International Network on African Energy Transition Inaugural Conference

Luiss University, Rome, 16-17 November 2023

REPORT

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Preface

On 16-17 November 2023, Luiss University and Eni organized in Rome the inaugural conference of the International Network on African Energy Transition (INAET), with the purpose of establishing a permanent and open network of experts, institutions, private sector and civil society on the energy transition in Africa. The network aims to contribute to the identification of innovative solutions for the sustainable development of the African continent, taking into due account the priorities and approaches of all parties. Africa's energy transition is acknowledged as a complex process which encompasses diverse challenges and trade-offs. Therefore, it should be addressed with a holistic and multi-level approach which takes into consideration different stakeholders and enhances the specificities of the African countries' decarbonization pathways. Africa is indeed defining its own paths to a sustainable energy future, which are inevitably different from those planned in Europe and the most advanced economies. The first Africa Climate Summit held in Nairobi in September 2023 demonstrates the continent's intention to forge a common position on climate and energy transition, overcoming diverging country-specific needs and approaches. The resulting adoption of the Nairobi Declaration on Climate Change enabled Africa's countries to point out a consistent set of messages for the international community ahead of COP28. The Africa Climate Summit also launched the Accelerated Partnership for Renewables in Africa (APRA) announcing that Kenya, Ethiopia, Namibia, Rwanda, Sierra Leone and Zimbabwe - countries with ambitious renewable agendas - are partnering to accelerate renewables on the continent and pursue green industrialization; this partnership is supported by Denmark, Germany, and the United Arab Emirates. Africa is aware of the crucial role it plays in addressing the pressing issue of the global energy transition and how its ever-stronger negotiating power leads to the establishment of new partnerships beyond the traditional ones. The network aims at improving mutual awareness and make Africa's perspectives and priorities fully understood by Italians and Europeans decision makers, scholars, companies and key stakeholders. To this end, university, research center, and think thank representatives from Algeria, Côte d'Ivoire, Egypt, Ethiopia, Kenya, Mozambique, Nigeria, Republic of Congo, Rwanda, South Africa, Tunisia and Italy attended the conference in Rome, together with official representatives from the UN, FAO, IMF, IRENA, the EU and the Italian Government.

INAET aims to advocate for Africa's energy transition process and serves as a catalyst for the urgent and transformative actions required, that should emerge from an open and inclusive dialogue based

on a bottom-up approach. To this end, it is relevant to recognize that a paradigm shift and pragmatic and realistic solutions are needed to address the energy transition trade-offs, which can be simplified into the so-called energy trilemma (how to balance energy security, energy equality and environmental sustainability). The conference is the kickoff of a permanent platform of African energy transition experts willing to exchange knowledge and expertise to increase awareness and promote effective and impactful synergies. To further stimulate the debate on Africa's energy transition and contributing to share Africa's perspectives outside the continent, this report synthesizes the outputs of the conference and the topics addressed by the various speakers, thus presenting a foundational INAET document to lay the ground for future initiatives.

Executive Summary

Acknowledging climate change impact on Africa and emphasizing the need for adaptation plans

Africa is disproportionately affected by climate change compared to the rest of the world, but this impact varies from country to country. It is crucial to acknowledge the dire consequences experienced by the Africa countries in order to urgently scale up adaptation actions specific to each area, in addition to and in synergy with mitigation measures.

Africa's development intertwined challenges: energy for sustainable urbanisation and clean cooking

Achieving the UNSDG's poses several challenges which are closely intertwined with the access to a modern, clean and affordable energy, especially in Africa which is currently facing an unprecedented urbanisation and widespread lack of clean cooking: energy transition, in this context, is a solution for a sustainable development path for the Continent.

Africa's development intertwined challenges: the nexus between energy, water and food security

Food and water security is the overriding development challenge for the whole African continent. Again, the energy transition can be an opportunity to sustainably improve the agricultural system and productivity, ensure access to water and fight hunger. To this end, solutions to be adopted need to consider the so-called Water-Energy-Food Nexus and Water-Energy-Food&Ecosystem Nexus.

Endorsing Africa's vision on resources management

Looking at the limits defined by the Paris Agreements, the IPCC scenarios and the recent COP Dubai decisions, the carbon budget consistent with keeping the increase of global temperatures below 1.5°C is now small and being rapidly depleted, requiring a rapid decrease of greenhouse gas emissions. On the other hand, Africa needs ensuring energy access and meeting the growing need for energy. To balance these needs, it is necessary to prioritize Africa's perspectives and acknowledge the complexity and peculiarities of each country while attempting to forge innovative and feasible solutions to achieve the zero emissions goal.

Prioritising a people-centred renewable energy system

Africa is at the centre of international interest when it comes to energy transition for its tremendous potential of renewable energy and its abundance of critical minerals used in the transition technologies. To fully profit from this new geopolitical position and develop a renewable system that meets African needs and priorities, it is imperative - whether we are talking about off-grid, mining or biofuels - to maintain a holistic, multi-level approach by putting the needs of communities first.

Involving and benefiting the most vulnerable

To achieve a just energy transition that leaves none behind, all necessary actions must be implemented to avoid exacerbating existing inequalities and, above all, to enable the most vulnerable groups to benefit from the transition. To this end, all stakeholders - especially the most marginalised - affected by energy initiatives must be adequately engaged and informed, while respecting the principles of distributive, procedural and recognition justice. In this sense, empowerment and capacity building projects that enable the most vulnerable groups to gain decision-making power are key.

Boosting climate finance and fostering international private investment

As widely acknowledged by the international community, Africa's energy transition can only be achieved through a substantial transfer of resources from most advanced economies and massive investments from the international private sector. In this context, multilateral development banks and financial institutions play a crucial role in enabling investments, as well as national and regional African institutions in creating the appropriate regulatory framework.

