# New Energy

**Gavin Rennick, President New Energy**

During the next 30 minutes, as I make this presentation, 4600 people will be added to the population of the planet. That rate of increase, given our current demographics and consumption patterns, would mean a 20 percent increase in the global demand for energy by 2050.

At the same time, in order to mitigate the effects of climate change, we need to overhaul the energy system of the world, achieve net-zero emissions, and in doing so, balance the planet. To do this we need energy innovation; lower carbon; higher value. And we need to go further.

Good morning, everyone, it's great to be here with you. My name is Gavin Rennick, and I am the president of New Energy.

I've been with the company for 24 years, and held a variety of positions, spanning line and geographic leadership, Engineering and Manufacturing, Digital, M&A, and Human Resources.

I'm very excited to talk to you because today, new energy represents an incredible opportunity for our company, at a time that is critical for our planet.

# An incredible opportunity

Our strategy for creating and scaling a diversified portfolio of businesses focused on decarbonization and clean energy technology will be key to the company's future.

It's clear today that "the energy transition" is accelerating; moving rapidly from talk or commitments to policy to law to actual investment, as globally, energy security and affordability, coupled with climate change, take center stage.

The total investment in energy transition has more than doubled over the past five years and is accelerating, and according to the IEA report released just last week, is expected to more than double again by 2030.

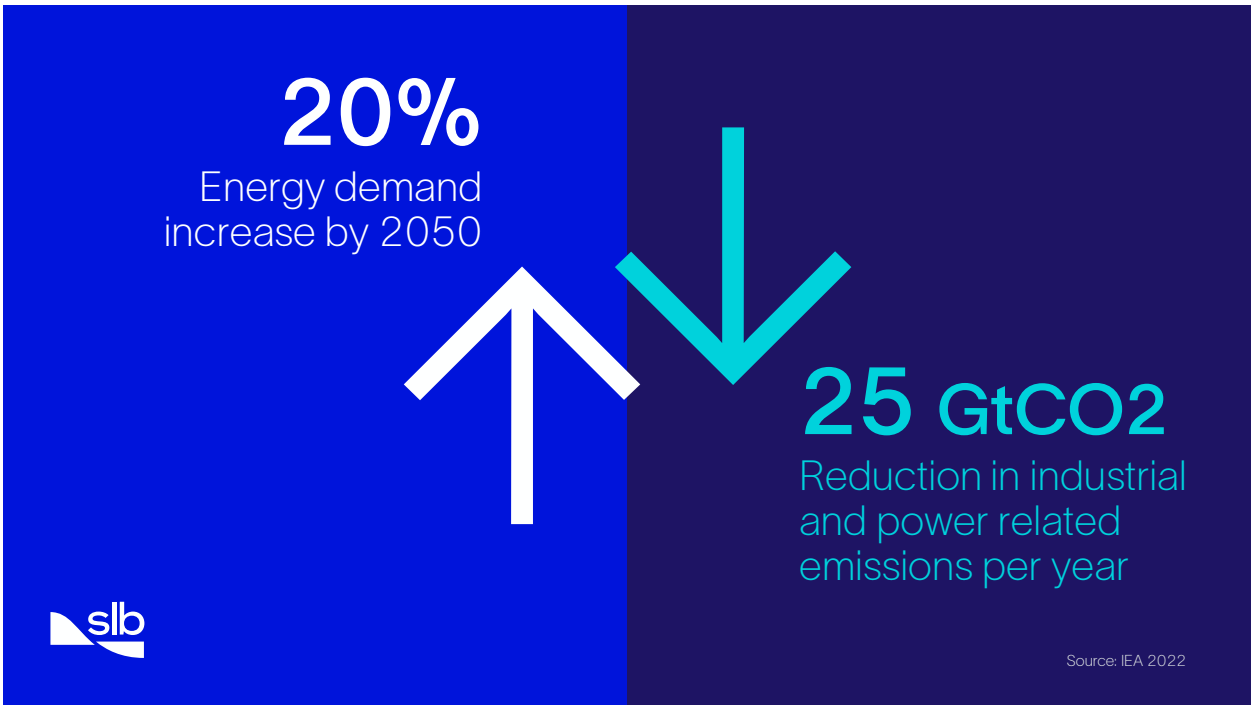
This is driven by energy security and affordability; stronger carbon pricing mechanisms; and targeted incentive schemes.

These are delivered through plans like RePower EU in Europe; the Inflation Reduction Act in the United States; and similar vehicles in Japan, Korea, Australia, and many other countries.

The total value of these announced incentives equates to about $1 trillion in funding, with $400 billion specifically targeting areas we are focusing on, that you will hear about today.

