

Latin America Energy Transition Readiness Index

Latin America: an energy powerhouse with global potential

By taking action on key priorities, Latin America could gain worldwide influence on energy supplies and the energy transition

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Energy transition: greater regional integration can help Latin America become a global exporter of clean energy

The Latin America Energy Week 2022 showed that the region has great potential to play a global role in the energy transition. However, Latin America needs to take the right actions in order to develop its full potential.

A seismic shift is transforming traditional energy structures across the globe, redefining what it means to create a sustainable world. Developing and implementing solutions requires collaboration. Energy Week conferences, a series of events each focusing on a different geographical region hosted by Siemens Energy and partners, bring together industry, political and society leaders from around the world to tackle the increasingly serious challenges that face not only the energy industry but society at large.

Latin America has a solid foundation for expanding its influence in the global energy transition. However, it will first need to create the right conditions, achieving greater regional integration and making clean energy exports a strategic priority. On June 8-10, 2022, the Latin America Energy Week brought together key leaders from the fields of energy, technology, finance, business, and government to discuss the many challenges – and some potential solutions. Participants were also asked about the importance of a set of key energy priorities and what progress they have achieved towards the energy transition.

“There is a consensus about the huge opportunities in Latin America, which has ideal conditions for exporting to other regions. But we must have regulatory clarity to be able to make these investments.”

César Norton, President HIF Global (Chile)

“In Latin America, many of the nations are reliable energy producers, that are also democracies with preserved institutions, and which have great potential to help other countries supplying reliable energy.”

André Clark, Senior Vice President Hub Latin America, Siemens Energy (Brazil)

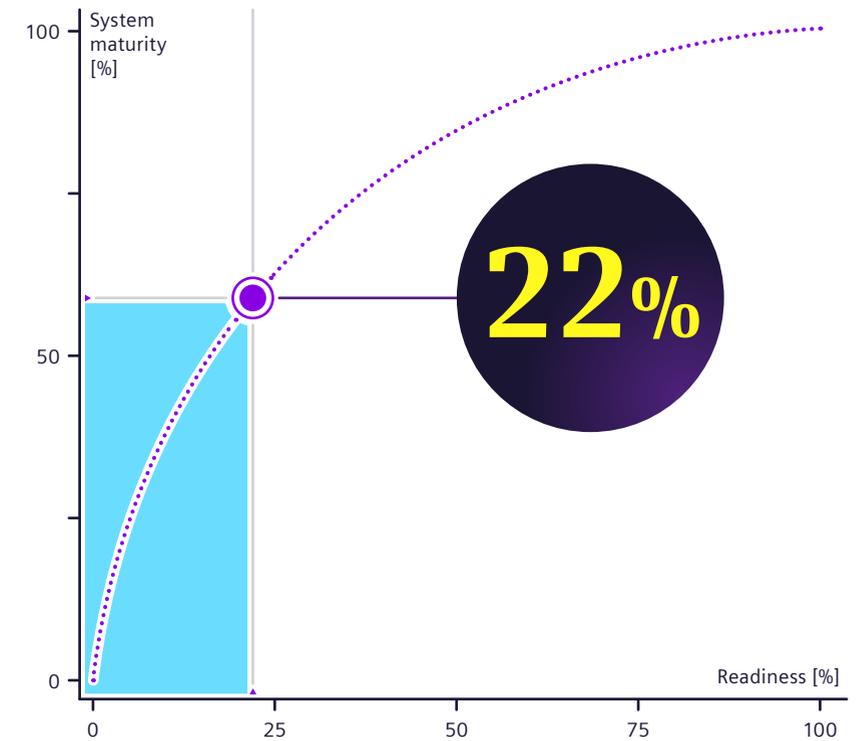
Methodology

During the conference, participants (expert and decision-makers from across the energy sector in Latin America) in each session completed a short survey on the session's topic. Up to 530 participants answered the survey. The Energy Transition Readiness Index is calculated based on these survey results. Participants were asked to give their expert opinion on the progress of each of 12 energy priorities (see page 6). The index aggregates the answers of the experts by combining the progress of each priority ("readiness") with the assessment of its respective importance ("system maturity" as measured by the average importance of all priorities, with higher average pointing to a more systemic approach toward energy transition). The index describes the perceived readiness, on a scale of 0 to 100%, of the energy transition towards net zero in Latin America.

