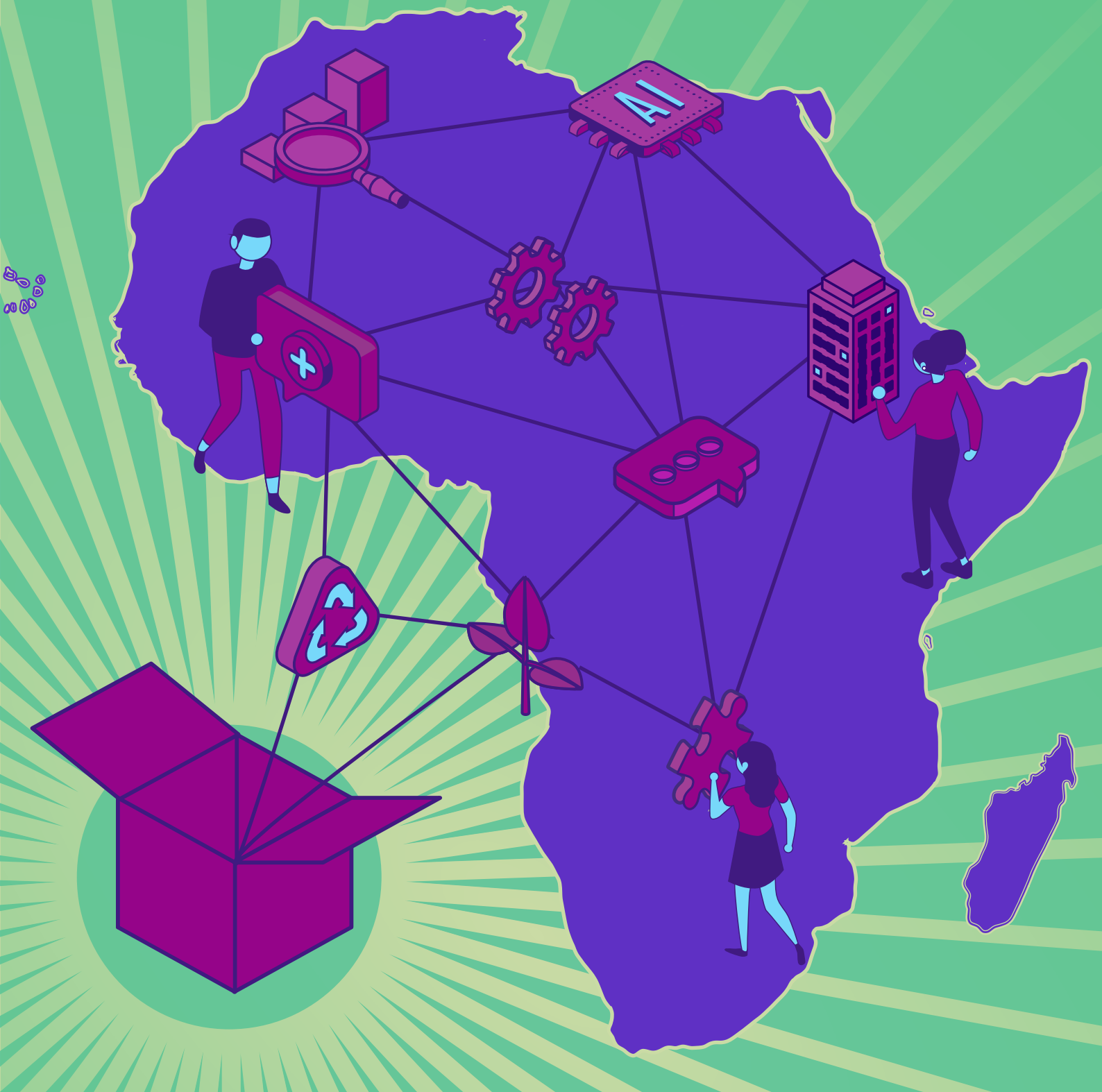
DATASPHERE
INITIATIVE

AFRICA SANDBOXES OUTLOOK

Thinking outside the box for responsible innovation in the age of AI



About the Datasphere Initiative

The Datasphere Initiative is a think and do tank that catalyzes meaningful dialogues and co-creates actionable and innovative approaches to respond to data challenges and harness opportunities across borders. Our mission is to equip organizations to responsibly unlock the value of data for all. For more information, visit www.thedatasphere.org or contact info@thedatasphere.org.