And with the spotlight on COP27 conference in Egypt next week, I expect to see this accelerate even further.

As a global technology company, this represents one thing and one thing only—an absolutely incredible opportunity—because to achieve net zero requires an enormous amount of innovation and many, many energy technologies deployed at scale.




Now let me be more specific as to how we see this opportunity.

As I said, global energy demand is expected to increase 20 percent by 2050.

Simultaneously, global emissions need to be reduced or offset to achieve net zero, and about half of these emissions, around 25 Gigatons, 25 billion tons of $CO_2$ emitted each year, come from industrial and power generation sources.

Our ambition is to focus on and deliver technology solutions that address these industrial and power generation emissions while simultaneously ensuring we meet the world's needs for reliable, affordable energy.


By doing this, we intend to establish SLB as a global technology leader in industrial decarbonization and clean energy.

"OK, so how will you do that?", you ask.

Well, we are systematically building a portfolio of businesses—great businesses.

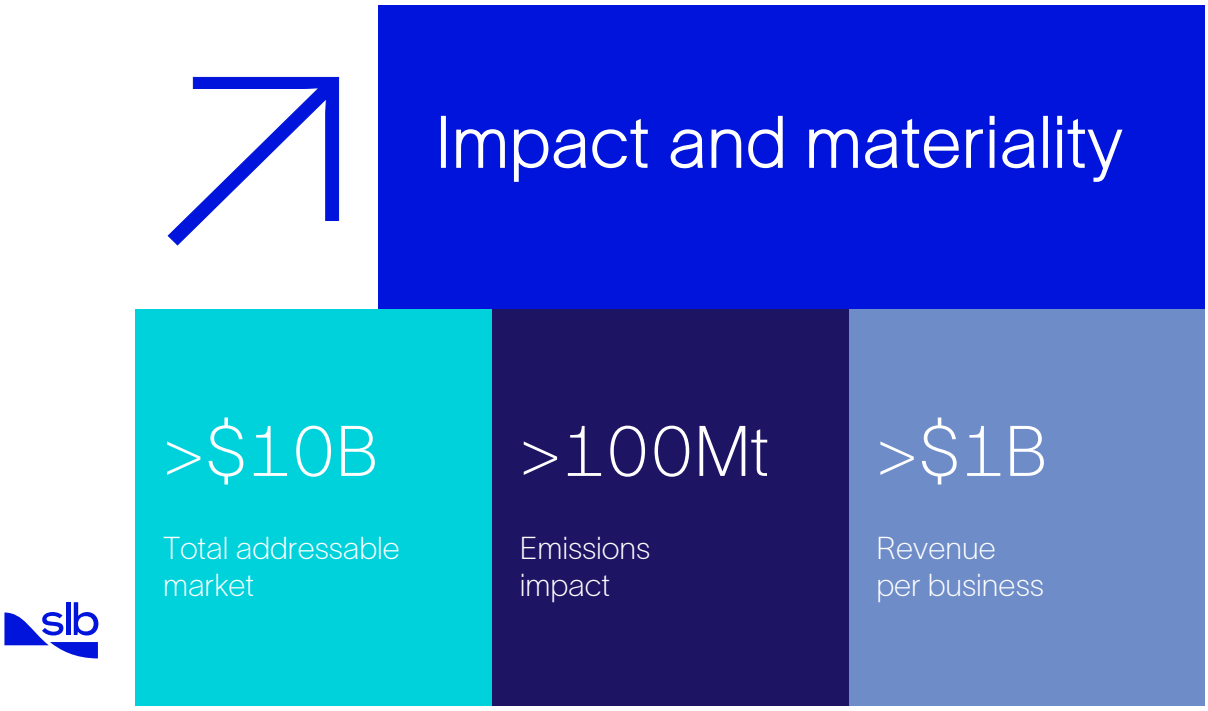
A diversified portfolio that, in the conservative scenario of simply implementing the policies that are announced today, will more than double SLB's total addressable market. A portfolio that will materially impact those 25Gt of $CO_2$ emissions.

I'm excited to talk to you today about our strategy to create this portfolio

And then I want to walk you through the progress we have already made.

Our approach to the selection of businesses in New Energy employs three key principles, or filters: impact and materiality; adjacency; and business model.

