Lux Expertise Services

Lux Executive Digest

Lux Research | The Deciding Factor

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How is a theme/market evolving and why?

Target Audience

Executive leadership within your organization

Audience Need

Exercising preliminary decision-making on market entry/expansion based on confluence of ongoing developments

Lux Engagement

Quarterly distillation of insights from ongoing surveillance of a target market — including relevant regulations, peer group activities, startup innovations, and other developments

Delivered Value

Mitigate blind spots, make timely decisions, and generate internal momentum to pivot from spectator to market participant

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How to get started

Duration	• 52 weeks, coincident with Lux's Research & Advisory subscription service
Data Sources	• Lux analysts' coverage of emerging technologies — and implications for a target market • Insights from Lux's ongoing interviews with technology developers and review of public/private data lakes
Deliverables	• **PowerPoint executive summary** – comprising ~10 slides embedding charts, graphs, and a Lux Take on what's most relevant for your organization and customizable to your layout/template • **60-minute call** – to review and cogitate insights with you

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Monitoring market activity in quantum dot display technologies to define the right time to enter a new market

Challenge

A leading Japanese chemical company asked Lux Research to construct an ongoing monitoring program designed to determine whether to continue developing its quantum dots (QD) capabilities and to find the right time to enter the market via partnerships.

Solution

Lux developed an annual program consisting of four components of market activity monitoring, which included collating academic research on QD technologies, aggregating the commercialization activity of QD display technologies by corporations and startups, understanding key partnerships and acquisition activities as well as the QD supply chain, and outlining key trends in venture capital funding and new investments favoring the technologies.

Value

Lux helped the client stay abreast of key market activities while also developing a critical view on the state of the technology and value chain dynamics to support its decision of when to enter the market. The client used the deliverables to continue investing in the technology and enter the market through a product development partnership with a Lux-recommended company.

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Concise, curated documents ensuring executives stay abreast of the latest emerging technologies impacting the energy sector

Challenge

The innovation team of a multinational utility was looking for a third-party expert to identify, analyze, and educate its executive leadership team on the latest emerging technologies impacting the core and adjacencies of its business.

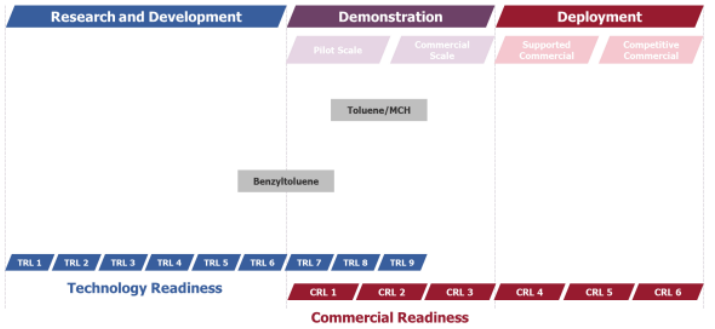
Solution

Lux addressed the client's needs by crafting concise, curated documents for over 36 technologies across themes such as digital transformation, energy storage, advanced renewables, and the hydrogen economy. Each document identified the key opportunities and innovation activity tailored towards the immediate and strategic needs of the client for its net-zero transformational journey.

Value

Lux's analysis plays a foundational role in securing board-level buy-in for strategic partnerships, investment targets, and project developments led by the client's business unit leaders.

Technology Status



Economics

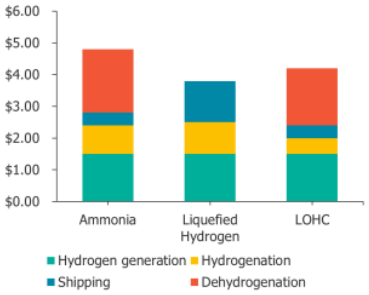
The figure, based on the recent Hydrogen Insights 2021 report by the Hydrogen Council, showing price projections for the cost of hydrogen transportation using the three main hydrogen carriers – ammonia, liquefied hydrogen, and LOHC (benzyltoluene) – based on a hypothetical scenario where hydrogen is traded between Saudi Arabia and the Netherlands via ship.

The total cost of hydrogen transport averages US$ 4.20/kg H_2 for LOHC, compared to US$ 4.80/kg H_2 for ammonia and US$ 3.80/kg H_2 for liquefied hydrogen. Dehydrogenation is the most cost-intensive stage due to the high thermal energy demand.

Overall, the cost of hydrogen transport across all three technologies are similar – commercial adoption will factor in other non-economic considerations such as ease of adoption, safety issues, and availability of technology. For example, ammonia can leverage existing fertilizer infrastructure which offsets the need to build capital-intensive supporting infrastructure such as with liquefied hydrogen.

Currently the industry has yet to conduct a cost analysis highlighting any nuanced differences between toluene and benzyltoluene.

Hydrogen Carrier Cost Projections
Cost US$/kg of hydrogen (Source: Hydrogen Council)



Note: Cost projections for 2030. Based on a shipping route from Saudi Arabia to Rotterdam, Netherlands through the Suez Canal (8,700 km). LOHC used in scenario is benzyltoluene.

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