Acknowledging climate change impact on Africa and emphasizing the need for adaptation plans

Although Africa's contribution to global CO_2 emissions is extremely low - with less than 4% of the global cumulative emissions from 1890 to present – the continent is probably the world's most vulnerable to climate change. Key development sectors have already experienced widespread losses and damages due to human-induced climate change, since exposure and vulnerability in Africa intersect with socioeconomic, political and environmental factors. The IPCC Sixth Assessment Report warns that widespread droughts, heat waves, floods and other extreme climate hazards are expected to increasingly affect the continent with several related catastrophic impacts, including reduced crop yields and productivity, increased water stress, threats to livestock production, increased range and transmission of infectious diseases, expanded biodiversity loss, etc[1]. The impact of climate change varies across countries and even within each country; it is indeed higher in the poorest areas of the continent, where people already live in precarious conditions, although, climate change places at risk health, livelihoods, food security, water supply, human security and economic growth of the whole continent. The social groups most affected are the millions of African smallholder farmers and the people who live in the informal settlements or slums in cities, with the latter representing an estimated 60 percent of the population in sub-Saharan Africa[2]. Even the larger economies are severely affected. For instance, Nigeria experienced in 2022 the worst floods in a decade which killed more than 600 people and affected half a million people including 2.6 million children[3]. Moreover, estimates shows that the drylands areas of Africa - home to two-fifths of the continent's population and including three-fifths of the total farming land - are warming at twice the rate of the global average, exacerbating the occurrence of intense droughts[4]. The arid and semi-arid area of the Horn of Africa is indeed suffering since 2020 the worst drought in 40 years which decimated over 13 million head of livestock. Because of the extreme climate vulnerability of the area, the drought left 23.4 million people in acutely food insecurity and 5.1 million children acutely malnourished; in addition, an estimated 2.7 million people have been displaced and 180,000

[1] Trisos, C.H., I.O. Adelekan, E. Totin, A. Ayanlade, J. Efitre, A. Gemeda, K. Kalaba, C. Lennard, C. Masao, Y. Mgaya, G. Ngaruiya, D. Olago, N.P. Simpson, and S. Zakieldeen, 2022, *Africa*. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability*, Contribution of Working Group II to the Sixth Assessment Report of the IPCC, Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 1285–1455.

[2] GCA, 2021, *State and Trends in Adaptation Report 2021. How Adaptation can make Africa Safer, Greener and More Prosperous in a Warming World*, Rotterdam, The Netherlands.

[3] UNICEF, 2022, *Nigeria. Emergency food response*.

[4] IPCC, 2018, *Global Warming of 1.5°C. Intergovernmental Panel on Climate Change*, Geneva, Switzerland.

refugees have left Somalia and South Sudan for Kenya and Ethiopia[5]. As for climate migrants' issue is concerned, the World Bank 2021 Groundswell report predicts that by 2050, Africa could see 105 million internal climate migrants of which 85.7 million in the Sub-Saharan region[6]. Droughts have also severely affected the Maghreb, especially since 2015, hitting cereal production and water resources available to natural ecosystems. Some tools are available to mitigate the effects of drought, but they are not equally available across the region.[7] Extreme weather and flooding have also hit North Africa, causing local disasters such as the one in Derna and across Eastern Libya in September.

Climate change is projected to affect Africa's near-term development and poverty reduction goals, as well as the long-term continent growth, causing a loss from 2% to 4% in terms of annual GDP by 2040. Even if global mitigation actions succeed in keeping global warming below 2°C, the continent is expected to face adaptation costs of $50 billion per year by 2050[8]. Although it is clear and widely acknowledged – both by the African governments and by relevant international players - that adaptation actions are an absolute priority, current adaptation flows to the continent account only for 24% of total climate finance needs, and adaptation costs are predicted to rapidly grow due to global warming. The estimated funding needed for African countries' NDCs from 2020 to 2030 is approximately $2.8 trillion, which represents over 93% of African GDP; African governments have committed $264 billion to finance the implementation of their respective NDCs, accounting for 10% of the total estimated costs for implementation[9]. The remaining amount is expected to come from the international community and the private sector, but to this end – as further explored below – a reform of the Multilateral Development Banks' system, additional measures to de-risk private capital, new partnerships and an enabling legal and normative framework are required.

The Africa Adaptation Acceleration Program (AAAP) is the Africa-owned and Africa-led response to the continent's needs related to vulnerability reduction as well as economic growth opportunities that result from effective climate adaptation actions. The AAAP aims to accelerate adaptation actions especially in four priority areas: food security, resilient infrastructure, youth entrepreneurship and

[5] WFO, 2023, *Drought in the Horn of Africa. Situation update, July 2023*.
[6] Clement, Viviane, Kanta Kumari Rigaud, Alex de Sherbinin, Bryan Jones, Susana Adamo, Jacob Schewe, Nian Sadiq, and Elham Shabahat, 2021. *Groundswell Part 2: Acting on Internal Climate Migration*, Washington, DC.
[7] FAO, Drought in the Maghreb Region: Diagnosis, Impacts, and Perspectives for Strengthening the Resilience of the Agricultural Sector, 2023
[8] GCA, 2021, ivi.
[9] Tiangoua Kone, Climate Promise Regional Coordinator for Africa, 2023, For Africa to meet its climate goals, finance is essential, UNDP blog posts.

job creation, and innovative climate adaptation finance[10]. At the same time, the much needed efforts on adaptation should not leave behind the mitigation measures, since rapid and decisive greenhouse gas emissions reduction strategies are crucial in avoiding the high-warming scenarios and the associated socio-economic costs, taking also into consideration Africa's fast-growing population and strong urbanization rate, resulting in an increase of CO_2 emissions. Looking at the closely intertwined and interconnected nature of climate change and energy – energy can be seen as both the cause and the solution of global warming - efforts must be undertaken to reduce Africa's vulnerability, restore climate damages and adopt energy decisions that can help reverse the global CO_2 emissions trend, first and foremost for the African continent's future.