Key insights

The Latin America Energy Week generated a wealth of invaluable insights. On a global scale, Latin America is a minor contributor to climate change, responsible for just 5% of global CO₂ emissions. Worryingly, misperceptions abound regarding how the region is doing in terms of cutting emissions. Of course, Latin America is a diverse region. Most nations benefit from a high share of hydroelectric power, but there are exceptions. In fact, the largest share of emissions in Latin America comes from outside the electricity sector. In terms of primary energy consumption, around 70% of primary energy stems from fossil fuels. This makes the electrification of industry, transportation and the residential sector a key priority in efforts to achieve carbon reduction. The energy transition can serve as an engine for the region's economy, attracting investments and creating many new job opportunities. Most countries in Latin America enjoy a natural competitive advantage here thanks to their abundant, high-quality wind and solar energy sources, allowing highly competitive generation costs. That also means that technologies such as green hydrogen have major potential for countries in the region.

With energy security back on the global agenda, Latin America has an unprecedented opportunity to expand its role in international energy markets. In the short term, it can supply oil and gas to countries affected by the sanctions against Russia. In the longer term, it could become one of the world's leading producers of renewable energy and green hydrogen. However, much remains to be done in all areas, including systematically implementing the energy priorities in the economy as a matter of urgency. Participants show only a medium level of awareness for the necessity of systemic changes and regional energy integration. Government engagement in the definition of energy models, removing barriers and implementing energy investment-driving regulation is crucial for energy infrastructure, security and sovereignty.



Overall, Latin America scores 22% in the Energy Transition Readiness Index (see Methodology). This gives it a solid foundation, particularly as the region's share of global emissions is low. The challenges for Latin America are great, from correcting current misconceptions about what has already been achieved, to finding ways to compensate the region for the potential loss of income from exports of fossil fuels.

CO₂ reduction: gap between perceptions and reality

Identifying energy priorities

Global management consultancy and Energy Week partner Roland Berger identifies, in close collaboration with Siemens Energy, 12 priorities for tackling the energy transition. Successfully addressing these priorities on a global level will result in significant decarbonization and is likely to lead to net zero emissions.

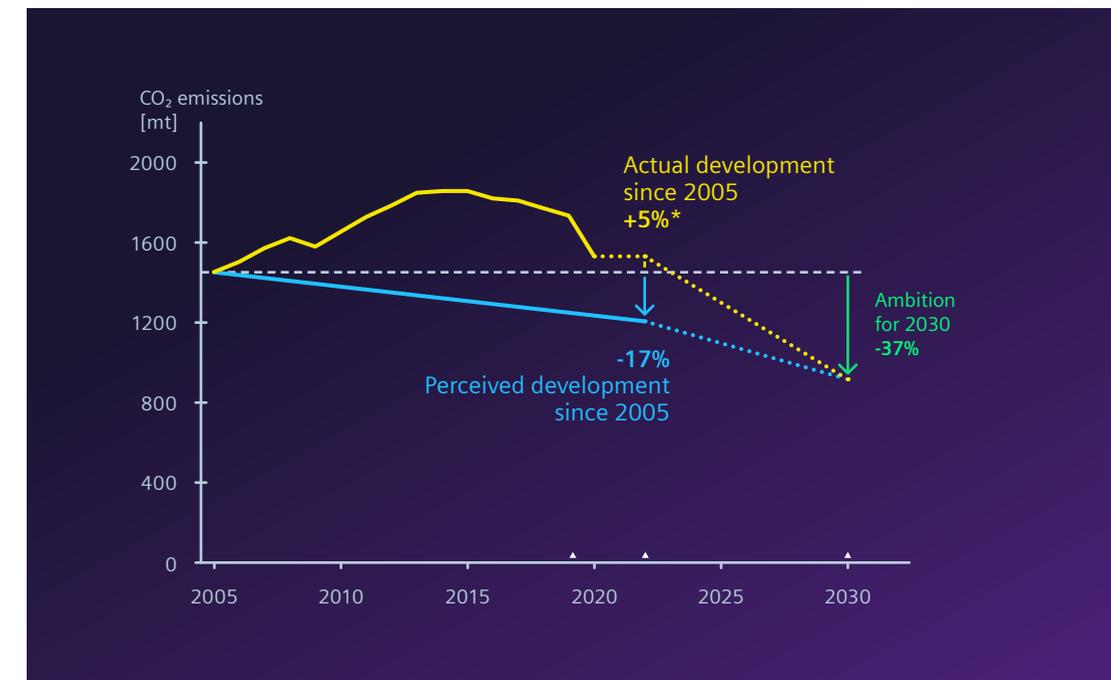
“When talking about decarbonization in Latin America, renewable energy is an opportunity, being modernization and expansion of infrastructure a key driver to advance with equitable energy transition and economic development in the region.”

