FONDAZIONE MAIRE

MAIRE

CLIMATE GOALS:

Winning the challenge of climate goals through the creation of skills and competences worldwide

ADDENDUM 1: FOCUS AZERBAIJAN - KAZAKHSTAN

sponsored by

NEXTCHEM

TECNIMONT

Ipsos

Report of the international research promoted by Fondazione MAIRE - ETS with IPSOS

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1 INTRODUCTION

The goals of the research and the role of Fondazione MAIRE - ETS and MAIRE Group

This report presents the results of the second edition of an international research promoted by Fondazione MAIRE - ETS and the worldwide research Institute, IPSOS, with the partnership and support of the MAIRE Group companies for Sustainable Technology Solutions and Integrated Engineering & Construction Solutions, NEXTCHEM and TECNIMONT.

The research examines how new skills (or competences) and education meet the energy transition, mitigation and adaptation goals over the coming years are perceived. The original research was firstly presented for COP28 in Dubai (UAE) and it is being presented in this second edition at COP29 in Baku (Azerbaijan).

1.1 The subject of the research

The world demands transitional progress, the world needs transformational action and transformation needs competence, competences that needs designing and updating quickly and across the board.

There should be seven years left to reduce emissions and keep the ambitions of the Paris Agreement alive, even if according to the obtained results this seems to be quite difficult without improving the efforts in decarbonization processes, education, and technological development. To meet this challenge, we need to accelerate cross sectoral progress on mitigation and adaptation, and we need to train thousands of new engineers, economists, scientists, technicians, communicators, educators worldwide. Women and men should adopt roles and responsibilities in industry institutions and administrations, and in civil society.

Millions of people need to be educated to behave differently with a view to mitigation and adaptation, building global climate resilience. Developing competences during the energy transition is pivotal to this task, and this has to happen worldwide, reducing gaps in know-how and enabling decarbonisation in every country, for a fair and equitable transition that leaves no one behind. Thousands of innovative solutions need developing to modify processes, business models, to make products with a lower carbon footprint, to defend and restore natural carbon sinks, coasts, homes, and our heritage. Tens of thousands of projects and infrastructures need to be realized worldwide for a new low carbon economy and for restoration.

But how strongly is the perception about the need for developing new competences and professional profiles to make it feasible and possible to reach the decarbonization goals being considered internationally?
What kind of competences are needed to make a net zero economy real?
Who are the players and what are the levers in this transition of competences?
What internationally applicable tools for coordinating efforts to increase competences systemically and inclusively for the energy transition exists?

These are the topics of our research.

The energy sector employs over 65 million people in total; to reach the net zero emissions goal, the transition could create 14 million clean energy technology-related new jobs, shift around 5 million workers from fossil fuels, and require additional skills and training for an estimated 30 million employees, according to the IEA's landmark report Net Zero by 2050.

Inclusion and equal participation in the workforce is a relevant aspect and it directly covers SDG10- (Reduced inequalities), SDG5 (Gender equality) and SDG8 (Decent work and economic growth), as well as other SDGs indirectly. Inclusive education for the energy transition is a great opportunity to reduce social inequalities. Women and minorities are underrepresented in the energy labour force. Women currently account for only 16% of conventional energy sector employment. The new energy workforce should be more inclusive and gender-balanced, according to the International Energy Agency and the World Economic Forum.

These are core subjects in climate goal discussions. Without significant effort invested in creating new competences and changing the culture throughout business and civil society, succeeding in the challenge of reducing GHG emissions to the targets required to mitigate global warming will be impossible.

We hope that this study will be of help to promote, design and coordinate new educational initiatives at national and international levels.

1.2 For a transition strategy that focuses on know-how and skills training to make the energy transition real: the vision in Azerbaijan and Kazakhstan

For an energy transition strategy that prioritizes know-how and skills training. The Azerbaijan and Kazakhstan 2024 Focus on Fondazione MAIRE – ETS's research for COP29.

The road to global decarbonization must maintain, and progressively intensify, its focus on those countries that are most reliant on fossil fuels because that is where the greatest change needs to take place, from the perspective of the country's financial and infrastructural economic structure, business models, people training, culture and behavior.

With COP28 held in Dubai and now COP29 in Baku, holding the major international climate conferences in countries that are fossil economies, and as such still tied to coal and oil, is a bold and disruptive move that shows great courage. Courage on both sides: that of the international Community and that of the country itself, facing a challenge of both a political and reputational nature.

The findings emerging from this second study conducted by the Foundation point along these lines: Azerbaijan and Kazakhstan are two countries at the starting gate in the challenge of the energy transition, but which already possess a fairly strong awareness of its benefits, the inherent difficulties it entails, and the ingredients that are necessary to make it a reality.

From our research, all the ingredients that the two countries need are clear: legal framework and regulation; engagement of both local and international businesses (which means technology transfer, investment, and know-how), skills training, and growth in public involvement and awareness.

This 2024 Focus brings the total number of countries covered by our research to twelve, coming from Asia, Europe, North and South America, and North Africa.

The insights that have emerged from this year's spin-off reinforce the picture of an international community that is increasingly aware of the need for the energy transition and how the creation of new skills is an absolute necessity for it to succeed.

The relevance of investing in skills development to achieve progress toward climate goals is a theme recognized by all countries in the survey. We believe it is a fundamental, urgent step, with priority over even the availability of financial resources.
It is plausible to expect that as they become aware, those countries which are a bit further behind in the move from a fossil-based economy to one based on renewables and circularity may require more of an investment in training than others in the coming years, even if they do not currently consider the energy transition a priority.

This drill-down shows an interesting aspect related to the usual dichotomy between well-being-work and sustainability-transition.

Involving these economies in the major international negotiations like COP29 will help to provoke an acceleration in the awareness of the opportunities related to the energy transition. Opportunities for the people, for the environment but also for the economy and the business.

These opportunities include also the creation of new jobs from the reskilling of workers and professionals who have been and are working for the oil sector and who might be useful resources for the development of a low carbon economy and industrial infrastructure. Those people may fear uncertainty created by the switch driven by the energy transition and must be reassured about their future.

Investments in the energy transition should not be seen as a risk to one's future nor as substitutes for other investment aimed at improving citizens' quality of life - like the investments in the health and education public sectors - but rather as a complement to them.

In analyzing the data that emerges from the comparison of the respondents' answers, we see that Italy, the country in which this research started, does not differ much from Azerbaijan in the degree to which the energy transition is recognized as a priority. When compared to investments in other sectors, in Italy investments in decarbonization are seen as even less of a priority than they are in Azerbaijan and Kazakhstan.

Just as, according to the data, there is even less awareness in Italy than there is in the two Caspian countries of the potential the energy transition holds to create job opportunities. The Italians interviewed consider the country to be behind, in comparison to others, aligning their perception with those of Turks, Algerians, Azeris and Kazakhs.
The people of the two Caspian states seem to be aware of their country's potential for improvement, and perhaps what is needed now is to better align what governments are currently doing and need to do going forth with the wishes of their citizens.

Azeris and Kazakhs seem to be saying there is a need for policies, regulations, new infrastructure, communication. And training. Investment in training that will stimulate the creation of soft skills such as critical thinking and problem solving and the building of knowledge regarding the analysis of environmental impacts, an aspect that has perhaps been underappreciated until now.
The involvement of all stakeholders is something held in high regard: models of stakeholder engagement can be the target of skills transfer on a par with technology transfer, given the realization that no industrial, economic, and cultural change is possible today, in any country in the world, without the capacity for dialogue with all its stakeholders. This is evolution.

The awareness that this is an urgent matter is less developed in these two countries than it was in the others that were surveyed last year: in this respect, the venue for COP29 in Azerbaijan may once again serve as a catalyst for great acceleration. Adapting existing industrial processes with more virtuous solutions from the standpoint of emissions mitigation and the upskilling and reskilling of existing skills are the ingredients the ruling class is aiming for. The two 2024 Focus countries seem to recognize that they do not have enough people trained on these issues within their own countries, particularly Kazakhstan. Therefore, a massive and urgent transfer of skills is urgently required.

As we write this introduction to the 2024 research report, the final preparations for the COP29 in Baku in November are nearing completion. The country is increasingly recognizing its need to cultivate resilience in a profoundly changed scenario, including for the risks posed by climate change. Nearly the entire Parse is facing desertification, drought, and water scarcity, a phenomenon that is expected to increase due to the planet's rising temperatures.
Azerbaijan has set national targets to reduce GHG emissions by 35% by 2030 and 40% by 2050, compared to 1990 levels, with a net-zero target for 2060. Investment in clean energy, energy efficiency, new industrial processes with lower carbon footprints, and training: just recently, the Azerbaijani government launched a new sustainability training program aimed at raising the awareness of ecological, social, and inclusive sustainability issues in an effort to promote sustainable development and meet environmental commitments.

We are getting ready to present this second report in Baku amidst a setting rich in dynamism - regardless of appearances - a context in which the Fondazione MAIRE - ETS, for its role in stimulating skills training for the energy transition, and the MAIRE Group companies TECNIMONT and NEXTCHEM, for their roles as developers of sustainable technology and engineering and construction solutions, can make a strategic and important contribution.

November 2024

1.3 The role of Fondazione MAIRE - ETS

Fondazione MAIRE - ETS has the scope to help develop the "humanistic engineering" as a discipline that could and will be pivotal for the worldwide paradigms transformation. People with a multidisciplinary culture, a broad outlook, and soft skills who can blend technical and technological know-how and expertise with economic vision, with environmental and social sustainability knowledge and sensitivity, and with a broader multi-cultural approach and sense that progress represents human evolution.

Among other activities, Fondazione MAIRE – ETS is involved in courses specifically designed for female students to bring them closer to STEM disciplines, and engineering, energy sector and energy transition job opportunities in the future. It also participates in training initiatives on the digital and ecological twin transitions; promotes the engagement of young artists on sustainability themes; and partners with schools, associations, and institutions to encourage young people to go into a technical career to become the protagonists behind this progress in the industry and across society over the coming decades. In particular, in 2024 the Foundation has been launching a project dedicated at educational poverty, to support those students with a disadvantaged situation, to carry on their educational path and specialize in the sector of the energy transition.

Fondazione MAIRE – ETS aims to use this report to stimulate a debate on the steps the international community has to take towards developing the necessary competences that make achieving the climate goals possible. People will need to broaden their skills to adapt to this disruptive change in the economy and in the society. Skills relating to collaboration, leadership, knowledge of multiple disciplines, creativity, ethics and flexibility will be of critical importance.

This is what the Fondazione MAIRE – ETS calls a new type of engineer, the *humanist engineer* of the future who will be human-centric and able to work across disciplines to find the solutions that consider the many facets and complexity of this new paradigm.

1.4 Transferring competences: the role of MAIRE Group

MAIRE S.p.A. is the founding company of the Fondazione MAIRE – ETS. MAIRE is a leading technology and engineering group that develops and implements innovative solutions to enable the energy transition, creating value in 45 countries, relying on over 9,300 employees, and supported by the over 20,000 people engaged in its projects worldwide.

MAIRE is listed on the Milan Stock Exchange and its basket of expertise and a bold sustainability strategy to go with the transformation and growth of the business makes it possible to store, develop and improve the competences that need transferring worldwide.

MAIRE provides Sustainable Technology Solutions and Integrated E&C Solutions. Technology solutions are designed to make the energy transition happen by slashing the environmental impact of oil&gas and fertilizers industry, leveraging the consolidated know-how in hydrogen and carbon-capture technologies, transforming waste into valuable resources like chemicals, fuels, and recycled plastic and finding new processes from non-fossil feedstock. On the second hand, MAIRE offers a wide range of integrated engineering and construction services and solutions for a low-carbon future.

In 2021, the Group created the first Research Center on Circular Economy within NITK2 in India, and a specific laboratory for the polymer characterisation at Baku Higher Oil School in Baku, Azerbaijan, in 2022, as well as promoting fellowship and technical lectures.
The Group has both a network of over 29 universities worldwide and Open Innovation platforms, which aim to create R&D ecosystems that will help innovation in the energy transition to flourish.

1.5 The approach of the research, credits and acknowledgments

This research was conducted, during 2023 and 2024, in over 12 countries, 4 continents and interviewing over 2.000 people.

This research can and wants to contribute to providing a picture on the perceived way to build new competences for the energy transition and sustainable development, and the role that new profiles of "*humanist engineers*" may play regarding global climate goals. We would like to thank the

MAIRE Group companies, NextChem and Tecnimont, the Fondazione MAIRE – ETS board of directors and MAIRE's communication department for their support.

2 KEY FINDINGS FROM RESEARCH CONDUCTED BY IPSOS

To explore the topic of energy transition and understand the role of skills and education in defining an effective and inclusive process, Ipsos conducted in 2023 and 2024 an international survey involving public opinion (2000 highly educated individuals) and opinion leaders (17 in-depth interviews, managed by psychologists, with experts and professionals belonging to different areas of expertise/memberships). The sample included individuals from 12 countries and 4 continents worldwide - Italy and the United Kingdom from Europe; Turkey, Saudi Arabia, the United Arab Emirates, China, India from Asia; Algeria from Africa; United States of America and Chile from the America; Azerbaijan and Kazakhstan.

The interviews with the educated population were self-completed and collected through the Ipsos online panel (Computer Assisted Web Interviews). The opinion leader interviews were conducted via a phone or web call, based on a discussion guide.

Please see the methodological note at the end of the report for additional information.

The IPSOS research team was coordinated by Nando Pagnoncelli, President of Ipsos Italy, and included Andrea Alemanno, Head of Corporate Reputation and Public Affairs, Ilaria Ugenti, Corporate Reputation Leader and Paola Simonetta, Senior Researcher.

The following chapters aim at presenting the survey's main findings as far as the second edition of the research, focused on Azerbaijan and Kazakhstan is concerned. The results of the second edition have been compared to those of the first edition. Please refer to the 2023 complete report for the first edition of the research: Climate Goals: Winning the challenge of climate goals through the creation of skills and competences worldwide.

2.1 Executive summary of the second edition of the research with focus on Azerbaijan and Kazakhstan

The global energy transition represents one of the most significant challenges and opportunities of the 21st century. As the world grapples with the urgent need to mitigate climate change and secure sustainable energy sources, countries worldwide are at various stages of this complex transformation.

