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HUMANISING ENERGY

World Energy Issues Monitor and Covid-19 Pulse survey

17 May 2021

Digital event for the Spanish Energy Club / WEC Spain

AGENDA

1. World Energy Issues Monitor 2021
2. COVID Implications and Outlook
3. Q&A

OUR ENDURING MISSION

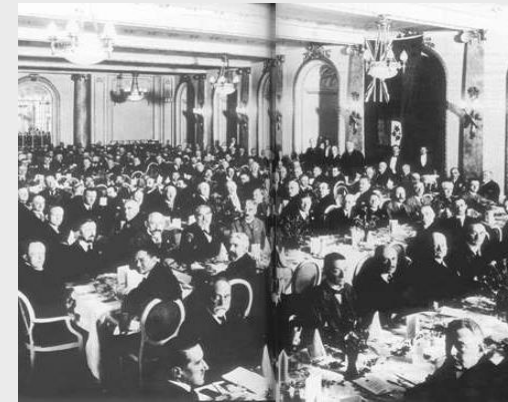
100 years of better energy for everyone and everything

- The first permanent **world energy** organisation
- **Open-to-all, impartial, neutral and vehemently independent**
- **3,000 member organisations in nearly 90 countries from across the entire energy industry**, connecting public, private, civic and academic spheres – the ‘whole’ system.
- **Inspire, inform and impact ‘how to’** - build and transform by engaging diversity in energy as a source of insight, innovation and learning.

“A breath of common sense in a global age” – H G Wells 1924



Global influenza pandemic 1918



World Power Conference 1924



Great Depression 1929

RECOVERY IN AN ERA OF GLOBAL ENERGY TRANSITION

Humanising energy vision for people and planet



2D GLOBAL DRIVERS:
Diversification of supply
Development of new technologies
(incl. electrification)

3D GLOBAL DRIVERS:
Decarbonisation
Decentralisation
Digitalisation

4D GLOBAL DRIVERS:
Decarbonisation
Decentralisation
Digitalisation
Disruption-by-demand



WORLD ENERGY TRANSITION TOOLKIT

Supporting energy leaders in successful energy transition



World Energy Trilemma Index

integrated policy pathfinding to manage security, equity & sustainability through transition

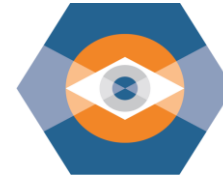
Past



World Energy Issues Monitor

grounded reality check - global, regional, national energy leaders' perspectives on key challenges

Present



World Energy Scenarios

bigger picture thinking, testing deeply held assumptions & reframing choices & options

Future



Innovation Insights

moving whole systems innovation from margins to mainstream

Spotlight

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WHAT KEEPS ENERGY LEADERS AWAKE AT NIGHT AND BUSY AT WORK?

WORLD ENERGY ISSUES MONITOR 2021

Martin Young, Senior Director, Insights, World Energy Council

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World Energy Issues Monitor 2021

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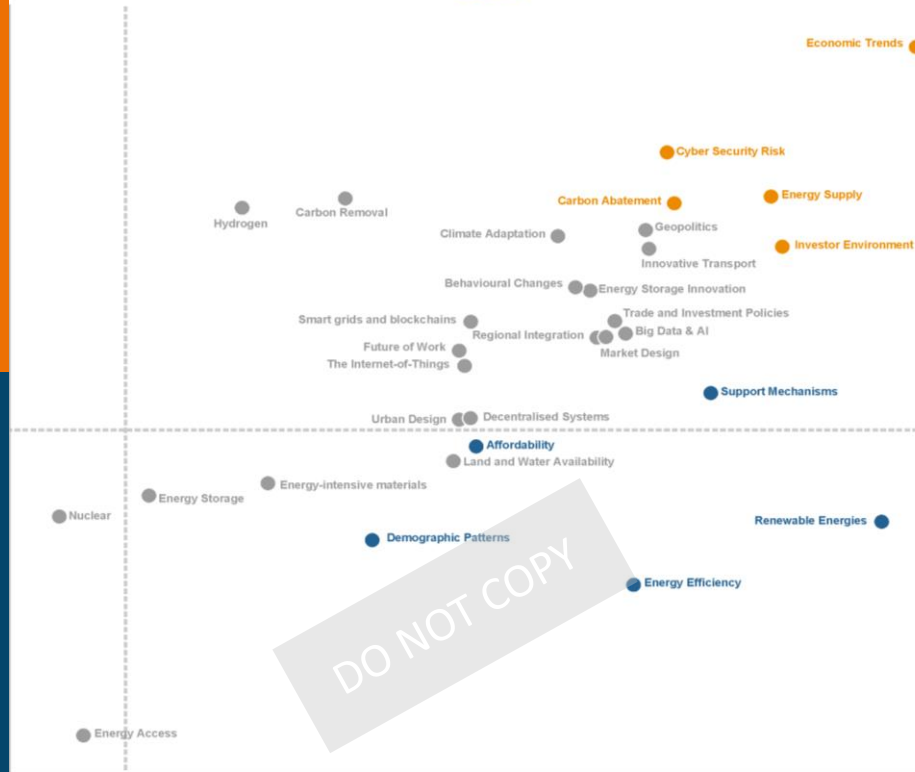


First time maps for Australia and Hong Kong



Welcoming back Dominican Republic, Kazakhstan and Saudi Arabia

Global



● Critical Uncertainties: what keeps energy leaders awake at night
 ● Action priorities: what keeps energy leaders busy at work
 ---- Centre-point line

GROWING REPRESENTATIVENESS



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2 500 responses from 108 countries



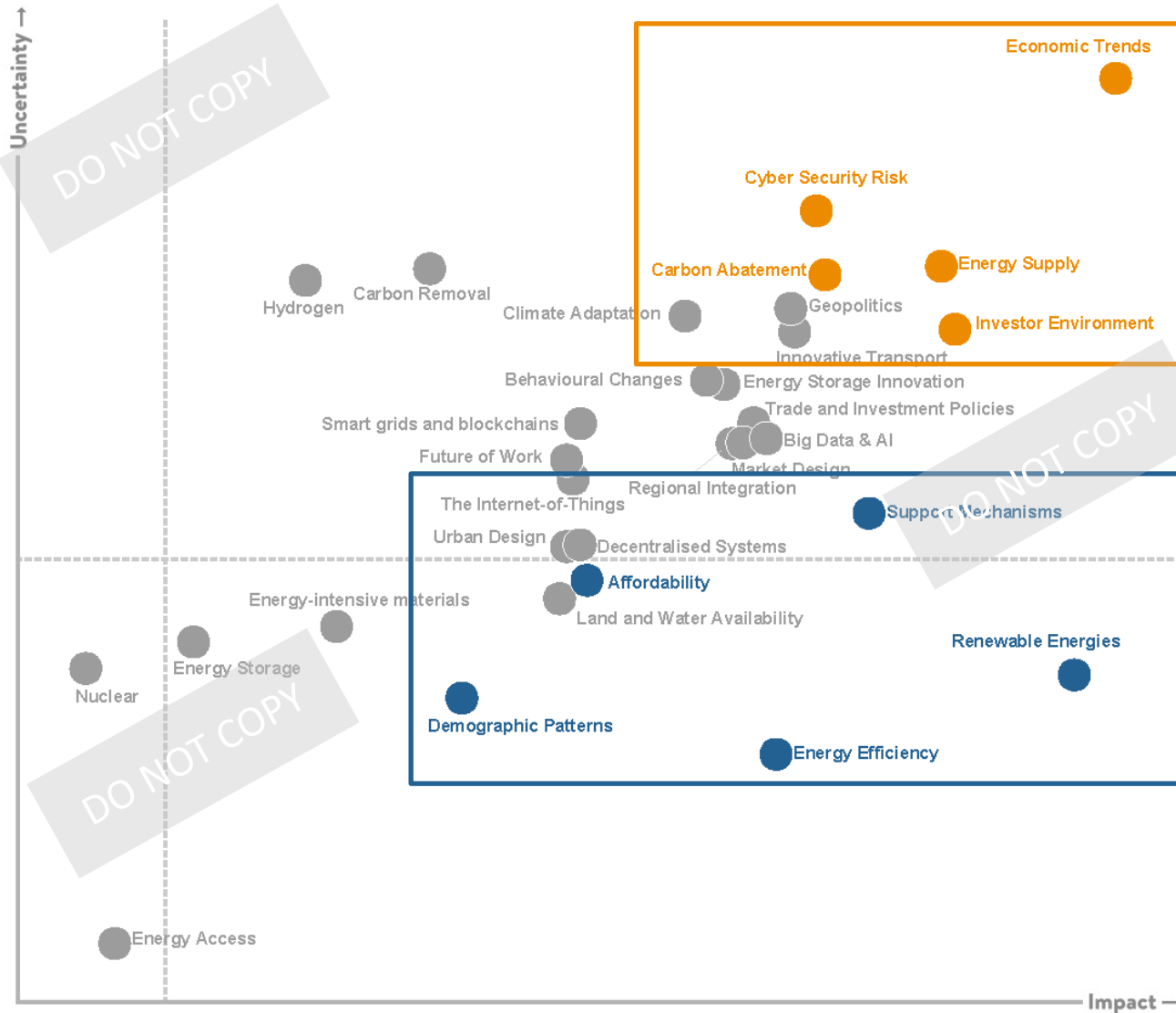
>1 000 Senior Management or higher, including C-Suite and Board



