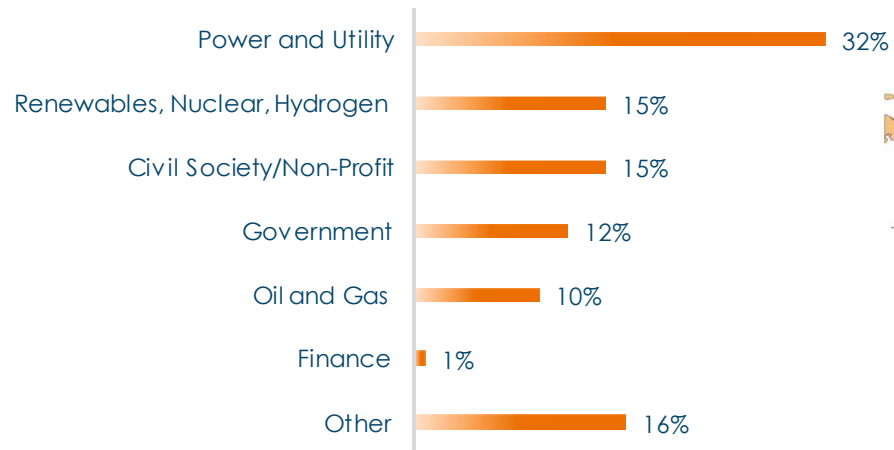


REDESIGNING ENERGY FOR PEOPLE AND PLANET

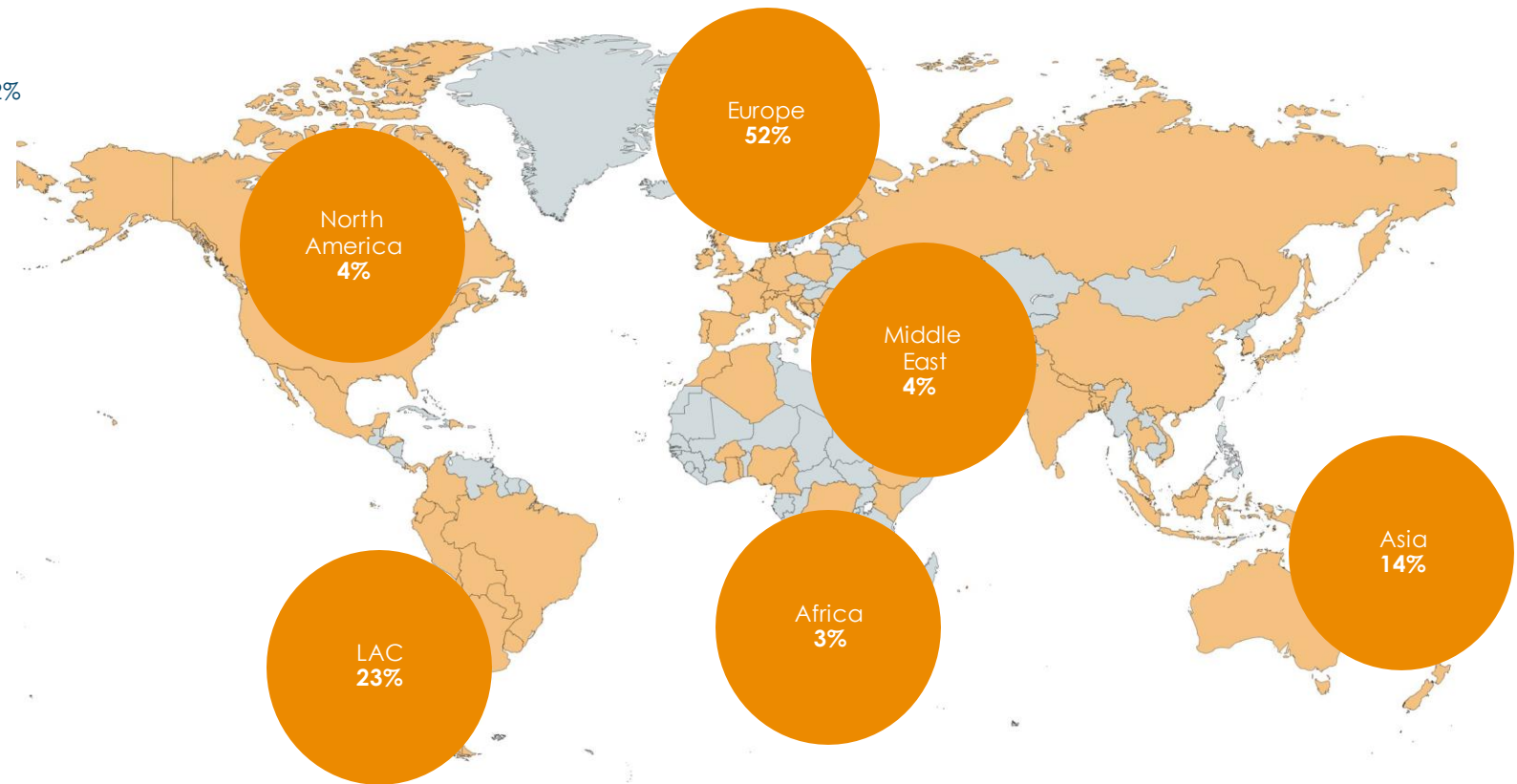
WORLD ENERGY PULSE 2023 | ROUND 1 | APRIL

Pulse response overview

711 energy decision makers
Across **6** regions and **77** countries



10% of the above are Global Future Energy Leaders (FEL100) and Start-up Energy Transition (SET100) entrepreneurs



EXECUTIVE SUMMARY

WORLD ENERGY PULSE | APRIL 2023

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World Energy Leaders concerned that investments and solutions will fail to deliver faster, fairer and more far-reaching energy transitions.

NET ZERO GENERATION IS MOVING FAST BUT NOT AT SCALE

The majority (64%) of global energy leaders are concerned that **the current pace of global energy transition is too slow** to achieve the UNFCCC Paris Agreement commitments and UN Sustainable Development Goals.

Despite headlines about the rapid growth in renewable power generation, decarbonization of the global power sector also depends on investment in grids, new storage solutions and meeting global growth in demand for power. Even so, by 2050, **about half of a bigger global energy system will not be electrified**. Renewables will need other clean energy friends and improved infrastructure actions planning to get to scale. Deeper decarbonisation will depend on innovation across sectors and new models of shared and circular economy.

DIFFERENT SCALES OF JUSTICE – WHAT IS FAIR?

Despite widespread rhetoric on 'just' and 'globally inclusive' energy transitions, there are vastly different interpretations about what fairness involves and **how to manage affordability, access and acceptability challenges**.

There is strong agreement (62%) that UNSDG Goal 7 on **basic access to electricity does not do justice** to the goal of enabling 10 billion better lives on a healthy planet.

THE TIES THAT BIND US, BLIND US

The focus (by 48%) on decarbonization is redirecting \$1 trillion investment a year to adding renewable power capacity and low carbon liquid fuels. **Energy transition for climate resilient development**, however, includes people, skills and other infrastructures. The 'whole system' must adapt to sea-level rise, changes in weather patterns, and prepare for new users and uses.

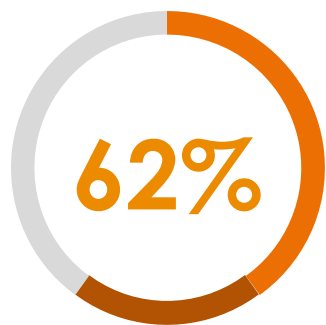
In delivering climate-energy security agendas, most (89%) see that **energy interdependency is not a choice**. The majority (86%) think managing the connected challenges of energy security, affordability and sustainability is best achieved using the **World Energy Trilemma** framework approach.

National security interests and the risk of a green technology arms race are perceived by almost half (46%) as the **greatest impediments to rebuilding trust and making progress**.

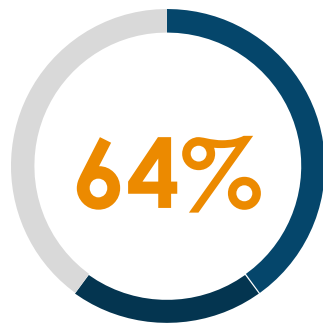
KEY HIGHLIGHTS

WORLD ENERGY PULSE | APRIL 2023

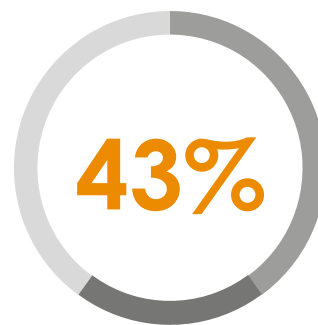
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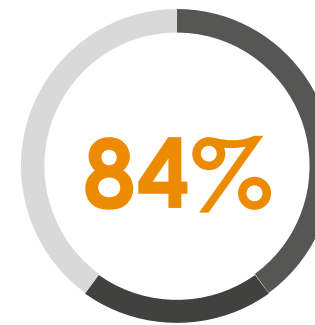
agree that **basic access to clean energy is not enough** and access to more, quality energy for sustainable development is needed.



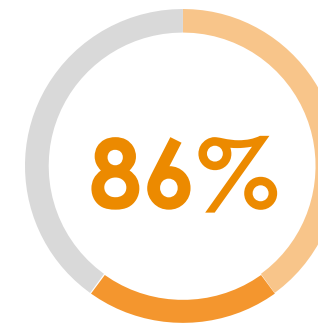
believe the current pace of transitions is a primary concern and want to drive a **faster transition**.



see affordability and modern energy access as the most concerning aspects of **ensuring fairness**. The theme of energy justice is still emerging with 11%.



see **energy interdependence** as an unquestionable condition to ensure countries' climate-energy-security agenda is delivered.



think balancing the **Energy Trilemma** is needed to redesign energy for better lives and a healthy planet.

