The winds of climate change

Wealth Management Chief Investment Office

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Why this theme?
The global shift to 'net zero' carbon emissions will likely gather momentum in 2022. Major economies further tightened emissions reduction timelines, while moves are underway in several countries to mandate climate change impact disclosures in companies' financial reports.

Why does it matter?
As the world transits to 'net zero' carbon emissions, a seismic shift in consumption, investment and regulation is likely as governments, companies and individuals adapt existing infrastructure, technology and behaviour to drive the transition to 'net zero'.

What does this mean for investors?
We expect capital flows to accelerate into 'net zero'-related investments over the coming decade as economies transition to a low carbon environment. We believe investors should consider exposure to firms and sectors enabling this transition, including electric vehicles, water, infrastructure and green capex.

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The Winds of Climate Change

We believe the global shift to 'net zero' carbon emissions will gather momentum in 2022. Major economies further tightened carbon emissions timelines, while moves are underway across several countries to mandate disclosures of the climate change impact in companies' financial reports.

The COP26 (United Nations Conference of Parties) climate conference gathered more than 40,000 participants from almost every country on earth to discuss and address climate change, helping evolve global climate regulations and priorities.

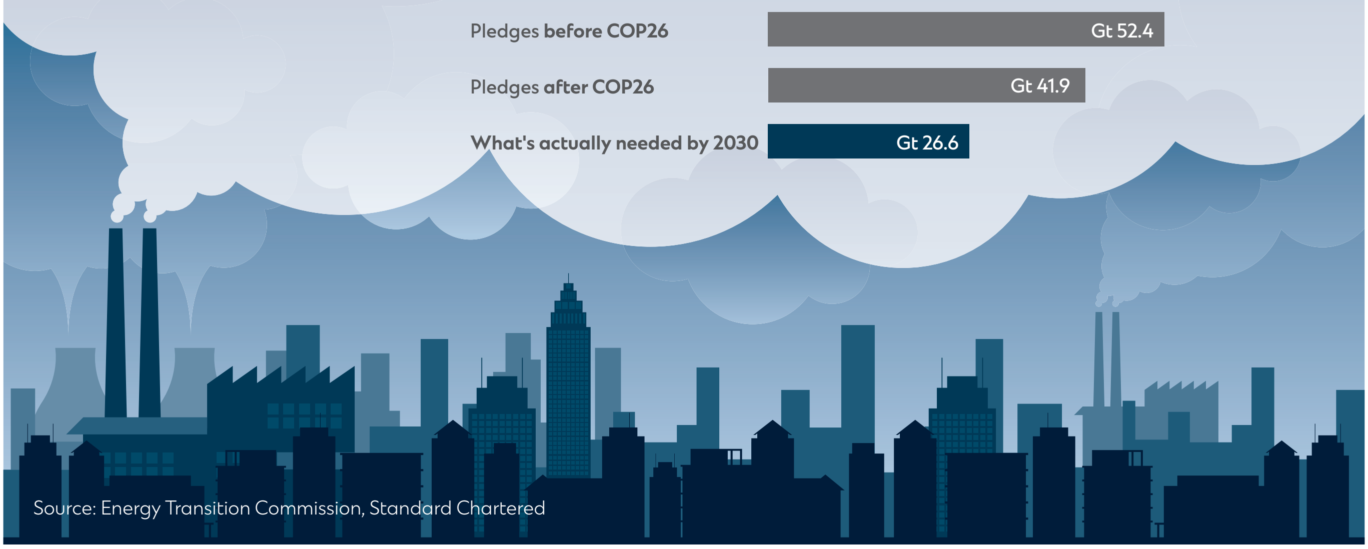
What was agreed at the Glasgow summit

- Call for an end to fossil fuel subsidies as well as an explicit plan to phase out the use of coal. This is significant given many Emerging Markets are heavily reliant on coal for power generation.
- Countries to revisit and strengthen their 2030 climate plans by the end of 2022 instead of every five years under the Paris Agreement.
- A doubling of national contributions to the Adaptation Fund by 2025 from Developed Markets. This is critical for developing countries to adapt to the impact of climate change, the costs of which can run into trillions of Dollars.
- Lastly, rules were finally agreed to establish a global carbon market and govern bilateral carbon trading to ensure emission reductions are not double counted across countries.

