



Wealth
Management

Environmental action

Reversing climate and environmental degradation



| Forward-looking
| for generations



Cover image
Bauer brothers, Hortus Botanicus, detail from
"Lilium candidum L.", c. 1778.
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Our four pillars of sustainable investment

Building a more sustainable economic system

Our sustainable investment framework takes our overarching mission of investing for sustainable value creation and translates it into investable opportunities.

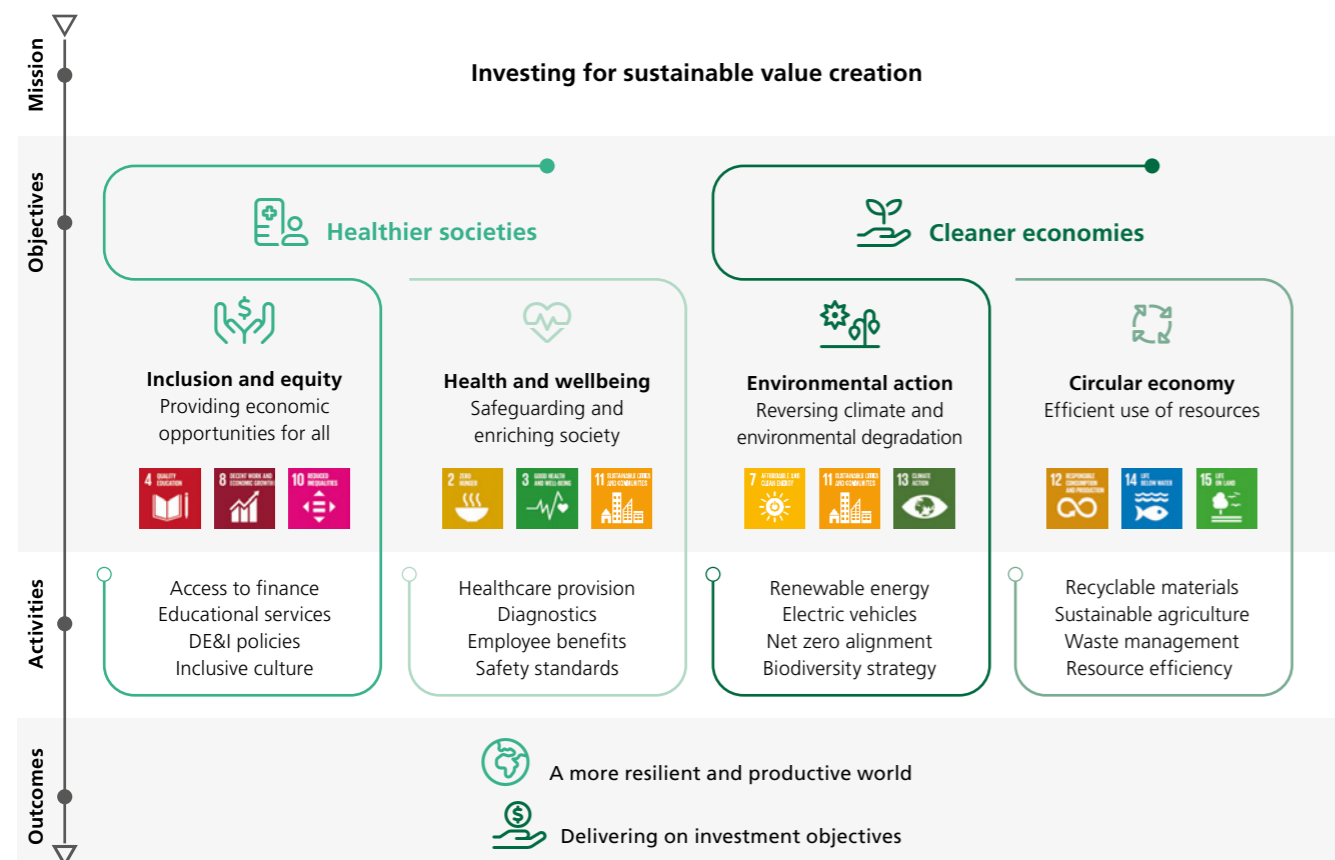
We focus on two structural mega-trends that we believe are paramount in delivering a transition to a more sustainable global system: 'Healthier societies' and 'Cleaner economies'. Beneath these two mega-trends, we have identified four investment pillars. These help us to identify the attractive attributes of potential investments when considering both 'what' they do and 'how' they do it. To help create a healthier society we focus on 'Inclusion and equity' and 'Health and wellbeing', and to build a Cleaner econ-

omy we have identified 'Environmental action' and 'Circular economy' as the two key drivers. Through utilising this framework we aim to build portfolios of investments that are helping to contribute to a more resilient and productive world, whilst delivering strong investment returns.