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60 Country Maps (new record)

78%

of TOTAL GLOBAL ENERGY CONSUMPTION represented in the 2021 Country Maps



Critical Uncertainties

Issues Monitor 2021 Global Map

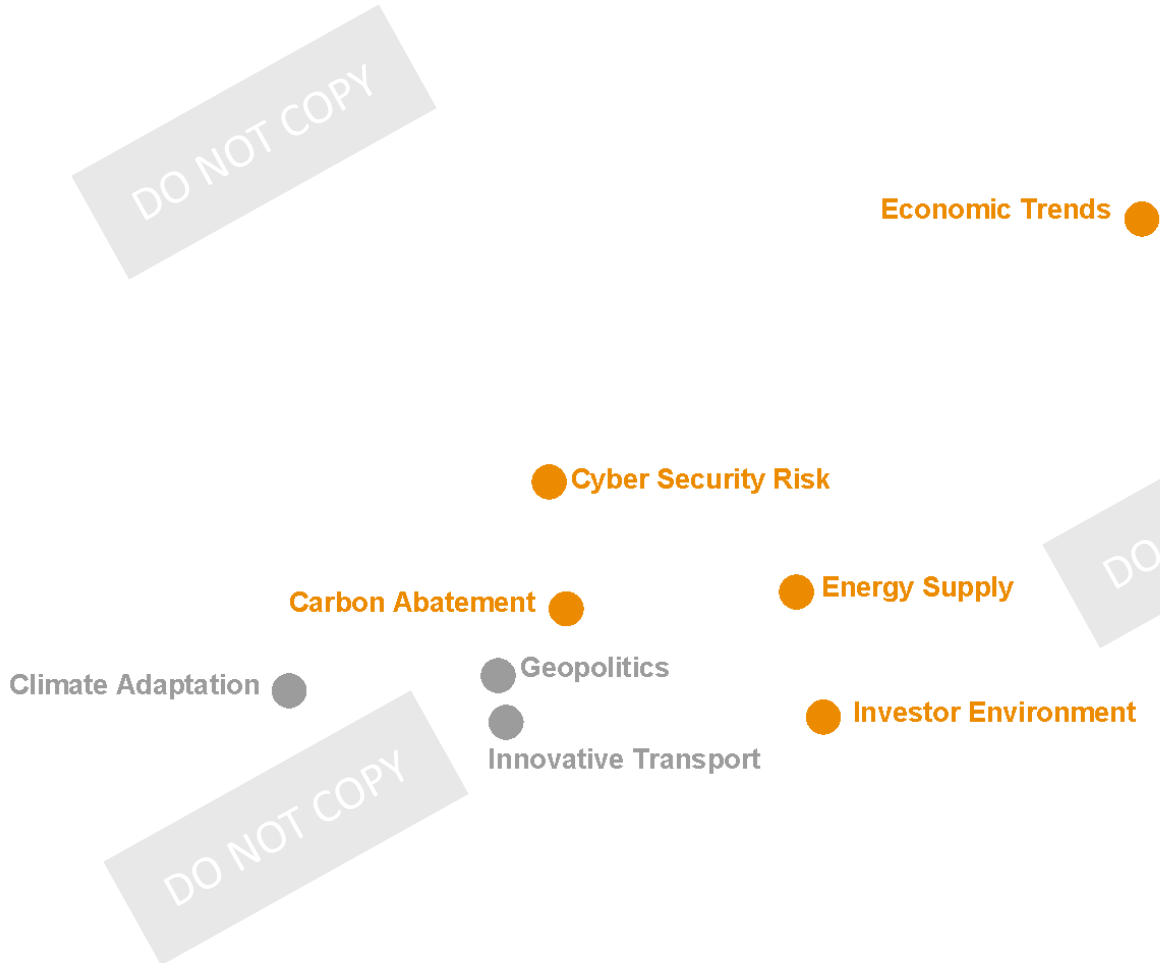
Action Priorities

● **Critical Uncertainties:** what keeps energy leaders awake at night
● **Action priorities:** what keeps energy leaders busy at work

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CRITICAL UNCERTAINTIES

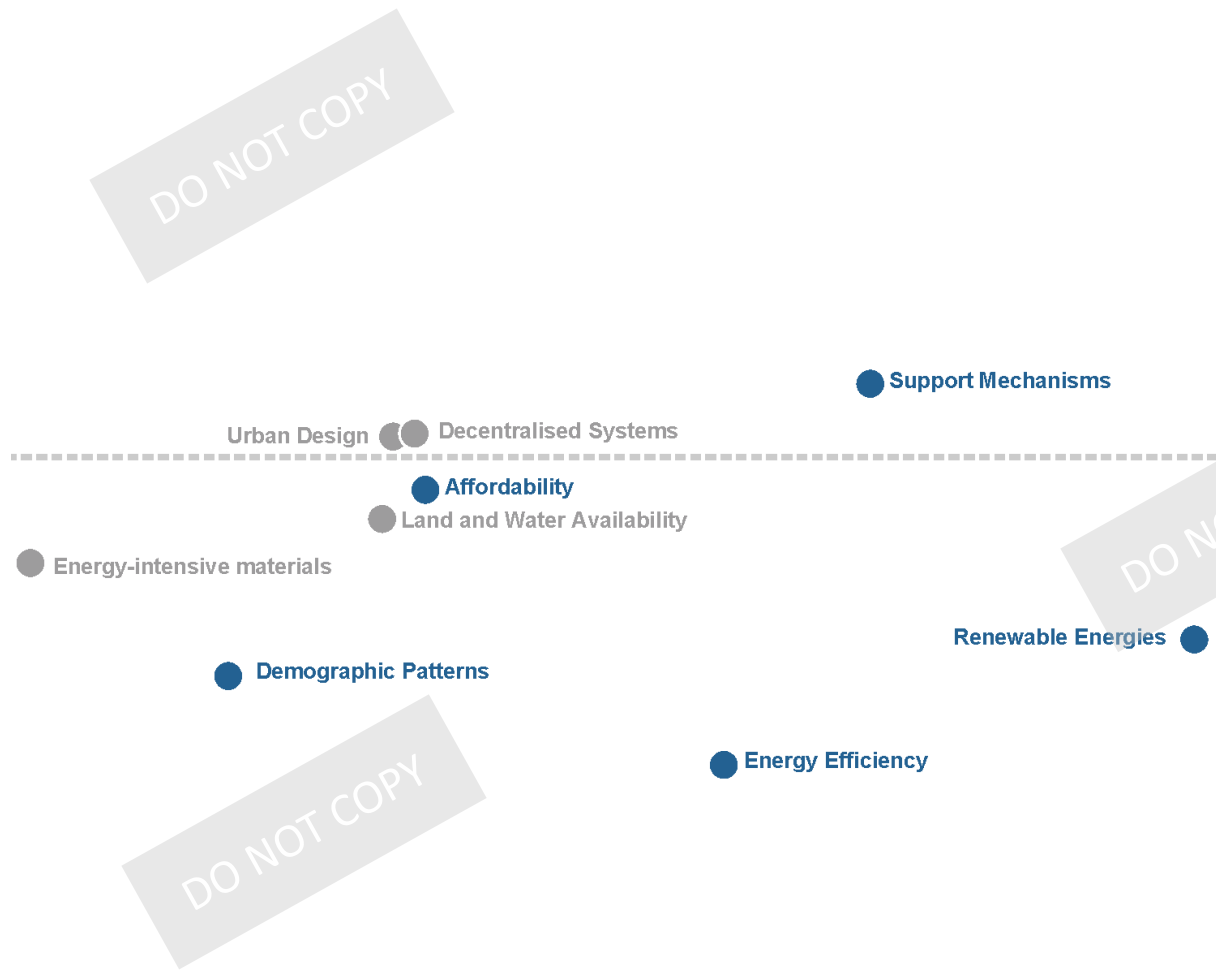
What is keeping energy leaders awake at night?