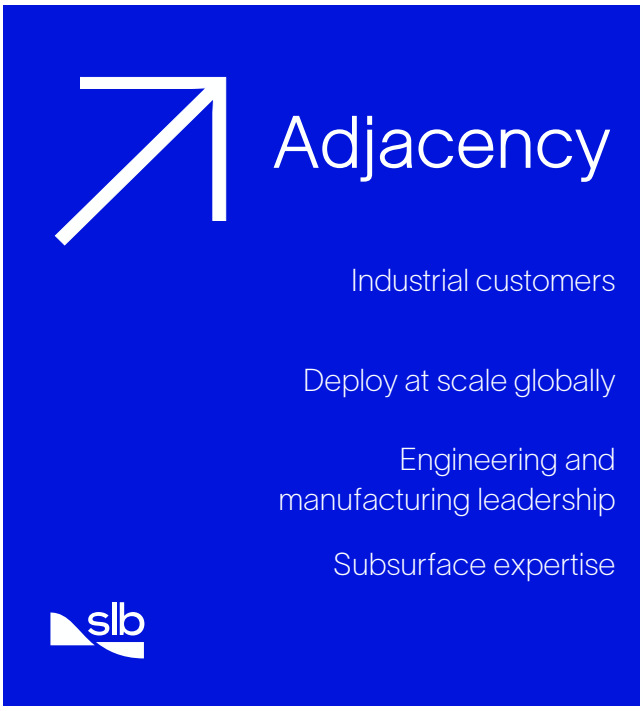
Let's start with impact and materiality.




We are prioritizing business opportunities based on market size and growth, emissions impact, and potential business size.

Practically, this means focusing on individual business opportunities that target a specific market of more than $10 billion per year within the next decade. Potentially enabling hundreds of megatons of emissions impact. And each have the potential to be a $1 billion business by the end of the next decade.

That's impact and materiality.




Second, adjacency.

We focus on opportunities where SLB' s inherent capabilities and experience provide us with a launchpad to enter and grow quickly. This comes in different dimensions: leveraging our unmatched understanding of the subsurface and decades of experience in developing it; our ability to engineer and manufacture high-specification industrial process systems; our ability to rapidly deploy complex technology at scale globally in over 120 countries across more than 70 technology centers.

And customers—our ability to deal with industrial players. Beginning with our existing customer base; expanding into refining and petrochemicals, steel, mining, power and heat, and other energy-intensive industries that have the intent and capabilities to decarbonize.

We are focusing on opportunities that maximize leverage from these adjacencies, providing us with our right to play.


Third, we are focusing on business models that are technology-led, with the potential to generate accretive returns over the long term.

What does this mean?

It means we are targeting opportunities where technology can enable disruptive new solutions or strongly drive economics, and where our innovation capabilities, that Demos talked about this morning, are fully leveraged.

We are building a highly differentiated technology offering through a combination of internal R&D and innovation, focused M&A, and partnerships.

To establish and maintain technology leadership, we will ramp up New Energy R&D to more than one-third of SLB's R&D spend within the next decade and within pure research, New Energy will represent 50 percent of our activity next year, 2023.

In addition, we are continuously scanning the cleantech landscape, engaging, investing in, and acquiring promising technologies.

These companies see us as very attractive to work with due to our technology development capabilities, and as an unmatched industrialization and global deployment partner.

We are also working with bigger companies—great partners with complementary capabilities.

Such is the case with Linde, with whom we are bringing to market carbon capture solutions focused on the hydrogen, ammonia, and natural gas markets.

Or Panasonic, with whom we are developing a sustainable domestic lithium supply chain in Nevada.

Or the CEA, the renewable energy research agency of France, with whom we have created Genvia, a company that I will go into a little later. Technology-led; R&D; M&A; partnerships.

These businesses also largely employ capital-light business models. In practice, this means a combination of manufactured products, services, and digital revenue streams. It also means that we don't sell hydrogen or green electricity directly to a customer, nor take the lead position in capital projects associated with resource ownership.

In this way, the portfolio is being constructed to ensure that it has the potential to be accretive to the company once scale and maturity is achieved.

We are thoughtful in selecting these opportunities and do so with advice from our board where we have established a dedicated New Energy and Innovation committee.

High impact; material; adjacent; technology-led and capital-light.

OK, that's our strategy. So, where do we stand today?


Today we have already established a broadly diversified portfolio.