Solange Ribeiro,
Deputy CEO, Neoenergia (Brazil)

While Latin America is a minor contributor to climate change globally, emissions grew by around 20% between 2005 and 2019 on the back of economic expansion and increased energy demand (the drop that followed during the COVID-19 pandemic is likely to be only temporary). The survey reveals a gap exists between perceptions and reality. Conference participants estimated that the region’s emissions fell by 17% on average between 2005 and today, while just four in ten of the participants correctly indicated that no reduction in emissions had actually been achieved. The reason for this discrepancy probably lies with current public discussions around the initial decarbonization measures already underway. In reality, economic growth counteracts any potential reductions achieved by these measures at present: Emissions continue to grow, albeit at a slightly slower pace. The region is still a long way off achieving a true turnaround.

Big ambitions for 2030

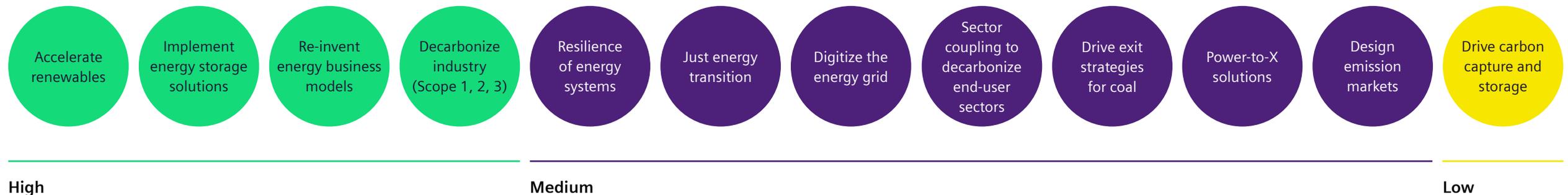
Participants expect emission levels to fall by 37% by 2030, compared to their 2005 level. Given their misperception of what has been achieved so far, however, this is highly ambitious. Emissions need to fall not only in the energy sector but also in other sectors, such as industry and transportation – areas that rely heavily on oil, gas and partially on coal, where electrification will be key to achieving decarbonization targets. Yet, the target remains important in terms of restricting climate change to 1.5 °C and achieving climate neutrality by 2050. The region’s challenging ambition should thus be to achieve emissions reductions in the medium and long term, while ensuring simultaneous growth of the economy and welfare.



What is the level of CO₂ reduction in your country today and what will it be in 2030 compared to 2005?

* Source: BP Statistical Review of World Energy July 2021

Ranking the energy priorities



In the period to 2030, how strongly will each of the 12 energy priorities impact your achievement of climate targets? (from low impact = 1, to medium impact = 3, to high impact = 5)

Overall, participants considered all of the energy priorities relatively important in order to reach the climate goals in the region, where most countries are targeting net zero by 2050, such as Argentina, Brazil, Chile and Colombia. Top of the list was the accelerated expansion of renewable energy, an area where technology is already advanced and costs are competitive, making implementation relatively straightforward. Participants saw integrating renewables into the energy system, which requires storage solutions, as a priority task. In addition, decarbonizing industry was considered important: If done successfully, this enables economic growth without pushing up emission levels.

Participants considered the resilience of energy systems and achieving a just transition to be relatively important. To guarantee social acceptance, matters such as fairness of distribution need to be addressed through regulation. It is also necessary to increase the number of people who have access to a stable and reliable electricity supply – by no means a given in parts of Latin America today.

“Some 80% of Latin America’s population lives in cities. You can’t talk about increasing renewable generation if there is no way to get that energy to everyone, and at an affordable price.”

