

WORLD ENERGY ISSUES MONITOR

DECODING NEW SIGNALS OF CHANGE

GLOBAL PERSPECTIVES

MACROECONOMICS
& GEOPOLITICAL
issues drive critical
UNCERTAINTIES



 **TECHNOLOGY**
issues drive
ACTION PRIORITIES

REGIONAL INTEGRATION
is a “desired” means of
IMPROVING ENERGY SECURITY



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WHY IT MATTERS

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INSIGHTS FROM

3000  
ENERGY LEADERS

550     
INDIVIDUAL
CONSUMERS 

104    
COUNTRIES



THE ISSUES MONITOR

The annual World Energy Issues Monitor provides unique insight into what energy policymakers, CEOs and leading experts identify as Critical Uncertainties and Action Priorities.

Based on the analysis of over 3,000 survey responses from energy leaders in 104 countries as well as 550 responses from individual energy users in 50 countries, we have identified the major trends and topics impacting the energy transition.

The World Energy Council has been conducting the Issues Monitor survey since 2009¹. The survey looks at 42 issues and how they are perceived by energy leaders from different parts of the world. These 42 issues show the progression of energy transition in terms of the operation of the energy system.

New this year, the Issues Monitor also provides readers with the views of the individual customer, detailing their perceptions of their role in the overall energy system.²

GLOBAL PERSPECTIVES: Macroeconomic and geopolitical issues lead critical uncertainties while technology issues lead action priorities, and regional integration is a “desired” means of improving energy security.

A NEW PULSE: The 2020s is primed to be the decade of the customer.

WHAT WE ARE TRACKING: Carbon Capture & Storage (CCS) is gaining in importance within the Oil & Gas sector.

A DIFFERENCE IN OPINION: Nuclear power is here to stay in Europe.

¹For an overview of how to reach the map and the methodology behind the Issues Monitor, please visit this link or annex 2 of the Issues Monitor report

²In 2019 the Council initiated a new survey – The Energy Pulse; while the Issues Monitor looks at existing issues, the Pulse is an ad-hoc survey mechanism that aims to dig into issues that are emerging and not covered directly within the Issues Monitor.



GLOBAL PERSPECTIVES

The global map and narrative are produced by synthesising individual country analyses and commentaries.³ This provides an informed picture of five categories of transition challenges at national, regional and global levels:

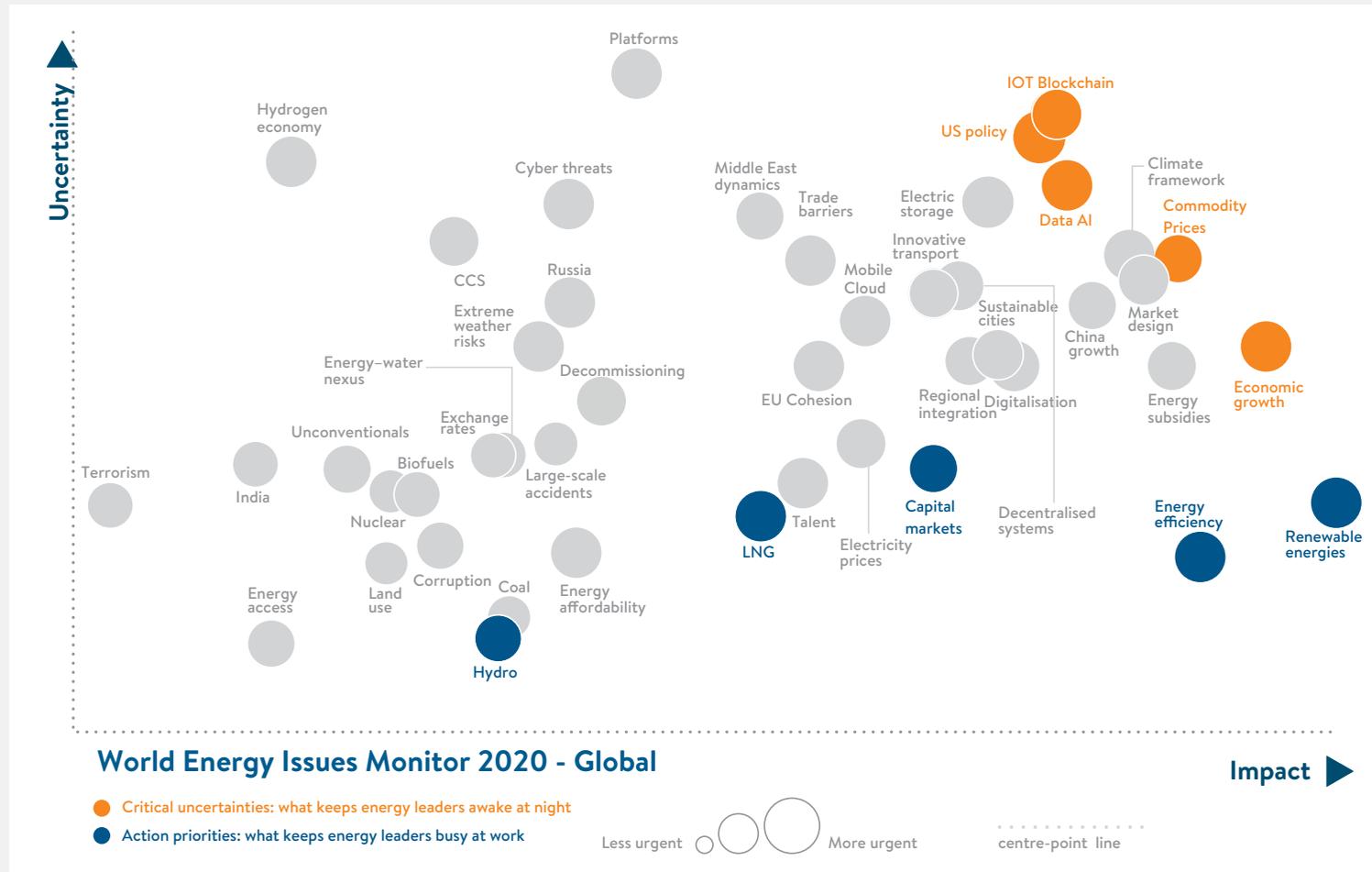
- macroeconomic risks
- geopolitics
- business environment
- energy vision
- technology