The process involves not only technological and infrastructural changes, but also profound shifts in policy, economics, and societal attitudes. In this context, understanding the readiness, perceptions, and competencies of different nations becomes crucial for developing effective strategies to accelerate the energy transition on a global scale.

The report contributes to understanding of the global energy transition landscape by presenting findings of a survey conducted by Ipsos for the Maire Foundation in 2024. Building on a previous 2023 study that covered 10 countries, this survey focuses specifically on Azerbaijan and Kazakhstan. These two nations, with their unique economic and geopolitical positions, offer valuable insights into the challenges and opportunities associated with energy transition in regions that have historically relied heavily on traditional energy sources.

The survey shows a complex and multifaceted picture of the perception and preparedness for energy transition in Azerbaijan and Kazakhstan, revealing both similarities and stark contrasts between the two nations. Both countries exhibit a lower level of familiarity with energy transition concepts compared to other nations.
This could suggest the opportunity to intensify educational efforts and awareness initiatives to equip these countries with the necessary understanding to face future energy challenges.

The perceived importance of energy transition varies significantly between Azerbaijan and Kazakhstan. This may be affected also by the great difference between the two countries in terms of dimension and population.

In Azerbaijan, most of the respondents recognize energy transition as a priority, indicating a growing consciousness of environmental issues and the potential economic opportunities they present. This awareness suggests a fertile ground for future energy transition initiatives.

In Kazakhstan, only a minority of respondents is viewing energy transition as an absolute priority, maybe for the need to develop other programs

and investments in other sectors of the society, to improve the quality of life of a larger number of inhabitants on a much bigger territory.

This brings to the presence of competing concerns on the national agenda, potentially complicating efforts to prioritize energy transition in the country's future planning.

The perception of government commitment to energy transition in Azerbaijan and Kazakhstan suggests actions to improve dialogue to match public expectations and policy implementation.
A significant disparity exists between the priorities expressed by the public and the perceived actions of their respective governments. This misalignment reflects a deeper challenge in translating societal concerns into actionable policies. The gap underscores the need for a more integrated approach to policymaking, one that actively incorporates public sentiment and expectations into the formulation of energy transition strategies.

The development of adequate infrastructure is considered a critical issue, requiring significant investment and long-term planning. This challenge is closely linked to the creation of effective energy and environmental policies, which must balance immediate economic concerns with long-term sustainability goals. Furthermore, the active involvement of all stakeholders is crucial for ensuring comprehensive and equitable transition strategies.

The complex nature of the energy transition process requires a fundamental restructuring of economic systems, social behaviors, and governance structures. In addition, collaboration between government agencies, private companies, research institutions, and civil society organizations is essential for developing innovative solutions and ensuring an inclusive transition process.

Despite the significant challenges associated with energy transition, the process also presents similar opportunities in both Azerbaijan and Kazakhstan.

One of the most significant opportunities identified in both countries is the potential for job creation. The shift towards renewable energy sources and sustainable practices necessitates the development of new industries and skills. This could lead to the emergence of a "green economy", offering diverse employment opportunities and fostering a new generation of green jobs. This prospect is particularly appealing in regions where traditional energy sector jobs may be at risk, offering a path for economic diversification.

Furthermore, particularly in Kazakhstan, the energy transition process is driving an increase in public awareness of energy and environmental issues. This growing consciousness represents a significant societal shift, potentially influencing individual behaviors and collective decision-making. As communities become more informed about the impacts of energy consumption, they may be more inclined to support sustainable policies and adopt eco-friendly practices in their daily lives. This increased awareness could create a positive feedback loop and lead to greater support for transition initiatives.

The energy transition process needs a substantial upskilling of the workforce in both Azerbaijan and Kazakhstan. A widespread recognition of this need is evident, with most individuals acknowledging their requirement for additional training in energy transition-related topics. This perception underscores a significant skills gap that must be addressed to facilitate an effective transition. The required skills range from technical expertise to soft skills.

In both Kazakhstan and Azerbaijan, the development of technical knowledge is crucial for advancing the energy transition process. While the specific priorities may vary slightly between the two nations, several key areas of expertise emerge as particularly important.

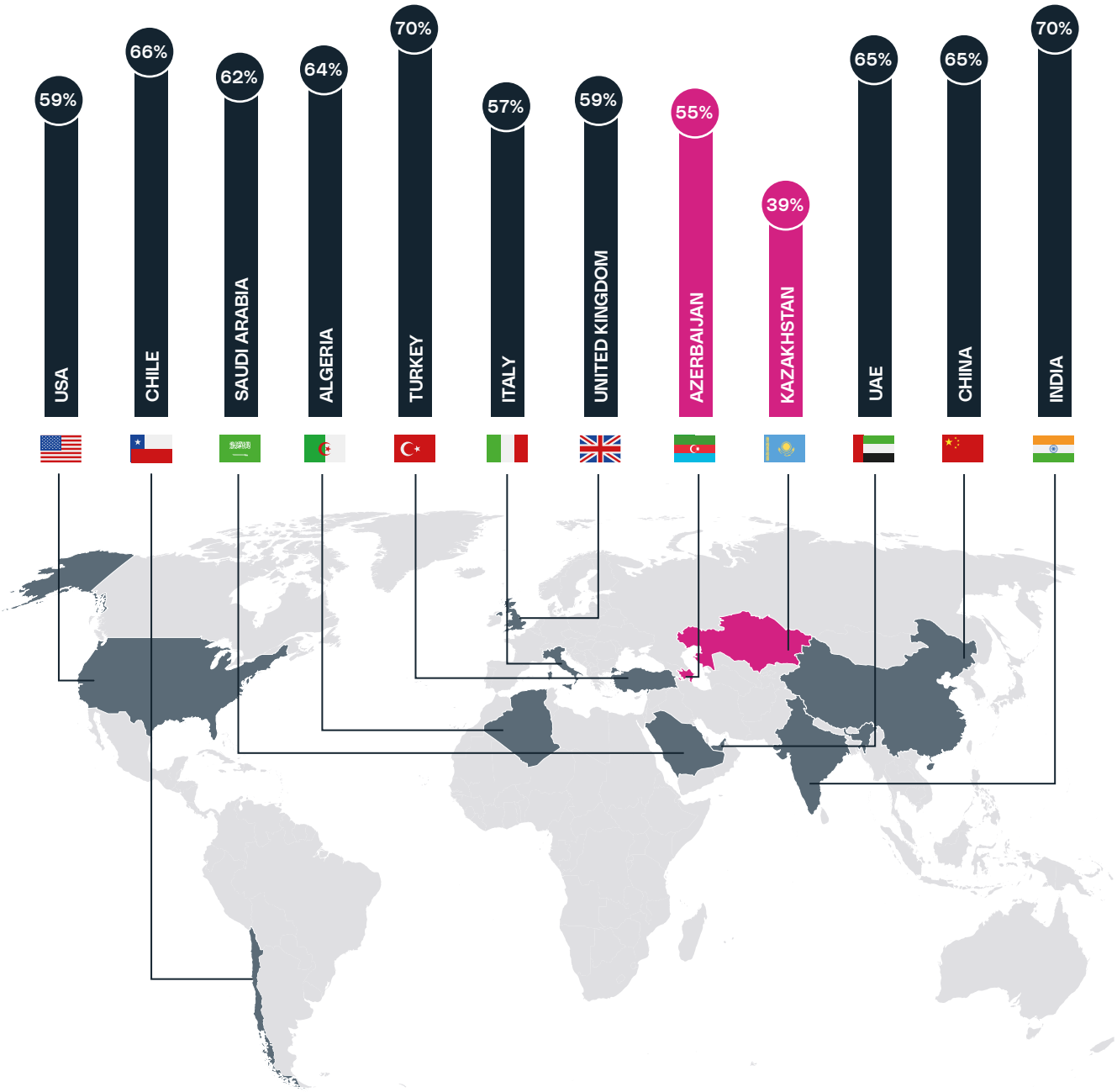
For Kazakhstan, with its vast natural resources and existing energy infrastructure, a primary focus is on analyzing and assessing the impact on the region.

In Azerbaijan, where there's a growing emphasis on diversifying the energy sector, renewable energy technologies take center stage. Developing expertise in solar, wind, and other renewable energy sources is vital for the country's transition towards a more sustainable energy mix. Environmental impact assessment skills are crucial for both nations. However, equally important are soft skills that enable professionals to navigate the complex landscape of energy transition. In Azerbaijan, problem-solving abilities are considered a priority, as the transition presents numerous challenges that require innovative solutions. In Kazakhstan, critical thinking skills are considered essential for analyzing complex data, evaluating alternative approaches, and making informed decisions.

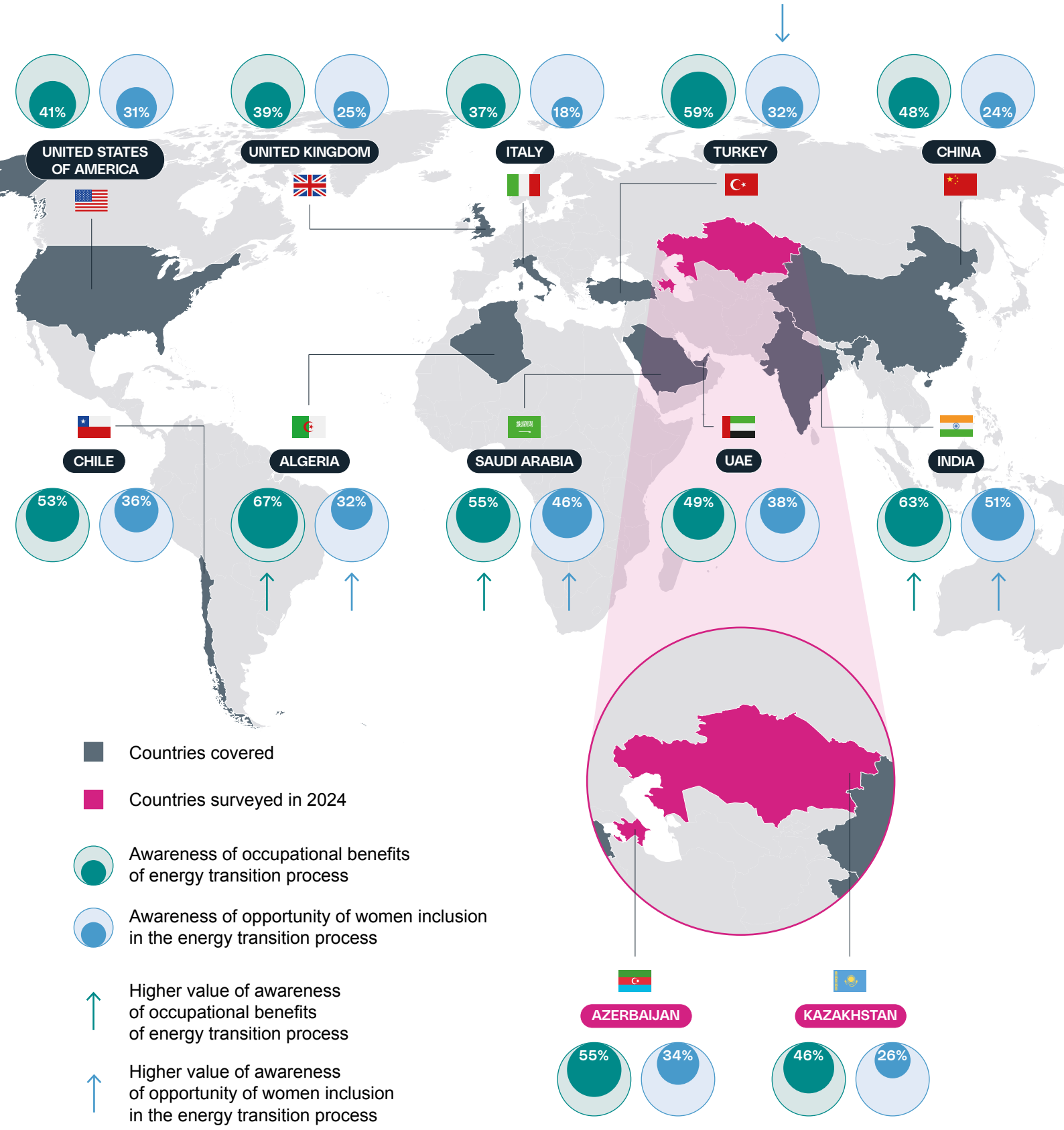
Addressing this gap requires a coordinated and comprehensive approach to training and skills' development. For both counties, this effort needs the collaboration of multiple stakeholders, with governments, public research centers, and universities playing pivotal roles. The emphasis on training and skills development is not merely an educational endeavor but a strategic imperative. It is crucial for preparing the workforce to meet the challenges and seize the opportunities presented by the energy transition. A skilled workforce is essential for implementing new technologies, developing innovative solutions, and driving the transition forward. Moreover, by equipping individuals with relevant skills, countries can enhance their competitiveness in the emerging green economy, potentially positioning themselves as acknowledged players in sustainable energy practices. The recognition of the need for training and skills development in energy transition represents a critical step towards a successful transition.

By investing in human capital and fostering a knowledgeable and skilled workforce, Azerbaijan and Kazakhstan can not only contribute to global climate goals but also position themselves advantageously in the emerging green economy landscape.

