

2023 IMPACT & ESG PERFORMANCE REPORT

ENERGY IMPACT PARTNERS



Dear Partners & Colleagues:

The past year has been extraordinary in many respects. The pandemic is entering its third year, the war in Ukraine continues to wreak havoc with its tragic human and economic fallout, and inflation and economic recovery are pressing global concerns. Against this backdrop, the world experienced the warmest nine years in history, with more than \$165 billion per year in damages from extreme climate events in the U.S., 20,000 deaths in Europe from extreme heat, and severe droughts and storms across much of the world.¹

In the face of these sobering events, we are reminded of the importance of our mission to accelerate the clean energy transformation. Thankfully, we continue to see innovative solutions and attractive investment opportunities in companies that will reduce carbon, increase energy resilience, help societies adapt to climate change, and advance a just energy transition. Our view is further bolstered by the passage of the U.S. Inflation Reduction Act, as well as many continued policy actions in Europe and the rest of the world that will only help accelerate innovation and deployment.²

With that backdrop, 2022 marked our most active year ever. We invested more than \$500 million in 27 companies with the potential to

form critical building blocks on the road to net zero. The pace of collaboration between our portfolio and partners continued to accelerate, contributing to almost \$2 billion in business since our inception via more than 420 collaborations. Perhaps most importantly, as a result of this, we are proud to report that our portfolio companies enabled actual reductions of more than 11 million metric tons of global carbon emissions in 2022, with projected lifetime reductions of 103 million metric tons. This is the equivalent of taking almost 22 million cars off the road for a year.

As we look forward, we see the need to decarbonize the global economy only getting stronger. When we started our journey, before the Paris Accord existed, only 40 companies had made a commitment to net zero. Today there are more than 4,000 companies globally, spanning every industry and type of economic activity, broadening both the opportunity and necessity of pioneering and scaling new technologies and processes.³ Despite the many challenges we face, we believe we can get there by bringing together innovators, incumbents and capital.

We hope this report brings transparency and greater understanding of our work to our investors, our partners and all the stakeholders in the energy transition. We will continue to push forth in our mission and model to drive innovation, impact and better returns and we look forward to collaborating with you towards a cleaner energy future.

Sincerely,



HANS KOBLER
Chief Executive Officer



PETER FOX-PENNER
Chief Impact Officer



*From left: Hans Kobler,
Peter Fox-Penner*

Overview

Energy Impact Partners is a purpose-built investment platform with over \$3.2bn in AUM in seven active funds. It has three defining features:

Our investment focus is concentrated on the clean energy transition

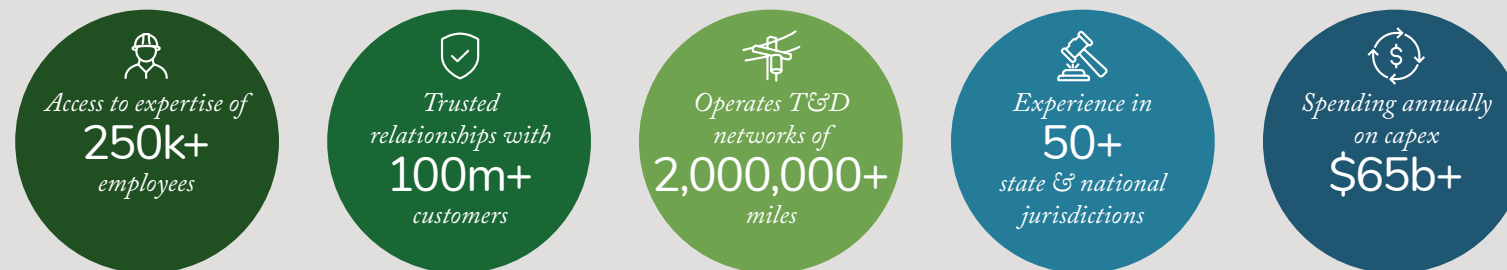
Collaboration with our coalition of strategic investors is designed for speed and scale

We combine the expertise in our coalition with our own cutting-edge research

EIP FUNDS ACTIVE IN 2022



60+ STRATEGIC PARTNERS IN UTILITIES AND INDUSTRY, WITH OPERATIONS THAT SPAN...



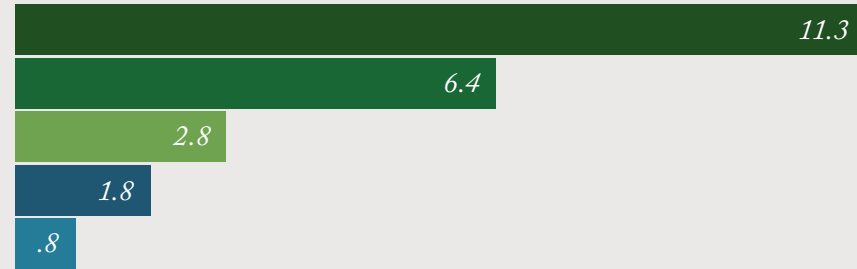
Source: Company filings for public utility partners; Bloomberg NEF

CARBON IMPACTS — ENABLED SAVINGS

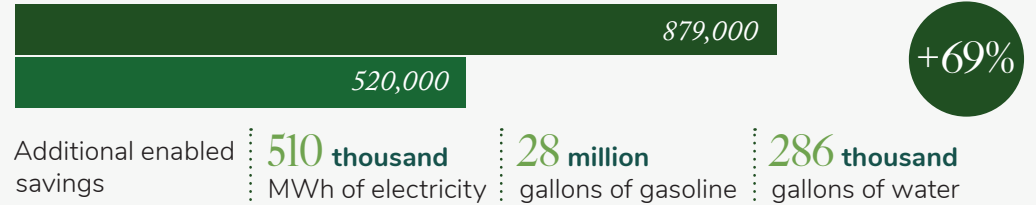
Our ownership-weighted annual, lifetime, and five-year-projected enabled carbon savings increased by 69%, 34%, and 1100% respectively. The especially strong projected savings stem from our deep decarbonization portfolio, which is targeting very large as well as hard-to-abate opportunities. Our enabled savings were distributed across many portfolio companies and evenly between the major measurable investment themes of decarbonized supply and sustainable demand.



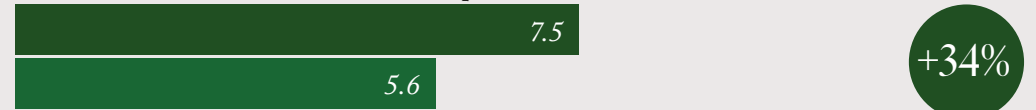
Total Annual Enabled Savings · *million MTCO_{2e}*



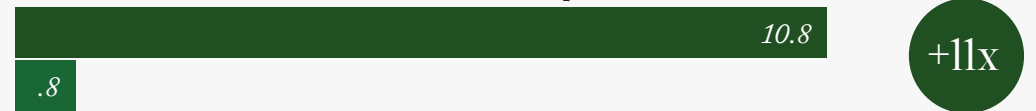
Ownership-Weighted Annual Carbon Savings Enabled · *MTCO_{2e}*



Ownership-Weighted Lifetime Carbon Savings Enabled of Existing Technology · *million MTCO_{2e}*



Ownership-Weighted Five Year Projected Savings of Pre-Commercial Technology · *million MTCO_{2e}*



CARBON FOOTPRINT & NET IMPACT

Our carbon footprint also grew as we returned to “normal” operations and our staff and portfolio expanded. This year we worked with our portfolio company Greenly to do a full Scope 3 financed emissions estimate. As expected, our financed emissions are much larger than our internal footprint. Using our most conservative savings measure, enabled carbon savings are over 6x our full scope 1-3 emissions.

EIP FOOTPRINT 2022

MTCO₂e

Scope 1	42
Scope 2	85
Scope 3 excluding financed emissions	2190
Scope 3 including financed emissions	141,000
Total EIP Internal Footprint ⁴	2320
Total – all scopes	143,000

Source: Analysis by EIP and Greenly



ESG HIGHLIGHTS

We are pleased to report that 90% of our reporting portfolio companies have or are adopting a non-discrimination policy, and two-thirds or more also have key employee welfare measures in place. Progress is needed on some key environmental measures: only 8% of our portfolio performs climate risk assessments and only 43% have waste reduction programs.

Within EIP, we are continuing to focus on promoting diversity. Over the past three years of high staff growth we have managed to roughly maintain our gender and underrepresented minority representation, but continued improvement remains a focus.

2022 ESG HIGHLIGHTS

Impact & Sustainability team

met with **35** portfolio companies to discuss ESG and impact topics

Held Board seats at

45 portfolio companies at year-end 2022

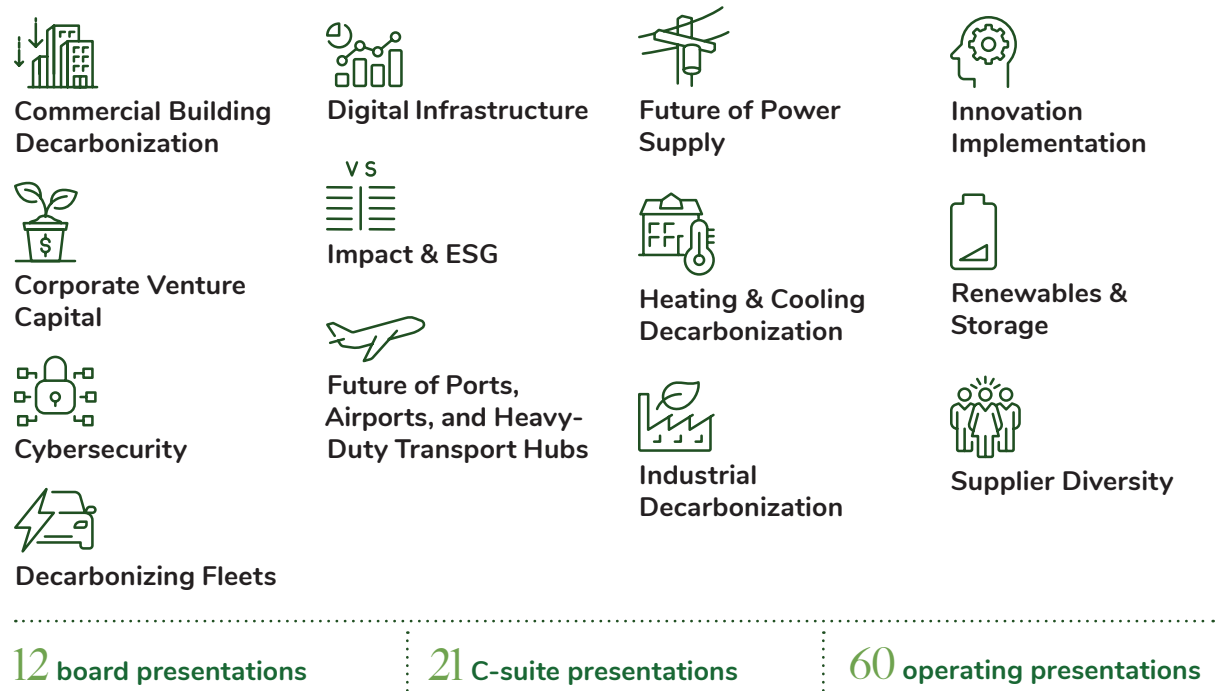
83% of portcos responding to our ESG annual survey

MAJOR GENDER & RACIAL METRICS FOR EIP REPORTING PORTFOLIO

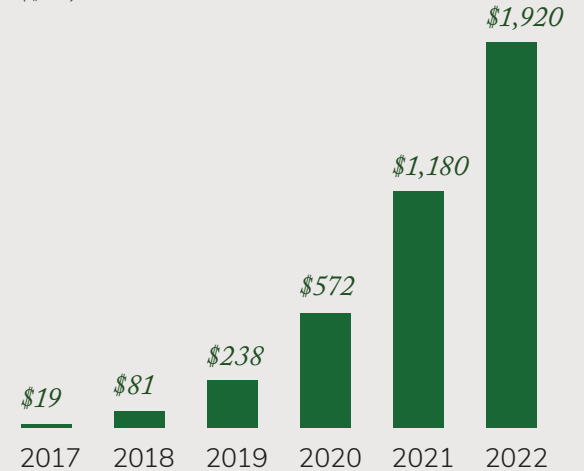


HELPING OUR PARTNERS' NET ZERO JOURNEYS

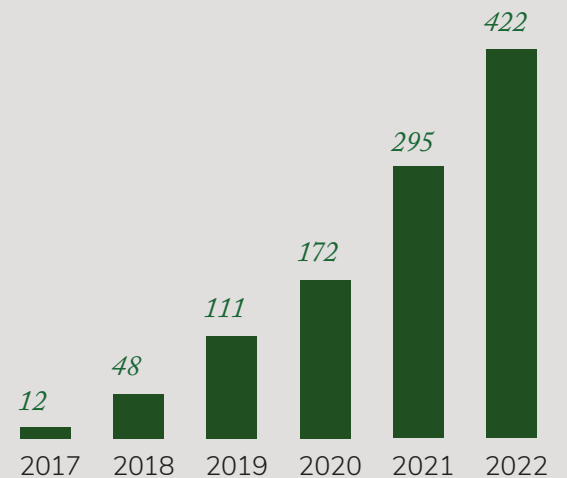
Our strategic partners continue to increase their engagement with our portfolio companies. There have been 422 contracts worth almost \$2 billion in bookings, primarily through collaborations with our partners and select deals with others in the energy ecosystem where we have played a hands-on role. We engaged with 12 partner boards, 21 C-suites, and 60 operations teams, and we worked together intensively with our LPs, PCs and industry experts on 16 working groups.



CUMULATIVE BOOKINGS GENERATED FROM PORTFOLIO COLLABORATIONS (\$M)



CUMULATIVE NUMBER OF CONTRACTS FROM PORTFOLIO COLLABORATIONS



Guide to this Report

SECTION 1

About EIP provides an overview of our mission, funds, and awards.

SECTION 2

Climate Tech and Our Investments provides a condensed view of our investments, the Climate Tech landscape, and our impact pathways, as well as presents our current investment portfolio.

SECTION 3

Our Climate Impacts explains the carbon savings our companies enable, other environmental impacts, our scope 1, 2, and 3 footprint, and the net effect of these actions.

SECTION 4

Case Studies showcases a diverse subset of our portfolio companies.

SECTION 5

ESG provides additional ESG metrics for EIP and our portfolio companies.

SECTION 6

Helping Our Partners Succeed describes the ways we work with our strategic investors to assist them in their decarbonization journeys.

SECTION 7

Thought Leadership and Community Collaboration chronicles our public-facing presentations, podcasts, and other activities advancing the clean energy transition.

Additional information, including our online Technical Appendix, are posted at www.energyimpactpartners.com/impact



SECTION ONE

About EIP

Our Mission & Structure

Since our inception in 2015, Energy Impact Partners (EIP) has maintained an unwavering mission: to accelerate the transition to clean, decarbonized energy by investing in new and emerging climate technologies and solutions while achieving superior returns for our investors. For this mission, measuring our impacts accurately and transparently is an essential key to success. This report – our fifth consecutive annual impact publication – documents our progress towards this mission during 2022.

At EIP, we assist the companies we invest in with measuring and improving positive impact and ESG attributes, which we believe will help them improve their long-term prospects for success. Later in this report, we highlight our annual review of the ESG progress of our portfolio companies (PCs) as well as ESG metrics for EIP.



ABOUT EIP

Our Mission & Structure

EIP is a unique, purpose-built investment platform with three defining features:

Our investment focus is concentrated on the clean energy transition. The commercial production or use of energy is part of nearly every activity and sector in modern economic systems. Investments across our entire platform include technologies and businesses that enable energy companies and networks to advance clean solutions and facilitate new processes, markets and modes of customer interaction. Starting with production, our investing spans the full range of clean energy supplies, from electricity generation technologies that will power future net-zero grids, to decarbonized fuels such as hydrogen and renewable natural gas. Our investments also include innovations that help decarbonize energy use by increasing

energy efficiency and shifting processes to cleaner energy sources, from decarbonized transportation and buildings to new industrial and agricultural processes.

Collaboration with our coalition of strategic investors is designed for speed and scale.

EIP's diverse coalition of strategic investors offer their extensive expertise and experience operating everything from energy-intensive enterprises to utility-scale components of the energy system to find clean energy solutions that can rapidly scale. EIP's current coalition now includes:

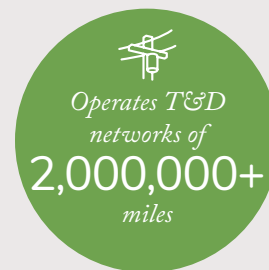
30+ electric utilities who serve 160+ million customers and operate 2.8 million miles of transmission and distribution lines.

20+ industrial enterprises from transportation, real estate, manufacturing, and information technology industries.



Ambassadors from our strategic partners discuss potential investments at one of our 11 council days during 2022.

UTILITY PARTNER REACH



Source: Company filings for public utility partners; Bloomberg NEF

OUR STRATEGIC PARTNERS LEADING CORPORATE INVESTOR COALITION FOCUSED ON THE ENERGY TRANSITION

Utility Investors ·
North America



Utility Investors ·
Europe



Industrial Investors



Subset of publicly identified strategic partners.

ABOUT EIP

Our Mission & Structure

This coalition is extremely active in helping us evaluate new technologies, ideas, and processes. Each of our strategic investors appoints one or more “ambassadors” who participates intensively in our investment evaluation processes. Last year, more than 150 ambassadors representing every one of our 64 strategic partners participated in EIP evaluations and other activities.

Together with more traditional financial investors who increase our financial capacity, our investors are also a critical source of opportunities to pull our technologies up the scale curve through early deployments and demonstrations, scaling within the coalition’s footprint, and peer-to-peer sharing within their industries. Since our inception, more than 400 contracts have been signed to deploy EIP technologies within our coalition with a total value of over \$1.9 billion. These technologies include products as diverse as utility-scale energy storage plants, replacement of utility poles with sustainable composite materials, carbon-neutral microgrids and electric vehicle charging software.

Our Theory of Change is that clean energy solutions are best accelerated into the market by a motivated coalition of energy producers and users who understand the opportunity as well as the need for action.

We combine the expertise in our coalition with our own cutting-edge research. The contributions of our strategic partners to investment evaluation and ongoing portfolio strategies are guided and augmented by our own extensive in-house research team. This group supports our deal teams by providing sophisticated technical diligence and market knowledge, adding further depth to the teams’ own diligence. We also convene specialized, technology-specific working groups that mix highly-specialized subject matter experts from within our investor coalition with in-house and outside experts. These working groups conduct in-depth evaluations of emerging technologies and new companies, scan the business model landscape, and have discussions with target area innovators.

“When a good idea is born, or then the first prototype of an invention is created, we should celebrate its potential to change the world. But progress is as much about implementation as it is about invention. The way individuals and institutions take an idea from one to one billion is the story of how the world really changes.”

DEREK THOMPSON, *The Atlantic* Jan 2023

Seven Funds, One Purpose

During 2022, seven EIP funds made investments: Flagship I and II, European Flagship I, Credit Fund I and II, the Elevate Future Fund and the Frontier Fund.

These funds allow our partners to customize exposure to investment opportunities and strategies across the funding continuum, with Frontier focused most intensively on seed and early-stage investments and the Credit Funds investing in creditworthy firms at all stages, including mature private companies. The funds are designed to be symbiotic across types of investment, stage and geography so that our platform provides integrated support and collaboration.

EIP's **Flagship Funds I and II** focus mainly on proven technologies and business models that are ready to scale, including technologies whose trajectory we can influence with our ecosystem. Investments are typically inflection or growth stage companies.

Our **European Flagship Fund** pursues a similar approach to Flagship Funds I and II across all of Europe, where there is strong dedication to climate action and a blossoming cleantech innovation network. Combined with the fact that we have many strategic investors in both North America and Europe, our two Flagship geographies allow us to cross-pollinate the best solutions on both sides of the Atlantic.

Credit Funds I and II (Credit Funds) provide secured debt, unitranche and mezzanine financing, and equity to small and middle market companies, as well as for strategic opportunities in growth stage companies, across the clean energy spectrum. The Credit Funds are licensed as Small Business Investment Companies (SBICs) by the U.S. Small Business Administration (the SBA), which allows them to use private capital and low interest leverage from the SBA to offer financing to companies that qualify as small businesses for purposes of the SBIC Program.

The **Frontier Deep Decarbonization Fund** (Frontier) seeks seed and early-stage venture investments in companies at the forefront of deep decarbonization in all energy production and industrial use sectors that can meaningfully contribute to global decarbonization. Innovations in all these areas are needed to reach full decarbonization of both the electric and fuel energy systems.

The **Elevate Future Fund** (Elevate), focuses on seed, early stage and credit investments in companies and funds that are run by, or focused on the advancement of, people from underrepresented and underserved groups including, without limitation, Black, Latine, Women, and LGBTQ+ people, all while aiming to close the wealth gap. This fund is a core part of our commitment to increasing diversity, equity, and inclusion (DE&I) in the private equity and venture capital sectors and promoting a more just and equitable energy transition.

“The Elevate Future Fund exists to create more opportunities for diverse founders and entrepreneurs, and to create essential ESG solutions to accelerate our net zero future.”



ANTHONY ONI, *Managing Partner of the Elevate Future Fund*

ABOUT EIP
Seven Funds, One Purpose

All direct investments are subject to our firmwide impact and ESG policies and are included in this consolidated report. Additional information on the investments in each of these funds is shown in the Technical Appendix.

EIP FUNDS ACTIVE IN 2022



Frontier Fund
Deep Decarbonization Technologies

Flagship Funds I & II
Growth Capital to decarbonize the global economy

Credit Fund I & II
SBIC leverage (2-1)

Elevate Future Fund
Increase diversity

Flagship Europe
Growth Capital to decarbonize the European economy



Research, Strategy, and Innovation
Learning and collaborating across platforms



Our Commitments & Awards

EIP is proud to be a part of the financial community committed to responsible investment and the promotion of a just transition to sustainable energy. We have endorsed the U.N. Principles for Responsible Investment, are signatories to the Task Force on Carbon Disclosure and are members of Initiative Climate International. We have also helped co-found the **Venture Climate Alliance**, a group of VCs dedicated to educating our sector about its role in achieving a net-zero global economy. We are also

a steering and working group committee member of **Project Frame** and a regular participant in the Edison Electric Institute/American Gas Association Sustainability Task Force.

EIP has been the recipient of multiple awards, recognizing our groundbreaking and novel approach to energy transition investing, impact measurement and ESG. In the last year, EIP was acknowledged by the following organizations:

Climate50 – 2022 #1 Most Impactful Climate Growth VC⁵

Real Deals – Future 40 ESG Innovator Award⁶

ESG Investing Awards – Best ESG Investment Fund Energy Transition⁷



SECTION TWO

Climate Tech & Our Investments

Themes

Our investment efforts are focused on the transformative building blocks of a decarbonized and sustainable energy system. We've identified four core investment themes, all fundamental to the energy transition.



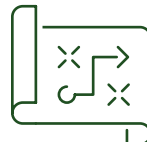
Decarbonized Supply

Solutions for generating zero-carbon electricity, producing net-zero fuels (e.g., hydrogen), and enabling technology to support this transition (e.g., material production advances).



Sustainable Demand

Solutions for improving end-use energy efficiency, electrifying fossil-fuel driven processes (e.g., vehicles and industry) and supporting consumer decarbonization and circularity goals.



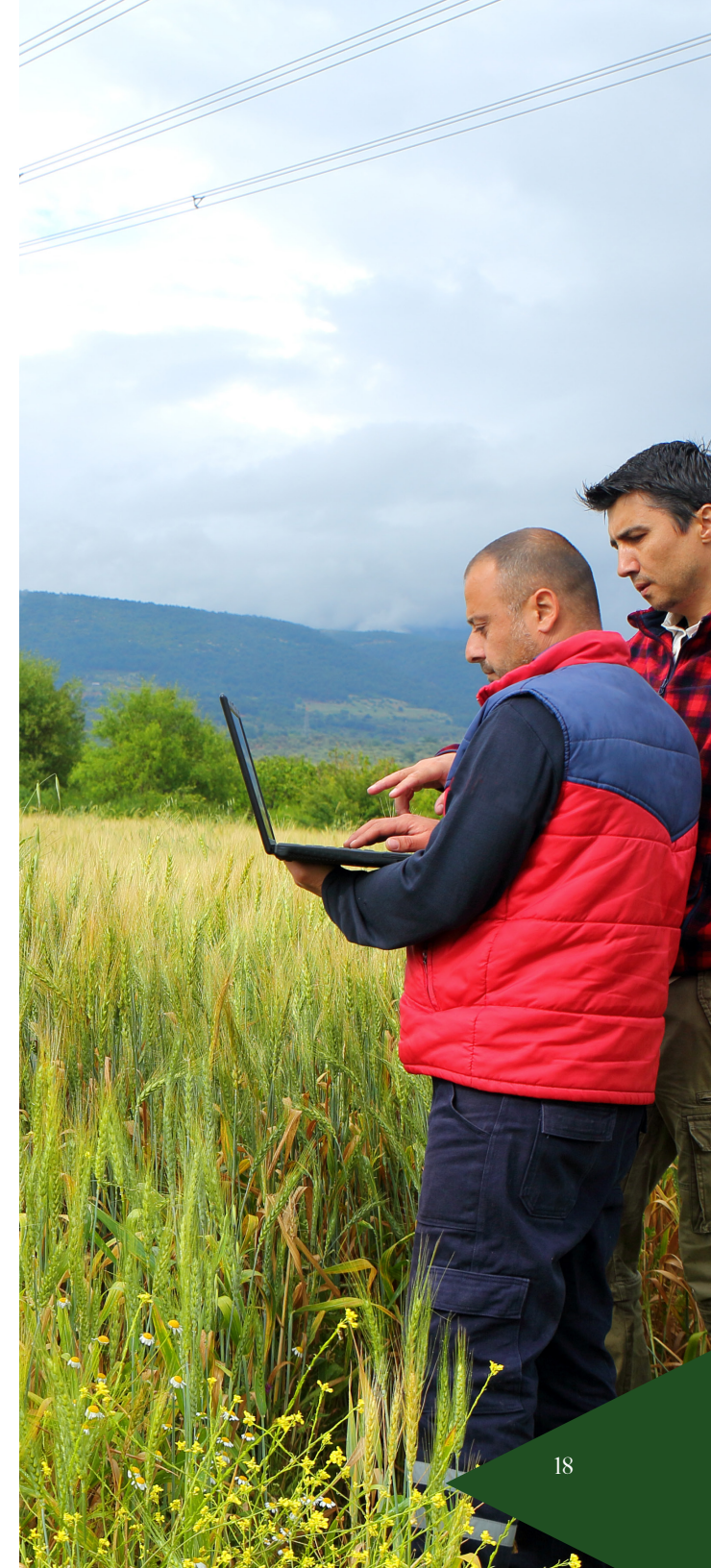
Intelligent Infrastructure

Solutions for more proactive, nimble, cost-effective, and resilient operation of energy generation and networks and related industrial equipment.



Foundational Technologies

Solutions for enabling better use of data, better organizational management, and better cybersecurity – particularly for energy system operations.





DECARBONIZED SUPPLY

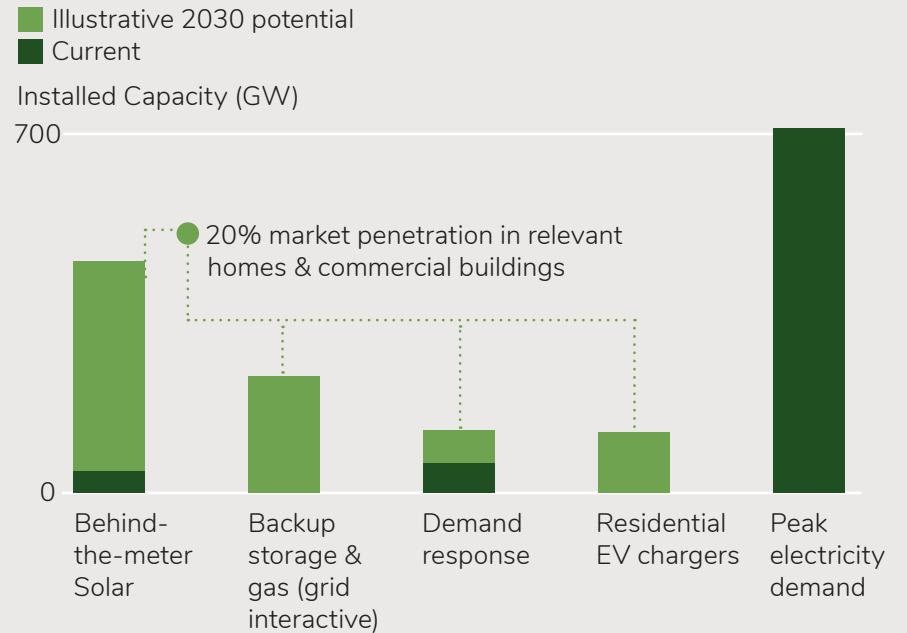
The production and use of energy products accounts for almost 75% of global greenhouse gases (GHG),⁸ highlighting the need for energy supply decarbonization. Innovation is vital to ensuring that the right technologies are developed and commercialized rapidly for the energy transition.

DISTRIBUTED ENERGY RESOURCES

The proliferation of distributed energy resources (DERs), which range from electric vehicles and home batteries to smart thermostats and controllable water heaters, presents both an unprecedented challenge and an enormous opportunity for the energy industry. The challenge lies in ensuring these resources are placed where they hold the most value and are controlled flexibly in accordance with the needs of the grid. The opportunity rests in the potential for aggregated DERs to represent an entirely new class of assets in the electricity market, lowering both costs and emissions across the sector. Harnessing the value of DERs will be a top priority for decades, and a raft of new technologies will scale up to meet the challenge.

Our research shows that at least four major types of DERs will play a significant role in decarbonizing the power system: behind-the-meter (BTM) solar, BTM storage and backup generation, demand response (DR) and flexible load resources, including managed EV charging. All four categories have market penetrations in the single digits and are far from achieving their potential. Distributed solar will play an important role as a clean energy resource in densely populated regions without easy access to large-scale wind or solar energy sources, while the other resources highlighted here will add valuable flexibility for grid operators. The figure to the right shows that a 20% market penetration for each of these four technologies in the U.S. would yield a peak reduction potential roughly equal to total US demand.

AT 20% PENETRATION, DERs COULD MATCH A SIGNIFICANT PORTION OF US PEAK ELECTRIC DEMAND BY 2030



Sources: BNEF, “2020 Customer Sited Solar and Storage Long Term Outlook” | Generac, “2021 Investor Day Presentation” | FERC “2021 Assessment of Demand Response and Advanced Metering”

POWER GENERATION

Wind, solar, and battery storage already dominate new capacity additions and will play an increasingly central role in power supply in the coming decades. This momentum is underpinned by 10-20 years of deployment-led innovation, with each new wave of deployment unlocking incremental cost reductions and performance improvements that make the next wave even more competitive. Despite this momentum, these technologies have faced immense supply chain pain in the last few years. A mix of general supply chain capacity expansion, technological innovation, and new policies should help mitigate these challenges, but other long-term obstacles remain, most notably, land and transmission constraints, and to a lesser extent, labor availability. This reality creates a long-term tailwind for technologies that can improve ease of interconnection, support transmission capacity expansion, or improve labor efficiency across construction or operations.

In wind power, one category of innovations that address these issues is modular and on-site fabrication technologies that can enable taller towers and larger blades. There are also a tremendous amount of innovative operational technologies being developed by both startups and wind OEMs themselves. Examples of operational technologies include data-driven asset management platforms that provide real-time visibility into performance and help streamline operations, predictive analytics that help optimize production and anticipate failures, and sensor- and drone-based platforms that enrich the data foundation.