The 2020 global map incorporates all survey responses, representing the views of over 3,000 energy leaders from 104 countries.

In this era of transition defined by decentralisation, digitalisation and decarbonisation, energy leaders must pay attention to many different signals of change and distinguish key issues from the noise. The Issues Monitor identifies shifting patterns of connected issues shaping energy transitions.

³For an overview of how to reach the map and the methodology behind the Issues Monitor, please visit Chapter 11 of the Issues Monitor report

Figure 1: Global Perspectives on the Energy Transition



Based on the results obtained from the national and regional analyses, three main insights have emerged from this year's World Energy Issues Survey:

Macroeconomic and Geopolitical issues drive Critical Uncertainties

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Technology issues drive Action Priorities

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Regional integration is a “desired” means of improving energy security

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Macroeconomic and geopolitical issues lead Critical Uncertainties

A. Ongoing US-China trade dispute

The strained trade relations between the United States and China have led to higher uncertainty across all regions. Tariffs imposed on energy and other goods between the US and China together with emerging technology tensions (e.g. with Huawei and 5G infrastructure) are seen globally as having an impact beyond just the world's two largest economies. The uncertainty has affected confidence and led to lower energy demand growth prospects. After two years of uncertainty, the US and China signed a phase one trade agreement in January 2020 that eased some tensions, leaving other issues unresolved for later.

- China plays a crucial global role as an energy infrastructure investor, with particular relevance for growing economies. In Argentina, for instance, large Chinese investments such as the Caucharí Solar Park complex positions the country as an enabler of new business opportunities and growth. As the world's leading energy consumer and importer, China also represents a demand and revenue source for energy exporting countries.
- The United States plays a critical role as a leading energy exporter and an active development partner.

Its development support provides crucial finance for growing economies such as Chile, where it can also be a key trading partner and leading investor in infrastructure and innovation.

B. Growth prospects clouded by macroeconomic risks

Volatile commodity prices is a key source of instability for both energy consumers and producers. This reflects changes in the balance of oil and gas supply and demand, especially the growth of US oil and gas production reducing the import demand from the world's second largest energy consumer.

- While consumer countries face economic challenges, those countries that rely heavily on hydrocarbon exports for state revenues are particularly exposed and face significant challenges. Nigeria, for instance, saw a significant decline in energy export revenues from lower prices. Colombia's economy continues to be severely impacted by the oil price collapse of 2014, as the commodity has historically accounted for most of the country's export income.

- Governments have responded differently to these energy price fluctuations, with some reducing expenditure on infrastructure projects and others using the opportunity to eliminate subsidies. A few countries have raised import duties to manage trade balances. Algeria responded to decreased export revenues by raising domestic fuel prices in an effort to reduce the subsidies bill. But there can also be risk. The Ecuadorian government's decision to eliminate fuel subsidies as part of public spending cuts led to massive protests in late 2019.

C. Climate issues are seen as a priority, but there is still high uncertainty

Although the Climate Framework issue receives priority attention in all countries, uncertainty remains around the impact of intensifying extreme weather events and the need to adopt climate adaptation and mitigation measures. Countries with greater exposure to extreme weather events show more concern about the pace of climate-change with more frequent incidents of extreme weather events such as flooding, droughts and forest fires.

- Although individual countries are able to reduce emissions and improve their own climate performance, they remain concerned with the pace of collective global actions. For instance, in Japan there is growing concern that the frequency and severity of heavy rains and super typhoons may increase further as a consequence of climate change. Chile is concerned that global warming will melt glaciers and lead to increasing water scarcity - in October 2019, the country faced its worst drought that led to the death of around 10,000 animals.
- National targets for cleaner energy use range from a minimum 20% renewables share of the energy mix to complete carbon neutrality (the European Union 2050 objective). Germany's 2019 climate protection package lists more than 60 measures for transport, agriculture, industry and other sectors to lower their respective CO₂ emissions. Key challenges relate to the transport sector as the biggest emitter, and the need to protect industrial competitiveness and vulnerable communities.