- **Economic Trends** – clear certainty of economic uncertainties against COVID-19 with short-term economic challenges and uncertainty about longer-term economic recovery with implications for energy transition
- **Investor environment** – closely linked to economic situation with greater uncertainty on investments, availability of funds, on what / where to invest, and if there will be any support
- **Energy supply** – energy sector has kept the lights on but longer-term concerns about demand destruction and how demand might change
- **Cyber security risks** – digital solutions have helped mitigate economic impacts of pandemic raising awareness of cyber security with wide perception of more cyber-attacks
- **Carbon abatement** – essential to enable continued use of existing hydro-carbon assets while meeting meet lower carbon goals

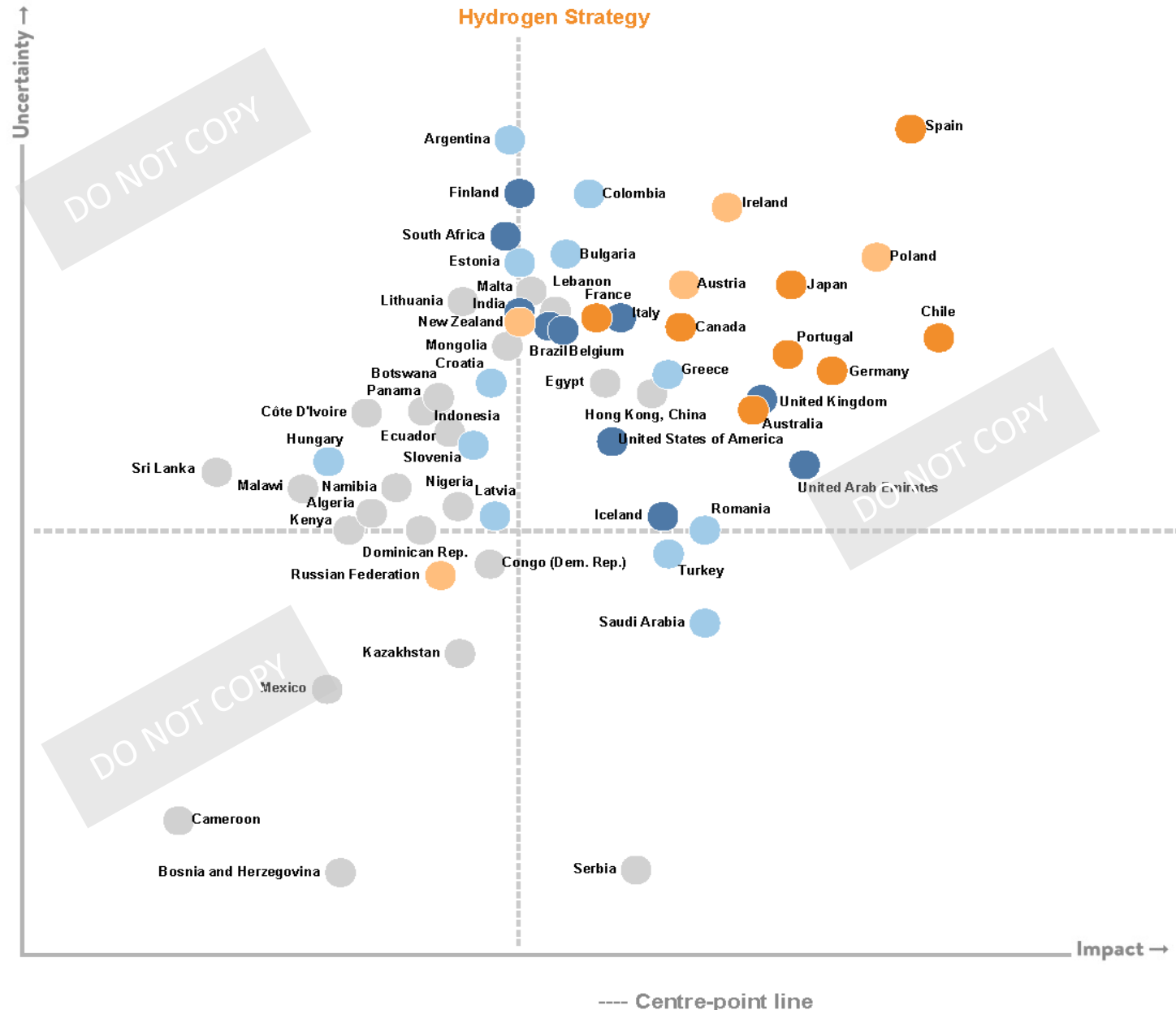
ACTION PRIORITIES

What is keeping energy leaders busy at work?



- **Renewables** – long-standing Action Priority as energy sector implements proven technologies and make them work within energy system
- **Energy efficiency** – longer-term policy aspiration with energy sector looking for continuous improvement
- **Affordability** – high profile with pandemic exposing long-standing societal issues related to cost / access
- **Demographic patterns** – country specific with developing countries looking at rising urban populations increasing demand contrasting with developed countries anticipating flat or declining demand being exacerbated
- **Support mechanisms** – in short-term for COVID response and long-term for feed-in tariffs or post-COVID recovery

HYDROGEN – INNOVATION TURNING POINT FOR NET-ZERO?



- Increasing **recognition of hydrogen's potential** to decarbonise sectors / uses that are difficult to electrify
- Countries with net-zero targets prompted to start developing national hydrogen strategies, but perspectives **differ significantly between countries**
- Hydrocarbon asset rich countries see hydrogen as an opportunity to continue to **utilise their existing assets** in conjunction with **carbon abatement** technologies
- Developing countries lower but emerging interest in exploring **how hydrogen might be used** within their energy systems

REGIONALLY DIVERSE CRITICAL UNCERTAINTIES

There is no 'one size fits all' path



Common to all regions

- Economic Trends

Frequent occurring across several regions

- Energy Supply
- Cyber Security Risk
- Carbon Abatement
- Investor Environment

Unique regional issues

- **Africa:** Affordability and Geographic Patterns
- **Asia:** Energy Storage Innovation
- **LAC:** Trade and Investment Policies and Market Design
- **MEGS:** Internet-of-Things, Big Data and AI and Innovative Transport
- **North America:** Climate Adaptation