Aligned with the United Nations Sustainable Development Goals

The UN Sustainable Development Goals (SDGs) are a global framework designed to influence positive economic development and improve the world by encouraging collaboration and innovation. Whilst we do not use the SDGs as our primary framework, we do believe that our investment pillars are closely aligned to several of the SDGs.

UN SDGs in action: our sustainable investment framework



Pillar three: Environmental action

Environmental action is the third pillar within the sustainable investment framework. This pillar incorporates UN SDGs seven, eleven and thirteen



UN definition: Ensure access to affordable, reliable, sustainable and modern energy for all.

Goal seven aims to increase access to natural energy sources such as solar, wind, hydropower and natural gas, whilst simultaneously mitigating the environmental effects of the increased use of fossil fuels.



UN definition: Make cities and human settlements inclusive, safe, resilient and sustainable.

The world is becoming increasingly urban, with 60% of the world's population expected to live in cities by 2030 according to UN data. Goal eleven looks to ensure access to adequate, safe and affordable housing, especially for people living in vulnerable situations.



UN definition: Take urgent action to combat climate change and its impact.

Goal thirteen aims to promote urgent action to tackle climate change and support vulnerable regions and populations. Utilising investments, political will and technology, goal thirteen aims to limit the increase in global mean temperatures to two degrees Celsius above pre-industrial levels.

Investment theme: Renewable energy

The significant role of renewable energy in the transition towards net-zero and a more sustainable future is undeniable. However, renewable energy is not synonymous with sustainable energy and requires a multi-faceted approach as demand outstrips capacity. Currently, the contribution of renewable energy is not sufficient to meet the world's primary energy and electricity supplies and needs to be supplemented by alternative forms of low or no carbon energy. Further investment in enabling technologies related to renewable energy is required to allow our global energy systems to operate securely and economically.

Industrial countries have 28% of the world's population and yet they represent 77% of energy consumption. The world's population is predicted to reach 9.7 billion in 2050; 90% of this growth will belong to developing countries who, as yet, do not have sufficient infrastructure in place to meet future energy demand in a sustainable manner.¹ A well-supported energy system supports all sectors, from businesses to medicine, education and agriculture. Without electricity, women and girls spend hours each day fetching water, clinics cannot store vaccines, businesses cannot operate competitively, and school-children are unable to study after dark.

The International Renewable Energy Agency's (IRENA) Transforming Energy Scenario shows that cumulative investments of nearly USD 10 trillion should be redirected from fossil fuels to low carbon technologies by 2030, with nearly USD 9.6 trillion of investments needed to scale up renewable power generation capacity. Looking further ahead to 2050, another USD 3.2 trillion, representing 2% of global GDP,² is needed to achieve the low carbon energy transformation.



A global transition from fossil fuels to renewable energy will play a pivotal role in mitigating climate change, making an immense contribution to decarbonisation, as well as accomplishing goal seven: to adopt affordable and clean energy for all. The energy sector has started changing in promising ways, with the widespread adoption of renewable energies and related technologies.

Energy consumption



28%
of world population



77%
of energy consumption

¹ For Sustainable Development: Future Trends in Renewable Energy and Enabling Technologies, 2020, Seckin Salvari, M and Salvari, H
² IRENA, Global Renewables Outlook: Energy Transformation 2050, 2020



Investment opportunities



Innergex Renewable Energy

Sector: Renewable energy production
Headquarters: Longueuil, Canada

Innergex operates and develops hydroelectric facilities, wind farms and solar farms in North America, Canada, France and Chile. The company's mission is to build a better world with renewable energy, promote healthier communities and generate sustainable value. The company's hydroelectric plants produce minimal greenhouse gases and produce non-polluting energy from the natural flow of rivers.