Technology issues lead Action Priorities

A. Technology improvements are seen to provide solutions for greater affordability and sustainability

Governments are beginning to design pathways for the wider adoption of renewables, digitalisation, energy efficiency, energy storage, and other innovative technologies as part of national energy transitions.

- Blockchain remains seen as an enabling solution for affordability of distributed energy systems. While start-ups are proving the value and usability of the technology, governments in different regions are beginning to open opportunities for innovative solutions. In Switzerland, start-ups are developing blockchain-enabled energy technology for smart meters and transactional power grids aimed at reducing network and grid operation costs.
- Smart cities are gaining momentum especially in Latin America and the Caribbean, where the environmental impacts of fast-paced urbanisation are balanced with supporting policies and investments in smart grids, innovative transport and storage technologies. In 2019, Panama approved an Electric

Mobility Strategy with the support of the UN Environment Programme and the European Union as a way to reduce greenhouse gas emissions from the transport sector.

B. Energy Efficiency appears as a key theme with clear measures being universally adopted

The high potential impacts and relatively low costs of Energy Efficiency measures are recognised in nearly all countries and led to adoption of a number of plans to improve the performance of appliances, buildings, the electricity and gas distribution grids.

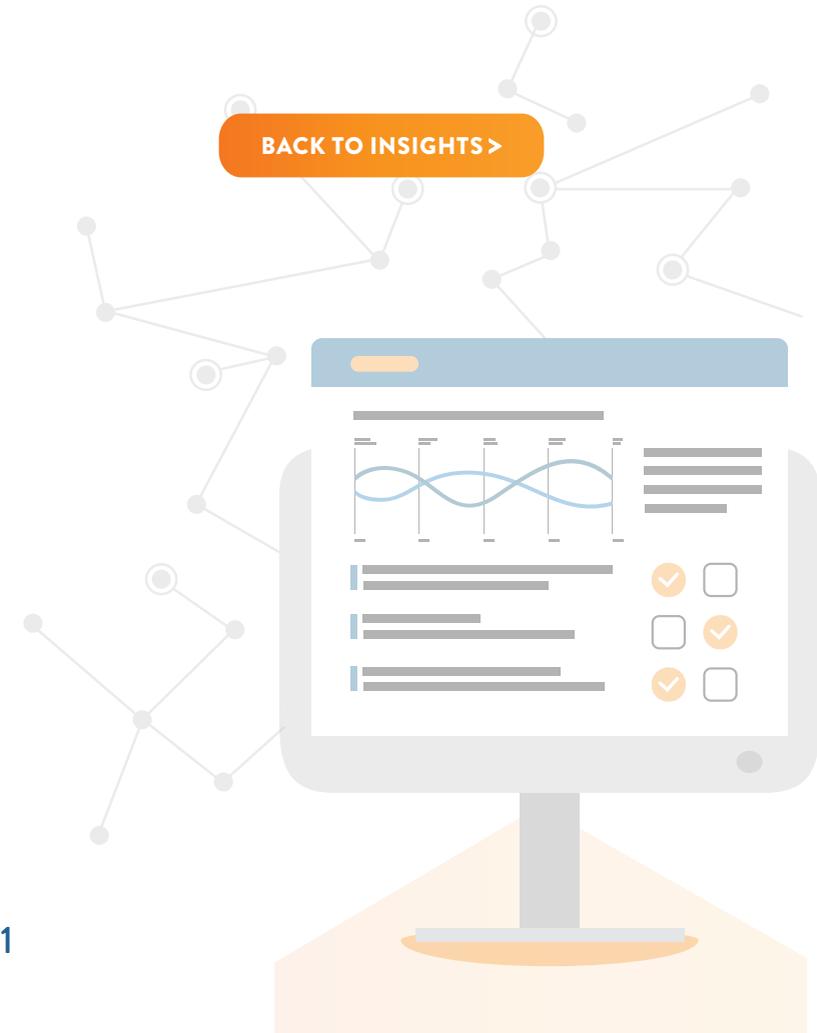
- Building efficiency is a particularly important focus for Europe, where the European Commission estimates that buildings account for 40% of energy consumption and 36% of CO₂ emissions. Governments are using tax incentives for building renovation to reduce energy consumption. For example, since 2010, Switzerland has prioritised improving building efficiency through the Swiss federal and cantonal Buildings Programme that incentivises the energy-efficient renovation of buildings through investment in renewable energies, waste heat

recovery and the optimisation of building services technology.

C. Focus on distributed systems to achieve accessibility and decarbonisation goals

Distributed policy initiatives are being promoted to achieve universal energy access by 2030. However, while supporting regulatory frameworks may exist, project finance in emerging markets remains a challenge as business cases usually rely on subsidised support.

- In western Mongolia, the Asian Development Bank is supporting a project to develop a 40.5MW distributed renewable energy system to reduce import dependency and improve affordability and environmental sustainability.
- In developed markets such as Sweden, distributed generation is promoted to help decarbonisation with taxes, clean energy certificates for renewables generation and white certificates for energy efficiency being used as incentives.





Regional integration is a “desired” means of improving energy security

A. Working toward strengthening regional integration

Energy integration can increase regional cooperation and diversify countries’ sources of energy supply to enhance energy supply security.