REGIONALLY DIVERSE ACTION PRIORITIES

There is no 'one size fits all' path



Common to all regions

- Renewable Energies
- Energy Efficiency

Frequent occurring across several regions

- Big Data and AI
- Support Mechanisms

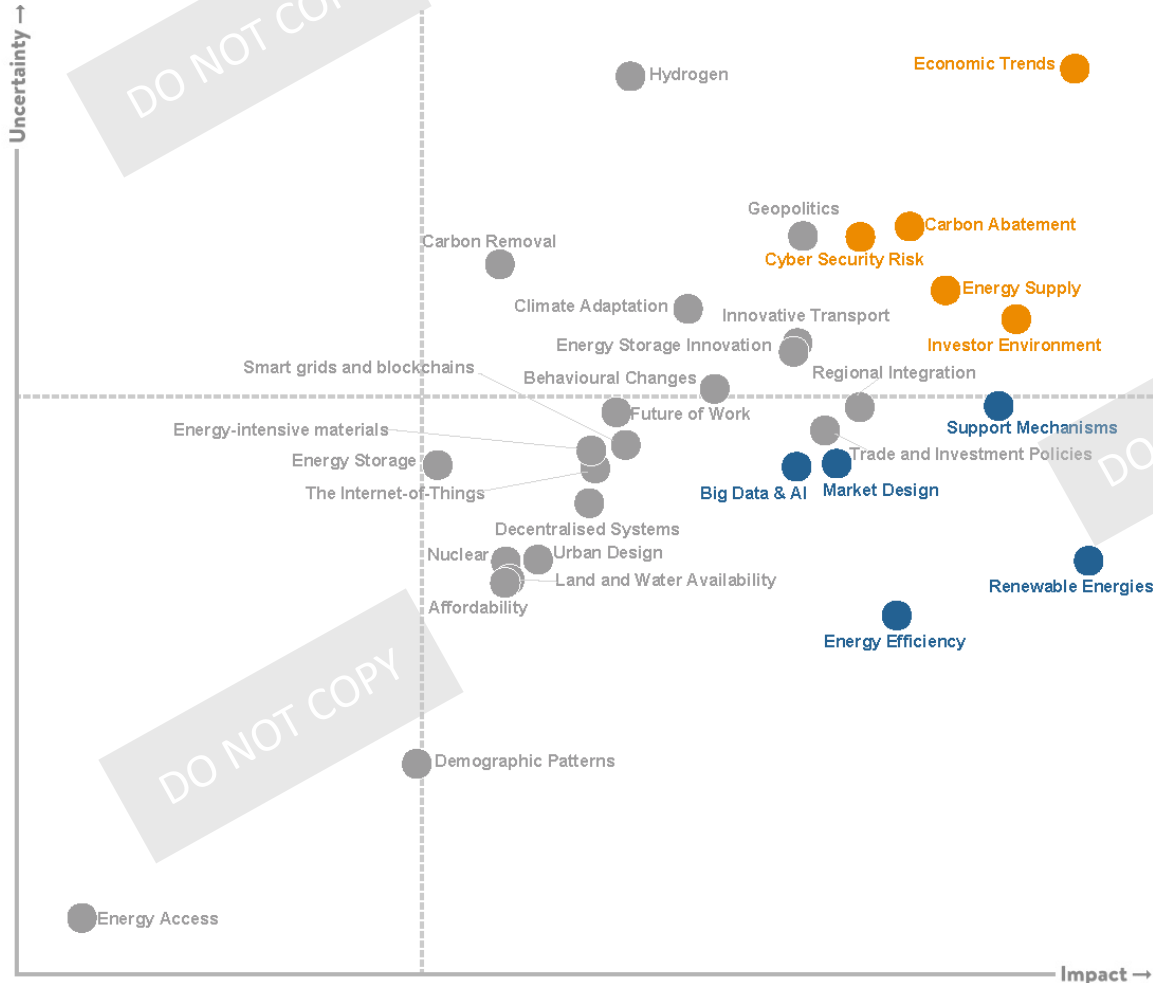
Unique regional issues

- **Africa:** Investor Environment and Energy Storage Innovation
- **Asia:** Innovative Transport
- **Europe:** Market Design
- **MEGS:** Affordability and Geopolitics
- **North America:** Land and Water Availability and Urban Design

ISSUES MONITOR 2021

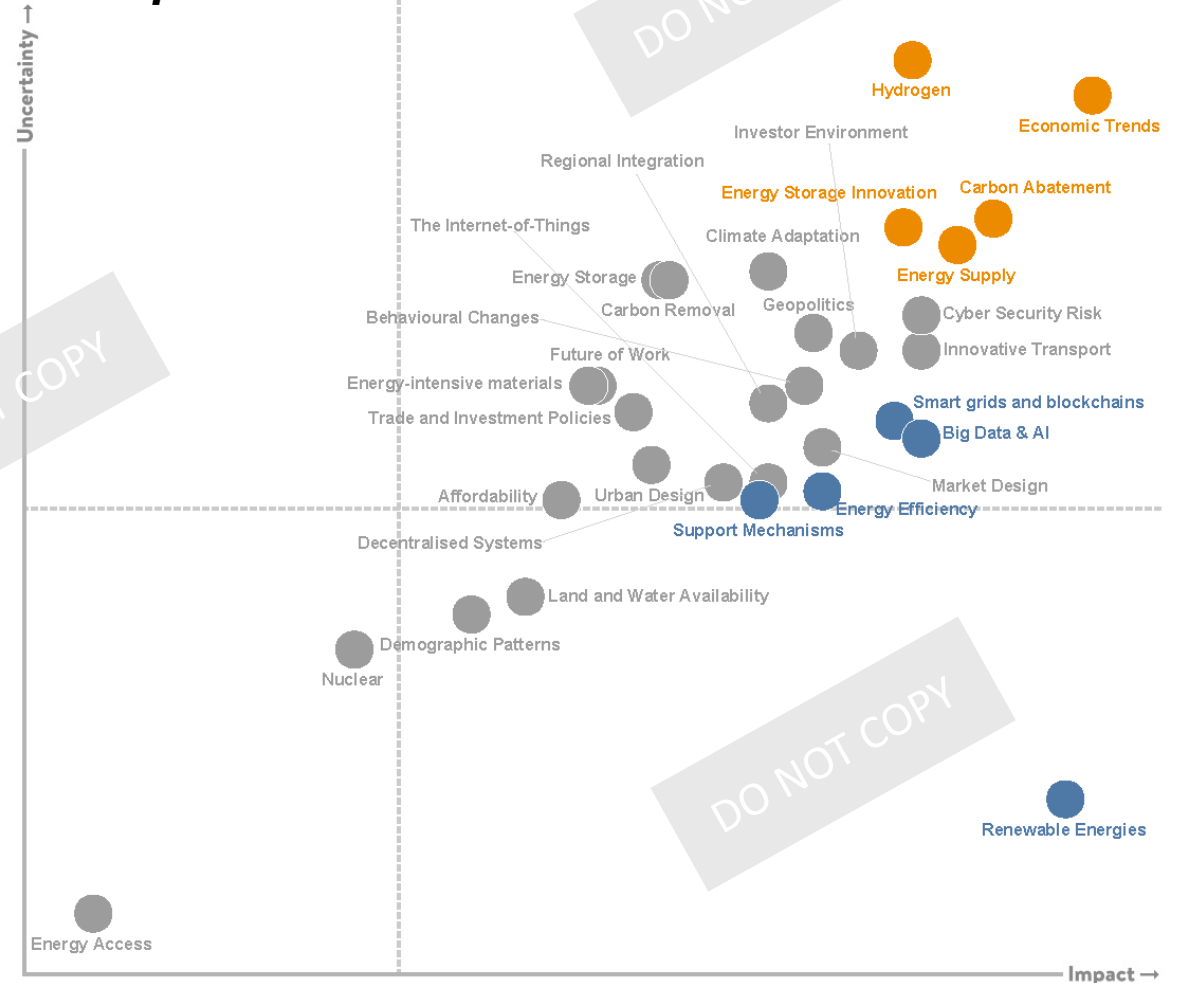
European and Spanish perspectives

Europe



● Critical Uncertainties: what keeps energy leaders awake at night
● Action priorities: what keeps energy leaders busy at work
 ---- Centre-point line

Spain



● Critical Uncertainties: what keeps energy leaders awake at night
● Action priorities: what keeps energy leaders busy at work
 ---- Centre-point line

HOW DO GLOBAL, EUROPEAN & SPAIN UNCERTAINTIES / PRIORITIES COMPARE?

2021	Global	Europe	Spain
Critical Uncertainties	<ul style="list-style-type: none"> Economic Trends Cyber Security Risk Energy Supply Carbon Abatement Investor Environment 	<ul style="list-style-type: none"> Economic Trends Cyber Security Risk Energy Supply Carbon Abatement Investor Environment 	<ul style="list-style-type: none"> Economic Trends Carbon Abatement Energy Supply Hydrogen Energy Storage Innovation
Action Priorities	<ul style="list-style-type: none"> Renewable Energies Energy Efficiency Support Mechanisms Affordability Demographic Patterns 	<ul style="list-style-type: none"> Renewable Energies Energy Efficiency Support Mechanisms Big Data & AI Market Design 	<ul style="list-style-type: none"> Renewable Energies Energy Efficiency Support Mechanisms Big Data & AI Smart Grids and Blockchain

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COVID IMPLICATIONS AND OUTLOOK:

