WORLD ECONOMIC FORUM

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Six basic sectors for Progress
Dynamic Briefing

Generated 22 January 2020 for Marco Antonio Gonzalez

Six basic sectors for Progress

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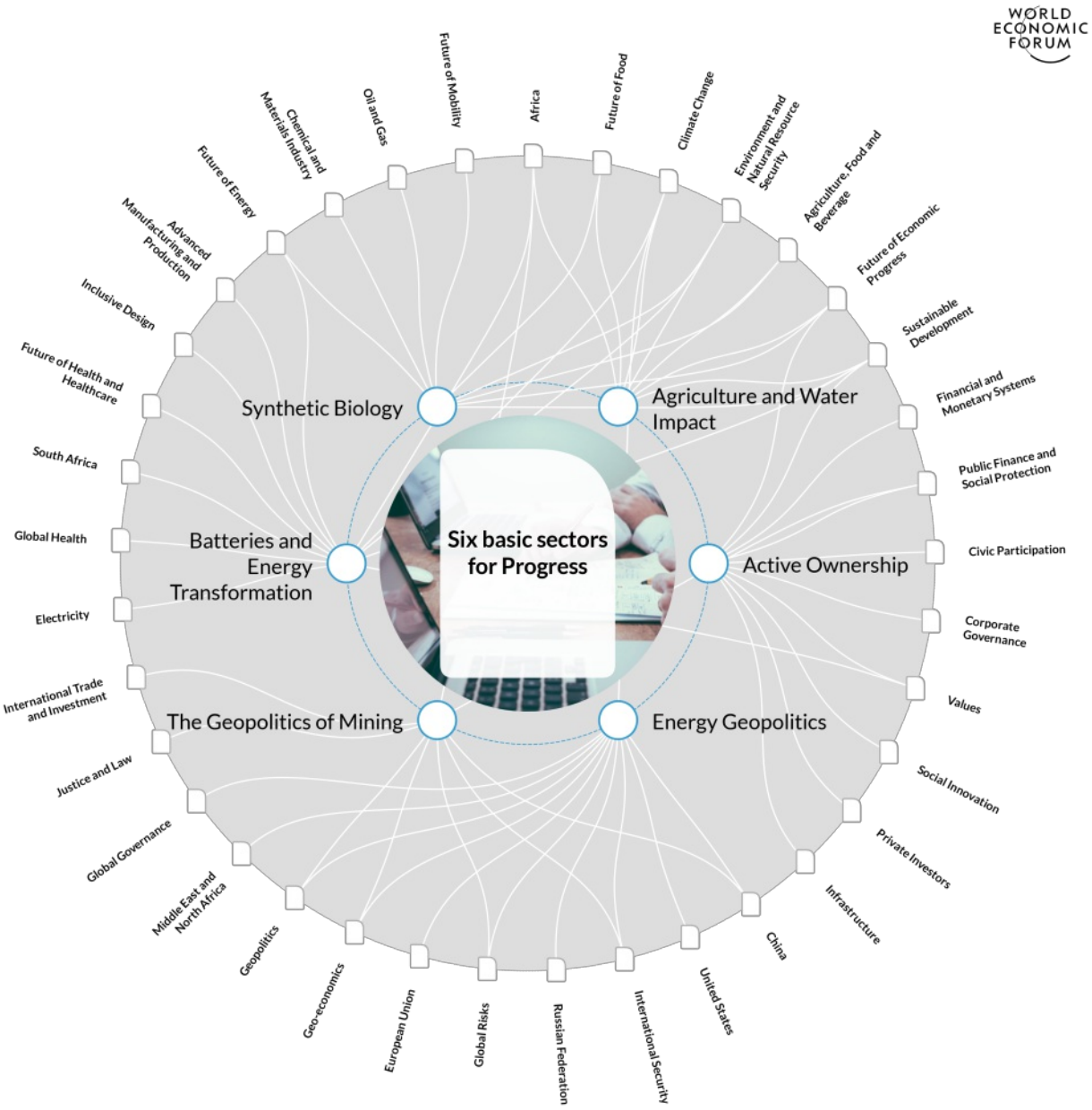
About

This dynamic briefing draws on the collective intelligence of the Forum network to explore the key trends, interconnections and interdependencies between industry, regional and global issues. In the briefing, you will find a visual representation of this topic (Transformation Map – interactive version available online via intelligence.weforum.org), an overview and the key trends affecting it, along with summaries and links to the latest research and analysis on each of the trends. Briefings for countries also include the relevant data from the Forum's benchmarking indices. The content is continuously updated with the latest thinking of leaders and experts from across the Forum network, and with insights from Forum meetings, projects communities and activities.