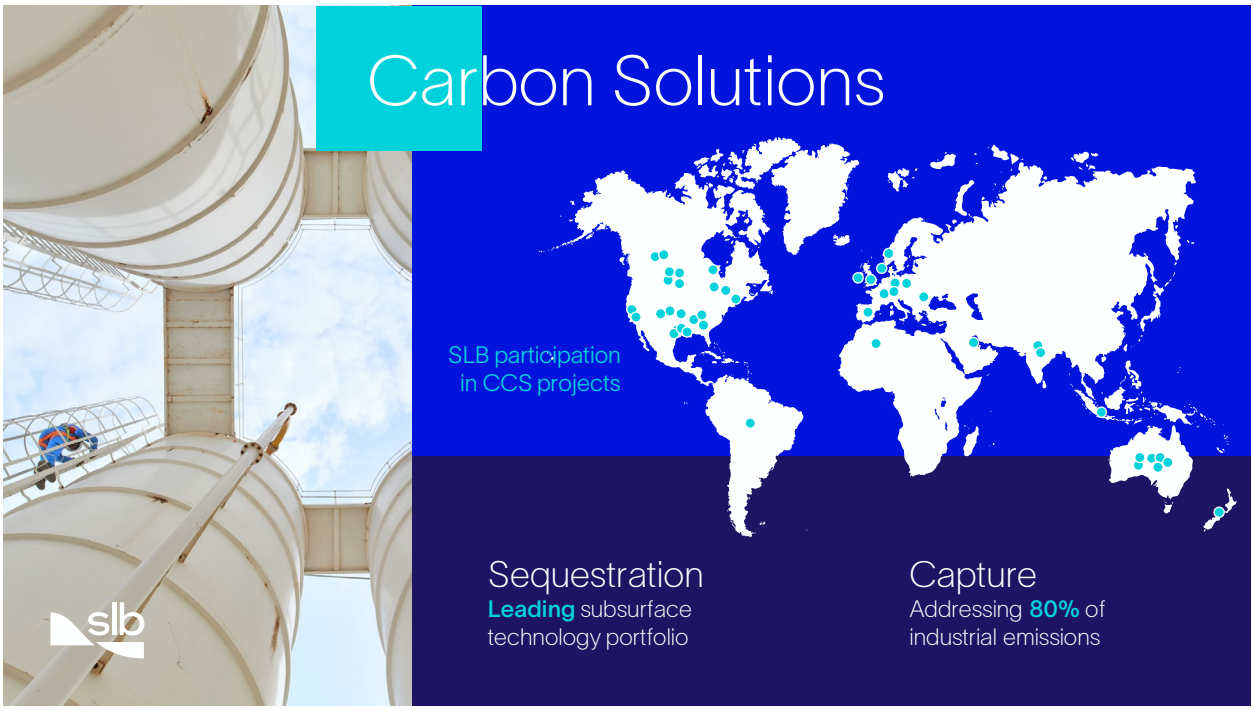
- diversified across different value streams in energy transition
- diversified in terms of input commodity exposure
- diversified in terms of technology maturity
- diversified in terms of time horizon for growth
- and diversified in terms of geographic application.

This portfolio spans five business areas: Carbon Solutions; Geothermal and Geoenergy; Critical Minerals; Stationary Energy Storage; and Hydrogen.

The result of this, is that we have chosen to focus on a total addressable market which, conservatively at more than $700 billion, will double the total addressable market of SLB by the end of the next decade.

So now, let's talk about these businesses in a bit more detail.

Let me start with Carbon Solutions, that fully leverages our strengths in both subsurface and processing equipment.




CCUS—carbon capture, utilization and sequestration—is an enormous opportunity: in North America, accelerated by the Inflation Reduction Act; in Europe; and in the Middle East, where national ambitions are to lead the decarbonization agenda.

SLB has been in the CCUS business for more than three decades. Today, we are actively involved in 22 significant Carbon Capture and Sequestration projects globally, representing 175 Mtpa in abatable emissions.

We are also providing consulting or discrete services for another 52 or so early-stage prospects.

How do we participate in this market?

CCUS projects can be split into capture, transport, sequestration or use.

We do not play materially in transport (building pipelines and compressors) and we don't have a position in carbon use today.

In a pure sequestration project, we participate at different levels of integration—from integrated subsurface field development where we run the whole program, through to providing key products or services in evaluation, construction, or injection.

We have developed key technologies specific to CCUS, from formation evaluation that you heard about this morning, to specialized cement, to permanent monitoring technology, to reservoir simulation models.

This is to ensure that the $CO_2$ is safely injected and stays in the reservoir as intended.

Also, with partners, we are developing a unique set of technologies to capture carbon in the most economical way.