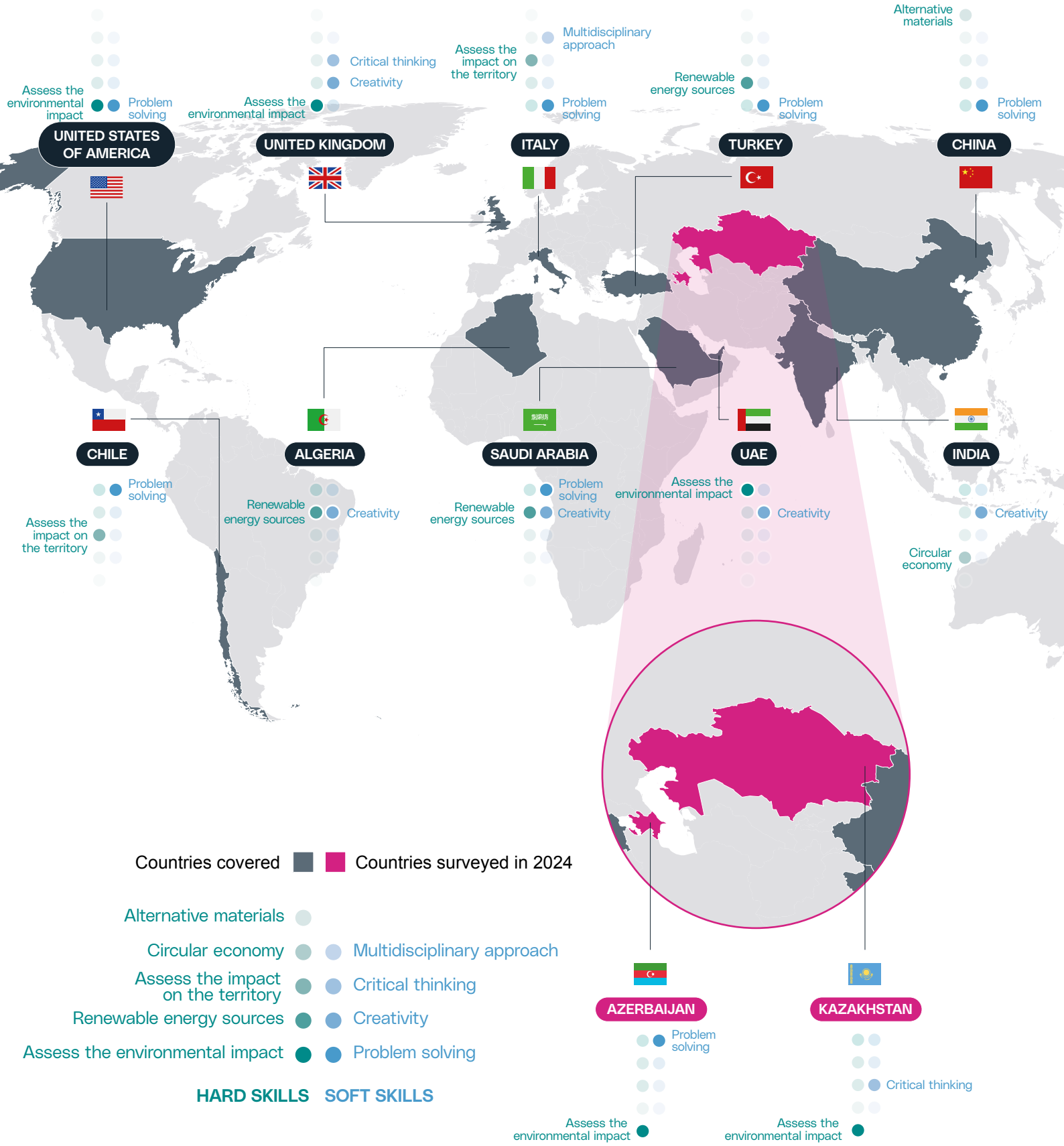
How countries' respondents look at the energy transition as a priority



Perception of energy transition benefits across countries: awareness of occupational benefits and opportunity of women inclusion



Key skills and competences prioritized for energy transition



2.2 Main results from 2023 study

Energy transition is currently a widely discussed and well-known topic. It is considered the "key" for addressing climate change-related issues and non-renewable energy resource depletion. In fact, the transition to renewable energy sources like solar and wind power from traditional energy sources such as coal and oil is pivotal for reducing greenhouse gas emissions and increasing environmental sustainability, as is the introduction of technological solutions and new processes in industry.

Energy transition is considered **a multidimensional topic with significant societal, economic, and environmental implications**. Awareness and the priority of the topic vary across countries, but they are generally high in advanced economies. However, the perception of a country's commitment to energy transition can sometimes be biased, with some countries overestimating their progress.
Opportunities associated with energy transition include job creation and raising public awareness, while the development of new infrastructure is considered challenging.

There is a common belief that **energy transition is a complex and ambitious process**. To run this process, it is necessary to involve many different stakeholders with diverging interests that need to be combined to reach the final goal. In addition, the idea of a cultural change impacting the lifestyle of citizens, their beliefs, and behaviors is seen as crucial to effectively contribute to the transition process.

There's a consensus that attention to energy transition has increased over the past 2-3 years, more so by private companies than by politicians. **Companies are seen as key players in driving sustainable innovation and education**.

Overall, **the benefits of the energy transition process are higher than the costs**. When thinking over the medium-long term, the benefits outweigh costs to a wider extent than in the near in every country. By the way, these costs are becoming less and less impactful when considering the ever-increasing costs of extreme events caused by climate change.
The key factors contributing to the successful implementation of energy transition include environmental, technological, and economic considerations. Environmental factor is seen as pivotal. Technological advancements are also crucial, specifically in the **development of innovative sustainable solutions**.

Familiarity with the energy transition process is widespread, but there is a **recognition of the need for further training**. The importance of targeted educational programs is widely recognized, with almost all respondents considering sector-specific training programs as essential.

Lastly, the urgency of providing training for those involved in the energy transition process is underscored, with the majority of respondents expecting training to take place in the short term.

Regulation is a fundamental lever to address the strategies of companies in moving towards production models with a low environmental impact through a setting that support sustainable energy policies, including carbon reduction targets, bans on polluting technologies, and reforms of existing energy policies.

All activities that can help protect the planet through the production of alternative energy sources, reducing environmental impact, preserving natural resources, promoting renewable energy, and low or zero-emissions industrial technologies, are key to achieving a full transition.

Indeed, the progress of educational activities is considered not very adequate. Overall, the concern is related to the fact that the educational process in the energy transition is not occurring at the right speed and breadth to truly impact the transition itself.

The future professionals in the energy transition process will **need both hard and soft skills**. When it comes to soft skills, creativity, problem-solving, critical thinking, flexibility, and teamwork are all highlighted as essential. Communication is also considered an essential soft skill. However, understanding the needs of different stakeholders, addressing their difficulties and resistance, and demonstrating cultural sensitivity are all important factors.

As for hard skills, the capability to analyze and assess environmental impact, and knowledge of raw materials and renewable energy sources are considered most important.

The renewable energy and energy transition sector is growing worldwide, but **there is a need for more technical professionals with energy transition skills**.

The "***humanist engineer***" — a professional who combines technical expertise with a keen awareness of social, economic, and environmental implications — is emerging as a key player in the process.

2.3 Results from 2024 study, focus on Azerbaijan and Kazakhstan

This section presents the results of the survey realized in 2024 in Azerbaijan and Kazakhstan within the framework of the results of the 2023 survey in the previous 10 countries of the research - Italy, UK, Turkey, Saudi Arabia, UAE, China, India, Algeria, USA and Chile.

The countries are grouped in the tables by continents. Data coming from Azerbaijan and Kazakhstan are marked in the tables with a pink background of the columns.
The legenda suggests the precise interpretation of the data depiction.

The texts below the tables are commenting the responses to the questions, suggesting an interpretation of the data and of the data comparison among countries.
The quotes in blue are extracted from the one-to-one deep dive interviews and provide highlights comings from two opinion leaders of the 2024 target countries.

For a complete picture of the 2024 study and an overview on the overall results, please refer to the executive summary included in chapter 1.

Table 1 Awareness on energy transition process

Q1A. Have you ever heard of **energy transition?**
Base: Total Sample - % Values
Countries surveyed in 2024

Higher values
Lower values

	EUROPE		ASIA							AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA	AZERBAIJAN	KAZAKHSTAN	ALGERIA	USA	CHILE
TOTAL WARNESS	97%	95%	90%	96%	97%	97%	95%	96%	93%	96%	96%	99%
I am **very familiar with it**	60	59	47	55	50	37	63	43	29	56	63	42
I have heard of it, but i only have a vague idea	37	36	43	41	47	60	32	53	64	40	33	57
I have **never heard of it**	3	5	10	4	3	3	5	4	7	4	4	1

Table 1 provides an overview of the energy transition process awareness levels across countries. Both Azerbaijan and especially Kazakhstan show lower familiarity levels with the energy transition process compared to the other advanced economies like Italy, the UK, and the USA, and India as well, where more than half of respondents are "very familiar" with this topic. In Azerbaijan, 96% of respondents have heard of the energy transition process, but only 43% are "very familiar" with it. A similar pattern is observed in Kazakhstan, where 93% of respondents are aware of the energy transition process, while only 29% are "very familiar" with it. Like Azerbaijan, Turkey, and Chile, the energy transition is a known concept in Kazakhstan, but the deep understanding among the population requires further enhancement and this makes it possibile to foresee that these two countries will be high training-demanding in the next years.

"[…] the carbon lobby is still strong and clearly tries not to communicate about alternative energies. So, there is no communication on what can be achieved with the energy transition […] The culture surrounding the energy transition and its overall awareness is lacking here in Kazakhstan"

Top Manager KazakWhstan

Table 2 Perceived importance of energy transition process

Q2_2. In your opinion, how important is energy transition?
Base: Total Sample - % Values
Countries surveyed in 2024

Higher values
Lower values

	EUROPE		ASIA					AZERBAIJAN	KAZAKHSTAN	AFRICA	AMEWWRICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA			ALGERIA	USA	CHILE
It's a **priority**	57	59	70	62	65	65	70	55	39	64	59	66
It is important, but **on par with other areas of commitment**	41	40	28	35	34	35	29	39	55	35	34	31
It is of **secondary importance**	2	1	2	3	1	0	1	6	6	1	7	3

In Azerbaijan and Kazakhstan, there is a recognition of the importance of the energy transition as a priority or on par with other areas of commitment. Azerbaijan aligns with other European countries, with a majority (55%) viewing the energy transition as a priority, demonstrating a high level of understanding and prioritization in the country's collective consciousness, an aspect that is very important for the future development of the role of these countries in the global energy transition scenario.

In Kazakhstan, while the energy transition process is recognized as important, the perceived urgency is lower, with only 39% considering it a top priority. This suggests that other local or national issues may be competing for attention and prioritization.

When compared to other countries, such as Turkey and India, where the energy transition is seen as a priority by 70% of respondents, it's clear that there are varying degrees of urgency attached to the energy transition process globally. These differences could be influenced by factors such as the visibility and immediacy of climate change impacts, the presence and influence of energy industries, and national policies and discourses surrounding energy and climate change.

"In Europe, we make an overstatement about the activities we conduct regarding energy transition whereas in Kazakhstan, being a former Soviet Union country, people live more day to day, the reality that matters is what happens today. Today, the population's priorities are on lifestyle and the ability of the country to take care of the population efficiently in cities and villages. People have other problems. A person who has problems to find a hospital, a school, or a shop with daily fresh food sees the energy transition as a secondary problem and not as a priority. The population is also scared by the fact that the funds eventually alllocated to the energy transition will not be used for other more important needs such as school, hospitals, infrastructures and so on"

Top Manager Kazakhstan

Table 3 Energy transition perception across countries

Q3A. How much do you agree or disagree with each of the following statements? Energy transition...
Base: Total Sample - % Values Countries surveyed in 2024

Higher values are highlighted

% Scores 10-9 *Ranked on Italy*	EUROPE		ASIA					AZERBAIJAN	KAZAKHSTAN	AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA			ALGERIA	USA	CHILE
It is crucial for **combating climate change and global warming**	**38**	**52**	**65**	**62**	**61**	**53**	**62**	**64**	**53**	**74**	**50**	**65**
It **creates new job opportunities** in the renewable energy and clean technology sectors	37	39	**59**	**55**	49	48	**63**	**55**	46	**67**	41	53
It **reduces dependence on imported energy sources** and the risk of **supply disruptions**	36	39	49	53	47	45	**61**	43	43	52	44	52
It significantly **benefits human health and the environment** by reducing greenhouse gas emissions and air pollution	36	42	**59**	**58**	**58**	**54**	**65**	**58**	**61**	**79**	47	**66**
It **leads to better energy efficiency**, reducing long-term costs	35	38	**57**	52	51	45	**61**	**52**	40	**62**	44	**56**
Investment in energy transition **is a priority over other areas**	25	29	41	**55**	49	45	**58**	40	32	45	32	37
It **represents an opportunity for more female participation** and provides **new employment opportunities for women**	18	25	32	**46**	38	24	**51**	34	26	32	31	36

Looking at the perception of energy transition, both Azerbaijan and Kazakhstan demonstrate high levels of awareness regarding the crucial role of energy transition in combating global warming, as well as its environmental and human health benefits. In Azerbaijan, 64% of respondents believe that energy transition is crucial for combating climate change and global warming. This shows concretely that something is changing in the perception of these countries of their potential role in the global picture and the need to play such a role.

"Now people understand that such a dramatic use of these energy resources - oil, uranium, and gas - has significant negative effects globally and this will create very significant problems and challenges for future generation. We do not want to leave these environmental challenges to the future generation, we have started to see these kinds of challenges, so we try to do our best to prevent negative impacts in the future"

Academic Azerbaijan

In Kazakhstan the benefits to human health and the environment rank as the most important aspect of energy transition (61%). This pattern aligns with results observed in Algeria and India, where the health-related benefits of energy transition are also highly recognized. The creation of new job opportunities and the reduction of long-term costs are also important topics for respondents in Azerbaijan (55%), Turkey, Saudi Arabia, Algeria, and Chile. There may be room for further awareness-raising and education efforts to fully communicate the benefits of energy transition to all individuals in society and foster a deeper understanding of this process. In general, opinion leaders emphasize a comprehensive understanding and commitment to tackling environmental challenges through sustainable practices and innovations. There is a strong association between global temperature, clean energy, zero emissions, and decarbonization.

