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- The global shift away from oil and gas has presented a clear opportunity for private equity to supply investment capital to the renewable energy sector, with investments in renewables jumping from less than \$2 billion in 2012 to a record \$26 billion in 2022. This trend is fuelled by advancements in renewable technologies that have made them more efficient and cost-effective. It also reflects a growing recognition of the long-term economic potential and societal benefits of clean energy sources, as escalating climate concerns and governmental commitments to reduce carbon emissions have made renewable energy projects attractive assets for private equity investors.
- Clean hydrogen produced from renewable energy is decarbonizing a range of industries and bridging the gap between renewable energy sources and their practical applications with the help of hydrogen storage, transportation and distribution technologies. Hydrogen's flexibility has put it in a position to grow into a \$2.5 trillion industry that could supply more than 20% of global energy demand by 2050. But before clean hydrogen can become a major player in global clean energy we must be able to produce it more efficiently and at a lower cost. Governments around the world have recently introduced significant regulatory initiatives and subsidy programs to push companies to develop and manufacture new clean hydrogen technologies. As a result, clean hydrogen is attracting investors who predict that the industry's rapid growth will lead to its commercialization.

The clean hydrogen opportunity

- Clean hydrogen is a flexible energy carrier that can be produced in various ways and support a variety of applications including industrial processes, energy storage and electricity production, and as an alternative transportation fuel. The possibilities are endless: hydrogen cells can store wind and solar power, creating a reliable energy source unaffected by weather patterns; hydrogen fuel cells can produce heat and power heavy-duty vehicles such as trucks, buses, and trains that require greater range and faster refuelling than battery technologies can provide; and hydrogen can reduce iron ore to produce steel.
- At the moment clean hydrogen is very expensive to produce – between \$3-6 per kilo – which is uneconomical when compared to other energy sources. But this is changing. The cost of hydrogen production greatly depends on the capital cost of electrolyzers, their capacity, and the procurement cost of renewable energy. This means that innovations in electrolysis and an increase in the scale of production of electrolyzers will make clean hydrogen significantly cheaper to produce. The cost of renewable energy is already cost-competitive with fossil fuels: since 2010 the unit cost of solar energy decreased by more than 85% and wind energy by more than 55%.
- While the price of hydrogen is expected to decrease over time, the extent and pace of cost reductions will depend on a complex interplay of technological, economic, and policy factors. Private equity investments can help to reduce risk, alleviate uncertainties and enable large-scale expansion of the clean hydrogen market. Here is how.



The role of private equity in the rise of clean hydrogen

Capital: Private equity is bridging the gap in financing and providing the capital needed to make clean hydrogen a mainstream energy source. This capital is used for technology development, infrastructure setup and project implementation. Public policy and government incentives such as tax credits, loan guarantees and subsidies can leverage private sector investment, so capital stretches even further.

Project Development: Private equity investors can identify promising opportunities, conduct feasibility studies, secure permits and land rights and manage the construction process for clean hydrogen production facilities. Their expertise and financial resources enable them to navigate the complexities of renewable energy project development effectively.

Risk Management: Private equity investors are skilled at assessing and managing risks associated with renewable energy projects, including technology, regulatory and market risks. By conducting thorough due diligence and implementing risk mitigation strategies, they help minimize the likelihood of project failure and maximize returns for investors.

Active Management: Private equity firms add value to renewable energy projects through active management and strategic initiatives. This may include optimizing project design and performance, implementing cost-saving measures, negotiating favourable contracts, and exploring new revenue streams.

Exit Strategies: Private equity investors typically have exit strategies in place to realize returns on their investments in renewable energy projects. This may involve selling their stakes to strategic buyers, other private equity firms, or through initial public offerings (IPOs) or mergers and acquisitions (M&A) transactions.

Research and Innovation: Private equity investment fosters innovation and technology adoption by providing funding for research and development, pilot projects, and commercialization efforts. This drives advancements in clean hydrogen technologies and can accelerate its deployment as a mainstream energy source.

Market Expansion: Private equity investment contributes to the expansion of the clean hydrogen market by increasing access to capital, fostering competition and driving down costs. This helps make clean hydrogen more competitive with fossil fuels and promotes its widespread adoption as a viable alternative. And as the hydrogen market matures and infrastructure for hydrogen production, distribution, and storage expands, economies of scale could lead to cost savings throughout the value chain.

Conclusion

Overall, private equity plays a crucial role in the renewable energy sector by providing investment capital, driving project development, managing risks, creating value, facilitating exits, fostering innovation, and expanding markets. Its involvement contributes to the growth and sustainability of the renewable energy industry, ultimately helping to address environmental challenges and promote energy security. Continued private equity investment in research, development, and deployment of hydrogen technologies, along with supportive policies and market incentives, will be crucial for realizing the full potential of hydrogen as a clean energy carrier.



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