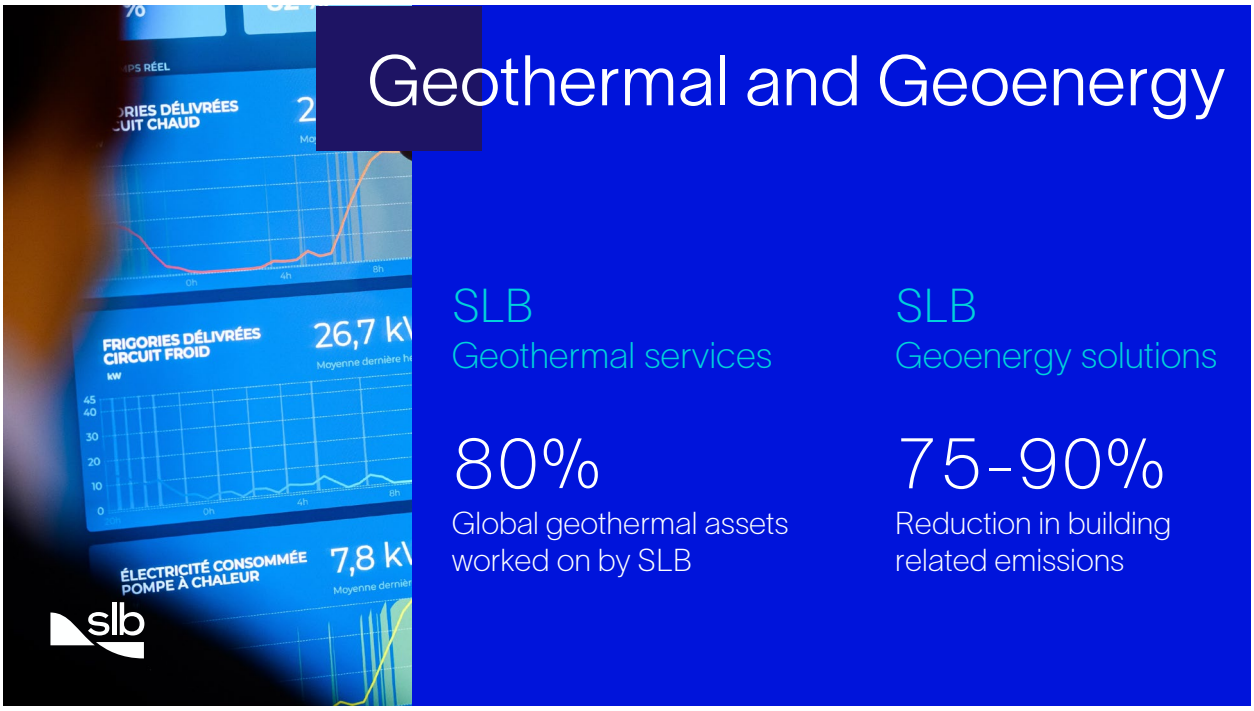
We recently acquired exclusive rights to next-gen absorption capture technology, from RTI International. This is an exciting technology that has the potential to address a broad range of emissions streams, with applications that cover over 80 percent of the capture market.

These are real steps—and we see the total CCUS market accelerating to above $50 billion per year by 2030, and over $250 billion by 2040.

An attractive market, highly adjacent, accelerating now, with enormous potential to decarbonize industry.

That's Carbon Solutions.

Let's move now to another business area that is accelerating rapidly and also leverages key SLB strengths—Geothermal and Geoenergy.




The inherent stability of geothermal energy as baseload renewable power and today's economic realities have led to a strong resurgence of support. The geothermal market for power generation alone is predicted to grow from 16 GW today to circa 100 GW by 2050. And the market is expanding driven by pure heating applications.

Understanding the subsurface is a key SLB strength, and this extends to heat.

GeothermEx, our geothermal consultancy is, by far, the leading consultancy in the world on geothermal assets—having assessed resources across the globe for over 50 years, and been involved in 80 percent of all currently-operating geothermal fields.

Beyond consulting, we also provide integrated field development services for geothermal fields, and have completed projects in the Philippines, Indonesia, Turkey. and Mexico.

And then there is the question of efficiency.

Heating and cooling together represent 65 percent of the energy consumption of buildings in many large cities—like London, Paris, and here in New York—and offer a huge opportunity for reducing emissions, which is where geoenergy comes in.

Our Celsius Energy business today leverages our inherent subsurface and engineering capabilities to provide a solution to efficiently heat and cool large-scale facilities.