In solar power, two emerging technology categories that can mitigate land and transmission challenges are novel foundations and tandem panels. Novel foundations can improve land density and reduce construction labor and material cost, whereas tandem panels unlock a meaningful step change in panel efficiency, driving more energy production per panel. The dynamic with operational technologies is quite different in solar compared to wind. While solar OEMs tend to be far less instrumental in defining the operational tech stack than wind OEMs, solar assets also have fewer moving parts than wind assets and fewer components that can lead to critical failures. Nonetheless, there is still room for many similar operational technologies to improve asset performance, such as SCADA solutions, data-driven asset management platforms, and remote inspection platforms. Unlike in wind assets, the relative simplicity of solar assets should also lend itself to substantial roboticization, such as for construction, panel cleaning, and vegetation management around the assets, that can help cut costs and address labor shortages.

Even with continued wind and solar advancements, the fully decarbonized grid will require substantial zero-carbon, power-dense, firm generation resources. We view carbon capture coupled to a gas power plant, as well as nuclear and geothermal as the three most promising options for firm, clean generation, and there is substantial room for emerging technologies to support each of these options. New technologies that scale down nuclear reactors for factory production and enable

new fuel cycles show immense promise but still face massive regulatory challenges and unproven economics. The key challenge with scaling geothermal, which today makes up less than 1% of US electricity generation, is geographic suitability. New technology that allows for deeper and more cost-effective drilling can expand geographic suitability but cannot eliminate geographic constraints altogether without substantial breakthroughs. Carbon capture largely avoids these regulatory and geographic constraints, but the capture technology itself is still nascent; deploying it would also require a substantial buildout of midstream and storage infrastructure.

Even with continued wind and solar advancements, the fully decarbonized grid will require substantial zero-carbon power-dense generation resources.

CLIMATE TECH & OUR INVESTMENTS

Themes

HYDROGEN

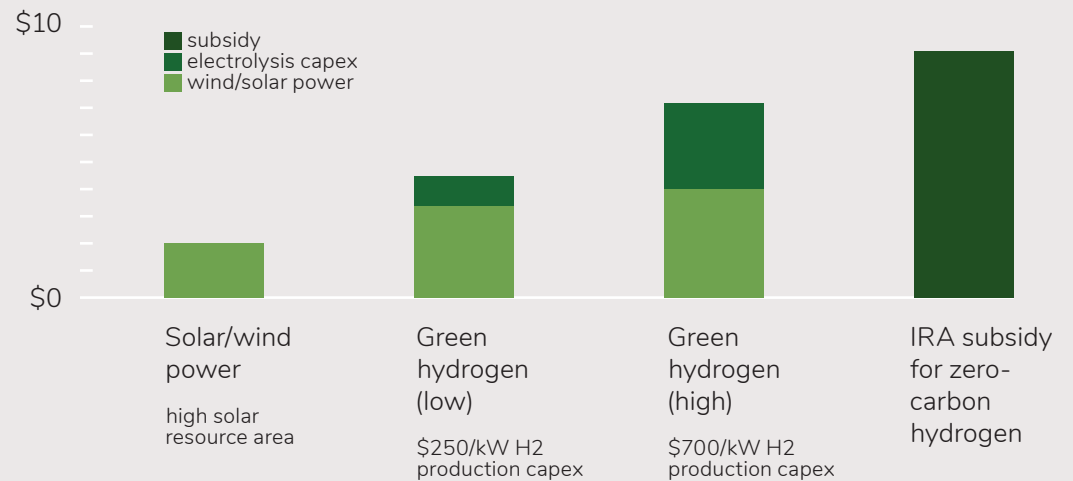
Along with announcing net-zero pledges, 13 countries have formulated national strategies to scale-up low-carbon hydrogen.⁹ However, hydrogen is not a monolith and needs to be considered in the context of other net-zero gaseous fuels. We believe hydrogen will have a role to play in the scheme of deep decarbonization, although to date it hasn't cemented its role yet in any major end use. The Inflation Reduction Act is likely to have a significant impact on expanding the role of clean hydrogen. In every end use sector, the direct use of hydrogen will have to compete against alternative decarbonization strategies – most notably direct electrification. Clean hydrogen does have an obvious initial market to enter, which provides room for growth for at least a decade: it's the current market for 'grey' hydrogen produced primarily from natural gas. We are already seeing promising development of clean hydrogen targeting the ammonia and methanol markets, for example.

Technologies to produce decarbonized hydrogen – often referred to as colors that signify its source or production process – are mushrooming. Electrolyzers to produce green hydrogen are improving steadily, with many competitive offerings. Proton Exchange Membrane systems offer more operational flexibility and are better suited to use with variable wind and solar inputs, while alkaline units are significantly cheaper. Investment can continue to scale and deploy novel hydrogen solutions, especially for industrial applications.

PROJECTED COST OF GREEN HYDROGEN AND IRA SUBSIDY

Why make green hydrogen? The IRA is an enormous boon (as long as it holds up)—providing a subsidy worth >4x the cost of energy from wind or solar power, and higher than most reasonably optimistic projections for green hydrogen's 2030 cost.

cost of thermal energy content (\$/MWh)



CLIMATE TECH & OUR INVESTMENTS

Themes

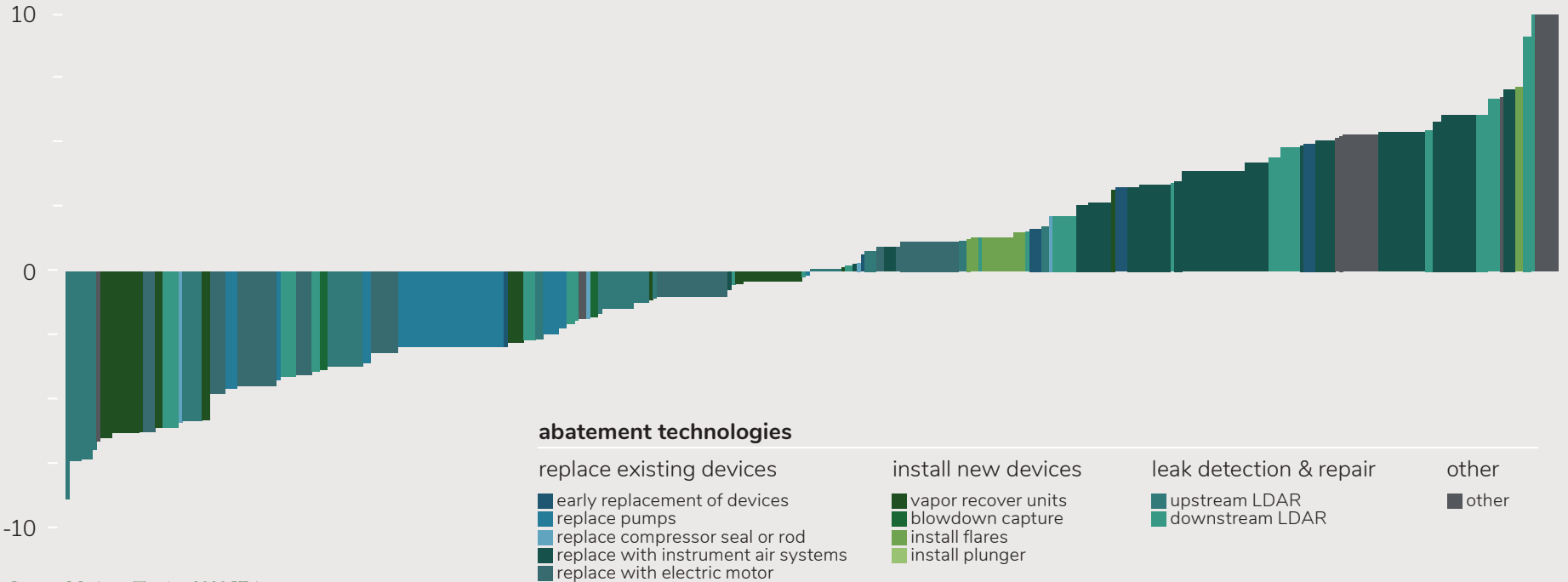
CLEAN FUELS

While we are very bullish at EIP on the future for clean electrons, we recognize that there are some end uses which do not make good candidates for meaningful amounts of electrification. The heaviest duty ground vehicles, shipping, and aviation sectors will likely continue to rely on much denser (mostly liquid) fuels, and clean molecules could also serve as a valuable complement to electrification in many industrial settings.

“Clean fuels” can come from many primary energy sources and take many forms: biomass can be converted to a wide range of fuels, and clean electricity can be harnessed to make hydrogen, which is the foundational energy carrier in molecules like ammonia and methanol. One long term vision is for an entirely new “electrofuel” economy, which begins with clean hydrogen, adds carbon ‘recycled’ from the air via direct air capture technology, and then synthesizes those ingredients into drop-in net-zero hydrocarbons.

A LARGE PORTION OF UPSTREAM METHANE EMISSIONS CAN BE ABATED WITH A POSITIVE NPV

Cost (USD/MBtu)



Source: Methane Tracker 2020 IEA

We also see continued value for gaseous fuels, beginning with the obvious option which is natural gas. Natural gas still has a role to play for decades at the very least, as the cheapest option in many regions for backstopping the cost and reliability of the energy transition. Natural gas power generation makes an ideal complement for renewables as next-generation storage technology reaches maturity in the next 10+ years. Over time, we also see opportunities to achieving true net-zero while continuing to employ methane molecules. One option is by capturing the carbon from those molecules (either pre- or post-combustion); the other option is substituting fossil methane with bio-methane (commonly called “renewable natural gas”, or RNG). However, for either of these approaches to work, the gas industry must focus intently on reducing methane emissions from every point in its supply chain. Because methane itself is a potent GHG, dealing with rampant methane leaks and venting to the atmosphere is critical. Although there are many methane reduction options that are cost-effective today, more investment is needed in this fragmented space to help optimal solutions scale and enable complete decarbonization.

CARBON CAPTURE, UTILIZATION, AND SEQUESTRATION

Carbon capture project development is ramping up globally, driven primarily by policy expansion and cost reductions. Whether carbon capture can make the leap from these early projects to much larger opportunities in heavy industry and power is one of the biggest uncertainties of the energy transition. Particularly with the incentives in the IRA, we expect acceleration in this space and see it as a technology pathway to decarbonize natural gas, coal, and industrial processes.

Captured carbon can, in some cases, be repurposed as the building block for plastics or other materials that effectively sequester CO₂ in long-lived products. But ultimately, significant amounts of carbon capture would require geological sequestration as a long-term carbon removal solution. The geological sequestration industry is in its infancy and will need a host of new solutions to reduce costs and guarantee long-term robustness.

Whether carbon capture can make the leap from these early projects to much larger opportunities in heavy industry and power is one of the biggest uncertainties of the energy transition. Particularly with the incentives in the IRA, we expect acceleration in this space and see it as a technology pathway to decarbonize natural gas, coal, and industrial processes.



SUSTAINABLE DEMAND

As the grid becomes multidirectional, understanding and decarbonizing customer operations will become increasingly important to our energy transition goals. Innovations beyond consumption are an area for investment across individual homes, commercial buildings, and industrial clients.

MOBILITY

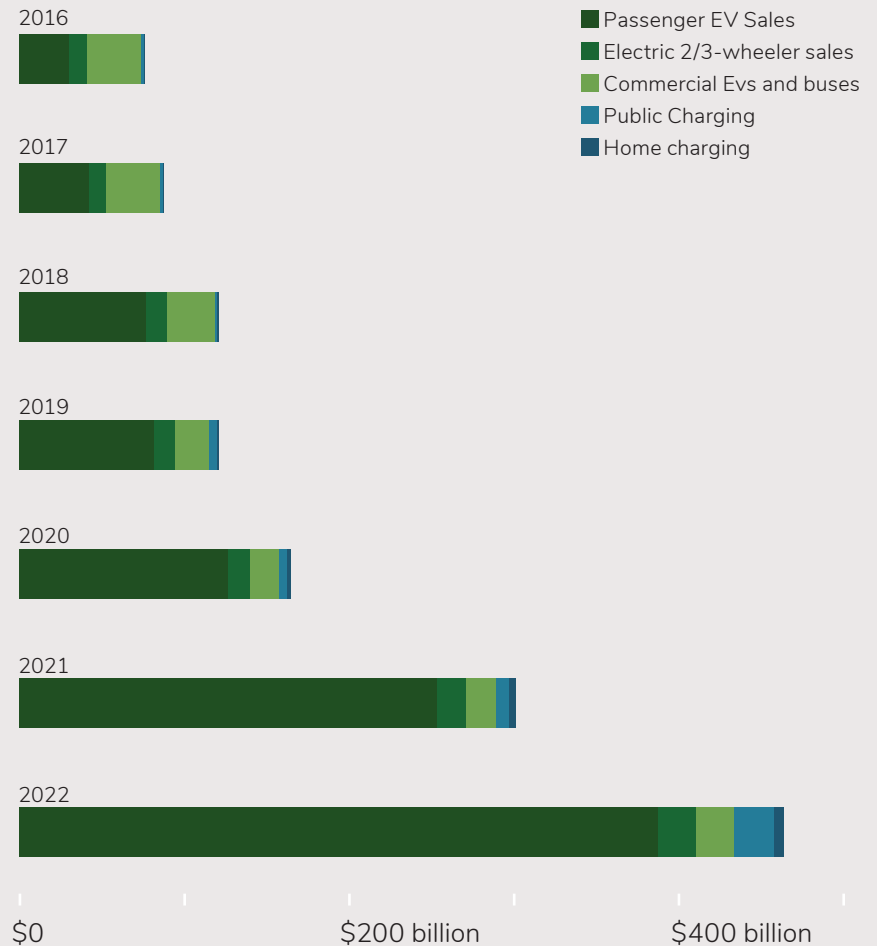
We believe future of personal mobility will be shared, connected, and most importantly, electric. As all modes of road transportation begin to converge towards electric drivetrains, the management of the electron – including production, storage, charging and trading – will increasingly become fundamental to determining the winners in this space. All this additional load will need to be integrated in a sustainable and scalable way, with an acute focus on cost, accessibility, and reliability. To make it all happen, software and innovative business models will be relied upon to optimize the orchestration of these assets.

The transportation sector is now America’s largest source of GHG emissions,¹⁰ and the \$2.5 trillion global auto industry is responding by adapting their businesses for the electrified future at an increasingly rapid pace.¹¹ Already, the total value of all electric vehicles sold to date in the passenger vehicle segment has exceeded \$1 trillion,¹² demonstrated in the figure to the right.

Beyond just passenger vehicles, all aspects of the transportation sector need to be transformed to achieve decarbonization. Heavier modes of road transport, such as mid-duty and heavy long-haul trucking, look to be pursuing electrification with rising investment in related infrastructure, but many challenges remain. In the long term, shipping and aviation pose complications for electrification, but the pathway continues to be explored. Lastly, there is the ever-present advancement of autonomy across all these modes.

SPENDING ON ELECTRIC VEHICLES IS SURGING

Annual global spending on EVs and charging infrastructure



Source: BloombergNEF
Note: includes plug-in hybrids and battery electrics

CLIMATE TECH & OUR INVESTMENTS

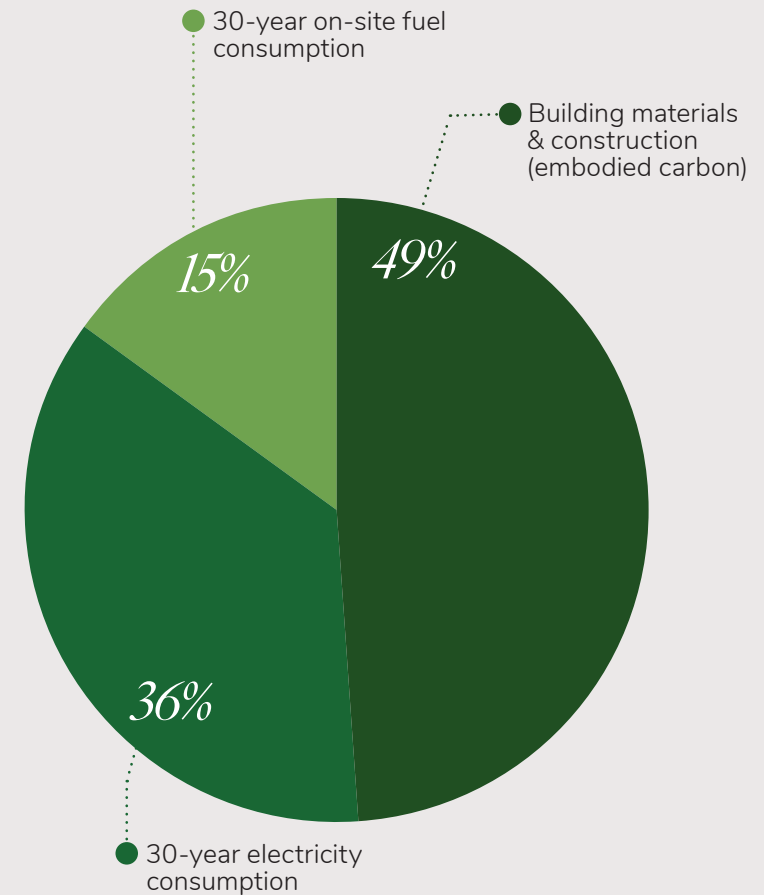
Themes

SMART BUILDINGS & CITIES

The digital, connected, and electrified future offers important opportunities to optimize and decarbonize the built environment. Many new buildings will be intelligent, adjusting temperature and lighting in response to prices and other signals. Our cities will be responsive, using sensors and analytics to monitor traffic, air quality and more. We believe electricity and urban infrastructure will be the backbone of this intelligent built environment, and the utility meter data stream will be increasingly valuable.

Buildings and the built environment are a uniquely challenging arena for decarbonization technology. 49% percent of the typical U.S. residential building's 30-year cumulative carbon emissions is embodied in the materials used to construct the house; the remaining 51% come from the energy used in the structure as seen in the figure to the right. Investment in heating and cooling technologies, building intelligence, energy efficiency service providers, building materials, and green energy procurement will all be needed to advance decarbonization.

SOURCES OF TOTAL CARBON EMISSIONS OVER 30 YEARS TYPICAL NEW US APARTMENT BUILDING



Source: "Embodied Carbon Benchmark Study", Carbon Leadership Forum, 2017 | EIA Residential Energy Survey, 2015

INDUSTRIAL DECARBONIZATION

There are three broad approaches to decarbonizing industrial processes: direct electrification, the direct use of green, blue, gold¹³ or turquoise hydrogen to replace fossil fuels, and the continued use of fossil fuels with carbon capture. Each of these approaches has general strengths and weaknesses, see figure below, and is particularly applicable to its own set of industries.

Direct electrification includes three types of technologies: industrial heat pumps, thermal storage systems, and electrochemistry. Both industrial heat pumps and direct thermal storage are showing promise as sources of both medium- and high-temperature heat, the largest single industrial energy use. Successful thermal storage technologies appear likely to be even cheaper than hydrogen storage and offer much higher round-trip efficiencies.

THERE ARE PLUSES AND MINUSES FOR ALL MAJOR INDUSTRIAL DECARBONIZATION PATHWAYS

Electricity	Hydrogen		Carbon capture
	<ul style="list-style-type: none"> + Easy to store & transport at large scale + Often relatively easy retrofit for existing gasfired processes + Now, heavily subsidized in the US 		
Direct electrification	'Green' or 'Gold' H ₂	'Blue' H ₂	Point-source CCS
<ul style="list-style-type: none"> + Inherently the most efficient use of low-cost clean electricity - <i>High grid impact</i> - <i>No feedstock or reactive molecules</i> 	<ul style="list-style-type: none"> + Built-in clean power storage + Cheaper bulk transport & delivery than electricity - <i>Inherently more expensive than green electricity</i> 	<ul style="list-style-type: none"> + Cheap energy source (natural gas) + Feedstock + reactive molecules - <i>Hard to get to truly 100% zero-carbon</i> - <i>Needs carbon disposal infrastructure</i> 	<ul style="list-style-type: none"> + Cheap energy sources (coal & gas) + Now, solid subsidy in the US - <i>Hard to get to truly 100% zero-carbon</i> - <i>Needs carbon disposal infrastructure</i>

Source: Energy Impact Partners

CLIMATE TECH & OUR INVESTMENTS

Themes

Several hard-to-abate industries appear to be good candidates for direct electrification. EIP portfolio company Boston Metal uses an electrochemical process to produce decarbonized steel directly from iron ore and green electricity. Similarly, new electrochemical processes can be used to decarbonize lime, one of the most emissions-intensive ingredients in cement.

Apart from providing heat through combustion, the use of clean hydrogen for industrial decarbonization primarily involves combining hydrogen with other feedstocks. The most promising applications in this area use hydrogen and waste CO₂ streams to produce a variety of chemicals and plastics with no GHG process emissions. Although clean hydrogen can also be used to decarbonize steelmaking, direct electrification may offer emissions advantages.

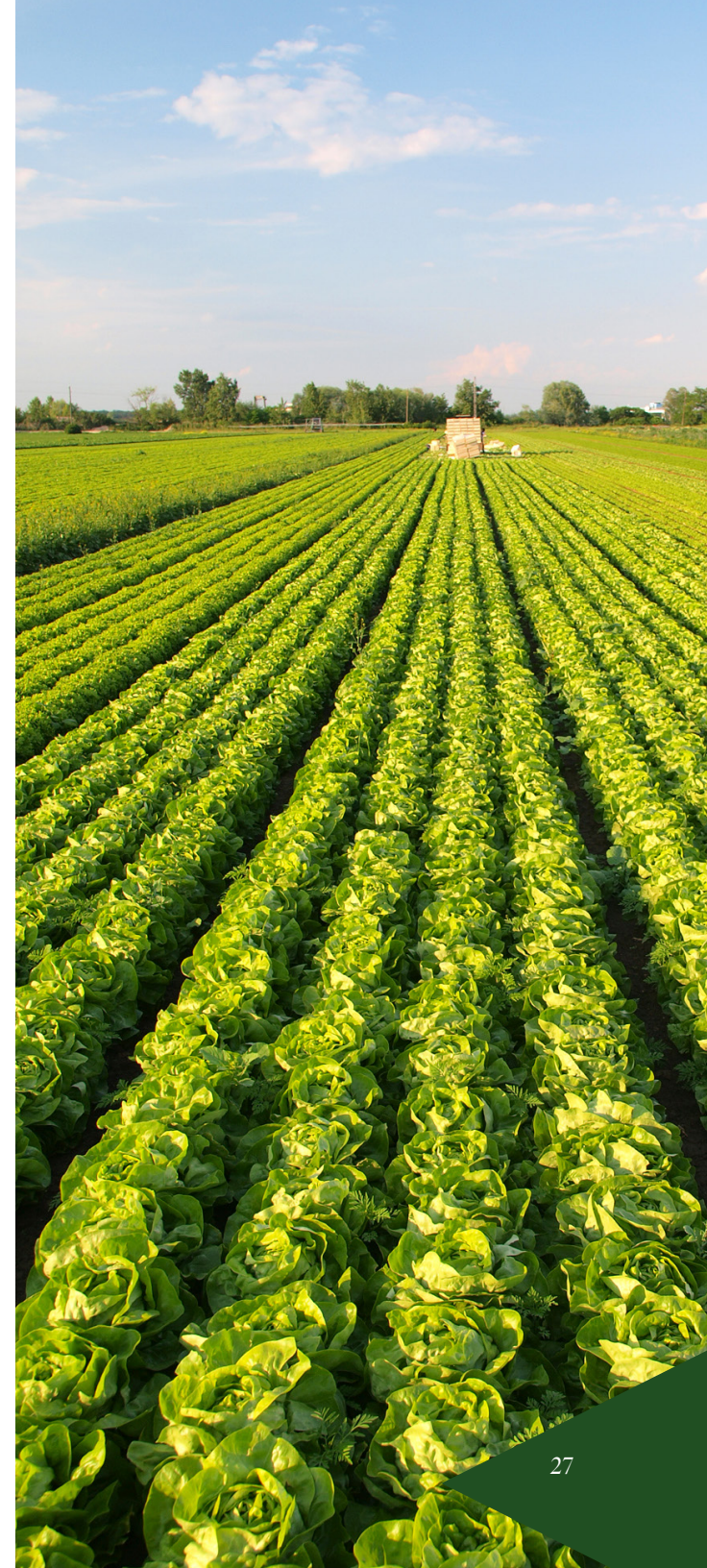
Finally, many industrial processes that emit highly-concentrated CO₂ may ultimately be decarbonized by capturing and sequestering or reusing these emissions (CCUS). While we expect CCUS to play a significant future role, many processes and facilities are likely to be unsuitable for post-combustion capture, creating an opening for other decarbonization pathways.

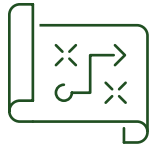
AGRICULTURE & FOOD

Food systems—including agricultural components such as livestock farming—account for more than a third of global greenhouse GHG emissions, according to a UN backed study published in 2021.¹⁴ With evidence that shows food systems are becoming increasingly more energy-intensive, especially through packaging and transportation, reimagining global food value chains is needed to decarbonize the entire ecosystem. Companies decarbonizing food and agriculture include those that are pioneering alternatives to emissions-intensive foods, creating solutions to reduce the harmful emissions from agricultural practices, and disrupting traditional supply chain models with more efficient and/or circular processes.

CUSTOMER ENGAGEMENT

Virtually every resident of the United States and other advanced economies directly purchases energy in several forms. While utilities are usually the default (and often sole) supplier of power, they are highly incentivized by both regulators and disruptors to better engage their ratepayers, and to provide customized, intuitive customer experiences. The opportunities to meet this challenge include better customer segmentation and targeting, the provision of new services, and better financial incentives and rate structures.





INTELLIGENT INFRASTRUCTURE

The 4th industrial revolution is underway, propelled by an explosion of IoT data, artificial intelligence/machine learning capabilities, and widespread automation. These tools have the potential to increase resilience and drive down costs and emissions across all industries relying on manufacturing, complex supply chains, or heavy equipment. Energy industry participants have potentially dual roles to play in this transformation, acting both as energy supplier to the new industrial economy and as large industrial incumbents.

ELECTRICITY GRID OPTIMIZATION

Wind and solar now dominate both annual capacity additions and interconnection queues in the US. Transmission interconnection costs are up ~5x in high-penetration markets and studies take 3-5 years to complete. Meanwhile, building interstate transmission remains an extraordinarily daunting challenge.

Although new policies are needed to alleviate this bottleneck, new technologies in grid optimization and management will also play an important role in enabling a future clean grid because they will enable a much larger and more distributed grid to integrate millions of DERs while operating with efficiency and resilience. We divide this space into five categories: large-scale systems to manage entire regional systems, systems designed specifically to manage DERs on distribution grids, market-making and price signal platforms, DER end use specialists, and independent virtual power plant (VPP) specialists. Solutions are needed to allow the industry to continue to serve its customers despite using more intermittent renewable generation.

HOW WE SEGMENT THE MARKET FOR DER MANAGEMENT SOLUTIONS

Grid Management Systems	Standalone DERMSs	'Market makers & price signal facilitators	DER class specialists	Independent VPPs offering utility grid services
<p>The ADMS /EMS vendors who are building out DER awareness and control functionality...</p> <p>plus some new entrants from big tech.</p>	<p>The (mostly) startups who have built standalone DERMS platforms, primarily focused on aggregating across diverse asset classes and providing bulk dispatch capabilities.</p>	<p>Technologies that help utilities create markets for DER services or design and deploy innovative time and location based tariffs.</p>	<p>Companies that focus on getting the integrations, dispatch, and user experience <i>exactly</i> right for a particular class of DER. Usually work hand in hand with utilities to roll out programs to customers.</p>	<p>Companies that deploy DERs or flexible load technologies to customers independent of the utility (for nor energy or non-grid related benefit) but who are engaged in selling grid services to markets or utilities.</p>

ENERGY STORAGE

As the penetration of renewable energy grows, the intermittency of renewables creates three big areas of opportunity for storage technologies: daily peak storage (4-6 hours), daily net load balancing (8-20 hours), and long duration multi-day storage (100+ hours). Lithium-ion batteries are already dominant for 4-hour durations and lower, thanks to dramatic cost declines largely enabled by the EV industry. If the supply chain challenges of the last few years are overcome, there should be room for continued cost declines that could make lithium-ion batteries competitive at 6-8+ hour durations. Beyond supply chain, lithium-ion batteries face major challenges in fire safety, controls adequacy, and degradation management, all of which largely stem from the innate electrochemical complexity of the assets. These are important challenges for the industry to navigate, but they should prove manageable through a mix of purpose-built software and analytics platforms and best practice-sharing across the sector.

The multi-day storage end of the spectrum is where emerging technology is needed most. At these durations, one of the most

important metrics is installed capex per kWh, more so than roundtrip efficiency or cycle life, since the technology is fundamentally intended to soak up large volumes of excess renewable generation and dispatch relatively infrequently. Novel electrochemical batteries (like those developed by our portfolio company Form Energy) are promising for multi-day storage, although hydrogen could also be competitive with low-cost electrolyzers and sufficient midstream infrastructure development. The 8–20-hour duration category has seen a Cambrian explosion of new technologies and companies in the last few years, with concepts ranging from gravity-based, to thermal, to thermal-mechanical, to flow batteries. Many of these concepts involve substantially less technology risk than multi-day storage technologies, as they leverage mature components and materials with established supply chains. This presents both pros and cons – these technologies should be able to quickly scale up to serve the market’s near-term needs, but many will face limited cost-decline potential, making them vulnerable to longer-term competition from both lithium-ion and multi-day storage technologies.

MAXIMUM SHARE OF FIRM CAPACITY FOR STORAGE, AS A FUNCTION OF DURATION & RENEWABLE PENETRATION

As we seek to rely more & more on storage as a firm, flexible capacity resource **we'll need to deploy storage with longer and longer 'duration.'** Ultimately, storage systems would need roughly 100 hours of duration in order to back up ultra-high levels of wind and solar.

In order to keep adding incremental capacity value, **storage projects will need to keep adding incremental duration.**

Once storage reaches about **20 hours of duration, storage can effectively balance nearly any diurnal profile of renewable generation & load...**but adding marginal duration does little to address multi-day or seasonal intermittency.

In order for storage to serve as **the** firm capacity resource in a high-renewable penetration grid, 'four days' of duration, or about **100 hours is a good rule of thumb.**





FOUNDATIONAL TECHNOLOGIES

Not all investment themes for the energy transition can be easily measured in terms of direct emissions or energy KPIs. We think that it is important to view energy systems holistically to ensure that integrated, intelligent, and flexible systems can connect clean energy supply and end users.

TRANSPARENCY AND REPORTING

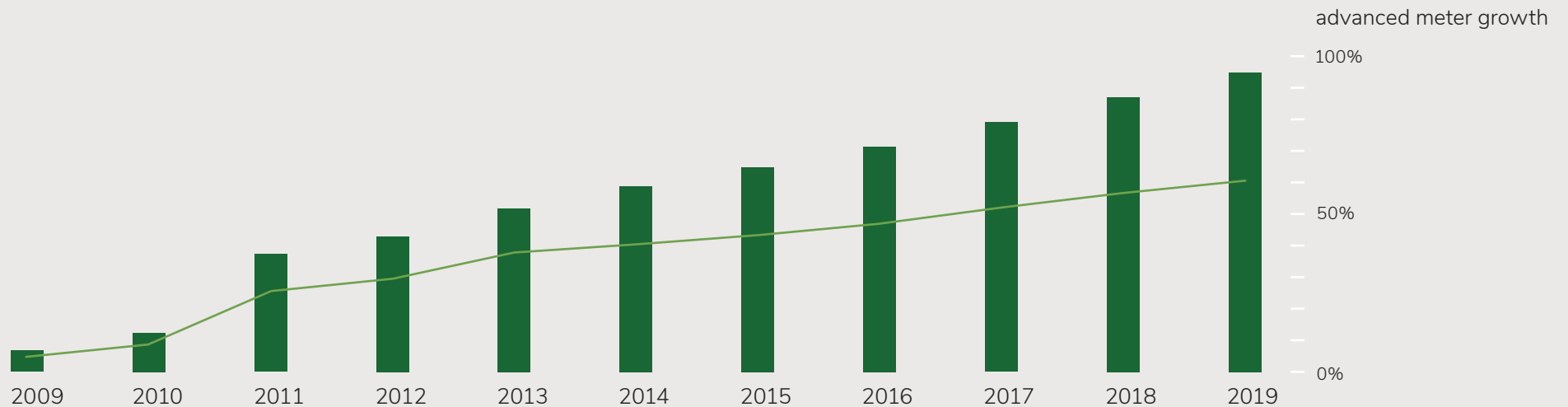
As the world moves increasingly to reporting and analyzing ESG trends and savings, we believe there are huge macro tailwinds around defining a tech-driven approach to ESG reporting and analysis. We see this accelerating both in the US and in Europe where, starting in 2022, the Sustainable Finance Disclosure Regulation (SFDR) obliges financial market participants to disclose non-financial data and the Corporate Sustainability Reporting Directive (CSRD), and EU Taxonomy oblige any corporation above 250 FTEs to do the same. We believe this will accelerate the need for companies to seek tools to keep up with the growing demands for reporting and analysis from investors and regulatory bodies.



