Closing Thoughts

We have learned a lot working on this book.

Together, we have explored the oil and gas industry's many initiatives for the climate problem, from carbon capture to eliminating methane emissions to sustainable fuels and plastics. We have spoken with people in the industry who are working seriously on these and other efforts to reduce emissions. Finally, we've looked at how, with the help of the blockchain, these initiatives could fundamentally transform the industry. Altogether, this will make the oil and gas industry more sustainable, and in more ways than one.

The transition to a zero-carbon economy creates new opportunities for the industry to get on a more solid financial footing. It could diversify its product mix beyond just commodity oil and gas into low-carbon energy. Industry participants, especially small and mid-sized ones, could differentiate their products based on embedded emissions or carbon intensity. This could, in turn, lead to premium prices and long-term purchase agreements, which would produce stable revenue streams that lock in profits and secure more favorable terms from lenders. Thus, the industry should embrace the energy transition not just to benefit the environment but also its own balance sheets and investors.

This would also mean a transition of the oil and gas industry from one of physical commodities to digital products. The liquids and gasses that get loaded into tankers or flow through pipelines may still be the same, but the digital certificates of origin and carbon intensity will be the ones that determine their value. Low or zero-carbon products with proven origins will command higher prices from customers and get better terms from investors and lenders.

This brings us to the blockchain. The past year (2022) showed us that it's certainly not magic pixie dust on its own. Rather, it's a technology for collaboration without needing a centralized authority, such as a government regulator. This means that it could enable the industry to prove the climate benefits of its new products. It could then help raise capital, track production across multiple jurisdictions, establish self-regulatory regimes, and create new markets.

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For example, let's say that we accept that our advanced society needs reliable energy and that rising living standards in developing economies means we must produce more energy, not less. At the same time, we accept that climate change is real and must stop emitting the greenhouse gasses that cause it. So now comes the hard part: What is a real plan that would provide for our energy needs while meeting the world's climate goals?

The oil and gas industry may argue that solar panels and lithium-ion batteries alone could not meet the world's energy demand, so natural gas is needed. But unless it could put forth a *credible* climate strategy, who would believe it?

Next, let's say the oil and gas industry puts forth a proposal for "carbon-neutral natural gas." It will minimize the emissions footprint from producing natural gas, including eliminating methane flaring and venting and then removing the emissions from burning natural gas with carbon capture and storage. If the industry tries the usual "Trust us" or "Trust the government," environmentalists would predictably protest "greenwashing" and "lobbying." Investors, banks, and the general public would probably be skeptical at best of the industry's claims. So instead of the usual, how about the industry say, "Let's figure this out together, based on open standards and equal access to the data."

This is where the blockchain comes in. All the stakeholders, including the oil and gas industry, environmentalists, banks, investors, and government agencies, could jointly define a standard for carbon-neutral natural gas together by answering questions such as "Would the methane leakage in natural gas production and transportation be added as emissions?" "Would CO_2 removed by carbon capture and storage from natural gas combustion be deducted from emissions?" Even controversial questions such as "What carbon credits, if any, could be counted against natural gas emissions, and for how long?"

Once a standard is established, it could be coded on the blockchain and used to certify the carbon-neutral natural gas as it is produced. All parties could have equal access to both the standard and all the data needed to verify its practice. Further, the blockchain could transfer the emissions reduction from buyers, support long-term offtake agreements, and structure financing transactions. All of this could be done at a fraction of the cost of traditional processes.

Wishful thinking? Perhaps. But didn't you just meet, in the course of reading this book, people in the oil and gas industry who are working on real projects to reduce emissions? If they are serious about fixing the climate problem, shouldn't we join them? Or do we need a reminder from Benjamin Franklin, who famously said back in 1776: "*We must all hang together or surely we will hang separately.*"