- EU Cohesion is seen as necessary for more supply diversification for greater energy security. Bulgaria, for instance, is investing in the Greece–Bulgaria (IGB) gas pipeline and the Alexandroupolis LNG terminal. It is also modernising the existing national gas transmission network, expanding gas storage and liberalising the gas market to support the creation of a Balkan gas distribution centre. Across the region, US LNG supply agreements are being discussed to diversify imports and increase market competitiveness.
- Regional electricity and gas integration in Africa can help meet countries’ growing energy needs. In September 2019, the World Bank approved a financing scheme for the construction of the Mozambique–Malawi Interconnector that will link Malawi to the Southern African Power Pool, helping to

address the country’s insufficient power generation capacity. China’s “One Belt, One Road” initiative is supporting investment in infrastructure projects for regional integration.

B. National energy strategies aim to diversify the energy mix and reduce overreliance on one supplier or one energy source

While regional integration remains important for all countries surveyed, there remains a strong focus on self-reliance.

- Countries reliant upon oil and gas imports recognise that this dependency renders their economies vulnerable to supply disruptions.
- Energy mix diversification is a key objective for countries reliant upon few supply sources. Diversification plans frequently target increasing the share of renewables to reduce imports and lower carbon emission. For example, Belgium’s National Energy Plan targets a rise in the share of renewables to 18.4% by 2030 (from 8.65% in 2017) as part of its diversification strategy.

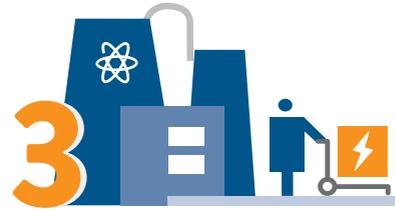
C. Renewables are an important focal point for boosting electricity production

The expansion of renewable energy, especially solar and wind, is included in many countries’ energy strategies to increase clean domestic energy supply.

- Lebanon currently relies on imports for most of its energy demand but is looking to renewable energy to increase domestic production with a target of 12% by 2030.
- Countries with significant coal generation are also looking to increase renewables capacity while CCS could be an important technology to reduce emissions from coal use.

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KEY TRENDS



A NEW PULSE:
The 2020s is primed to be the decade of the customer

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TREND TRACKING:
CCS is gaining in importance within the Oil & Gas sector

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A DIFFERENCE IN OPINIONS:
Nuclear power remains important in Europe

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A NEW PULSE: The Decade of the Customer

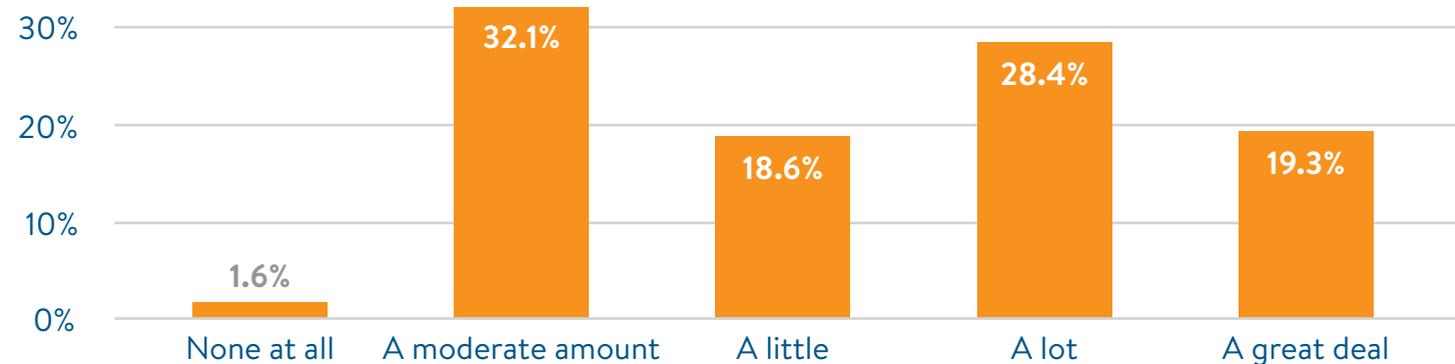
The focus for the 2010s was about trying to automate and upgrade the energy system and set targets to move the energy transition forward. Digitalisation accelerated the transition of all sectors towards a more customer-centric environment. New policies and regulations were introduced to facilitate this transition and empower consumers.

As a result, the 2020s may very well be about realising those targets through a transition from activism to action.

Interestingly, customers do not appear to appreciate fully how individual behaviour can contribute to the larger effort to decarbonise economies. In 2019, we piloted a short survey to ask 550 customers from 50 countries to what extent they thought their actions could help reduce emissions from energy. As shown in Figure 2, many do not see a direct connection between their individual behaviour and overall energy demand. Effective decarbonisation requires much of the population to understand that their actions can contribute “a great deal” to reducing emissions from energy.