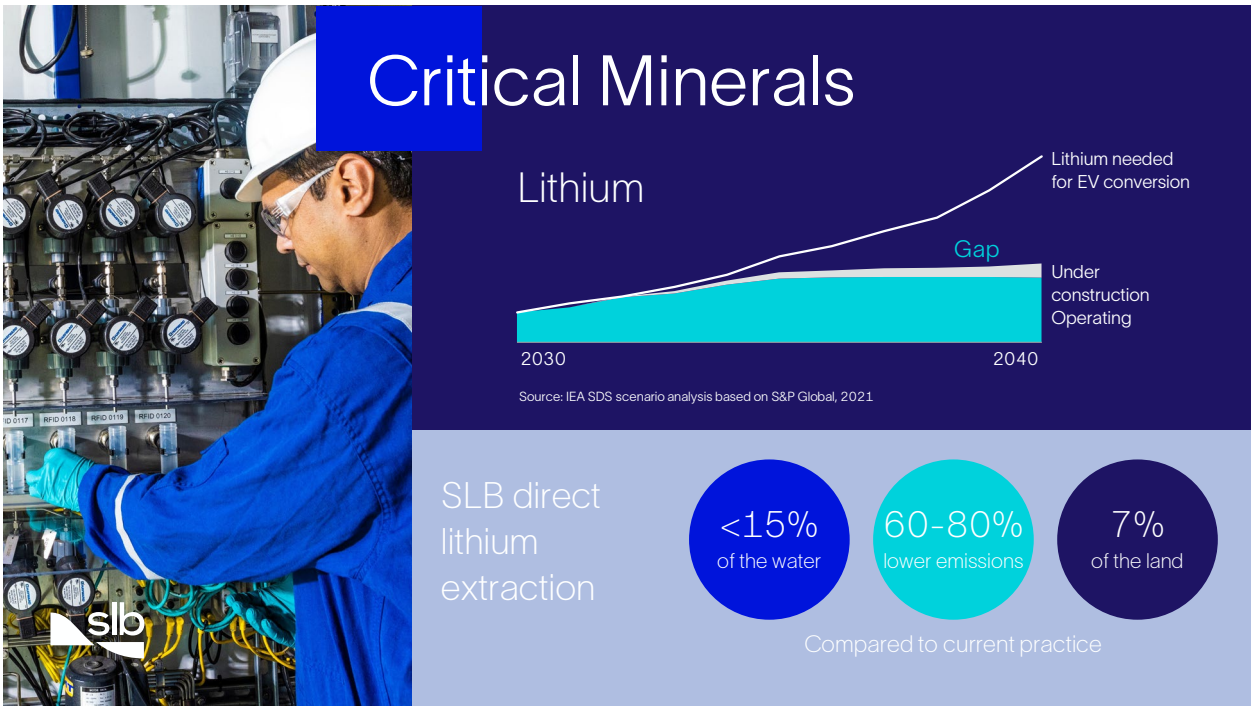
The system reduces building emissions by up to 90 percent, and there are over 300,000 target facilities in Europe alone.

Having been founded through innovation as an internal startup, we have commercialized the system, and just been awarded the largest geoenergy project in France—one of the top 10 in Europe—and now have a significant project pipeline building.

You can see the Celsius Energy system at the cocktail event this evening.

So that's Geothermal and Geoenergy.

Now let's pivot to another business area essential to energy transition—Critical Minerals.




The energy transition requires a range of technologies, from solar panels to batteries, that rely on key critical minerals to be built. With a projected quadrupling in demand by 2050, there is market pressure to secure access to these minerals—in a sustainable, reliable, domestic supply chain.

And the mineral under the greatest pressure, with demand expected to increase at least 12X by 2040, driven by the EV battery market needs, is lithium.

The lithium market projects a shortfall between demand and supply of 40% by 2040 with prices already rising from $20,000 per ton to over $70,000 per ton on the spot market in the last 12 months.

Lithium today is produced from two different types of resources: from hard rock via mining and refining, and from brines via evaporation in big ponds.

These existing methods are energy intensive, use a lot of water and land, and are largely not within a domestic supply chain.

We are initially focusing on brine, lithium contained within water, found in the subsurface, playing to our strengths.

New brine resources can be unlocked, utilizing an approach known as direct lithium extraction, or DLE.

This requires the drilling of wells to produce the brine and then subsequently reinjecting water into the reservoir, having processed it to remove the lithium.

And it's the processing that is really key.