The Datasphere Initiative with the support of the William and Flora Hewlett Foundation launched the Africa Sandboxes Forum project in 2022 aiming to accelerate responsible operational and regulatory innovation through sandboxes and building communities of practice across African countries. The forum has seen the Datasphere Initiative team develop an online course on sandboxes, engage over 200 policymakers across the region through regulatory roundtables and sectoral working groups, enhancing knowledge sharing on the potential of sandboxes for responsible innovation.

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Acknowledgements

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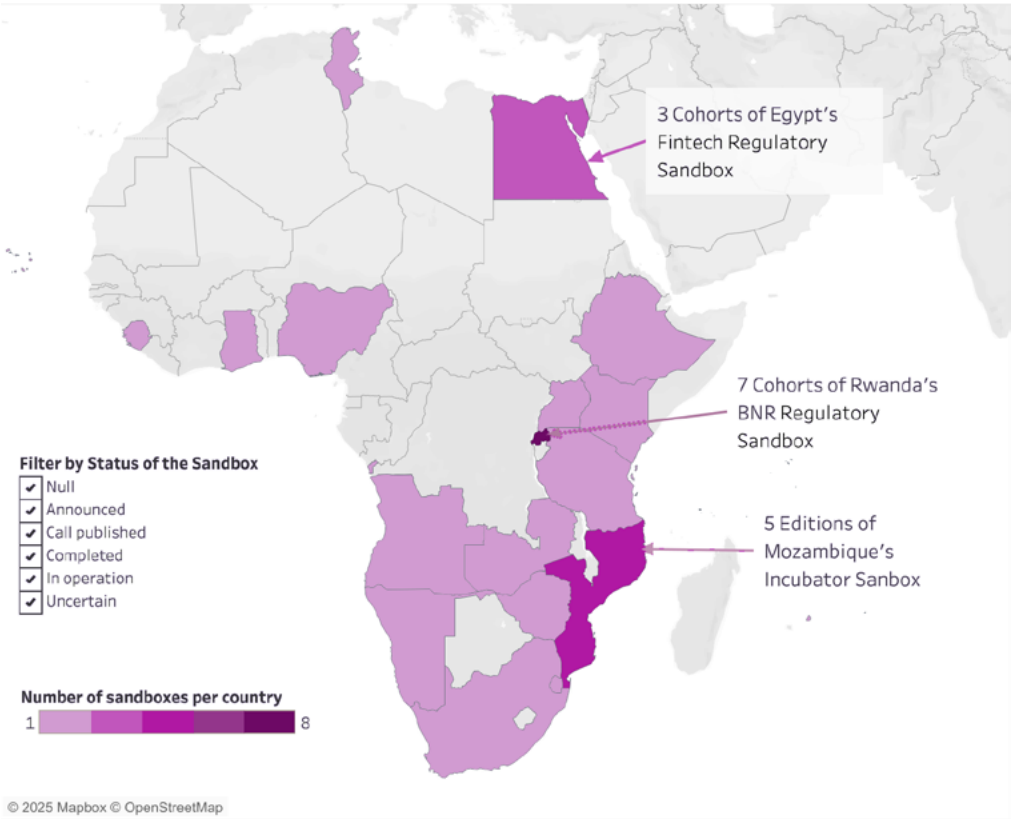
EXECUTIVE SUMMARY

Sandboxes are emerging as useful tools for testing regulatory and technical innovations capable of tackling the complex challenges presented by data and artificial intelligence (AI). Their potential is being explored in Africa to support data governance innovation and support data value creation. As part of the Datasphere Initiative's Africa Sandboxes Forum, this report presents research and analysis of current sandbox experiences in Africa and offers recommendations for supporting their use to tackle complex regulatory challenges.

Sandboxes in Africa by country

Sandboxes were mapped between January and October 2024 as part of the Africa Sandboxes Forum project.



An interactive version of the map can be viewed on Tableau public.

HIGHLIGHTS

Experiences point to a promising sandbox environment where more investment, capacity and collaboration is needed. As of October 2024, there are **25 unique national sandboxes** from **15 countries**, including examples with several **cohorts up to 7 iterations**. This demonstrates the usefulness and success of sandboxes, with valuable lessons that can inform future deployments.