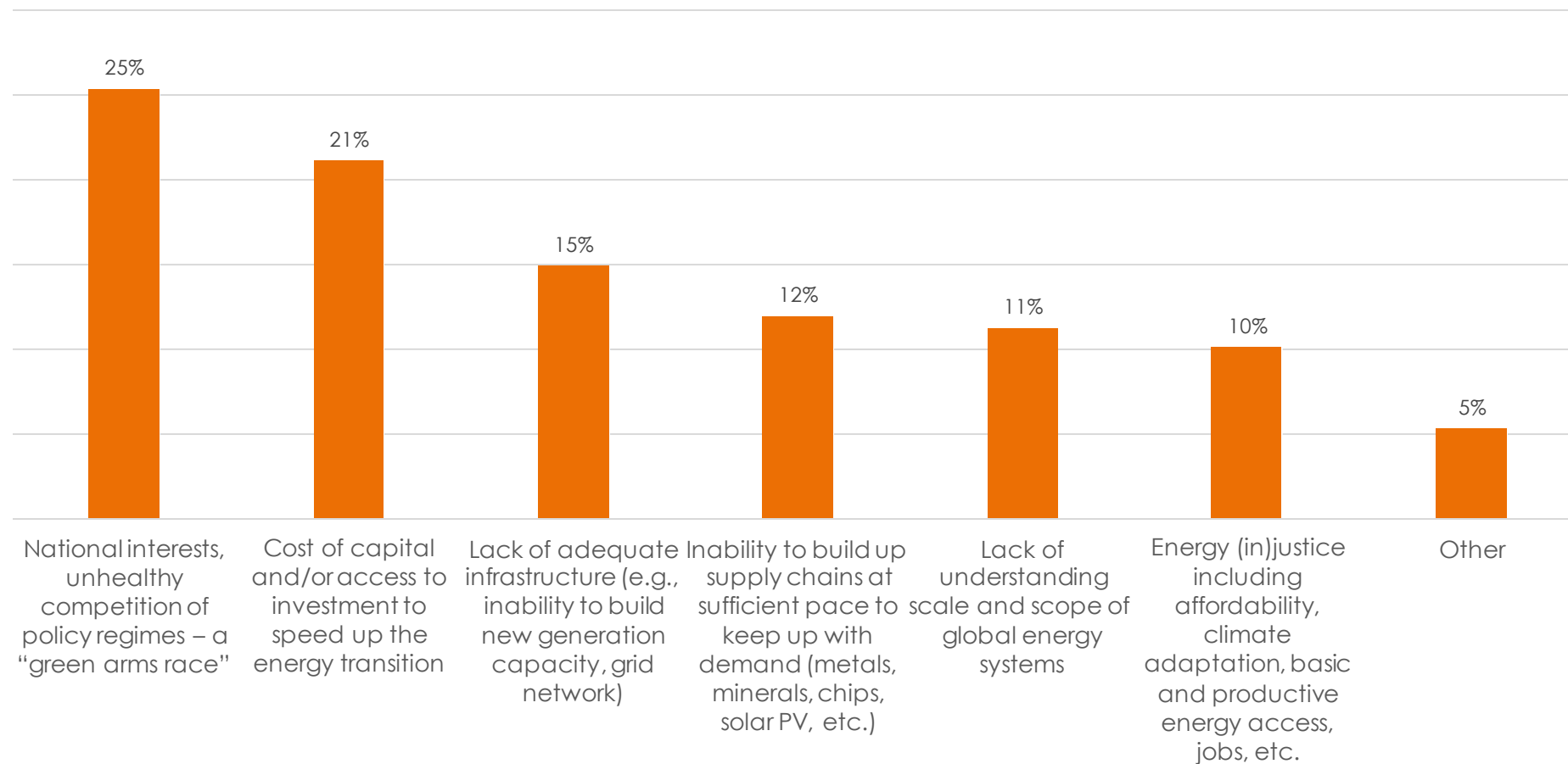


ENABLING FASTER TRANSITIONS

Greatest impediments to the pace are a **green arms race** and the **cost of capital (46%)**.

Lack of grid investment is part of the big gap in infrastructure action planning.

GREATEST OBSTACLES IN ACCELERATING ENERGY TRANSITIONS

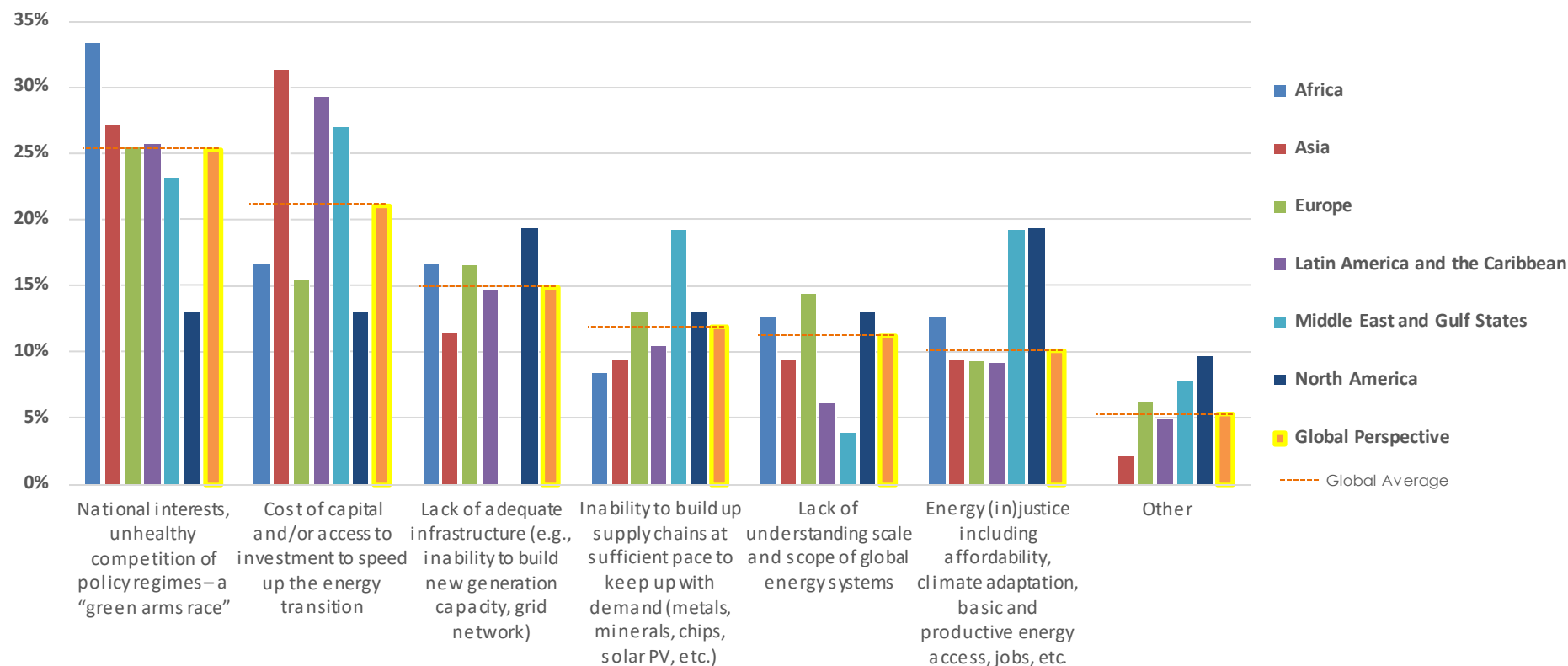


Cost of capital is seen most strongly as an obstacle for **Asia (31%), LAC (29%)** and **MEGS (27%)** respondents.

North America differentiates from the global trend, choosing **lack of infrastructure** and **energy (in) justice** as the region's greatest obstacles.

Supply-demand dynamics are of biggest concern to **MEGS** respondents, who also see **(in) justice** as a bigger issue.

