



Expert Comment

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Robert Mudida (2019)

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EU–Africa relations in technological innovation: A multi-stakeholder perspective

Robert Mudida

Executive summary

This paper examines the relationship between the EU and Africa in terms of technological innovation, focusing on the period from 2000 to 2017. A multi-stakeholder analysis involving state and non-state actors is conducted regarding technological innovation relations between the EU and Africa.

I argue that from a multi-stakeholder perspective, it is critical to include non-state actors and essential to enhance the prominence of ‘track two’ actors in diplomacy surrounding technological innovation, as Africa–EU innovation relations have been primarily pursued in the context of state-centric Africa–EU summits. The heavy financial dependence on the EU for technological innovation will be unsustainable in future, as will the currently weak state of innovation policy implementation, if Africa’s stagnant manufacturing sector is to be revived by technological innovation.

From a multi-stakeholder perspective, it is critical to include non-state actors. Key non-state actors important to consider in technological innovation collaboration with the EU include private-sector firms, universities, think tanks, and civil society organisations (CSOs). CSOs play critical roles in localising technological innovation. Debates surrounding the SDGs have focused primarily on establishing goals and indicators; but insufficient attention has been paid to examining the roles and responsibilities of different stakeholders in *achieving* these goals

A concrete focus on innovation in Africa–EU relations began with the EU-Africa High Level Policy Dialogue (HLPD) on Science, Technology and Innovation adopted at the 2nd Africa–EU Summit in Tripoli in 2010. In recent years, Africa–EU relations in technological innovation mainly evolved at the state level on bilateral and multilateral fronts. Critical areas of collaboration on the Africa–EU technological innovation agenda include food and nutrition security, sustainable agriculture, infectious and parasitic diseases, sustainable energy, climate change, transport, information and communication technology, and marine research. Beginning in 2014, technological innovation was identified as a cross-cutting

objective in all critical areas of Africa–EU cooperation and is considered vital to promoting growth and employment; improving competitiveness; and determining and addressing pressing global societal challenges such as climate change, affordable renewable energy and energy efficiency, infectious diseases, and food and nutrition security.

Future scenarios in Africa–EU technological innovation relations are also considered in this paper. It is essential to enhance frameworks to give greater prominence to non-state ‘track two’ actors in Africa–EU technological innovation diplomacy. To do so implies emphasising dual-track technological innovation diplomacy to the greatest extent possible.

A crucial positive future scenario is one in which non-state actors are given prominence in Africa–EU relations in technological innovation, yet their roles will evolve to become highly complementary to those of state actors. An alternative negative future scenario is one in which state-centric lenses continue to dominate innovation relations between the EU and Africa. This scenario would be accompanied by ineffective implementation of critical innovation outcomes. Another noteworthy emerging scenario in the future of Africa–EU technological innovation involves balanced partnerships where contributions are made to different aspects of the partnership in an equitable manner.

The model of heavy financial dependence on the EU by African states in their technological innovation relations represents an unsustainable future scenario. It is therefore critical to develop a sustainable framework in this area that extends beyond state-funded research in the context of bilateral and multilateral diplomacy, which is the currently dominant framework.

The issue of informal firms has received little attention in frameworks of Africa–EU technological innovation cooperation but will likely be a critical factor in shaping these relations in the future. This is paramount because technological innovation must have broad-based effects in African societies, which can only be achieved if informal firms are integrated into technological innovation policies.

Another critical issue in future scenarios of Africa–EU innovation relations concerns effective implementation. In this context, the related issues of joint ownership, governance, and financing of the dialogue on technological innovation are central given that innovation policies in the African context have often suffered from weak implementation.

The context for Africa–EU relations in technological innovation

Technological innovation is considered a critical component of the UN's sustainable development goals (SDGs); SDG 9 specifically refers to fostering innovation and focuses on building resilient infrastructure, promoting sustainable industrialisation, and fostering innovation. More broadly, the SDGs mark an important shift in the economic and political relations between developed and developing countries and therefore require a re-conceptualisation of African–European (EU) relations in many areas but particularly in terms of technological innovation (European Commission, 2015).