"So, the first challenge for the Central Asian countries, including Kazakhstan, which are still in the first phase of energy transition [from carbon to gas] must be decarbonization. This is the initial and most important step to allow that in the future these countries can approach new energies' sources, more sustainable, among which there is hydrogen"

Top Manager Kazakhstan

Table 4 Countries' commitment to energy transition

Q2_1. Which of the following statements best describes the level of commitment in your country?
Base: Total Sample - % Values
Countries surveyed in 2024

ENERGY TRANSITION is the shift from traditional fossil-based energy sources and raw materials to renewable, recycled, and sustainable energy sources and raw materials to reduce greenhouse gas emissions and address climate change

Higher values
Lower values

	EUROPE		ASIA					AZERBAIJAN	KAZAKHSTAN	AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA			ALGERIA	USA	CHILE
It's a **priority**	53	51	37	62	55	59	71	31	15	38	54	48
It is important, but **on par with other areas of commitment**	40	42	42	34	40	41	26	50	58	43	33	41
It is of **secondary importance**	7	7	21	4	5	0	3	19	27	19	13	11

Table 5 Country positioning on energy transition

*Q13. In your opinion, how would you rank **your country's level in the energy transition process?***
Base: Total Sample - % Values
Countries surveyed in 2024

Higher values
Lower values

	EUROPE		ASIA					AZERBAIJAN	KAZAKHSTAN	AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA			ALGERIA	USA	CHILE
Ahead of other countries	8	29	14	41	44	49	43	16	2	1	38	20
On par with other countries	47	46	26	46	42	41	46	29	12	41	37	29
Behind other countries	45	25	60	13	14	10	11	55	86	58	25	51

RANK BY ETI SCORE*

2023	38°	13°	65°	57°	63°	17°	67°	32°	76°	86°	12°	30°
2024	41°	13°	59°	58°	52°	17°	63°	38°	98°	91°	19°	20°

Table 6 Perceived importance vs country positioning on energy transition process

*Q2_2. In **your opinion**, how important is energy transition?*
Q2_1. Which of the following statements best describes the level of commitment in your country?
*Q13. In your opinion, how would you rank **your country's level in the energy transition process**?*
Base: Total Sample - % Values
Countries surveyed in 2024

Higher values
Lower values

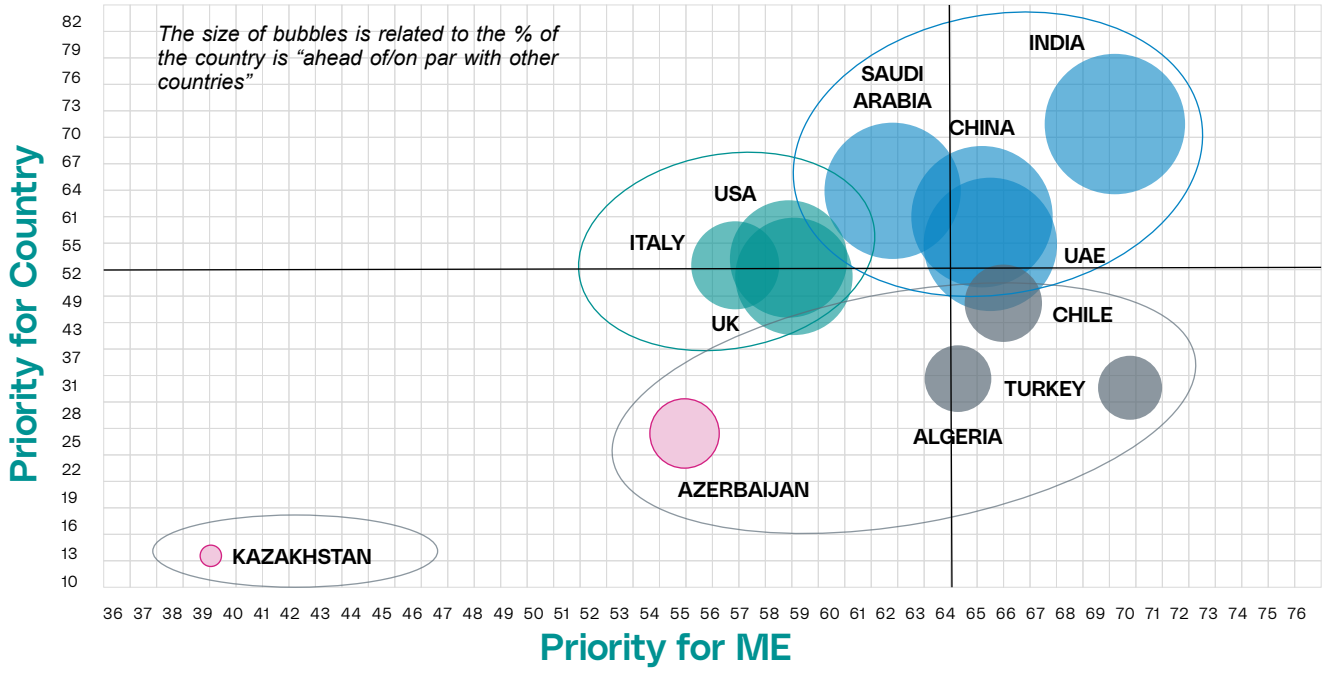
	EUROPE		ASIA							AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA	AZERBAIJAN	KAZAKHSTAN	ALGERIA	USA	CHILE
Priority for **ME**	57	59	70	62	65	65	70	55	39	64	59	66
Priority for **COUNTRY**	53	51	37	62	55	59	71	31	15	38	54	48
Country's level in the energy transition process: **BEHIND** other countries	45	25	60	13	14	10	11	55	86	58	25	51

The commitment of governments to the energy transition process is well acknowledged, but there may be a perception that other issues are competing for attention and prioritization. In Azerbaijan, 81% view the energy transition process as at least a priority on par with other areas, although only 31% consider it an absolute priority. In Kazakhstan, 73% of respondents consider the energy transition a priority on par with other areas, but only 15% view it as an absolute priority. As in Algeria and Turkey, data suggest a potential gap between the government's efforts and the public perception of it, maybe suggesting a need for continued action to strengthen the efforts and the ways to make them perceived by the population. (Table 4)

According to the ETI (Energy Transition Index), which ranks countries based on their performance in the energy transition process, Azerbaijan ranks higher (38th) than Kazakhstan (98th). The perception of Kazakh respondents, with 86% believing that their country is lagging behind others in the energy transition process, is consistent with the country's low ETI score. However, the perception of Azerbaijani respondents differs from their country's higher ETI ranking, with 55% believing that their country is behind others in the energy transition process, highlighting a potential gap between the country's performance and the public's awareness or understanding of it. In both countries, there is room for further awareness-raising and education efforts to deepen the understanding and support for the energy transition process. Overall, strategies should not only focus on improving technical and infrastructural readiness but also on enhancing public understanding and engagement in the energy transition process. (Table 5)

Graph 1 Positioning map

Q2_2. In your opinion, how important is energy transition?
Q2_1. Which of the following statements best describes the level of commitment in your country?
Q13. In your opinion, how would you rank your country's level in the energy transition process?
Countries surveyed in 2024



According to the positioning map (Graph 1), Azerbaijan can be grouped with countries such as Turkey, Chile, and Algeria, where the energy transition process is viewed a higher priority by respondents than it seems to be seen by them as a priority by the Governments.

Kazakhstan presents a parallel yet more extreme situation. Here, the individual priority given to the energy transition also exceeds the perceived governmental commitment. However, the overall perceived importance of energy transition is considerably lower compared to Azerbaijan. Moreover, in line with its lower ranking on the Energy Transition Index (ETI), Kazakhstan is perceived as less advanced in the energy transition process. This perception aligns with the ETI data, underscoring the need for significant progress in energy transition awareness and public knowledge.

In Kazakhstan, opinion leader agrees that before delving into the energy transition, there is an essential challenge to ensure the economic sustainability of countries still dependent on carbon. The likelihood of advancing alternative energy sources hinges on the presence of economic incentives, as these are the primary motivators for progress. To realize these goals, it is imperative to involve a wide array of stakeholders with varying interests to reach a consensus.

"Before talking about the energy transition there is a need to address an important challenge to the sustainability of the economy of the country which is still based on carbon. There are few chances that a further step on the implementation of alternative sources of energy will be approved if there is no economic interest in doing that. And the economic interest is the driver"

Top Manager Kazakhstan

Table 7 Main opportunities and benefits of energy transition

Q5_1. Which are main opportunities and benefits of energy transition?
Base: Total Sample - % Values
Countries surveyed in 2024

The most mentioned options for each country are highlighted

Ranked on Italy

	EUROPE		ASIA					AZERBAIJAN	KAZAKHSTAN	AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA			ALGERIA	USA	CHILE
Ensuring the **active involvement of all stakeholders** in the energy transition process	**32**	21	21	21	19	26	16	18	22	16	21	**27**
Creation of **new jobs** in sectors focused on sustainability and climate solutions	27	**35**	**36**	**37**	**33**	**43**	**39**	**31**	**31**	**37**	**38**	**32**
Development of energy and **environmental policies by the government**	24	29	27	**32**	**29**	24	23	**32**	19	**30**	23	**32**
Engagement of private companies to adopt renewable energy	24	19	23	20	23	13	26	20	20	17	21	25
Development and **implementation of new infrastructures**	21	23	21	21	22	27	25	25	25	**27**	**29**	26
International collaboration for sharing knowledge, resources, and experiences	19	19	17	19	18	27	**29**	19	22	25	21	16
Training of professionals in the energy transition process	18	12	11	17	17	9	13	25	19	14	14	21
Raising public awareness about energy and environmental issues	17	**35**	**29**	25	**31**	**31**	**29**	23	**26**	**32**	21	18
None of these	5	2	2	1	-	1	-	1	3	1	5	-

Countries may perceive and prioritize the benefits and opportunities of the energy transition differently, potentially influenced by their unique socio-economic contexts, the state of their energy markets, and their environmental priorities. Table 7 outlines the main opportunities and benefits of the process. The creation of new jobs is seen as a major benefit in almost all countries (43% in China, 31% in Kazakhstan and Azerbaijan). Similarly, raising public awareness about energy and environmental issues is highly prioritized in the UK, the UAE, China, Turkey, India, Algeria and Kazakhstan. In Azerbaijan, the development of energy and environmental policies (32%) is viewed as a critical opportunity alongside the creation of new jobs.

This aligns Azerbaijan with countries like Saudi Arabia, Chile, the UAE and Algeria, where policy development is viewed as a key aspect of the energy transition process.

"[…] It's important to disseminate the green culture in terms of awareness and the creation of skilled resources. You also need to ensure that all stakeholders can [..] use the existing assets, which means monetizing their core business in a different way"

Top Manager Kazakhstan

Table 8 Main challenges of energy transition

Q5_2. In your opinion, what are the main challenges with energy transition process?
Base: Total Sample - % Values
Countries surveyed in 2024

The main challenges for each country are highlighted

Ranked on Italy

	EUROPE		ASIA					AZERBAIJAN	KAZAKHSTAN	AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA			ALGERIA	USA	CHILE
Raising public awareness about energy and environmental issues	**27**	17	**27**	**32**	31	**35**	23	22	17	**39**	24	27
Engagement of private companies to adopt renewable energy	**26**	**30**	17	17	14	19	26	17	21	22	**29**	**40**
Ensuring the **active involvement of all stakeholders** in the energy transition process	**25**	27	**28**	25	23	**30**	**32**	21	**31**	15	19	32
Development and **implementation of new infrastructures**	23	**33**	**29**	**29**	**36**	25	**33**	**27**	**35**	27	**34**	17
International collaboration for sharing knowledge, resources, and experiences	23	18	16	27	21	23	17	22	14	24	20	14
Training of professionals in the energy transition process	21	17	21	19	23	17	29	**28**	25	21	18	23
Job losses in traditional sectors that do not embrace sustainable solutions for the environment and climate	21	17	20	21	20	18	15	20	17	19	15	12
Development of **energy and environmental policies by the government**	20	**31**	**33**	21	22	**30**	25	**27**	**27**	**31**	27	31
None of these	2	2	1	1	1	2	-	3	3	-	4	-

Table 8 highlights the main challenges of energy transition. The development of new infrastructure is one of the most mentioned issues in Kazakhstan and Azerbaijan and is also critical in the UK, Turkey, Saudi Arabia, the UAE, India, and the USA. The development of energy and environmental policies by the government is another key challenge, followed by raising public awareness about energy and environmental issues (in Italy, Turkey, Saudi Arabia, China, and Algeria).

In Kazakhstan, the importance of having all stakeholders actively involved in the energy transition process is emphasized (31%), as it is in Italy, Turkey, China, and India.

This calls for a collaborative approach involving government bodies, private companies, and the public. Additionally, the development and implementation of new infrastructures are considered essential for a successful energy transition in Kazakhstan (35%). Azerbaijan highlights the necessity for further training and education in this field (28%), indicating a potential gap in the market for skilled professionals and a need for educational programs focusing on energy transition. The least mentioned challenges are related to international collaboration for sharing knowledge, resources, and experiences, and job losses in the traditional sectors.

"I personally think that launching new education programs in renewable energy resources would have an impact on the development of the process. However, it is important [..] to make sure that our faculties and academic staff get the relevant training in this area. This will be a kind of value added in the process"

said Academic Azerbaijan

Table 9 Opportunities vs challenges of energy transition

Q5_1. Which are main opportunities and benefits of energy transition?
Q5_2. In your opinion, what are the main challenges with energy transition process?
Base: Total Sample - % Values
Countries surveyed in 2024

Negative/ positive differences are highlighted

Difference % of total mention Q5_1 vs Q5_2	EUROPE		ASIA					AZERBAIJAN	KAZAKHSTAN	AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA			ALGERIA	USA	CHILE
Development of **energy and environmental policies** by the government	4	-2	-6	**11**	7	-6	-2	5	-8	-1	-4	1
Development and implementation of **new infrastructures**	-2	**-10**	-8	-8	**-14**	2	-8	-2	**-10**	0	-5	9
International collaboration for sharing knowledge, resources, and experiences	-4	1	1	**-8**	-3	4	**12**	-3	8	1	1	2
Engagement of private companies to adopt renewable energy	-2	**-11**	6	3	**9**	-6	0	3	-1	-5	-8	**-15**
Raising public awareness about energy and environmental issues	**-10**	**18**	2	-7	0	-4	6	1	9	-7	-3	-9
Training of professionals in the energy transition process	-3	-5	**-10**	-2	-6	-8	**-16**	-3	-6	-7	-4	-2
Job creation in traditional sectors that do not embrace sustainable solutions for the environment and climate*	**6**	**18**	**16**	**16**	**13**	**25**	**24**	**11**	**14**	**18**	**23**	**20**
Ensuring the **active involvement of all stakeholders** in the energy transition process	7	-6	-7	-4	-4	-4	**-16**	-3	**-9**	1	2	-5

**Change in wording for Q5_2 "Job losses in traditional sectors that do not embrace sustainable solutions for the environment and climate"*

Table 9 compares the differences in the opportunities and challenges of energy transition across various countries. Generally, the creation of new jobs is seen as an opportunity in all countries, and the training of future professionals represents a common challenge. Kazakhstan, like the UAE, may face difficulties in establishing necessary infrastructure for renewable energy generation and distribution.