While it is debatable if the Glasgow pact will be sufficient to limit global warming to the 1.5°C trajectory, there are signs of increased urgency. Several companies also came forward in partnership with multiple stakeholders, including governments, financial institutions, companies and multilateral organizations to put 'net zero' as an organising principle that will affect how they operate their business in the future.

Moving in the right direction, but further pledges needed to meet absolute targets

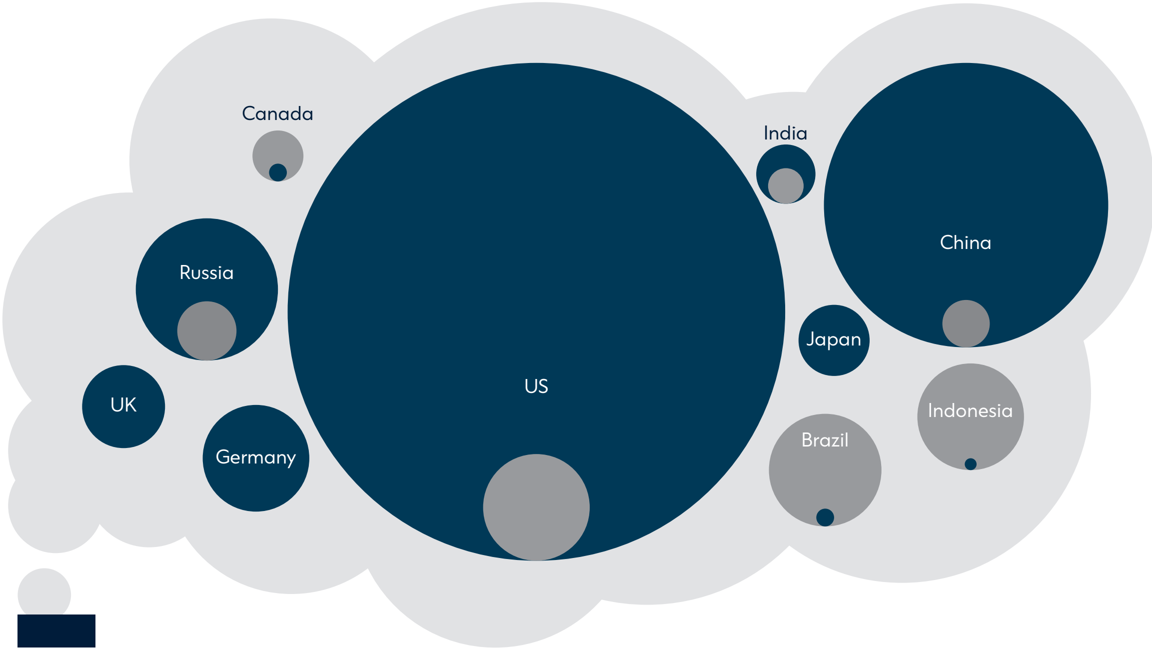
Pledged reduction in pollutants measured in giga tonnes (Gt) of CO2



Source: Energy Transition Commission, Standard Chartered

Countries with the largest cumulative carbon emissions from 1850 to 2021

Billions of tonnes of CO_2 from fossil fuels and land-use change



	US	China	Russia	Brazil	Indonesia	Germany	India	UK	Japan	Canada
Fossil	420	240	120	15	10	100	50	70	60	15
Land	90	40	50	95	90	-10	30	0	0	43

Source: Euronews green, Standard Chartered

Green agenda remains firmly at the forefront

We have seen greater support for the transition to a greener economy over the course of the year. In addition to US infrastructure plans (which have a strong climate focus), all 27 members of the European Union (EU) also committed to turn the region into the first climate neutral continent by 2050

To get there, they have pledged to reduce carbon emissions by at least 55% from 1990's levels (from 40% targeted previously) by 2030. This pledge is expected to create opportunities across sustainable transport (auto emissions could be reduced by 55% by 2030), clean technology infrastructure (35 million buildings could be renovated by 2030) and an increase in share of clean energy and its efficiency.