TPI Composites

Sector: Wind turbine supply chain
Headquarters: Arizona, United States

TPI Composites has successfully built a business manufacturing wind turbine blades across Asia, Europe and the Americas. The company's core expertise is in advanced composite technology, producing over 10 000 blades since 2001. The lightweight nature, durability and strength of composites now

means the company is developing new applications for composites in the electric vehicle market. TPI Composites is also focused on the circularity of the blades it produces and is involved in developing a solution to entirely breakdown the blades to base components, similar to virgin materials.



Vena Energy

Sector: Renewable Energy
Headquarters: Singapore

Vena Energy is a leading Asian renewable energy company running a range of wind, battery storage, solar and hybrid renewable energy projects. An example of Vena's current projects is the Hancock Solar project in Taiwan, the company's fifth project in the country. The project alone will save up to 10 million litres of water annually, while also providing clean energy to around 2 926 local households annually.

Investment theme: Energy storage

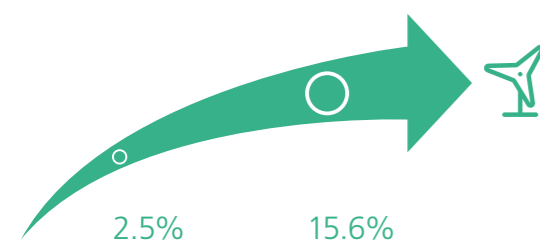
Utilising renewable sources of energy incurs additional operational challenges, looking beyond generation. Flexibility of our power systems is a key enabler for the integration of high shares of variable renewable electricity. Alongside other measures, maximum flexibility will be facilitated by securing long-term and short-term storage.

Renewable energy sources are required to create a sustainable environment, replacing our dependence on problematic traditional energy sources. However, a significant challenge in the adoption of renewable energy is supply and demand. The creation of energy from these renewable sources is dependent on environmental conditions; wind energy requires wind while solar is dependent on sunlight. The flexibility of the power system is defined by how well it can cope with variability and uncertainty and balance production and consumption. Windbased generation is an example of how energy installations are constantly increasing, with Europe's share of wind energy increasing from 2.5% to 15.6% in just over 15 years. While the system seems prepared to deal with uncertainty and variability in demand, the continuation of this growth trend will require higher investment in energy storage systems.

For emissions to be reduced to zero will require the fullscale deployment of zero-carbon electricity sources, mainly renewables, combined with other infrastructural innovations, in particular energy storage. Energy storage will be crucial across all industries, in particular transport and the widespread deployment of electric vehicles (EV). Cars today typically spend around 95% of their time parked and stationary. These periods, combined with battery storage, can make EVs a flexible solution by creating their own micro-grid system. However, it could also form an increasing challenge, with simultaneous charging at peak periods within the day creating increased load and stress on the power grid. Thus, investment in energy storage, infrastructure and digital technologies is crucial to aid the adoption of green methods of transport.



Europe's share of wind power increase over 15 years³



Car use



95%
of the time, cars are stationary or idle⁴

³ WindEurope

⁴ MIT 'Unparking: a project by MIT Sensable City Lab': senseable.mit.edu/unparking/



Investment opportunities



Nextera Energy

Sector: Utilities

Headquarters: Florida, United States

Nextera is one of the United States' largest investors in renewable infrastructure and energy production. Through to 2022 the company has between USD 50 and USD 55 billion of investments planned to help shape the future of the American energy sector. Nextera is the world's largest utilities company, generating more wind and solar energy than any other company. They are particularly invested in energy storage, ensuring that they can store energy when demand is low and supply communities when it is high. Storage innovations include the Babcock Ranch Solar Centre, which is the largest combined solar-plus-storage facility in the United States. Meanwhile, the Pinal Central Solar Energy Centre in Arizona generates and stores enough solar energy to power 5000 homes using a lithium-ion battery storage system.



Enphase Energy

Sector: Utilities

Headquarters: California, United States

Enphase Energy is a global leader in energy management technology, including storage and battery solutions. Enphase's platform offers customers both at home and in the workplace the ability to manage their

solar generation through solar panel systems and to store and communicate energy through batteries connected to the panels. This enables the delivery of a fully integrated solar-plus-storage offering. The company has recently partnered with Rubicon Energy, a provider focused on the decentralisation, digitalisation and decarbonisation of energy in emerging markets, to provide solar solutions in South Africa, for residential and commercial use.