Executive summary

This is the base map, there are six strategic sectors from which to develop maps in neural structure.

1st Finance / investment as a new model of speculation to obtain wealth to be used in the common good.

2nd Health and 3rd Dissemination of knowledge from the new approaches in biotechnology and DNA for the eradication of diseases, global health treatment on the increase of life expectancy.

4th Biotechnological agriculture and water treatment / purification as necessary bases for food and human survival.

5th Energy geopolitics on fossil fuels, alternative and ecological energies as well as new energy sources.

6º Geopolitical dynamics as a global interrelation.

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1. Agriculture and Water Impact

A growing and increasingly wealthy global population must be fed, placing intense pressure on water resources.

2. Active Ownership

The shift to active ownership may help to foster longer-term value creation.

3. Energy Geopolitics

A new geopolitical order in the energy world is emerging.

4. The Geopolitics of Mining

Mining companies must navigate rising geopolitical risk and economic protectionism.

5. Batteries and Energy Transformation

Millions of people without electricity access could benefit from battery-powered microgrids.

6. Synthetic Biology

Microbial cell factories can sustainably produce the chemicals needed to fuel an economy.

Agriculture and Water Impact

A growing and increasingly wealthy global population must be fed, placing intense pressure on water resources

In the next 40 years, the world's farmers will need to produce more food than they managed to produce in the previous 10,000. The challenge of feeding a growing, increasingly affluent global population comes alongside related, increasing demands for water and energy, at a time when climate change is poised to further alter the availability of water resources. Agriculture already places significant pressure on the world's freshwater, by accounting for nearly 70% of global water withdrawals (the number actually rises to nearly 90% in countries where farming is most intensive). Unless substantial efforts are made to reduce food waste, and increase the water-use productivity of agriculture - that is, to get more "crop per drop" - water demand generated by the agricultural sector is only projected to further increase; according to a United Nations report published in 2017, the global population is expected to increase to about 9.8 billion by the year 2050, from roughly 7.6 billion currently - and then to increase further to 11.2 billion by the year 2100.

Changes in diet will also play a crucial role in increasing demand. Greater demand for staple crops like maize and wheat, for example, is coinciding with a dietary shift that has people eating more livestock and poultry products, including meat, dairy, and eggs. Meat-based diets are more water-intensive than the vegetarian variety. UNESCO has predicted that global food demand will increase by 70% by 2050. Already, aquifers (layers of permeable rock that serve as reservoirs for ground water) in many regions with high-potential farmland are being depleted, and nutrients from farm runoff are polluting drinking water wells and resulting in harmful algal blooms in lakes and rivers. Technology that can help to increase crop yields and make plants more drought resistant will become even more vital in the near future. Agriculture's harm to ecosystems can be mitigated by decreasing post-harvest waste, and by employing more sustainable fertilizer and pesticide use. Developed nations will likely adopt these technologies and techniques first, though the biggest benefits in terms of increasing crop yields will be enjoyed in developing nations - particularly in sub-Saharan Africa.

Related insight areas: Africa, Future of Food, Climate Change, Environment and Natural Resource Security, Agriculture, Food and Beverage, Future of Economic Progress, Sustainable Development

World Resources Institute

Achieving Abundance: Understanding the Cost of a Sustainable Water Future Data

21 January 2020

Population and economic growth, as well as climate change, have pushed water crises to the top of the global agenda. Given the scale of the issues, delivering sustainable water management requires rapid mobilization of funding for water-related improvements and more effective use of existing resources. The Achieving Abundance Working Paper proposes a method whereby any decision-maker can calculate the cost required to deliver sustainable water management to a geography. The working paper calculates the cost of action required to close the gap between current conditions and desired conditions to financially compare and prioritize different water-related challenges or different targets of Sustainable Development Goal 6.