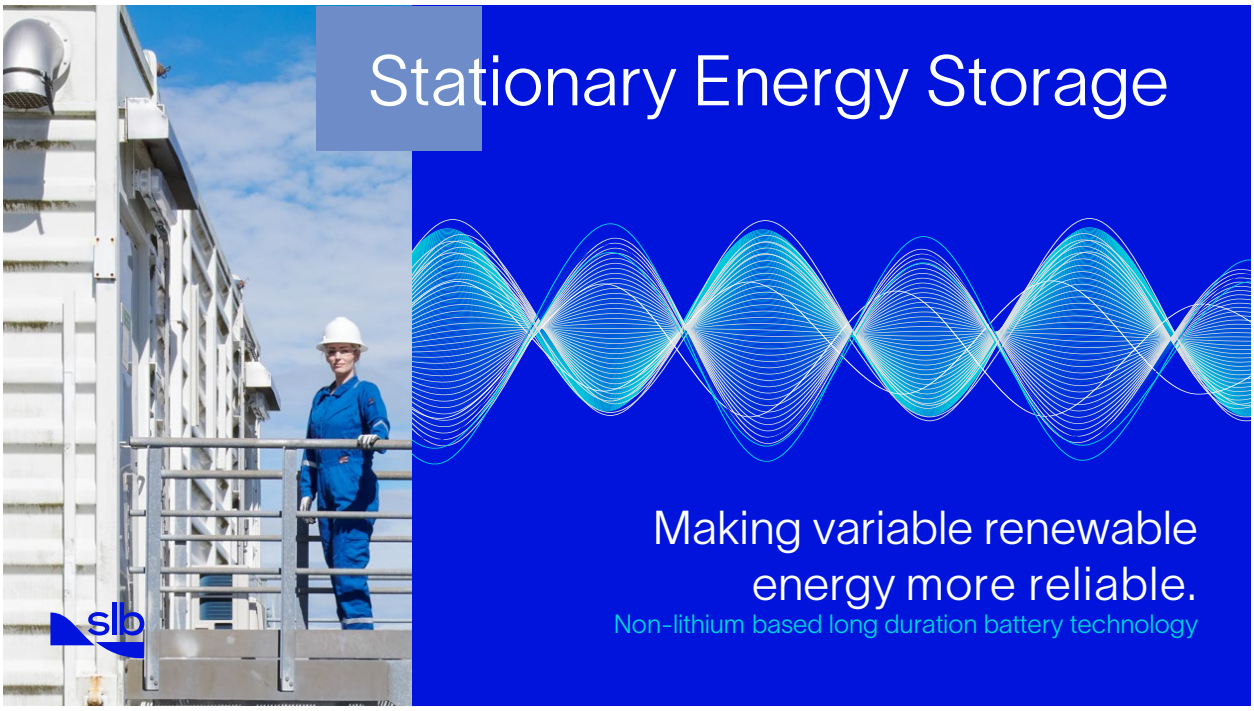
Our Neolith Energy solution integrates multiple exciting processing technologies for lithium extraction, concentration, and conversion—efficiently and sustainably enabling production of battery-grade lithium products.

Our pilot project, now under construction in Nevada, is expected to use 15 percent of the water, reduce emissions by between 60 percent and 80 percent, and use just 7 percent of the land compared to current practice.

It should be operational by Q2 next year. You can see a model of the plant and meet our technology development manager in the cocktail area later today.

This method unlocks access to new lithium resources and enables domestic lithium production in any country where brine resources exist.

Now that we have addressed the opportunity of supplying a tight lithium market, let's look at a complementary avenue of growth with great potential—Stationary Energy Storage.




Stationary energy storage is a key enabler to make variable renewable energy sources (solar or wind) a larger component of the world's electricity systems, via energy shifting.

That means enabling power to be delivered in the right place, at the right time, to meet demand.

As renewables penetration increases, so does the need for more and more storage, to ensure efficiency of renewable assets and reliability of electricity systems.

Large-scale, long-duration energy storage is key, and this market is growing rapidly.

One initial investment we have made is in Enervenue, a California-based startup that delivers nickel-hydrogen, non-lithium based, economic, safe battery technology that targets the 10-hour storage market.

We have also invested in an Australian company, Raygen, with a novel approach to providing much longer duration, via thermal energy storage—suited for large-scale solar assets.

This is an exciting area for us, and you will hear more about this in the coming months.

Finally, I want to cover what could be our largest, most exciting long-term business opportunity—Hydrogen.


Hydrogen has huge potential to decarbonize industrial sectors globally.

Demand for low-carbon hydrogen is growing fast, fully supported by large public investment programs, targets, and incentives.

We conservatively expect a 10X growth in low-carbon hydrogen production from 2025 through 2040

Within the hydrogen ecosystem, we have chosen to focus on production technology—that means developing technology that creates low-carbon hydrogen from either electricity or gas in the most economic, sustainable way.

Genvia is a truly unique joint venture, a public/private partnership in which we are the lead investor and industrialization partner along with the CEA, the scientific research agency of France.

Genvia is developing high-temperature solid oxide electrolyzer technology focused on the most efficient conversion of electricity to hydrogen for industrial applications that have heat available.

This technology improves efficiency by up to 30 percent from existing commercial technologies; that means 30 percent less windmills or 30 percent less solar panels.

It is so exciting that the company already has six pilot projects in multiple high-emissions industries including petrochemicals, cement, and steel.

In addition, Genvia was recently selected by the French government as a key project to receive a grant of up to EUR 200 million, to accelerate bringing this technology to market.