DIGITIZATION AND CYBERSECURITY

The world is aggressively turning to electrification as a key lever to decarbonizing major industries across the economy, ranging from transportation to heating to industrial processes to hydrogen production. The past two decades of digital upgrades have brought significant operational benefits, but they have also greatly increased the sector’s exposure to cyber threats, and the next ten years will only accelerate this trend. The figure below highlights the growth of advanced meters, increasing both the data management burden and cyber vulnerabilities. To optimize operations, data must travel vast distances to provide real-time decision support, and to relieve stress on the grid from electrification of transportation, industrial processes and heating demand will have to be carefully coordinated and automatically controlled – a very data-intensive undertaking.

ADVANCED METERS HAVE HIT CRITICAL MASS AND A WAVE OF DATA IS COMING



Source: 2021 Assessment of Demand Response and Advanced Metering

CLIMATE TECH & OUR INVESTMENTS

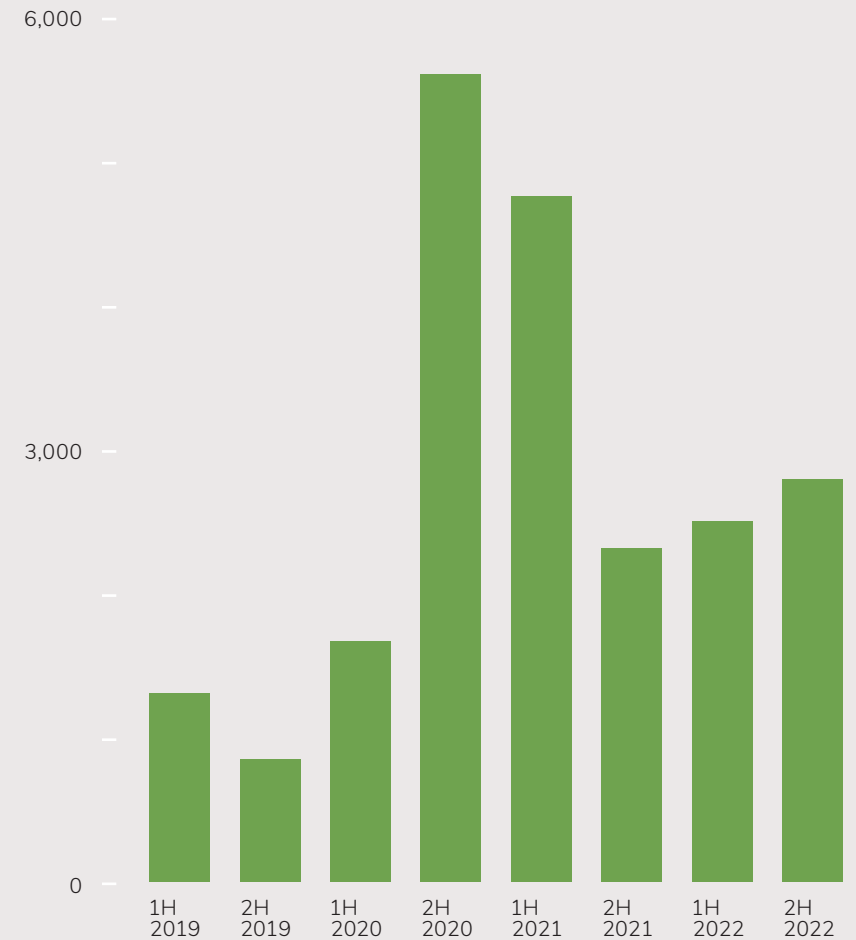
Themes

Critical infrastructure, especially centralized electric utilities, are among the leading targets for threat actors, and attacks are on the rise, as seen in the figure to the right. Energy sector cybersecurity professionals overwhelmingly (84%) believe that a cyber-attack is likely to cause physical damage to assets in the next two years, but less than half of energy executives (44%) see a need for urgent improvements to prevent attacks on their business.¹⁵ This gap foreshadows the even greater cyber risks emerging as we transition our energy system. The steady increase of distributed denial of service (DDoS) attacks, accentuated by moments of geopolitical strife as indicated by the spike during to the escalation of the Russia-Ukraine war in late 2021 and early 2022, is likely to continue.

As utility, energy, and industrial companies continue to rapidly deploy new cybersecurity infrastructure to help manage this challenge, we believe we are well-positioned to continue to invest in this sector and deliver attractive risk-adjusted returns for our investors. Cyber solutions are critical to the reliability and safety of both electric power systems and national security, and the global market for cybersecurity is poised to exceed \$450B by 2025.¹⁶

CRITICAL INFRASTRUCTURE FACES MOUNTING THREATS AMID RAPID GEOPOLITICAL AND TECHNOLOGICAL CHANGE

Number of DDoS attacks



Source: Netscout, BloombergNEF

Impact Pathways

The clean energy transition requires a monumental shift of supply, delivery, operations, maintenance, management, and customer experience across the global economy. Our investments in all these areas follow our four themes of Decarbonized Supply, Intelligent Infrastructure, Sustainable Demand, and Foundational Technologies. However, to measure the impacts of these investments we must go beyond these “what” categories to specify the mechanisms of impact. For each investment, we need to measure how and how much it changes the energy system and its emissions.

To do this, we categorize all portfolio companies across impact pathways which explain our impact theory of change for each investment. We further distinguish between portfolio companies that are directly measurable (DM) and those that are foundational (F). Directly measurable companies have direct carbon impacts that can be concretely modeled using a baseline-vs-investment, two-scenario approach. Foundational companies are those whose impacts on the carbon transition are not reasonably measured in tons of carbon emissions saved or other traditional energy and environmental metrics.



IMPACT PATHWAYS



CLEAN ENERGY GENERATION & STORAGE

Clean energy generation and storage companies create technologies that support expanding electrification, developing clean energy sources, storing energy, capturing and sequestering carbon, and enabling decreased reliance on fossil fuels.



CLEAN ENERGY DELIVERY & INFRASTRUCTURE

Once clean energy is generated, infrastructure must bridge the gaps between production and use. End users need access to innovations that enable clean mobility, optimized electric vehicle use, and microgrid infrastructure.



GRID INTEGRATION & OPTIMIZATION

Decarbonizing the grid involves extensive changes in the resource mix, network size and architecture, and new control systems and markets that extend to the grid edge—including integration of large-scale plants, storage, and millions of energy-efficiency, demand-response, and distributed-generation sources in one reliable grid. Diversified resources and transmission/distribution systems all require awareness, optimization and control elements facilitating grid edge intelligence in a variable and distributed future.



ENERGY EFFICIENCY

A vital part of reaching national and corporate climate targets is increasing resource-use efficiency to enable economic growth without proportional growth in adverse environmental impacts.



EFFICIENT OPERATIONS

Enabling efficient operations is fundamental to utility and grid decarbonization. Helping companies operate more efficiently and provide better overall service promotes the clean energy transition in a variety of ways. Possibilities include reducing the cost of service, which generally translates to lower long-term prices in both restructured and regulated markets. In turn, these lower prices reduce customers' and policymakers' resistance to accelerating the clean energy transformation and expanding the use of clean electric power.



CYBERSECURITY

Cyber solutions are critical to the reliability and safety of both electric power systems and national security, as well as driving momentum towards rapid electrification and decarbonization.



DECARBONIZATION TOOLS

Decarbonization tool companies support utilities and corporations on their decarbonization journeys, ensuring they can measure, analyze, and improve their GHG emissions or other ESG KPIs.



MATERIALS & CIRCULARITY

Materials & Circularity companies aim to reduce the embodied carbon in hard goods and implement business models that allow for easier reuse and recycling of goods, ultimately abating the adverse environmental impacts of new production.



DECARBONIZATION OF FOOD & AGRICULTURE

Food systems are becoming more vulnerable to climate shocks and increasingly energy intensive. Tackling packaging, transportation, practices, and supply chain concerns will be important to decarbonization.

Our 2022 Portfolio¹⁷

IMPACT PATHWAY	INVESTMENT THEMES			
	<i>Decarbonized Supply</i>	<i>Sustainable Demand</i>	<i>Intelligent Infrastructure</i>	<i>Foundational Technologies</i>
Clean Energy Generation & Storage	Electric Hydrogen Form Energy ION Solar Hydrogen Stealth Mosaic Powin Energy Zap Energy Zolar	Dragonfly Energy Instagrid Moxion Power Palmetto Solar Rondo	Zitara	
Clean Energy Delivery & Infrastructure	Carbon America Enchanted Rock Project Canary	ChargerHelp! EVmo FLO Via Sibros		
Grid Integration & Optimization		Innowatts	Power Factors Spire Power Solutions TESCO	
Energy Efficiency	SMTI	Aeroseal AtmosZero Quantela Derive Systems EV.Energy HopSkipDrive Sense Sparkfund Transaera		

IMPACT PATHWAY	INVESTMENT THEMES			
	<i>Decarbonized Supply</i>	<i>Sustainable Demand</i>	<i>Intelligent Infrastructure</i>	<i>Foundational Technologies</i>
Efficient Operations		GridX	Community Tree Service eSmart Particle RS Poles Sitetracker Urbint Williams	Celerity Lightlytics
Cybersecurity				42Crunch Corelight Dragos Finite State Network Perception Noetic Oort Picnic Rangeforce Scythe
Decarbonization tools		Arcadia Singularity		Audette Measurabl ESG Book Greenly
Materials & Circularity		6K Boston Metal Mill Grover Manus Bio Rheaply Sublime Systems		
Decarbonizing Food & Agriculture		Cosmic Bliss Hippo Harvest Nitricity Smallhold		

CLEAN ENERGY GENERATION & STORAGE

Technologies that support expanding electrification, developing clean energy sources, and enabling decreased reliance on fossil fuels.



A leader in lithium-ion deep cycle battery technology for RV, off-grid, and marine applications. Improving conventional and solid-state lithium-ion battery manufacturing and storage, while reducing costs, and maintaining quality are key to expanding, affordable and accessible energy storage. As energy systems transition to renewable energy generation and electrification expands, energy storage becomes increasingly pivotal for a reliable energy supply.



Next-generation hydrogen electrolysis technology to unlock scalable and low-cost green hydrogen to power heavy industry and beyond. More than 30% of global emissions are produced by heavy industry, and 95% of current hydrogen is produced with fossil fuels.¹⁸



A long-duration energy storage technology that is a fraction of the cost of lithium-ion batteries and has broad geographic suitability to potentially reform the global electricity system to run on 100% low-cost renewable energy. As energy systems transition to renewable energy generation and electrification expands, energy storage becomes increasingly pivotal for a reliable energy supply.



Instagrid's converter technology uses a unique architecture of stacked micro-inverters, providing unprecedented power levels with a drastic reduction of size and weight replacing combustion generators.

ION SOLAR

Vertically-integrated premium residential solar installer that educates, designs, and installs to make the switch to solar technology simple. Expanding residential solar is important for electrifying the grid and supporting the transition to renewable energy.



A low-friction financing platform to aid professional contractors and homeowners in upgrading homes with residential solar and energy efficient installations. Buildings result in 29% of total US GHG emissions, and providing clear and easy financing for upgrades is important to reduce emissions.¹⁹



Designs, engineers, and manufactures proprietary mobile energy storage technologies for temporary power applications, which enable and accelerate the electrification of industries such as construction, transportation, utilities, live events, film production, and defense. Vertically integrated full solution of rental and charging services utilizing proprietary software for smart charging and fleet management to support the energy transition.

CLEAN ENERGY GENERATION & STORAGE *continued*

Technologies that support expanding electrification, developing clean energy sources, and enabling decreased reliance on fossil fuels.



A platform that provides end-to-end fulfillment software for rooftop solar brokers and energy management tools for solar homeowners. Expanding solar is important for electrifying the grid and supporting the transition to renewable energy.



Energy storage systems with integrated optimization software and modular battery system hardware to provide turn-key solutions and support utility scale deployments across generation, transmission, and distribution. Electrifying the grid is a key component of the energy transition.



An environmental data and software company that measures, analyzes, and visualizes environmental risk assessments and emission profiles. They manage risks and reconcile emissions to deliver auditable decarbonization data and tackling fugitive methane emissions upstream in the oil & gas supply chain with real-time monitoring and certification.



Electrified industrial heat battery technology with unlimited cycling to provide continuous heat from intermittent power. The battery technology is modular, scalable, and energy dense which allows it to be retrofitted into existing industrial processes. This is increasingly important as industry pivots from fossil fuels towards intermittent energy sources like renewables.



Groundbreaking modular and smaller-scale fusion technology using a sheared-flow stabilized Z-pinch. This method is simpler and cheaper than other fusion technologies, and important for providing energy for low-carbon transitions without radioactive waste, intermittent and unpredictable supply, and expensive infrastructure development.



An analytics platform for battery manufacturers and operators to understand battery status and optimize lifetime value. In EVs, the battery is by far the most important single determinant of vehicle cost and performance. Improved battery analytics leading to expanded lifetimes will clearly improve EV adoption over time.



A platform to digitalize and automate residential solar system installation in Europe. Expanding solar is important for electrifying the grid and supporting the transition to renewable energy.

CLEAN ENERGY DELIVERY & INFRASTRUCTURE

Technologies that connect end users to clean technologies, expand clean mobility, and support clean infrastructure.

Carbon America

A vertically integrated carbon capture and storage (CCS) developer that covers the entire CO₂ capture-transport-storage value chain process, from screening to proprietary CCS technology to project closure. Delivering turnkey comprehensive solutions to industries and corporations is key to driving a swifter energy transition and achieving many corporate net-zero goals.



ChargerHelp!

Reliable and cost-effective EV charger maintenance software and services. Public EV chargers are typically out of service 32% of the time – far worse than gasoline fueling stations. Increasing charger uptime plays an obvious role in supporting rapid, near-universal adoption of EVs by both individual and commercial drivers.



Microgrids-as-a-Service providing extreme reliability to hosts and energy services to grid operators. Operating microgrids as virtual power plants helps to minimize end-customer cost and risk while providing additional reliability. The reliability of energy supply is increasingly important as natural disasters such as fires, storms, floods, and extreme regional conditions that impact electrical grid performance worsen in frequency and severity with climate change.



A leading technology-enabled fleet management and rental company, connecting gig drivers with electric, hybrid and delivery vehicles on-demand. Expanding access to electric vehicles beyond car ownership is important to addressing mobility to the expanding gig economy.



A platform for managing a city's transport options in the multimodal era. Smarter, greener, and more equitable cities must have widely-accessible mass transit systems. Via helps improve transit.



A vertically-integrated EV charging network operator and smart charging solutions provider with extremely high reliability and interoperability. They enable more than a million charging events every month, thanks to over 80,000 high quality EV charging stations deployed at public, commercial and residential installations. This supports the expansion of electric vehicles and the shift away from fossil fuels.²⁰



SIBROS

A connected vehicle platform for real-time data collection, remote software management, and diagnostic commands. The Sibros platform gives automotive OEMs in-depth product usage insights with integrated tools to dynamically improve vehicle quality, performance, and experience across the full mobility product life cycle.

GRID INTEGRATION & OPTIMIZATION

Grid integration and optimization firms assist with integrating and managing distributed energy resources and the creation of a digital, multidirectional, fully intelligent grid.



Meter-level predictive analytics for load forecasting, risk management, and customer engagement. Improved predictive analytics increases the efficiency and lowers the cost of power delivery and improves the ability of the system to cope with disruptive events such as the covid pandemic. These capabilities are enormously important as electrification of the economy expands.



The leading platform for renewables asset management, with solutions across performance, financial, and field services management. Power Factors is used now to verify and optimize the performance of over 110 GW of solar, wind, and storage assets.



Leading provider of specialty power transformer products. Transformers are a critical element in expanded distribution systems able to accommodate high levels of electrification and are also critical elements for resilience and cybersecurity.



US leader in electric metering testing equipment, including AMI meter tests, ultrasonic cleaning systems, statistical sampling processes, technical support for reports to utility regulatory commissions, and other services. All of these functions enable regulated distribution systems to perform their critical function as the “last mile” in a highly distributed and electrified system.

ENERGY EFFICIENCY

Companies aiming to reduce the adverse impact of GHG emissions through increased energy efficiency.



A residential billing and engagement platform facilitating access to air sealing technology for heating, ventilation, and air conditioning (HVAC) ducts and building envelopes, installed through a network of partners for residential and commercial buildings.

AtmosZero

A company with a novel solution for decarbonizing industrial heat production through electrification. Target industries include food and beverage, specialty chemicals, and textiles.



An automotive software platform for safely and reliably optimizes fuel efficiency to help reduce transport emissions and save customers money on fuel costs.



Automotive software technology that enables EV charging at the lowest carbon times on the grid, connecting to utilities to optimize for energy tariffs, network signals and carbon intensity. As electric vehicle adoption continues to rise globally there will be the increasing need for smart charging optimization software to facilitate efficient charging and

monetize the flexibility that EVs can bring to load balancing.



HopSkipDrive

A leading transportation platform with a strong mission of providing equitable transportation to vulnerable youth including foster, homeless and children with disabilities. Ridesharing services like HopSkipDrive have the potential to push the electrification trend as they require their fleets to respond to societies needs and will in turn expose more riders to the technology of electric vehicles.



Home and energy intelligence through non-intrusive real-time energy monitoring. Sense helps people understand what devices are on in their house, how much energy is being consumed, and improve energy efficiency.



Thermally driven heat-pumps for residential and light commercial sectors which provide greater efficiency than traditional furnaces, water heaters and boilers.



An innovative subscription model for industrial and commercial energy customers to finance energy efficiency projects. These services include efficiency and cost benefits across lighting, heating, and cooling, which reduce emissions through avoided energy consumption from buildings, one of the largest CO₂ contributors.



transaera

Novel, high-efficiency air conditioning and dehumidification. Demand for cooling is expected to massively increase as emerging economies lift populations out of poverty, emphasizing how important it is to develop alternatives to conventional air conditioning systems.

EFFICIENT OPERATIONS

Companies that increase efficiency and throughput to prevent pushback against a rapid clean transition, accelerating the clean energy transformation and expanding the use of clean electric power.



A utility-focused consulting firm. Celerity's services to utilities include internal data management, standards development, technical support for battery and photovoltaic technologies, planning support for high level integration of distributed generation, regulation/ litigation support, and incident investigation and failure analysis. These are all functions that clearly support efficient, successful network operations.



Vegetation management and emergency response services for electric utilities, commercial properties, or residential spaces. Vegetation management is an important service to reduce weather related outages, which can cause wildfires, reduce reliability and hurt grid resilience.



eSmart Systems is a leading provider of AI-powered solutions for the inspection and maintenance of critical infrastructure. Over 40 utilities globally utilize Grid Vision® solution to reduce inspection costs by up to 8X, improve quality of defect detection

with 60% more defects detected, 30% reduction in opex, improve inspections safety with virtual inspections, improve the quality and accuracy of asset data and prolonging asset life.



Big data billing and rate analytics solution to address the challenges of dynamic pricing and intermittent generation. Grid X makes it easier for both customers and utilities to implement, analyze, and refine tariffs for solar systems, dynamic pricing, and specialty rates for EV charging and other electrification options.



Simulation platform delivering visibility and control into cloud environments.



A provider of IoT connectivity solutions with many applications in smart, clean, and connected electricity networks. Current customers using their solutions are enabling IoT-connected smart fleets and charging options, smart grid and smart home services that reduce energy and emissions, and improved heating and cooling equipment.



Composite modular utility pole technology with double the service life, superior performance, lower installation costs, and improved grid infrastructure properties than existing wooden utility poles. This technology provides hurricane, fire, and ice storm grid hardening, while also being non-conductive.



A project and asset management platform purpose built for distributed critical infrastructure. The platform has 50,000+ users managing \$150 billion in assets including 50% of US EV charging ports.



AI platform improving damage prevention, worker safety, and emergency response for gas and electric infrastructure.



Construction, maintenance, and specialty services provider for power plants, oil & gas, and industrial facilities.

CYBERSECURITY

Cyber solutions are critical to the reliability and safety of both electric power systems and national security, as well as driving momentum towards rapid electrification and decarbonization.



API security platform for developers and operators, achieving protection through “positive security.”



IoT firmware analysis and vulnerability management platform to mitigate supply chain cyber risk.



Comprehensive identity threat detection and response platform for enterprise security.



Threat emulation platform, analytics and services to help organizations assess security controls.



Network monitoring platform, sensors and actionable threat intelligence insights to strengthen IT security.



Leading cybersecurity audit and compliance solution for OT networks.



Social engineering cybersecurity and risk management platform.



Cybersecurity orchestration, automation and response platform with 650+ integrations.



Cybersecurity software platform and threat intelligence service for industrial control systems.



Cyber asset management and continuous control monitoring platform to assess and manage risks across all assets.



eLearning platform for immersive cybersecurity skill development.

“Over 80% of energy sector cybersecurity professionals believe that a cyber attack is likely to cause physical damage in the next two years, but less than half of energy executives see a need for urgent improvements. This gap foreshadows the even greater cyber risks emerging as we transition our energy system.”²¹

THE CYBER PRIORITY, DNV

DECARBONIZATION TOOLS

Utilities and other companies aiming for net zero must have good tools for measuring and projecting GHG emissions and other ESG KPIs.

Arcadia

Residential billing and engagement platform facilitating access to clean energy. Arcadia's platform enables energy innovators to automate and optimize their products to make energy use cleaner and smarter.

Audette¹⁰

Analytics and automation platform to streamline and optimize capital planning for commercial real estate decarbonization. Commercial real estate makes up 20% of global carbon emissions and is not on track to a net zero world.

esgbook

Comprehensive ESG and sustainability data digital platform for investors, companies, and market stakeholders in real-time. ESG Book provides data, proprietary research, framework-aligned ESG information and transparency solutions.

Greenly

Carbon accounting platform aiming to support small and medium sized enterprises measure emissions, reduce their footprint, and achieve their climate goals.



The leading ESG data management and analytics solution for commercial real estate. Improved ESG and climate data collection and climate risk assessment in the building sector, which accounts for 28% of global greenhouse gas GHG emissions for operations only, is clearly foundational for full decarbonization.

Singularity

Carbon intelligence platform to enable the next generation of data-driven decarbonization solutions. Singularity provides access to up-to-date granular grid data, analyzes and predicts changes in grid emissions, and optimizes costs and carbon for decarbonization.

“In the last twelve months, the number of Fortune Global 500 companies with a net zero target increased by over 50%.”²²

IF NOT NOW, WHEN?
Climate Impact Partners

MATERIALS & CIRCULARITY

Companies that promote the sustainable production and consumption of goods and services through the creation of innovative materials and manufacturing practices or enabling business models that allow for easier reuse and recycling of goods.



Domestic manufacturing of low-cost battery cathode materials with a scalable, low cost and sustainable process. This platform provides up to 50% lower conversion costs, 20-30% CAPEX reduction, and up to 30% reduction in energy costs.



A one step decarbonization technology that uses clean electricity to produce green steel. This technology is cost-effective, scalable, and imperative to decarbonize steelmaking which accounts for 10% of global GHG emissions.



A waste prevention service tackling the urgent issue of food waste and its impact on our climate with a new system that makes it easy to take the food you can't eat at home, conserve the nutrients and get it back to farms where it can feed chickens, rather than a landfill where it decomposes and emits methane. The membership includes a bin that dries, shrinks and destinks uneaten food overnight, along with a mailback pathway back to farms and personalized impact tracking.



A circular economy platform for consumer technology. Grover enables consumers to rent technology which reduces product production and reuses existing products, extending their life cycle, reducing emissions, and refurbishing products between users.



A sustainable developer and manufacturer transforming chemical manufacturing and creating renewable and scalable routes to materials, chemicals, and ingredients.



With Rheaply's technology, companies can build a digital log of all their materials and resources, creating visibility of this inventory across their organization. They can also sell, track, or donate items within their company, to a network of external partners, or to the public. By using Rheaply's platform, customers make more prudent, efficient purchasing decisions based on utilization, reuse, and sharing of valuable assets.



An electrochemical technology to produce low-carbon, cost-competitive cement. This solution is a drop-in replacement for ready mix, enabling engineers, contractors, construction workers and more to implement sustainable cement with minimal changes.

DECARBONIZING FOOD & AGRICULTURE

Embodied carbon in product and agricultural supply chains must be reduced through the implementation of novel manufacturing methods, logistics, or low carbon technologies.



A lower emissions alternative to conventional dairy ice cream. Products are organic plant-based ice creams or organic grass-fed dairy ice cream that are sustainably sourced and farmed.



Advanced greenhouse robotics, automation, and optimization technology that provides fresher and sustainable food faster.



Distributed, decarbonized, and electrified on-farm nitrogen fertilizer production. The current global supply of fertilizer is fueled by coal and natural gas, which has large associated emissions, complicated supply chains, and high costs.



Indoor farming technology to optimize small-scale, local, specialty mushroom production. Smallhold farms foster regenerative agriculture loops and are certified organic and sustainable.

“Harnessing the power of innovation is crucial to reduce emissions, helping adapt agriculture to a changing climate, and making it more resistant against adversity.”²³

ZITOUNI OULD-DADA, *Deputy Director UN Food and Agriculture Organization*

SECTION THREE

Climate Impacts

Climate Impacts

The overarching impact objective of EIP has always been to accelerate the clean energy transition. In the language of climate policy, this objective is climate mitigation – more concretely, reducing GHG emissions on a trajectory to reach net zero by 2050 or sooner. Pursuing this objective over the past seven years, we have realized that it significantly overlaps and synergies with the goal of climate adaptation and the social goals of greater energy system reliability and resilience.



Our Approach to Measuring Carbon Impact

All measures of carbon savings, which are also often called *avoided* or *Scope 4* emissions, are by definition relative to emissions in a *baseline* scenario without the technology we have invested in.²⁴ Attribution of the emissions difference between our investment scenario and the baseline raises three important questions. First, is the contribution of this technology to carbon savings quantifiable in units of carbon saved, or does it play more of an enabling or foundational role? Second, would these carbon savings have occurred without our investment? Third, was our investment the sole action that enabled these savings or do other economic actors also share the credit for these savings? If so, how do we allocate our share of the savings?²⁵

Decarbonization of the world's energy system will require an uncountable number of new technologies and business processes, alongside many policy and behavior changes and public sector investments. Many of these very important new technologies and processes play a foundational role that does not lend itself to a ton-by-ton, unit-by-unit calculation of carbon savings. Nonetheless, these technologies are a necessary part of the transition to clean energy. We measure the effects of these foundational technologies using KPIs that more accurately

track their role than carbon tons. This section provides results for the *directly measurable* technologies, while the next section below reports foundational company impact KPIs.

With respect to the second and third questions, we do not claim strict additionality for our savings, nor do we claim to be the sole actor effectuating change. As we explain in more depth in our white paper, **Know Your Impact**, we refer to our savings as *enabled* because our role is to finance companies whose products

change current high-emissions energy value chains. Our companies impact these value chains by implementing changes like substituting a lower-emissions product or process, eliminating waste, or increasing customer uptake of better alternatives, among others. Effectuating these changes often requires other participants in the value chain, including companies who manufacture, install, and service the chain, as well as the companies that support and finance them. To one degree or another, all of these actors help enable the emissions reductions we measure.

While we do not apportion savings among actors along the value chain, we follow GHG protocol and **Partnership for Carbon Accounting Fundamentals (PCAF)** guidance by claiming only the portion of a company's savings that we are responsible for financing. For example, if we provide 20% of a company's invested capital this year, we claim only 20% of measured savings for that company in our impact.

Carbon Impacts Enabled

Depending on the maturity of our company's product, we assess one or two of these three enabled carbon savings measures:

Annual Enabled Savings

These are the carbon emissions avoided in 2022 by the use of our companies' commercial products and services sold and installed through 2022. For example, Derive Systems had its energy-saving software on 66,205 vehicles in 2022, saving an average of 6% of fuel use in these fleets. There is comparatively little uncertainty around these savings because we use actual sales and service data and the baseline against which we measure is essentially the observable average in the marketplace today. In the example of Derive Systems, the baseline is their customers' actual automotive fleets without their systems installed. In **Project Frame** terminology, these are *Realized Impacts*. To see more corresponding Project Frame and EIP terminology see Appendix II.

Lifetime Enabled Savings

Many of the products sold by our companies will continue to reduce carbon emissions for the lifetime of their product, not just during the year they are sold. Derive Systems, for example, estimates that installation of their software will enable savings for seven years. Using these lifetimes, we estimate life-of-product carbon emissions avoided by all sales through YE 2022. The baseline for these savings may change over the lifetime of the product.²⁶

Projected Five-Year Enabled Savings

For companies whose product sales are not yet commercial, we project the date of market entry, annual sales from this date through the end of the fifth year of commercial sales, and estimate enabled annual carbon savings from these sales.²⁷ The Project Frame term for this metric is *Planned Impact*. The baseline may shift a little over the five-year forecast period, but usually these changes are not significant.²⁸ The majority (12) of our pre-commercial companies are in the Frontier Fund.

Each of these measures is designed to be conservative, understating rather than overclaiming savings. Upon exit we no longer count any additional enabled savings from new product sales, but we continue to count the savings enabled by the existing installed base. Annual and lifetime savings measurements, which were calculated using the services of ESG Capital Group, also include savings of electricity and/or fuel, water savings from reduced fossil fuel generation, and reduced SO_x and NO_x emissions.

CLIMATE IMPACTS

Carbon Impacts Enabled

TOTAL ENABLED IMPACT

The figures on the next page show the growth of our total enabled savings measures for our full platform since our first impact report in 2018. Before ownership allocation 2022 enabled savings were:

11.3 million metric tons (MTCO₂e) annual enabled savings, or the equivalent of taking 2.44 million cars off the road for a year, an increase of 77%;

103 million MTCO₂e lifetime enabled savings, the equivalent of 1.7 billion trees growing for a decade, an increase of 37%; and

152 million MTCO₂e of five-year projected enabled savings, a 338% increase from 2021 and the equivalent of 32.9 million annual one-year auto emissions.

Several factors contributed to these large increases:

across all our funds, investment activity was high – we went from 28 to 43 directly measurable companies in our portfolio, an increase of 54%;

our existing portfolio continued to grow, racking up additional annual and lifetime savings; and

the Frontier Fund more than doubled the number of companies in its 2021 part-year portfolio and tended to take larger investment stakes.