Technological innovation is considered the backbone of prospects for sustained development on the African continent and is focused on developing new products and processes. Technological innovation shows promise for improving Africa's productivity in multiple economic sectors to facilitate deep-rooted structural transformation that may bring a host of potential benefits to Africa's political, social, and economic spheres (Mendi & Mudida, 2018).

This paper examines the relationship concerning technological innovation between the EU and Africa from 2000 to 2017. This is an important policy issue because economic growth theory clearly indicates that long-term growth is premised on sustained productivity increases in countries, primarily through technological innovation (Eggink, 2013).

Despite Africa's rise since the turn of the century, enhancing technological innovation remains a critical issue to be addressed if more inclusive global development is to be achieved. High economic growth in Africa in the short run has not necessarily been accompanied by the required technological innovation. Yet long-term growth in Africa can only be sustained by technological innovation in vital sectors such as agriculture, manufacturing, and services. The manufacturing sector in many African countries has remained stagnant for several decades and needs to be revived by technological innovation (World Bank, 2013). Agricultural-sector productivity in many African countries has been

given a strong boost by technological innovation, although much remains to be done (Juma, 2011).

A multi-stakeholder analysis involving state and non-state actors can then be undertaken regarding the technological innovation relations between the EU and Africa. For the EU, developing technological innovation relations with African states represents, as noted in its 2015 briefing, its 'science diplomacy', which also serves to increase the EU's 'soft power'. Soft power has become an increasingly critical component in enhancing the influence of international outcomes, as it is more difficult to compel state and non-state actors through the use of hard power based on threats and force (Gallarotti, 2011).

Africa is also a vital strategic partner for the EU, representing one of the fastest-growing emerging regions in the world with many areas of mutually beneficial collaboration. However, for African growth and prosperity to be sustained, technological innovation is essential.

This paper first provides a theoretical framework based on a multi-stakeholder, polycentric perspective. Then, I consider relations between the EU and African states based on a state-centric perspective followed by a non-state centric perspective. The paper concludes with some future scenarios of Africa–EU relations regarding technological innovation.

Theoretical underpinnings of Africa–EU relations in technological innovation

This paper adopts a multi-stakeholder, polycentric perspective regarding the issues arising in Africa–EU relations vis-à-vis technological innovation. From a polycentric point of view, the polity to be analysed is not necessarily the state; it can be any entity able to produce governance and formulate and implement policy. A polycentric perspective has been accompanied by a shift in governance from state actors to numerous types of actors such

as local governments, global agencies, business entities, and civil society organisations (CSOs) (Koenig-Archibugi, 2010).

The nature of the innovation ecosystem requires the consideration of actors beyond states. Innovation involves the private sector, universities, think tanks, and non-governmental organisations. States, despite being important and highly visible actors in innovation processes, cannot sustain innovation processes by themselves because innovation agreements reached by states often require the cooperation of non-state actors for implementation.

In the African context, many innovation policy processes are severely limited by ineffective implementation. State processes are formal; conversely, the informal sector is an important social ingredient in many African states, constituting up to 50% of GDP in many African states. Many innovation processes in African states also do not explicitly involve state actors. Relations based on interactions among states are considered 'track one' innovation diplomacy in this paper, whereas those that focus on non-state actors are considered 'track two' (Montville, 1991).

The broader context of Africa–EU 'track one' relations from 2000 to 2017

From a state perspective, diplomacy is concerned with advising, shaping, and implementing foreign policy. As such, it relates to the means by which states – through formal and other representatives as well as other actors – articulate, coordinate, and secure specific or broader interests via correspondence, private talks, exchanges of view, lobbying visits, threats, or other activities (Barston, 2013).

In this context, EU relations with Africa are governed through two agreements: The Cotonou Agreement and the Joint Africa-EU Strategy (JAES) adopted in 2007 (The Africa-EU Partnership, 2007). The JAES is the political framework that guides EU relations with the entire African continent. It aims to build a relationship between the EU and the African

Union (AU) that is based on partnership, egalitarian relationships, shared objectives, and mutual benefits and risks through developing a long-term vision on how to ensure peace and security, faster socioeconomic growth, and sustainable development in Africa.