World Resources Institute

It Could Only Cost 1% of GDP to Solve Global Water Crises

21 January 2020

New WRI research shows how countries can achieve water security for all by 2030. The economic benefits of investing in sustainable water management far outweigh the costs.

South African Institute of International Affairs (SAIIA)

G20 compact with Africa: Consolidating and accelerating Rwanda's transformation agenda

21 January 2020

Rwanda harnessed the G20 Compact with Africa (CwA) initiative as a framework to accelerate and consolidate its economic transformation agenda in line with the country's Vision 2050.

Frontiers

A Simple Method for Simulating Drought Effects on Plants

21 January 2020

Drought is expected to increase in frequency and severity in many regions in the future, so it is important to improve our understanding of how drought affects plant functional traits and ecological interactions. Imposing experimental water deficits is key to gaining this understanding, but has been hindered by logistic difficulties in maintaining consistently low water availability for plants. Here, we describe a simple method for applying soil water deficits to potted plants in glasshouse experiments. We modified an existing method (the "Snow and Tingey system") in order to apply a gradual, moderate water deficit to 50 plant species of different life forms (grasses, vines, shrubs, trees).

Science Daily

Local water availability is permanently reduced after planting forests

20 January 2020

River flow is reduced in areas where forests have been planted and does not recover over time, a new study has shown. Rivers in some regions can completely disappear within a decade. This highlights the need to consider the impact on regional water availability, as well as the wider climate benefit, of tree-planting plans.

The New Humanitarian

Building a safety net for Zimbabwe's urban poor

20 January 2020

Almost half the population of the Harare suburb of Epworth are food insecure, and almost one in three children is stunted due to poor nutrition.

World Economic Forum

How conscious consumerism is taking root in India

20 January 2020

It's said that most people are unaware of the climate crisis and unwilling to change their behaviour. A new pan-Indian study shows this isn't the case - but we can all do more.

Active Ownership

The shift to active ownership may help to foster longer-term value creation

Banks and brokers are the most widely disparaged culprits behind the financial crisis, due to their short-termism and excessive risk taking. Yet, they were acting on behalf of large institutional investors who failed to effectively monitor their investments. Pension funds, endowments, insurers, and sovereign wealth funds should therefore share some of the blame, due to their passive corporate governance. In the future, they will hopefully act as better stewards of the companies they invest in by adopting a more active stance. A broader transition to active institutional ownership is gaining momentum, largely due to the extensive shedding of debt taking place in the corporate and financial spheres. By replacing debt with equity, investment managers are likely to become less inclined to maximize short-term results and instead focus on companies' long-term value creation. Norway's $1 trillion sovereign wealth fund, for example, has clearly stated its expectations for the companies it invests in, in terms of corporate governance, shareholder rights, social issues, and the environment. The fund's active ownership is a tool to both protect shareholders' rights, and to benefit the people of Norway.

Active ownership has implications for the relationship between asset owners and managers, with performance no longer hinging purely on short-term market benchmarking, but also on longer-term metrics like internal rates of return. The organizational impact of this will be profound, as layers of intermediaries are reduced, more reliance is placed on internal capabilities and in-house expertise, and fewer mandates are granted to external managers and funds of funds (a mutual fund, for example, that invests in other funds). Dedicated teams can more effectively operationalize an institution's long-term mission, and improve corporate governance at the companies being invested in. In principle, the cost of active ownership is the increased volatility that results from more concentrated portfolios; diversification is widely considered the surest way to achieve better returns. However, institutional ownership of large stakes in companies could provide better monitoring, and more aligned incentives, without necessarily increasing risk thanks to so-called relationship investing - or actively investing for the long term, in exchange for some say in how a firm is run. Stewardship should matter to institutions that take the long view. Some asset managers may not welcome it, as it involves spending more effort and resources. However, until institutional investors start to behave like well-informed, responsible owners, managerial entrenchment will undermine the long-term prospects for finance capitalism.