SolarEdge

Sector: Integrated renewable energy technology

Headquarters: Israel

A company known for solar panel technology, SolarEdge also has a solution called 'StorEdge' enabling the storage of solar energy. It is possible to monitor battery status, solar production and consumption data remotely from SolarEdge's platform. The SolarEdge inverter is used with LG Chem's (a battery manufacturer) residential storage system to convert solar power into air conditioning. This storage solution automatically provides homeowners with backup power in case of grid interruption and allows homeowners to maximise self-consumption, and to increase energy independence.

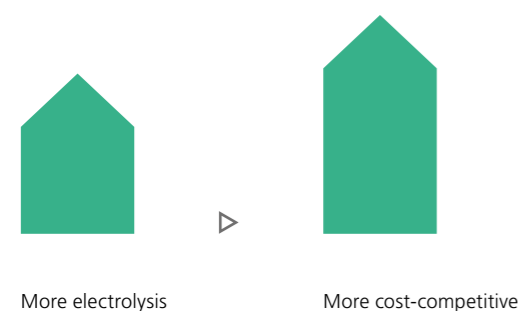
Investment theme: Green hydrogen

Hydrogen has emerged as an important energy source for a more sustainable future. It is inextricably linked to renewable energy, boosting market growth and broadening the reach of renewable solutions. Electrolysers used for hydrogen production can add flexibility based on demand and offer storage options for solar and wind power. The cost of producing hydrogen with renewable energy is dropping. Combined with the urgent need to cut greenhouse gas emissions, this has given clean hydrogen unprecedented political and business momentum, thus making it a compelling investment theme.

Hydrogen is not currently a primary energy source. It can be produced using fossil fuels or from renewable sources through electrolysis (green hydrogen). Hydrogen pipelines have been used for decades, meaning that production is already 'at scale'. However, it is not yet clean, as the huge majority of the world's hydrogen is currently produced using fossil fuels. Fossil fuel produced hydrogen is already employed across industries in significant quantities, yet it is predicted that the transport sector will be the second largest user of hydrogen by 2050, as it is used in fuel cell electric vehicles and as a synthetic fuel for shipping and aviation. With this expanded role, if we are to mitigate the negative environmental impact, it is imperative that this traditionally produced hydrogen is replaced by that from green sources.

If we are to reach a place where global emissions hit zero, hydrogen could be the missing link in the transformation of our energy systems to 100% renewable. In this scenario, more and more electrolysis will be deployed, as well as with more renewables, meaning that green hydrogen will be increasingly cost-competitive. Furthermore, hydrogen offers a promising solution for improving the sustainability credentials of the natural gas industry, with projects developing within the UK, Netherlands, France and Italy. However, economic barriers need to be overcome and regulatory standards established before large-scale adoption. The current drive towards a hydrogen-based economy has enormous momentum and scope. While the green hydrogen market today is modest, its growth potential is significant.

Europe's share of wind power increase over 15 years³



Transport sector's use of hydrogen vehicles



30%+
contribution to total CO₂ reduction needed



Investment opportunities



Linde Group

Sector: Industrial gases

Headquarters: Dublin, Ireland

Linde produces and distributes industrial gases. The company is one of only a small number of industrial gas companies globally and is well-placed to benefit from increasing environmental standards attached to energy production. Linde operates supplying oxygen, hydrogen and other gases to a wide variety of industries, including manufacturing and electronics industries. The company is establishing a strong presence in the green hydrogen market, as well as selling oxygen and other gases into the healthcare sector.



East Japan Railway (JR East)

Sector: Rail

Headquarters: Tokyo, Japan

JR East is implementing new-generation energy efficient railcars with innovative features, such as regenerative brakes that convert kinetic energy during deceleration into electric energy. Through the com-

pany's 'ecoste' initiative, JR East is implementing a variety of energy conservation, renewable energy and other eco-friendly technologies at stations. JR East is also collaborating with Hitachi and Toyota to develop hydrogen powered trains: JR East will design and manufacture the train carriage, which will be known as Hybari. Toyota will develop the fuel cell device while the hybrid drive system will be developed by Hitachi.



Wabtec

Sector: Sector: Rail

Headquarters: Pennsylvania, United States

Wabtec sells rail equipment, wagons, carriages and control systems for freight and transit rail. The company have recently announced a series of joint ventures and pilot-test initiatives deploying new low carbon technologies. These include trialling new electric locomotives including the world's first heavy-haul 100% battery-electric locomotive, and hydrogen fuel cell solutions with General Motors.