Alvaro Villasante,
Vice President of Business Management and Innovation,
Grupo Energía Bogotá (Colombia)

Current progress

According to participants, current progress on achieving the energy priorities in Latin America is advancing in many areas. Substantial action is needed if the 2030 climate targets are to remain in reach. Some progress is seen in the area of power generation, where participants perceive the expansion of renewable energy sources (RES) to be relatively mature. Installed capacity for solar and wind remains relatively low, however, leaving room for a wider rollout in the future. By contrast, exit strategies for coal generation are of limited applicability in Latin America, as coal accounts for just 6% of the region’s power generation (2020).

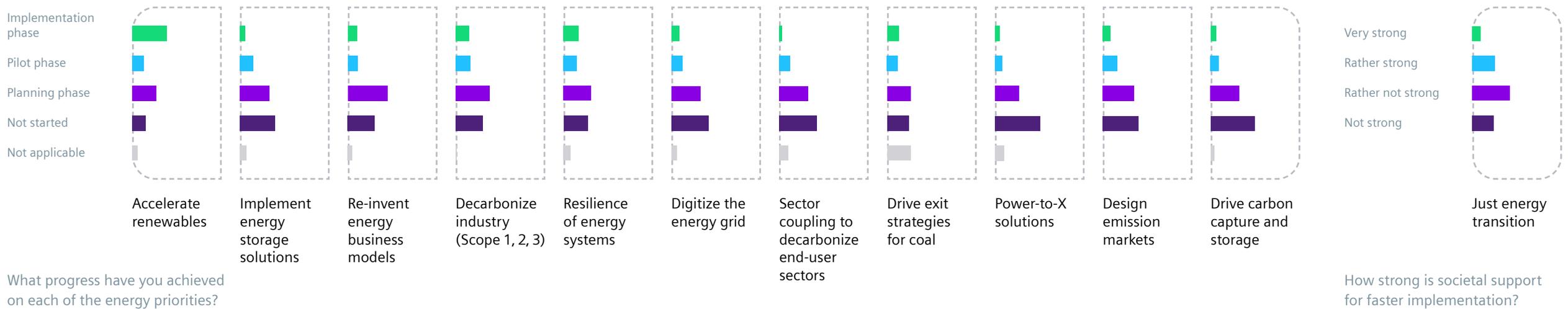
The survey also reveals a number of blind spots for participants. Areas that have a high impact but where little progress has been achieved include implementing energy storage solutions – which either have not been started yet or are still in the planning stage – and developing new energy business models.

“Achieving a low-carbon economy requires an evolution in which natural gas will play a key role. Today we have to take advantage of our industry dynamics, as they will contribute to the implementation of clean energy for the future of Latin America.”

Fernando Tovar, CEO, Fermaca (Mexico)

“Latin America has been a case of success in expanding influence of renewables and its acceleration should pose now the question of securing more locally the industry value chain since more than 70% of solar and wind components are manufactured by producers from Asia.”

Georges Almeida, Head of Infrastructure Latin America, Roland Berger



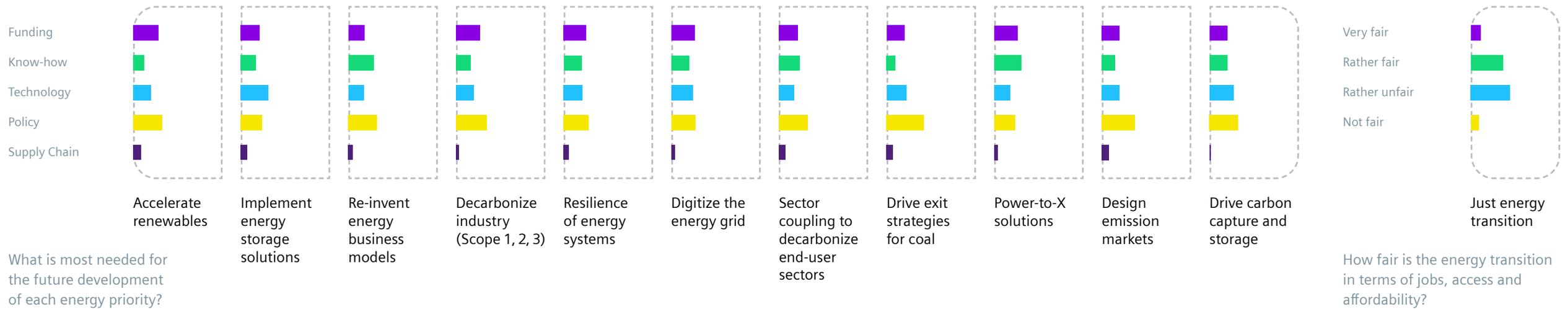
What needs to be done?