Paragraph 4 of the JAES notes,

“The purpose of this Joint Strategy is to take the Africa–EU relationship to a new, strategic level with a strengthened political partnership and enhanced cooperation at all levels. The partnership will be based on a Euro-African consensus on values, common interests and common strategic objectives. This partnership should strive to bridge the development divide between Africa and Europe through the strengthening of economic cooperation and the promotion of sustainable development in both continents, living side by side in peace, security, prosperity, solidarity and human dignity” (African Union and European Commission, 2007).

In more concrete terms, the first Africa–EU summit took place in Cairo on 3–4 April 2000 under the auspices of the Organisation of African Unity and the EU. Key principles of the Africa–EU partnership articulated at this conference were based on equality, respect, alliance, and cooperation. Africa–EU relations are presently guided by the Africa–EU strategic partnership, which represents the formal diplomatic channel through which the EU and the African continent work together. This was founded on the JAES, which was adopted by the Heads of State and Government at the 2nd EU-Africa (Lisbon) summit in 2007.

The JAES, adopted at the Lisbon Summit in 2007, constitutes an overarching, long-term framework for Africa–EU relations. The framework is based upon a strong political relationship and close cooperation in key areas between Africa and the EU. It is implemented through jointly identified priorities of common interest to both the EU and Africa and significantly affects the daily lives of citizens on both continents. At the 4th EU-Africa Summit in Brussels in 2014, African and European Heads of State and Government adopted the ‘Roadmap 2014-2017’ (The Africa-EU Partnership, 2014). It focused on the

implementation of the JAES in five priority areas: peace and security; democracy, good governance, and human rights; human development; sustainable and inclusive development and growth and continental integration; and global and emerging issues.

Africa–EU collaboration within the technological innovation area is intricately linked to human development and sustainable and inclusive development and growth. The rapid proliferation of mobile communications technology, the internet, and other areas of innovation (e.g., agriculture) exemplifies Africa’s great potential in technological innovation.

Even before the formalisation of its relationship with the EU with regard to technological innovation, the AU – through its organ the New Partnership for Africa’s Development – had already underscored the importance of technological innovation in Africa’s development. Africa’s Science and Technology Consolidated Plan of Action was endorsed by the AU Summit of Heads of State and Government in 2006. The implementation revolves around three pillars of the Consolidated Plan of Action, namely knowledge production, capacity building, and technological innovation.

The evolution of Africa–EU cooperation in technological innovation

Africa–EU collaboration in technological innovation has recently been defined largely by state-level collaboration, specifically ‘track one’ innovation diplomacy. In this regard, Africa–EU innovation cooperation has multilateral and bilateral aspects. Multilateral diplomacy has often taken the form of summit diplomacy, which became particularly prominent after the year 2000. However, there are also many bilateral agreements between the EU and African states in relation to technological innovation. Scientific relations between what is now the EU and Africa date back more than 25 years to the launch of the first Science and Technology for Development Programme in 1983 and have developed steadily since (European Commission, 2009).

On the multilateral front, according to the '*Roadmap 2014-2017*' agreed upon at the 4th EU-Africa Summit in 2014, a strategic objective in the area of human development is to promote human capital development and knowledge; skills-based societies and economies, especially by strengthening the links between education, training, science, and innovation; and to better manage people's mobility. Technological innovation is therefore seen as a critical aspect of human development in the context of Africa–EU relations. Africa–EU collaboration on science, technology, and innovation is focused on reinforced cooperation between research communities; the creation of joint academic research programmes; and the development of a long-term, jointly funded research and innovation partnership with a focus on food and nutrition security.

The EU-Africa High Level Policy Dialogue on Science, Technology and Innovation was adopted at the 2nd Africa–EU Summit in Tripoli in 2010 as an important element of the JAES. The dialogue serves as a platform for regular exchanges on research and innovation policy and aims to formulate and implement long-term priorities to strengthen Africa–EU cooperation around science, technology, and innovation. The dialogue is co-chaired by the EU and the AU and brings together science and technology representatives from the 27 EU Member States and the 55 African countries.