[10] AU, AAI, AfDB, GCA, 2022, *Africa Adaptation Acceleration Program*.

Africa's development intertwined challenges: energy for sustainable urbanisation and clean cooking

Africa is committed to promote a sustainable development path that is consistent with the African Union (AU) Agenda 2063, the United Nations Agenda 2030 for Sustainable Development and the commitments made under the Paris Agreement. To this end, the energy transition offers the unique opportunity to holistically address different development needs, as energy is a key enabler for the achievement of all SGDs. Urbanisation is certainly one of the development challenges more closely related to the energy debate. Africa's urban population is expected to triple by 2050, in a context where most of the people still live in unimproved housing and face various challenges such as the lack of infrastructure and reliable power grid, high levels of poverty, unemployment and low living standards. Nevertheless, about 60% of the built-up area that African cities will need has not yet been built and this represents a unique opportunity for African countries to take advantage of the energy transition to create resilient and sustainable cities and infrastructure. The way in which African cities will develop is a determining factor in achieving mitigation and adaptation objectives and the SDGs. Therefore, there is a global interest in ensuring that Africa urbanises sustainably, by at the same time stimulating industrialisation, employment and ultimately ensuring a good quality of life for the urban population, starting with access to reliable and affordable energy. Beyond the expansion of metropolises, the rapid development of African intermediary cities - urban areas from 50.000 to 1 million inhabitant – is reshaping the traditional urbanization narrative, with villages experiencing an unexpected and remarkably swift urbanization process. Such intermediary cities play a crucial role in regional development and are expected to contribute to industrialisation through the development of micro, small and medium enterprises in manufacturing and services. In dealing with the urbanisation issue, it is vital to consider the distinct perspectives of each city and actively involve the local communities to ensure that the voices of the African cities are heard especially within the dedicated international forum, such as Local Governments for Sustainability (ICLEI) or the Global Parliament of Majors.

Developing Africa's energy system and ensuring clean cooking and access to affordable and reliable energy to the 600 million African people without access to electricity is an essential condition for the achievement of all SDGs, especially in terms of poverty reduction and food security. About 990 million people in sub-Saharan Africa had no access to a clean cooking facility in 2022. IRENA predicts 130 million Africans to have access to a clean cooking each year between 2022 and 2030, about 10%

of the current African population[11]. The reliance on wood, charcoal and other biomass for cooking dramatically damages health and compromises productivity, affecting women and children disproportionately. In 2019, more than 600,000 people in Africa died prematurely from exposure to household air pollution caused by the inefficient combustion of biomass leading to high releases of methane and other GHGs[12]. Furthermore, gathering firewood and charcoal means that households - mostly women - spend up to 60 hours a month in collection, pursuing a practice that involves unsustainable harvesting and contributes to deforestation and land degradation, further increasing the impact on the climate.[13] In this context, switching from the traditional use of biomass to cleaner options faces economic, infrastructural and cultural barriers, among which the lack of access to reliable power supply and the cost of electricity are the most common. As for affordability, many companies have adopted the PayGo business model as a solution to manage and spread upfront costs for solar home systems, recovering costs through rate payments. Moreover, governments have supported clean cooking programmes focused on providing stoves for free or at reduced prices, yet they have been hindered by the lack of training on the benefits of using clean cooking stoves, higher fuel prices and supply issues. In terms of policy designing and implementation, the cooking sector has been treated separately to other energy access initiatives so far; instead, investments for electricity access should be instead always encompass the enduring clean cooking issue, to avoid that, even among those who have access to energy, only a small minority make the transition to clean cooking systems. Electric cooking is likely to remain even more limited in rural households not reached by grid connection and indeed most of the people are expected to gain access to clean cooking using improved biomass cook stoves which avoids the need to build new supply chains. Based on IRENA forecast for 2022-2030, one-third of the people are expected to gain fist clean cooking access via LPG, especially in urban areas, 10% via electricity, 10% via biogas and 6% via ethanol[14]. Again, affordability is the main reason which might force people to revert to traditional biomass fuels, considering the increase in the LPG price in most African countries and the decision of some governments of removing LPG subsidies. Holistic strategies and adequate policies and programmes are needed to overcome these barriers.

[11] IEA, 2022, *Africa Energy Outlook 2022*.
[12] WHO, data available at Household air pollution attributable deaths (who.int).
[13] Ibidem.
[14] IEA, 2022, ivi.

Africa's development intertwined challenges: the nexus between energy, water and food security

Since 2021, the number of people suffering from food insecurity in Africa has increased by more than 57 million especially due to the outbreak of the Covid pandemic. Based on FAO data, more than one-quarter of the population of Africa - 346.6 million people - suffers from severe food insecurity, with Central, Eastern and Western Africa worst affected[15]. Climate change is already hampering progress towards food security, interacting with multiple other constrains and shocks, including inequality and conflict. Changes in the start and end dates of the growing seasons and the frequency and severity of droughts and heavy rainfall caused the most visible impacts on the African food system so far[16]. Even in the 1.5°C scenario, more frequent regional food system distress can be expected, with crops failures across multiple neighbouring countries, food safety breakdowns, price shocks and social upheaval. However, Africa's agricultural exports are rising, and, with 60% of the world's total still unexploited cultivable land, Africa occupies a strategic position to become one of the world leaders in agriculture and agri-food sector. Yet, largely driven by four countries (Nigeria, Angola, Democratic Republic of the Congo and Somalia), the continent currently remains a net food importer, with an annual cost of $43 billion. The last African Union's Biennial Review shows that only 4 of the member countries are on track to achieve the goals of the Malabo Declaration on Accelerated Agricultural Growth by 2025. This goes along with the continent struggle in achieving the SDG 2 (ending hunger in all forms)[17]. In this regard, the Water-Energy-Food Nexus (WEF) is part of FAO's strategy to support food security and sustainable agriculture, while achieving its mandate of eradicating hunger, reducing poverty, and sustainably managing ecosystems. The nexus was also adopted by the SADC as both conceptual and empirical approach to address the regional challenges related to water and food security, development and sustainable natural resources management. The WEF Nexus approach analyses intersectoral connections to identify synergies and circular solutions that reduce negative impacts on the economy, nature and social development and can allow for more efficient and sustainable management of primary resources. For many African countries indeed energy supply projects can be also exploited to improve the agricultural productivity of local farmer, a case in point are the irrigation solutions which uses efficient and cost-effective piston pumps powered by solar panels, generally coupled with drip irrigation kits, as well