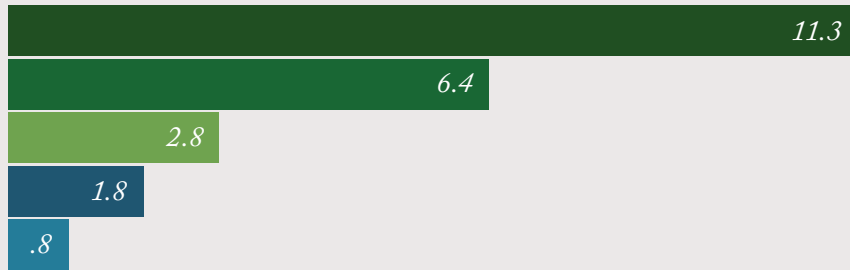
All of these factors contributed to the especially strong increase in five-year projected savings. In addition, three Flagship Fund II companies that are pre-commercial were measured via five-year projected savings, adding to this category's total. As noted earlier, these figures do not include any savings contributed by the foundational firms in our portfolio, though we believe that investing in foundational technologies is an essential part of decarbonization.²⁹



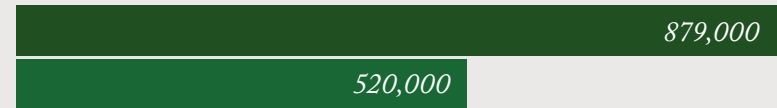
CARBON SAVINGS ENABLED — TOTAL EIP PORTFOLIO

2018 2019 2020 2021 2022

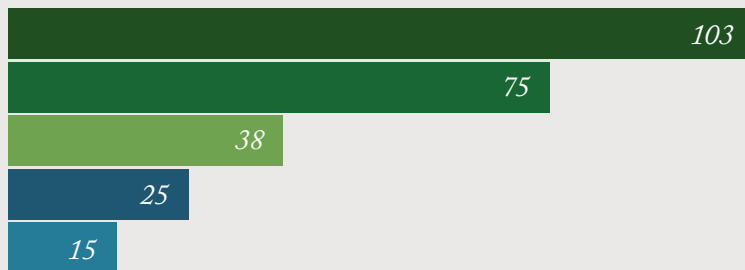
Annual Enabled Savings · million $MTCO_2e$



Ownership-Weighted Annual Enabled Savings · $MTCO_2e$



Lifetime Enabled Savings · million $MTCO_2e$



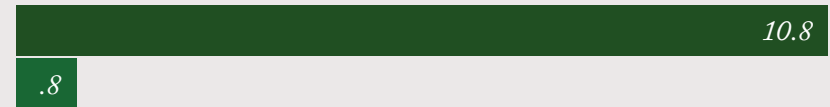
Ownership-Weighted Lifetime Enabled Savings · million $MTCO_2e$



Projected Five-Year Enabled Savings* · million $MTCO_2e$



Ownership-Weighted Projected Five-Year Enabled Savings · million $MTCO_2e$



*In last year's EIP Impact report a 10-year projection period was used. The 2021 results in this figure have been restated to reflect a five-year period.

CLIMATE IMPACTS

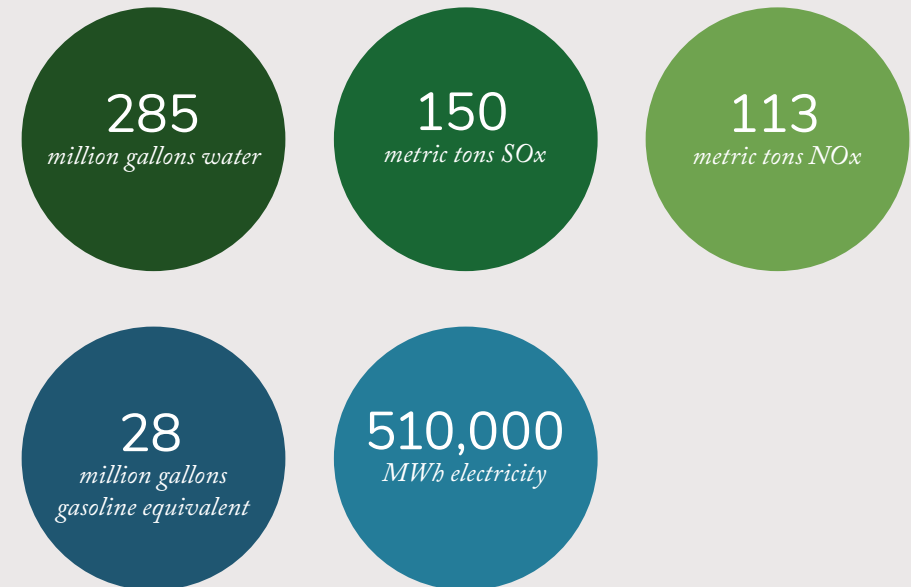
Carbon Impacts Enabled

When accounting for ownership share (right side of figure), the increases in our attributed annual, lifetime and projected five-year enabled savings shows similarly strong increases: 70%, 34%, and an extraordinary 1267% respectively. The differences in percentage increases before and after ownership allocation are driven by ownership share differences, different product lifetimes, exits, and the fact that lifetime savings cumulate over many years and therefore tend to shift more slowly than annual totals. The exceptional increase in five-year ownership-allocated savings (versus unallocated savings) is also due to an increase in our average ownership share in these high-impact companies between 2021 and 2022.

One positive feature of our overall portfolio savings profile is that its magnitudes are close to balanced between lifetime savings, which are occurring now and the very near term, and future savings enabled by technologies entering the market between now and 2030. This should create an immediate but steadily increasing stream of enabled savings well into the future.

Beyond carbon savings, we also enabled significant growth in other environmental sustainability indicators in 2022. Before ownership allocation our annual electricity savings increased 39% to 6.8 million megawatt-hours, enough power for 620,000 households; our fuel savings rose 20% to 312 million gallons of gasoline equivalent, enough to drive 7.8 billion miles; and our water savings rose 38% to 3.6 billion gallons, equal to the water used by 40,400 average U.S. households.³⁰ After ownership allocation our enabled environmental savings were 510,000 MWh of electricity, 28 million gallons of gasoline, 150 and 113 metric tons of SO_x and NO_x, respectively, and 285 million gallons of water.

OWNERSHIP-WEIGHTED ENVIRONMENTAL SAVINGS (2022)



CLIMATE IMPACTS

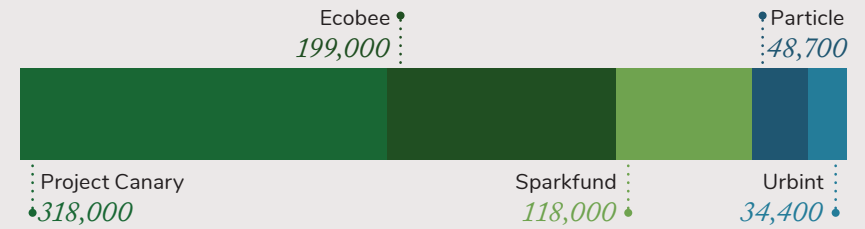
Carbon Impacts Enabled

PORTFOLIO IMPACT HIGHLIGHTS

As one would expect from a portfolio of venture and growth-stage companies, enabled savings vary considerably with the size and stage of the company, emissions savings per unit of sales, and product lifetime. The tables below show the top five contributors to annual and lifetime savings, respectively. Project Canary heads the annual list with one-third to almost one-half of 2022 savings because it reduces methane emissions, a GHG with 29 times the global warming potential (GWP) of carbon dioxide.³¹ The remaining companies with high savings contributions are Ecobee (energy efficiency), Arcadia (community solar), Sparkfund (energy efficiency), Mosaic (solar systems), and Urbint (methane reduction). These companies have grown substantially during our ownership period, and several also sell long-lasting products that save energy well into the future. The remaining savings are distributed widely among all our directly measurable companies, as shown in the figure below.

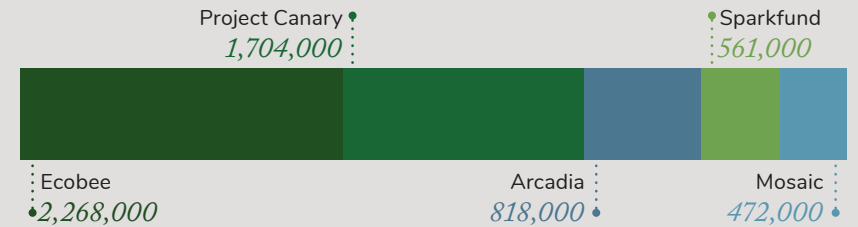
TOP FIVE ANNUAL ENABLED SAVINGS CONTRIBUTORS

MTCO₂e

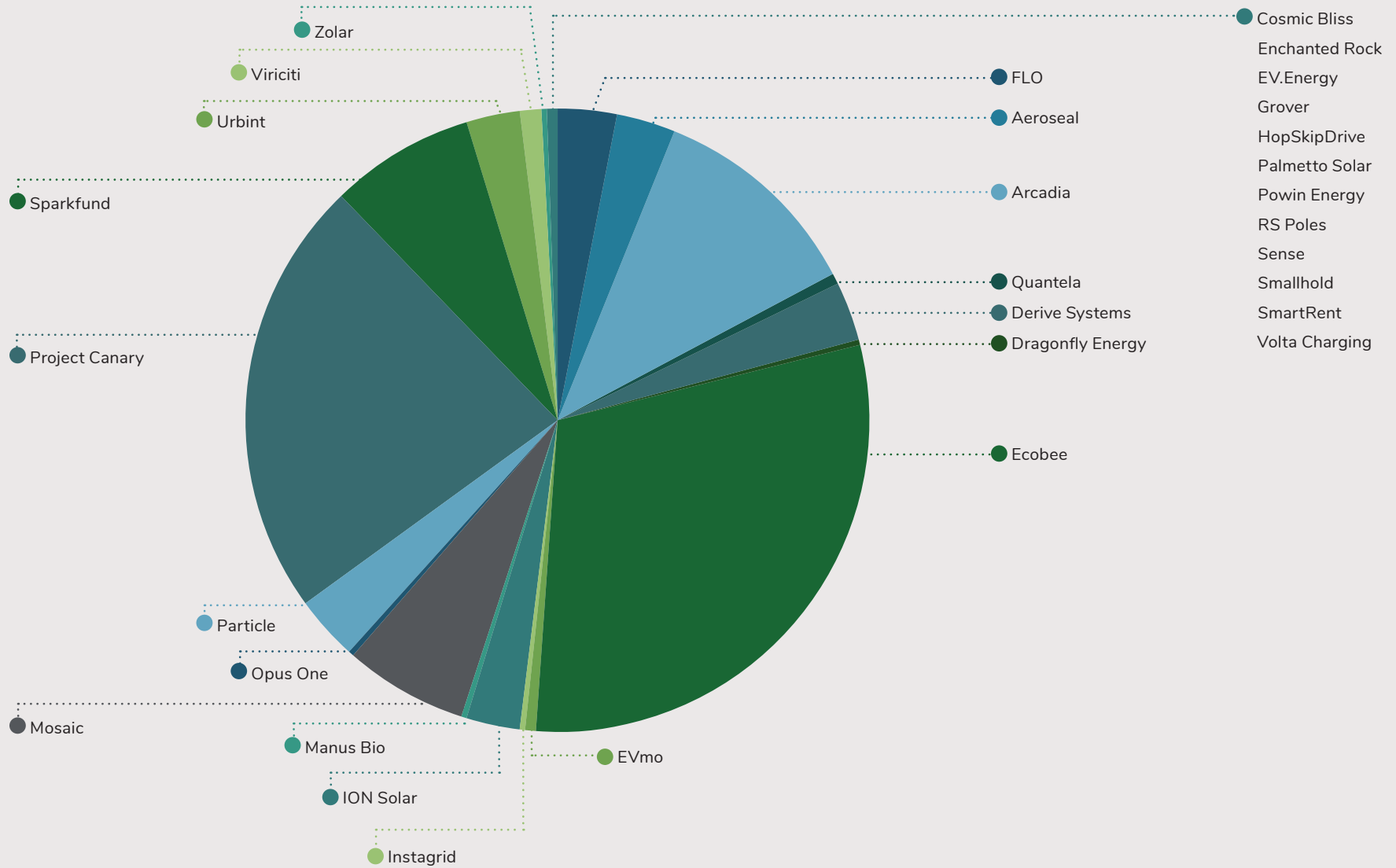


TOP FIVE LIFETIME ENABLED SAVINGS CONTRIBUTORS

MTCO₂e



OWNERSHIP-WEIGHTED LIFETIME SAVINGS BY COMPANY, 2022
tCO₂e



INVESTMENT THEME & FUND IMPACTS

The table below displays ownership-weighted (allocated) enabled savings by our three investment themes: decarbonized supply, sustainable demand, and intelligent infrastructure. The table shows that annual savings are nearly equal for decarbonized supply and sustainable demand, while intelligent infrastructure investments are at a lower savings level. The latter occurs because many investments in this category are by nature foundational – essential to the transition but not directly quantifiable in saved tons enabled. For example, our portfolio company **Tesco** makes electrical equipment used to test EV chargers and Advanced Metering Infrastructure (AMI) systems. By any measure EV chargers and AMI systems are key building blocks for a clean energy grid, but we do not attribute carbon ton savings to Tesco’s metering equipment.

Lifetime and five-year projected savings are more heavily weighted towards sustainable demand versus decarbonized supply. This reflects several factors consistent with our end-to-end decarbonization mission. First, sustainable demand covers nearly the entire economy outside the power and fuels sectors, yielding a very broad set of decarbonization needs and solution opportunities. Second, our supply investments producing savings are relatively early stage now, reducing their five-year projected numbers, but have strong potential to scale into large climate solutions. Among the larger set of sustainable demand companies we have several that are already achieving significant lifetime savings and others that are addressing extremely large opportunities such as decarbonized steel, cement, and industrial heat. With respect to enabled carbon savings, the overall effect is to tilt our investments towards the so-called hard-to-abate sectors, a strong positive for climate progress.

ENABLED CARBON SAVINGS BY INVESTMENT THEME OWNERSHIP WEIGHTED

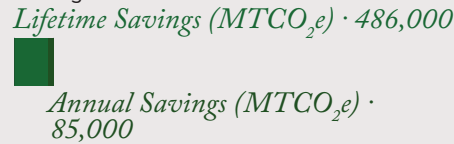
Decarbonized Supply



Sustainable Demand



Intelligent Infrastructure



CLIMATE IMPACTS

Carbon Impacts Enabled

RESULTS BY FUND

In 2022 five of our current funds made investments in companies that are post commercial market entry, selling solutions creating enabled carbon savings. They grew their enabled savings in all categories, with a pattern that reflects the stage and specific focus of each fund:

Flagship Fund I increased its annual enabled savings by 115,000 MTCO₂e to 468,000 MTCO₂e (+33%) and its lifetime savings by 303,000 MTCO₂e (+7%) to 4.7 million MTCO₂e.³² As this fund winds down over the next few years, annual savings growth will taper to zero because all companies will have exited, and new enabled savings will cease. The lifetime savings, which come from the installed base, will taper off much more slowly, well into the future.

Flagship Fund II grew annual savings by 19,000 MTCO₂e (53%) and lifetime savings by 274,000 MTCO₂e (+65%) to over 740,000 MTCO₂e total. This strong, balanced performance occurred as the fund's companies began to scale and the fund added substantially to its portfolio.

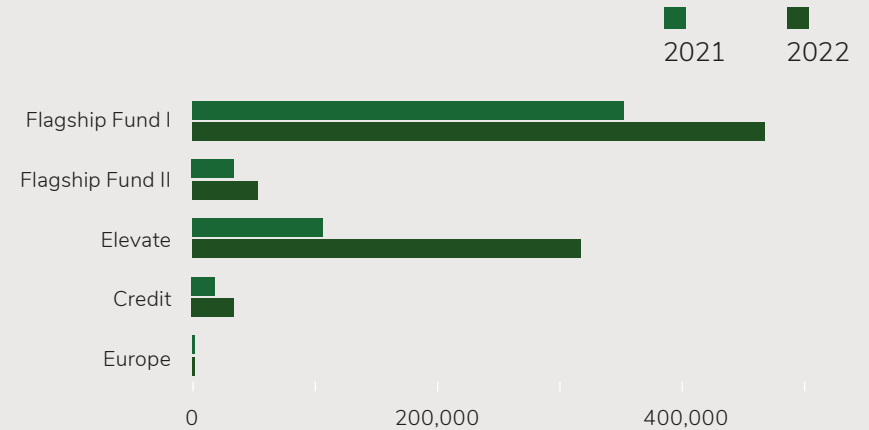
Elevate Future Fund had a similarly strong and balanced savings growth profile, with 210,000 MTCO₂e (+195%) additional annual and 1.168 million MTCO₂e (+218%) added lifetime savings. These numbers were influenced greatly by the fund's investment in Project Canary, the largest source of annual savings across our platform.

Credit Fund I also had a balanced year of growth, adding 15,000 MTCO₂e (+73%) in annual and 154,000 MTCO₂e (+93%) to lifetime enabled savings.

Consistent with its posture as a new fund on our platform, the European Flagship Fund had 164 MTCO₂e (+5%) added annual savings and 25,000 MTCO₂e (+88%) in added lifetime reductions.

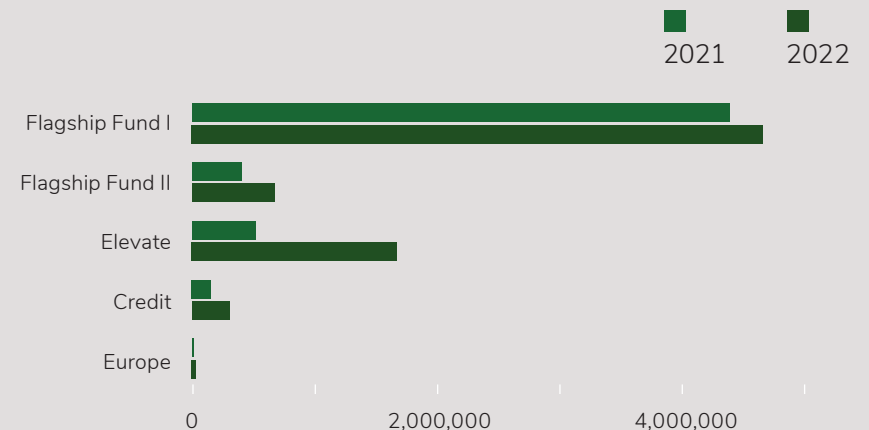
OWNERSHIP-WEIGHTED ANNUAL SAVINGS

MTCO₂e



OWNERSHIP-WEIGHTED LIFETIME SAVINGS

MTCO₂e



CLIMATE IMPACTS

Carbon Impacts Enabled

Frontier Deep Decarbonization Fund's 2021-22 growth in five-year projected savings was exceptionally strong, more than tripling pre-allocation savings from 45 million to 148 million MTCO₂e. After allocation, Frontier's year over year growth was more than 12x, from 791,000 to 9,505,000 MTCO₂e. This very strong increase was spurred by an active year of portfolio additions, larger average ownership stakes in portfolio companies, and optimistic growth prospects for companies in the portfolio.

ENABLED FIVE-YEAR PROJECTED CARBON SAVINGS — FRONTIER FUND'S EXCEPTIONAL GROWTH*

million MTCO₂e



OWNERSHIP-WEIGHTED FRONTIER'S 5-YEAR FIVE-YEAR PROJECTED CARBON SAVINGS

million MTCO₂e



*In last year's EIP Impact report a 10-year projection period was used. The 2021 results in this figure have been restated to reflect a five-year period

OUR CARBON FOOTPRINT

With assistance from Greenly, a carbon accounting platform within our portfolio, we estimated our 2022 carbon footprint in all scopes, including financed emissions.³³ In 2022 we returned to fully operational offices, the “new normal” of business travel, and in-person council days and other events. During this period, our Scope 1 and 2 emissions increased modestly (23 tons or 21%) over 2021, well below our 41% increase in employees. Scope 3 emissions from travel, hotel and events increased significantly YOY to 1430 MTCO₂e, reflecting a return to business travel, in-person meetings, and the expansion of our coalition and operating footprint. The remaining scope 3 emissions other than financed emissions (Category 15) also increased consistent with our geographic and employee expansion, but by much smaller proportions. (See figure)

EIP FOOTPRINT 2022

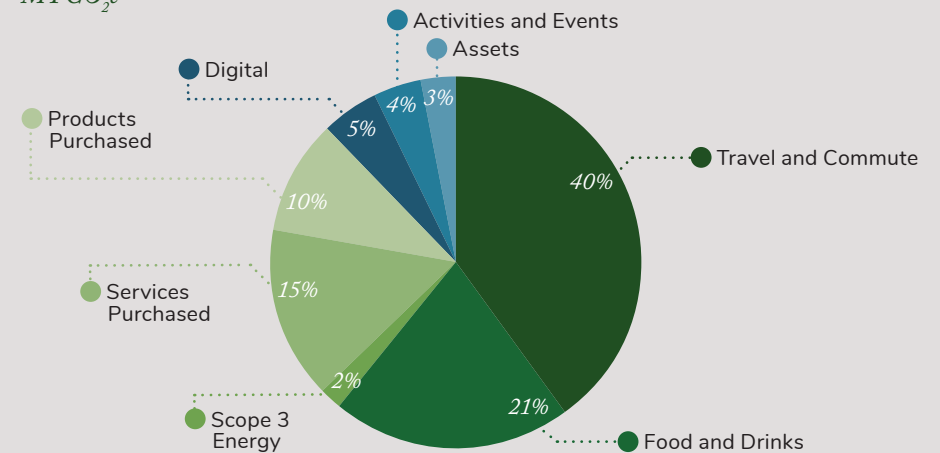
MTCO₂e

Scope 1	42
Scope 2	85
Scope 3 excluding financed emissions	2190
Scope 3 including financed emissions	141,000
Total EIP Internal Footprint ³⁴	2320
Total – all scopes	143,000

Source: Analysis by EIP and Greenly

EIP 2022 SCOPE 3 (EXCLUDING FINANCED) EMISSIONS

MTCO₂e



Source: Greenly analysis of EIP expenditures

CLIMATE IMPACTS

Carbon Impacts Enabled

This year we also used Greenly's calculation platform to estimate our Scope 3 financed emissions (FE). Our FE have increased along with the size and scope of our total portfolio, rising from 10,200 MTCO₂e in 2021 to 141,000 MTCO₂e in 2022. The largest contributor to our FE (18.2%) is Williams Industrial Services, which as expected is one of the largest companies by revenue in our portfolio. Powin, Mimeo, Spire, and Derive each contribute between six and nine percent of FE and the remainder is widely distributed across all remaining portfolio companies. The technical appendix contains further information on our footprint methodology and results.

EIP'S SOFTWARE FOR CARBON FOOTPRINTS

Greenly is a carbon footprint measurement platform designed to be both accurate and user-friendly for small- and medium-sized companies. Greenly uses a combination of spend-based and activity-based approaches to measure a company's complete footprint. Greenly's platform also provides useful engagement and benchmarking tools to help enable the transition to Net Zero.



CLIMATE IMPACTS

Carbon Impacts Enabled

OUR NET ENABLED IMPACT

As a platform focused on climate solutions, it is important that the savings we enable our companies and their customers to achieve far outweigh our own carbon emissions. This year, our net enabled annual savings of 879,000 MTCO₂e exceeded our annual Scope 1-3 total footprint by a factor of over 6x. This approach is the most conservative way to view our net impact, as we use annual rather than lifetime or projected savings not yet realized. The technologies our companies have installed during our ownership period will save 7.5 million MTCO₂e over their lives, over 52 times our total 2022 footprint. Our companies planning to enter the market over the next decade are projected to save another 10.8 million MTCO₂e in their first five years post commercialization, almost 75x this year's footprint.

In addition to this net impact, EIP offsets its emissions.

Although our enabled annual savings are more than 6x our footprint, this year EIP is continuing its policy of purchasing offsets equal to all our internal emissions. We are offsetting our Scope 1 and 2 emissions using a portfolio primarily of companies sequestering through biochar (72%) and enhanced weathering (22%), with the remainder from direct air capture and bio-oil. Our internal Scope 3 emissions will be offset using a combination of forestry and soil sequestration offsets selected for their integrity by our offset consultant, Klimate.³⁵ As our portfolio of climate solutions matures, we hope to use our own technologies to remove and replace our own carbon emissions as well as those of many other energy users.



CLIMATE IMPACTS

Carbon Impacts Enabled

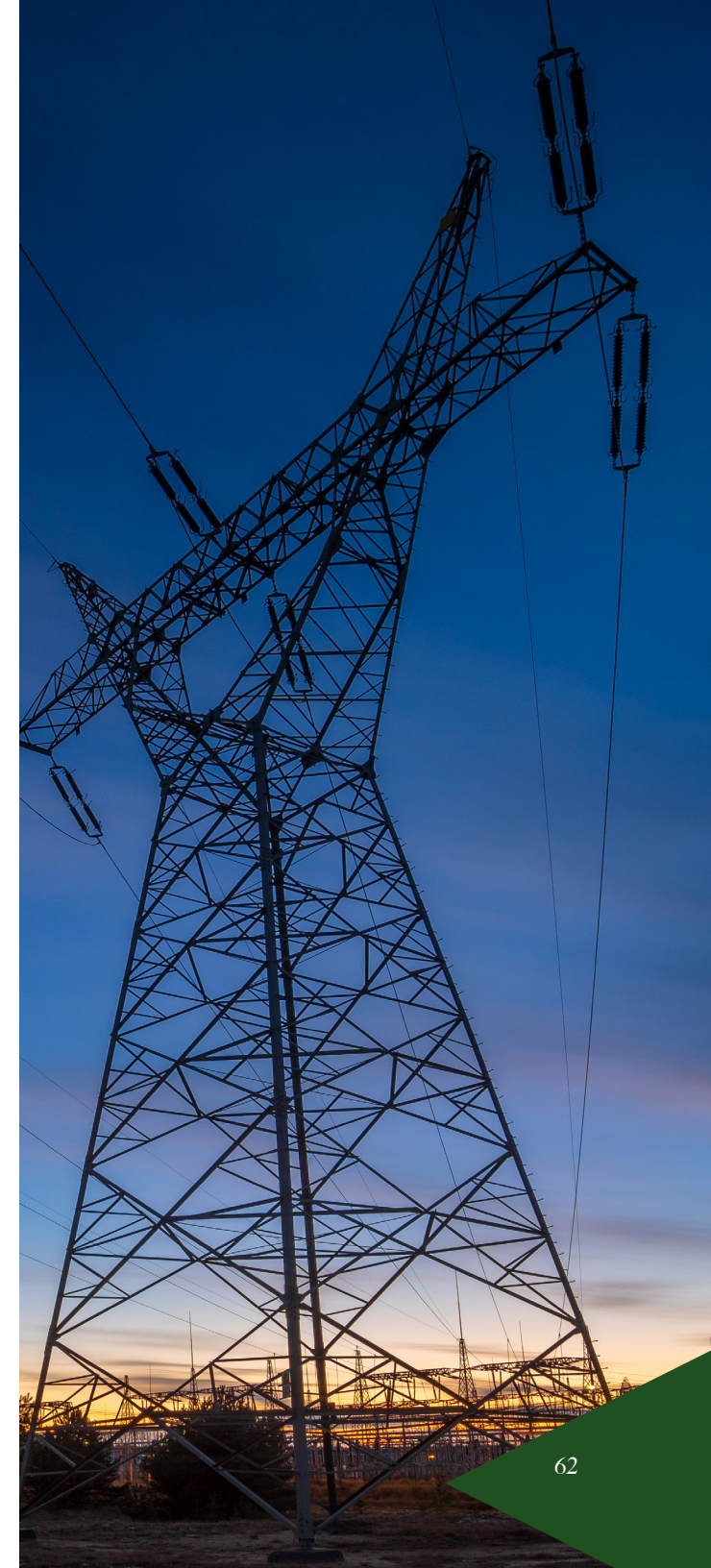
CUSTOMER IMPACT KPIs

While the full range of the impacts our companies have on energy systems and decarbonization are complex and often difficult to quantify directly, several additional metrics are available that correlate with impact and can be measured over time to assess the direction and rate of progress. These metrics, called our customer impact KPIs, are useful because they are available for all our companies and can be benchmarked against each firm's own past trajectory, as well as against other firms inside and outside our portfolio. In addition, most firms also have more specific, differentiated KPIs, which we expect to introduce on a company-by-company basis. The results, presented in this section, are anonymized by portfolio company and are reported as of year-end 2022. The three customer impact KPIs we report for all companies are:

Customer Expansion Within EIP's Coalition of Strategic Investors: This metric fits with EIP's role of advancing the transition by sharing market intelligence and innovation experience with our partner coalition.

Customer Expansion Within the Energy Industry: We seek to introduce innovations that can scale rapidly throughout the energy industry, accelerating the pace of positive change. The penetration of our portfolio solutions across energy industry customers is one way to measure our industry-wide impacts.

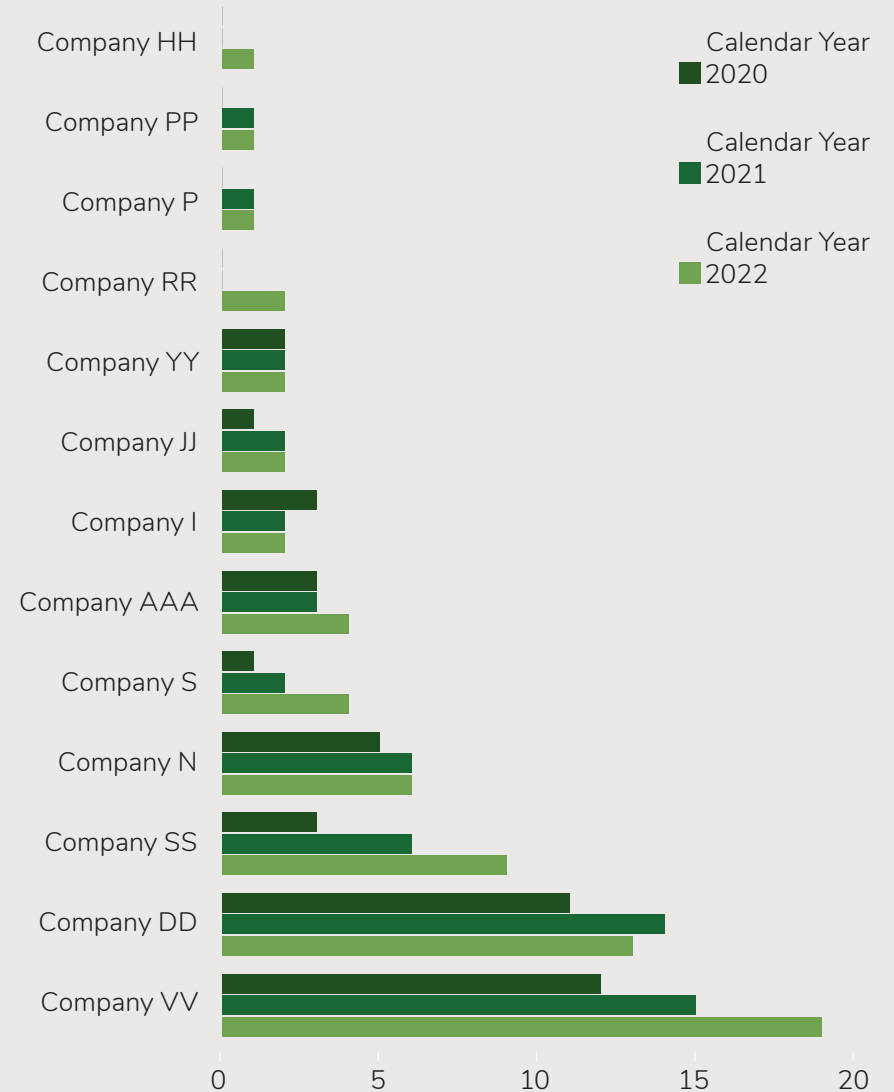
Total Customer Expansion: Especially for our portfolio companies who sell directly to retail customers, total customer growth is also a measure of their impact.



CUSTOMER EXPANSION WITHIN EIP'S COALITION

The figures in this section display data on the customer impact KPIs from a sample of portfolio companies that sell directly to utilities and other customers who are within EIP's strategic investor coalition. Tracking customer expansion within the EIP coalition across all reporting portfolio companies shows a 32% increase in customers from 2021 to 2022 and a total 75% increase since 2020. The figure at right displays data from a sample of our Foundational portfolio companies that sell directly to our strategic partners. Of the 13 companies reporting, only one reported decreased sales into EIP's coalition from 2021 to 2022, with a high of 19 coalition partners for Company VV. As an example of EIP's collaboration process at work, Company S added two new logos in the EIP coalition in 2022, increasing its total collaboration count to five. Their participation in EIP's annual meeting, a council day, and a working group helped secure these new logos and contributed to a pipeline of 15 opportunities in our LP base. They saw significant expansion with one of our LPs after a successful smaller scale deployment, with their solution now being rolled out to millions of that LP's customers.