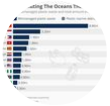
Related insight areas: Financial and Monetary Systems, Public Finance and Social Protection, Civic Participation, Corporate Governance, Values, Future of Economic Progress, Social Innovation, Private Investors, Sustainable Development, Infrastructure

World Economic Forum

Charting the course for SDG financing in the decade of delivery

21 January 2020

Bridging the SDG financing gap requires removing the constraints to the supply of, and demand for, capital and improving how we link the two.

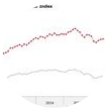


World Economic Forum

How venture capital can help stem the flow of ocean plastic waste

20 January 2020

When combined with public policy, corporate commitments and changes in human behaviour, here's how venture capital can help stop plastic waste polluting the ocean - especially in Asia.



World Economic Forum

Just 1.3% of US financial assets are managed by women or minorities. Here's how to change that

19 January 2020

A new kind of asset fund could reduce the high barriers to entry to financial investment for women and minorities.

World Economic Forum

SDG500: the fund kickstarting sustainable investment

19 January 2020

The SDGs could be worth $12 trillion, but they've been slow to attract finance. SDG500 is a new multistakeholder investment initiative to change that.

Rocky Mountain Institute

The Promise and Challenges of BlackRock's Climate Commitment

17 January 2020

Asset management giant BlackRock made waves in the financial press this week, announcing through its annual letter to CEOs that the company would put sustainability front and center in its investment strategy. As the world's largest investor, with over $7… Read More The post The Promise and Challenges of BlackRock's Climate Commitment appeared first on Rocky Mountain Institute .

London School of Economics and Political Science

Why 'greening' the EU's institutions remains far from straightforward

17 January 2020

In response to the increasing salience of climate change, there have been renewed efforts to enhance the green credentials of the EU's institutions. As Tobias Tesche writes, these efforts include proposals for the European Central Bank and European Investment Bank to take climate change into greater consideration when making decisions. Yet not all of these proposals have been well received […].

World Economic Forum

The heat is on businesses to respond to climate change

15 January 2020

Climate change-related risks to business are huge. Here's how they should be preparing.

Energy Geopolitics

A new geopolitical order in the energy world is emerging

Changes in the global balance between supply and demand for oil and gas promise to impact geopolitics - and, in turn, feed back into energy markets. International efforts to adopt policies aimed at mitigating the use of fossil fuels, for example, create geopolitical challenges not only for oil- and gas-rich countries, but also for developing economies where energy demand will continue to grow alongside increasing industrialization. In addition, the ongoing global push for greener energy systems impacts the geopolitical calculations of countries aiming to become significant exporters of things like solar panels, wind turbines, and the lithium and cobalt used to make batteries that power electric cars. This may lead to trade conflicts, the application of tariffs, and more aggressive pushes to exploit raw materials. Another geopolitical fact of life related to oil and gas: as reserves and production grow in North America, so does the ability of the US to check the geopolitical power of countries in other regions that rely on oil and gas exports.

The Vienna Alliance (also known as “OPEC+”) between the Organization of the Petroleum Exporting Countries and Russia is intended to coordinate production and stabilize the price of oil at a level deemed acceptable by exporting nations; OPEC’s inability to control prices by itself can be attributed to the growing supply of oil from the US. Rapid production growth in the US has also led some to question that country’s future role in the Middle East. A reduced role could open the door for increased engagement by developing countries like China and by large oil and gas exporters such as Russia. In Latin America, meanwhile, lingering political risk has investors keeping a watchful eye on developments in Mexico and Brazil. The collapse of the Venezuelan oil industry will require years of rebuilding to regain the levels of crude production the country’s enormous resources can support. Natural gas also presents new geopolitical challenges and opportunities. Trade in liquefied natural gas is growing, and connecting previously fragmented markets. The globalization of this market has implications for the ability of traditional suppliers to control regional markets - and to benefit from their dominant positions.