Figure 2: Customer perspectives on their individual role to control energy demand and reduce emissions from energy

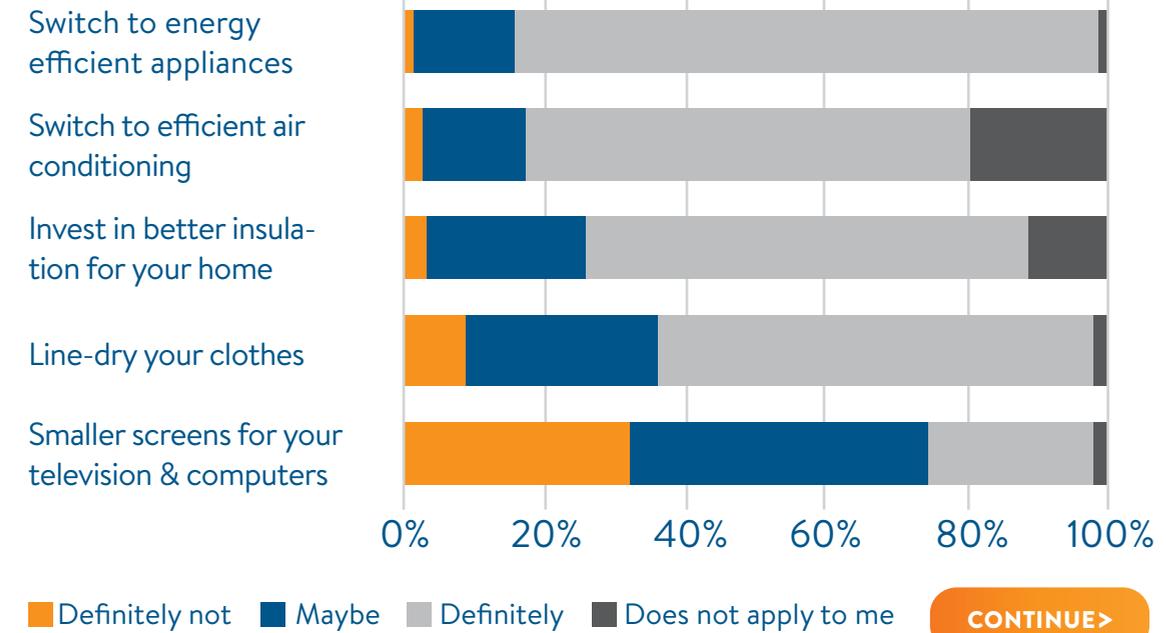
| How much do you think your actions can help reduce emissions from energy?



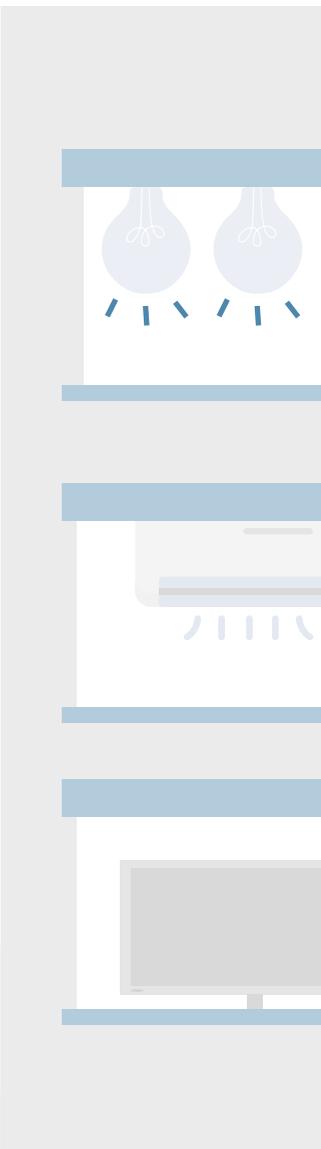
At the same time, many customers are willing to be more efficient. The same respondents who seem unaware that individual efforts could contribute strongly to climate mitigation and adaptation are willing to switch to more energy efficient domestic appliances (see figure 3).

Figure 3: Customer willingness to become more energy efficient

| What steps are you willing to take to help decrease your emissions in your home?



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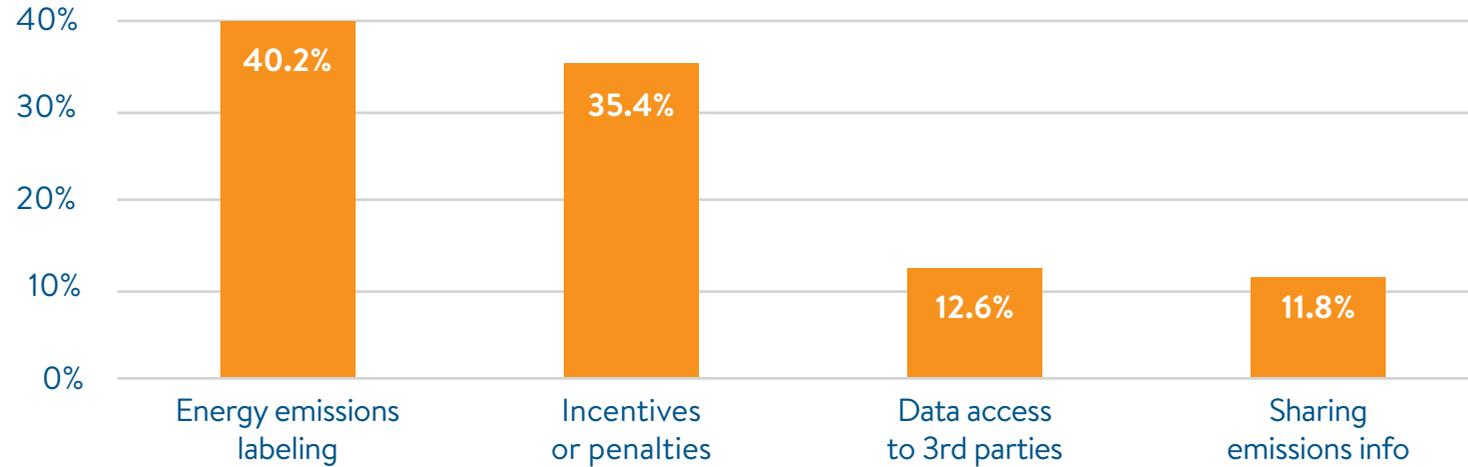
Over the last 10 years, the energy sector has invested significantly to build two-way capability into the grid to allow for more renewables and distributed generation, and equip the customer with new controls (e.g. smart meters, demand response programs, time of use rates, etc.) that provide more oversight of their energy use.