While a standardised classification of what qualifies for carbon markets is still in development, carbon pricing is gaining momentum. According to the IMF, more than 60 carbon tax and emission trading programs have been introduced globally. We are likely to see increased regulations and likely higher carbon prices impacting companies' costs, incentivising a switch to cleaner energy. According to the IMF, the price of carbon will need to rise to $75 a ton from the current global average price of $3 a ton to keep global warming below 2 degrees celsius.

Corporates, investors and other stakeholders are increasingly pressed to commit to and quantify various forms of environmental and social impact. We believe this will encourage investment capital to increasingly flow to areas presenting 'green' opportunities.

Potential areas the 'net zero' transition is likely to target

Breakdown of 'net zero' and the subcomponents

WATER	INFRASTRUCTURE	CARBON	RENEWABLES	ELECTRIC VEHICLES	GREEN CAPEX
Distribution	Roads, rail, (air)ports and waterways	Carbon markets taxonomy	Solar	Non-combustion vehicles	Power storage
Treatment	Electric grid	Direct carbon capture	Wind	Recharging stations	Green R&D
Storage	Zero carbon buildings	CO2 transportation and storage	Hydroelectric	Greener airplanes	Carbon capture
Source			Geothermal	Battery storage	Low emission fuels

Source: Standard Chartered

Who are the expected winners?

Infrastructure and Green-related investments

Current energy, transport, building and water infrastructure make up more than 60% of global greenhouse emissions. An unprecedented transformation of existing infrastructure will be needed to meet the world's infrastructure development and climate objectives. The Organisation for Economic Cooperation and Development (OECD) estimates that USD 6.9tn a year is needed up to 2030 to meet these objectives (compared with USD 3.2tn invested between 2016-2020). Geographically, China and the US are expected to represent the greatest proportion of this spending.

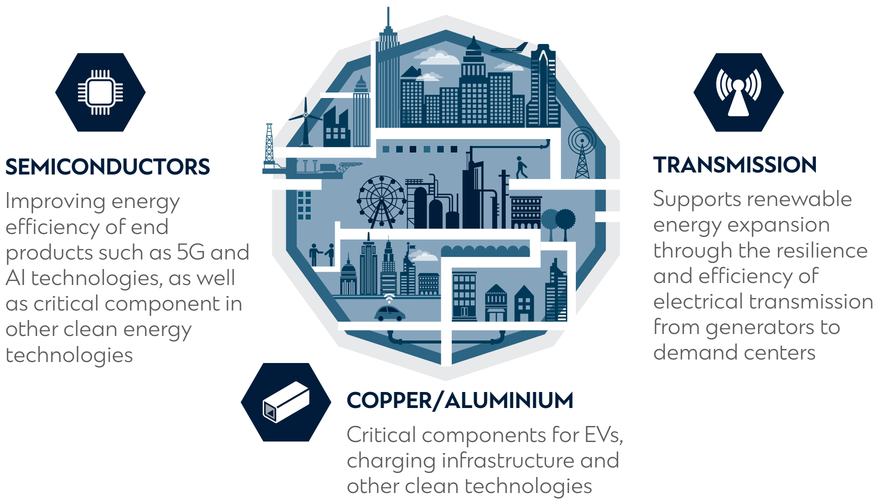
Current spending on infrastructure for development and to achieve 'net zero' commitment is insufficient. We see scope for significant growth over the next few years. Companies linked directly to infrastructure development (to achieve net zero and clean water – another policy goal) will likely benefit from this long-term tailwind. In addition, companies which are building blocks to achieve global green ambitions (such as copper, aluminium and semiconductors), which are key inputs to many technologies relating to net zero, also present interesting opportunities, in our view. Many of these building blocks have a long lead time from development to output and could be a key focus for investments.