GREATEST OBSTACLES IN ACCELERATING THE PACE OF ENERGY TRANSITIONS

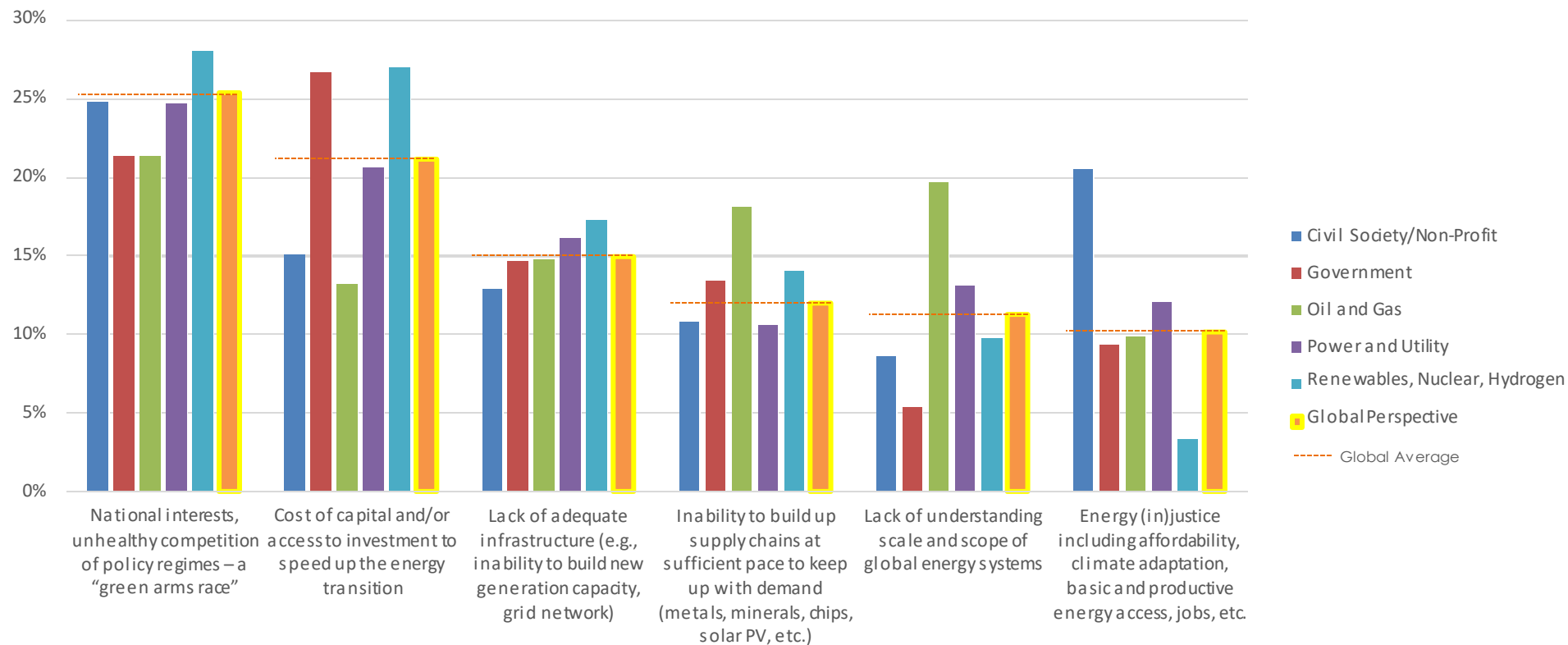


Clean energy technology leaders are the most worried about the impact of a **'green arms race'** on the pace of energy transitions,

Oil & Gas view a **lack of understanding of scale and scope of energy systems** and **supply chains** as the key challenges.

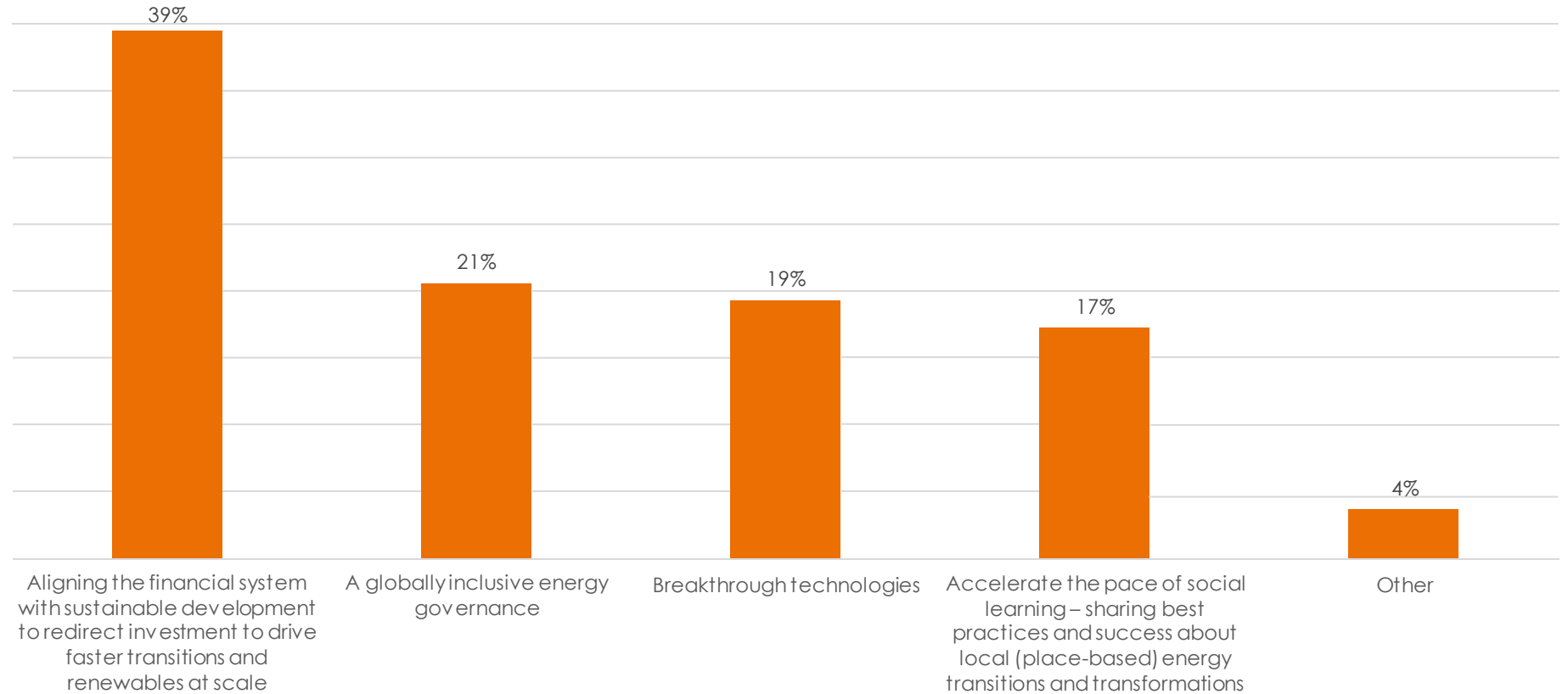
Civil Society respondents are **most concerned about energy (in) justice** issues (twice the global average).

GREATEST OBSTACLES IN ACCELERATING THE PACE OF ENERGY TRANSITIONS



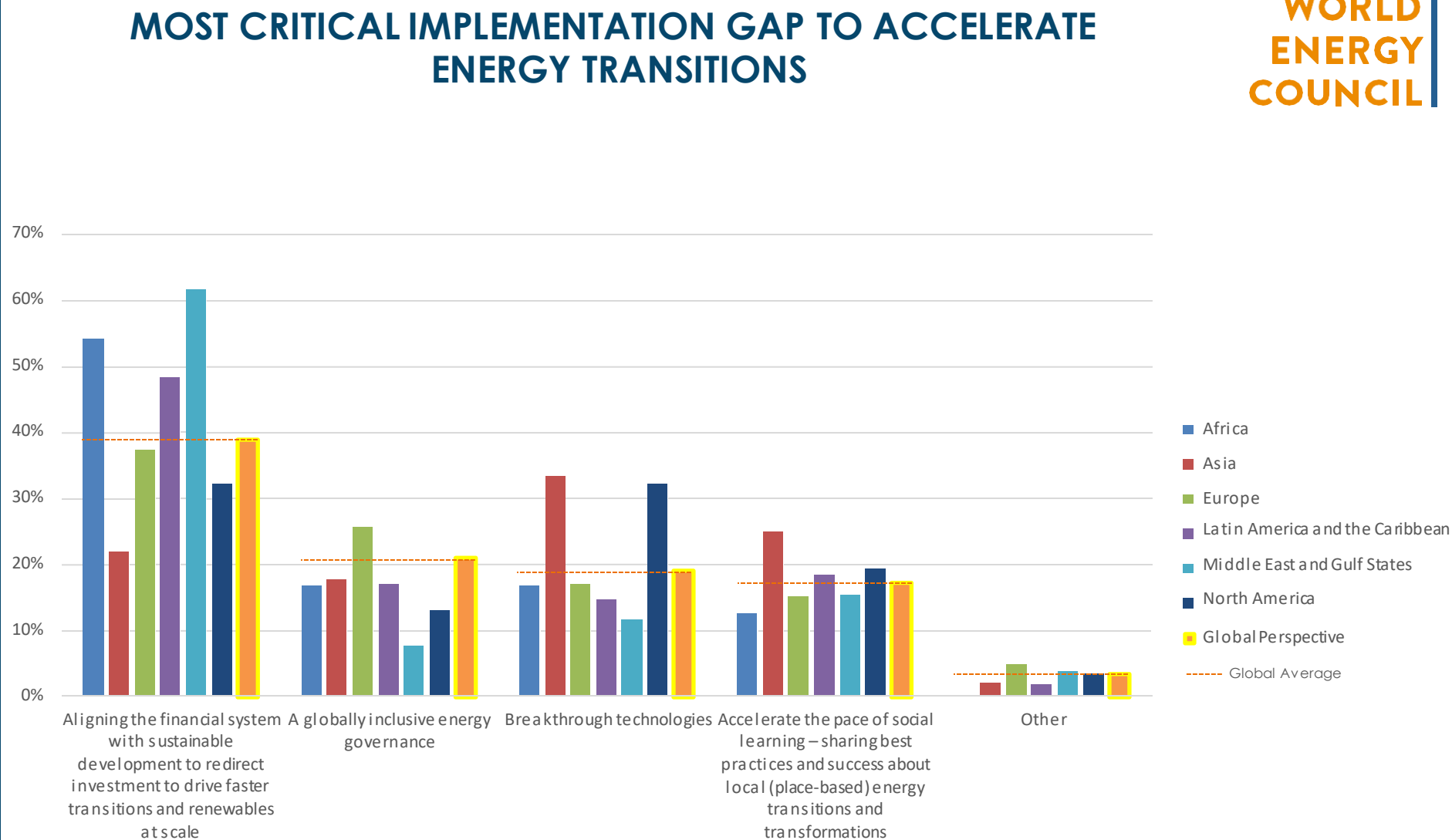
The greatest implementation challenge is **aligning the financial system with sustainable development goals**.

MOST CRITICAL IMPLEMENTATION GAP TO ACCELERATE ENERGY TRANSITIONS



Breakthrough technologies appear as the priority for **North America** and **Asia** when it comes to closing gaps towards faster energy transitions.

Asia is also the region attributing the greatest importance to **accelerating the pace of social learning**.