[15] FAO, ECA and AUC, 2021, *Africa – Regional Overview of Food Security and Nutrition 2021: Statistics and trends*, Accra, Ghana.
[16] GCA, 2021, ivi.
[17] Ibidem.

as PV shading for horticulture or agrivoltaic and cold storage. The North Africa region, for example, is one of the most affected by water stress and food insecurity, but also where the link between water uses and impacts is most evident and the WEF Nexus can reveal promising business models to respond to several development needs. To further benefit from the WEF Nexus-based projects, some requirements are still missing, including adequate public and private funding schemes, collaboration between stakeholders and designing innovative, viable and scalable solutions and integrated policies addressing the interconnections between water, energy and food systems[18]. A further multidimensional development of this approach is the so-called Water-Energy-Food&Ecosystem Nexus. This new approach looks at the natural and human dimensions in an even more integrated way, recognizing the close links between water, food, energy and ecosystems and the different institutions that regulate them. A holistic vision that integrates relevant factors such as demographic change, urbanisation, industrial and technological development with climate change can help to address urgent emerging problems on the African continent and provide more effective local responses.

[18] Res4Africa Foundation, GIZ, 2023, *Designing innovative solutions for the Water, Energy and Food Nexus*, March.

Endorsing Africa's vision on its resources management

While the energy transition for high-income countries means a progressive reduction in the consumption of fossil fuel, the debate on the African energy mix is way more complex, as many of the sub-Saharan countries are still facing the challenge of energy access. Moreover, a growing population, supply chain disruptions, and the economic consequences of the COVID-19 pandemic have partially reversed the progresses made in the past years towards electrification. Therefore, even assuming an impetuous growth of renewable energy, is important to feed into the discussion the role that could be played by transition fuels, which gained a recognition also in the conclusions of COP28. As recognized also by IEA, natural gas in particular plays a crucial role – together with renewables – in allowing to achieve energy access for all and in expanding African industries. This is indeed reflected in various policy statement. In the African Common Position on Energy Access and Just Transition, for instance, African countries have called for a comprehensive development of all their natural resources, stipulating that "Africa will continue to deploy all forms of its abundant energy resources including renewable and non-renewable energy to address energy demand[19]. Hence, it is expected that the development of renewables - of which Africa has tremendous untapped potential - will take place alongside the exploitation of fossil fuels, first and foremost natural gas. On the subject, the Kigali communique supports Africa deployment of gas as a transition fuel, while acknowledging to prioritize the creation of local jobs in the sustainable energy sector; besides, the Nairobi Declaration reaffirms the African governments commitment to "propelling Africa's economic growth and job creation in a manner that not only limits our own emissions but also aids global decarbonization efforts, by leapfrogging traditional industrial development and fostering green production and supply chains on a global scale"[20]. It is therefore clear that opinions differ on the energy mix African countries should use for their own development paths, especially considering the long-term risks related to the fossil-fuel pathway. As for economic growth and fuels export potential, African governments should thoughtfully consider the competitive advantage in the gas market of those countries who have long time experience in the industry. Furthermore, carbon tax and other measures against fossil fuels are likely to be imposed, putting at risk the future African suppliers of oil and gas. Most importantly, looking at the environmental sustainability of the

[19] AU, 2022, *Africa Speaks with Unified Voice as AU Executive Council Adopts African Common Position on Energy Access and Just Energy Transition*, July.
[20] AU, 2023, *The African leaders Nairobi declaration on climate change and call to action*, September.

non-renewable energy pathway, the IPCC have warned that there is no room for more fossil fuel expansion in keeping the global temperature below 1.5°C.

However, Africa should also be realistic on energy transition. For some countries, like Kenya, net zero targets seem more feasible, but for others such as Nigeria which are not yet exploiting their renewable energy potential and are heavily reliant on oil and gas revenues, the outlook may be different. In this context, the priority is first and foremost to ensure that the whole fossil fuel value chain respects the ecosystem, understood as not only the surrounding environment but also the local communities. Moreover, it is important that oil and gas companies engage ever more effectively with national governments and local communities in the countries where they operate, to promote a more inclusive local development. During the conference, the case of the LADOL Free Zone in Nigeria was presented, as an example of an innovative solution to leverage on the oil and gas industry to boost a fossil fuels dependent country's energy transition pathway. The case of LADOL Free Zone shows how to provide logistical, engineering and other support services for deep water offshore oil and gas exploration, but it represents also the world's first attempt of a Sustainable SEZ. Its mission is to be the first Net-Zero Industrial Complex in Africa by 2035 and attract sustainable international and local industrial companies, thanks to cost savings and bespoke infrastructure; it has been designed to drive outsized social and environmental impact across Nigeria and Africa, by creating and capturing sustainable business opportunities, across energy, healthcare, agriculture and urbanisation.