Central areas of collaboration in technological innovation that have been identified under this framework include food and nutrition security, sustainable agriculture, infectious and parasitic diseases, sustainable energy, climate change, transport, information and communication technology, and marine research. Future areas of collaboration include chronic diseases and astronomy (European Commission, 2018). These areas aim to overcome critical constraints to Africa's development and provide excellent synergy with the UN's SDGs. For example, climate change has had profound effects on Africa, including exacerbating conflict in several states (Mudida, 2009).

Another essential issue in innovation relationships is effective coordination. For instance, the ‘Roadmap towards a jointly funded EU-Africa Research & Innovation Partnership on Food and Nutrition Security and Sustainable Agriculture’ underscores the need for,

“...enhanced coordination of FNSSA-relevant research and innovation policies, programmes and funding mechanisms between Europe and Africa, building on past experiences in Agricultural Research and Agricultural Research for Development to create synergies and optimise investment and identify gaps” (African Union and European Commission, 2016).

At the EU-Africa Summit 2014, a new framework of cooperation within the JAES (i.e., the ‘Roadmap 2014-2017’) was agreed upon. Under this framework, science, technology, and innovation comprise a cross-cutting objective throughout the five areas of Africa–EU cooperation identified earlier. The ‘Roadmap 2014-2017’ further outlines investments in science, technology, and innovation as essential to promoting growth and employment; improving competitiveness; and identifying and addressing pressing global societal challenges such as climate change, affordable renewable energy and energy efficiency, infectious diseases, and food and nutrition security. The FinCEAL Plus project has been designed to engage Finnish participation in bi-regional policy dialogue and to promote Finnish involvement in addressing these challenges.

Following the EU-Africa Summit in 2014, an EU-Africa High Level Policy Dialogue expert working group was set up to provide input regarding a roadmap towards creating a long-term, jointly financed Research and Innovation Partnership with a primary focus on food and nutrition security and sustainable agriculture. The Expert Working Group’s ‘Roadmap towards a jointly funded EU-Africa Research & Innovation Partnership, with an

initial focus on food and nutrition security and sustainable agriculture' was published in April 2015 (Expert Working Group, 2015).

Cooperation between Africa and the EU in the fields of science, technology, and innovation has strengthened in recent years. Yet this research is often still funded out of development cooperation budgets; in such cases, external donors' priorities are likely to be underscored, hence the growing interest in Africa for research activities that are financed in line with Africa's own strategies and priorities (European University Association, 2010).

The European Union's ERAfrica (European Research Area Network for Africa - Developing African-European joint collaboration for Science and Technology) project is a response to this concern. It facilitates the networking of European and African research donors and encourages joint calls for proposals to promote long-term cooperation between EU Member States and/or associated countries and African countries. ERAfrica operates within the framework of the Joint Africa–EU Strategy (8th partnership) with the European Commission acting as a catalyst by providing €2m under the 7th Framework Programme for Research (2010-2013). All parties participate equally in decision making irrespective of their financial contribution.

Partnerships also exist at the bilateral level between individual EU states and African states. The country with the most bilateral cooperation with EU states is South Africa, the only African country to participate in the EU's ERAWATCH programme. One of four of South Africa's nearly 1,000 applications to the Seventh Framework Programme for research project funding was successful, representing a total of more than €735m according to the 2012 ERAWATCH report on South Africa (UNESCO, 2015).

The role of non-state actors in Africa–EU technological innovation relations

State-centric diplomacy is, however, incomplete. Modern diplomacy therefore also recognises the critical role of non-state actors in what is known as ‘track two’ diplomacy. Diplomacy in a formal sense can no longer be viewed as falling under the purview of foreign ministry and diplomatic service personnel. Rather, diplomacy is undertaken by a wide range of actors including diplomats, advisers, envoys, and officials from a wide range of domestic ministries and agencies and their counterparts, reflecting its technical content. Officials hail from different international organisations such as the International Monetary Fund and the United Nations Secretariat, foreign corporations, and host governments around the world; as well as from non-governmental organisations and ‘private’ individuals and firms (Barston, 2013).