Policy is the main area where action is needed, according to the participants. Latin America has a golden opportunity to act as a third party for the United States and China, and develop its role as a reliable exporter of green energy and hydrogen. Crucially, any move in this direction requires regulatory support.

After policy, participants identified three areas as showing a similar level of priority for action: funding, technology and know-how. They see the requirement for action on funding as particularly high for renewable energy sources (RES) – here, the regulatory regime needs to be adjusted to create more investment opportunities. In the area of technology, action is needed particularly on energy storage solutions and carbon capture and storage (CCS), while the need for action on know-how is particularly strong for Power-to-X solutions.

“Latin America is blessed with abundant energy resources. State-of-the-art transmission grids will unleash the region’s full potential, while making Latin America a green powerhouse.”

Tim Holt, Member of the Executive Board, Siemens Energy



Energy priorities in detail

Accelerate renewables

The speed of the expansion of renewable energy is strongly linked to the speed of decarbonization. However, technological, societal, and bureaucratic barriers partly impede progress. Lifting these barriers is key to speeding up the roll-out of renewable energy solutions.

Decarbonize industry (Scope 1, 2, 3)

Industrial production can generate significant carbon emissions. These must be reduced across Scopes 1, 2 and 3 in order to move towards a carbon-neutral industry and society. The roll-out of new production processes and energy-efficiency measures must define a pathway to carbon neutrality.

Design emission markets

An overarching regulatory framework must ensure the cost-efficient reduction of carbon emissions wherever possible. Implementation of emission markets and/or carbon pricing mechanisms is crucial in order to align incentives across continents, countries, and sectors.

Digitize the energy grid

A greater share of intermittent renewable energies makes it more challenging for power grids to maintain a secure power supply. The safe and reliable set up, maintenance and operation of the future energy grid requires new digital solutions.

Drive carbon capture and storage

Carbon capture and storage (CCS) is a technological solution for capturing emissions and storing carbon in a way that lessens its climate impact. Decarbonization strategies must define the role of CCS technologies in the transition towards climate neutrality.

Drive exit strategies for coal

Decarbonization requires a step-by-step phase out of power and heat generation from coal. Strategies must manage this while simultaneously ensuring a secure supply of power and heat. Coal's role in the transition to carbon neutrality must be clearly defined within these strategies.

Implement energy storage solutions

The intermittency of renewables necessitates both short-term and long-term energy storage solutions. Technological and economic solutions must be devised to ensure that 100% renewable energy delivers a highly secure supply.

Just energy transition

Social acceptance is an essential component of the energy transition. A fair energy transition further includes affordable energy supply, decent working conditions, as well as diversity and inclusion. Social distortions must be avoided, as well as energy poverty and resistance to renewable energy.

Power-to-X solutions

The transformation of power to hydrogen and other fuels enables the storage of otherwise curtailed renewable energy. Additionally, Power-to-X fuels can be used in hard-to-abate sectors such as aviation and shipping or high-temperature industrial processes.

Re-invent energy business models

Energy business models are a key enabler for fostering investment in decarbonization technology, for example, via contracting solutions. Solutions such as PPAs (power purchase agreements) and long-term trading can secure payment streams over the investment period, which makes investments bankable and suitable for low-interest financing.

Resilience of energy systems

The global events of recent years have led to increased uncertainty and greater stress on the management of organizations. Be it global climate change, energy scarcity, social unrest, failures of cybersecurity or war, the ability to think the unthinkable and prepare scenarios is increasingly important as a competitive factor.

Sector coupling to decarbonize end-user sectors

All energy end-user sectors must be decarbonized to create a truly climate-neutral society. With an increased share of renewable power generation, the heating and mobility sectors can be decarbonized via the electrification of end-user appliances.



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