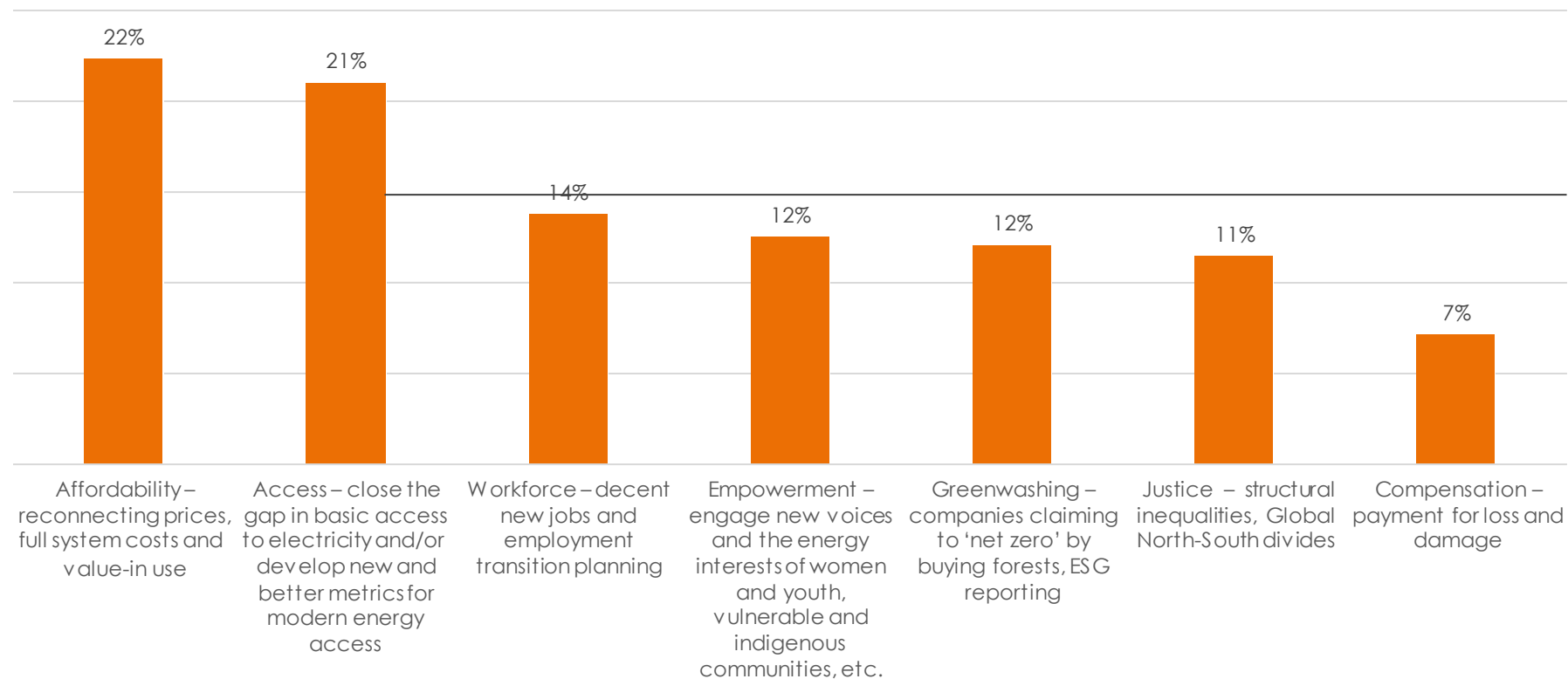


NAVIGATING FAIRER TRANSITIONS

Affordability and quality energy access (43%) are key aspects of ensuring fairness.

ASPECTS OF FAIRNESS OF MOST CONCERN IN PROGRESSING ENERGY TRANSITIONS

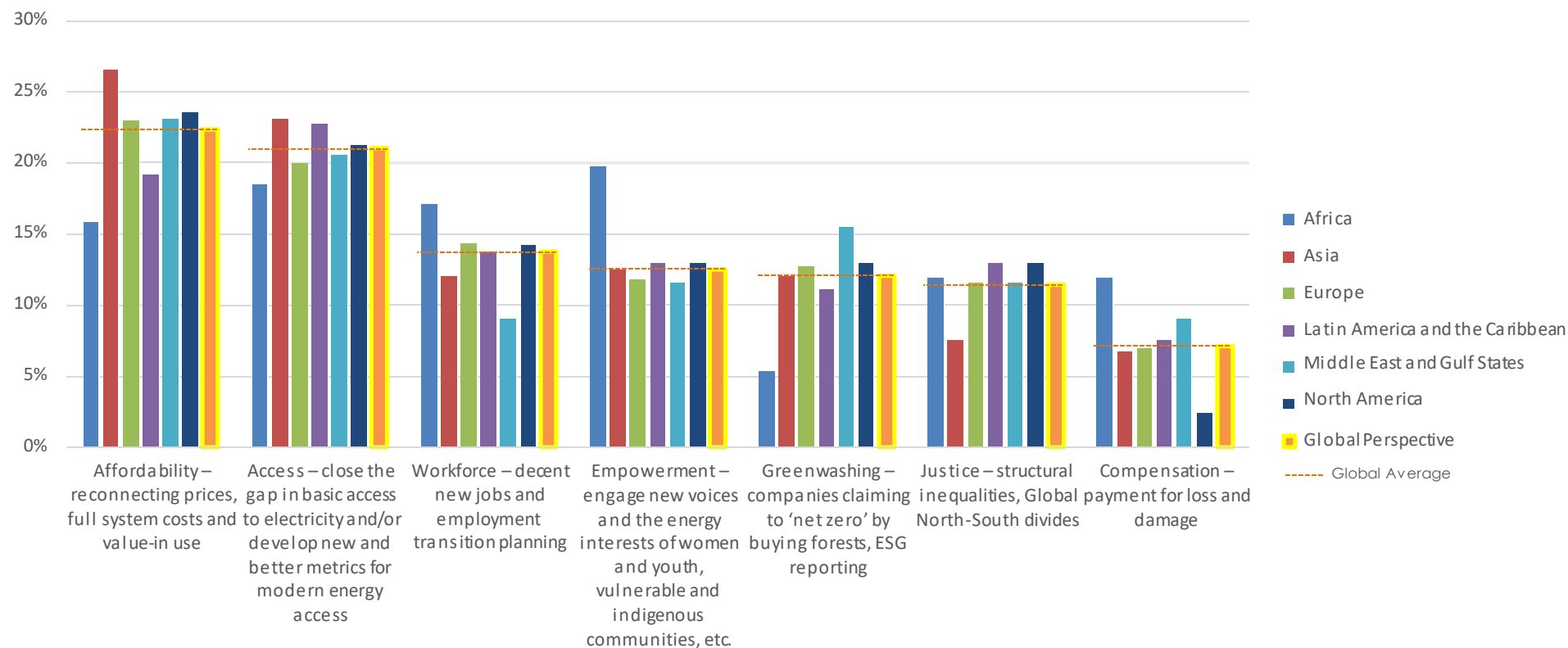
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Africa brings a unique perspective globally, leading the view that **community empowerment** and **workforce transition** are important to progressing energy transitions.

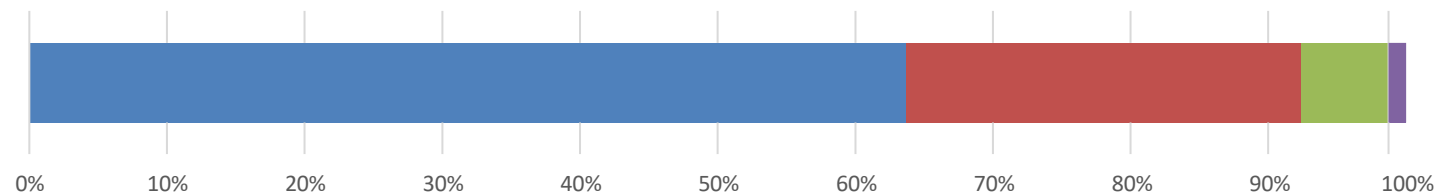
Payment for loss and damage also perceived higher in Africa.

ASPECTS OF FAIRNESS OF MOST CONCERN IN PROGRESSING ENERGY TRANSITIONS

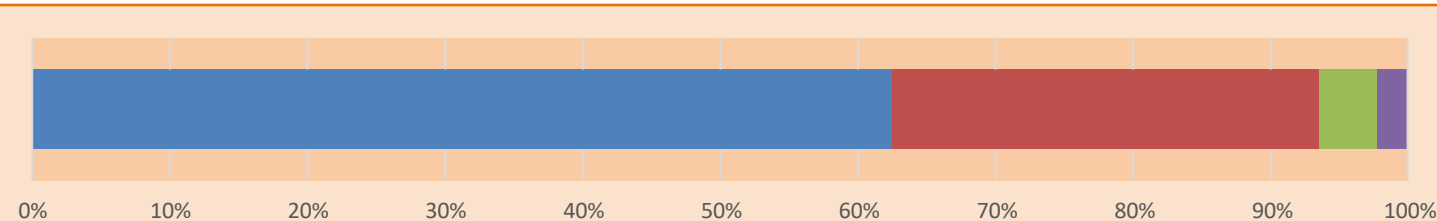


ENERGY FOR BILLIONS OF BETTER LIVES

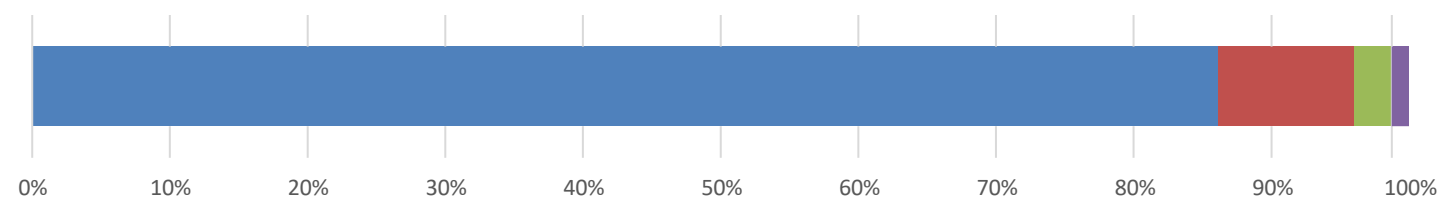
Strongest agreement **(86%)** that managing the energy trilemma - energy security, affordability and sustainability – is back.