As energy systems develop, customers for the first time are being equipped with the capability to drive the direction of the energy transition.

Our survey gives some insight into the most likely direction customers might follow:

Figure 4: What Customers Need to Take Action

| What would encourage you to better manage your energy consumption?



While financial incentives are an obvious carrot or stick to encourage change, most respondents also wanted more information on emissions labelling on all consumer products. Additionally, they asked for information on the carbon footprint of everything from a pair of jeans to producing a hamburger. This strongly

suggests that customers are becoming less passive and much more engaged than before.

The decade of the customer is here with increasing active participation that the energy sector will need to engage with and support

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TREND TRACKING: CCS is gaining in importance within the Oil & Gas sector

Looking at thousands of survey responses over the years provides an interesting perspective on the evolution of issues. The Council has reviewed the Issues Monitor responses of energy leaders since 2015 to determine whether there are scattered signals that over time may form a global trend.

In comparing response from the Oil & Gas sector in 2015 with 2019, we found that almost half of respondents identified Carbon Capture & Storage

(CCS) as a high impact issue in 2019, up from about a third in 2015. CCS is increasingly being viewed as an essential option for continued hydrocarbon use although governmental support is needed to enable scalability and cost effectiveness.

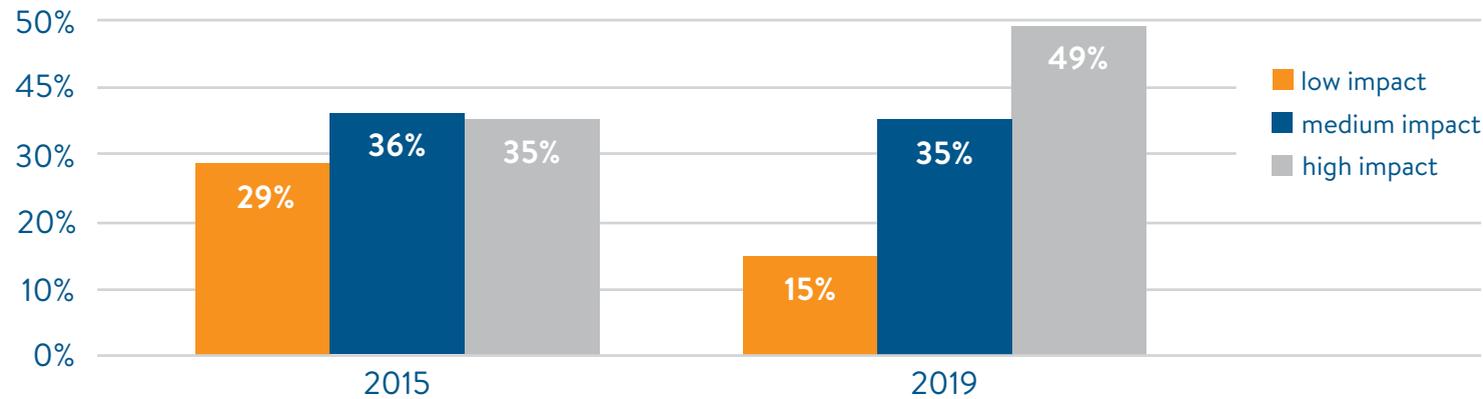
According to the latest report from the Global CCS Institute, there are now 19 large-scale CCS projects in operation globally with four projects under construction, and a further 28 in various stages of

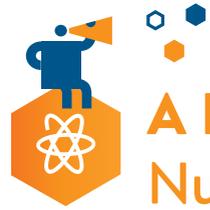
development. The US government is using financial incentives (45Q tax credit) to encourage more cost effective CCS projects.

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Figure 5: Carbon Capture and Storage is Gaining Ground for the Oil & Gas Sector

| Growing impact of CCS for the global O&G sector





A DIFFERENCE IN OPINIONS: Nuclear power remains important in Europe

The Council investigated how European energy leaders perceive nuclear energy as a carbon-free resource for meeting electricity demand. Opinions remain polarised but in many European countries, nuclear power is increasingly recognised as a carbon-free energy source and potentially an integral part of the future energy mix. In December 2019, the European Commission set a target of net-zero carbon emissions by 2050. There is qualified support among energy leaders to include nuclear energy to help create a carbon neutral continent and enable a just energy transition.

