Investment	L-C Power Generation	L-C Power: Solar
Eni	European Major	Nigeria Solar-powered Water Scheme Project	Sub-Saharan Africa	Nigeria	Capex Investment	L-C Power Generation	L-C Power: Solar
Eni	European Major	HyNet North West	Europe	UK	Capex Investment	CCS & Carbon Removal	CCS

Introducing the Energy Transition Service

Guiding the energy industry through the low-carbon transition

Energy Transition Service

- The Energy Transition Service guides the energy industry through the low-carbon transition. (Click [here](#) for details.)
- We offer unparalleled intelligence, analysis and insights into the pace and direction of the low-carbon transition, with a focus on key industry technologies, costs, market development and policy drivers.
- Energy Intelligence Research covers various critical facets of the energy transition – concentrating on macro, market, technology, and investment issues. (Click [here](#) for our latest research.)
- Our Energy Transition Macro Outlook reports and scenarios analysis offer insights into key industry themes. The **Low-Carbon Investment Tracker** evaluates spending trends for top oil and gas firms.
- We analyze key costs and drivers for **low-carbon technologies** such as hydrogen and CCS, and model **market dynamics** to help understand the disruptive demand impact of transition trends.
- We also offer a wide range of **advisory** solutions, including tailored benchmarking and strategic analysis.

Key Scenario Drivers: Global Climate Policy – Net Zero Goals

Wave of national carbon neutrality goals a sign of growing momentum at various levels of government

Europe: The EU agreed in late 2020 on a 2050 net-zero target. In the European member states that have set their own goals, with several including the UK and France announcing theirs in late 2020.

North America: In the US, the Biden administration has set a net-zero emissions goal. Canada announced a 2050 net-zero emissions goal.

Asia: China has set a 2060 net-zero target. India has set a 2070 net-zero target. Japan has set a 2050 net-zero target.

Latin America: Chile leads in Latin America, committing in 2019 to achieve net zero by 2050. Uruguay has set a 2050 net-zero emissions target.

Middle East: Key producer of oil and gas has set a 2050 net-zero target.

Russia: Russia recently pledged to achieve carbon neutrality by 2060.

Other countries: South Korea (2050), South Africa (2050), Mexico (2050), Colombia (2050), Argentina (2050), Brazil (2050), Indonesia (2060), Philippines (2060), Vietnam (2060), Thailand (2060), Malaysia (2060), Singapore (2060), New Zealand (2060), Australia (2060), Canada (2050), USA (2050), EU (2050), UK (2050), France (2050), Germany (2050), Italy (2050), Spain (2050), Portugal (2050), Ireland (2050), Netherlands (2050), Belgium (2050), Luxembourg (2050), Austria (2050), Switzerland (2050), Norway (2050), Sweden (2050), Denmark (2050), Finland (2050), Iceland (2050), Iceland (2050), Iceland (2050).

Scenario Drivers in Focus: Factors Shaping the Transition's Trajectory

Multiple factors are at play, but on balance we see current trends lean slightly toward a faster scenario

	Slower	Faster
Policy Support	<ul style="list-style-type: none"> Growing global discord on climate policy, especially between advanced and industrializing economies, as well as major fossil fuel exporters Countries fall far short on implementation of their NDCs and off-track to achieve net-zero goals 	<ul style="list-style-type: none"> Enhanced global policy cooperation: effective increases in ambition, combined with just sectoral emissions action, and upgraded climate finance More rapid implementation: Key economies EU, US and China outperform and upgrade current plans
Technology Trends	<ul style="list-style-type: none"> Supply-chain constraints slow cost declines for renewable power and battery technologies, retarding adoption and wider electrification efforts EVs hit snags in key markets like the US, tied to elevated input costs and lingering consumer doubts 	<ul style="list-style-type: none"> Faster adoption of maturing technologies: renewable power plus storage, EV uptake, plus faster electrification of multiple demand segments Emerging technologies beat expectations: hydrogen and CCS swiftly approach commerciality
Societal Pressures	<ul style="list-style-type: none"> Post-pandemic economic demands trump climate priorities, especially among developing and industrializing economies through the mid-2020s Advanced economies face similar competing priorities, ending the political will for climate action 	<ul style="list-style-type: none"> Direct impacts of climate change become clearer, galvanizing multiple stakeholders Clearer scientific consensus on catastrophic consequences of inaction add to policy, investor and wider momentum for urgent action
Investor Demands	<ul style="list-style-type: none"> Criticism of ESG grows, as efforts to gauge climate risk and implement net-zero targets come up short Emphasis on supply (over demand) results in market imbalances, encouraging investors to favor shorter-term financial returns over climate concerns 	<ul style="list-style-type: none"> Net-zero Scope 3 plans become a minimum standard requirement for oil and gas firms, accelerating implementation of transition strategies Investors shift from engagement to divestment, for the most carbon-intensive oil and gas sources