Enhancing transparency, fostering open consultations throughout the sandbox lifecycle, and documenting best practices and lessons learned would effectively share these experiences, benefiting others aiming to implement similar initiatives.

Across Africa, sandboxes have particularly advanced the financial sector. These sandboxes foster emerging innovations and create a dynamic space for regulators to learn about new technologies. They not only facilitate the testing of novel financial products and services in a controlled environment but also enhance the regulatory framework by providing regulators with firsthand experience and insights into cutting-edge technologies.

Expanding sandbox initiatives to other sectors could drive socio-economic development and unlock new opportunities for growth.

While sandboxes in the context of digital health are in the early stages of development and our analysis identified one recently deployed sandbox covering AI innovations on the continent, their application in this sector could prove highly impactful. Sandboxes can be used to test data breaches and privacy concerns in healthcare, clarify the roles of stakeholders, and provide a shared platform for engaging and discussing issues to foster digital

To fully realize the potential of sandboxes, it is essential to leverage comprehensive approaches to measure and enhance effectiveness.

health innovations. They can help gather crucial evidence for policy making, drive regulatory innovation, and create an enabling environment for AI. Additionally, sandboxes could also foster the development of robust data collection and management practices for climate change mitigation efforts and effectively address data-sharing issues.

Governments and the private sector need support to design and deploy sandboxes for responsible regulatory and technical innovation. Our analysis reveals that most online references to sandboxes across the continent highlight technical innovations resulting from their use. However, sandboxes can also serve as safe environments for experimentation and the refinement of regulatory approaches, as well as for developing and stress-testing policy frameworks.

Shifting the focus from purely technical innovation to regulatory innovation can unlock their full potential effectively shaping digital policy.

Sandboxes offer a valuable opportunity to advance agile policymaking processes, particularly as the linear nature of regulation in many nations struggles to keep pace with rapidly advancing technologies. For Africa to avoid stifling innovation or risking harm to uses of emerging technologies like AI, agile tools such as sandboxes provide a critical middle ground. They enable stakeholders to experiment with new technologies and practices within the context of regulatory frameworks. It is also important to note that sandboxes are complex to set-up, resource intensive and require regulatory skills and capacity to design and participate in. The success of sandboxes largely depend on the extent to which the relevant government authority has set them up responsibly, adhering to minimum building blocks in areas such as data governance, stakeholder engagement, and transparency. Given the complexities and risks associated with sandboxes, there is a pressing need for additional resources in terms of capacity-building for regulators to address risks associated with sandboxes and power responsible innovation.

INTRODUCTION

Responsible creation, extraction and maximization of the economic and the social value of data and data-driven technologies is one of today's most transversal and global challenges. Data has become a fundamental resource, as it fuels technologies like AI, which hold the promise of transforming industries, economies and societies.

While the ongoing data revolution brings significant benefits, such as boosting economic growth, fostering more efficient and precise health solutions, and providing access to education, data and AI present new and complex challenges that require adaptive governance mechanisms. Yet as technological innovations evolve at break-neck speed, policymaking around the world remains largely at a standstill. Regulators lack the skills and knowledge to design frameworks that remain flexible and agile in a fast-evolving tech landscape. Traditional regulatory processes fail to connect sectoral silos or involve insights of key stakeholders from the private sector, technical community, civil society and academia.

Challenges of developing responsible and innovative regulation only rise in complexity in the context of Africa, where systemic inequalities and disparities deepen in the digital age. While each country faces its unique challenges, from developing data protection legislation, to designing digital public infrastructure or fostering competitive inclusive local markets, stakeholders across the region remain energized and motivated to embrace the opportunities data and AI can bring. Innovations and incubations across the continent are evolving to catalyze progress and drive inclusive development across healthcare, education, energy and agriculture.

One of the emerging approaches to responsibly unlock the benefits of data and AI is sandboxes.

What are sandboxes?

Sandboxes are time-bound and multistakeholder collaborative environments that test innovative technologies and practices against regulatory frameworks, or experiment with new uses, capabilities, resources or business models. Sandboxes are structured to boost novel technologies and services through interactive processes and spaces for stakeholders to co-create and foster transparency. They have emerged as key mechanisms for experimentation, providing a safe environment and enabling regulatory and technical innovation.