Prioritising local development through a people-centred renewable energy system

Africa has a vast and untapped renewable energy potential, with more than half of the world's solar resources, as well as great potential for wind, hydro, and geothermal energy. In 2022, Africa's contribution of new renewable power production was less than 6 GW of the nearly 300 GW added globally. In 2021 renewable investment per capita in North America was 179 times higher than in Sub-Saharan Africa and over the past two decades less than 2% of global investment in renewables has flowed to Africa. As suggested by the IRENA's Director General during the conference, the African energy system needs to be developed based on three pillars: physical infrastructure, namely expansion and modernization of grids; new thinking on planning and investments to design bankable projects with the simultaneous development of a regulatory architecture which considers changed dynamics and moves investments in the right direction; and finally, institutional and human capacity building. As for the continent renewable energy system, the Nairobi Declaration reaffirms Africa's ambition to significantly increase its renewable capacity from the current 56 GW to at least 300 GW by 2030, and it calls on the international community to support African countries in achieving this goal. With adequate policies, investments and partnerships, Africa has the unique opportunity to create a modern and sustainable energy system. Indeed, African countries could leapfrog directly to low-carbon energy sources at the top of the energy scale, bypassing some of the fossil fuel phases. In addition to expanding existing networks, the scaling up of renewables requires greater flexibility to ensure that intermittency does not lead to unsustainable and unreliable power systems. Looking at total energy investment in Africa, only the 0.5% was directed to transmission and distribution networks; for instance, between 2010-2020, the 98.2% of the World Bank's electricity infrastructure investments going towards generation and only 0.3% to transmission[21]. Provided that the continent needs massive investment to improve national grids - which grew only by 5% per year between 2019 and 2022 and will need to triple by 2030 under the most ambitious scenarios[22] - the development of decentralized renewable energy systems is also crucial to improve the quality-of-life in rural areas. Off-grid solutions can adequately power schools, small businesses and health facilities and, as mentioned before, contribute to improve the water-energy-food nexus, thanks to solar-powered irrigation systems and biogas generators among others. In this context, energy affordability is a serious constraint, indeed, based on IRENA's forecast, without adequate financial support "around

[21] William Tobin, Maia Sparkman, 2022, *To meet energy security and climate goals, Africa needs investment in infrastructure*, Atlantic Council.
[22] IEA, AfDB, *Financing Clean Energy in Africa*, September 2023.

half of the new electricity access connections providing the most basic energy services are unlikely to be affordable"[23].

Besides affordability, critical minerals supply chains can be considered one of the most significant issues related to the development of renewable energy in Africa. In the context of the global decarbonization acceleration – especially in the aftermath of the Russian-Ukrainian crisis – the increased geopolitical competition toward the continent has been defined a "new scramble for Africa" with reference to the international players' growing interest around the vast African reserves of natural gas, but also toward the significant amounts of critical minerals such as lithium, nickel, cobalt, and copper increasingly needed to produce clean energy technologies, like batteries, fuel cells and supercapacitors. According to the World Bank, production of critical minerals could increase by nearly 500% by 2050 to meet the expected rise in global demand for clean energy technologies. Within the global race for raw materials - where the US and the EU are trying to compete with China to secure their supply of critical minerals and value chains for green technologies - Africa faces two alternative scenarios: existing inequalities, power imbalances and global dependencies, alongside an extractive sector which perpetuates unequal distribution of profits, exacerbates conflict situations and negatively impact job creation and local communities, could be perpetuated; or African states could be able to overcome their current export dependencies in the raw materials sector and promote sustainable local value creation. Africa indeed is home to 30% of the world's critical mineral reserves: the DRC produces 70% of the world's cobalt; Guinea has the world's largest bauxite reserves; Gabon is the world's 2nd largest producer of manganese; Namibia is the world's 2nd largest exporter of uranium ore; South Africa has 90% of world's platinum group metal reserves; Zambia is the world's primary exporter of unrefined copper; Mozambique is the world's 3rd largest producer of graphite; Zimbabwe is world's 3rd largest exporter of chromium ore and Mali accounts for 840,000 tonnes of lithium resources[24]. It is therefore not surprising that international investment in the continent's mining sector is on the rise, and that, at the same time, several African countries are willing to review pre-existing contracts to structure new, more favourable, and cooperative partnerships. In this context, it is crucial to succeed in

[23] Ibidem.
[24] African Ministerial Conference on the Environment, 2023, *Progress in the implementation of decisions of the African Ministerial Conference on the Environment and consideration of emerging environmental issues: critical minerals and their role in energy transitions in Africa*, July 2023.
Mo Ibrahim Foundation, 2023, *Global Africa. Africa in the World and the World in Africa*.

adopting partnership and policies aimed at promoting sustainable mining practices and ensuring appropriate environmental, social, and corporate governance in the mining industry. Mining governance in African states must focus on improving mining conditions from the extraction and processing phases, where risks to human rights, such as possible conflicts with local communities arising from land use in the area surrounding mines, and environment impacts, such as land degradation, deforestation or drinking water and air pollution, are substantial. Many African communities and workers are indeed already being heavily damaged by the extraction of minerals. A case in point is the over 9 million African artisanal and small-scale miners, mainly women who work outside the formal channels of business and run the risk of being exploited by illicit traders. In this regard, the mining sector is adversely affecting communities notably in the DRC, where it has been estimated that 15-30% of all cobalt production comes from artisanal and small-scale mining[25]. Moreover, the report "Powering change or business as usual?" found that in mining city of Kolwezi, multinational mining companies have forcibly evicted communities from their homes and farmlands[26]. To deal with the adverse communities' impact of mining sector strengthening legislation and standards is a priority; indeed, the introduction of legal tools for ensuring due diligence and traceability standards is critical to ensure the human rights respect in the minerals supply chain. However, although many African countries have already established relevant normative frameworks and high standards, there are major problems in enforcing them and understanding how effectively use these tools in practice.