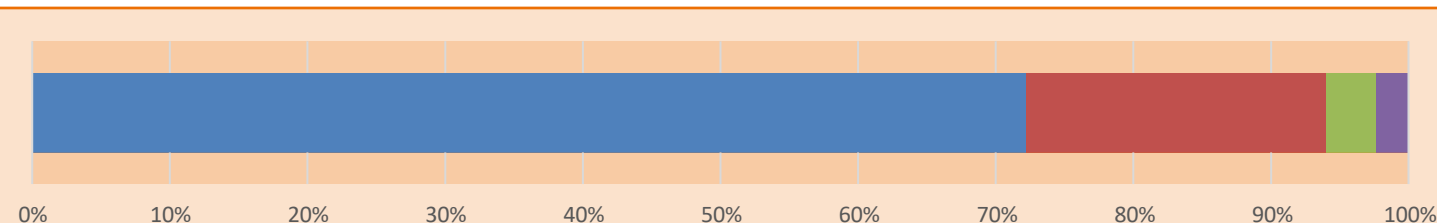
Driving a faster energy transition by 2050 is essential and all that matters for now is to improve the pace of the transition



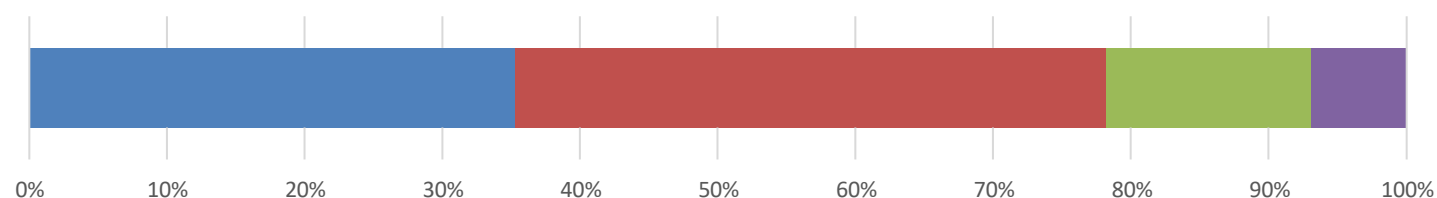
Driving a faster energy transition by 2050 is not enough and access to more energy for sustainable development is also essential



Redesigning energy for billions of better lives and a healthy planet involves managing connected challenges on energy security, affordability and environmental sustainability



The increase in electrification through renewables is inevitable and other energy solutions are essential for speed and scale



Throwing money and technology at the problem won't work and the role of people and communities in their local places (placed-based) is being overlooked

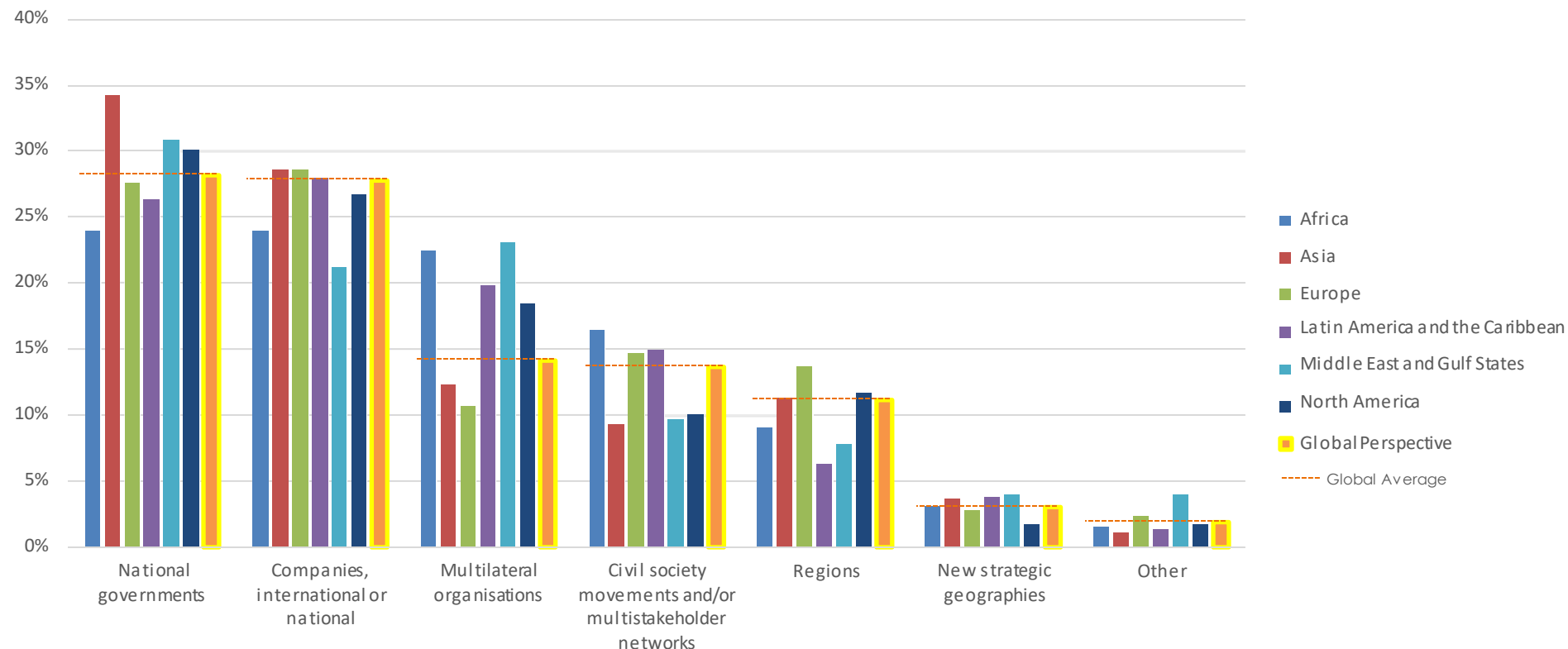
Strongly agree Neutral Strongly disagree I don't know

Asia and Europe are much less reliant on **multilateral organisations** to drive faster and fairer transitions.

Civil society movements are perceived with more prominence in energy transitions in Africa, Europe and LAC.

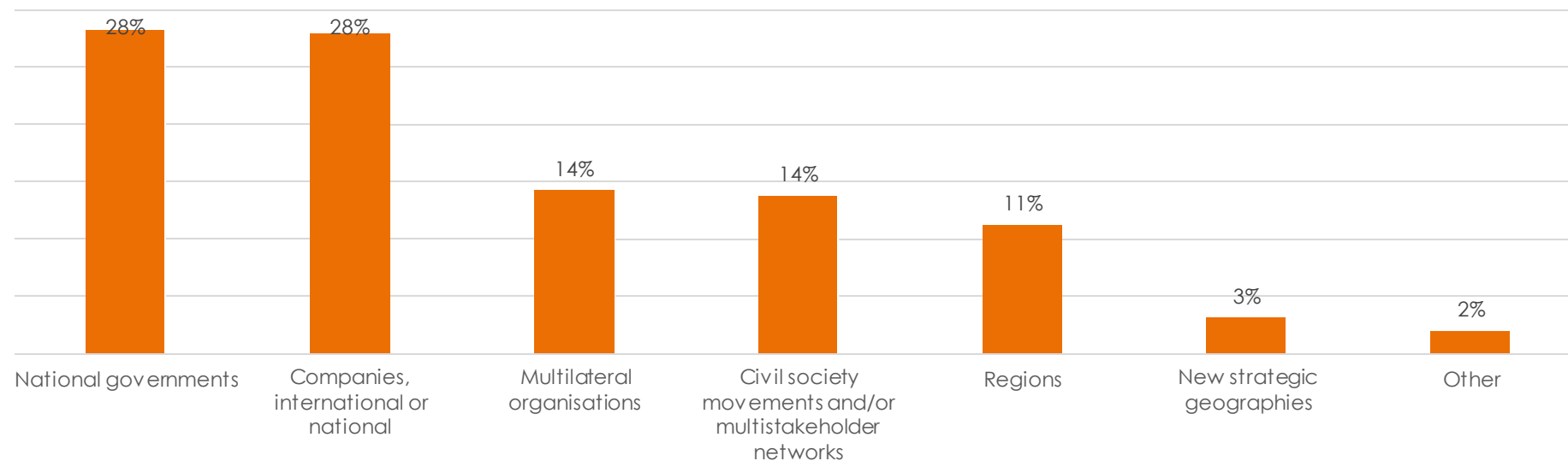
Europe and LAC are the only two regions where the **private companies** are perceived to lead more than **government**, although to a low difference margin.