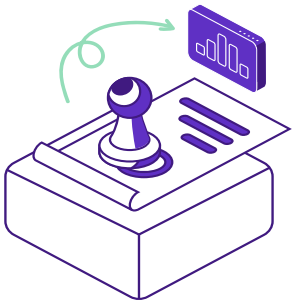
While they can be classified in different ways, the Datasphere Initiative's Sandboxes for Data[1] report adopted and categorized sandboxes depending on the issue at hand and what the sandbox does. In that sense, sandboxes can be **operational**, **regulatory**, or **hybrid**.

[1] Datasphere Initiative (2022), *Sandboxes for data: creating spaces for agile solutions across borders*.

OPERATIONAL

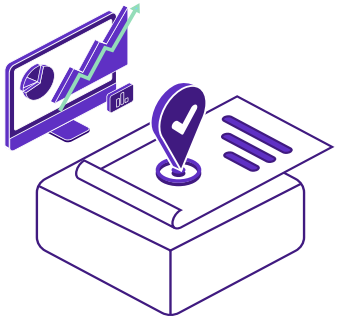
Testing environments where hosted data can be accessed and used.Operational sandboxes deal with and handle data.

REGULATORY



Collaborative processes where regulators, service providers and relevant stakeholders test innovative technology and data practices within a flexible regulatory framework.

HYBRID



Hybrid sandboxes incorporate elements of the two.

Additionally, sandboxes can be classified by their geographic scope, including **cross-border**, **national**, and **sub-national** (e.g., municipal) sandboxes.

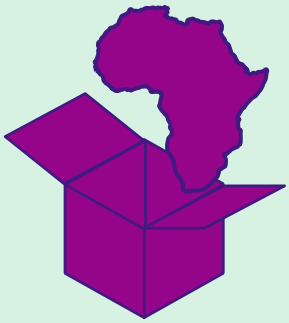
The sandbox approach has already been implemented in several countries, with numerous examples emerging of how regulatory and operational sandboxes are being used to test and understand the impact and nuances of digital services, technologies, and infrastructures across various sectors.[2] From fintech to healthcare, sandboxes are slowly emerging in Africa as a helpful tool to ensure regulatory efforts are as innovative and future-oriented as emerging technology. However challenges and barriers to sandboxes remain as governments need resources and capacity to design and effectively implement pilots. Engaging non-governmental actors can be a complex task, as companies require a safe space to test their services and products with regulators. Findings indicate that sandboxes are valuable for clarifying regulatory expectations for innovations, particularly when accompanied by relaxed regulations that allow for effective testing. However, these findings also highlight areas for improvement: there are some concerns about regulators' ability to maintain the privacy of innovations. In some cases regulators could benefit from more technical support (targeted training or by providing skilled personnel) to effectively carry out technical due diligence.

> ***... for the very intricate technological issues you do need someone [a regulator] who understands those. …one of the benefits of the sandbox is the idea of bidirectional learning, the learning is going both ways, from the regulator to the participant, and then from the participant to the regulator.***
>
> — Wendy McCallum (Senior Lecturer, Economics & Economic History, Rhodes University), who conducted a study on the South Africa's Cohort 1 of the Intergovernmental Fintech Working Group's regulatory sandbox

As part of the first iteration of the Datasphere Initiative's Africa Forum on Sandboxes, this report collects key insights from the stakeholders consulted and detailed desk research on the region's experience and potential for leveraging sandboxes in the age of AI. Case studies and data analysis reveal a promising sandbox environment where more investment, capacity and collaboration is needed to realize the potential of these tools for fostering responsible innovation.

[2] Datasphere Initiative (2025), *Sandboxes for AI: Tools for a new frontier*.

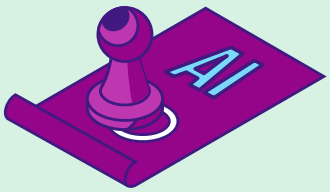
REPORT STRUCTURE



PART 1

SANDBOX IMPLEMENTATION IN AFRICA

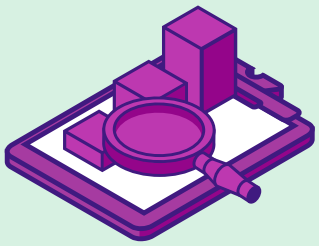
Part 1 covers sandbox implementation on the continent, showcasing unique case studies of sandboxes with distinct attributes, such as regional coverage, topics handled, and the completeness of the sandbox stages.