Related insight areas: China, United States, International Security, Russian Federation, Global Risks, Climate Change, European Union, Geo-economics, Geopolitics, Middle East and North Africa, Global Governance

Project Syndicate

Finding Europe's Way in the World

21 January 2020

For historical reasons, Europe has long resided in the strategic shadow of the United States, which itself has underwritten decades of globalization and rapidly expanding prosperity. But the global balance of power is rapidly shifting, leaving Europe increasingly exposed.

World Economic Forum

Davos 2020 - Averting a Climate Apocalypse

21 January 2020

Averting a Climate Apocalypse Global emissions of carbon dioxide remain on course to rise above 1.5°C despite clear and present risks.

World Economic Forum

Greta Thunberg: Our house is still on fire and you're fuelling the flames

21 January 2020

This is what Greta Thunberg told the World Economic Forum's 2020 Annual Meeting in Davos about the urgent action needed to prevent climate change.

European Council on Foreign Relations

Unsettled union: The future of the Belarus-Russia relationship

21 January 2020

Minsk retains enough power to decline any Russian proposal it deems unacceptable – even if this results in a further rise in economic tension.

Peterson Institute for International Economics

Trump's phase one deal with China relies on overblown estimates of what the US can sell

21 January 2020

The centerpiece of President Donald Trump's much anticipated " phase one " trade agreement with China, signed January 15, is a commitment by Beijing to import an additional $200 billion worth of American goods and services over the next two years. Trump is certain to cite that pledge time and again…

Peterson Institute for International Economics

Unappreciated hazards of the US-China phase one deal

21 January 2020

The centerpiece of President Donald Trump's much anticipated " phase one " trade agreement with China, signed January 15, is a commitment by Beijing to import an additional $200 billion worth of American goods and services over the next two years. Trump is certain to cite that pledge time and again…

Frontiers

How Social Capital Affects Environmental Performance in China

21 January 2020

Chinese society's unique characteristics present challenges with regard to discovering new ways to tackle tremendous environmental problems. This paper examines the effect of provincial social capital on environmental performance in China. In the first stage of the analysis, we measured the environmental performance levels of the 2011–2017 panel data of 30 provinces in China. We did this using data envelopment analysis (DEA). After introducing the concept of social capital, we innovatively built the social capital index system based on China's national conditions and measured social capital data from three perspectives. Then, we used the Probit regression model to explore the effect of social capital on environmental performance.

The Geopolitics of Mining

Mining companies must navigate rising geopolitical risk and economic protectionism

A growing popular resistance to globalization and free trade is altering politics, and directly affecting the mining and metals sector. For example, policy-makers in the places where mines operate are increasingly trying to enact local content laws and regulations, which require minerals to be processed (and therefore gain in value) before they are exported. Meanwhile import restrictions on semi-finished products such as steel and aluminium have triggered recent trade disputes; full-blown trade wars and increased protectionism would likely lead to lower global commodity demand, and disrupt mining and metals companies, while an increase in local content regulations could increase production costs for individual mining projects. On the flip side, increased protectionism could actually provide opportunities for domestic mining companies, and for those that are vertically integrated (or, in control of multiple stages of a supply chain), as they can provide solutions that go beyond the simple extraction of minerals. Best practices for navigating these and other geopolitical risks include maintaining good relationships with domestic joint venture partners where mines are located, and securing access to countries with high consumer demand.

When it comes to minerals that are essential for promising renewable-energy technologies, geopolitical risk has been further complicated by market consolidation. China, for example, has secured its own supply of critical minerals such as lithium, cobalt, and rare earths, while developing a dominant market position by acquiring mining projects, forging resource-for-infrastructure deals with mineral producing countries (one example is an arrangement with the Democratic Republic of Congo to provide billions of dollars worth of infrastructure in exchange for access to copper mining), promoting domestic production, and gaining control of key components of the mineral and technology value chain. Countries that must rely on imports and are wary of supply disruptions have examined ways to hinder Chinese-backed takeovers, and to avoid having to rely on Chinese companies. Further consolidation, geopolitical manoeuvring, and muscle flexing could create challenges for companies that have so far prospered under a system of relatively free trade - while creating opportunities for domestic projects that might not be economically viable without government intervention.