Areas where 'green capex' is potentially needed
Transport infrastructure
Power infrastructure
Machinery
Metal & mining
Building materials
Utilities
Airlines
Low emission fuel
Electric equipment
Semiconductor & equipment
Water distribution
Water treatment
Water storage
Renewables
Automobiles

Source: Standard Chartered

Critical inputs to green technologies

Critical infrastructure underpinning most green technologies



Source: Standard Chartered

Water

Governments and UN leaders formed a climate and water coalition to address risks of shrinking water reserves. The challenges facing the water sector today include rising water stress, particularly as climate change affects supply amid increasing demand from urbanisation and industrial needs. There is a pressing need for improvements in waste water and storm water system technologies in the conservation and protection of drinking water supply. The World Bank estimates that agriculture, health and income losses related to water could cause as much as a 6% decline in some countries' GDP by 2050. This suggests there is a material need for water infrastructure spending. According to an OECD report, global financing needs for water infrastructure range from USD 6.7tn by 2030 to USD 22.6tn by 2050. We expect goals and standards relating to water to become more stringent over time and technology improvements will likely play a key role to help address issues relating to water conservation, waste water treatment and efficiency.

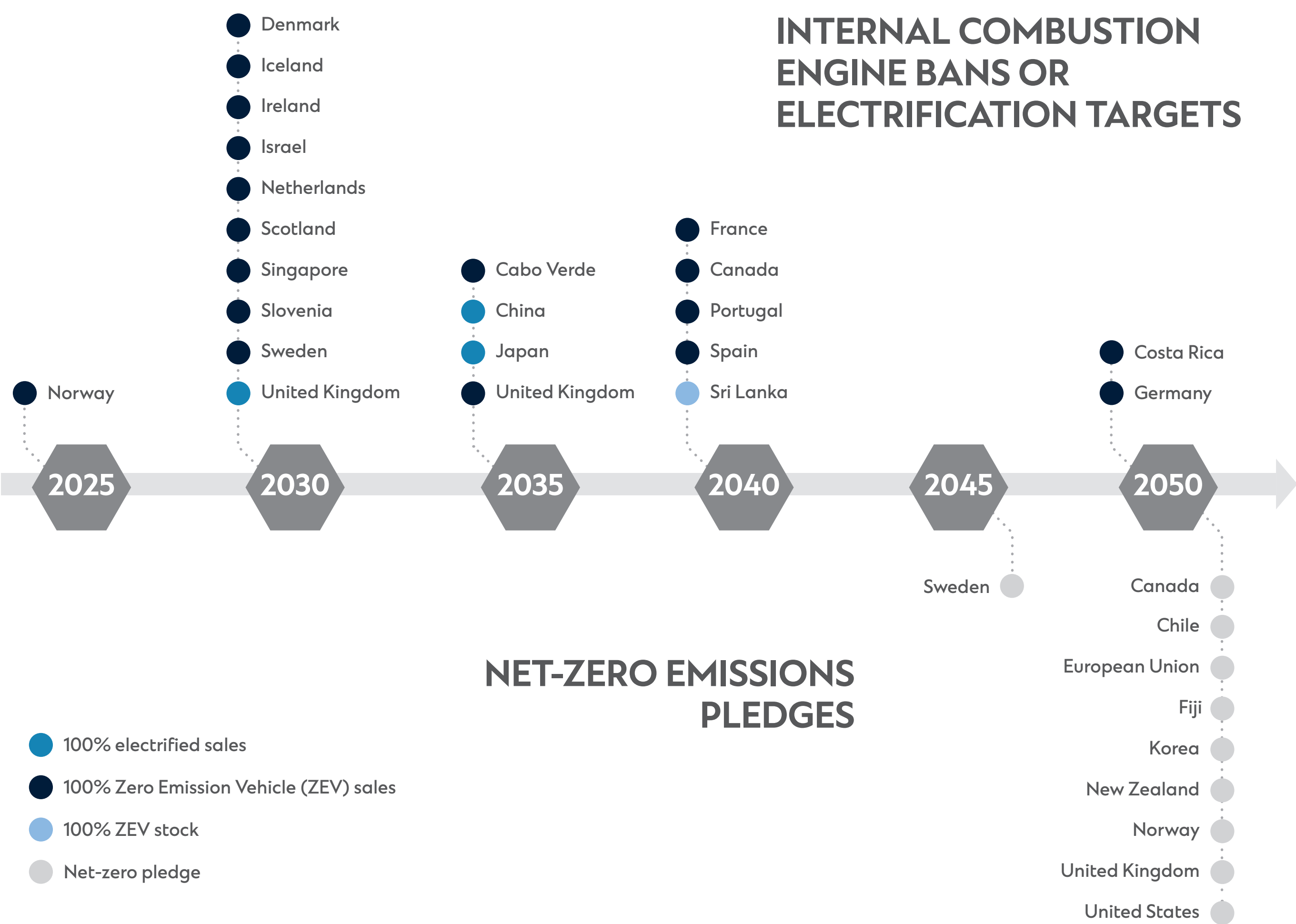
Electric Vehicles (EV)