RECOVERY WITH ENERGY DIVERSITY AND RESILIENCE

Anastasia Belostotskaya, Associate Director, Scenarios, World Energy Council

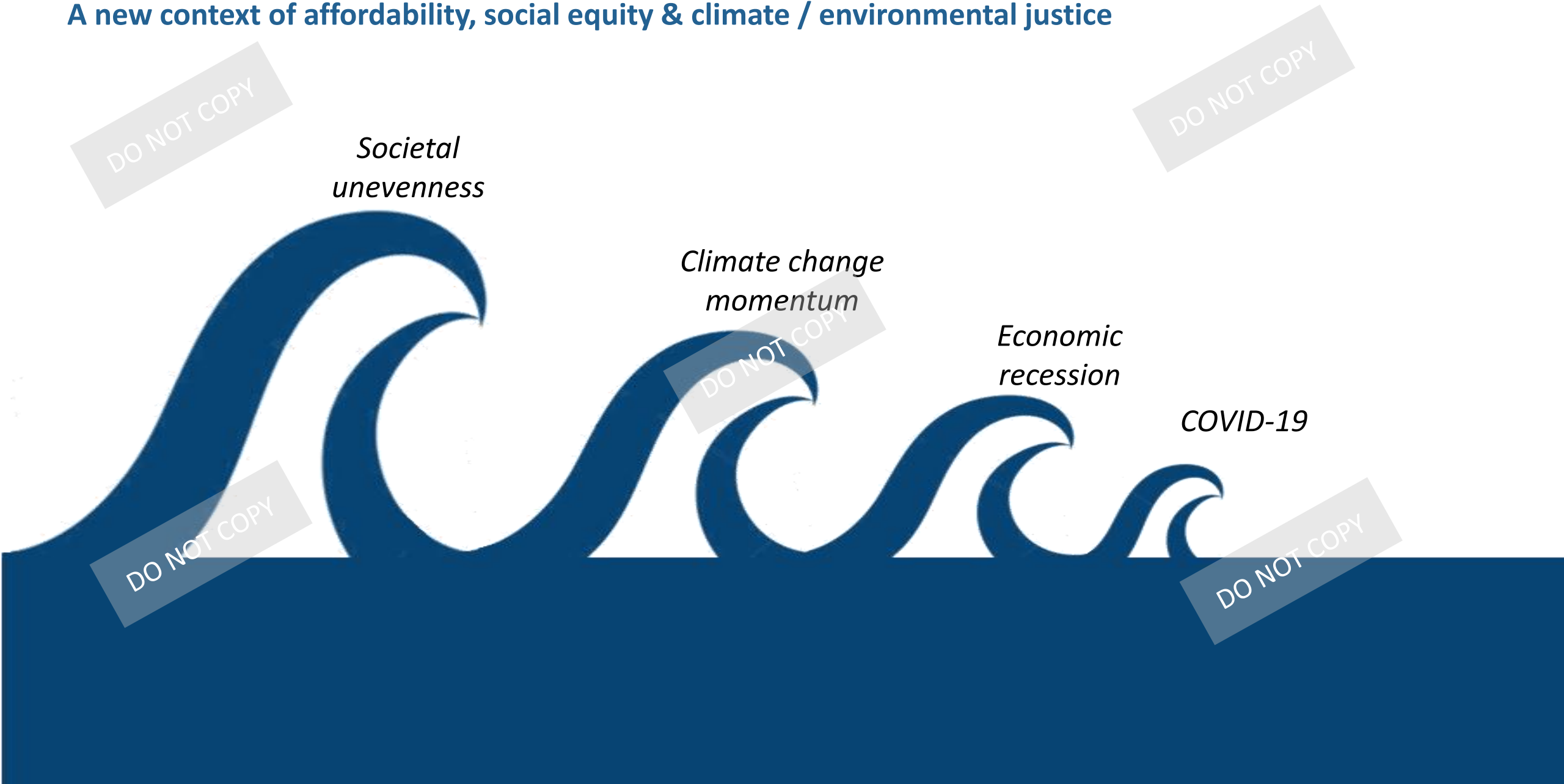
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COVID-19: A PIVOTAL MOMENT FOR ENERGY

A new context of affordability, social equity & climate / environmental justice



*Societal
unevenness*

*Climate change
momentum*

*Economic
recession*

COVID-19

2020: COVID SCENARIOS AND TOOLS

Supporting energy leaders in recovery from covid crisis

Community-wide surveys

1st survey, [#1](#), [#2](#) (April 2020)
[2nd survey](#) (June 2020)
[3rd Survey](#) (March 2021)



World Energy Transition Radar



Scenario-based role play simulation

Interactive role play to simulate interaction of leadership choices and actions



World Energy Covid scenarios
(to 2024)



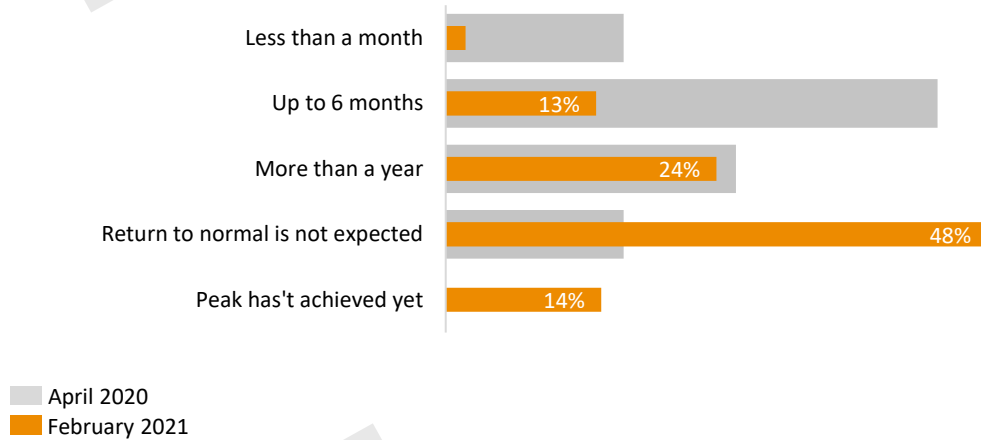


NO RETURN TO PRE-PANDEMIC NORMAL IS EXPECTED

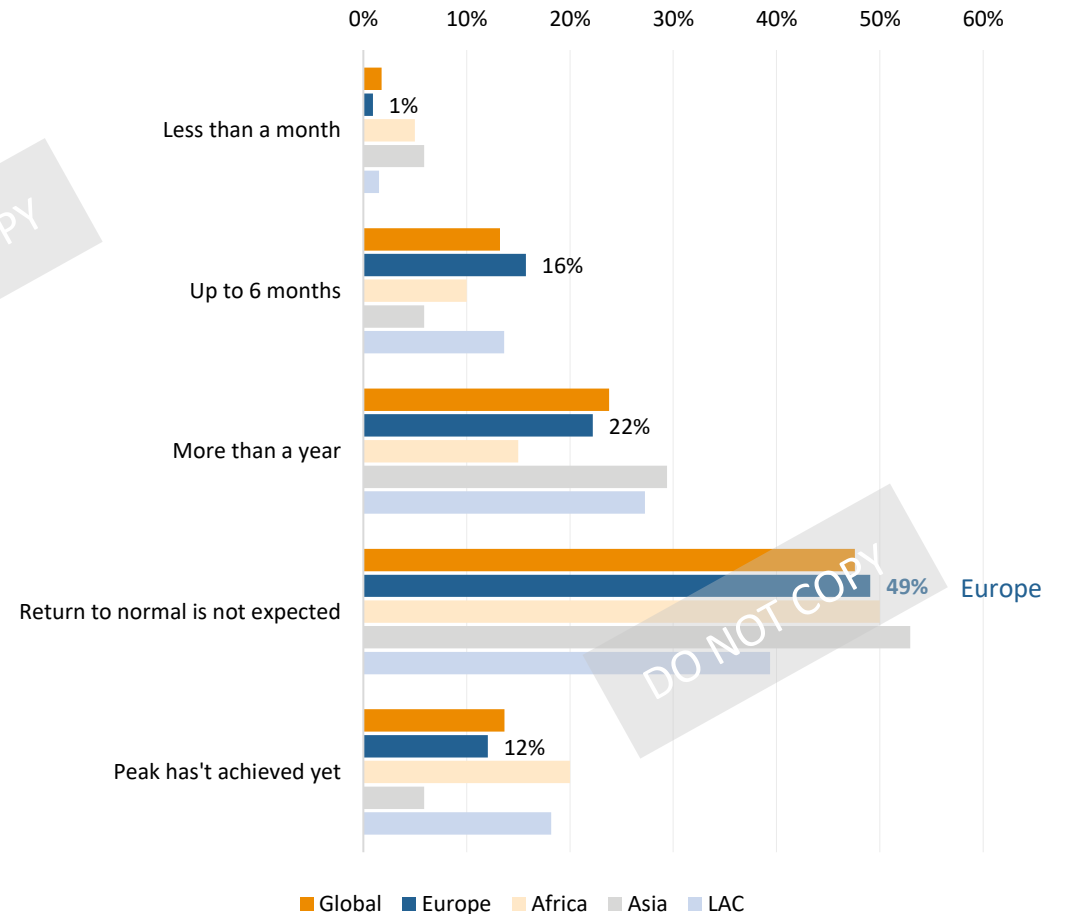
Europe expectations are in line with global views

Q: How long will it take for energy systems to come back to normal after the peak disruption from COVID?