EIP COALITION CUSTOMERS FOR FOUNDATIONAL COMPANIES
2020-2022

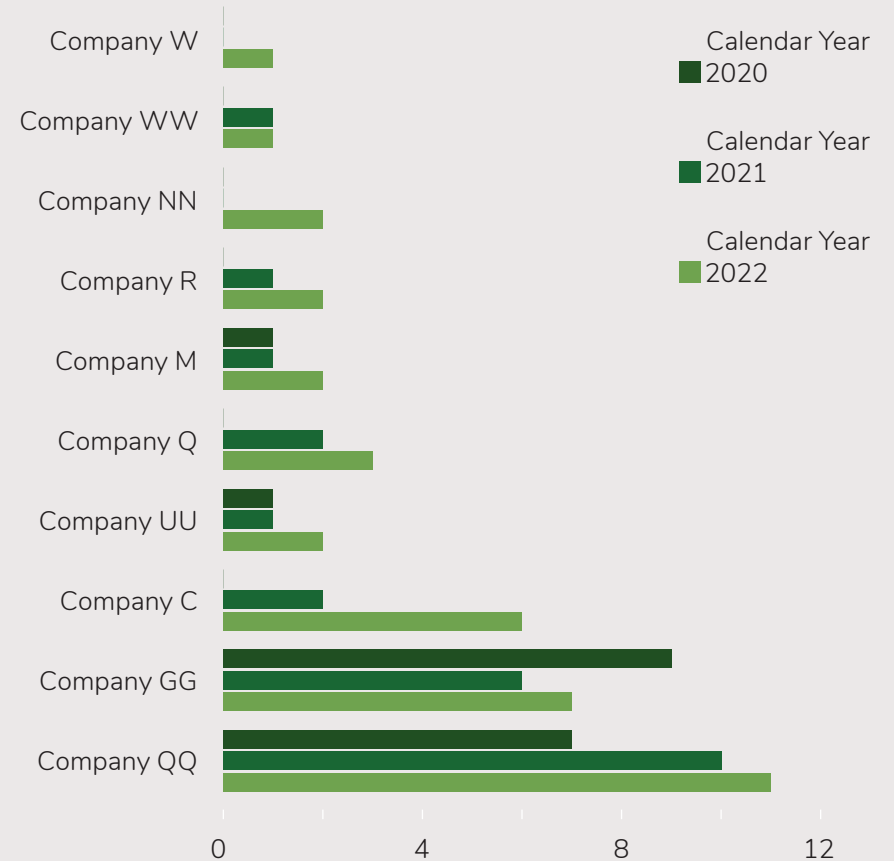


CLIMATE IMPACTS

Carbon Impacts Enabled

The next figure displays data from a sample of our Directly Measurable portfolio companies that sell directly to our strategic partners. Of the 11 companies reporting, none reported decreased sales into EIP's coalition from 2021 to 2022, with a high of 11 coalition partners for Company QQ. Notably, Company UU tripled its presence with EIP's partner base in 2022, and these additional proof points in the industry have served to further amplify their value proposition in the market. Additionally, Company M has been a key component of an EIP utility LP's new program that was recently launched. This partnership model has been showcased at innovation events with numerous EIP partners, which has helped lead to over 20 pipeline opportunities. Additional information regarding the contracts and bookings between our portfolio companies and partners, and our collaboration process, is presented in the "Helping Our Partners Succeed" section of this report.

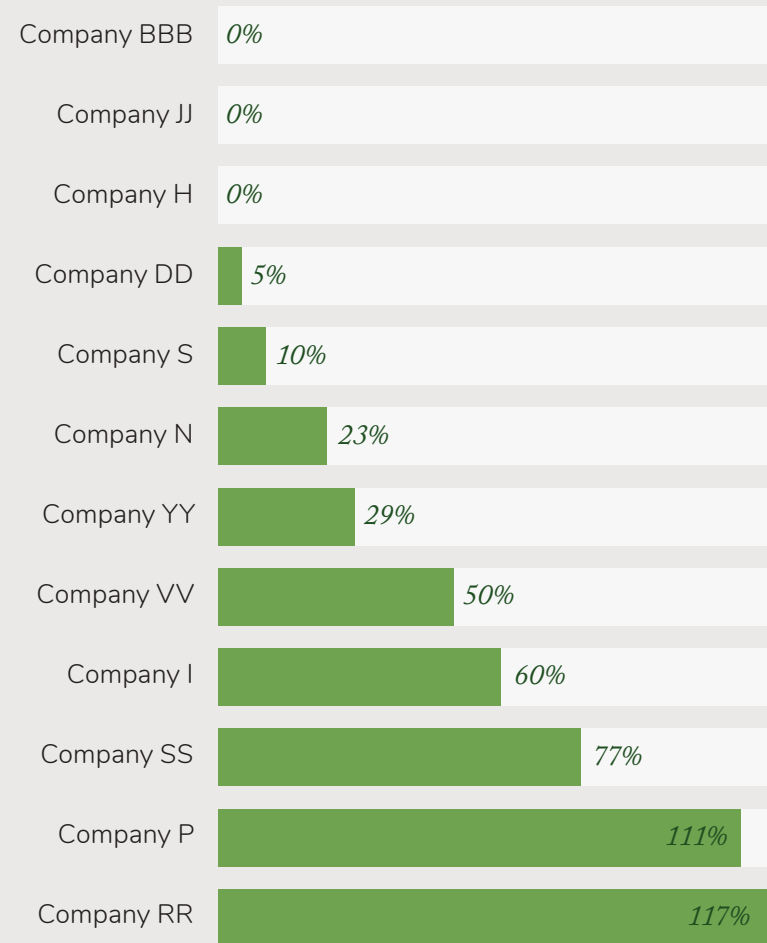
EIP COALITION CUSTOMERS FOR DIRECTLY MEASURABLE COMPANIES 2020-2022



CUSTOMER EXPANSION WITHIN THE ENERGY INDUSTRY

Increased use of our technologies by energy industry customers outside our investor coalition is another important indicator of impact. Most of the companies in our portfolio are business-to-business (“B2B”) enterprises, and although customers within EIP’s coalition are key partners in market acceptance, the ultimate markets for many of our companies include many customers beyond our investor coalition. Tracking customer expansion within the energy industry for all reporting portfolio companies shows a 88% increase in customers from 2021 to 2022, and a total 257% increase since 2020. The figure at right displays data from a sample of Foundational portfolio companies that sell to the energy industry. Due to the wide range of customer counts among our companies, we express this metric in annual percentage growth from year-end 2021 to year-end 2022. Of the 12 companies reporting, none reported a decrease in sales from 2021 to 2022. Notably, Company SS went from having 31 energy industry customers in 2021 to 55 in 2022. This increase includes new or expanded contracts with 5 EIP LPs. EIP brought the company in to present at an in-person council day, coordinated several virtual one-on-one engagements with LPs, and frequently highlighted the company in EIP’s own presentations to LPs.

2021-2022 CHANGE IN ENERGY INDUSTRY CUSTOMERS FOR FOUNDATIONAL COMPANIES

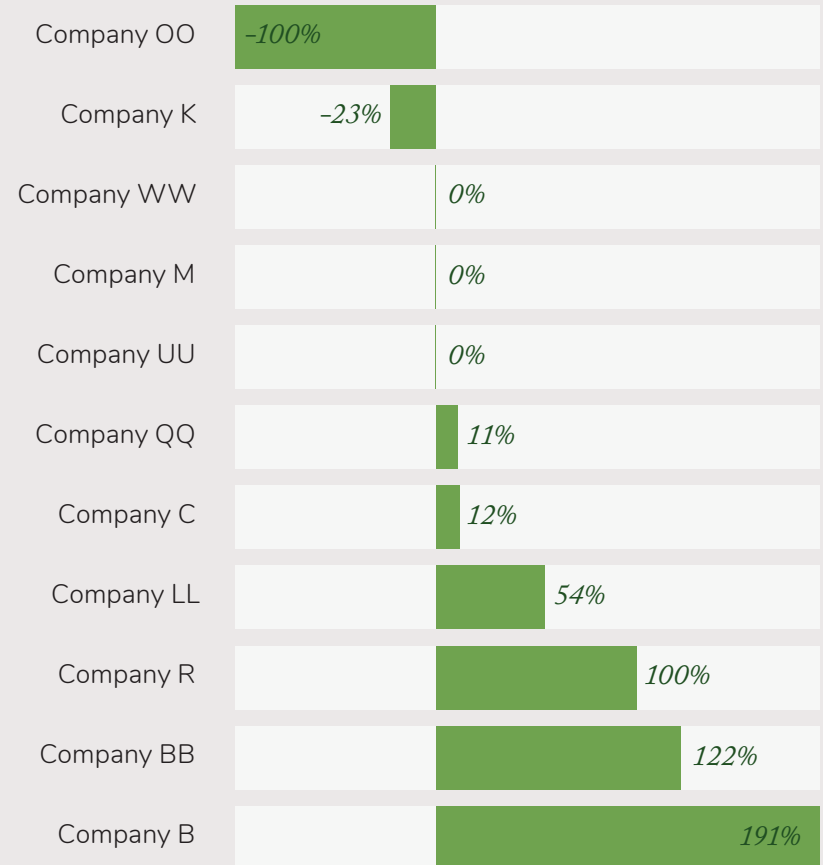


CLIMATE IMPACTS

Carbon Impacts Enabled

The figure at right displays data from a sample of Directly Measurable portfolio companies that sell to the energy industry. Of the 11 companies reporting, only two reported a decrease in sales from 2021 to 2022. Company R recently signed a contract with an EIP LP that will be their first demonstration-scale project, coming after years of productive scoping discussions and negotiations, that began with an EIP introduction shortly after our original investment. This project resulted in increased interest from other utility customers.

2021-2022 CHANGE IN ENERGY INDUSTRY CUSTOMERS FOR DIRECTLY MEASURABLE COMPANIES



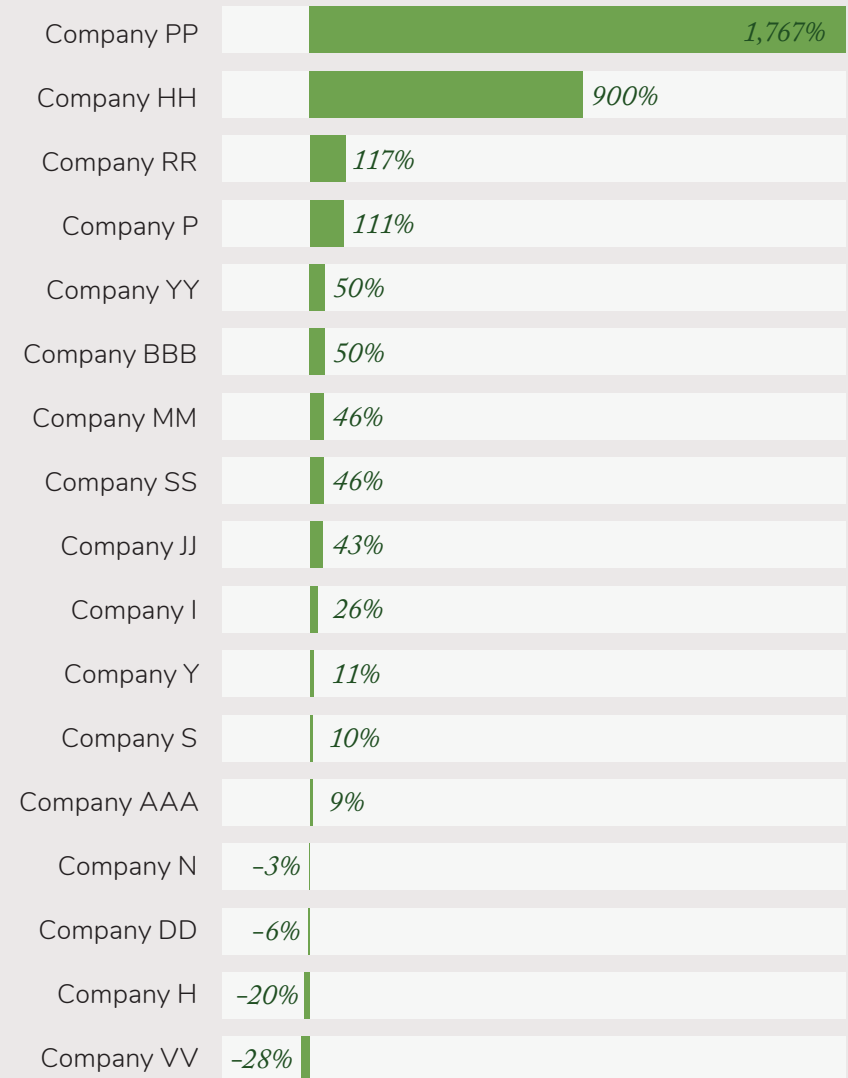
CLIMATE IMPACTS

Carbon Impacts Enabled

TOTAL CUSTOMER GROWTH

The final customer impact KPI tallies the total number of customers of all industries and types. Due to the wide range of customer counts among our companies, we express this metric in annual percentage growth from year-end 2021 to year-end 2022. Tracking total customer expansion for all reporting portfolio companies shows a 62% aggregate increase in total customers from 2021 to 2022 and an aggregate 150% increase since 2020. The figure at right displays data from a sample of Foundational portfolio companies that reported total customer counts from 2021-2022. Of the 17 companies reporting, only four reported a decrease in total customers from 2021 to 2022.

2021-2022 CHANGE IN TOTAL CUSTOMERS FOUNDATIONAL COMPANIES

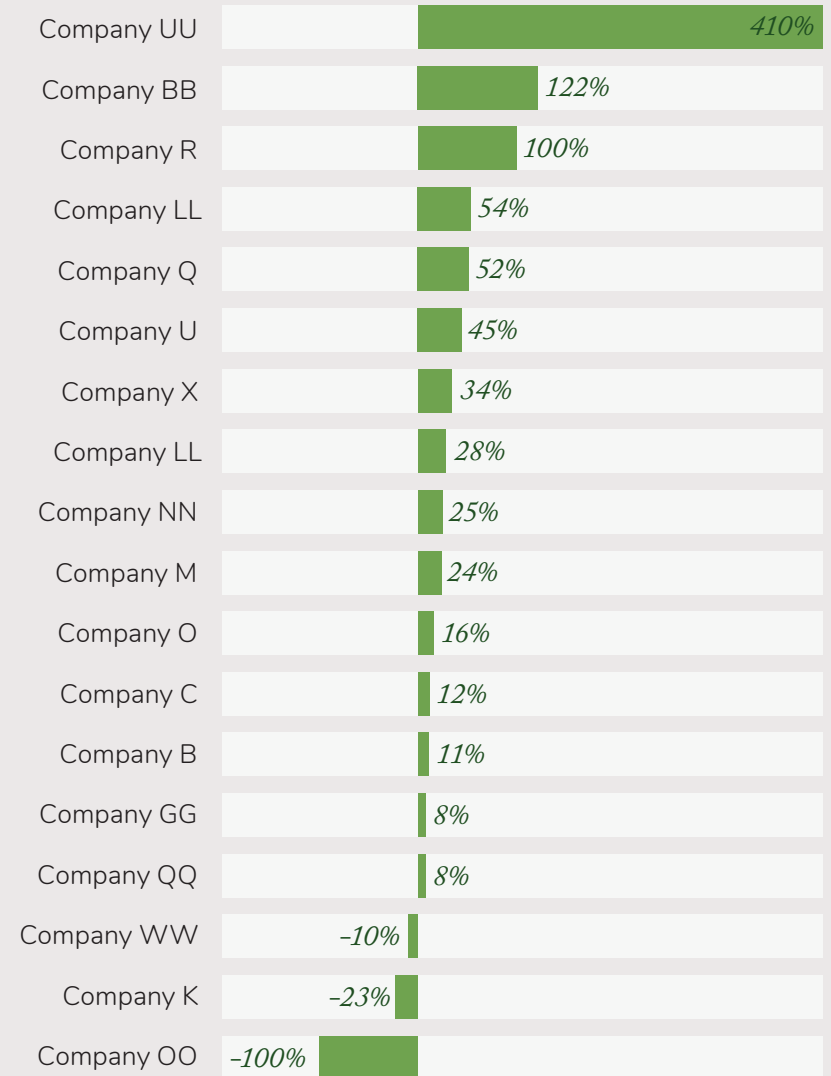


CLIMATE IMPACTS

Carbon Impacts Enabled

The figure at right displays data from a sample of Directly Measurable portfolio companies that reported total customer counts from 2021-2022. Of the 18 companies reporting, only three reported a decrease in total customers from 2021 to 2022.

2021-2022 CHANGE IN TOTAL CUSTOMERS FOR DIRECTLY MEASURABLE COMPANIES



SECTION FOUR

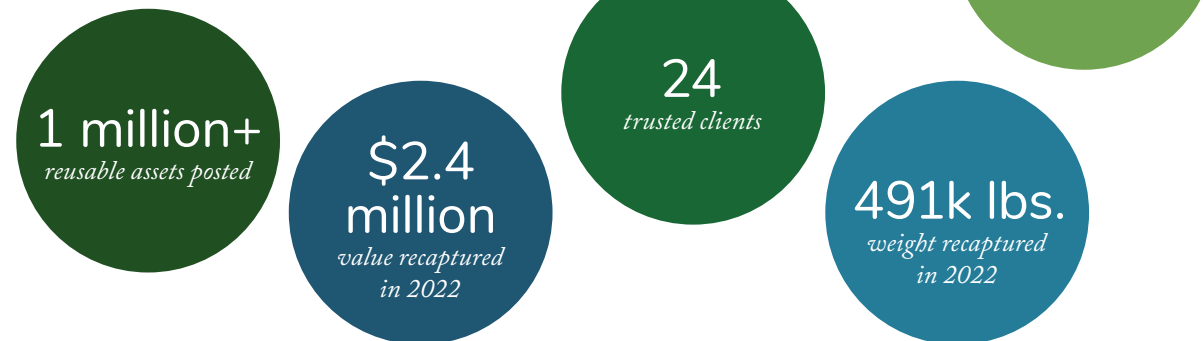
Case Studies

Rheaply—Put Your Resources to Reuse

Every year, corporations produce massive amounts of waste from the disposition of workplace resources and materials—in fact, 38% of total material input into the global economy is stock build-up.³⁶ Today, there are few solutions for companies to track, quantify, and improve on this issue.

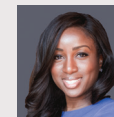
With Rheaply’s technology, companies can build a digital log of all their materials and resources, creating visibility of this inventory across their organization. They can also sell, track, or donate items within their company, to a network of external partners, or to the public. By using Rheaply’s platform, customers make more prudent, efficient purchasing decisions based on utilization, reuse, and sharing of valuable assets. They can also access a reporting dashboard to measure the associated embodied carbon and waste avoidance as well as cost savings through internal reuse.

In June 2022, EIP participated in Rheaply’s \$20 million fundraiser. EIP anticipates that members of its coalition of strategic corporate investors will be able to use Rheaply to log, track, reuse, donate, and sell their assets. Rheaply was founded in 2016 by Dr. Garry Cooper and is based in Chicago.



Rheaply team

“There is ample opportunity to expand circularity in the global economy to ensure we hit net-zero carbon targets. We believe Rheaply is the market player poised to bring a valuable solution to market while building a company that engenders diversity and inclusivity.”



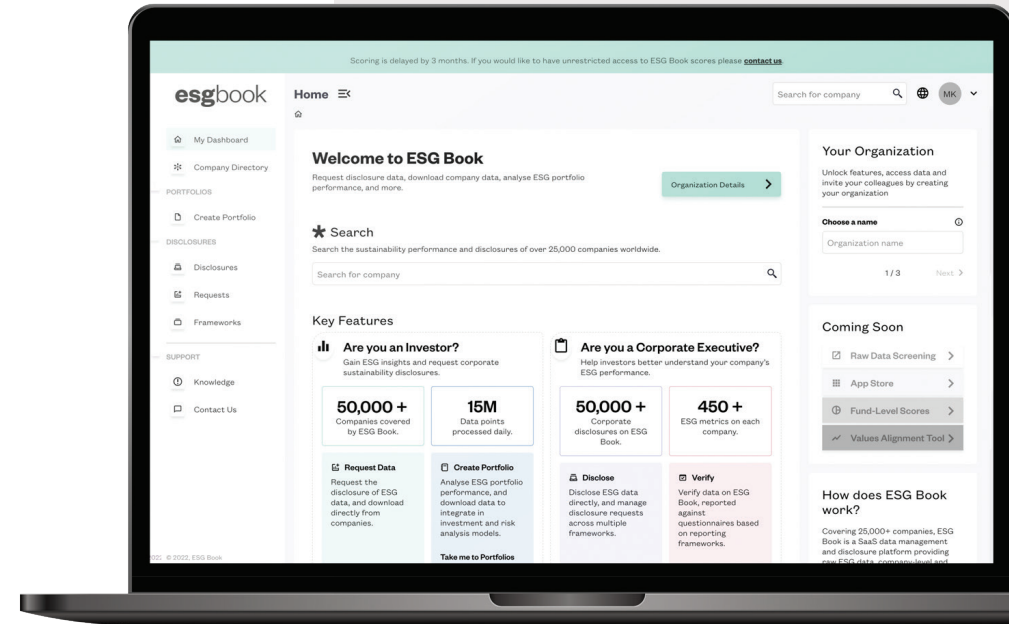
VIDA ASIEGBU, *Principal at Energy Impact Partners*

ESG Book—Building the World’s Leading ESG Data Platform

ESG data represents a large, and rapidly growing, market opportunity. Accurate data, accounting, analytics, and reporting are critical to the net zero transition. ESG Book is a leading ESG data provider building one of the largest independent ESG datasets on public equities along with proprietary scores, metrics and analytics.

ESG Book’s cloud-based platform makes ESG data accessible, consistent, and transparent, enabling financial markets to allocate capital towards more sustainable and higher impact assets. Covering over 50,000 companies globally, ESG Book enables companies to be custodians of their own data, provides framework-neutral sustainability information in real-time, and promotes transparency. ESG Book also allows users access to the fundamental data underlying each metric to understand how these scores are derived.³⁷

esgbook



CASE STUDIES

ESG Book—Building the World’s Leading ESG Data Platform

ESG Book’s innovative freemium model offers businesses free access to report their own data and view high-level summaries of peers’ data. Paid users can also dive into more detailed analysis of their own and competitor ratings. Financial institutions can use ESG Book to request data from portfolio companies and business customers, creating network effects as more users report through the platform and make their data available.

EIP led ESG Book’s \$35 million Series B round in June 2022, joined by Meridiam and Allianz X. Transparent and trustworthy ESG data is critical for investors to understand how companies are performing on climate metrics, and EIP expects that its partners can use ESG Book to assess their performance and compare with industry peers.



“We are delighted to welcome ESG Book to our family of companies that empower the transition to net zero and support the principles of sustainability. ESG Book is EIP Europe’s tenth investment, and this partnership is driven by a shared vision for radical transparency in sustainability data. We look forward to supporting the tremendous momentum of the company as it builds the world’s leading ESG data platform.”



NAZO MOOSA, *Managing Partner, Europe, at Energy Impact Partners*

Hippo Harvest—The Future of Food

Extreme weather and climate events, supply chain challenges, and shifting consumption patterns are placing pressure on food supplies and creating a need for innovative agricultural solutions. The agriculture industry also emits a quarter to a third of all greenhouse gases globally and is one of the largest contributors to water pollution.³⁸

To address these challenges, **Hippo Harvest** deploys Controlled Environment Agriculture (CEA) technology, resulting in produce that has a lower environmental footprint than traditional farming. By utilizing machine learning to optimize growing conditions and robotics for more efficient farming practices and crop harvesting, Hippo Harvest's greenhouses are maximizing yield and plant health while minimizing environmental impacts for its variety of leafy greens and lettuces. The company also signed Amazon's Climate Pledge, a commitment for businesses to achieve net zero by 2040.

In December 2021, EIP participated in Hippo Harvest's Series A funding. EIP's utility partners can add value on multiple fronts in the future of agriculture by providing incentives to attract development in their territories, rebates and special rates, renewable generation on site, and resiliency for new electrified infrastructure. Hippo Harvest was founded in 2019 and is based in Pescadero, CA.



CASE STUDIES

Hippo Harvest—The Future of Food



61%

Less Food Waste

Hippo has harnessed technology to farm sustainably for all of the goodness with half of the waste.



55%

Less Fertilizer

Hippo cuts down on fertilizer by getting custom—delivering a tailored dose of nutrients directly to plants' roots at each life stage.



92%

Less Water

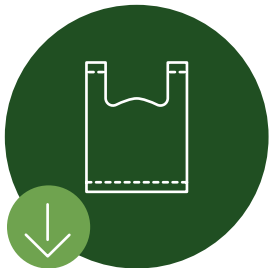
Delivering only as much water as plants need, exactly when they need it.



80%

Less Food Miles

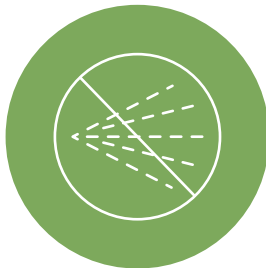
Hippo grows all lettuce in local greenhouses, not faraway fields—reducing the distance from their farm



40%

Less Plastic

Hippo uses 100% post consumer recycled packaging and 40% less total plastic than a traditional clamshell pack.



100%

Pesticide Free

No synthetic pesticides are used, so there's less danger to wildlife, water supplies and your overall health.



Rondo—Decarbonizing Industry Brick by Brick

Decarbonizing the industrial sector is one of the greatest barriers to a net-zero future: industry accounts for about 31% of global GHG emissions, largely due to the sector’s extreme reliance on fossil fuel combustion for heat.³⁹ Even renewable fuels, a key tool for industrial decarbonization, are typically dependent on fossil fuels for their production.

Rondo Energy designed the Rondo Heat Battery (RHB) to eliminate the need for fossil fuels in most heat-intensive industrial processes. The Rondo Heat Battery converts electricity to high-temperature heat, which it stores in brick material and discharges as steam. Rondo allows its customers to use intermittent wind and solar—now the cheapest sources of energy in the world—to supply 24/7 zero-carbon heat. Rondo is designed as a drop-in solution, integrating as easily into a site as a new boiler would.

On March 6, 2023, Rondo announced the commissioning of its first commercial installation: a 2MWh RHB for Calgren Renewable Fuels in Pixley, CA. Before Rondo, Calgren’s Pixley facility was already producing the world’s lowest carbon intensity biodiesel, ethanol and RNG. A full-scale Rondo installation can reduce the

carbon intensity of ethanol by about 50%. When paired with carbon capture, Rondo can enable zero-carbon ethanol.

Rondo’s 2MWh Heat Battery is the first deployment of a technology that Rondo expects to reach gigawatt scale within the next 5 years. By designing for scalability, reliability, and simple integration, Rondo has positioned itself to take a huge bite out of industrial emissions—and fast.



“From construction through commissioning, my team and I remain impressed that the Rondo Heat Battery caused no disruption or slow-down to Calgren’s operations. We see this solution as the perfect fit for us—a low-cost, zero-carbon, drop-in thermal storage system for existing facilities that increases the reliability, profitability, and performance of our operations.”

LYLE SCHLYER, *President of Calgren Renewable Fuels*

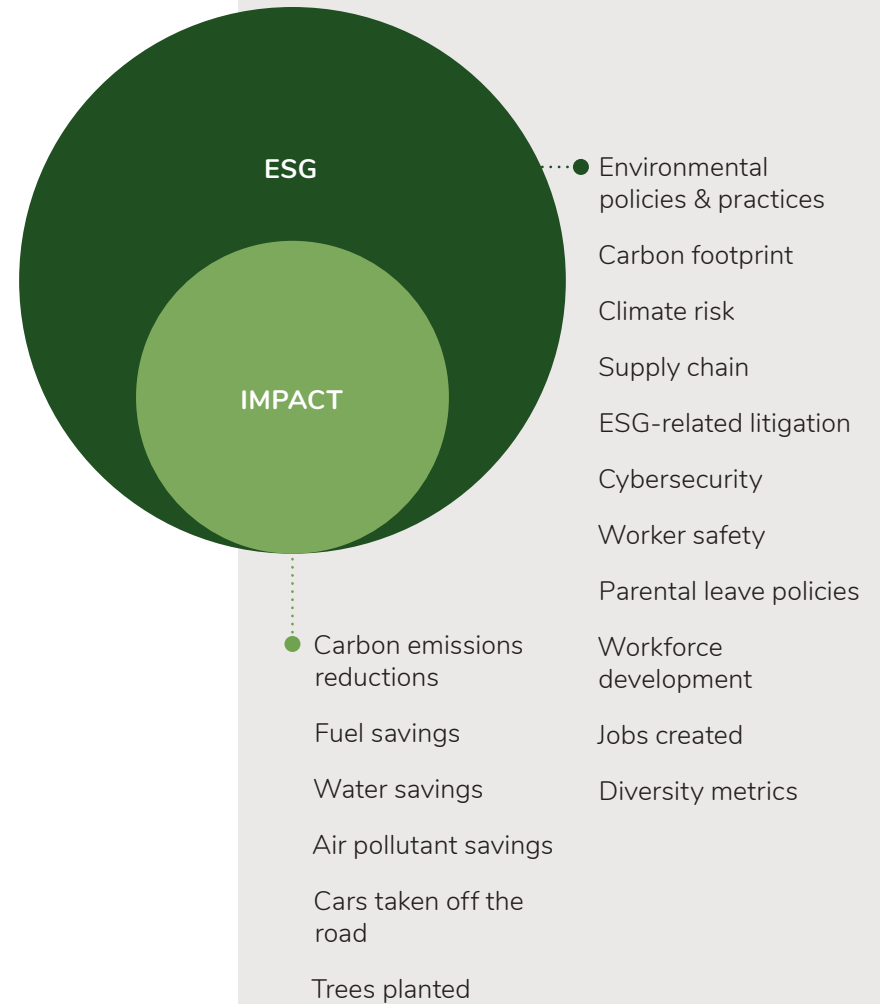
SECTION FIVE

ESG

EIP's Approach

While both ESG and Impact are integral to EIP's work, they are not identical concepts. EIP has been built to maximize impact. EIP measures its impact on the environment and society in terms of quantitative and qualitative metrics that are indicative of progress towards accelerating the clean energy transformation. EIP reports on the impacts enabled by its portfolio companies using a variety of metrics such as reductions in carbon emissions, fuel savings, water savings, and other metrics tied to the expansion of clean technologies and markets, as presented in preceding sections.

The entire scope of EIP's ESG reporting incorporates impact metrics as well as a broader set of data on the environmental, social, and governance attributes of reporting portfolio companies. We believe these ESG factors may impact the current and future financial, economic, reputational, and legal prospects of EIP's investments. For example, EIP's ESG reporting includes extensive data on the composition of the workforce in portfolio companies, a review of policies affecting DE&I, and a number of governance metrics. EIP believes that reporting on this broad set of ESG indicators enhances our role as a responsible investor and will ultimately lead to improvements in portfolio financial performance as well as more sustainable outcomes.



ESG
EIP's Approach

Before any investment is approved by the applicable Investment Committee, EIP's Impact & Sustainability and Investment teams work together closely to perform a carbon impact assessment and review ESG-related risks and opportunities for the investment. Each Investment Committee reviews these assessments as part of the final investment decision.

New investees also commit to sharing data and collaborating with EIP on ESG and impact measurement. Once EIP has made an investment in a company, the Impact & Sustainability team meets with the company's leadership team to understand the company's ESG and impact status and goals. The company then begins collecting data (including ESG metrics, impact KPIs, and carbon savings data where applicable). These metrics are aggregated for annual ESG and impact reporting.

In 2023, the Impact & Sustainability team expects to launch mid-year portfolio reviews to inform potential improvements to investee companies' ESG and impact performance. The Impact & Sustainability team will collaborate with Investment teams, who frequently hold Board or Board observer seats at portfolio companies, to determine the most appropriate next steps for our portfolio companies with regard to ESG and Impact.

Additionally, the Impact & Sustainability team is developing several toolkits and resources to support portfolio companies with ESG best practices. EIP recently launched a Diversity, Equity & Inclusion (DE&I) Toolkit, available to all EIP portfolio companies, collating resources from consultants, academic organizations, and other experts on a wide range of DE&I topics. Within this toolkit, EIP offers several case studies, templates, and links to other organizations that may be valuable for portfolio companies' DE&I journeys. We intend for this toolkit to be constantly evolving as new practices and standards are developed. The Impact & Sustainability team is also collaborating with EIP's investment teams to develop further resources surrounding LCA development, B-Corp certification, and integrating ESG in supplier due diligence.