On balance, current trends lean slightly toward a faster scenario

Low-Carbon Investments: Spending Growth Gathers Pace

Renewable power generation drives spending, but larger non-power investments are also emerging

- Announced low-carbon investments in Q1-Q3 2021 of \$39 billion are well above full-year 2020 levels, reinforcing the multiyear growth trend.
- Bumper investments in Q1'21 are the principal reason for strong 2021 activity. But even Q2-Q3 average spending (\$8.6 billion) easily exceeds 2020's average.
- Low-carbon power makes up most spending in 2021, but its share dropped from 94% in Q1 to 67% in Q3.
- While investments by value are concentrated in power generation, greater diversity, i.e. carbon fuels in Q1 hydrogen and bio.
- We also track pro-projects primarily related EV service.

Key Dynamics 1: The Time Frame of the Energy Transition Is Evolving

The Ukraine conflict and energy crisis is pushing transition toward a "slower now, faster later" pathway

- Transition headlines are clearer in the near term.
- Policymakers and industry executives are seeing immediate priorities deflected away from the transition – a focus that has dominated for several years but is no longer the top agenda item in 2022.
- There's a clear near-term focus on securing or diversifying sources of oil and gas supply.
- High oil and gas prices have also given producing companies and countries financial breathing room, easing immediate pressures for rapid diversification.
- The surge in costs for critical materials for clean energy technologies may have an impact, at least in the short term, on the pace of their rollout.
- Looking further ahead, the picture is different.
- Climate pressures – as underscored by the most recent IPCC report – have not gone away.
- High oil and gas prices – and high volatility – if they endure, may not be supportive for future demand.
- For some regions and countries, new energy security priorities are aligned with existing transition goals.
- As a result, we are seeing the shape of the transition flex into a "slower now, faster later" trajectory.

Appendix: Company Coverage

Low-Carbon Investment Tracker

- The Low-Carbon Investment Tracker currently covers investment activity by a total of 34 IOCs and NOCs.

European Majors	NOCs	Global Independents
<ul style="list-style-type: none"> • BP • Eni • Equinor • Lukoil • OMV • Repsol • Shell • TotalEnergies (Total) 	<ul style="list-style-type: none"> • Abu Dhabi National Oil Co. (Adnoc) • CNOOC • CNPC • Ecopetrol • Gazprom • Pemex* • Petrobras • Pertamina • Petronas • PTT • QatarEnergy (QE) • Rosneft • Saudi Aramco (Aramco) • Sinopec 	<ul style="list-style-type: none"> • APA Corp. (APA) • ConocoPhillips (Conoco) • EOG Resources (EOG) • Hess Corp.† (Hess) • Inpex Corp. (Inpex) • Occidental Petroleum (Oxy) • Pioneer Natural Resources*† (Pioneer) • Santos • Wintershall Dea (Wintershall) • Woodside
US Majors		
<ul style="list-style-type: none"> • Chevron • Exxon Mobil (Exxon) 		

Notes: * No low-carbon projects announced in the period since 2015 currently tracked for Pemex and Pioneer. † Deals to acquire Hess and Pioneer (by Chevron and Exxon, respectively) announced in Q4'23, pending close.

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