Global view



Regional view



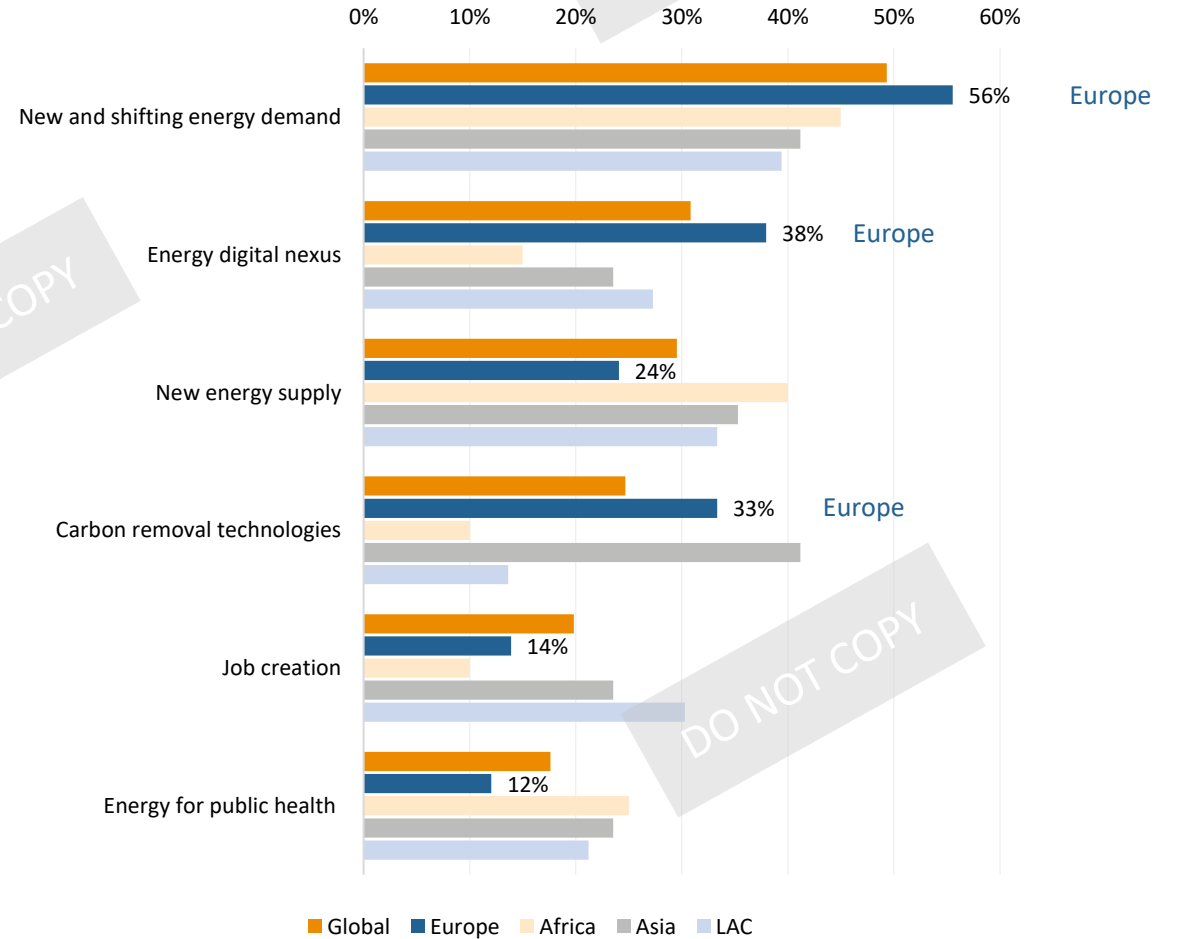
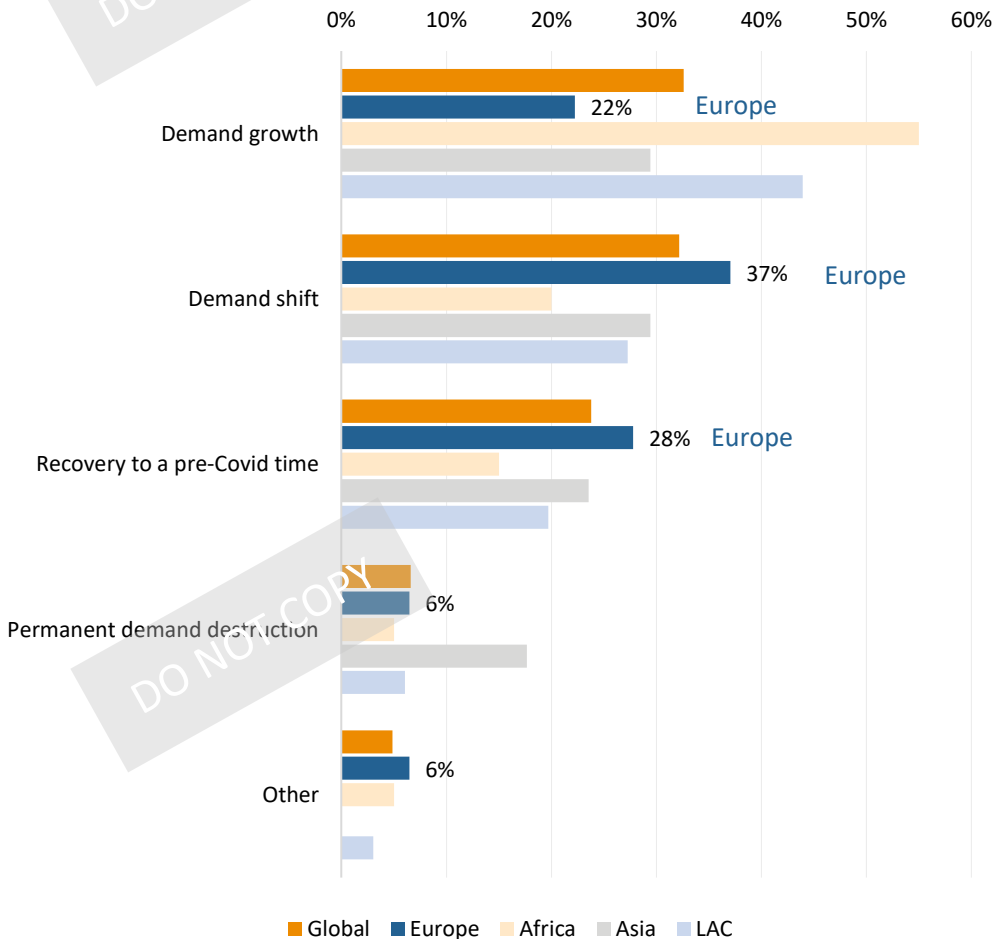


EXPECTATIONS ON ENERGY DEMAND CHANGE

Europe sees new and shifting demand as most promising solution spaces

Q: What is your **expectation on the recovery of energy demand** in your country after all government restrictions related to pandemic have been lifted?

Q: What are the most promising **new solution spaces** emerging?