A key priority for African countries is notably to promote value-addition processes directly on the continent, boosting employment and revenues in Africa. To this end African countries are called upon to put in place appropriate industrial and environmental policies to maintain control over the whole value chain of their mineral resources and support a sustainable transformation. Efforts are needed to create the conditions for the development of industrialisation strategies at the national level, also leveraging on greater integration between the different African regional economic communities and at the level of the African Union. Cooperation strategies at the regional level have yet to be fully explored but greater integration efforts, namely the Africa Continental Free Trade Area (AfCFTA), are likely to provide for new critical opportunities. Many African countries are rightfully

[25] Cristian Lanzano, Patience Mususa, 2021, *Mining in Africa: Artisanal and small-scale miners will be the last to reap benefits from world's green shift*, The Nordic Africa Institute.
[26] Amnesty International, 2023, *Powering change or business as usual?* Amnesty International Ltd Peter Benenson House, 1 Easton Street, London WC1X 0DW, UK.

eyeing opportunities to create local transformation industries. As an example, the Democratic Republic of Congo and Zambia in 2020 set up a joint governance structure to create a battery value chain, aiming to refine minerals closer to extraction sites and to assemble electric batteries, adding value locally rather than supplying raw materials to the global market. To this end, the African Development Bank is formulating a green minerals strategy for the African continent with the aim of identifying synergies and linkages across regions to help African countries add value to their extractive sector[27]. When it comes to creating local value chains for green technologies in Africa special attention should be paid at the end-of-life management, especially to batteries which contain harmful materials for both the environment and humans. E-waste accumulation is already a huge problem in Africa which is bound to escalate without a proper management of technology disposal and a circular economy approach. To this end the continent still faces a major lack of technical knowledge, research experience, trained personnel, institutional capacity and financial support.

Many African countries are looking at bioenergy as one of the renewable energy solutions for energy security and energy access. FAO and diverse international companies are assisting these countries in promoting a sustainable bioenergy sector that integrates food security and agricultural needs. A Rwandan best practice was presented during the conference. In 2007 Rwanda started the production of biodiesel to be used in motor vehicles, electrical generators, cooking stoves and lamps in urban, peri urban and rural areas which stopped due to insufficient yields from the plant mainly due to shortage of raw material. In collaboration with Eni, a new agricultural project was launched last year to restart developing a local value chain for the biofuels with the purpose of producing seeds on marginal lands non in competition with food production. The project has seen a pilot phase to test different oil seeds species and to select the ones that showed high yield for the upscaling phase. Castor seed, ground nuts, sunflower and safflower were among the seed tested. Many of the oil seed varieties performed very well, especially castor varieties. Based on these outcomes, in September 2023 Rwanda started the production of castor seeds on 100 hectares which is expected to be exported to other projects of Eni in Africa (e.g., Mozambique, etc.), giving to Rwanda the role of hub for seedlings production. This practice allows to see how strategic production and use of biodiesel is likely to result in sustainable exploitation of African natural resources, environmental conservation and improved health and socio-economic conditions.

[27] ANRC, 2022, *Approach Paper to Guide Preparation of an African Green Minerals Strategy*, African Development Bank, Abidjan, Côte d'Ivoire.

Involving and benefiting the most vulnerable

There is not an universally accepted definition of a just transition, since it is possible to affirm that the socio-economic and geopolitical context plays a crucial role in defining what a just transition is and how to implement it, but it can be said that general it is linked to the concept of an inclusive and sustainable development. To fulfil the "leave no one behind" promise of the 2030 Agenda for Sustainable Development, adequately addressing inequalities is an essential part in dealing with climate impacts and even in implementing energy transition. While this is inevitably valid also for the African continent, it must also recognise different specific priorities concerning Africa's just energy transition, such as African women and young people often overlooked but vital role in driving the transition. The African Union Climate Change and Resilient Development Strategy and Action Plan specifically addresses issues related to equity and justice, acknowledging that climate change has the potential to exacerbate current inequalities and discriminations throughout the continent[28]. Pre-existing inequalities and precarious life conditions of the most vulnerable groups could be neglected or even worsen if not properly considered at all levels. With a view of prioritize the social impact of the energy transition and to ensure that it successfully and effectively responds to the African needs, the local context and perspectives must be fully understood. At this end, proper stakeholders' and communities' information and engagement, throughout the whole energy initiatives process, are necessary in order to adequately consider needs, interests and values especially of the most disadvantaged groups. The respect of procedural, distributional and recognitional justice principles should therefore be always guaranteed, especially to enable the most vulnerable to benefit from the transition and to reduce unintended drawbacks in the transition process. Consultations with stakeholders should be conducted from planning to implementation to monitoring and reporting, and at all levels i.e., national, regional, and local. Sharing information, collective bargaining and negotiation with various groups are part of this process. Moreover, community leaders should be engaged since early stages in the process and marginalized and disempowered groups should have adequate representation, for instance through the involvement of civil society organisations[29]. Raising awareness among the population is also crucial to ensure the success of the transition and requires the implementation of capacity-building actions that can be more easily realised through multi-stakeholder partnerships. In short, for a meaningful impact to be

[28] AU, 2022, *African Union climate change and resilient development strategy and action plan (2022-2023)*.
[29] AfDB, *Connecting Just Transition Theory to Action. Discussion Paper for the African Development Bank's Just Transition Initiative to Address Climate Change in the African Context*.

reached by energy projects, clear and credible principles and appropriate accountability mechanisms must be followed and the improvement in the quality of life of the most vulnerable people must always be assessed.