Investment theme: Electric transport

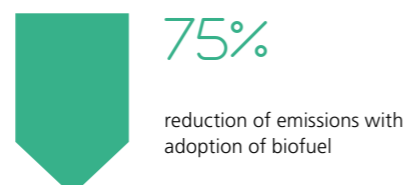
Accounting for nearly a quarter of global energy-related CO₂, current patterns of transport are driven by fossil fuel vehicles and generate a range of environmental, social and economic costs for our climate. The path towards providing transport services, while also reducing CO₂ emissions, is becoming clear for some but not all transport methods. For light vehicles, such as cars and small trucks, battery developments have shown a clear improvement in range, cost and market share. However, other heavier modes of transport such as road freight, aviation and shipping, still require substantial levels of innovation and investment to provide reliable and cost-effective sustainable options.

With an ever-growing urban population, meeting the accessibility needs of people in cities is a crucial challenge relating to climate change and the functioning of global cities. If the current growth trend continues, the number of vehicles globally is predicted to rise to between 2 and 3 billion by 2050.⁶ Currently, freight transport (ships, trains and trucks) accounts for more than 40% of transport's total energy demand and is predicted to increase by 20% by 2050. In addition, global aviation is expected to increase exponentially over the coming decades and carbon emissions from shipping could also grow by up to 250%. In IRENA's Transforming Energy Scenario, freight's emissions would decline by almost 75% with the adoption of biofuels, with further efficiencies across all modes from switching to electricity.⁷ Investments patterns are beginning to evolve to support sustainable transport, but a three-pronged investment strategy is needed to transform the sector and improve transport to support the move towards low carbon economies. This investment approach is based on the principles of avoiding, shifting and improving carbonintense vehicles and fuels. Green transport policies will also reduce road accidents and alleviate poverty by improving access to markets and

other essential facilities. In the coming years, plug-in EVs and fully-electric trucks could account for the majority of commercial light-to-medium trucks. Yet, while the general trend appears to be towards electric vehicles, the path is less clear for heavy-duty trucks. Battery technology continues to improve, and more and more truck manufacturers are now offering different models of electric trucks. Investment opportunities present themselves in developing and implementing lithium-ion technology for logistics companies, and electric highways, where overhead power lines could be used to power heavy-duty trucks over long distances.



Freight emissions



⁶ United Nations

⁷ IRENA, Global Renewables Outlook: Energy Transformation 2050, 2020



Investment opportunities



Umicore

Sector: Materials technology

Headquarters: Brussels, Belgium

Umicore targets three sustainable areas: resource scarcity, clean air and vehicle electrification. A core focus is the automotive industry where Umicore offers a variety of products targeting sustainability and efficiency. These include emissions control catalysts for cars to promote cleaner air. The technology catalytically activates after treatment solutions which transforms pollutants into harmless gases before releasing them into the environment. Umicore has teamed up with key market participants to find viable solutions for green transport. The service covers the entire value chain, including a range of recycling services for electric batteries, some of which specifically focus on the recycling of metals in batteries such as cobalt and nickel.



Schneider Electric

Sector: Electric infrastructure

Headquarters: France

Schneider Electric provides energy and automation products. The company makes electrical products such as wiring and power distribution boards focusing on smart energy solutions and lifecycle services. The com-

pany also specialises in electric vehicle charging, providing solutions to residential, municipal and destination charging. Governments worldwide are contributing towards setting up charging stations, and it is expected that the industry will see a compound annual growth rate of over 30% between 2021 and 2028.⁸



ASML

Sector: Chip-making equipment

Headquarters: Netherlands

ASML is one of the world's leading manufacturers of chip-making equipment. ASML's machines make semiconductors that are unrivalled in their technology, the company has over 90% market share and each machine it makes is sold for around USD 150 million. ASML also sells software and software upgrades to make improvements to chips in terms of size and performance. Semiconductors are used in everything from a solar panel, to a phone to a laptop. Automakers used about 10% of the chips on the semiconductor markets. A modern car could easily have more than 1 000 semiconductors inside it. ASML's equipment is vital to the EV market and is likely to become more so in the future.

⁸ www.fortunebusinessinsights.com/electric-vehicle-ev-charging-stations-market-102058

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Our sustainable investment
pillars help us to identify which
investments are contributing to
building a more sustainable
global system.

Phoebe Stone, Partner and Head of Sustainable Investing

Imprint

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