Related insight areas: Public Finance and Social Protection, Justice and Law, Africa, Geopolitics, International Security, Global Risks, Geo-economics, International Trade and Investment, China

World Economic Forum

Forging a Sustainable Path Towards a Common Future | DAVOS 2020

21 January 2020

Carbon emissions from fossil fuels hit a record high in 2019 – yet another sign that we are betraying future generations who will increasingly need to adapt.

Rocky Mountain Institute

Sunshine for Mines: A Brighter Vision for Sustainable Resources

15 January 2020

In both life and work, it's important to reflect on your past accomplishments and how they inform your future journey. When RMI started its mining initiative five years ago, carbon reduction wasn't on the radar for mining companies, and the… Read More The post Sunshine for Mines: A Brighter Vision for Sustainable Resources appeared first on Rocky Mountain Institute .

YiCai Global

China Will Open Oil, Gas Exploration and Mining to Non-SOEs, Ministry Says

09 January 2020

China plans to open up its oil and gas exploration and mining markets, which are currently only open to state-owned enterprises, to more capital resources in order to stimulate vitality in the sector, according to the Ministry of Natural Resources.

Peterson Institute for International Economics

Phase One China Deal: Steep Tariffs Are the New Normal

19 December 2019

Nearly two years after President Donald Trump fired the opening shot in his trade war with China, the smoke is clearing on what seems to be the new normal in the troubled US-China economic relationship. Some previously threatened tariffs poised to hurt American shoppers are not taking effect. Some…

Bruegel

Lessons from the China-US trade truce

19 December 2019

The tentatively agreed deal between China and the United States temporarily stops a dangerous dynamic, yet it falls far short of the negotiating objectives of both sides. US trade policy has become a dominion of the executive branch guided principally by the President's electoral interests. Meanwhile, China demonstrates its capacity to resist pressure: it will enact structural reforms at its own pace in line with its interests. Sadly, the deal confirms that the United States no longer feels obligated to follow WTO rules, and can induce others to do the same.

Asian Development Bank

Options for Urban Mining and Integration with a Potential Green Circular Economy in the People's Republic of China

19 December 2019

This brief discusses how the People's Republic of China can apply the green circular economy concept to address urban mining challenges toward achieving zero waste.

SpringerOpen

Industrial policy, structural transformation and economic growth: evidence from China

05 December 2019

Industrial policy is an important means for governments to promote industrial development and accelerate economic growth. This paper mainly uses the Chinese Law and Regulation Database as the source of the rel…

Batteries and Energy Transformation

Millions of people without electricity access could benefit from battery-powered microgrids

The widespread deployment of batteries in power systems could enable some 600 million under-served people to gain access to energy by the year 2030, according to the Global Battery Alliance. Progress has been made in terms of enabling greater global access to electricity; according to the World Bank, as of 2019 the total number of people without access had declined to about 840 million, from 1 billion in 2016. However, the World Bank also reports that by 2030, some 650 million people may still be going without - and nine out of 10 of those people will be located in sub-Saharan Africa. In order to help address this issue, microgrids are being deployed throughout the region that are powered by batteries. In one example, the South African electric utility Eskom launched a pilot project designed to provide electricity to the 81 people in the rural Wilhelmina community in Ficksburg via a solar-powered microgrid. In a 2018 press release, Eskom said the microgrid deposits energy from the panels in three sets of lithium-ion batteries that offer 90 kilowatt hours of storage.

The use of advanced battery technology could also help reduce air, water and land pollution. Replacing traditional, lead-acid batteries with more modern equivalents could help address serious related pollution issues, for example. According to a report published by the World Health Organization in 2017, the recycling of used lead-acid batteries is a public health concern because there is no known safe level of exposure to lead. As of 2016 data, nearly half a million deaths were a result of lead exposure, according to the report, with the heaviest related impacts on low- and middle-income countries, and on young children and women of childbearing age. Ultimately, the environmental benefits of greater battery use could include contributing to progress made towards achieving the goals set out by the Paris Agreement on climate change (in particular, the goal of limiting global warming to 2°C above pre-industrial temperatures) thanks to the decarbonization of both transportation via electric mobility, and of the power sector via the deployment of batteries to facilitate renewable energy. Emissions produced as part of the production of batteries must also be addressed. According to the Global Battery Alliance, greenhouse gas emissions intensity in the battery value chain could be nearly halved by 2030 by applying a more circular, sustainable approach.