The 2020s is likely to be the decade of transition to Electric Vehicles (EVs). According to World Resource Institute (WRI), the global share of new passenger EVs has increased at an average pace of 50% per year since 2015. If this growth continues, EVs could make up 100% of new car sales by 2040 (from under 5% currently). Significant policy impetus has driven the initial take-up of electric vehicles. These measures – primarily subsidies, tax rebate and tighter fuel emissions standards – have played key roles in rising EV sales worldwide. As the world transitions to EVs, we are seeing more ambitious policies and corporate action to accelerate this transition. Regulators around the world have proposed tighter emission limits for cars and vans. For example, the EU will require average emission of new cars to come down by 55% from 2030 and 100% from 2035, compared to 2021 levels. This means all cars registered as of 2035 will be zero-emission.

Automakers are racing towards EVs, securing critical supplies in the battery supply chain, from mineral extraction, semiconductor chips to the process of battery and EV manufacturing, as governments continue to build up critical charging infrastructure. We believe these developments are likely to further support EVs.

Fig. 5 More than 20 countries have announced automotive electrification or Internal Combustion Engine (ICE) bans in the coming years

Electrification or ICE ban target timeline



Source: IEA, Standard Chartered

Major governments are targeting to increase their share of renewable by 2030. These will drive greater investments in clean energy infrastructure and adoption of renewable energy sources.

While not part of our preferred themes in 2022, renewable energy is also a key pillar in the journey to net zero. The share of renewable energy use is set to increase as governments globally transition towards a low carbon economy. More than 100 countries have so far committed to net zero emission targets by 2050 to 2070.

Replacing polluting coal, oil and gas-powered sources with renewable energy sources (e.g. wind, solar and hydro) would significantly reduce carbon emissions from power generation. The sharp decline in the cost of renewable energy over the past few years has also helped increase their share in the energy mix.

While the renewables uptake will likely increase, it would still be a challenge to decarbonise heavy industries such as steel, cement and chemical industries which are amongst the top emitters of greenhouse gases. Carbon abatement technologies, including higher efficiency conversion processes to reduce fuel consumption, usage of lower carbon fuel and carbon capture and storage, will also be instrumental in mitigating greenhouse gas emissions.