GOVERNANCE DRIVERS OF FASTER AND FAIRER TRANSITIONS

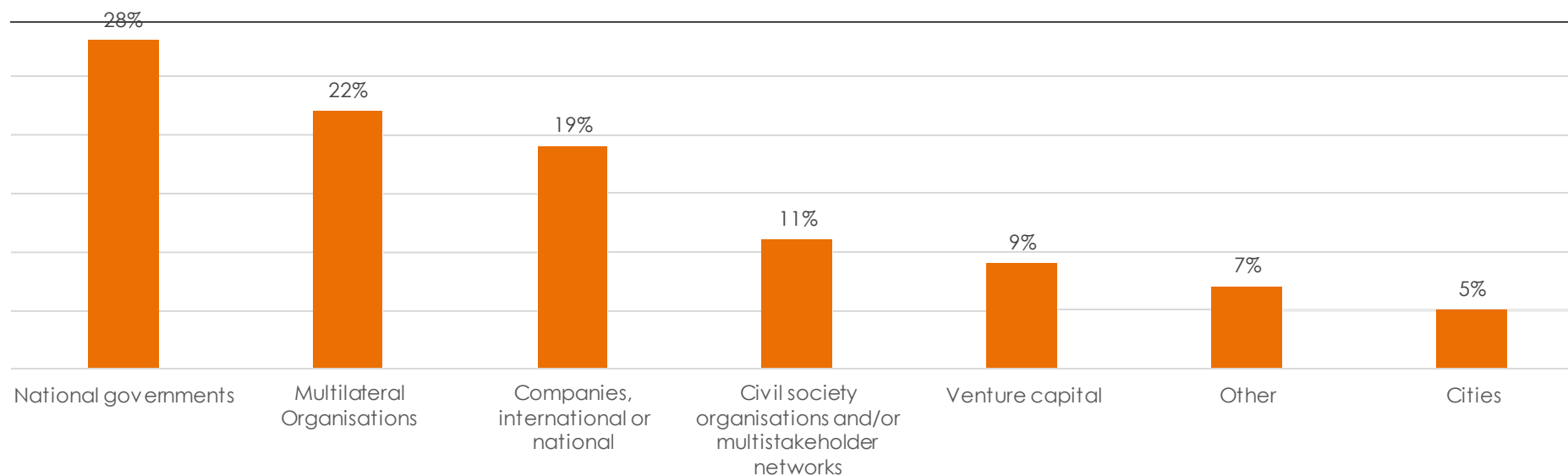


WHO IS DRIVING
TRANSITIONS?

APRIL 2023: What form of governance or governance level is driving faster and fairer transitions in your region?
(global view)



APRIL 2022: Where is the most effective leadership on global energy transition coming from?
(global view)

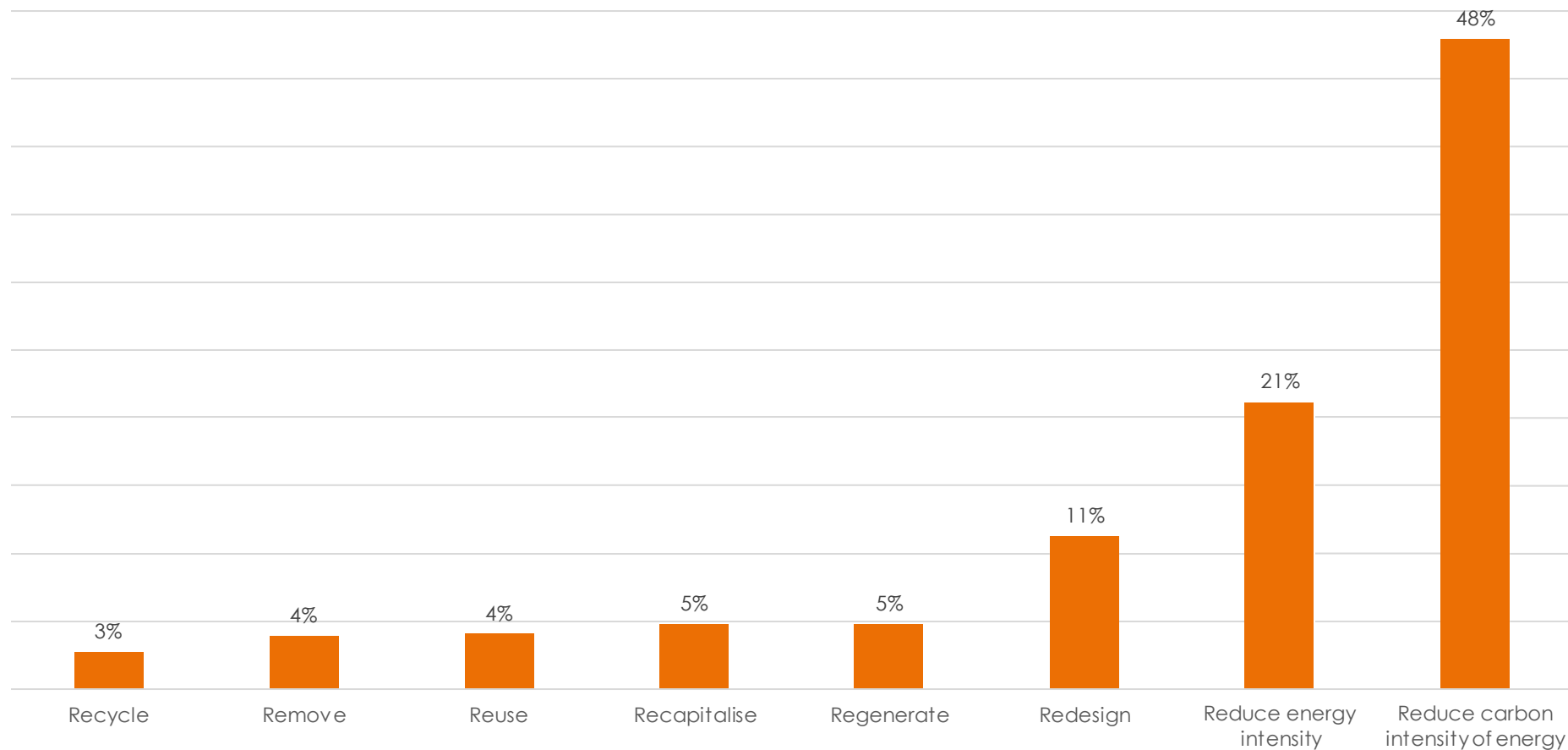


BEYOND NET-ZERO

Redesigning energy for people and planet is mostly translated in **climate mitigation** options of **reducing carbon intensity of energy (48%)**. This is being done via renewable technology investments, including electricity storage, hydrogen and automation.

Not enough attention is being paid to **complementary or adaptation** solutions such as **reuse (4%)**, **remove (4%)** and **recycle (3%)**.

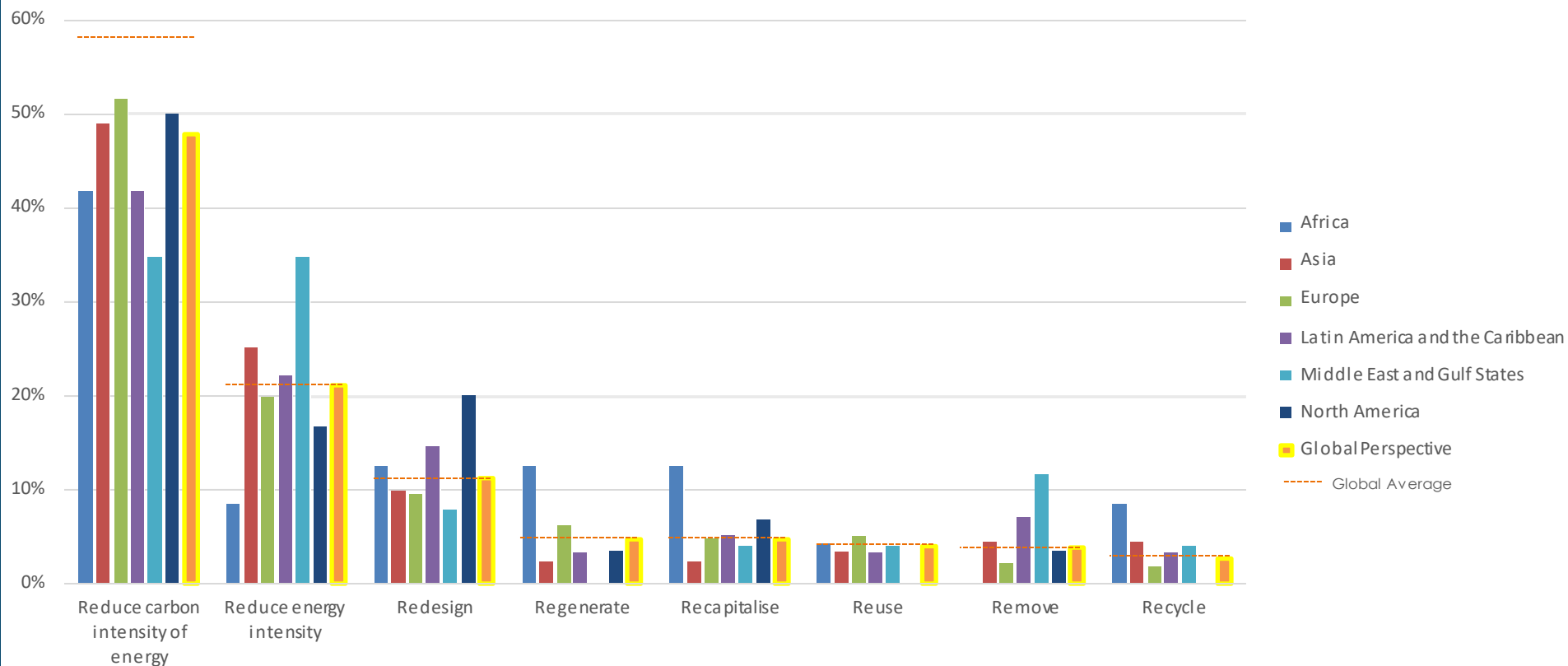
FOCUS ON SOLUTIONS THAT REDESIGN ENERGY FOR PEOPLE AND PLANET



FOCUS ON SOLUTIONS THAT REDESIGN ENERGY FOR PEOPLE AND PLANET

In addition to **Reducing Carbon Intensity of Energy**, a priority for all regions, **Reducing Energy Intensity** through efficiency gains appears as a key priority for MEGS countries.

Reuse, Remove, Recycle and Regenerate options appear as lower priorities across regions.