The active involvement of all stakeholders, a challenge also highlighted by respondents in India, suggests that Kazakhstan may need to foster greater cooperation and coordination among government bodies, private companies, non-profit organizations, and the public in the energy sector.

"It is important to exploit traditional infrastructures to minimize the overall investment. It is not certain that solar and wind are always the optimal solutions. Indeed, with a good assessment by experts and a longer time framing, better guidelines can be derived on the best projects to implement in order to avoid or limit the negative impact on the existing business"

Top Manager Kazakhstan

Table 10 Key players in energy transition

Q7. In your opinion, who are the key players in the energy transition in your country?
Base: Total Sample - % Values
Countries surveyed in 2024

The most/least mentioned options for each country are highlighted

Ranked on Italy

	EUROPE		ASIA							AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA	AZERBAIJAN	KAZAKHSTAN	ALGERIA	USA	CHILE
Public entities/government	48	37	57	34	39	65	39	66	53	42	37	57
Private companies	45	45	37	39	43	41	32	29	34	41	47	56
Citizens	37	39	37	37	35	23	36	47	38	30	37	45
Scientists and experts	27	31	31	31	31	41	36	17	27	43	33	29
Politicians from your country	23	43	37	13	16	30	27	18	13	25	30	33
Engineers and technicians	20	19	13	20	24	29	19	21	33	11	28	12
International organizations	17	20	15	26	27	16	25	23	14	14	13	16
Politicians from other countries	9	15	7	13	9	8	13	7	3	4	11	6
NGOs, non-profit organizations	8	9	17	22	17	6	18	17	11	16	9	11
Journalists	8	5	5	13	6	5	5	7	3	21	7	4
Climate change activists	7	16	12	21	22	15	27	11	31	30	22	7
Celebrities and influencers	7	5	7	13	14	13	11	8	3	10	9	5

Governments are considered key players in energy transition (Table 10). In Kazakhstan and Azerbaijan, the success of the energy transition does not only depend on political decisions but also requires the commitment of society as a whole (which is also considered crucial in Saudi Arabia, the UAE, India, the USA, and Chile). However, private companies are also recognized as important players, underlining the importance of an inclusive and collaborative approach to energy transition.

"The key players are surely the politicians and the private entrepreneurs, private companies - national and international - and of course the sovereign fund of Kazakhstan which defines the future budget allocation"

Top Manager Kazakhstan

Also opinion leaders emphasize the strategic importance of cooperation between the government, private companies, and citizens in driving the energy transition.

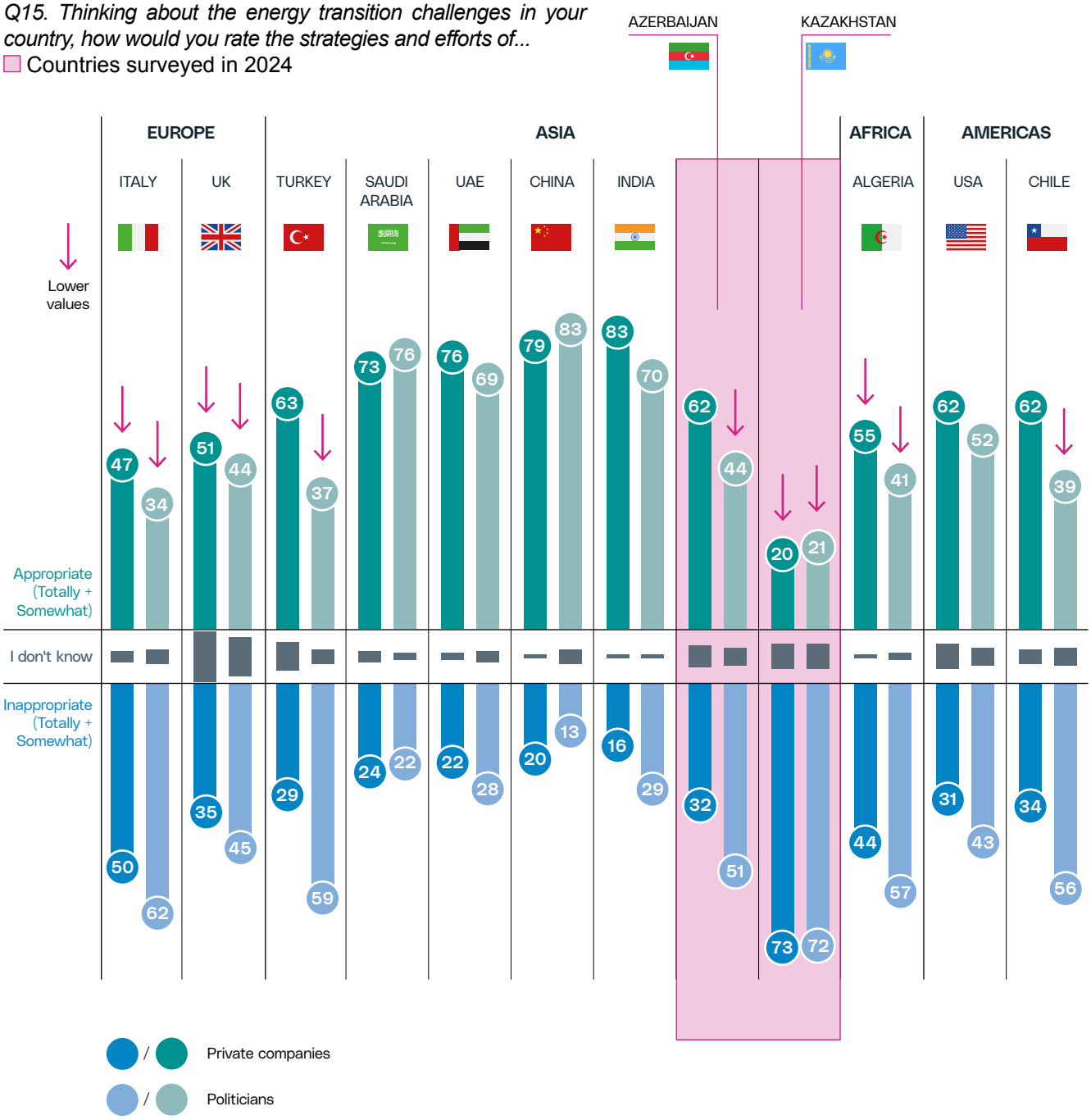
"Since the energy transition process involves all of society, I would say that all layers of society are part of the process. All the representatives of the society are working in a harmonized manner, there are for example government officials who forward the messages, there are top managers of different companies who disseminate messages to society, there are scientists as well"

Academic Azerbaijan

Table 11 Evaluation of strategies and efforts

Q15. Thinking about the energy transition challenges in your country, how would you rate the strategies and efforts of...

Countries surveyed in 2024



In general, a greater level of coordination between the government and private sectors is required to effectively advance the energy transition process. In Azerbaijan, similar to Italy, Turkey, India, Algeria, and Chile, a lack of coordination in the efforts undertaken for the energy transition between these two actors is observed. Companies are generally perceived as more proactive, and better-performing compared to politicians. In Kazakhstan, respondents are more critical of both actors, with only one in five considering their commitment adequate.

Table 12 Most important actions to ensure a successful transition process

Q6. Which are most important actions to ensure the energy transition process is a success in your country?
Base: Total Sample - % Values
Countries surveyed in 2024

The most mentioned options for each country are highlighted

Ranked on Italy

	EUROPE		ASIA							AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA	AZERBAIJAN	KAZAKHSTAN	ALGERIA	USA	CHILE
Reduction waste by companies and individuals	**33**	**37**	34	25	**35**	34	33	**40**	**49**	34	31	**34**
Engagement of local communities in energy transition process	31	30	31	**37**	**35**	30	**40**	24	26	36	30	32
Adoption of **renewable energy sources**	30	**37**	26	26	30	**37**	24	18	**28**	34	**34**	28
Improvement of energy efficiency in industrial andtransp. sectors	24	28	20	29	21	18	25	20	18	14	26	26
Facilitation of **investments into renewable energies**(public policies and regulations)	23	26	**41**	27	27	20	23	**33**	25	**44**	28	33
Development of smart energy grids for efficient energy manag.	23	19	22	21	21	18	23	**29**	19	26	27	18
Improvement to companies' production processes	21	19	23	23	28	23	28	**28**	23	32	25	31
Improvement of energy efficiency in residential buildings	20	29	19	18	16	11	22	19	15	11	18	13
Transition of traditional vehicles to sustainable mobility	19	14	16	23	25	**37**	31	30	14	21	20	22
Energy technologies innovation	17	25	23	23	24	33	15	25	22	23	25	21
Low-carbon industrial technologies innovation	10	15	12	24	18	25	20	11	12	11	14	21

To ensure the success of the energy transition, the priority is the adoption of sustainable practices by both companies and individuals (Table 12). This is particularly highlighted in Azerbaijan and Kazakhstan, where 40% and 49% of respondents, respectively view this as the most crucial action.

In Kazakhstan, the adoption of new sustainable energy sources is the second most crucial action, mentioned by 28% of respondents and considered crucial in China, the UK (37%), and Chile (34%).

In Azerbaijan, the role of financial investments in supporting the energy transition is also emphasized: facilitating investments in renewable energies (33%), developing smart energy grids for efficient energy management (29%), and improving companies' production processes (28%) are seen as above-average in importance.

A comprehensive understanding of the energy transition process, which acknowledges the importance of financial investments, technological advancements, and improved production processes, is crucial.

"Focusing on specific geographical areas or agglomerations could favor the creation of more realistic geographic microstructures that could check and develop the green transition in a more realistic way with more common goals. For example, a Central Asia committee could be created. It should work to reach specific goals, monitor internally and bring to the next COP forum the results and activities done in each country while trying to remain within the standards of that area and not to the global standard"

Top Manager Kazakhstan

Table 13 Cost-benefit analysis of energy transition process

*Q14_1. Over the **short-term** (1-3 years), what would you say regarding energy transition in your country?*
*Q14_2. Over the **medium to long-term** (more than 3 years),*
what would you say regarding energy transition in your country?
Base: Total Sample - % Values
Countries surveyed in 2024

Higher values
Lower values

	EUROPE		ASIA					AZERBAIJAN	KAZAKHSTAN	AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA			ALGERIA	USA	CHILE
OVER THE SHORT-TERM												
The **benefits will outweigh** the costs	37	46	26	50	34	26	45	21	15	17	43	34
The costs and benefits will **balance out**	42	35	43	43	55	52	44	48	28	57	37	44
The **costs will outweigh** the benefits	21	19	31	7	11	22	11	31	57	26	20	22
OVER THE MEDIUM/LONG-TERM												
The **benefits will outweigh** the costs	51	51	39	41	39	60	45	40	22	35	55	47
The costs and benefits will **balance out**	42	43	37	52	55	35	47	42	44	46	32	41
The **costs will outweigh** the benefits	7	6	24	7	6	5	8	18	34	19	13	12

Although the challenges and costs associated with the energy transition process are significant in the short term, the perceived long-term benefits are substantial (Table 13). In countries where government commitment to the energy transition process is considered to be improved, the costs of this process are perceived to outweigh the benefits in the short term (Turkey, Algeria, Azerbaijan, and Kazakhstan). However, when looking at the medium to long term, the perception changes markedly. In both Azerbaijan and Kazakhstan, there is an increase in the perception that the benefits of the energy transition process will outweigh the costs. This suggests a belief in the long-term value and positive impact of the energy transition, despite the perceived short-term challenges and costs.

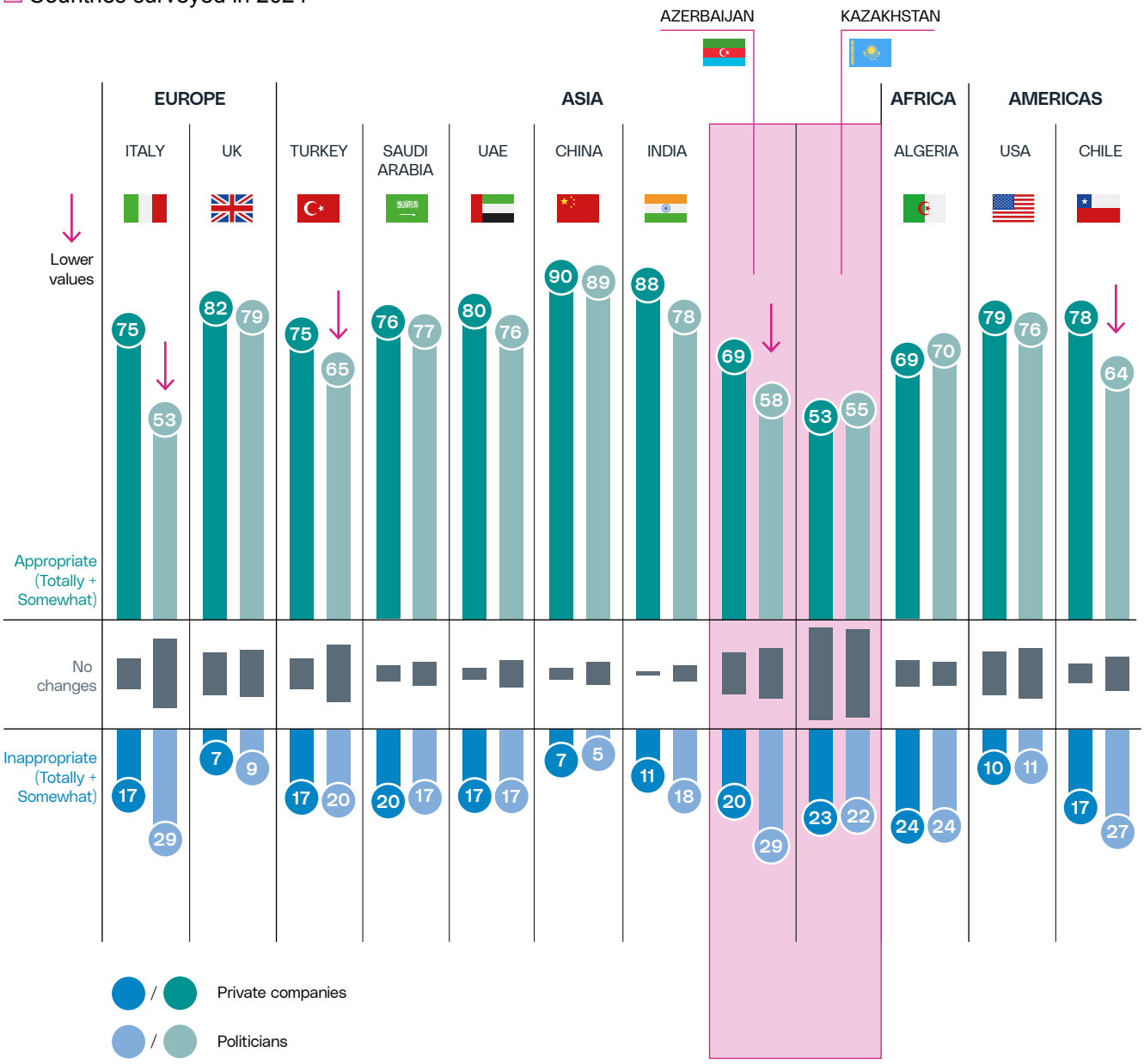
Opinion leaders agree that transitioning to sustainable energy is a continuous process that should be approached with a medium-to long-term perspective.