The role of non-state actors has been recognised in many policy documents on Africa–EU collaboration on technological innovation. For example, the ‘Roadmap towards a jointly funded EU-Africa Research & Innovation Partnership on Food and Nutrition Security and Sustainable Agriculture’ stated the following in relation to more inclusive stakeholder engagement:

“...operating across the entire value chain, linking research to innovation, involving all relevant stakeholders from private sector (including farmers), civil society, government and research organisations for enhanced impact at local level, generating locally relevant innovation and exchangeable knowledge and know-how” (African Union and European Commission, 2016).

Key non-state actors that are vital to consider in technological innovation collaboration with the EU are private sector firms, universities, think tanks, and CSOs.

The triple Helix methodology in innovation ecosystems recognises the crucial role of university–industry–government interactions in the innovation ecosystem. The Triple Helix

systems approach offers a wider perspective for understanding the sources and development paths of innovation. Key contributors to innovation and their interactions are specified. An innovation strategy centred on the Triple Helix systems may be an attractive prospect for African states aiming to increase their knowledge base and create centres of excellence at the country and regional levels around research themes with commercial potential and innovative firms that could facilitate that potential (Ranga & Etzlowitz, 2013).

The role of inter-university interaction and think tanks in technological innovation collaboration in Africa–EU relations

Technological innovation in the framework of Africa–EU relations is also closely linked to educational policy, particularly higher education, which is a vital ingredient in non-state-centric collaboration in technological innovation in Africa–EU relations. Higher education plays a crucial role in economic and social development, namely in catalysing sustainable development by producing high-quality human resources and disseminating the results of scientific and technical research. Key objectives of Africa–EU cooperation in higher education include promoting the mobility of African and European students, scholars, and researchers while supporting the development of centres of excellence in Africa, particularly through the Pan-African University (European University Association, 2010).

In addition to specific, traditional capacity-building actions, mobility has the potential to improve the quality of higher education by emphasising transparency and recognition tools and by helping institutions develop better services to send and receive foreign students and researchers. Institutional cooperation is amplified through mobility, as the institutions involved build partnerships and networks that can cast a critical eye on global issues affecting both sides. International cooperation can build on balanced partnerships and flows of people and ideas, thereby ensuring that knowledge grows through sharing and that

capacity and excellence are promoted on both sides (European University Association, 2010).

Extensive inter-university collaboration exists between individual universities and groups of universities in Africa and EU states. Some key aspects of this partnership have included an initial 'Europe-Africa rectors' dialogue in Addis Ababa, Ethiopia on 17 November 2009 that examined issues of common interest amongst university leadership. Several conferences have been organised on themes such as 'Access and retention: Comparing best practice between Europe and Africa' and 'Towards a coordinated vision of Europe-Africa higher education partnerships: Supporting institutional capacity building in Africa' (European University Association, 2010). Most African universities have long-standing relations with universities within the EU; these relations have focused on the exchange of scholars and applications for joint research projects among African and EU universities.

Public and private policy research think tanks are also important actors in the technological innovation landscape in Africa. These think tanks are local and international.

In Kenya, for example, a key local public policy think tank is the Kenya Institute for Public Policy Research Analysis. However, there are also several international think tanks based in Nairobi, such as the International Food Policy Research Institute.

Elsewhere in the African context, there are numerous Pan-African think tanks such as the Council for the Development of Social Science Research in Africa and the African Economic Research Consortium. These think tanks already collaborate with think tanks in the EU on issues of mutual research interest.

However, coordination among these think tanks in the African context is limited, with public- and private-sector think tanks possessing divergent objectives that limit their collaboration. Many private think tanks face funding limitations, whereas government-funded think tanks are often influenced by political considerations in their research processes and output.

Private-sector firms in Africa–EU technological innovation relations

Private-sector actors in the African context include formal and informal firms. Formal firms tend to be larger, more productive, and provide more stable employment. However, informal enterprises continue to play a vital role in African economies, and it is therefore critical to consider their roles in innovation. Such informal firms face unique challenges in enhancing innovation (Mendi & Mudida, 2018). A key question is how to integrate informal sector firms into the framework of Africa–EU collaboration on technological innovation.