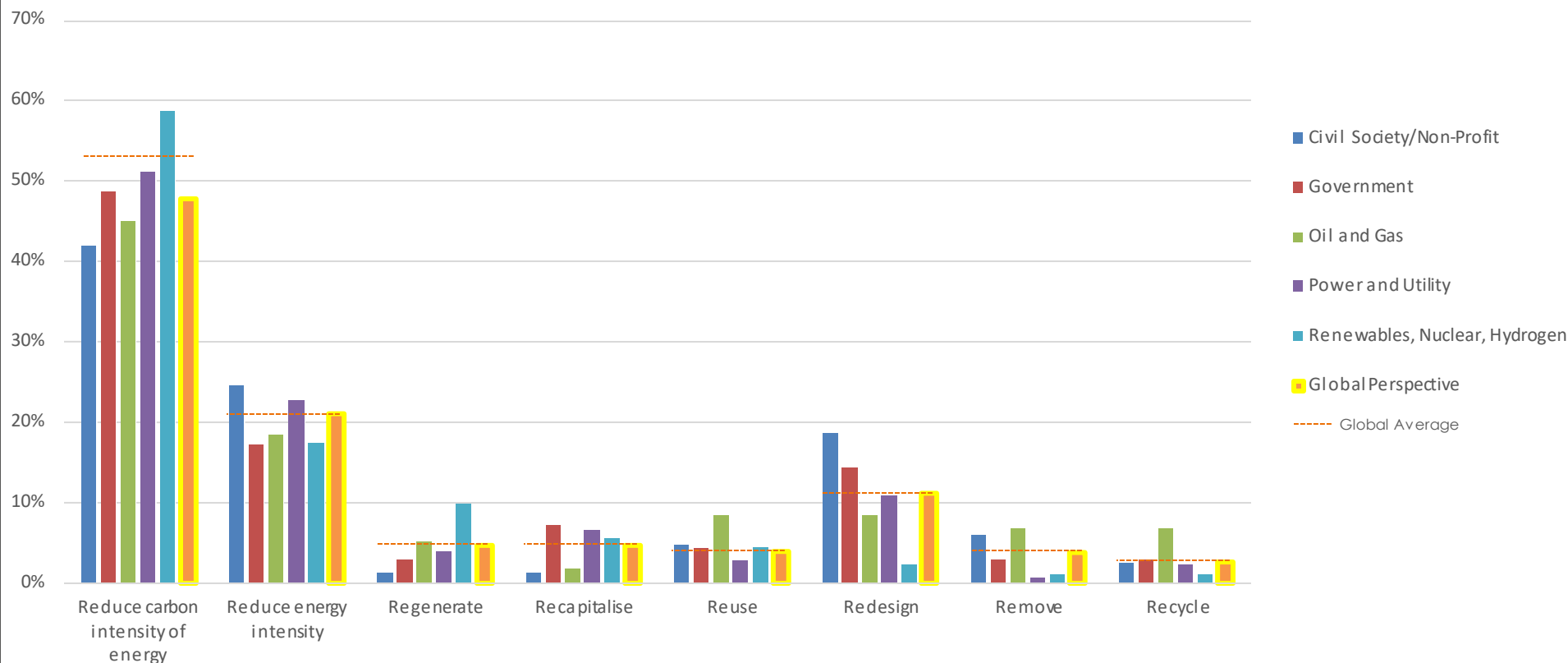


Clean energy technology sectors lead the global view that investment in **reducing carbon intensity of energy**, as well as **regenerate** solutions (although to a much smaller extent) must be prioritized.

Civil Society and **Government** give the greatest priority to **redesigning markets and institutions** to move further in energy transitions.

Oil and Gas firms see **carbon reuse and recycle** as a greater investment focus compared to other sectors.

FOCUS ON SOLUTIONS THAT REDESIGN ENERGY FOR PEOPLE AND PLANET



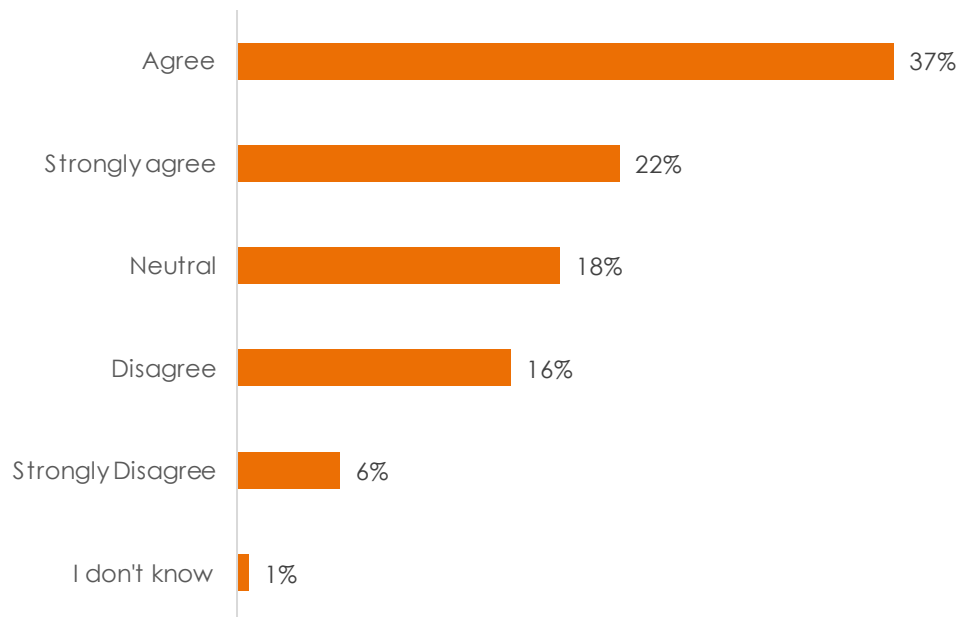
ENERGY INDEPENDENCE OR INTERDEPENDENCE?

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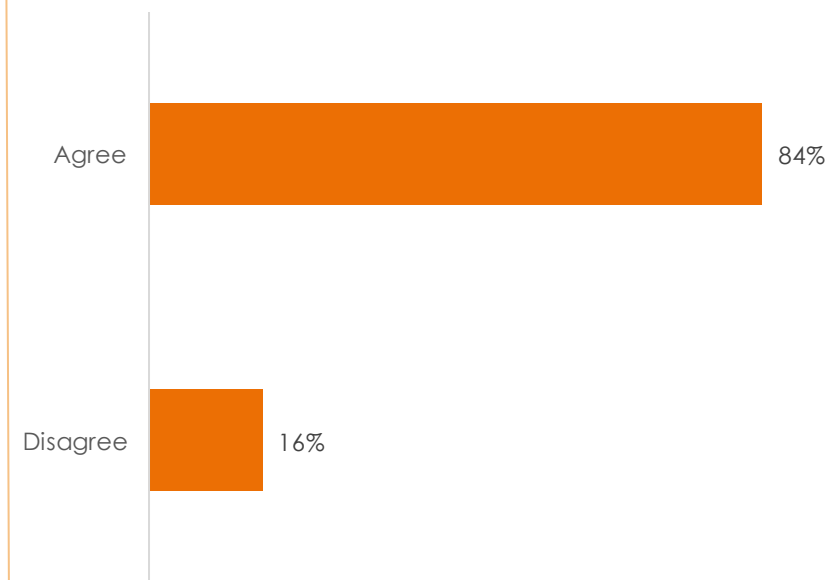
59% of global respondents agree or strongly agree that **energy independence** is the best way to meet their country's climate-energy-security agenda.

At the same time, **energy interdependence** is perceived by the vast majority (84%) as an unquestionable new reality.

To ensure your country's climate-energy-security agenda is delivered, energy independence is the best way to address this



To ensure your country's climate-energy-security agenda is delivered, energy interdependence needs to be accepted as the new reality



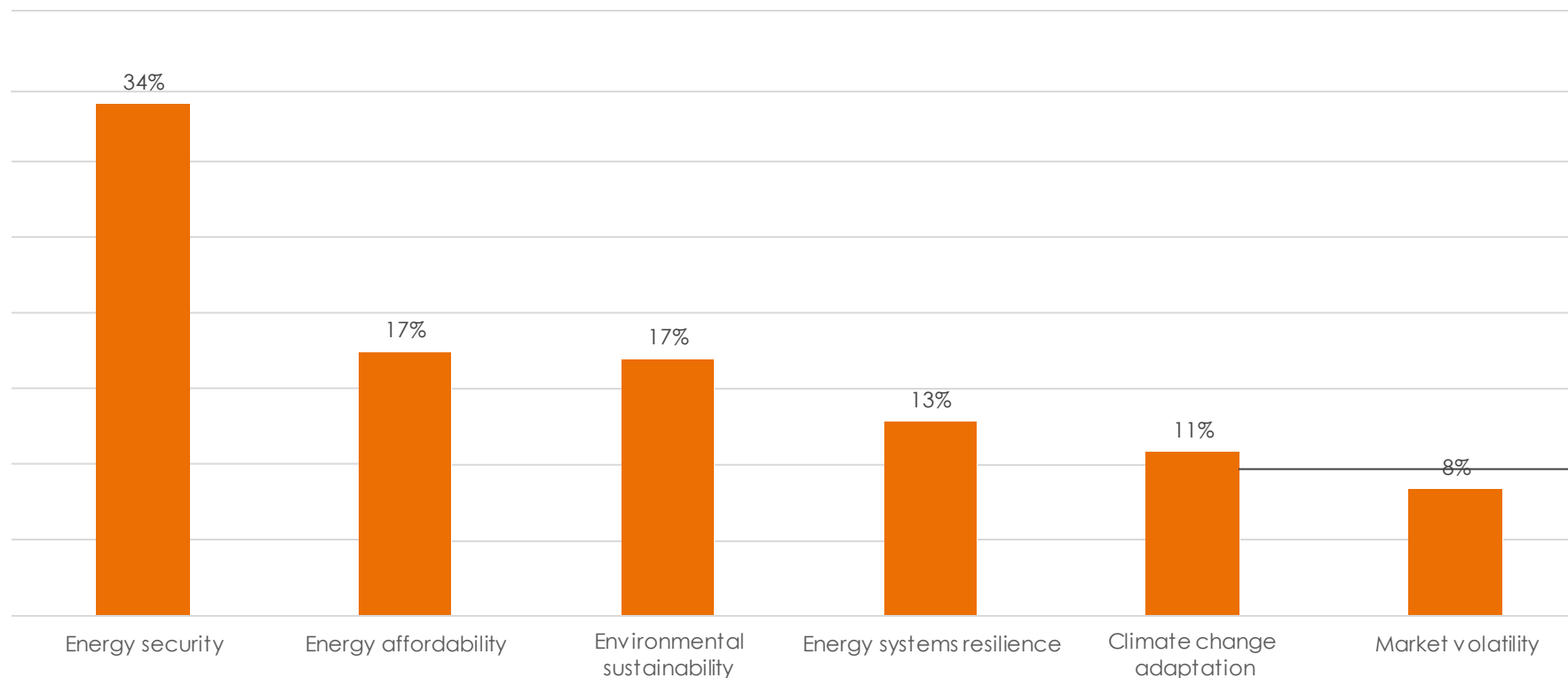
BRIDGING ENERGY SECURITY & CLIMATE

TOP PRIORITY CHALLENGES FOR MANAGING ENERGY TRANSITIONS

Energy security (34%) challenges continue to influence the management of energy transitions.