Related insight areas: Electricity, Global Health, South Africa, Africa, Values, Future of Health and Healthcare, Inclusive Design, Advanced Manufacturing and Production, Future of Energy, Climate Change, Sustainable Development, Environment and Natural Resource Security

World Economic Forum

How to unlock the promise of electric transportation

20 January 2020

There are still some challenges involved in making sustainable mobility the global norm. The tech and the industry are ready - now it's up to governments to get EVs over the finish line.

Rocky Mountain Institute

The Hidden Costs of EV Charging Infrastructure

16 January 2020

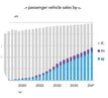
If you had to guess where the best opportunities are to reduce the cost of EV charging infrastructure, what would you say? The charging station hardware, perhaps? Or maybe installation techniques, like “future-proofing” by installing larger conduit and other elements of the “make-ready” infrastructure that supplies power to the charging stations? Or maybe unbundling contracts for network access fees and cellular data plans from hardware procurement?.

World Economic Forum

Why India is the new hotspot for renewable energy investors

14 January 2020

India is now home to one of the world's largest clean energy expansion programmes - a fact that has not gone unnoticed by domestic and foreign investors.



World Economic Forum

A 3-step plan for carbon-neutral cars

13 January 2020

Electric vehicles are fun, fast and much cleaner than their petrol and diesel-powered counterparts - but they aren't yet truly sustainable. Here's how to make that happen.

World Economic Forum

Cobalt mining is a global scandal. We must build an ethical battery

10 January 2020

The connection between the battery driven green economy and the exploitative conditions under which its essential commodity – cobalt – is mined is well known. Here's what needs to change in mining for ethical batteries.

SpringerOpen

Multi-objective energy management in microgrids with hybrid energy sources and battery energy storage systems

06 January 2020

Microgrid with hybrid renewable energy sources is a promising solution where the distribution network expansion is unfeasible or not economical.

The Atlantic Citylab

The Unequal Burden of Urban Lead

02 January 2020

Roughly $15 billion is spent in the U.S. annually to handle new cases of lead poisoning. Fully eradicating the toxin in our towns and cities means replacing 7 million lead service lines, remediating lead paint in 38 million housing units, and cleaning up countless tons of soil contaminated by the lead spewed into the air by automobiles. One estimated price tag: About half a trillion dollars.

Synthetic Biology

Microbial cell factories can sustainably produce the chemicals needed to fuel an economy

Civilization has largely set course for a more resource-efficient and sustainable global economy. One of the ultimate goals is to reconcile demand for chemical materials needed to treat human disease, develop sustainable agriculture and fisheries, bolster food security, and power industrial applications with the need to ensure biodiversity and environmental protection. In order to help achieve this, many countries have leveraged advances in synthetic biology and metabolic engineering by using natural biological processes to produce important chemicals - and making use of standardized, intelligent “cell factories” (collections of microbial cells, often built from bacteria or yeast, that can function like a chemical production facility). The consequences of this could be as significant as the impact of alchemy on chemistry millennia ago, with enormous and as perhaps unimaginable implications for medicine and materials science. The range of potential applications is vast, encompassing, and not limited to: diagnostics, therapeutics, sensors, environmental remediation, energy production, and biomolecular and chemical manufacturing. Studies have shown, for example, the potential to deploy bacteria-based cell factories to sustainably produce ethanol and butanol - which could in turn be used to de-carbonize transportation.