Figure 6 illustrates the diversity in perception of European energy leaders on the role of nuclear power in meeting electricity demand.

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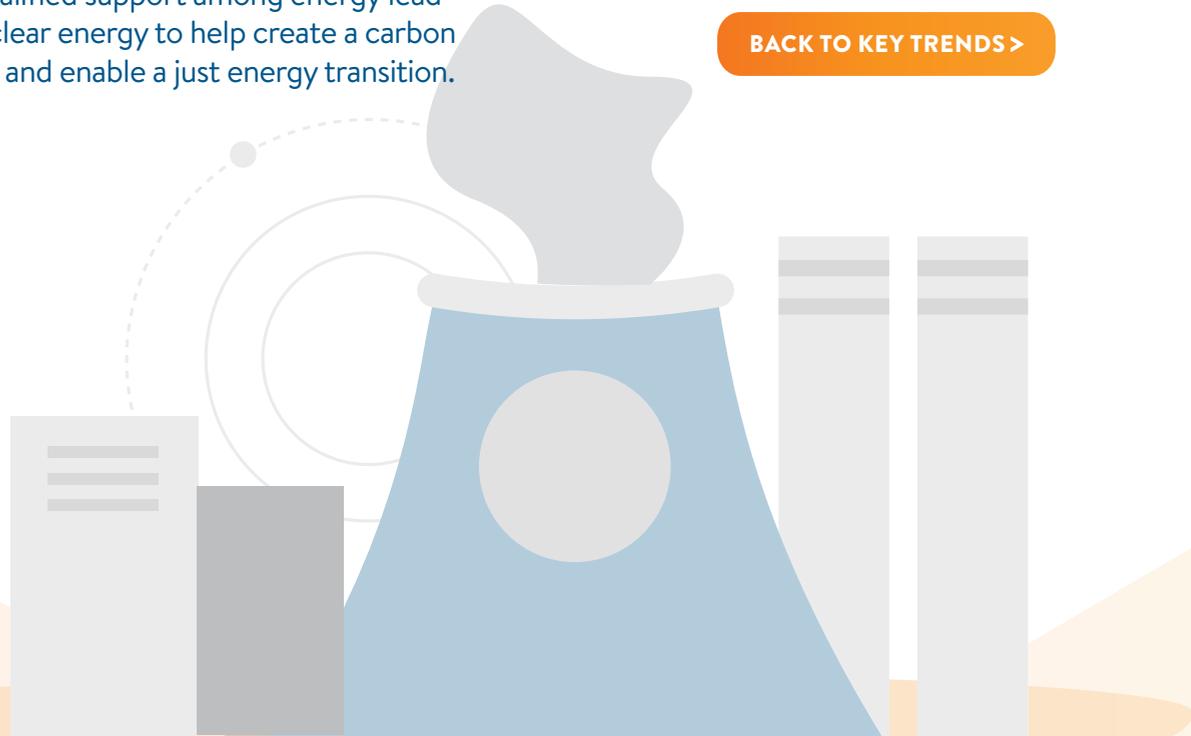
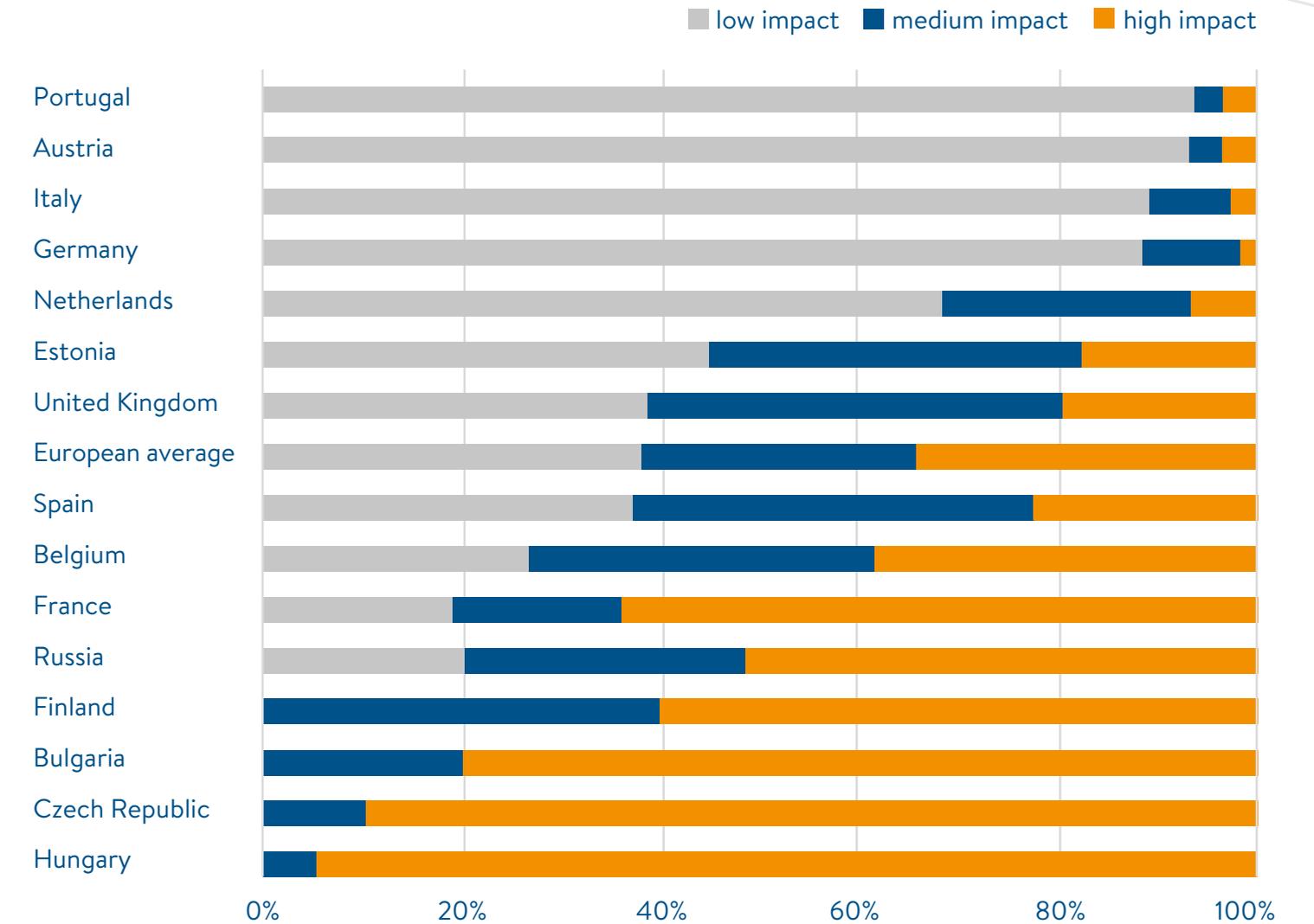