"The profitability of the energy transition process will be seen in a step-by-step manner, in the medium-long term"

Academic from Azerbaijan

Table 14 Attention to energy transition issue

Q16. Thinking about 2-3 years ago, do the following pay more/less attention to energy transition today?
Base: Total Sample - % Values
Countries surveyed in 2024



Furthermore, the data from Table 14 suggests that in all countries there is a general recognition of increased commitment from both companies and the political class towards energy transition compared to the past.
In countries like Italy, Turkey, Azerbaijan, and Chile, the efforts of private companies are viewed more favorably, indicating a significant gap between their actions and those of the governments.

In Kazakhstan, one in four respondents believe that the situation has remained unchanged compared to the past. This could imply that while some progress has been made in terms of energy transition efforts, there is room for substantial improvements or changes.

Table 15 Companies commitment to energy transition

Q17. Which of the following actions should companies focus on most for energy transition?
Base: Total Sample - % Values
Countries surveyed in 2024

Higher values
Lower values

	EUROPE		ASIA					AZERBAIJAN	KAZAKHSTAN	AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA			ALGERIA	USA	CHILE
Adopting **new production processes**	34	37	33	25	25	41	39	35	49	29	37	38
Providing **training/ education** for skills development	28	31	19	29	37	24	30	39	44	36	32	23
Innovating products and services in a sustainable way	25	37	35	31	34	50	38	17	29	39	37	37
Promoting a **cultural shift**	25	23	18	15	14	9	14	15	7	11	15	27
Implementing **new organizational strategies** with dedicated roles	23	19	13	21	28	21	31	15	19	21	20	18
Defining **decarbonization plans**	18	15	26	25	20	26	17	26	9	21	15	15
Undertaking **dedicated outreach activities**	15	10	6	25	17	10	13	23	18	19	10	12
Reporting on sustainability	14	15	16	21	15	17	17	12	8	17	17	18

Table 15 suggests a recognition of the adoption of new production processes and the provision of skills in the energy transition journey.
Companies' adoption of new production processes and innovation of products and services are seen as top priorities, with more than one in three respondents mentioning them overall.

"All aspects of innovating strategies and products, implementing new organizational strategies with dedicated roles, adopting new production processes, reporting on sustainability, putting in place an incentives system based on sustainability objectives, are interrelated and all should be balanced with each other's"

Academic Azerbaijan

In both Azerbaijan and Kazakhstan, equipping the workforce with the necessary skills and knowledge is crucial. In Kazakhstan, this is mentioned by 44% of respondents, following the adoption of new production processes (49% of mentions). In Azerbaijan, these two areas of commitment achieve similar results, with more than one-in-three respondents.

"Private companies play a big role in training on energy transition […] In this way, you create awareness and specialized resources, and you create the need that you are going to satisfy with your products and services"

Top Manager Kazakhstan

Additionally, in Azerbaijan, defining decarbonization plans and undertaking dedicated outreach activities are also seen as important actions, cited by 26% and 23% of respondents, respectively. This indicates the awareness of the need for clear strategic planning and communication in the energy transition.

Table 16 Perceived importance of energy transition areas

Q4. Which of the following aspects do you consider most important for energy transition? RANKING
Base: Total Sample - % Values
Countries surveyed in 2024

The most mentioned options for each country are highlighted

% 1° + 2nd + 3rd positions

Ranked on Italy

	EUROPE		ASIA							AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA	AZERBAIJAN	KAZAKHSTAN	ALGERIA	USA	CHILE
ENVIRONMENT	65	69	49	54	60	70	63	59	59	65	61	53
ECONOMY	54	56	51	49	49	48	42	46	51	50	58	49
TECHNOLOGY	53	61	51	50	48	70	51	59	61	57	58	49
REGULATION	37	41	30	34	27	50	34	28	31	24	40	33
SOCIETY	35	27	35	33	35	27	40	48	37	25	30	35
EDUCATION	28	25	55	51	47	16	41	38	39	54	31	48
CULTURE	27	21	29	29	33	21	30	23	22	26	25	34

In all surveyed countries, data demonstrate an understanding that energy transition is not only about environmental conservation but also has significant economic and technological implications. Indeed, the environment (61% on average) is seen as the most important area, followed closely by technology (56%) and the economy (50%) (Table 16).

Looking at Azerbaijan and Kazakhstan specifically, both countries also regard the environment and technology as the most critical aspects of energy transition. In addition, the economy is also regarded as an important area in these countries, proving an understanding of the broader impacts of the energy transition. Furthermore, achieving equitable access to energy (34% on average) could represent a significant contribution to the energy transition process in Kazakhstan (37%) and especially in Azerbaijan (48%). In this latter country, the economy and society are placed on the same level in the energy transition process.

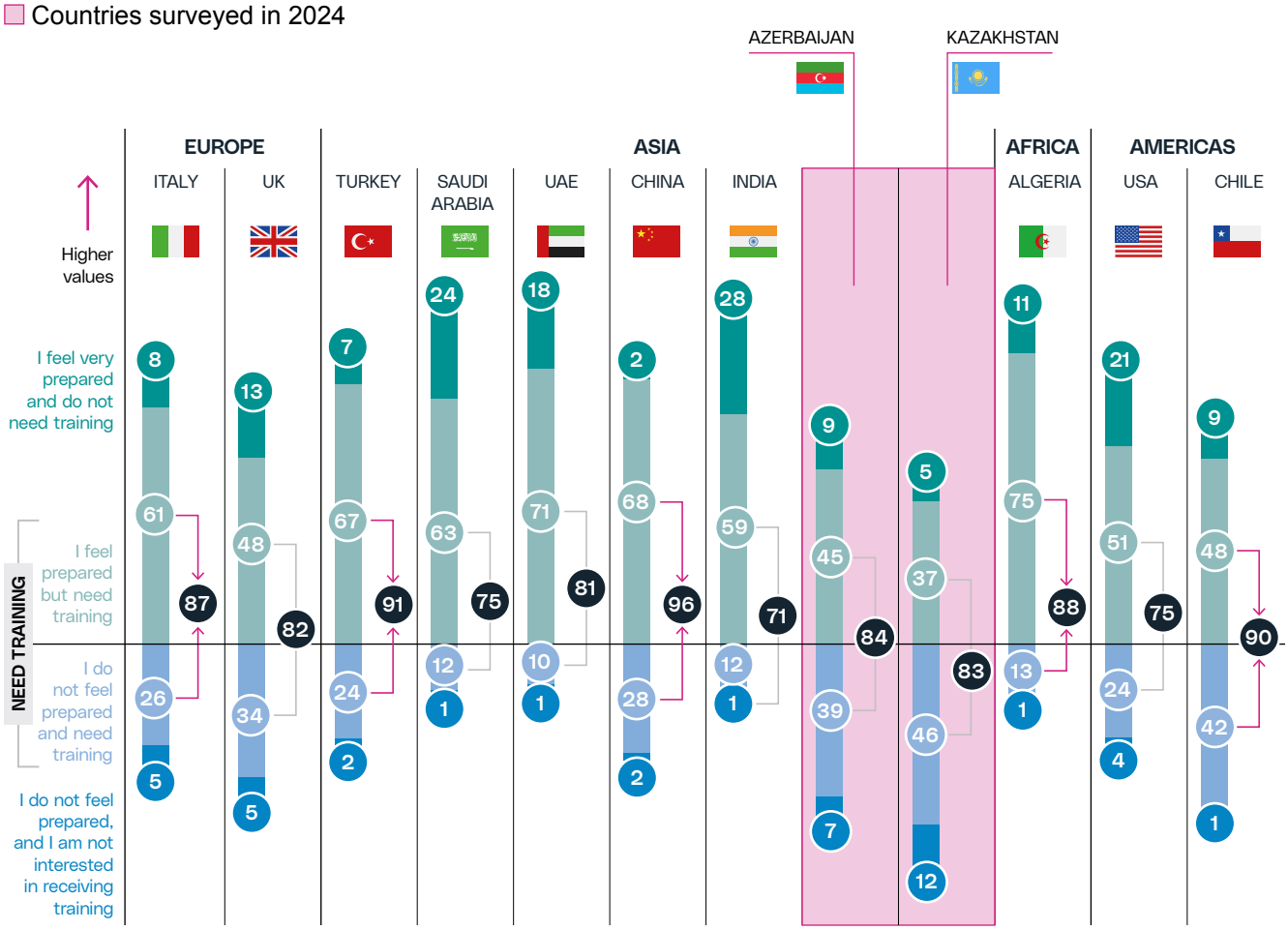
Among opinion leaders, there is a clear recognition of the interconnectedness and mutual influence of various areas crucial to the energy transition.

"Regulation and law creation are fundamental to stimulating the energy transition and ultimately to stimulate investments. After regulation is created you need to learn this regulation and you need to learn how to support it and how to use it, you need to be educated on the regulation. This means that you need to create a culture. Once you have regulation, education, and culture you need to bring the technology that must be taught to make the country ready with the necessary resources to support the technology adoption"

Top Manager Kazakhstan

Table 17 Need for training on energy transition

Q11. How prepared do you feel on the topic of energy transition?
Base: Total Sample - % Values
Countries surveyed in 2024



In general, a significant majority of respondents feel that they need training on energy transition (Table 17). The recognition of the complexity of the energy transition process and the necessity for specific knowledge and skills to navigate it effectively are confirmed in both Kazakhstan and Azerbaijan, with over 80% of respondents considering their skills in need of improvement.
The depth of this training need is further emphasized by the respondents' self-assessment. In these countries, 45% in Azerbaijan and 37% in Kazakhstan feel prepared but still need training, while 39% in Azerbaijan and 46% in Kazakhstan do not feel prepared at all. Only a small minority, less than one-in-ten respondents, feel adequately prepared for the challenges of energy transition. This data underscores the urgent requirement for widespread, targeted educational initiatives.

Opinion leader provide valuable insight into potential solution, from expert exchanges to international financial aid.

"International exchanges would help in this way, helping people with the required level of expertise in the energy transition, exchanging these types of people and experts between countries could help to develop skills in the energy transition"

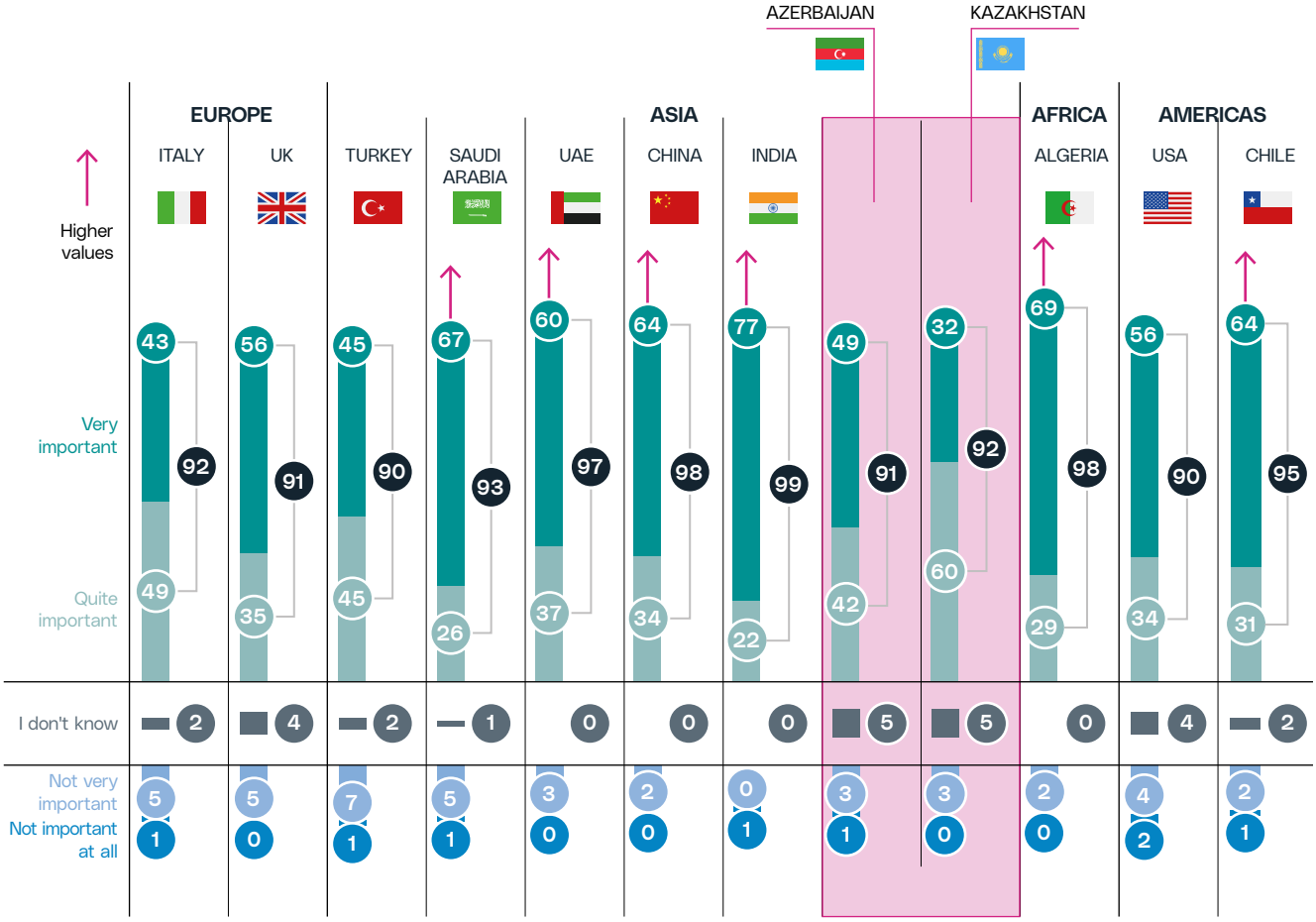
Academic Azerbaijan

"From the financing perspective, maybe the government should ask for financial support from international institutions that have the green impact as their final goal"

Top Manager Kazakhstan

Table 18 Importance of developing educational programs on energy transition

Q12. In your opinion, how important is developing educational and training programs for energy transition?
Base: Total Sample - % Values
Countries surveyed in 2024



In fact, the importance of education in equipping individuals with the necessary knowledge and skills for energy transition is recognized across all surveyed countries (see Table 18).