2022 ESG HIGHLIGHTS

Impact & Sustainability team
met with 35 portfolio companies to discuss ESG and impact topics

.....

Held Board seats at
45 portfolio companies at year-end 2022

.....

83% of portcos **responding** to our ESG annual survey

IMPACT & SUSTAINABILITY PROCESS FROM DEAL SOURCING TO EXIT

Pre-Investment

deal sourcing

EIP is purpose-built to maximize impact, investing in companies that enable the energy transition and are critical to future low-carbon economies

Exclusion list also applied for all investments

Frontier Fund focuses on even deeper decarbonization

Elevate Fund ensures EIP invests in founders of all backgrounds

due diligence

Companies fill out survey on ESG topics and provide data for carbon calculations

Companies assessed on Carbon, and Other Environmental, and Social Factors

Deal teams conduct extensive diligence on governance practices to ensure we invest in competent and cohesive management teams

Results considered during Final Investment Committee

deal documentation

Companies that EIP invests in share data and collaborate on ESG and impact measurement

Post-Investment

active ownership

Impact team engaged in company onboarding

Collaborate with investment team, portfolio company, and other key investors on key Impact and ESG topics

Prioritize high quality impact measurement

Provide resources to companies along the way

reporting

Portfolio companies report on Impact and ESG to EIP each year

Collaborate with other investors to reduce reporting burden

Impact & Sustainability report published by EIP annually

exit

Impact & Sustainability teams plan to work with investment teams on how we can help prepare companies to go public and be acquired, with ESG and Impact factors top of mind

EIP's Impact Advisory Board

In 2020, EIP established a dedicated Impact Advisory Board to provide input and guidance on EIP's ESG and impact measurement policies and practices and to provide a forum for sharing ideas, best practices, and intelligence. The Impact Advisory Board meets on a quarterly basis to review EIP's activities and discuss other ESG-related matters of importance to EIP's partners. Consistent with EIP's culture of collaboration and innovation, in 2021 this approach to giving LPs a stake in ESG policies through the Impact Advisory Board was recognized by Private Equity International (PEI) as one of the "30 Big Ideas Shaping ESG" in the area of governance.⁴⁰

IMPACT ADVISORY BOARD MEMBERS



nysnø
Climate Investments

Siri M. Kalvig is CEO of Nysnø Climate investments AS. As the leader of Nysnø, Siri continues the climate fight with finance and investments as tools to help turn the capital flow towards a development in line with Paris goals. She holds a Master of Science in Meteorology and has a Ph.D. in offshore wind technology. Prior to her position in Nysnø, Siri headed the research network for clean energy at the University of Stavanger. She has founded several businesses and is actively engaged in finance and start-up companies within environmental technology.



 **Microsoft**

Brandon Middaugh is the Director of Microsoft's Climate Innovation Fund in their Environmental Sustainability team. She works to accelerate innovation through investments in global climate solutions. Prior to this, she was Microsoft's Senior Program Manager, Distributed Energy where she led the evaluation and deployment of emerging energy technologies for their global cloud operations. Before coming to Washington State, she held several senior positions at SunEdison in the San Francisco Bay area.



 **Xcel Energy**

Frank Prager is senior vice president for Strategy, Security and External Affairs and Chief Sustainability Officer. As chief of staff to the CEO, Frank Prager is responsible for the tracking and development of the company's strategic initiatives. His organization is also responsible for the company's energy, environmental and climate policy priorities and security and emergency management programs. As Chief Sustainability Officer, Frank Prager develops Xcel Energy's sustainability strategy and promotes the company's sustainable priorities in its environmental, social and governance programs and practices. Frank Prager has worked at Xcel Energy for more than 25 years.



 **apg**

Joost Slabbekoorn is topic lead for climate change within the Global Responsible Investment & Governance team of APG Asset Management. In this capacity, he is responsible for overseeing the efforts of APG to advance climate risk and aligning the portfolio with the Paris Agreement. Joost is a CFA charterholder.



 **ENERGY IMPACT PARTNERS**

Anne Klee is a nationally recognized expert in environmental law and policy, and accomplished executive who has led national and global organizations in the private sector and held senior policy positions in the Executive Branch and on Capitol Hill. She currently serves on the Board of Wabtec Corporation, where she chairs the Compensation and Executive Development Committee and the ESG Subcommittee of the Nominating and Governance Committee; and on the Board of Sotera Health, where she chairs the Nominating and Governance Committee and serves on the Audit Committee. In addition, she serves on the Boards of the Center for Climate and Energy Solutions, WGBH in Boston, and the University of Pennsylvania Law School.

ESG at EIP

In addition to EIP's role in facilitating good impact and ESG practices at its portfolio companies, EIP also strives to promote the best environmental, social and governance practices internally.

ENVIRONMENT

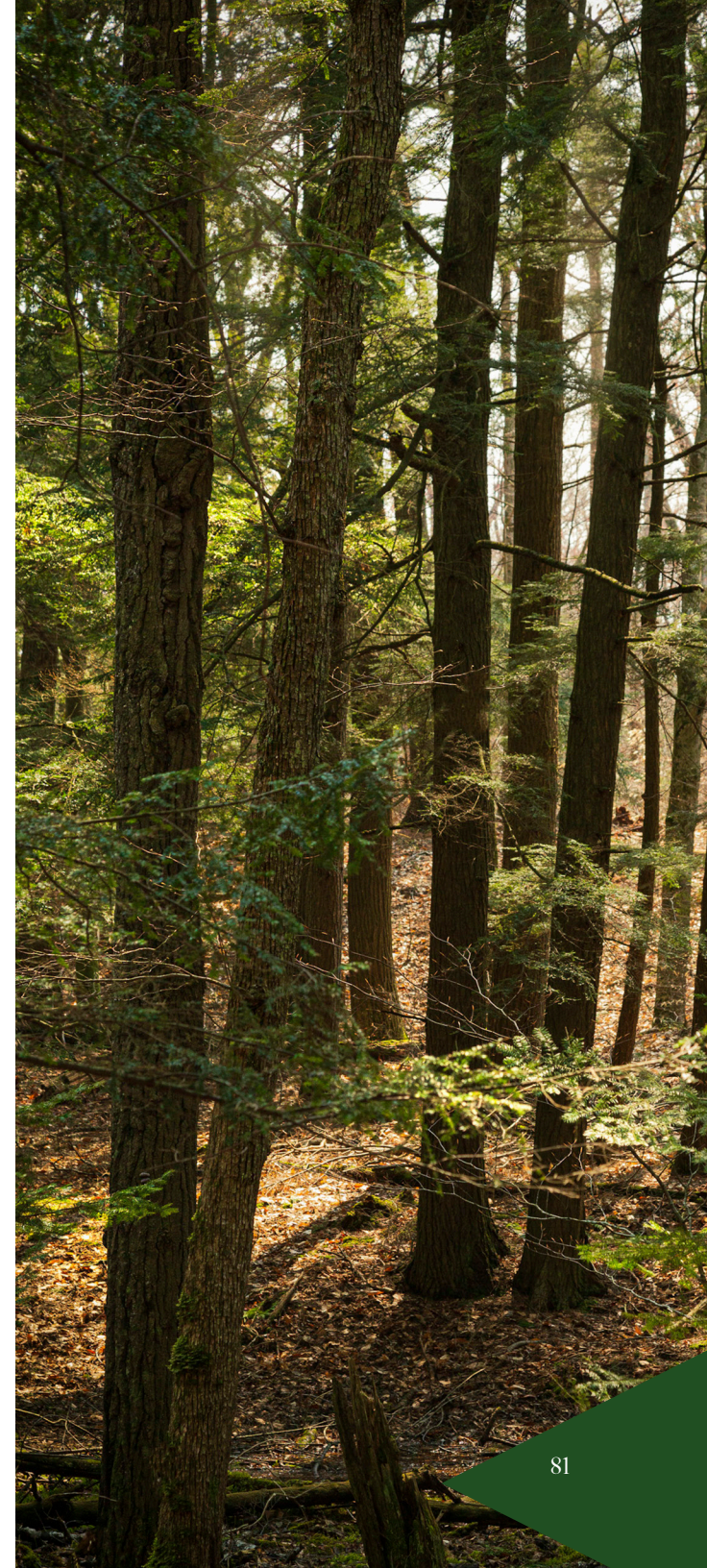
EIP is committed to reducing the adverse environmental impact directly related to business activities. Single-use plastics such as utensils and water bottles have been eliminated from all offices and the firm seeks to purchase eco-friendly, company-sponsored apparel and merchandise. EIP attempts to minimize printing, and all necessary printing is done on recycled paper. Food waste is minimized by individual ordering, and the firm aims to donate rather than discard food surpluses. EIP is also exploring options to reduce its footprint from purchased equipment (e.g. laptop computers).

SOCIAL & GOVERNANCE

EIP is committed to helping expand the pool of future climate finance leaders to include people from all segments of society. For many years, EIP has supported the Clean Energy Leadership Institute (CELI). CELI is the oldest non-governmental organization focused specifically on training future clean energy leaders from diverse backgrounds and has trained ~1,000 leaders through its fellowship program. In addition, EIP Managing Partner, Matthias Dill has played a leadership role in creating a new clean energy fellowship based in Europe, the Climate Fellowship, established in collaboration with Techstars Paris. The year-long program invests €100,000 in equity and supports entrepreneurs in standing up a leading climate tech startup.

EIP seeks to promote a diverse workforce and inclusive work environment, described further in the Diversity, Equity & Inclusion section below.

EIP is also exploring options to include ESG-oriented mutual funds and ETFs in employee 401(k)s.



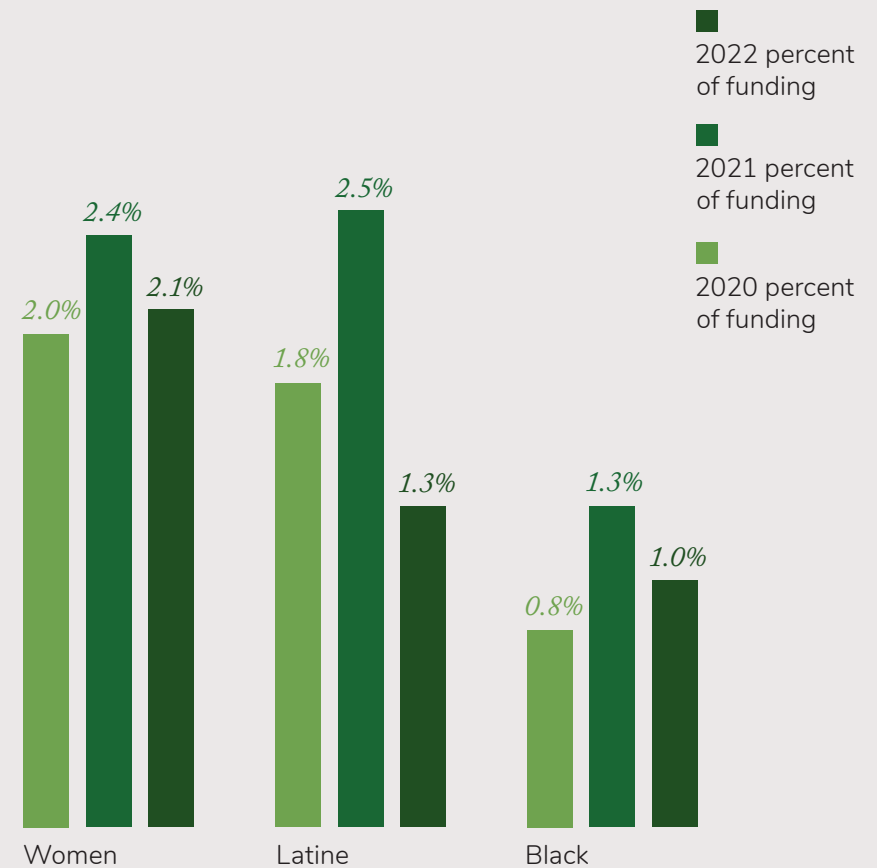
Diversity, Equity & Inclusion

DE&I is a core focus at EIP. The firm is taking steps to incorporate DE&I into its culture and business strategy and reduce the equity gaps in venture capital and energy technology industries. By building a more representative workforce and promoting transparency, collaboration, and inclusivity, EIP can spur the kind of innovation that is only possible when you engage diverse perspectives.

EIP recognizes the importance of the venture capital ecosystem as a meaningful lever for change and improving outcomes in society. In particular, investing in businesses run by leaders and founders from underrepresented backgrounds has the potential to advance economic mobility amongst groups that have typically been overlooked and excluded from prior wealth creation opportunities. Investing in businesses run by diverse founders and leaders will not only play a critical role in closing systemic gaps, but also has the potential to create alpha and generate outsized returns for investors. To track the ecosystem’s progress towards this end and drive measurable outcomes, it is imperative to drive awareness and visibility into data.

Consistent with prior impact reports, EIP is continuing to monitor the state of venture funding to diverse founders. While 2021 saw record levels of investment to Black, Latine and sole women founders, recession fears and the challenging fundraising environment in 2022 saw a significant pullback in investment to these groups. Fundraising was certainly impacted across all areas, but diverse founders experienced a disproportionate decrease as investment managers fled back to the status quo. Black founders were particularly impacted, experiencing a nearly 50% decline compared to the overall U.S. average decline in investment of 36%.⁴¹ Moving ahead in 2023, EIP is committed to playing a role in reversing this trend and leveraging the massive amounts of capital in the net-zero economy as a vehicle for closing these gaps.

INDUSTRY FUNDING TO DIVERSE FOUNDERS DECREASED FROM 2021 TO 2022



THE ELEVATE FUTURE FUND

EIP's Elevate Future Fund (Elevate) is dedicated to investing in founders from groups that are underrepresented in venture capital and companies servicing traditionally underserved communities.

As with all funds on EIP's platform, Elevate's investment focus is on technology segments that are well-positioned to capitalize on the shift toward a digitized, decarbonized, and electrified energy future. In addition to its direct investments, the Elevate team is forming partnerships with technology accelerators and universities, including historically Black colleges, to nurture talent and promote infrastructure and support systems to nourish talent from groups that are underrepresented in venture capital. Elevate works closely with its strategic investors to leverage their considerable resources and jointly advance this important mission.

The Elevate Future Fund made ten total investments in 2022, including four investments in venture capital funds Kapor Capital, NOEMIS Ventures, Powerhouse Ventures, and Techstars.



Kapor Capital is an early-stage venture fund investing in startups that close gaps of access, expand economic opportunity and make a positive impact on society and the economy. The fund invests in entrepreneurs coming from all backgrounds with a particular focus on BIPOC, women and other historically underrepresented founders in the education, finance, health, climate, work and other sectors. Kapor is led by Managing Partners Brian Dixon and Ulili Onovakpuri.



NOEMIS Ventures is a pre-seed and seed stage venture fund founded with the mission to invest in, and partner with technology companies to empower and pursue growth. NOEMIS invests in entrepreneurs who are at the forefront of innovation in the fintech, AI/ML and marketplace sectors, with a lens on investing in diverse entrepreneurs. The fund operates with the belief that great investments and differentiated outcomes result from building strong alliances with its portfolio. NOEMIS is led by Managing Partner Simeon Iheagwam.



Powerhouse Ventures is a climate-focused venture fund backing entrepreneurs who are building the digital infrastructure to rapidly transform the global energy and mobility industries. As both an innovation firm and a venture fund, Powerhouse sits at the intersection of startups, corporations, and investors that are driving rapid decarbonization. The fund also promotes investment in entrepreneurs from diverse backgrounds as part of its portfolio strategy. Powerhouse is led by Founder & CEO Emily Kirsch.



Techstars is a global early-stage accelerator founded in 2006. Elevate invested in Techstars' newly launched Rising Stars Fund, which is focused on investing in pre-seed, pre-accelerator startups led by people from groups that are underrepresented among founders. The Rising Stars Fund is enabling founders at the earliest stages of their entrepreneurial journey and providing them with the capital and resources needed to advance to later stages of investment. The Rising Stars Fund is led by Managing Director Neal Sales-Griffin and Techstars Head of Pipeline Saba Karim.

DE&I AT EIP

EIP is committed to advancing DE&I in the startup financing segment of the clean energy sector. It hopes to help attract new talent to the industry, invest in that talent, nourish the ecosystem that increases DE&I and share experiences with partners. Climate change will require record-breaking amounts of investment and represents a massive opportunity to elevate underrepresented groups. EIP is committed to developing and implementing programs and initiatives to promote DE&I in all areas of its employment and business strategy. As part of this commitment, some of the programs and plans the firm has developed include:



Hiring

Ensuring a significant portion of all qualified candidates for open roles at EIP are from backgrounds or have characteristics that are typically underrepresented among applicants for roles in the venture capital and energy industries,



Internships

Summer Internship Program focused on providing opportunities to students from underrepresented backgrounds



Services

Partnerships with DE&I recruitment platforms and services



Employee Resource Groups

For employees who share a common interest or affinity (gender, ethnicity, religious affiliation, lifestyle, or interest) to support one another and raise awareness



Events

Quarterly employee events to enhance our collaborative culture and encourage inclusive employee engagement



Training

Harassment and discrimination prevention and unconscious bias training



Management

Optional additional diversity training for all managers and employees

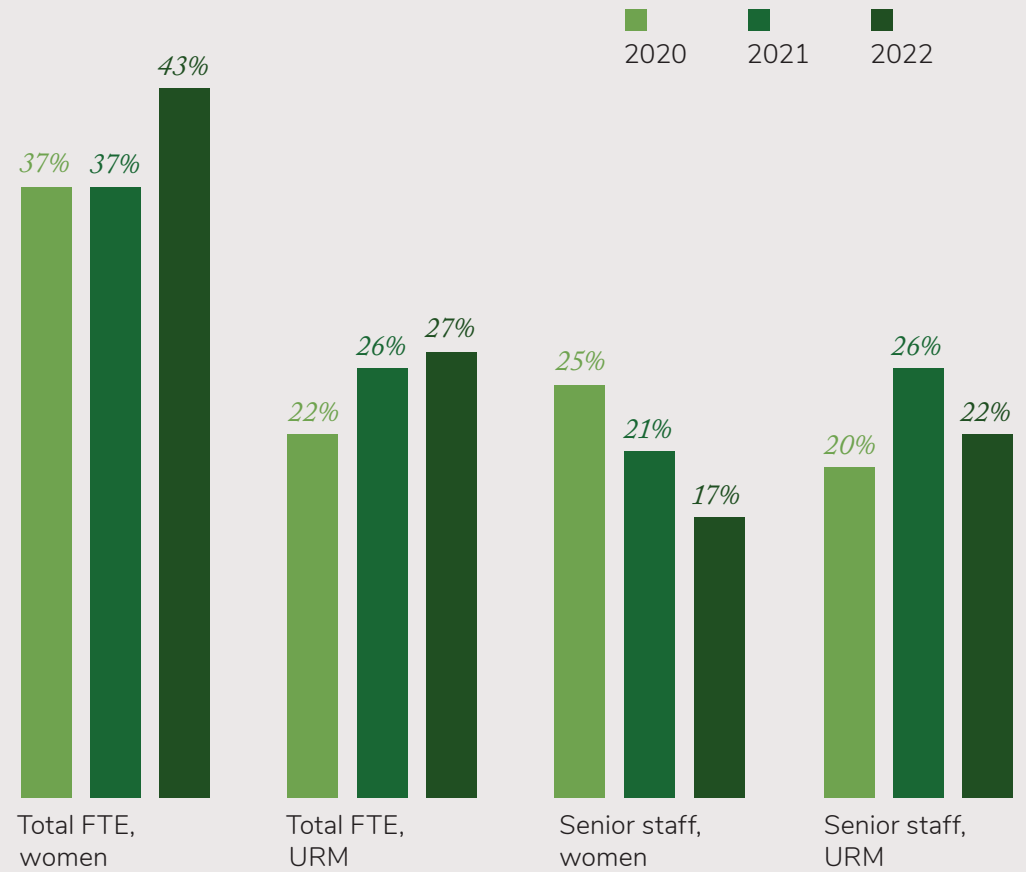


Pay Equity

Annual pay equity assessments completed through a compensation benchmarking exercise which matches skills, competencies, and experience to compensation

In the chart at right, EIP reports its own diversity metrics for year-end 2021 and 2020. As EIP strives to improve these results over time, it recognizes the importance of transparent reporting of these metrics and is committed to adapting and improving its DE&I initiatives as its goals evolve.

EIP WORKFORCE DIVERSITY METRICS PROGRESS⁴²



PORTFOLIO DIVERSITY

For the second consecutive year, EIP collected metrics from portfolio companies across its platform on DE&I within their organizations. This year, EIP's Impact & Sustainability, HR and Elevate teams collaborated to produce a DE&I Toolkit for portfolio companies that will help them continuously foster diverse, equitable and inclusive workplaces. In addition to the diversity data provided in the figures at right, 86% of reporting companies stated that they have or plan to adopt policies that specifically promote and foster DE&I in their workplaces. Further, 63% of reporting companies have adopted or plan to adopt efforts or set goals to improve employee diversity.

MAJOR GENDER & RACIAL METRICS FOR EIP REPORTING PORTFOLIO



ESG Metrics

64 portfolio companies, representing over 83% of active portfolio companies in 2022, participated in the annual ESG data collection exercise, reporting on approximately 30 key metrics.

ENVIRONMENTAL METRICS

Beyond EIP's focus on carbon impacts, the Impact & Sustainability team also collects data on other environmental aspects of portfolio companies. EIP acknowledges that early-stage companies often find it difficult to focus on internal environmental improvements such as office recycling programs. However, EIP encourages its portfolio companies to embed sustainable principles in their company's practices as early as possible. The following descriptions and data present the reporting portfolio's aggregated responses on several key environmental metrics.

Environmental policies and management systems: EIP encourages all portfolio companies, regardless of sector, to consider adopting an environmental policy. These policies typically include environmental improvements to onsite locations, such as waste reduction or recycling programs, purchasing renewable energy, or measuring and offsetting their carbon footprint. For companies with extensive onsite operations (e.g. factories, warehouse facilities, etc.), environmental management policies and processes are important to mitigate environmental risks from the production of goods and the supply chain for raw materials. EIP encourages companies with onsite operations to develop an environmental policy and/or management system as appropriate, or



to work with third party contractors to develop these practices. However, many of EIP’s portfolio companies are software-based and/or are in a pre-commercial phase. Therefore, only a minority (10%) of portfolio companies report having environmental management systems, and 26% have environmental policies.

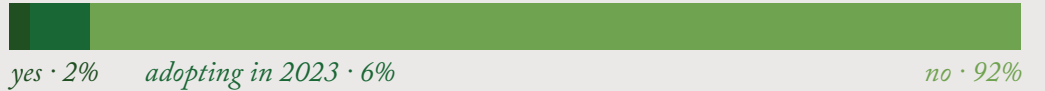
Waste reduction and recycling programs:

43% of EIP’s reporting portfolio companies have waste reduction and/or recycling programs in place. EIP encourages all of them to implement these programs as part of their company’s overall environmental or ESG policy.

Climate risk assessments: Currently, a majority (92%) of EIP’s reporting portfolio companies are not performing climate risk assessments. However, as climate risk continues to become a more prominent aspect of overall risk management, including its focus in the SEC’s recent proposed rulemaking for climate disclosures, EIP expects its mature and pre-IPO portfolio companies to begin to make these assessments.

ENVIRONMENTAL METRICS · 2022 EIP REPORTING PORTFOLIO

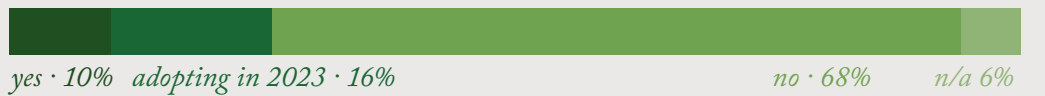
Climate Risk Assessment



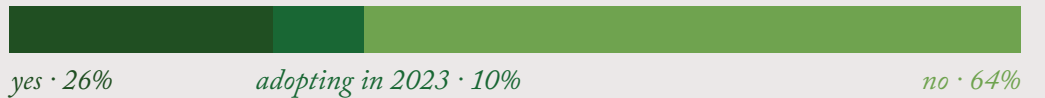
Waste Reduction/Recycling Programs



Environmental Management Systems



Environmental Policy



SOCIAL & GOVERNANCE METRICS

Similar to the reported environmental metrics, EIP also acknowledges that the social and governance aspects of earlier-stage companies may not be fully developed, as they focus on commercializing their businesses. EIP's investment teams conduct extensive diligence on the governance practices of each portfolio company to ensure the firm invests in competent and cohesive management teams with strong leadership. After investment, EIP's goal is to work with these leaders to embed high ESG standards into their operations and culture.

The chart on the following page presents the reporting portfolio's aggregated responses on several key social and governance metrics, described in further detail below.

Paid family leave policy: In the US, paid family leave is only available to people working at qualifying companies in certain states that have implemented required paid leave, or individuals working at companies that offer such leave. EIP encourages companies in jurisdictions without mandated paid leave to implement a policy that allows their employees to take paid time off to care for a new child or sick family member. 73% of EIP's reporting portfolio companies offer paid family leave above minimum requirements or are in the process of adopting a paid leave policy.

Employee satisfaction tracking: 79% of EIP's reporting portfolio companies track employee satisfaction or are adopting a process to do so. EIP encourages its companies to adopt a system to track employee satisfaction to better understand their employees and implement improvements to boost employee satisfaction (and therefore engagement) as needed.

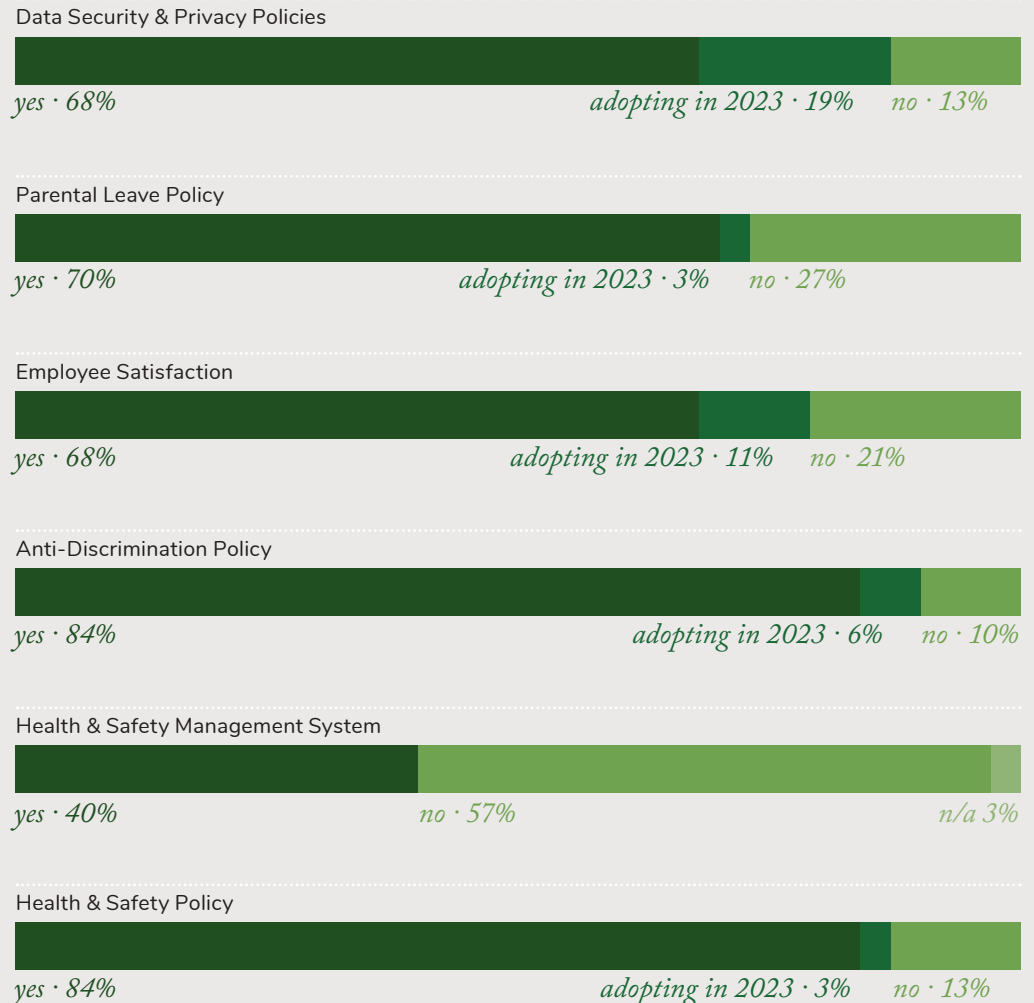
Data security and privacy policies: 68% of EIP's reporting portfolio companies have a data security and/or privacy policy. Data privacy is a material risk for companies in the technology and software space in which many of EIP's reporting portfolio companies work. EIP encourages its reporting portfolio companies to adopt policies to help mitigate cyber risks to themselves and their customers.



Anti-discrimination policy: 90% of EIP’s reporting portfolio companies have or will soon have an antidiscrimination policy in place, as is required by law in many jurisdictions. EIP encourages its portfolio companies to adopt such policies in conjunction with efforts to improve DE&I in their workplaces, as discussed previously.

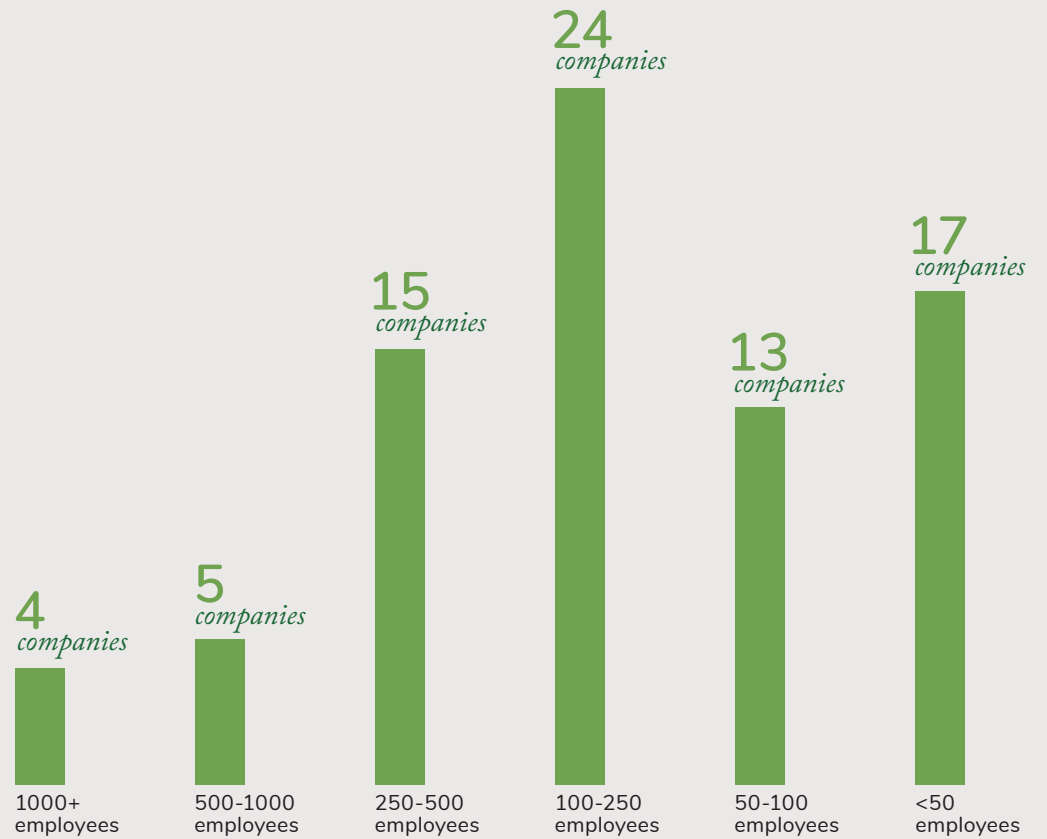
Health & safety policy and management systems: 84% of EIP’s reporting portfolio have a health and safety policy, and many also have adopted a health and safety management system. For companies with extensive onsite operations, worker safety is a material ESG risk which can be mitigated and managed through such policies and systems. EIP encourages portfolio companies to also monitor workplace injuries and accidents, and many portfolio companies have a strong management focus on safety.