In this context, the gender issue is extremely significant in the African context where women are among the most vulnerable groups, have less access to educational opportunities and have more limited access to decision-making processes that directly affect their lives. Moreover, women are also more exposed to energy poverty and climate impacts because of their role in subsistence agriculture and in biomass collection for cooking. Women empowerment is a crucial point in ensuring the success and equity of energy transition initiatives, since women are the ones who take care of communities, hence empowering women means empowering communities. To this end, it is crucial to guarantee that women actively participate in and benefit from climate actions and that they can benefit from the economic and social opportunities posed by the transition. Indeed, the transition must be exploited as an opportunity to rewrite roles that were previously played, by increasing the positive impact of gender inclusion and women's empowerment initiatives. Energy transition initiatives must help provide economic independence for women and involve them in decision making processes related to energy policies and projects as well as in the whole value chain of the energy transition business, by offering equal entrepreneurial and training opportunities, such as in STEM careers. Companies operating in the energy sector must actively question themselves on how to involve women in projects and what tools are the most effective to ensure that they can benefit from the transition. Women empowerment cannot come only from the international community without the promotion of a bottom-up approach starting from African communities and companies, aimed at raising awareness among the people about the importance of inclusiveness in transition opportunities, for instance by mentoring women and providing them with access to business networks and education. The Kenyan start-up E-Safiri Charging Limited - presented during the conference - represents a good practice of a small and medium-sized enterprise led by women operating in the energy sector which offers communities sustainable means of transport powered by renewable energy, such as electric bicycles. The company has recently received funding from international donors and development banks to implement capacity building actions, in particular workshops for women farmers on the use of solar-powered electric mobility as a sustainable response to community needs, such as wood harvesting or water supply. The workshops are also aimed at informing the population about the energy transition and the importance of not using

polluting transport, as well as to raise awareness on the importance of women role in the communities and how sustainable mobility can improve their quality of life, particularly in relation to employment.

Africa is home to the world's youngest population and Africa's youth has a critical role to play in defining the continent's energy transition. Young Africans are doomed to experience the worst impacts of climate change, if the global community will not succeed in adopting effective mitigation and adaptation actions. It should be a priority not only to ensure their welfare and interests, for instance, by addressing the concrete problems that cause the brain drain – considering that 52% of young Africans aged between 18 and 24 consider likely emigrating in the coming years[30] - but also, to make their voices heard, by allowing them to play a role in developing and implementing solutions to the challenges they are facing now and will face in the future. Yet, young people often remain excluded from decision-making processes, also on energy and climate issues. Through the Global Youth Energy Outlook[31], young sub-Saharan Africans expressed their perspectives on the ideal energy future they envision: 85.2% are concerned or very concerned about emissions caused by the current energy system; 83.2% think their country needs to invest more in fighting climate change or that their country has not invested at all. In addition, governments were identified as holding the greatest responsibility for greenhouse gas emissions followed by business and industry, but paradoxically "government willpower, policies, and regulations" was considered both the biggest barrier to achieving a sustainable energy transition and the solution. Finally, it reports the opinion of young Africans on business and industry which, according to them, should demonstrate effective engagement in climate action by "creating policies to reduce company emissions; committing to carbon neutrality; and cooperating with government on decarbonization"[32]. This survey allows energy stakeholders to reflect on the importance of listening the young people point of views and find the proper ways to involve them in decision making processes both in order to achieve a just transition and for the continent's future.

[30] Ichikowitz Family Foundation, 2022, *African Youth Survey 2022*.
[31] Student Energy, 2023, *Global Youth Energy Outlook*
[32] Ibidem.

Boosting climate finance and fostering international private investment

According to the UNFCCC "*common but differentiated responsibility*" principle, the most advanced economies should allocate financial resources and mobilizing climate finance, considering developing countries' needs and priorities. All governments and stakeholders should assess the financial needs of developing countries and achieving a balance between adaptation and mitigation actions. COP28 officially introduced a third pillar: the Loss and Damage mechanism, aimed at compensating for past and future climate change impacts on the countries that are less responsible for global warming but experience the worst damage. Nevertheless, in Africa climate finance is not performing as it should, as IRENA pointed out: "although Africa accounts for one-fifth of the global population, the region currently attracts only 3% of global energy investment". Moreover, based on its outlook, energy investment will need to double for African countries to achieve all their energy-related development goals. To this end, IRENA advocates the need for public-private partnerships to promote technology and best practice sharing initiatives and fill the investment gap. The public sector is also called upon to provide new tools for private investment risk reduction, enabling a potential acceleration of the start-up of renewable energy projects in Africa. Yet, private sector financing contributed to only 14% of total climate finance in Africa, primarily because of the sub–investment-grade ratings of many African countries. The IMF underlines the need to improve the local business environment, addressing the perceived risks which are not in line with the investors' risk-bearing capacity, especially institutional capacity, the policy environment framework to allow for well-structured, bankable project pipelines in local markets that can meet the risk–return requirements for private investors[33]. As for policy recommendations to unlock private climate financing, the IMF particularly highlights: introduction of additional policies by African authorities to effectively exploit carbon pricing; providing technical assistance, capacity development and technology transfer for developing investable projects; strengthening the climate information architecture addressing the lack of data, disclosures, and alignment approaches including taxonomies, considering that investors lean on high-quality, reliable, and comparable data; expanding the use of guarantees and blended finance by multilateral development banks and donors as an effective instrument for de-risk or risk sharing. The Nairobi declaration ask to redesign of the multilateral development banks' (MDBs) governance, to ensure a "fit for purpose" system with appropriate representation, voice, and agency of all countries, while acknowledging their crucial role

[33] IMF, 2023, *Global Financial Stability Report: Financial and Climate Policies for a High-Interest-Rate Era,* Washington, DC, October.

in channelling concessional finance and helping the continent to mobilize and de-risk private capital as well as boost investment in climate-aligned opportunities by setting the agenda[34]. According to the African Development Bank, development financial institutions (DFIs) – such as the Italian Cassa Depositi e Prestiti - and MDBs can mobilize the capital through a range of initiatives and measures: filling financing gaps by supporting large-scale, long-term investments through loans and grants; creating investable pipelines so that private capital can follow; de-risking investment by providing patient, risk-tolerant capital; providing financial linked capacity-building support to governments and expanding the use of financial innovation[35].