Almost all respondents consider education essential, particularly in India, where 77% of respondents hold this view. In countries such as Italy (43%), the UK (56%), the USA (56%) and Turkey (45%), despite recognizing the need for more training, a lower proportion of respondents attribute a high level of importance to the development of dedicated educational programs. This evidence is also observed in Azerbaijan (49%) and especially in Kazakhstan (32%).

This result emphasizes, particularly in Kazakhstan the need to effectively communicate the value and importance of such initiatives, which can help increase the perceived importance of these programs and support successful energy transition efforts in these countries.

"Indeed, people who are trained on technologies and processes related to the energy transition that will be necessary in the next years, can position themselves in the labour market - internal and external – competing with populations of countries that have already implemented the energy transition"

Top Manager Kazakhstan

Table 19 Reliable sources on energy transition

P0. Which sources do you consider reliable for information on energy transition?
Base: Total Sample - % Values
Countries surveyed in 2024

Higher values
Lower values

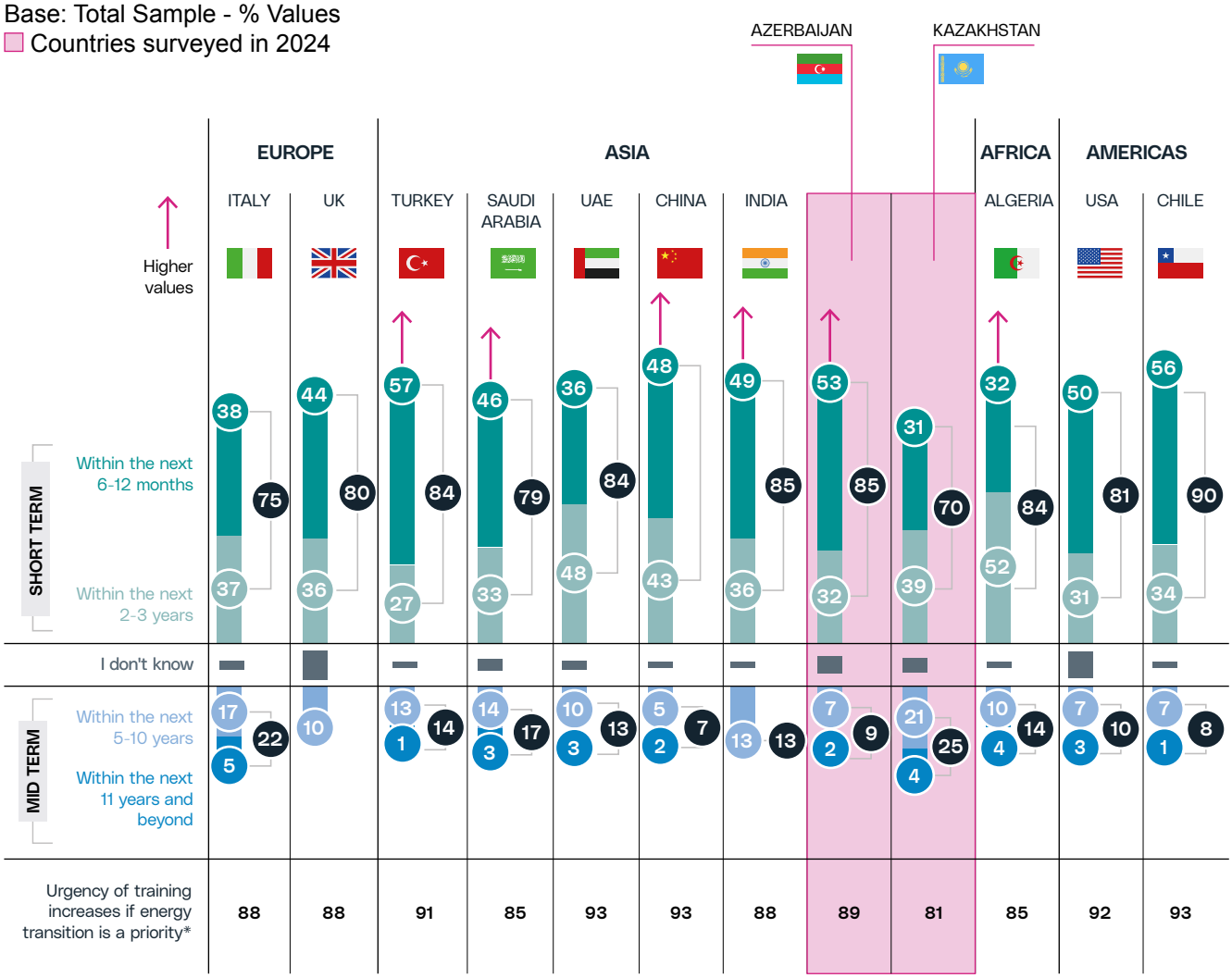
	EUROPE		ASIA					AZERBAIJAN	KAZAKHSTAN	AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA			ALGERIA	USA	CHILE
Specialised magazines	43	35	19	49	44	56	55	14	25	41	29	44
Academic publications/articles	37	51	69	47	44	53	53	45	57	48	49	58
TV	35	38	24	47	51	50	73	48	57	40	40	51
National newspaper	33	42	20	45	47	49	73	30	10	29	44	37
Websites	31	35	36	31	31	46	59	49	46	53	42	43
None of these	6	11	3	1	0	1	1	1	1	0	9	0

Overall, academic research and television are considered the most reliable sources of information on energy transition.
In Azerbaijan and especially in Kazakhstan, these are the two most effective sources of information on energy transition, alongside websites.

On the other hand, specialized magazines and national newspapers are viewed as the least effective touchpoints in Azerbaijan and Kazakhstan.

Table 20 Timing of training in energy transition

Q12_1. Considering the current situation in your country, when do you think training for those involved in energy transition should take place?
Base: Total Sample - % Values
Countries surveyed in 2024



In general, most respondents prefer to receive training within the next 6-12 months (45% on average, Table 20).
In Azerbaijan, more than half of the respondents agree on the necessity of implementing educational programs in the short term (53% within the year). This sense of urgency is shared by respondents in Turkey, Chile, China, India, and the USA, where a significant majority (one in two respondents) also see the need for immediate education and training initiatives.
On the other hand, Kazakhstan aligns more with Algeria and the UAE in considering a slightly longer timeframe (2-3 years) for implementing these programs. About one in three believes that training for those involved in the energy transition should take place in the next year, and 39% believe it's more realistic to schedule these trainings in the next 2-3 years, and one-in-five prefers even in the next 5-10 years.

The importance of energy transition is closely linked to the perceived urgency of education and training initiatives. Indeed, in line with the results from other countries, there is also an increased sense of urgency for education in the short term in both Kazakhstan and Azerbaijan among those who consider energy transition as a priority.

Table 21 Competence requirements for energy transition

Q8_1. In your opinion, when it comes to training those involved in energy transition...
Base: Total Sample - % Values
Countries surveyed in 2024

The most mentioned options for each country are highlighted

	EUROPE		ASIA							AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA	AZERBAIJAN	KAZAKHSTAN	ALGERIA	USA	CHILE
Technical knowledge is more important than personal skills and qualities	37	28	37	45	48	23	51	31	23	25	33	32
Technical knowledge and personal skills are equally important	61	69	60	51	49	76	48	61	75	73	62	67
Technical knowledge is less important than personal skills	2	3	3	4	3	1	1	8	2	2	5	1
MOST REQUIRED Technical Knowledge	Impact on the region	Environ-mental impact	Renewable energy sources	Renewable energy sources	Environ-mental impact	Renewable/ recycled raw materials	Recycling/ circular economy	Environ-mental impact	Environ-mental impact	Renewable energy sources	Environ-mental impact	Impact on the region
MOST REQUIRED Personal skill	Problem-solving Multidi-sciplinary approach	Critical thinking Creativity	Problem-solving	Problem-solving Creativity	Creativity	Problem-solving	Creativity	Problem-solving	Critical thinking	Creativity	Problem-solving	Problem-solving

According to the data from Table 21, both technical knowledge and personal skills are viewed as equally crucial in the majority of surveyed countries. In Azerbaijan (31%) and Kazakhstan (23%), there is a slight tilt towards technical knowledge, similar to that of European and American countries, as well as Algeria, Turkey, and China.

However, in both these countries, similar to others, there is a strong recognition of the need for a balance between hard and soft skills. Future professionals in the energy transition process need to be well-rounded, possessing not just technical expertise but also soft skills. This balanced skill set will be crucial in effectively driving the energy transition process.

Table 22 Soft skills for energy transition

Q9_1. What are the most important personal skills for those involved in energy transition?
Base: Total Sample - % Values
Countries surveyed in 2024

The most/least mentioned options for each country are highlighted

% 1°+2nd+3rd positions - Positioning (1°)

Ranked on Italy

	EUROPE		ASIA					AZERBAIJAN	KAZAKHSTAN	AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA			ALGERIA	USA	CHILE
Problem-solving skills	46	43	59	47	38	56	37	62	58	48	52	50
A multidisciplinary approach	45	33	34	30	27	45	32	33	34	31	35	43
Critical thinking and analytical skills	43	52	34	25	38	33	38	29	68	27	40	31
Creativity and innovation	37	51	47	48	63	54	43	42	30	69	42	45
Flexibility and adaptability	33	38	23	40	36	37	39	38	33	39	40	35
Teamwork skills	27	30	50	37	34	37	36	45	37	49	30	38
Emotional intelligence	25	15	15	17	17	7	26	19	9	5	16	24
Communication and networking skills	23	28	25	29	33	23	32	22	22	19	32	25
Fluency in the English language	20	10	13	27	13	10	20	11	9	13	16	9

In general, problem-solving skills are seen as the most crucial across all countries (Table 22).
In Azerbaijan (62%), problem-solving skills rank as the most important (as they do in Italy, Turkey, Saudi Arabia, China, the USA, and Chile). This aligns with the general trend and further emphasizes the complex and multifaceted nature of energy transition, which requires the ability to tackle challenges and find effective solutions through teamwork skills, creativity and innovation.

In Kazakhstan, the most crucial personal skills relate to critical thinking and analytical skills, mentioned by 68% of respondents, the highest score compared to all other countries. Problem solving skills (58%) are the second most mentioned ones. Other important personal skills identified include creativity and innovation, critical thinking (ranked first in Kazakhstan), and teamwork skills (second mentioned in Azerbaijan).
Empathy (emotional intelligence) and language skills are still considered the least relevant competences, as in the case in all the other countries.

"It is not enough to know how to do things, but it is also necessary to be able to explain them, to communicate them correctly to others and this also involves the need to have an open mindset which leads to the use of new processes that - in a heterogeneous world - must be adapted to the country where you are"

Top Manager Kazakhstan

Table 23 Technical knowledge requirements for energy transition soft skills for energy transition

Q8_2. What are main technical knowledge requirements for those involved in energy transition?
Base: Total Sample - % Values
Countries surveyed in 2024

The most/least mentioned options for each country are highlighted

% 1°+2nd+3rd positions - Positioning (1°)

Ranked on Italy

	EUROPE		ASIA					AZERBAIJAN	KAZAKHSTAN	AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA			ALGERIA	USA	CHILE
Analyse and assess the impact on the region	42	27	35	27	29	26	27	28	39	32	33	39
Understanding environmental issues and analyse and assess their environmental impact	37	46	33	29	41	39	33	53	44	45	46	36
Knowledge of various renewable energy sources	37	41	39	39	39	32	37	37	27	47	33	35
Knowledge of alternative renewable raw materials and recycled materials to substitute traditional materials	36	38	35	33	29	48	36	35	27	44	37	37
Knowledge of regulatory frameworks	31	19	21	23	11	14	25	20	26	8	19	25
Knowledge of sustainability issues, ESG principles, and sustainable design criteria	30	31	27	35	33	36	33	18	34	32	29	26
Knowledge of techn. issues related to recycling and circular economy	23	33	27	33	30	39	40	39	36	25	35	26
Manage the economic sustainability of projects	22	27	24	31	33	26	23	24	25	26	24	25
Manage economic resources in a fair and inclusive manner	22	16	31	28	35	25	25	29	23	27	26	25
Sensitivity to social issues and the ability to analyse and assess their impact on society	21	22	27	22	19	17	25	18	19	13	22	27