PART 2

POLICYMAKING IN THE AGE OF AI

Part 2 explores the AI opportunities and challenges in Africa, highlighting recent national and regional developments, as well as the gaps that need to be covered for data and AI to foster inclusive sustainable development. It also examines the role of data policy, the political will, and the potential of sandboxes to enable responsible regulatory experimentation and further provides sectoral deep dives, exploring policy areas in AI, health, climate, and sustainability. The sectoral deep dives highlight the challenges and opportunities discussed during the Africa Sandboxes Forum roundtables and how these sectors could benefit from the sandbox approach to regulatory and technical innovation.



PART 3

RESPONSIBLE REGULATORY AND TECHNICAL INNOVATION

Part 3 of the report, presents insights and lessons derived from analysis of sandboxes on the continent. These insights are accompanied by recommendations designed to demonstrate how the impact of sandboxes can be elevated to the next level. The final section of the report provides curated sandbox resources.

PART 1

SANDBOX IMPLEMENTATION

Findings from our investigation of sandbox cases in Africa

> *"Sandboxes aren't just for kids. They are for policymakers and data scientists."*
>
> — Cyril Seck, Strategy Advisor, Africa CDC

SANDBOXES AT A GLANCE

Countries in Africa have implemented innovative and agile regulatory mechanisms particularly within the finance sector. The Datasphere Initiative conducted a mapping of sandboxes across the region, and investigated the experimental regulation spaces in Africa. Our investigation identified a total of **25** unique national sandboxes and two regional sandboxes; i.e. Ecobank's pan-African Banking Sandbox,[3] which is operational in **33** countries across the continent, and the Digital Earth Africa Analysis Sandbox,[4] which is a cloud-based user computational platform that provides users with access to remote-sensing data and analysis tools for development of specific use cases. Sandboxes in Africa are at varying stages of development, including those that are in operation, those announced but with uncertain status, and those that have been completed and undergone several iterations. The national sandboxes span **15** countries, with the earliest implementations recorded in Rwanda[5] (2017), Sierra Leone[6] (2018), and Mozambique[7] (2018).

We further analyzed the impact of these sandboxes on the ecosystem and data value creation. In the subsequent sections, we provide more specifics of sandboxes across the continent, showcasing their contributions through case studies that illustrate how they are driving innovation and value creation within various sectors. Additionally, we explore the potential of these sandboxes in key areas: healthcare, artificial intelligence, climate action, and sustainability, highlighting their role in addressing critical challenges and fostering new opportunities.

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[3] Ecobank (n.d), *Ecobank API Portal*, (Accessed 31 October 2024)