The European Commission is targeting a 40% share of renewables in the EU energy mix by 2030 (from 32% currently); China targets having 25% (from 20%) of its total energy mix from non-fossil fuel sources by 2030; India aims to achieve a 50% clean energy share (from 39%) by 2030. These commitments will necessitate significant investments in clean energy infrastructure and adoption of renewable energy sources.

We believe Climate-related themes including Green Capex, Water and EVs will continue to do well over the coming years, given its increasing economic and social importance. Additionally, strong fundamental drivers, such as rising demand for climate solutions, expected higher private and public investments into renewables, infrastructure (transportation, telecom, rail, airports, buildings) and Water, as well as innovative climate-related technologies, are likely to further support this theme.

Valuations

The focus on climate remains topical, sustained by the continuous headlines of climate change and major summits like COP26.

An increasingly collaborative effort by global economies to combat the threat of environmental degradation demonstrates the significance that climate will play in future policy decisions. This emphasis of meeting climate goals supports the long-term drivers and conviction across our Winds of Climate Change themes.

Water, Electric vehicles (EVs) and Infrastructure/Green Capex sub-themes trade at 18.7-27.4x 12-month forward price to earnings ratios, though this does not appear excessively above that of global equities at 18.0x. We take comfort in positive earnings estimate revisions across these sub-themes. EV sales forecasts across the US, Euro area and China have been revised higher, providing a tailwind for EVs and related supply chains. Additionally, increasing investment needs for infrastructure to bridge the gap in meeting climate goals lends support to Infrastructure/green capex spending. The 'EU taxonomy', a green classification system, sets out conditions for an economic activity to be considered as environmentally sustainable. The sustainable use and protection of water and marine resources forms part of the environmental objectives that needs to be met and will likely continue to draw investor interest and capital supporting water-related investments.

We believe climate change will remain an enduring theme over the coming years, supporting valuations. Government regulations and commitment will play a critical role in ensuring that policy direction is clear and functions as a guide for companies and consumers to follow suit. Increasing investor demand for green solutions will also help to sustain the strong momentum in climate investing, in our view. We believe these will ultimately benefit investors who include exposure to climate change in their portfolios.

Themes monitor

Name	2021 YTD (%)	Annualised 3-year perf. (%)	12m forward P/E
The winds of climate change			
Circular Economy	24.4	25.1	N/A
Clean Tech	-17.5	42.2	31.0
Electric Vehicles (EVs)*	27.7	38.6	18.7
Water*	28.7	28.4	27.4
Infrastructure/Green CAPEX*	7.4	8.1	19.4
Embracing a digital future			
Robotics & AI	20.0	32.1	29.4
Internet of Things & 5G*	20.0	26.9	17.6
Medical Technology	-8.4	16.3	1,489.7
Online Gaming	-6.0	N/A	23.6
Fintech*	-5.7	26.3	30.3
Cybersecurity*	5.5	22.6	35.2
Blockchain*	29.1	47.8	16.0
China's 'Common Prosperity'			
Hard Tech/Semiconductors*	24.9	57.1	28.0
Renewables*	5.1	38.8	16.2
China Internet*	-44.2	5.1	31.6

Source: Standard Chartered
*Denotes our preferred themes for 2022 and are represented by the following indices: **Electric Vehicles (EVs) -** Solactive Autonomous & Electric Vehicles Index; **Water -** ISE Clean Edge Water Index; **Infrastructure/Green CAPEX -** S&P Global Infrastructure Index; **Internet of Things & 5G -** Indxx 5G & NextG Thematic Index; **Fintech -** Indxx Global FinTech Thematic Index; **Cybersecurity -** Prime Cyber Defense Index; **Blockchain -** CoinShares Blockchain Global Equity Index; **Hard Tech/Semiconductors -** FactSet China Semiconductor Index; **Renewables -** MSCI China IMI Environment 10/40 Index; **China internet -** CSI Overseas China Internet Index

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