SOCIAL & GOVERNANCE METRICS · 2022 EIP REPORTING PORTFOLIO



As of year-end 2022, the reporting portfolio companies employed over 15,000 full-time workers, with nearly 6,000 direct jobs created in 2022. EIP generally invests across venture-stage companies, which can range in size from a handful of employees to several hundred. EIP also invests in later-stage companies that may be even larger. The data presented below shows the number of companies in EIP's reporting portfolio in different employment bands, inclusive of full-time, part-time, and contract employees.

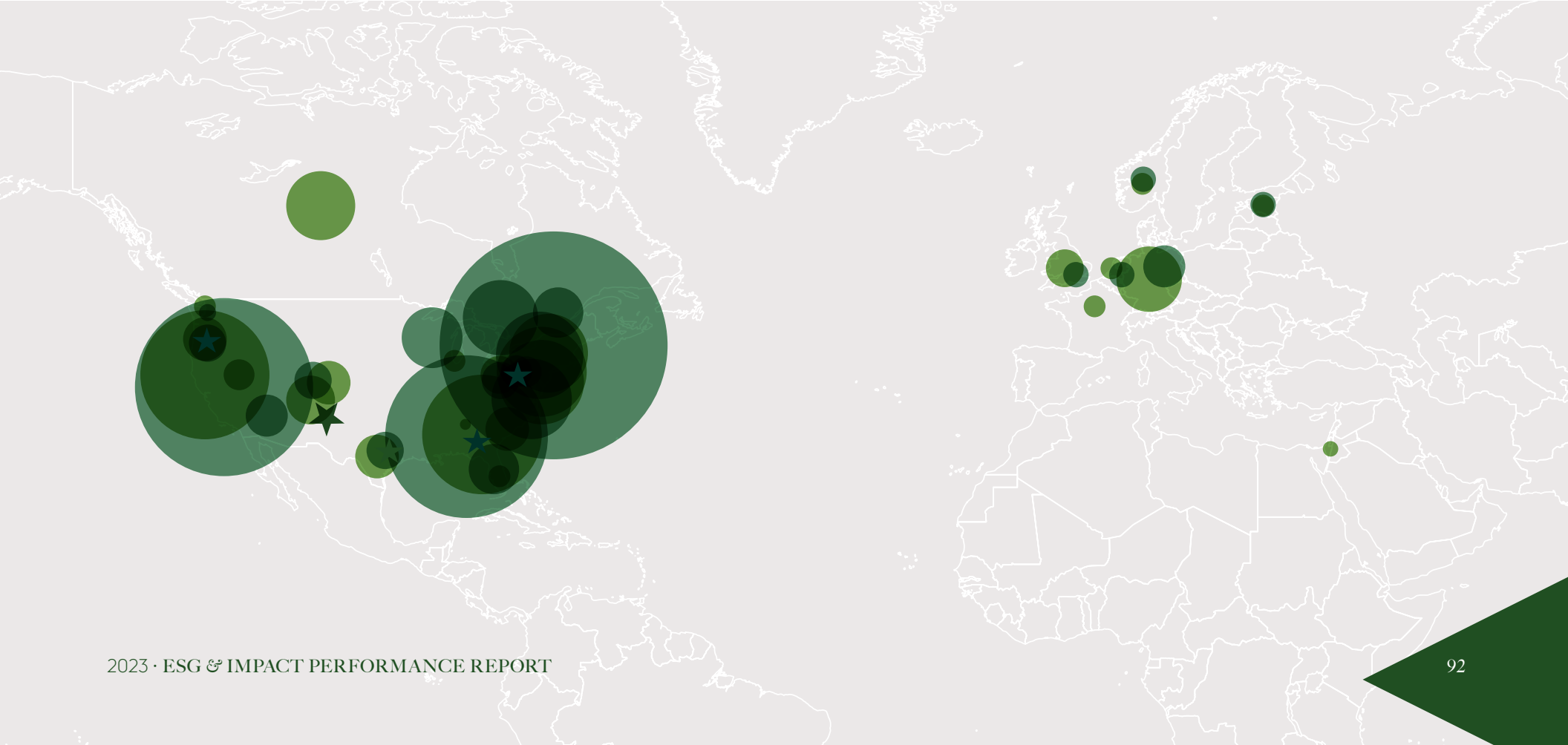
EIP 2022 PORTFOLIO EMPLOYMENT BANDS



GEOGRAPHIES SERVED

EIP's portfolio is mainly focused on early and venture-stage companies across North America and Europe. The map below shows the headquarter locations of EIP's portfolio companies and their relative head count. While many of EIP's companies are located in venture capital hotspots, such as Silicon Valley, several companies are located in opportunity zones, providing jobs and investment in economically-

distressed communities (indicated by stars on the map). EIP expects its footprint across the U.S. to grow to include even more of these communities, especially as the firm further deploys the Elevate Fund. EIP also expects its European presence to grow as the expanding European team invests in that region's dynamic energy markets.

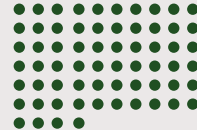


Sustainable Development Goals

The United Nations Sustainable Development Goals (SDGs) offer investors an aspirational view of what the world could look like by 2030, aligning the interests of the public and private sectors to drive progress around the globe. It is imperative that private stakeholders play a role in advancing the SDGs.

The UN estimates that over \$6 trillion of investments will be needed every single year until 2030 to fulfill these goals, with the majority of that amount coming from private investors.⁴³ With fewer than 10 years left, it is critical to push towards these goals together. EIP follows a careful framework to map its investments to the SDG's 17 parent goals by utilizing the 169 underlying sub-targets. EIP's 2022 portfolio companies aligned most frequently with the SDGs shown in the following figure: Industry, Innovation & Infrastructure, Sustainable Cities & Communities, Affordable & Clean Energy and Climate Action.

64 portfolio companies aligned with **Industry, Innovation, & Infrastructure**



39 portfolio companies aligned with **Sustainable Cities & Communities**



26 portfolio companies aligned with **Affordable & Clean Energy**



24 portfolio companies aligned with **Climate Action**




18 portfolio companies aligned with **Responsible Consumption & Production**




17 portfolio companies aligned with **Decent Work & Economic Growth**



10 portfolio companies aligned with **Partnerships for the Goals**



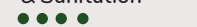
5 portfolio companies aligned with **Zero Hunger**



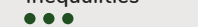
5 portfolio companies aligned with **Good Health & Well-Being**



4 portfolio companies aligned with **Clean Water & Sanitation**



3 portfolio companies aligned with **Reduced Inequalities**



SECTION SIX

Helping our Partners Succeed

Helping our Partners Succeed

EIP's most important impact on the energy transition is the effect we have on the transitions of our strategic investment partners and, through them, on the industries they lead. Nearly all of our strategic partners, who operate large and influential energy, industrial, real estate, and corporate networks, have adopted climate, energy, or sustainability related goals.

At EIP, we strive to facilitate the achievement of these goals by commercializing and de-risking transition solutions, offering strategic insights and a platform for shared intelligence and learning, and supporting our partners efforts to directly integrate new technology in their business. Almost 80% of our strategic corporate partners who have invested in the platform have deployed an EIP portfolio technology.

UTILITY INVESTORS · NORTH AMERICA



UTILITY INVESTORS · EUROPE



INDUSTRIAL INVESTORS



Subset of publicly identified strategic partners.

EIP does extensive research on a wide range of new technologies, decarbonization strategies, business models, and energy policy changes. Unlike traditional private equity and venture capital funds, we collaborate on such research and share the results of our work through intensive engagement with our investors, aiding in the transformation of their businesses towards clean, sustainable operations and ensuring that our research reflects the ground truth realities of the industry.

Our partners assist EIP by jointly defining attractive investment segments, generating proprietary deal flows, conducting rigorous due diligence grounded in the reality of their industries, and creating commercial opportunities for our portfolio companies. Utility partners hold long-established relationships with nearly every household and business in their service territories and have a thorough understanding of the regulatory system. Industrial partners touch many aspects of our society from technology to real estate, liquid fuels and more, which gives them insight into sectors key to the energy transition. Financial institution partners are strategically positioned to invest in the transition, both with EIP and beyond. These important attributes help our partners deploy technology from EIP's portfolio companies.

COMMERCIALIZATION

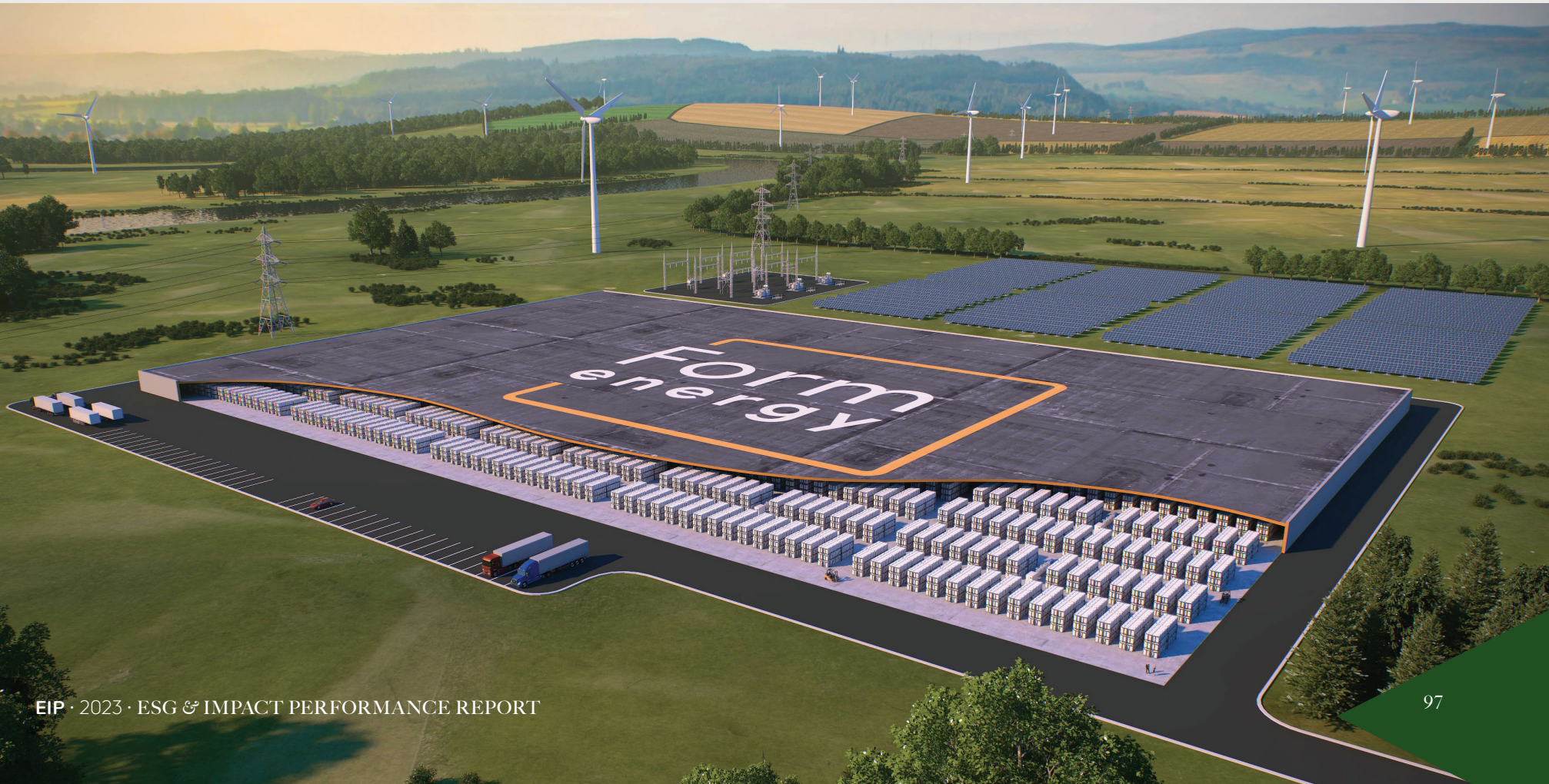
In serving as a bridge between new innovations and essential energy networks, we aim to help our corporate partners accelerate their own climate journeys and achieve equitable sustainability. We have long recognized the challenges of bringing innovators and corporates together and have worked to create a dedicated team of industry veterans, innovators, and business development resources designed to make finding the right connections easier for all parties.

Since our inception, we have supported firms in our portfolio in signing more than 420 contracts worth over \$1.9 billion in cumulative bookings, primarily through collaborations with our partners and select deals with others in the energy ecosystem where EIP has played a hands-on role. Many of the entrepreneurs at our portfolio companies recognize that EIP has a unique ability to introduce technologies into the energy system and speak credibly to utilities, regulators, and other key stakeholders in the energy marketplace.

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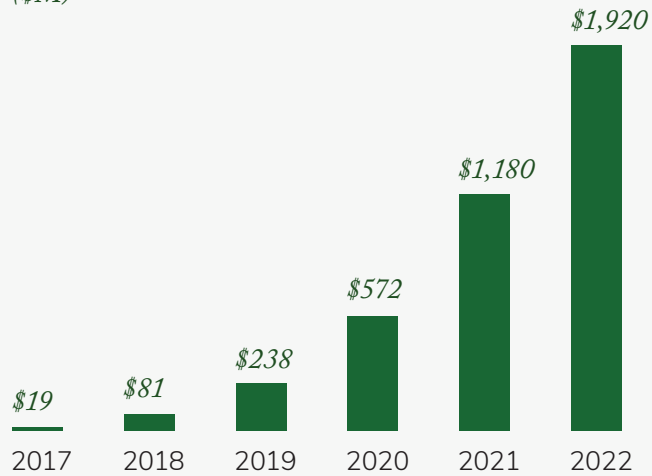
SPOTLIGHT: XCEL & FORM ENERGY

In 2022 not only did Xcel Energy announce that they were speeding up their companywide exit from coal to 2030,⁴⁴ they also launched a partnership with Form Energy to implement novel, multi-day energy storage projects at retiring coal plant sites. Form's ion-air battery storage systems, scheduled to come online in 2025, will allow Xcel Energy to integrate more low-cost, renewable energy into its system and maintain reliability following coal plant retirements and the transition to a highly renewable future.⁴⁵ Analysis demonstrated that Form's battery technology will strengthen the grid not only against normal day-to-day and season-to-season variability, but also against extreme weather events like severe winter storms and polar vortex events.

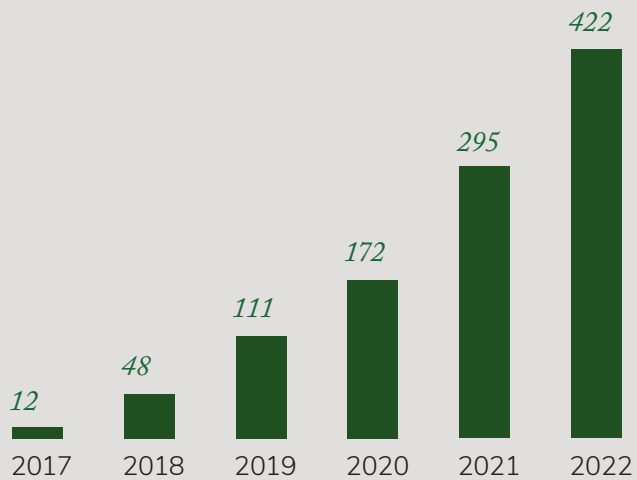


HELPING OUR PARTNERS SUCCEED
Partner Collaborations by the Numbers

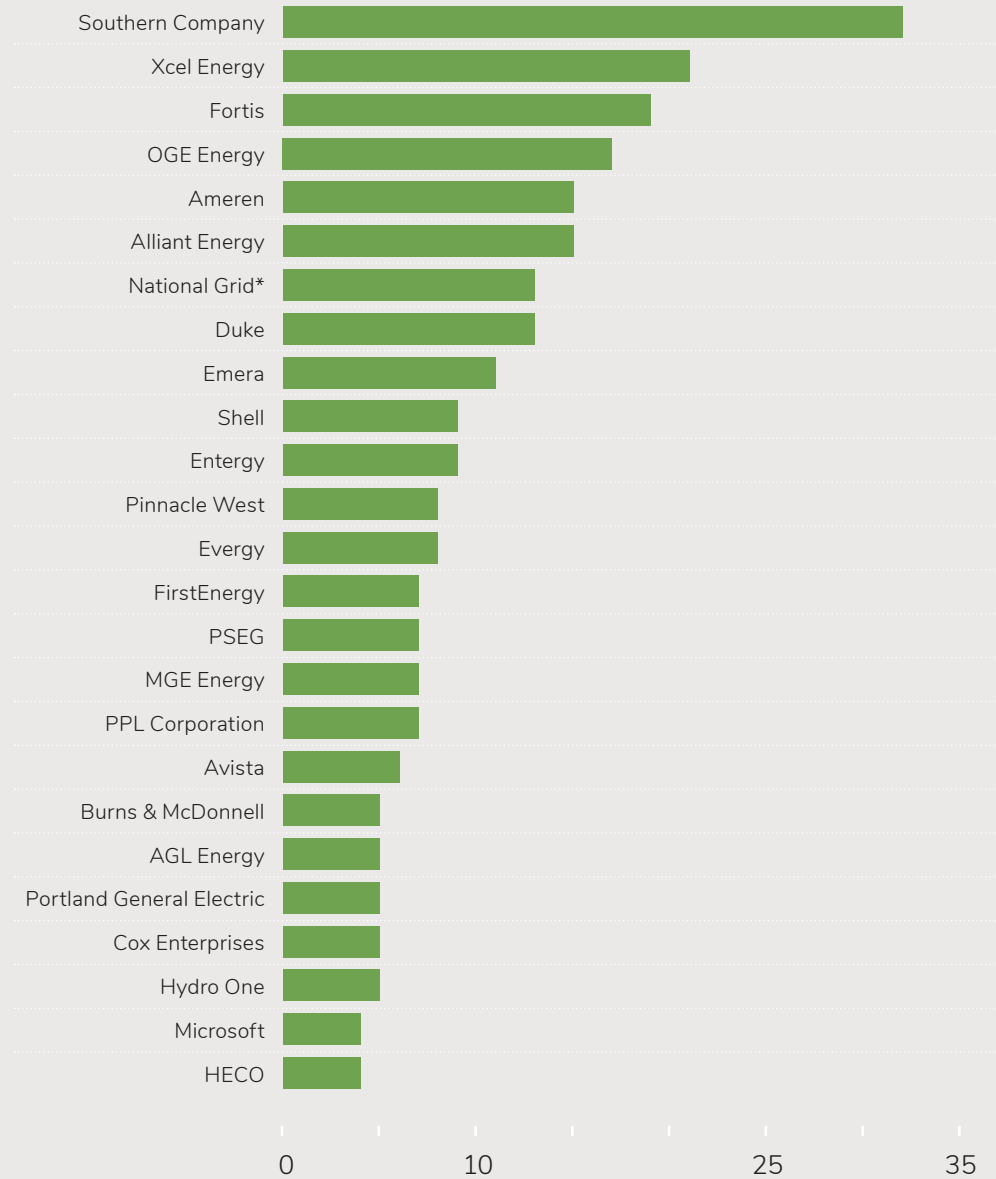
CUMULATIVE BOOKINGS GENERATED FROM PORTFOLIO COLLABORATIONS (\$M)



CUMULATIVE NUMBER OF CONTRACTS FROM PORTFOLIO COLLABORATIONS



CUMULATIVE NUMBER OF PARTNER/PORTFOLIO COLLABORATIONS



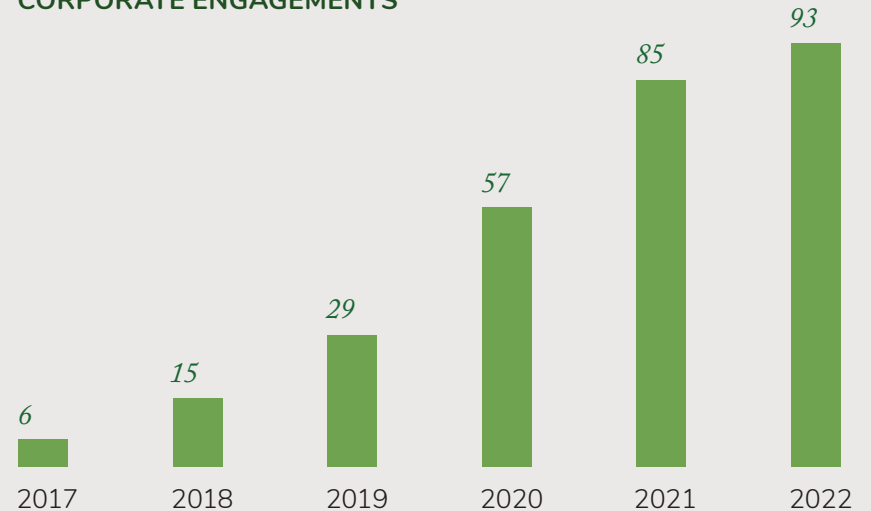
*Past partner

CORPORATE ENGAGEMENT

To support our partners in achieving their strategic goals, EIP strives to offer research, intelligence and support beyond deal flow and technology adoption. In 2022 EIP convened 16 working groups and 93 strategic briefings to over 600+ individual participants. These activities are almost an 80% increase in working groups and a 220% increase in briefings since 2019. We expect to continue expanding our research coverage and strategic insights in 2023.

In addition to briefings and working groups, we also offer tailored partner support. For utility and industrial partners, EIP provides hands-on commercialization engagement by driving collaboration with our utility and industrial partners and our portfolio companies, as well as with other customers across the energy ecosystem. Engagements range from providing introductions to supporting business case development and facilitating references to other partners.

CUMULATIVE NUMBER OF PARTNER CORPORATE ENGAGEMENTS



EIP IMPACT & SUSTAINABILITY VALUE CREATION

EIP recognizes that we are in a unique position in the energy transition ecosystem and aim to provide tailored support on ESG and climate frameworks, carbon and impact measurement, climate strategy development, and climate risk.

This effort has ranged from supporting the development, scoping and strategy of new climate programs, to advising on impact measurement methodologies and granular implementation, to explaining reporting best practices and regulatory landscape. We connect our partners with expert knowledge and capabilities from within the EIP network and our broader ecosystem of experts across regulatory, reporting, risk, and implementation areas of practice.

WORKING GROUPS

In 2022 EIP led 16 intensive, targeted working groups with our partners and external participants. The focus of each working group is featured below, with multiple working groups on select topics per year.



Commercial Building Decarbonization

EIP research and presentations on the importance and challenge of addressing carbon emissions in the built environment, and the tools asset owners and operators can use to optimize reduction strategies.



Corporate Venture Capital

Training and education for corporate VCs on cleantech, deal terms, financial modeling, and commercialization.



Cybersecurity

Research and start-up presentations on the cybersecurity market, IT/OT convergence, and cloud and devsecops.



Decarbonizing Fleets

Research and start-up presentations on the themes of decarbonizing road vehicle fleets, electrification software and services, infrastructure, and managing total cost of ownership.



Digital Infrastructure

Research and company presentations on digital market trends, continuous integration and deployment, and cloud for critical infrastructure.



Impact & ESG

Research and best practices on carbon impact and emissions measurement, regulatory landscape, climate strategies, and climate risks.



Future of Ports, Airports, and Heavy-Duty Transport Hubs

Research and company presentations on electrification, alternative fuels supply chains, and new tech-enabled business models.



Future of Power Supply

Research and start-up presentations on breakthrough technologies for carbon-free, firm power generation, such as nuclear fusion, multi-day energy storage, carbon capture, and green hydrogen.



Heating & Cooling Decarbonization

Research, discussion, and start-up presentations on the theme of decarbonizing heating and cooling in Europe including residential, commercial, and industrial.



Industrial Decarbonization

Research and company presentations on electrification, hydrogen, and decarbonization as a service.



Innovation Implementation

Research and case studies on how to reduce barriers to implementing innovation in corporate operational business units.



Renewables & Storage

Research and company presentations on renewables asset management, operations and maintenance, and battery system implementation and management.



Supplier Diversity

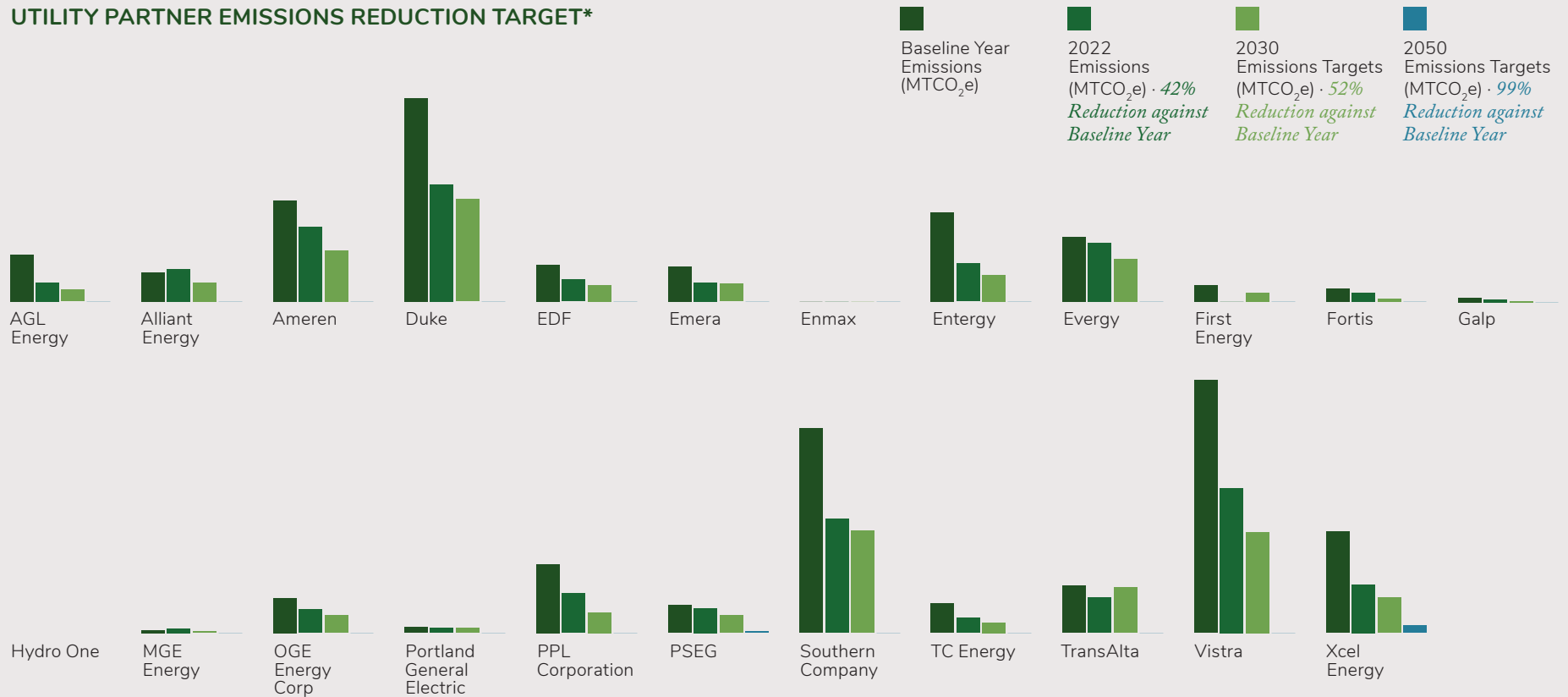
Research and best practices on sourcing practices, supplier development, organizational alignment, and impact measurement.

OUR PARTNERS' CARBON COMMITMENTS

Our investment partners have made many substantial climate commitments; nearly all have set targets around a significant emissions reduction by 2050 – in some cases, much earlier. As shown in the figure below and Appendix 1, our strategic partners have adopted important climate, energy, or sustainability related goals. Many are targeting net-

zero or carbon neutral commitments, aiming to fully integrate climate into operations and strategy by 2050. While these commitments cannot be guaranteed in advance, many of our partners have established planning and reporting processes that document their progress.

UTILITY PARTNER EMISSIONS REDUCTION TARGET*



All data comes from the most recent publicly reported company data prior to 5/1/2023. Subset of publicly identified investors with available data and forward looking climate commitments.

SECTION SEVEN

Thought Leadership & Community Collaboration

Thought Leadership & Community Collaboration

EIP was built on the model of consistent and intentional collaboration among incumbents and innovators to drive real impact towards decarbonizing the global economy. In addition to our efforts within our coalition, we advance our mission through global thought leadership activities that educate the public, our partners, investors and industry stakeholders on this generational transformation. In 2022, highlights included:

EIP's **2022 Impact and ESG Performance Report** intended to meet the highest standards of completeness and transparency. We amplified our perspective in an **Impact Alpha column** and a white paper that further documented our approach to impact measurement, **Know Your Impact**. [see page 107]

Partner and Head of Research, Andy Lubershane authored **Growth Opportunities in the Next Thirty Years of Climate Tech** on a wide-ranging review of the current state of energy transition technologies.

We continue to publish the **EIP Climate Tech Index**, updated daily on EIP's website, designed to track the performance of public companies that support global decarbonization.

In 2022, EIP also launched **The Hypervisor**, a cyber and digital infrastructure content hub to share public updates and exclusive EIP partner insights. The site published 16 pieces of content during the calendar year ranging from in-depth research on operational technology security and cyber-insurance to breaking news. The most popular post was the **Critical Infrastructure Cybersecurity Panorama**, a market map of legacy and startup cybersecurity vendors serving critical infrastructure communities.

Shayle Kann's **Catalyst** podcast produced 56 episodes in 2022 on a wide variety of topics in climate tech and clean energy innovation. The podcast continues to earn Apple's highest 5.0 rating and is described by reviewers as "an amazing climate tech show," "the best in the business," and "an absolutely must-listen."⁴⁶

Investor Dr. Michael Campos writes **Adapting**, a newsletter about the technologies we'll need to build to adapt to a changing climate.

COMMUNITY COLLABORATION

Beyond these activities, we spoke at several industry conferences around the world, including Bloomberg New Economy Forum Summit London, several Private Equity International forums, the EEI-Wall Street Dialog, the CREO annual meeting, NOAH22 Zurich, the Citibank Fusion Executive Summit, the New York Energy Capital Assembly, the ERB Institute and Harvard Business School.

We are also pleased to be a part of several industry thought leadership collaborations, including:

Impact & Sustainability Associate VP Morgan Sheil co-authored the Project Frame white paper on **Diving Deeper into Assessing Future Greenhouse Gas Impact**. EIP serves on the steering committee and several working groups for this project, a collaboration of leading climate investors firms working towards more standardized impact accounting.

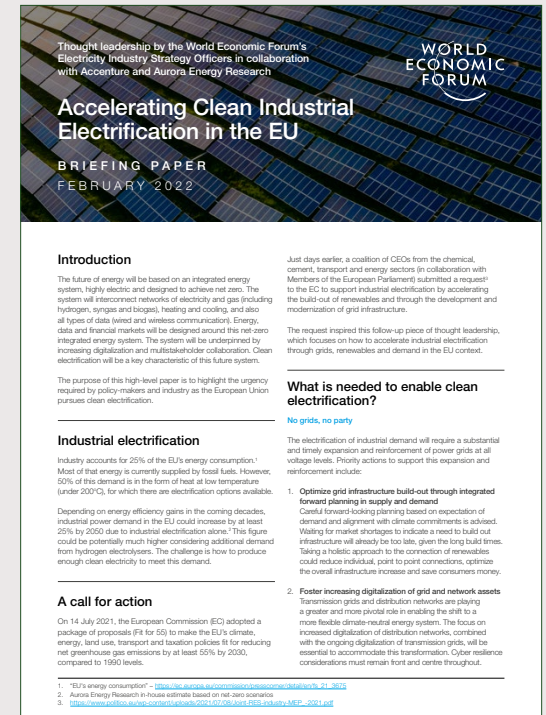
Co-founding the **Venture Climate Alliance**, a new coalition of venture capital firms committed to collaborating and sharing our learnings as a net-zero roadmap for early-stage investing that formally launched in 2023.