One critical emerging area in technological innovation involves public–private partnerships. Private-sector firms alone face immense challenges in undertaking innovation, particularly financial constraints and a difficult business- and policy-operating context. Government entities on their own also lack sufficient innovative capacity owing to bureaucratic constraints. Public–private partnerships therefore hold great promise for Africa–EU collaboration in technological innovation, especially because they focus private-sector input more on development issues (Mudida, Ngene, & Njuguna, 2018).

The role of civil society in Africa–EU technological innovation relations

Civil society organisation (CSOs) are also critical actors in Africa–EU technological innovation relations. Muok and Kingiri (2015) argued that the current innovation systems literature has tended to overestimate the role of governments as agents of resource allocation while underestimating the importance of civil society in improving basic institutions of the market economy. This body of literature also often overlooks the particularly important role of non-governmental actors, such as grassroots civil societies, in grassroots innovation.

Muok and Kingiri (2015) have sought to address two basic questions: 1) How important are CSOs' roles in low-carbon innovation systems? and 2) What are CSOs' specific roles, and what challenges do they face in performing these roles? Their research focused on the role of civil society through the lens of low-carbon innovation. They generated

empirical data using structured and semi-structured questionnaires targeting innovators in Kenya, a low-carbon innovation country. Their findings demonstrated that civil society plays a crucial role in low-carbon innovation in terms of learning and competence-building in Kenya. Muok and Kingiri (2015) thus recommended major interventions in terms of a policy framework to recognise and institutionalise civil society as an important player in grassroots innovation.

More broadly, CSOs play critical roles in localising technological innovation. Debates surrounding the SDGs have focused primarily on establishing goals and indicators; insufficient attention has been paid to examining the roles and responsibilities of different stakeholders in achieving these goals – in particular, how best to implement this universal framework at the local level. Given the scope and ambition of the SDGs, it is clear that state actors alone cannot achieve this agenda. It is therefore vital to incorporate all sectors of society, including CSOs, the private sector, and the general public at the local level in African states. Such localisation calls for an inclusive approach that utilises local knowledge to tailor the ambitious global development agenda to specific local circumstances (African Civil Society Circle, 2016).

Localisation is defined as “the process of defining, implementing and monitoring strategies at the local level for achieving global, national and subnational sustainable development targets. It involves various concrete mechanisms, tools, innovations, platforms and processes to effectively translate the development agenda into results at the local level” (African Civil Society Circle, 2016). In other words, localisation refers to local implementation of a new set of goals and progress monitoring at the sub-national level. Localisation should be conceptualised holistically and include civil society, local governments at the frontline of development, traditional leaders, religious organisations, the private sector, citizens, and other parties (African Civil Society Circle, 2016).

The inclusion of CSOs in these processes is vital because these actors play indispensable roles in society as agents of accountability and service delivery. In the African context, the inclusion of CSOs is important given that the continent is experiencing critical governance challenges, wherein not enough effective institutional spaces have been created by governments to allow CSOs to engage with global development issues.

In the South African context, for example, an examination of MDG-related implementation practices illustrated that CSOs played a critical role in advancing these goals by effectively articulating the needs and aspirations of the poor, fulfilling critical service-delivery gaps, and promoting 'good' governance practices. Therefore, it is essential to unravel the potential roles of CSOs in effective implementation of the SDGs and especially to engage CSOs in technological innovation processes (African Civil Society Circle, 2016). Technological innovation must also be adapted to the local African context to be useful, and CSOs are uniquely positioned to facilitate this process.

The First Africa–EU Intercontinental CSO Forum took place in Cairo in November 2010. On 23–25 October 2013, African and European CSOs met at the Second Africa–EU Civil Society Forum in Brussels ahead of the Africa–EU Summit in April 2014. Representatives from 32 African and 36 EU CSOs participated in the forum. The Third Africa–EU Civil Society Forum, a gathering of African and European CSOs, was held on 11–13 June 2017 in Tunis.