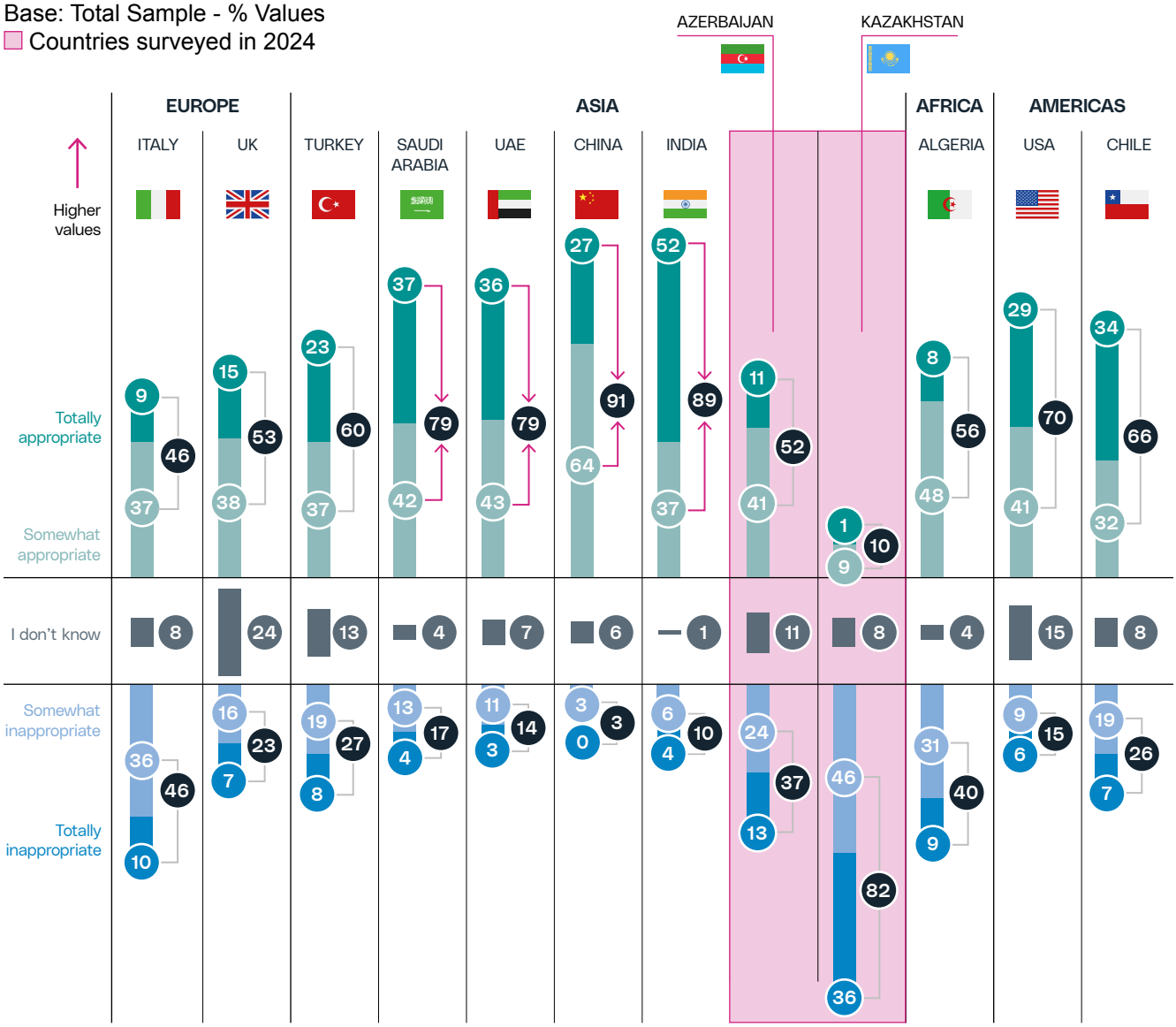
The main technical knowledge requirements include the analysis of environmental issues and the assessment of their environmental impact (40% on average). This trend is particularly pronounced in Azerbaijan (53%) and Kazakhstan (44%).
In Kazakhstan, 39% of respondents consider the ability to analyze the impact of the energy transition on the region as crucial, which is a technical skill also important in Italy, Turkey, and Chile. Additionally, knowledge of ESG and circular economy principles is deemed essential by 34% of respondents in Kazakhstan, similar to views in Saudi Arabia and China. In Azerbaijan, as well as in China, India, Kazakhstan, and the USA, competences related to renewable energy sources (37%) and raw materials (35%) are significant (Table 23).

"An overall – yet specific – assessment of the Kazakhstani context is necessary, as the actions currently implemented are already traditional, even in the green field. For example, it is important to assess how we should build a solar plant, using the knowledge of other countries, but leveraging the specific context of Kazakhstan, considering what is already present and working well"

Top Manager Kazakhstan

Table 24 Availability of energy transition professionals

Q10. How would you rate the availability of technical professionals with skills for energy transition in your country?
Base: Total Sample - % Values
Countries surveyed in 2024



In Azerbaijan, as in Italy, the UK, Turkey, and Algeria, there is room for improvement regarding the availability of technical professionals with energy transition skills. A significant portion of respondents (37%) consider this availability inadequate, while one in ten respondents believes it to be totally appropriate and four in ten as somewhat appropriate. In Kazakhstan, the situation appears even more critical, with only 10% considering the availability of technical professionals adequate, suggesting a significant gap between the demand for and supply of qualified professionals in the energy transition sector. The vast majority, 82%, evaluate the availability of technical professionals as inappropriate. These results for Azerbaijan, and especially in Kazakhstan, emphasize the importance of investing in education and training initiatives to cultivate necessary skills and expertise for the energy transition process.

"It is also important that the local workforce needed for the development of the business in Kazakhstan be supported by local experts otherwise there will be the same problem that occured during the first energy transition (in the exploration of traditional energies) when expats experts were employed - also at a high price - with a disadvantage for the local population that had to cover less skilled jobs"

Top Manager Kazakhstan

Table 25 Key player for training of those involved in energy transition

Q9.2. Who should be responsible for training those involved in energy transition?
Base: Total Sample - % Values
Countries surveyed in 2024

The most mentioned options for each country are highlighted

Ranked on Italy

	EUROPE		ASIA					AZERBAIJAN	KAZAKHSTAN	AFRICA	AMERICAS	
	ITALY	UK	TURKEY	SAUDI ARABIA	UAE	CHINA	INDIA			ALGERIA	USA	CHILE
Public research and development centers	53	57	46	58	66	49	66	67	37	75	54	48
Government responsible for energy policies	52	67	53	56	58	79	71	63	67	56	60	60
Private energy sector companies	43	49	17	49	39	34	61	33	17	26	41	45
Universities	42	44	49	49	47	42	46	32	43	71	41	50
Private company research and development centers	32	46	30	42	46	30	61	30	19	36	43	42
Professional sector associations	15	35	26	25	19	50	42	20	32	21	31	24
Foundations	3	10	6	13	11	5	17	7	5	12	11	8

The government (62% on average), public research and development centers (57%), along with Universities are perceived as the primary sources responsible for providing such training.
Specifically, in Azerbaijan, public research and development centers (67%) and the government (63%) are considered top players, with an equal level of responsibility for providing trainings. Private energy sector companies, universities, and private company research and development centers follow, mentioned by one-in-three respondents.

"The main responsibility would lie with the authorities, the companies, and the agencies who commission these kind of training processes"

Academic Azerbaijan

In Kazakhstan, the government responsible for energy policies is acknowledged as the main responsible party, mentioned by two-in-three respondents, followed by Universities, and public research and development centers (about four-in ten respondents).

In both countries, foundations are seen as responsible for training by only a few respondents.

3 CLOSING REMARKS

In the future, Fondazione MAIRE – ETS will increase the perimeter and view of the research every year, including in the panel new countries in different continents.
Some countries will also be monitored with sample-proof surveys, to observe and measure the change in attitudes and opinions during the time.

Year by year we will grow in worldwide extension and in the richness of comparison among countries and among geographical areas.

This effort will bring consistency to the commitment of Fondazione MAIRE – ETS in promoting initiatives to support the creation of skills and competence in the energy transition worldwide, directly and through partnerships with Universities, Schools, Institutions and specialized NGOs as also SDG17 is suggesting.

We believe that a stronger effort needs to be done at an international level to promote new courses on these themes in schools and universities, to increase opportunities of scholarships for students, to develop initiatives to involve younger students on this argument starting from high schools, attracting more and more women into the energy sector.

Fondazione MAIRE – ETS is supporting several projects in the area of education also with a particular focus on educational poverty and gender inclusion.

We can help countries like Azerbaijan and Kazakhstan - as also many other countries where we operate - to train and build those kind of skills that the countries themselves are requiring, like problem solving and creative thinking. The capability to solve problems that are not yet been solved; to create economically feasible engineering solutions to environmental issues; to foresee aspects that now are not yet clear; to deal with complexity, are all aspects that we can help develop, in partnership with universities and through cooperation with local Energy and Chemical companies.

New professional profiles - such as hydrogen industries architect and production engineers, material recycling and circular economy engineers, carbon capture and utilization engineers, data analyst and financial modeling engineers, regulatory and international sustainable engineers - are requested by the market to help energy transition develop. Competences and skills that make it possible to “engineering ideas” for a sustainable future are those that our Fondazione MAIRE – ETS and MAIRE Group are advocating and contributing to being created.

The view deriving from this research will also help the MAIRE Group’s commitment worldwide to promote the knowledge and diffusion of sustainable technology solutions for decarbonization and circularity, increasing the penetration of enabling technologies for the manufacture of low carbon and circular products in the sectors of agriculture, mobility and plastics, in an increasing number of geographies.

Helping the growth of a skilled portion of industry and society on the themes related to the energy transition and promoting the growth of the number, scale and effectiveness of enabling technologies available for the reduction of GHG emissions and mitigation of climate change and for the switch from a linear to a circular economy: this is what the Fondazione MAIRE – ETS, together with Tecnimont and NextChem and the MAIRE Group believe being a concrete way to give a solid contribution to this enormous challenge.

Let’s make climate goals happen!

4 METHODOLOGICAL NOTE

4.1 Questionnaire structure and flow

To achieve the research objectives, a structured questionnaire consisting of closed and pre-coded questions has been prepared.
The questions are formulated clearly and unambiguously to allow respondents to answer easily. They have been ordered in a way that doesn't influence the responses, with rotations between question items provided to avoid response bias.

The flow of the interview can be summarized as follows:

» Collection of socio-demographic data to ensure proper sample selection;
» Assessment of perception of the energy transition to define the context and measure the levels of knowledge and perceived importance of the concept;
» Identification of the critical success factors of the energy transition, to introduce and measure the level of importance of training and education, understand the skills required for future industry operators, and realize the urgency of dedicated training programs;
» Evaluation of the commitment of governments and companies to the energy transition process;
» Collection of additional information useful for final profiling.

4.2 Sample and methodology: target population

During wave 2, a total of 300 interviews were conducted across 2 countries: Azerbaijan and Kazakhstan.

The target population was chosen based on socio-demographic characteristics, with a focus on those employed and who have a high level of education. In addition, attitudinal characteristics were also considered. We aimed to identify individuals who were the most active and aware of environmental sustainability issues. This was done through profiling questions related to sustainability clusters (see the following paragraph).

The sampling was carried out based on quotas for gender, age groups, geographical macro-areas, education levels, and employment status. The interviews were conducted using the online CAWI (Computer Assisted Web Interviewing) methodology via Ipsos' proprietary panel, IIS (Ipsos Interactive Services). The average length of an interview was approximately 16 minutes. The interviews were conducted in July 2024 (see Table 1).

Table 1 Population target, sample, methodology and period of fieldwork

TARGET POPULATION	METHODOLOGY	NUMBER OF INTERVIEW	PERIOD OF FIELDWORK
Population with a **high level of education**, **employed**, **concerned and engaged** for environement*	Online quantitative survey (**CAWI**)	**2 countries, 300 interviews** AZERBAIJAN KAZAKHSTAN	15-31 July 2024

4.3 Sample and methodology: target opinion leaders

Alongside the quantitative phase (involving 300 interviews with a highly educated population), 2 individual interviews were conducted across 2 countries (Azerbaijan and Kazakhstan) with Key Opinion Leaders among sustainability and energy transition experts, selected from different targets: academics, institutions, and top managers of private companies.

The interviews were conducted via telephone and the online platform Teams by qualified psychologists. The average duration of the interviews was approximately 60 minutes, and they took place in September 2023 (see Table 3)

Table 2 KOL target, sample, methodology and period of fieldwork

TARGHET KOL	METHODOLOGY	NUMBER OF INTERVIEW	PERIOD OF FIELDWORK
University and **business association**	Telephone qualitative interviews (**CATI**)	**2 countries, 2 in-depth interviews** AZERBAIJAN KAZAKHSTAN	September 2024

FONDAZIONE MAIRE

Fondazione MAIRE – ETS is the corporate foundation of MAIRE Group. Established in 2021 as a non-profit organization, it is registered within RUNTS in 2024, acquiring the additional qualification of Ente del Terzo Settore.
The Fondazione MAIRE – ETS has defined as its own mission to foster the training of tomorrow's "*humanist engineers*" who will be able to apply their broad vision and multidisciplinary knowledge to contribute to the energy and digital transition. The foundation carries out projects to provide training and combat educational poverty together with schools, universities and other third sector players. In this perimeter the foundation sustains projects which aim to grant equitable access to educational opportunities, with a focus on contexts of social marginalization.
Fondazione MAIRE – ETS also manages the historical archives of the MAIRE Group, a precious documentary heritage of Italian projects in engineering and architecture, seeing to their preservation and promoting greater awareness of them and their use by an ever-widening public leveraging art and culture as a means of communication.
For further information: www.fondazionemaire.com.

MAIRE

MAIRE is a leading technology and engineering group focused on advancing the energy transition. The Group provides Integrated E&C Solutions for the downstream market and Sustainable Technology Solutions, the latter through three business lines: sustainable fertilizers, low-carbon energy vectors, and circular solutions. With operations across 45 countries, MAIRE employs over 9,300 people, supported by a global network of 20,000 project partners. MAIRE is listed on the Milan Stock Exchange (ticker "MAIRE").
For further information: www.groupmaire.com.

TECNIMONT

TECNIMONT is MAIRE's company dedicated to Integrated E&C Solutions. Thanks to its roots, dating back to the pioneers of Italian engineering, and the long experience gained through the management of large integrated projects, TECNIMONT is a leading global contractor for highly complex plants for the natural resources transformation industry. TECNIMONT's expertise in realizing mega Projects all over the world has positioned the company among the top-notch players, with outstanding references in the management of large integrated turn-key complex projects by acting as the EPC contractor for the Client. TECNIMONT is a top-class safety performer. An impressive track record, continuously confirming Zero Incident target, is sound evidence of its outstanding commitment to Safety all over the world.

NEXTCHEM

NEXTCHEM is MAIRE's company dedicated to Sustainable Technology Solutions. Thanks to the extensive know-how of nitrogen, hydrogen, carbon capture, fuels, chemicals and polymers, we offer innovative solutions and processes to fully enable the energy transition. Its technology solutions are designed to make the energy transition happen by slashing the environmental impact of traditional industries, leveraging consolidated know-how in hydrogen and carbon-capture technologies, transforming waste into valuable resources like chemicals, fuels, and recycled plastic, finding new processes from non-fossil feedstock.

NOTES

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