Chief Impact Officer Peter Fox-Penner's continuing work with the **World Economic Forum's** community of Chief Strategy Officers and with the advisory boards of the *Energy Futures Financing Forum*, a project of the **Energy Futures Initiative** and the **IMAP research program** on sustainable finance at **Boston University's Institute for Global Sustainability**.

Impact & Sustainability Senior Associate Gabriella Rocco's work on InvestEurope's Sustainable Investment Working Group to launch the **ESG Reporting Guidelines**, including specific recommendations for venture capital firms.

“EIP’s Annual report is the gold standard in impact reporting”

HAUK HOFSETH, *The OLMA Fund*



Introduction

The future of energy will be based on an integrated energy system, highly electric and designed to achieve net zero. The system will interconnect networks of electricity and gas (including hydrogen, syngas and biogas), heating and cooling, and also all types of data (wired and wireless communication). Energy, data and financial markets will be designed around this net-zero integrated energy system. The system will be underpinned by increasing digitalization and multistakeholder collaboration. Clean electrification will be a key characteristic of this future system.

The purpose of this high-level paper is to highlight the urgency required by policy-makers and industry as the European Union pursues clean electrification.

Industrial electrification

Industry accounts for 25% of the EU's energy consumption.¹ Most of that energy is currently supplied by fossil fuels. However, 50% of this demand is in the form of heat at low temperature (under 200°C), for which there are electrification options available. Depending on energy efficiency gains in the coming decades, industrial power demand in the EU could increase by at least 25% by 2050 due to industrial electrification alone.² This figure could be potentially much higher considering additional demand from hydrogen electrolyzers. The challenge is how to produce enough clean electricity to meet this demand.

A call for action

On 14 July 2021, the European Commission (EC) adopted a package of proposals (Fit for 55) to make the EU's climate, energy, land use, transport and taxation policies fit for reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels.

Just days earlier, a coalition of CEOs from the chemical, cement, transport and energy sectors (in collaboration with Members of the European Parliament) submitted a request to the EC to support industrial electrification by accelerating the build-out of renewables and through the development and modernization of grid infrastructure.

The request inspired this follow-up piece of thought leadership, which focuses on how to accelerate industrial electrification through grids, renewables and demand in the EU context.

What is needed to enable clean electrification?

No grids, no party

The electrification of industrial demand will require a substantial and timely expansion and reinforcement of power grids at all voltage levels. Priority actions to support this expansion and reinforcement include:

- Optimize grid infrastructure build-out through integrated forward planning in supply and demand**
Careful forward-looking planning based on expectation of demand and alignment with climate commitments is advised. Waiting for market shortages to indicate a need to build out infrastructure will already be too late, given the long build times. Taking a holistic approach to the connection of renewables could reduce individual, point to point connections, optimize the overall infrastructure increase and save consumers money.
- Foster increasing digitalization of grid and network assets**
Transmission grids and distribution networks are playing a greater and more pivotal role in enabling the shift to a more flexible climate-neutral energy system. The focus on increased digitalization of distribution networks, combined with the ongoing digitalization of transmission grids, will be essential to accommodate this transformation. Cyber resilience considerations must remain front and centre throughout.

¹ "EU's energy consumption" - https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&code=sdg_7_3_01
² Aurora Energy Research House estimate based on net-zero scenario.
³ <https://www.ecofys.com/wp-content/uploads/2021/07/Climate-RES-Industry-IMP-2021.pdf>

“EU policies have helped create a vibrant sustainability ecosystem that we are greatly enjoying and benefitting from.”



NAZO MOOSA,
Managing Partner, Europe
BNEF Summit London 2022

“In 2022 we saw how foreign actors can threaten energy security via malicious cyberattacks. As we look towards a transformed energy system by 2050, energy security will increasingly mean cybersecurity.”



ROB TERRIN,
Vice-President, Research and Innovation
The Hypervisor

“Clean technologies work and the money is coming — but we need more collaboration to adopt climate tech much faster.”



MATTHIAS DILL,
Managing Partner, Europe
NOAH22 Zurich

“Our wealth of subsurface engineering knowledge will prove useful for far more than oil and gas extraction: energy storage, geothermal energy, and increasingly efforts like carbon sequestration, mineral production, and even re-freezing the ice caps. Can we add raising cities from the sea to the list?”



MICHAEL CAMPOS,
Investor Frontier Fund
Adapting



Matthias Dill speaking at NOAH22 Zurich.

“It is time to move beyond commitments and target-setting and prioritize engagement and action. Now is the time to drive implementation forward to kick start decarbonization on a larger scale than ever before.”



MORGAN SHEIL,
Associate Vice President
Private Equity International Responsible
Investor Forum Europe 2022

“Demand on the grid will grow with the push to decarbonize... That’s changing how the system has to be designed, operated, and built.”



PETER FOX-PENNER,
Chief Impact Officer
NPR Marketplace Evening Report,
12.27.22

The scope & scale of CCS remains one of the biggest uncertainties of the energy transition. CCS tends to look quite economically-attractive on paper, but the devil is in the details for individual plants. If regional transport & sequestration infrastructure begins to take shape, one can imagine a snowball effect that leads CCS to become the solution to beat for large-scale emitters.



ANDY LUBERSHANE,
Partner & Head of Research
Growth Opportunities in the Next Thirty
Years of Climate Tech



Morgan Sheil speaking at the Private Equity International Responsible Investor Forum Europe 2022.

REDEFINING IMPACT IN THE LONG RUN

One of the most curious features of carbon savings impacts is that long-run success will be marked by savings numbers going down, not up. As each subsystem of the global economy becomes less carbon-intensive, the added savings from new carbon savings technologies will be less. This is simply another way of saying that true success in the clean energy transformation is shifting the baseline itself to net zero.

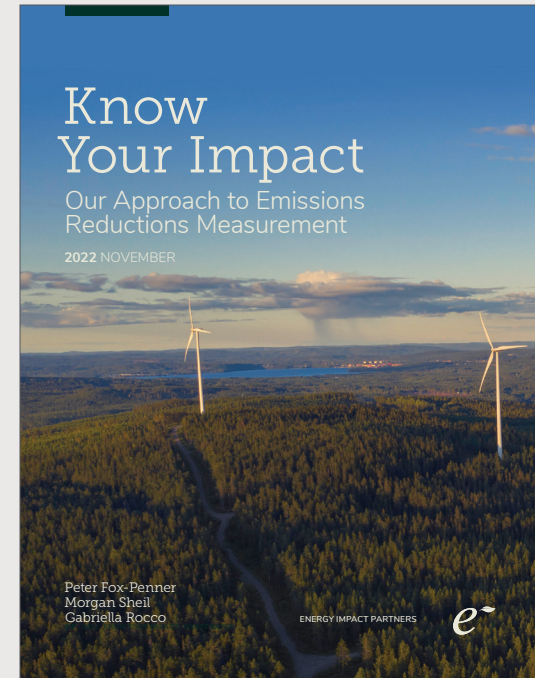
Our position in the climate community regarding carbon savings is analogous to the global effort to completely eradicate deadly diseases such as malaria. The Gates Foundation’s admirable campaign has as its goal the complete elimination of this disease. There are still 241 million cases of malaria a year, but over 1.7 billion cases have been prevented, and deaths from malaria have been cut in half since 2000.⁴⁷

As this campaign nears its immediate goal, the effort will undoubtedly shift from preventing malaria infections to preventing any resurgence of the disease, bolstering health systems, and other objectives that further public health in emerging economies. In a similar fashion, investors like EIP that invest in climate impact technologies and businesses will have to

gradually shift away from eliminating baseline tons to correlate objectives such as replacing first-generation zero emissions technologies with better second-gen tech that has even lower costs and better ESG attributes.

We see this already in our long-term impact estimates for electric generating technologies. The industry has already reduced its carbon emissions by almost 50% since its peak in 2007, and we project a relatively steady decline in grid GHG emissions to the point of approximate net zero by mid-century. According to our 2021 impact analysis, installing 1 gigawatt of new solar capacity on the grid displaces 89 mt of CO₂ right now; by 2040 a gigawatt of new panels will displace only 33 mt of CO₂.⁴⁸ However, we clearly want to incentivize and reward investment in solar capacity as much in 2040 as we do today. The answer to this conundrum is that we simply cannot, in the long run, count tons saved as the only measure of success in the clean energy transformation.

Know Your Impact November 2022



Authors & Acknowledgements

This report was written by Peter Fox-Penner, Morgan Sheil, Gabriella Rocco, and Saurabh Kumar of Energy Impact Partners, and Cliff Brown of ESG Capital Group. The review of Climate Tech in Section Two is based on materials produced by EIP's research team: Andy Lubershane, John Daugherty, Eve Hanson, Kirsten Smith, Rob Terrin, and Jake Elder, as well as Greg Theil. Questions or comments are welcome at impact@energyimpactpartners.com.



The authors would like to extend their gratitude to EIP's investment partners, portfolio companies, and employees, many of whom have devoted significant time and resources to make this report possible, including Albert Abaunza, Vida Asiegbu, Andrew Brochu, Robbie Edwards, Emilia Emcke, Aumri Esdaille, Rebecca Francus, John Freeze, Charlotte Guyette, Radhika Iyer, Rime Jabbara, Adam James, Tyler Knowles, Steven Simone, Dhana Warnecke, Kyle Wool, and Hany Zerbib.

Special thanks to our partners at Greenly for carbon footprinting work, especially Hadrien Dykiel, Jeanne Kuhn, Alexis Normand, and Matthew Vegreville.

From our portfolio companies, we would like to thank Maria McWalter, 42Crunch; Judy Lee, 6K; Daniel Crowe and Matt Myers, AeroSeal; Paul Mule, Elliot Burklow, and Helena Kilburn, Arcadia; Addison Stark and Sarah Heyborne, AtmosZero; Christopher Naismith and Matt Quetton, Audette; Adam Rauwerdink, Boston Metal; Brent Lewis and Ashleigh Ross, Carbon America; Evette Ellis, ChargerHelp!; Jackie Burge, Community Tree Service; Brian Dye, Corelight; Moshe Shalchon and Megan Miller, Cosmic Bliss; Amy Bagwell and Jill Krizan, Derive Systems; John Marchetti, Dragonfly Energy; Darren Sankbeil and Peter Vescuso, Dragos; Alex Panchula and Derek Warnick, Electric Hydrogen; Taylor DeLaFosse and Kevin Clothier, Enchanted Rock; Daniel Klier, ESG Book; Henrik Bache, Ole Melleby and Sunny Nagra, eSmart Systems; Nick Woolley and Sandy Neill, ev.energy; Stephen Sanchez and Michael Harris, EVmo; Connie Yuen, Finite State; Travis Allan, Francis Baillargeon, Maude Blouin, Simon Cousineau and Olivier Tremblay-Plourde, FLO; Charlotte Beard and Sid Radhakrishna, Form Energy; Alexis Normand and Laetitia Carle, Greenly; Scott Engstrom, GridX; Sophie Zielcke and Lisa Steffenhagen, Grover; Eitan Marder-Eppstein, Hippo Harvest; Joanna McFarland, Katrina Kardassakis and Patty Miller, HopSkipDrive; Niv Krikov, Innowatts; Sarah Fichtner, Instagrid; David Rasmussen and Conner Nelson, ION Solar; Or Shoshani, Lightlytics; Stephen Williams, Marketing Evolution; Jeremy Hux, Manus Bio; Jessica Joelson, Measurabl; Alyssa Pollack, Ross Mazur, Shy Sayadi and Michael Abramson, Mill; Sarah Gurbach, Mosaic; Paul Huelskamp and Audrey Stys, Moxion Power;

Raymond Hermann, Network Perception; Nicolas Pinkowski, Nitricity; Paul Ayers, Noetic; Matt Caulfield and Gwendolyn Quest, Oort; Omar Amin, Andrew O'Brien, and Urja Ojha, Palmetto; Isabella Andrade, Raniz Bordoloi, Zach Supalla and Steve Bower, Particle; Marco Gomez, Andres Holzer-Torres, and Katie Hayes, Picnic; Isabelle Proulx, Power Factors; Kevin Considine and Jessica Sgambati, Powin Energy; Jessie Schiavone, Aspen Little and Petra Sikorski, Project Canary; Taavi Must and Jaanus Kink, RangeForce; Luc Lavatai, RapidSOS; Connie Kim and Sabira Lakhani, Rheaply; Richard Gayler and Katie Mayer, Rondo Energy; Joel Tennon and Chris Micklas, RS Technologies; Elizabeth Wharton, Scythe; Carol McGarry, Mike Phillips, Marty Cissel, and Karen Rubin, Sense; Denise Mendoza and Seth Spears, Sibros; John Leigh and Michael Argosh, Sitetracker; Travis Breihan and Hannah Shufro, Smallhold; Michael Garrabrant, SMTI; Ben Hill, Phil Croker, Adam Meyer and Quan-Chi Le, Sparkfund; Justin Smith, Spire Power Solutions; Homam Karimi and Titus Engels, Studytube; Raffi Mardirosian, Sublime Systems; Lindsay Upton, Swimlane; Michael Dolmatch, Urbint; Randy Lay and Damien Vassall, Williams Industrial Services; Ryan Umstatt and Sam Crumley, ZAP Energy; Shyam Srinivasan, Zitara; Diana Ogorzelska, Zolar.

We would also like to thank our ESG Advisory Board members: Joost Slabbekoorn of APG, Siri Kalvig of Nysnø, Brandon Middaugh of Microsoft, and Frank Prager of Xcel Energy, and Ann Klee for their ongoing counsel, as well as the many members of our strategic partners who contributed to this report.

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Recipients should be aware that sustainability impact measurement is a developing discipline, and the sustainability impact of companies in the EIP portfolio is ultimately a matter of interpretation. EIP commissioned ECG Capital Group (“ECG”), an independent research provider, to conduct the sustainability impact assessments for the portfolio companies held in the EIP portfolio as of December 31, 2022. ECG has received or will receive a fee from EIP in connection with the preparation of the ESG impact assessments in this report. However,

EIP believes ECG was objective in preparation of the sustainability impact assessments and was not influenced, either directly or indirectly, in assessing the impacts generated during the 2022 calendar year by the portfolio companies in the EIP portfolio as of December 31, 2022.

The information contained in this report is based on data obtained from sources deemed to be reliable, including applicable portfolio companies; however, it is not necessarily reported according to established standards or protocols, is not guaranteed as to accuracy, is subject to change, does not purport to be complete, and should not be relied upon. EIP makes no representation or warranty, express or implied, with respect to the accuracy, reasonableness or completeness of the information.

Certain portfolio companies identified in this report may have been partially or fully exited by EIP. The inclusion of such companies in this report does not represent a full list of portfolio companies that were partially or fully exited by EIP and is meant to represent those portfolio companies engaged in certain ESG or impact related, projects, activities and/ or ventures applicable to this report. It should not be assumed that any portfolio companies discussed in this report were or will be profitable. A full list of EIP’s investments is available upon request and can also be viewed at https://www.energyimpactpartners.com/_portfolio/.

BACK MATTER

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Appendix

APPENDIX I - PARTNER CARBON COMMITMENTS & GOALS

PARTNER	GOAL
AGL Energy	Net-zero for Scope 1, 2, and 3 emissions by 2050 · <i>AGL Climate Commitments</i>
Alliant Energy	50% reduction in CO ₂ emissions from electricity generation from baseline by 2030; net zero CO ₂ emissions from electricity generation by 2050 · <i>Clean Energy Vision</i>
Amazon	50% of Amazon shipments net-zero by 2030; net-zero operational emissions by 2040 · <i>2021 Sustainability Report</i>
Ameren	50% reduction in Scope 1 emissions from baseline by 2030; 85% reduction by 2040; net zero Scope 1 emissions by 2050 · <i>Ameren 2022 EEI-AGA ESG/Sustainability Template</i>
AvalonBay	53% reduction in Reduce Scope 1 and 2 emissions intensity by 53% and Scope 3 emissions intensity by 47% by 2030 · <i>2021 Corporate Responsibility Report</i>
Avista	100% Clean electricity and carbon neutral natural gas operations by 2045 · <i>2021 Annual Report; 2021 EEI ESG/Sustainability Template</i>
Aviva	90% reduction in Scope 1 and 2 emissions from baseline by 2030; Net-zero Scope 1, 2 and 3 emissions by 2040 · <i>2022 Sustainability Report*</i>
Burns & McDonnell	50% reduction in Scope 1 and 2 emissions from baseline by 2030 · <i>2021 Sustainability Report</i>
BXP	Net-zero Scope 1 and 2 emissions by 2025 · <i>2021 ESG Report</i>
Chubu	50% or more reduction in CO ₂ emission from electricity sold to customers from baseline by 2030; net zero CO ₂ emissions by 2050 · <i>2022 CSR Report</i>
Cox Enterprises	Carbon and water neutral by 2034; Zero landfill by 2024 · <i>Corporate Responsibility Impact Goals</i>
Duke	50% reduction in CO ₂ emissions from electricity generation by 2030; Net-zero Scope 1, 2 and partial Scope 3 emissions by 2050 · <i>2022 EEI and AGA ESG/Sustainability Report</i>
EDF	50% reduction Scope 1 & 2 and 28% Scope 3 from baselines by 2030; Carbon neutral by 2050 · <i>2022 Universal Registration Document</i>

*% reduction in Scope 1 and 2 own operational CO₂e against 2019 baseline

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Append I – Partner Carbon Commitments & Goals

PARTNER	GOAL
Emera	55% reduction in emissions by 2025 and 80% by 2040; Net zero emissions by 2050 · <i>2021 Sustainability Report</i>
Enmax	Reduce or offset 70% of Scope 1 and Scope 2 emissions from baseline by 2030; Net zero by 2050 · <i>2021 Environmental Report</i>
Entergy	50% reduction in CO ₂ emissions from baseline by 2030; Net-zero carbon emissions for operations by 2050 · <i>2021 Integrated Report</i>
Evergy	70% reduction in CO ₂ emissions from baseline by 2030; Net-zero CO ₂ emissions by 2045 · <i>2021 Sustainability Report</i>
EWE	Climate neutral by 2035 · <i>Sustainability Commitment</i>
FirstEnergy	30% reduction in Scope 1 emissions from baseline by 2030; Carbon neutral Scope 1 by 2050 · <i>2021 Environmental Report</i>
Fortis	50% reduction in carbon emissions from baseline by 2030; Net-zero direct CO ₂ emissions by 2050 · <i>2022 Sustainability Report</i>
Fortum	Carbon neutral Scope 1, 2 and 3 by 2030 · <i>2022 Sustainability Report</i>
Galp	40% reduction in Scope 1 and 2 emissions by 2030; Net zero Scope 1, 2 and 3 by 2050 · <i>Sustainability Ambitions and Targets</i>
GE	Carbon neutral Scope 1 and 2 by 2030; net-zero for Scope 1, 2 and sold product emissions by 2050 · <i>2021 Sustainability Report</i>
HECO	70% reduction in emissions by 2030; net zero emissions from power generation by 2045 · <i>2022–2023 Sustainability Report</i>
Hydro One	30% reduction in emissions by 2030; net zero by 2050 · <i>2021 CSR Report</i>
MGE Energy	80% Reduction by 2030; Net Zero carbon electricity by 2050 · <i>2022 Corporate Responsibility & Sustainability Report</i>
Microsoft	Carbon negative by 2030; remove all historical emissions by 2050 · <i>2021 Environmental Sustainability Report</i>
Mitsui Fudosan	40% reduction in Scope 1 and 2 emissions from baseline by 2030; net-zero in Scope 1 and 2 by 2050 · <i>2021 CSR ESG Report</i>
OGE Energy	50% reduction in CO ₂ emissions from baseline levels by 2030; retire 95% of current fossil-fuel generation by 2050 · <i>Clean & Reliable Energy Stewardship</i>
Park Hotels & Resorts	Reduce energy consumption & carbon emissions · <i>2022 Corporate Responsibility Report</i>
Pinnacle West	100% clean, carbon-free energy by 2050 · <i>2022 Corporate Responsibility Report</i>

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Append I – Partner Carbon Commitments & Goals

PARTNER	GOAL
Portland General Electric	80% reduction in Scope 1, 2 and 3 emissions from power associated with retail customers baseline by 2030; net-zero Scope 1, 2 and 3 emissions by 2040 · <i>2022 ESG Report</i>
POSCO	10% reduction in Scope 1 and 2 emissions from baseline by 2030; 50% by 2040; Net-zero Scope 1 and 2 emissions by 2050 · <i>2021 Corporate Citizenship Report</i>
PPL Corporation	70% reduction Scope 1, 2, and purchased power by 2035; net zero by 2050 · <i>2021 Climate Assessment Report</i>
PSEG	Net-zero Scope 1 and 2 emissions by 2030 · <i>2021 Sustainability and Climate Report</i>
Public Storage	Committed to reducing energy consumption, carbon emissions, and embodied carbon · <i>2022 Sustainability Report</i>
ReNew	29% reduction in Scope 1, 2 and 3 from baseline by 2027; 90% reduction in Scope 1, 2 and 3 by 2040 · <i>2021-22 Sustainability Report</i>
Schlumberger	Net-zero in Scope 1, 2 and 3 emissions from baseline by 2050 · <i>2021 Sustainability Report</i>
Shell	50% reduction in Scope 1 and 2 emissions from baseline by 2030; net-zero Scope 1 and 2 emissions by 2050 · <i>2022 Annual Report and Accounts</i>
Southern Company	50% reduction in Scope 1 and 2 emissions from baseline by 2030; net-zero Scope 1 and 2 emissions by 2050 · <i>2022 Just Transition Report</i>
TC Energy	30% reduction in Scope 1 and 2 emissions from baseline by 2030; net zero Scope 1 and 2 emissions by 2050 · <i>ESG Data Table</i>
The Williams Companies	56% reduction in Scope 1 and 2 emissions from baseline by 2030; net-zero Scope 1 and 2 emissions by 2050 · <i>2021 Sustainability Report</i>
TransAlta	75% reduction in Scope 1 and 2 emissions from baseline by 2026; Carbon neutral in Scope 1 and 2 by 2050 · <i>2021 Integrated Report</i>
TrønderEnergi	Minimum of 50% reduction from 1990 levels by 2030
Vistra	60% reduction in Scope 1 and 2 emissions from baseline by 2030; Net-zero emissions Scope 1 and 2 by 2050 · <i>2021 Sustainability Report</i>
Xcel Energy	80% reduction in Scope 1 and 3 emissions from baseline by 2030; 100% carbon free electricity by 2050 · <i>2021 Sustainability Report</i>

APPENDIX II – EIP & PROJECT FRAME METHODOLOGY BRIDGE

TOPIC	PROJECT FRAME	EIP
Realized Impact	The impact that a proposed climate solution actually caused	Actual Annual Enabled Savings
Impact type	<p>Direct product – when a solution can be purchased as a whole to yield GHG impact</p> <p>Direct component – a part of an overall solution that plays a critical role in delivering GHG impact</p> <p>Facilitating – solutions that advances our ability to reduce emissions or adopt an emerging technology that ultimately delivers or accelerates GHG impact</p>	<p>Directly measurable – solutions that have direct carbon impacts that can be concretely modeled</p> <p>Foundational – solutions whose impacts on the carbon transition are not reasonably measured in tons of carbon emissions saved or other traditional energy and environmental metrics</p>
Potential Impact	<p>The impact a proposed climate solution could have based on a standardized growth trajectory that assumes the proposed solution takes over the Total Addressable Market (TAM)</p> <p>approach for earliest stage ventures and/or broad solution impact assessment, not for specific companies or proposed solutions</p>	We don't assess potential generally, as we try to base our assessments on commercial forecasts and bottoms up impact that is as granular and conservative as possible
Planned Impact	<p>Based on what the company deploying the solution intends to achieve per a realistic analysis of its business model</p> <p>a bottoms-up approach based on the specific business plan and commercial forecasts for the company, accounting for their current resources, offerings, and capabilities</p>	Projected Five-Year Enabled Savings
Long term planned impact	<p>Typically defined as beyond a 5-10 year time horizon</p> <p>can necessitate combining a bottom-up and top-down analysis of a company's emissions reduction impact</p>	We do not measure long term planned impact due to conservative principles and difficulty in modeling accurately beyond 5-10 years (no 2050 threshold for example)
Tesla Effect	May consider how a new lower emissions technology can be adopted by competing companies and bring about significant emission reduction impact	We do not consider
Vertical Attribution	<p>Attributing portions of impact across the shareholders of the company that has put the proposed climate solution on the market</p> <p>companies wishing to claim attribution can report a percentage of their portfolio companies' achievements using their equity ownership proportion in these companies during the year when the effect has been produced</p>	Ownership Weighting
Horizontal Attribution	<p>Attributing portions of emissions reduction impact across the chain of contributors along the value chain</p> <p>Given the complexity of a horizontal attribution methodology, Project Frame does not recommend at this time</p>	EIP does not do horizontal attribution as we believe that all components along the value chain are important and calculating this is difficult.
Additionality	The degree to which a proposed climate solution causes GHG impact that would not have otherwise happened in a no-intervention baseline scenario	We assess the technical additionality of the proposed climate solution, but we do not assess the additionality of dollars invested

Endnotes

- 1 Sources: <https://www.ncei.noaa.gov/access/billions/> for climate records and damages; <https://www.reuters.com/business/cop/europes-heatwave-may-have-caused-more-than-20000-excess-deaths-2022-11-24/> for excess deaths; both acc. 4.5.23
- 2 https://climate.ec.europa.eu/news-your-voice/news_en acc 4.5.23
- 3 <https://netzeroclimate.org/innovation-for-net-zero/progress-tracking/> acc 4.5.23
- 4 Internal footprint is defined as Scope 1 + Scope 2 + Scope 3 excluding financed emissions.
- 5 <https://climate50.com/2021-list/>
- 6 <https://realdeals.eu.com/article/future-40-esg-innovators>
- 7 <https://www.esginvesting.co.uk/awards/shortlistedfinalists/>
- 8 <https://ourworldindata.org/emissions-by-sector>
- 9 BloombergNEF, “1H 2021 – Hydrogen Market Outlook,” 2021
- 10 <https://www.cbo.gov/publication/58861>
- 11 <https://www.bloomberg.com/news/articles/2023-02-14/electric-vehicle-sales-top-1-trillion-in-wake-up-call-for-carmakers>
- 12 <https://www.bloomberg.com/news/articles/2023-02-14/electric-vehicle-sales-top-1-trillion-in-wake-up-call-for-carmakers>
- 13 Gold hydrogen refers to hydrogen collected from naturally occurring high-concentration geological deposits of hydrogen. For additional background, see **Hidden Hydrogen, Science 379:630 16 Feb 2023**
- 14 <https://news.un.org/en/story/2021/03/1086822>
- 15 <https://www.dnv.com/news/energy-executives-expect-more-extreme-cyber-attacks-but-defensive-action-is-lagging-new-dnv-research-reveals-224890>
- 16 Source: 2022 Cybersecurity Almanac, Cybercrime Magazine, January 2022
- 17 Less than 10% of EIP’s portfolio companies are outside of our investment thesis and are not categorized within our impact pathways. We have not included them in this chart, but their customer KPI data and ESG data are included in sections 3 and 5, respectively.
- 18 <https://eh2.com/#about>
- 19 <https://www.c2es.org/document/decarbonizing-u-s-buildings/>
- 20 <https://www.flo.com/about/>
- 21 <https://www.dnv.com/news/energy-executives-expect-more-extreme-cyber-attacks-but-defensive-action-is-lagging-new-dnv-research-reveals-224890>
- 22 <https://ifnotnowwhen.climateimpact.com/>
- 23 <https://news.un.org/en/story/2022/11/1130517>
- 24 As explained in **Know Your Impact**, one of the most important steps in carbon impact measurement is setting the baseline scenario for emissions absent our investment. While we use the term current value chain in this sentence, we expect that the baseline will evolve over time and reflect this in our calculations when the change is significant.
- 25 In addition to our white paper, **Project Frame’s Pre-Investment Considerations: Diving Deeper into Assessing Future Greenhouse Gas Impacts** discusses these issues in useful detail.
- 26 For example, we expect the electricity grid to become less carbon-intensive over the period between now and mid-century, when it reaches net zero. The savings from technologies such as solar panels, which displace grid power over several decades, therefore decline steadily in our calculations.
- 27 This results in a mixture of time streams for this category of enabled savings. Within our 12 companies in this category, commercial startup dates vary between 2023 and 2030. Because we employ the first five years whenever they begin, our calculations do not change if the first year of commercial operation shifts.
- 28 This is a revision of practice from our prior impact measurement reports. In the past we estimated impacts using a static ten-year window. We have made this more conservative and more accurate by adopting a five-year forecast window, starting from the projected first year of commercial sales. This required restating 2021 savings from pre-commercial companies, which we labeled “projected ten-year savings,” into five-year periods consistent with our 2022 data. Ownership weighting of the 2021 restated savings used the average 2021 ownership weight.
- 29 The figures also omit two DM firms whose early operations were not yet quantifiable. We expect to include them in subsequent reports.
- 30 Electricity use per household comes from <https://www.eia.gov/energyexplained/use-of-energy/electricity-use-in-homes.php> acc 4.11.23. *See* Technical Appendix for more information.
- 31 We use a GWP-100 value of 29.8 for fossil methane, from **IPCC Sixth Assessment Report, Working Group 1: The Physical Science Basis, Chapter 7**, Table 7.15. This is a conservative choice; the 20-year GWP is three times as large, and would lead us to compute savings about three times as large.
- 32 The percentage increase for lifetime savings grew by a smaller amount because it began from a larger base, and also because lifetime savings shift more slowly than annual savings.

ENDNOTES

33 Scope 1 and 2 footprints were based primarily on the square footage of office space we rent and recent factors for gas heating and electricity use per square foot in comparable offices. Emissions for all other outlays, including employee travel (i.e., Scope 3) were estimated using Greenly's software. This software uses an extensive library of emissions factors per dollar of expenditure by expense category mapped into EIP expenses by category. This approach is also used for financed emissions (Scope 3 category 15). *See* Technical Appendix for further details.

34 Internal footprint is defined as Scope 1 + Scope 2 + Scope 3 excluding financed emissions.

35 Our internal scope 3 emissions are all of our scope 3 emissions with the exception of category 15, financed emissions.

36 <https://www.circularity-gap.world/2023#download>

37 <https://www.esgbook.com/>

38 <https://www.nature.com/articles/s43016-021-00225-9>

39 <https://rhg.com/research/global-greenhouse-gas-emissions-2021/>

40 <https://www.privateequityinternational.com/30-big-ideas-shaping-esg-governance/>

41 <https://news.crunchbase.com/diversity/venture-funding-black-startups-2022/>; <https://news.crunchbase.com/diversity/us-based-latine-founded-companies-funding-falls/>; <https://pitchbook.com/news/reports/q4-2022-pitchbook-nvca-venture-monitor>; Note that data for funding to Latine founders was only available through Q3 2022.

42 Defined for 2022 as Black, Latine, Native American, Alaska Native, Pacific Islander, Underrepresented Asian (Filipino, Hmong, Vietnamese) for US employees, or, in international contexts, as otherwise defined by local governments.

43 <https://www.un.org/press/en/2017/ga11905.doc.htm>

44 <https://www.utilitydive.com/news/xcel-retire-texas-coal-fired-power-plant-tolk/635437/>

45 <https://www.businesswire.com/news/home/20230126005202/en/Form-Energy-Partners-with-Xcel-Energy-on-Two-Multi-day-Energy-Storage-Projects>

46 Quotes from **Catalyst with Shayle Kann on Apple Podcasts** acc. 12.14.22

47 Bill & Melinda Gates Foundation, **Malaria at a Glance**.

48 Our analysis uses grid carbon intensity factors of 1225 lbs. and 454 lbs. CO₂ e/MWh in 2023 and 2040, respectively and this calculation assumes a 16% solar capacity factor.