Following the emergence of recombinant DNA technology, which mashes up DNA from different species to produce combinations that have value for medicine or industry, biological systems have become widely used in industries such as chemicals and pharmaceuticals. However, the cell factories underpinning these processes often encounter systemic failure and suffer from instability. Synthetic biology and metabolic engineering can be applied to these problems by developing cells specifically designed for predictable, efficient, and streamlined production. Synthetic biology and metabolic engineering also enable the development of new biological systems capable of efficiently producing industrial chemicals and materials while consuming relatively less time, labour, and money. Some examples of this trend include reported advances in the microbial production of gasoline, terephthalic acid (an organic compound used to make clothing and plastic bottles), 1,4-butanediol (used to make fibres such as Spandex), and aromatic polyesters. In 2016, systems metabolic engineering was selected as one of the Top 10 emerging technologies by the World Economic Forum, for the ways that it can be used to more sustainably and affordably produce chemicals by using plants instead of fossil fuels.

Related insight areas: Future of Food, Future of Economic Progress, Chemical and Materials Industry, Oil and Gas, Agriculture, Food and Beverage, Future of Energy, Environment and Natural Resource Security, Future of Mobility, Sustainable Development

World Economic Forum

2030: from technology optimism to technology realism

20 January 2020

Harnessing technology is no silver bullet, but the Fourth Industrial Revolution could be fundamental to achieving the SDGs. It's time for us to back the promise of technology.

World Economic Forum

How to develop talent for the digital economy

20 January 2020

The growing call for cloud-based skills shows innovation is required to find the next generation workforce.

World Economic Forum

9 reasons to be optimistic about tech in 2020

17 January 2020

2020 is the year that some of the most-hyped technologies of the Fourth Industrial Revolution will reach full maturity and begin to deliver on their promise.

Science Daily

Edible 'security tag' to protect drugs from counterfeit

16 January 2020

Researchers are aiming to stump drug counterfeiters with an edible 'security tag' embedded into medicine. To imitate the drug, a counterfeiter would have to uncrack a complicated puzzle of patterns not fully visible to the naked eye.

Science Daily

Improved brain chip for precision medicine: Device chooses right combo of cancer drugs in record time

16 January 2020

A biomedical research team is reporting an improvement on a microfluidic brain cancer chip. The new chip allows quick assessment of the effectiveness of cancer drugs on brain tumors.

World Economic Forum

Here's how to improve access to healthcare around the world

15 January 2020

Digital technology, inclusive innovation and progressive partnerships can transform primary healthcare services for all.

Frontiers

Mediterranean Long Shelf-Life Landraces: An Untapped Genetic Resource for Tomato Improvement

10 January 2020

The Mediterranean long shelf-life (LSL) tomatoes are a group of landraces with a fruit remaining sound up to 6–12 months after harvest. Most have been selected under semi-arid Mediterranean summer conditions with poor irrigation or rain-fed and thus, are drought tolerant. Besides the convergence in the latter traits, local selection criteria have been very variable, leading to a wide variation in fruit morphology and quality traits. The different soil characteristics and agricultural management techniques across the Mediterranean denote also a wide range of plant adaptive traits to different conditions. Despite the notorious traits for fruit quality and environment adaptation, the LSL landraces have been poorly exploited in tomato breeding programs, which rely basically on wild tomato species.

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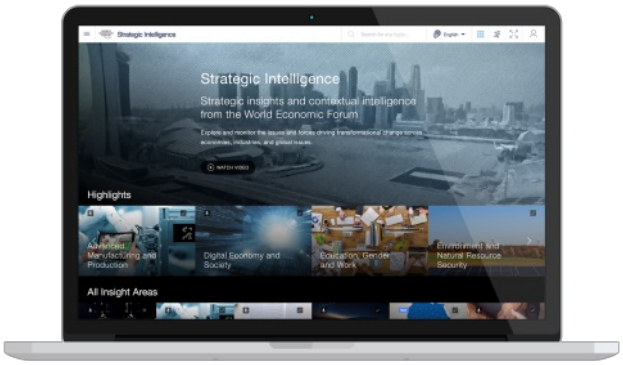

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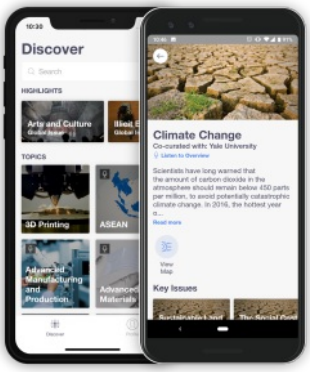

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