You will be able to see and touch this technology yourself in the Pod later today.

We have also invested in and are partnering with ZEG Power, a startup company that has a disruptive process technology to produce low-carbon hydrogen, this time from natural gas, with integrated carbon capture.

The hydrogen market is expected to grow strongly from around 2025, driven by industrial applications, reaching just under $280 billion by 2040 and then really taking off beyond this, as the full ecosystem develops.

Multiple exciting disruptive technologies; a potentially huge market; strong, sophisticated partnerships; tremendous government support—that's Hydrogen.

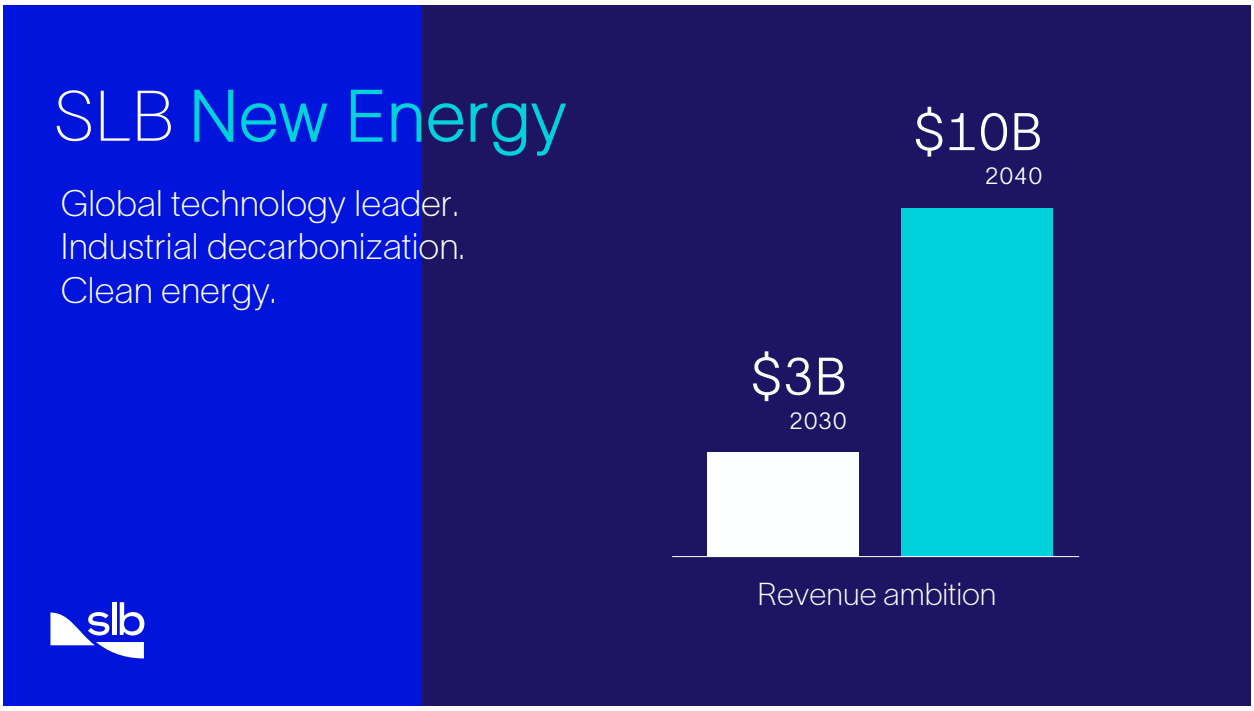

So this is where we are—five focus areas.

Across this portfolio, we are diversified: we have lithium production, and non-lithium batteries.

We have early-stage breakthrough technology in Genvia and energy storage; and mature, proven techniques in carbon solutions and geothermal; we will work with our existing oil and gas customers, and new customers and partners in new industries—and across all this, we have unique expertise to innovate, develop, industrialize, and deploy technologies, on a global scale.

Before I close, let me underline a few key points.

This energy transition provides us a truly incredible opportunity that will more than double the total addressable market for SLB by the end of the next decade.




Our ambition is to grow the New Energy portfolio into a revenue stream greater than $3 billion by 2030 and at least $10 billion by 2040, with significant potential upside as the world drives toward net zero.

In doing this we will create a true engine of growth for the company, and SLB will play a key role in enabling the reduction of those 25 GtPA of emissions.


We already have an exciting pipeline of technology and projects that leverage our strengths, and are beginning to deliver results—and this gives us confidence that we can establish ourselves as a technology leader in industrial decarbonization and clean energy solutions.

And in doing so, we plan to play a key role in meeting the world's needs, building a bright future for a balanced planet.

Thank you.