This Forum was organised under the JAES framework and was supported by the AU's Citizens and Diaspora Directorate and the EU. The forum brought together CSOs from each continent to discuss future priorities in light of external challenges and opportunities at global and regional levels. At the meeting of the **Africa–EU Civil Society Forum 2017**, African and European CSOs issued a declaration calling upon institutions and leaders in Africa and Europe to act upon political commitments to create an environment conducive to civil society participation, which is crucial for innovation.

Future scenarios of Africa–EU relations in technological innovation

Africa–EU relations in technological innovation have traditionally assumed a mostly state-centric perspective. It is essential to enhance frameworks to give greater prominence to non-state ‘track two’ actors in Africa–EU technological innovation diplomacy, which implies emphasising dual-track technological innovation diplomacy to the greatest extent possible.

A vital future scenario is one in which non-state actors are given great prominence in Africa–EU relations around technological innovation. Their roles will evolve to be highly complementary to those of state actors. An important future direction involves a framework in which the input of non-state and state actors is integrated when implementing Africa–EU technological innovation policies.

Non-state actors are highly diverse, and emerging technological innovation frameworks must consider how to engage such actors constructively so as to fully leverage their input. The need to involve multiple non-state actors in a technological innovation cooperation framework calls for a coordination framework amongst them given their diverse values and interests. CSOs, private-sector organisations, and think tanks often pursue divergent goals in the context of innovation. For example, CSOs aim to relate innovation to grassroots development, whereas private-sector firms are more profit-oriented. Such a framework for mobilising non-state actors in technological innovation should be complemented by an institutional framework within which cooperation with state actors can occur in the context of bilateral and multilateral diplomacy.

A vital issue in the future of Africa–EU technological innovation is balanced partnerships where contributions are made to different components of the partnership in an equitable manner. The model of African states’ heavy financial dependence on the EU regarding their technological innovation relations is not sustainable in the long term.

A critical aspect of technological innovation is the financing of innovation activities, especially research. It will be crucial to develop a sustainable framework in this area that

goes beyond state-funded research in the context of bilateral and multilateral diplomacy, which is currently the dominant framework.

A likely development in this area involves broader application of public–private partnerships to foster innovation financing. Governments within the EU and Africa often have multiple and competing priorities; thus, reduced reliance on state funding is essential to sustaining technological innovation initiatives. Even so, public–private sector collaboration in the African context has faced many challenges thus far, such as widely divergent private and public sector values. These obstacles will need to be overcome.

In addition, private sector firms in the African context are both formal and informal. In a future scenario, full integration of informal firms into the development of Africa–EU relations on technological innovation is envisaged. The issue of informal firms has received little attention in present frameworks of Africa–EU technological innovation cooperation but will likely be a critical factor in shaping these relations in the future. This is important because technological innovation should have broad-reaching effects in African societies, which can only be achieved if informal firms are integrated into technological innovation policies.

Policies in the context of Africa–EU relations should be rooted in effective implementation. The issue of joint ownership, governance, and financing of the dialogue on technological innovation is crucial for implementation. Innovation policies in the African context have been plagued by weak implementation; formal, elaborate institutions to implement public policy have often not resulted in effective implementation. Future Africa–EU technological innovation policies should prioritise effective implementation frameworks characterised by specific and measurable targets that can be monitored and evaluated frequently.

Conclusion

Technology innovation issues comprise an important aspect of Africa–EU diplomacy; each region is of vital strategic importance to the other’s diplomacy. The importance of technological innovation in Africa–EU partnerships has received great attention in recent years.

In the future, however, such diplomacy must extend beyond traditional bilateral and multilateral state-centric diplomacy. It is essential to effectively incorporate non-state actors such as the private sector, civil society, think tanks, and universities, as these entities constitute an important part of the innovation ecosystem in African and EU states.

A multi-stakeholder perspective is therefore critical and becomes even more so when implementing existing policy frameworks. Many such policy frameworks on Africa–EU technological innovation have been instituted in recent years but have yet to be fully implemented. The long-term success of implementation will depend largely on the extent to which a multi-stakeholder approach, integrating both state and non-state actors, is pursued effectively. The challenges in this regard are numerous but can be overcome.

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