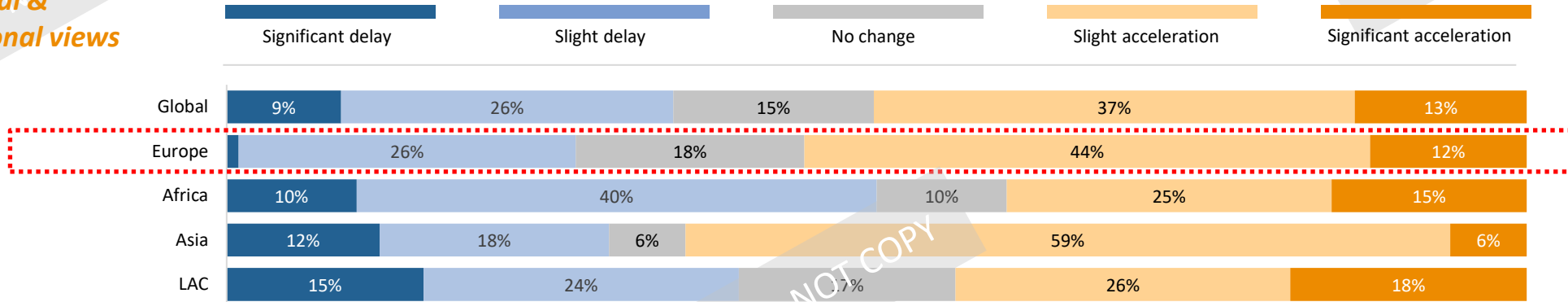


REGIONS ARE EXPERIENCING UNEVEN IMPACTS ON ENERGY TRANSITION

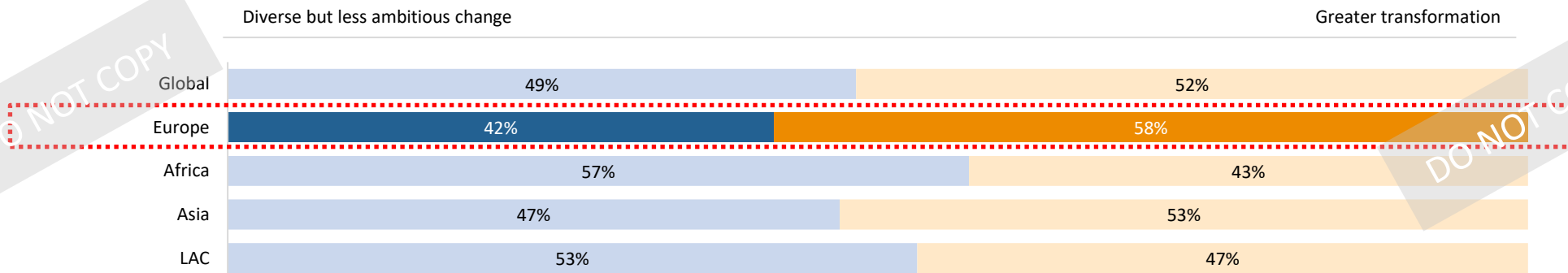
In Europe 56% see signals of slight or significant acceleration of energy transition

Q: How do you expect COVID to impact upon **energy transition**?

Global & regional views



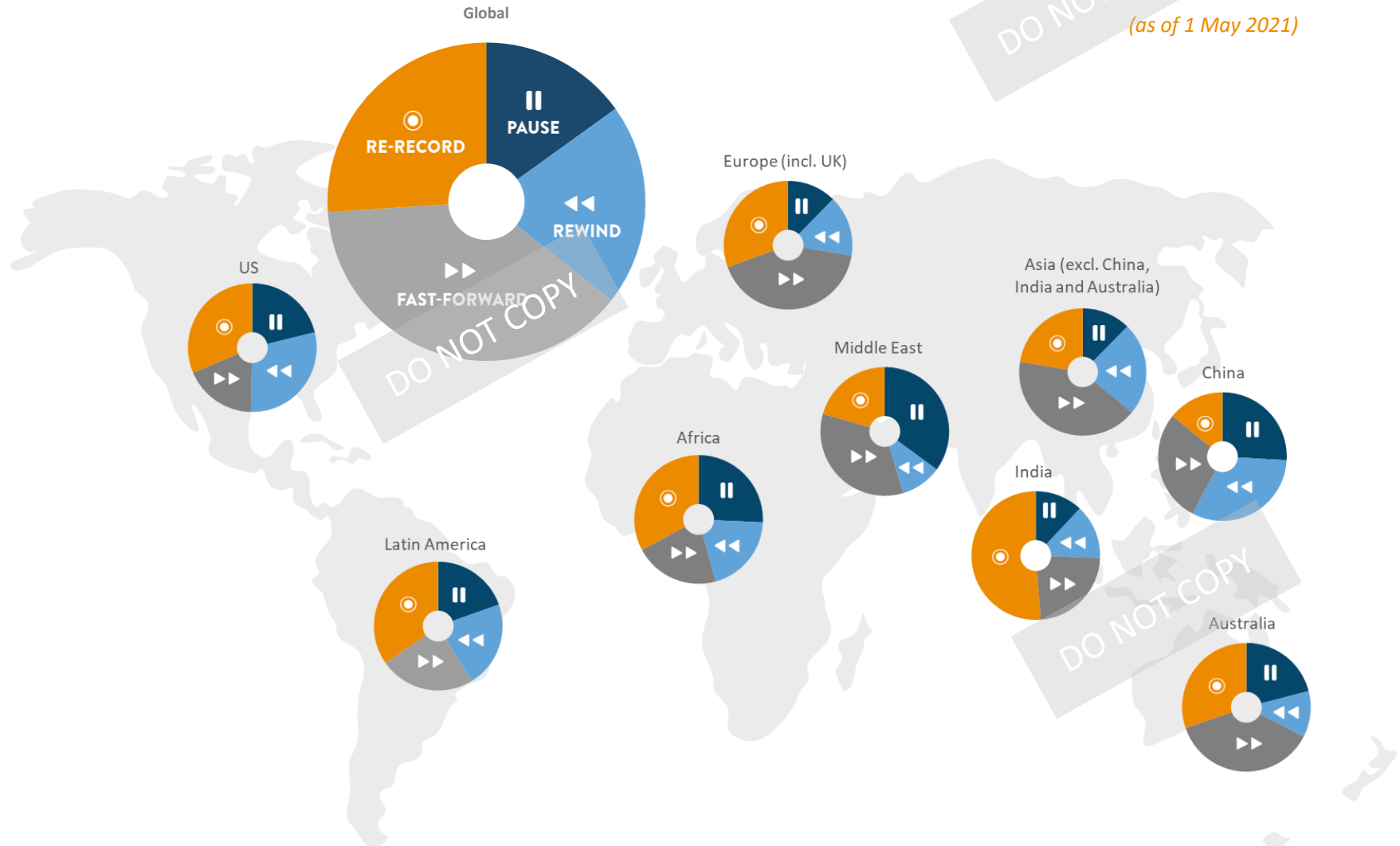
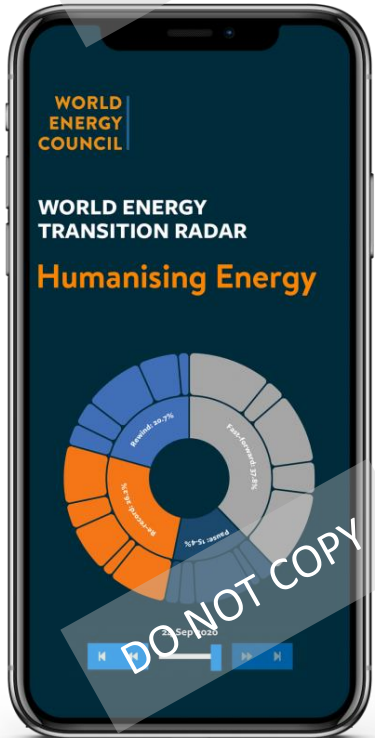
Q: What are the **recovery options** local stakeholders are focussing on?