Figure 6: Nuclear Energy's Role in Europe*
| Impact of nuclear within European countries



* The Europe Average in this chart is calculated from the responses of European countries in this Issues Survey. For a comprehensive list of countries included in the survey see page 168 of the full World Energy Issues Monitor 2020 report

PERSPECTIVES FROM

365 C-SUITE

745 SENIOR EXECUTIVES

800 Executives

900 Senior Managers & DIRECTORS

250 START UPS & FUTURE ENERGY LEADERS

PLUS 550 INDIVIDUAL CUSTOMERS



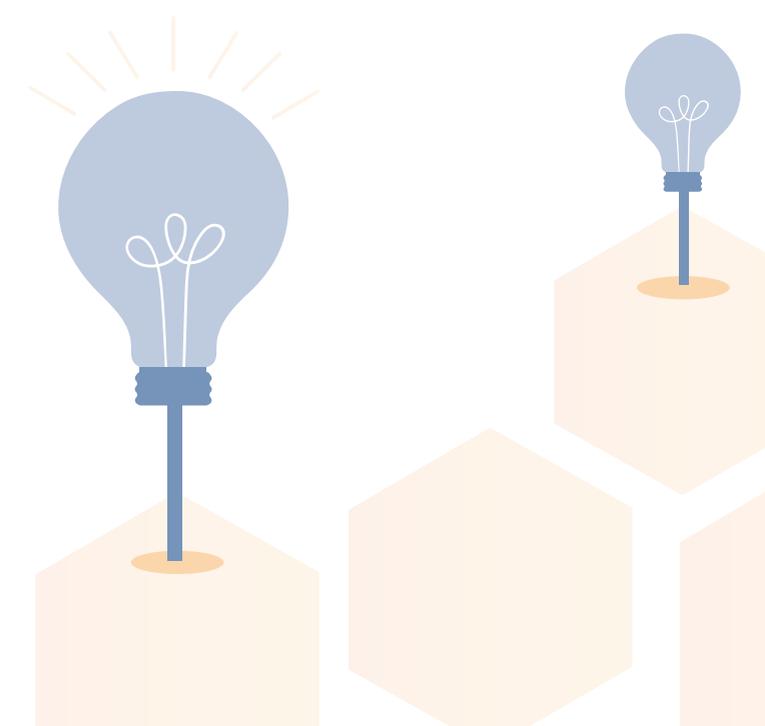
WHY IT MATTERS

This brochure is a snapshot of the findings from the World Energy Council Issues Monitor 2020 report. The complete Issues Monitor report includes a global issues map, 58 country maps, and six regional maps, as well as perspectives from Future Energy Leaders (FEL) and energy innovators.

The Issues Monitor and maps offer a range of opportunities for strategic conversations leading to a better understanding of the progression of the energy transition:

- Maps can be used to showcase the status of energy issues at the national, regional, and global levels.
• The country profiles inform energy transition progress while also allowing countries to compare and asses regional variations.
• The placement of the issues indicate areas of risk and concern as well as progress and action. Policy makers and other stakeholders can use this information to devise future strategies.
• Bespoke maps for individual organisations can provide a basis for executive team or board level dialogue on differing priorities and target markets.

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2020 WORLD ENERGY ISSUES MONITOR

DECODING NEW SIGNALS OF CHANGE

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