Climate change adaptation (11%) and **energy systems resilience (13%)** continue to be perceived with **lower priority**.

Uncertainty around **market volatility** has greatly reduced since the beginning of the COVID19 pandemic, with only **8%** of respondents prioritizing this issue.



Energy Affordability leads **Africa's** concerns for the year ahead.

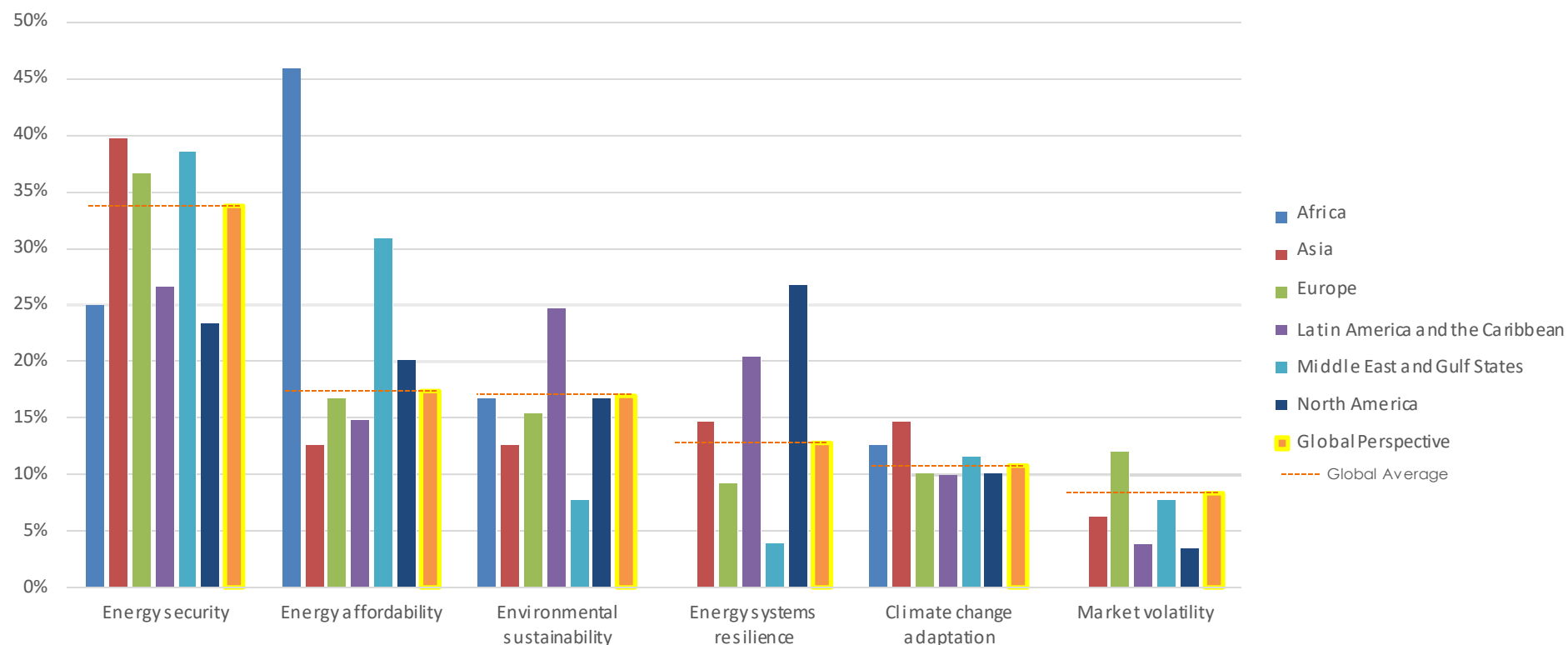
Asia and Europe are aligned on Energy Security as the key challenge.

The **MEGS** region puts similar emphasis on energy security and affordability.

For **LAC and North America**, the landscape looks more complex with attention to the Energy Trilemma interconnected challenges, along with a focus on system resilience needs.

TOP PRIORITY CHALLENGES FOR MANAGING ENERGY TRANSITIONS

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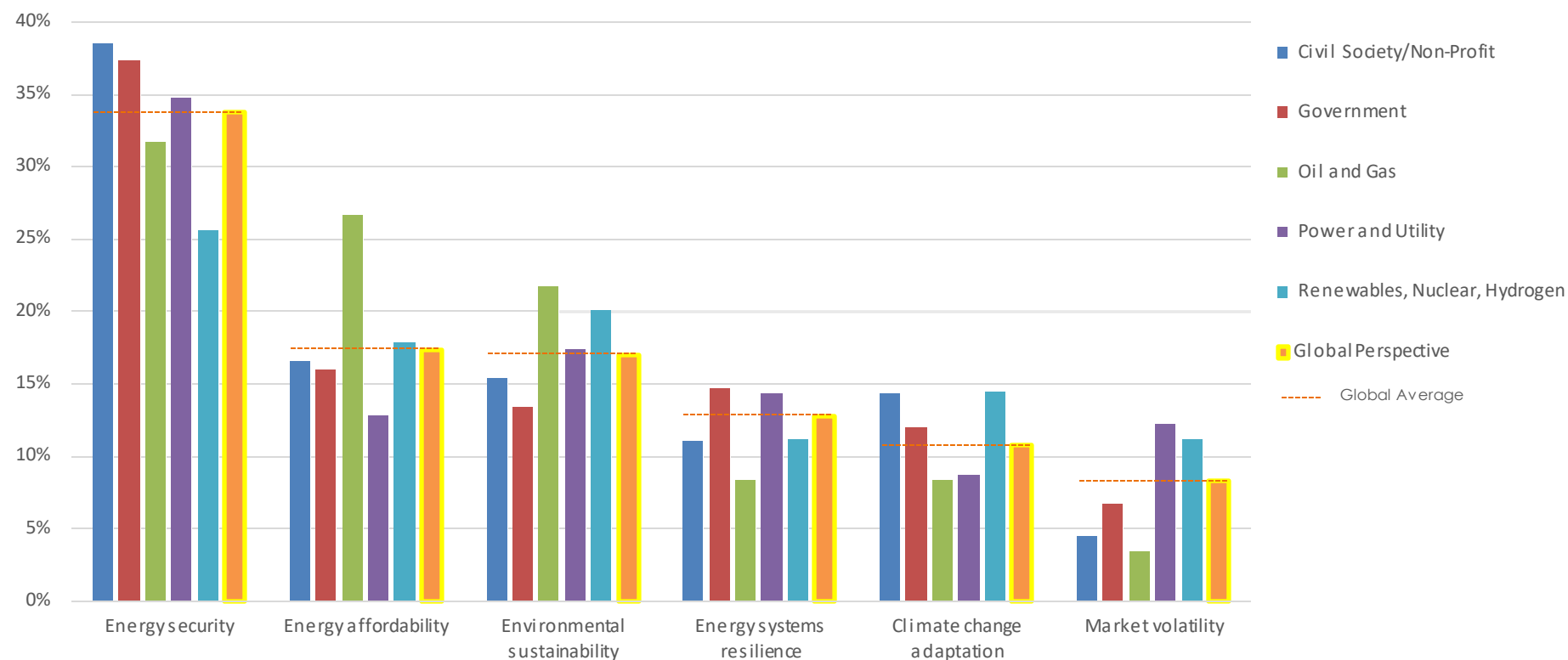


TOP PRIORITY CHALLENGES FOR MANAGING ENERGY TRANSITIONS

Renewables, Nuclear and Hydrogen sectors focus less attention on **Energy Security** challenges in relation to other sectors.

Oil and Gas executives are the most worried with challenges of **Energy Affordability** and **Environmental Sustainability**.

Focus on **Climate Change Adaptation** is primarily led by **Civil Society, Government, Renewables, Nuclear and Hydrogen** sectors.



ABOUT THE WORLD ENERGY COUNCIL

Formed in 1923, the World Energy Council is the world's oldest member-based energy organization and a registered charity.

We are **independent, impartial** and **open-to-all**. We do not advocate for any country, company, resource, technology.

Globally networked and locally strong, we work dynamically with 3,000+ member organisations, in nearly 90 countries, across all energy sectors.

Our **enduring mission** is to work together on better outcomes which nowadays means delivering more energy for sustainable development and climate neutrality.

In 2019, the World Energy Council launched a new vision of '**Humanising Energy**'. Involving more people and communities at all levels of society is the best way to manage global energy transition.

The **next big thing in energy** is a series of steps which accelerate the opportunities for learning with and from each other with the increasing diversity of place-based energy transitions.

We are working on a **step change in global energy literacy** – the essential first step to achieving billions of better lives and a healthy planet.



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