FAST-FORWARD SCENARIO SIGNALS DOMINATE IN EUROPE

World Energy Transition Radar – global and regional snapshots



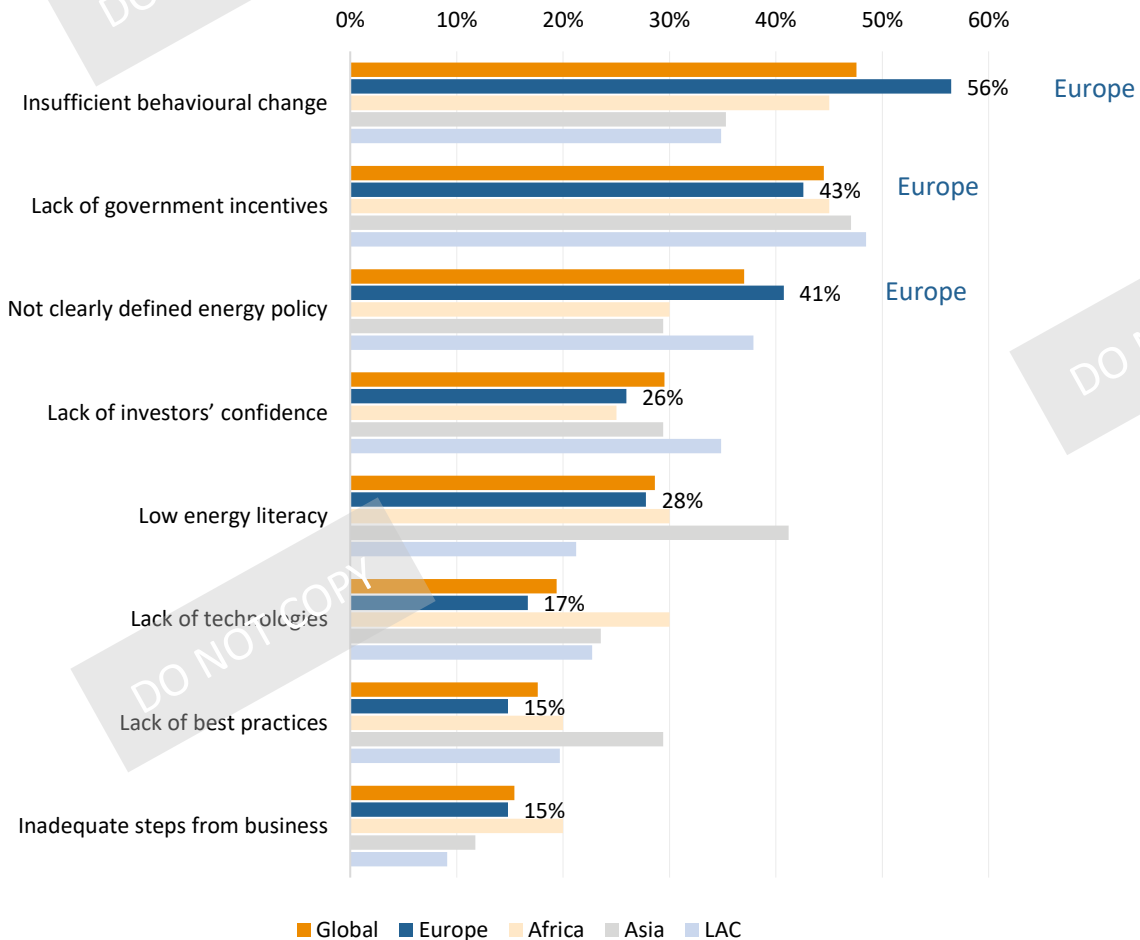


ENGAGING WIDER STAKEHOLDERS IN ADDRESSING BIGGEST CHALLENGES

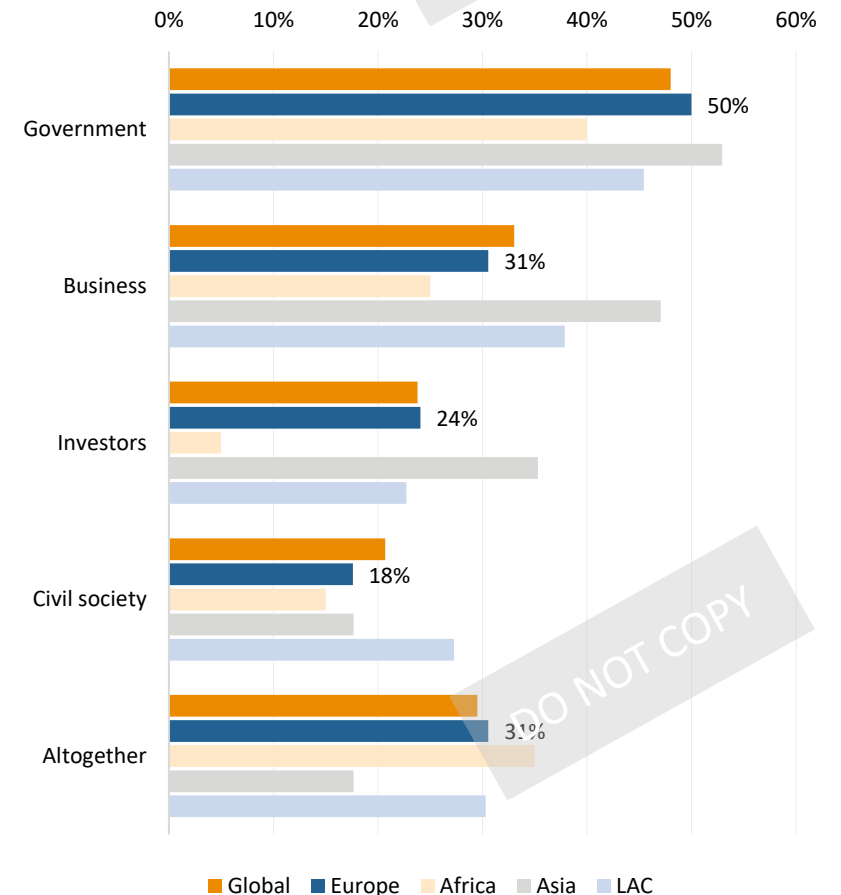
Behavioural changes & government incentives are seen as critical for energy transition

Q: What are the top 2-3 **biggest challenges** to achieving the PA target?

Regional view



Q: Who will play a greater role in the recovery from the COVID crisis?





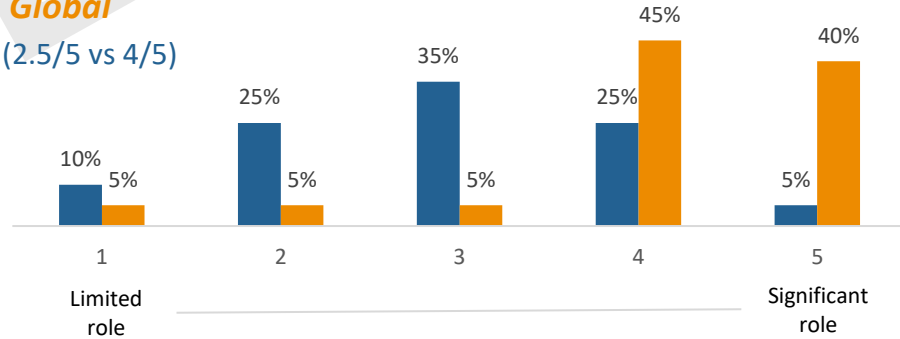
THE NEED TO BETTER ENGAGE CONSUMERS IN ENERGY TRANSITION

Information, education, and behavioural changes are main approaches

Q: How central do you think is the **role of consumers** in your country's current energy system? **How important is it to put people at the centre of the energy transition?** What are the main approaches to engage consumers better?

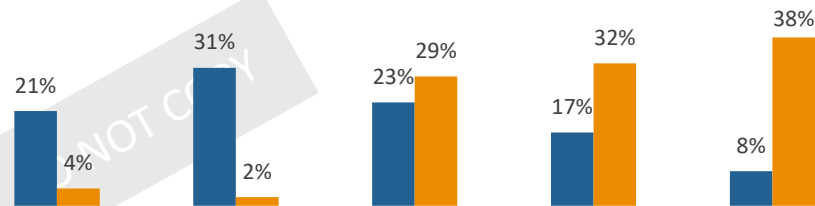
Global

(2.5/5 vs 4/5)



Europe

(2.7/5 vs 4.1/5)



■ Current role of consumers on a scale from 1 to 5
■ Desired role of consumers needed for successful energy transition

(In brackets are average score of current role vs desired role)



ENERGY FOR PEOPLE AND PLANET

Humanising energy is the key to achieving more energy and climate neutrality ambitions

COP-26 - Races to Zero Agendas



SETTING A HUMAN PACE

Fairly manage the full costs to society and mitigate any risk of transitions triggered crises



RECOVERY WITH RESILIENCE & DIVERSITY

Resilience of people and supply chains and learning with regional diversity in pathways



BUILD FORWARD TOGETHER

Accelerate whole system innovation with the bottom up pull of customer-centric and climate neutral solutions

Scaling human-centric capabilities: literacy, workforce diversity, future co-creation

25TH WORLD ENERGY CONGRESS – 24-27 October 2022, St Petersburg

‘Energy for Humanity’



Thank you