In accordance with the Discussion Paper of the African Development Bank's Just Transition Initiative to Address Climate Change in the African Context, climate finance relates to funding climate action and is not specifically designed to consider the international goal of leaving no-one behind by addressing the impacts on vulnerable workers and communities. A just transition finance approach is instead needed to connect climate finance with positive social outcomes also for: "lifting people out of poverty and improving their quality of live, ensuring food security, decent and fair job creation, the establishment of sufficient, resilient and sustainable power supply, accessible to all and efficient energy use"[36]. To pursue this approach, it is essential to recognise that there are both cross-cutting needs, such as affordability, and specific priorities. For example, in highly fossil fuels reliant countries, the issue of compensating the loss of income and employment - e.g. by investing in green jobs and reskilling the workforce - caused by the transition to clean energy seems more evident. While, in other countries, transition investments should prioritise the issue of helping communities move out of poverty, adapt to climate change and gain access to energy. When discussing investments, it is important to mention not only the amount of capital needed, but also the political and legal framework. As repeatedly emphasised during the conference, there is a mismatch between supply and demand that not only concerns the available funds but, more importantly, the lack of bankable projects for the appropriate use of these funds. To this end, the international community should promote capacity building of African actors within institutions and companies; indeed, the transfer of skills within industries and national and local authorities is crucial to overcome the shortage of investible opportunities and the lack of designing knowledge. However, when speaking

[34] AU, 2023, *The African leaders Nairobi declaration on climate change and call to action*, September.
[35] AfDB, 2022, *Financing a Just Transition in Africa: Challenges and Opportunities. Discussion Paper for the African Development Bank's Just Transition Initiative to Address Climate Change in the African Context.*
[36] Ibidem.

about how to ensure a just transition finance approach, the debt issue is another critical point. The Nairobi Declaration ask for "new debt relief interventions" and the members of CADTM International, among which many African CSOs, released a joint statement calling on world leaders to push for a debt restructuring solutions during the COP28 that would enable African countries to free-up critical resources needed to promote climate positive investments and green growth[37]. The non-profit Development Finance International Group estimates that in 25 Sub-Saharan African countries, the repayment of loan interests will consume 16 times more than climate adaptation spending[38]. The problem is that climate finance flows mainly in the form of loans, exacerbate financial disparities and increase debt levels of developing countries. Therefore, debt is hindering the urgently needed investments in climate actions and debt relief and the use of grants are the solution Global South countries are demanding to accelerate urgent spending on adaptation and SDG number 13.

African countries are required to put in place the legislative and regulatory framework to facilitate financing. In this context, there is the common understanding on the importance of accelerating the operationalization of the Africa Continental Free Trade Area (AfCFTA) Agreement and consequently promoting intra-African trade and economic integration and facilitating cross border energy trade, investment, and technology transfer among African nations. By eliminating trade barriers, the AfCFTA can indeed attract both foreign and domestic investments in renewable energy projects. This influx of capital nurtures innovation and supports the development of energy-efficient solutions that are vital for Africa's sustainable future. However, African government also need to design supportive policies and an enabling legislation framework at national level. On this regard Kenya is a relevant case study having achieved more than 70% energy access in 2019 and successfully implemented its ambitious Nationally Determined Contribution Plan to reduce its Greenhouse Gases emissions by 32% by 2032. Moreover, during the African Climate Summit, Kenya committed to 100% clean energy access and 100 GW clean grid by 2040 anchored on a green industrialization agenda. Supportive policies and fiscal incentives have been key to driving renewable energy investments in the country, which milestones can be considered the following: the National Energy Policy (2018), the Energy Act (2019), the Kenya National Electrification Strategy (2018) and the National Energy Efficiency and

[37] CADTM International, 2023, *Cancel the debt now to deliver climate justice!*
[38] DFI, 2023, *New Debt Service Watch briefing: The debt crisis is putting climate adaptation spending out of reach*, November.

Conservation Strategy (2020). In addition, with a view on increasing and regulating the private sector involvement in the renewable energy sector were specifically formulated the Feed in Tariff Policy (2021) - an instrument for promoting generation of electricity from RES by guaranteeing a pre-determined tariff for producers for a period of 20 years - and the Renewable Energy Auctions Policy (2021), primary aimed at procuring renewable energy capacity at competitive prices. In 2023, Kenya approved the Climate Change Act which introduces provisions on the regulation of and participation in carbon markets. The unregulated nature of the voluntary carbon market is currently an important issue, as the lack of standardised and universally accepted criteria allows companies to declare carbon neutrality without clear accountability, and potentially compromising the environmental and social impact of projects. The Kenyan Climate Change Act provides for the establishment of a carbon registry that would be accessible to the public and which contains information relating to carbon credit projects and the amount of carbon credits issued or transferred from Kenya. It aims to boost climate finance by reassuring investors while providing guidance and policy direction on carbon markets to national and county governments and other stakeholders. Carbon trading projects authorized under this Act are required to carry out an environmental impact assessment study to be submitted to the National Environment Management Authority as well as to provide a community development agreement. This agreement should outline the manner of engagement and the sharing of benefits between projects proponents, stakeholders and impacted communities. In addition, it provides for an annual social contribution of at least 25% of the aggregate earnings in non-land-based projects and 40% in land-based projects "to be managed and disbursed for the benefit of the community"[39].

[39] Republic of Kenya, 2023, *The Climate Change Act*, Kenya Gazzette Supplement No. 147, Acts No. 9.

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Date of publishing: February 2024