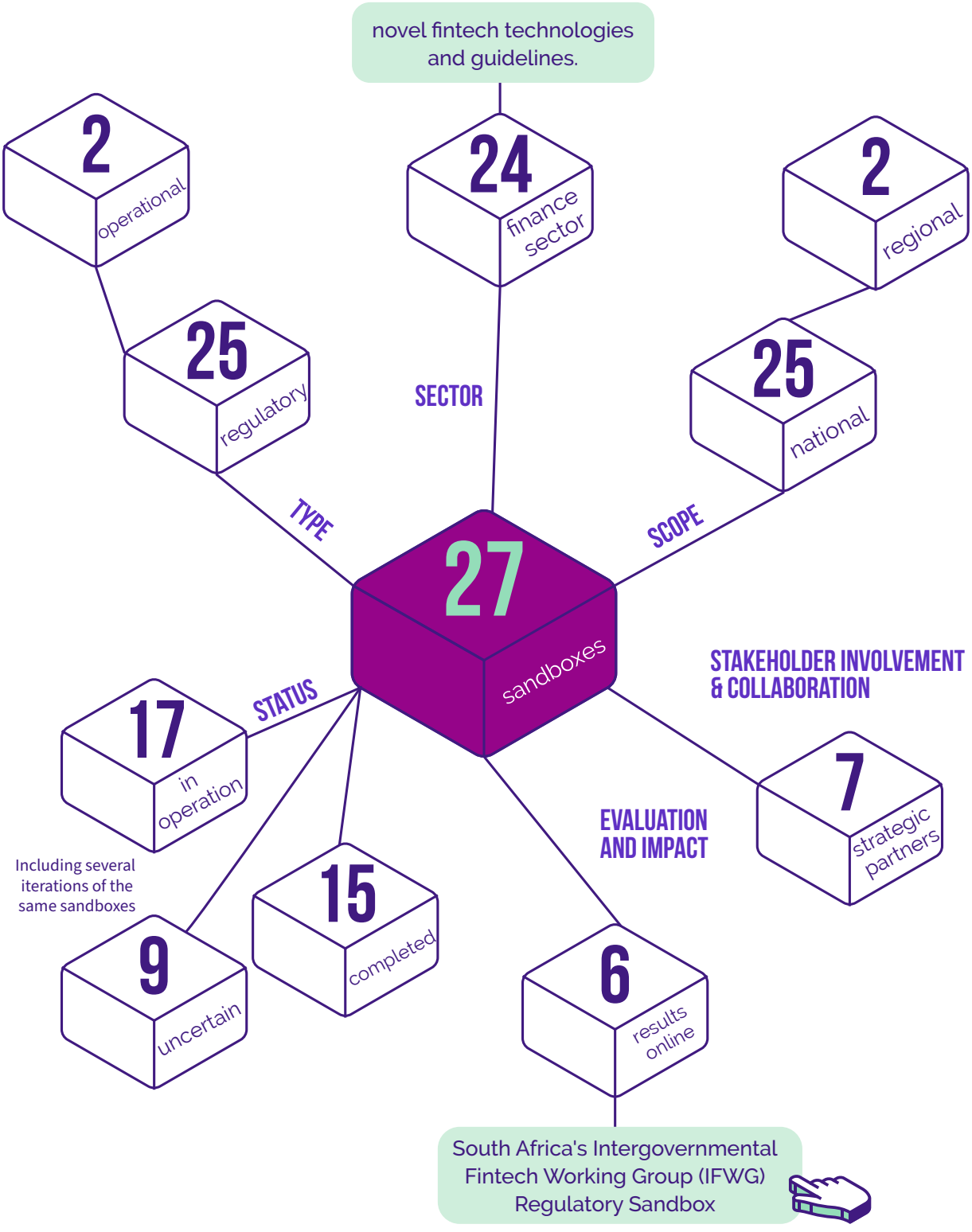
[4] DEA Africa (n.d), *Analysis Sandbox*, Digital Earth Africa (Accessed 31 October 2024)

[5] CMA (n.d), *CMA Fintech Regulatory Sandbox*, Republic of Rwanda Capital Market Authority (Accessed 31 October 2024)

[6] Bank of Sierra Leone (n.d), *BSL Sandbox Program*, (Accessed 31 October 2024)

[7] Bank of Mozambique (n.d), *Regulatory Sandbox* (Accessed 31 October 2024)

SANDBOXES IN NUMBERS



SANDBOX CASE STUDIES

As part of the Africa Sandboxes Forum phase two, the Datasphere Initiative interviewed practitioners from the public and private sector to learn about their experience with sandboxes. The Datasphere Initiative selected three case studies of experiences in Africa designing and deploying a sandbox. The case studies below present the sandbox journey and identify useful qualitative sandbox learnings for future sandbox efforts in Africa and outside of the region.

Case study 1: Ecobank's pan-African banking sandbox: a key cross-border experience in the region.

From unlocking cash access for the unbanked in Togo to powering youth banking in Kenya, Ecobank's APIs are driving financial inclusion through open APIs.

Background

Ecobank's pan-African banking sandbox[8] offers fintechs the unique opportunity to access the bank's Application Programming Interface (API) that gives access to a range of banking tools and services that potential fintech partners can leverage to develop innovative solutions and test their products in the 33 countries in which Ecobank operates. With the majority of the sandboxes in the region focusing on enhancing regulatory experimentation through dialogue and learning, the operational dimension of this sandbox is creating opportunities for the region to explore data spaces and data sharing at a technical level.

According to the Datasphere Initiative's "Sandboxes for Data" 2022 report,[9] operational sandboxes can also be established by regulators or government agencies to test capabilities using actual datasets. They can also be created by a coalition of actors to pool resources together, sometimes through technologically enabled decentralized approaches, such as data collaboratives, fiduciaries, or commons, to encourage or explore their use.[10]

Findings from an interaction with a representative from the Ecobank pan-African banking sandbox

> ***"...we decided to open a secure space and publish our APIs, to enable any company that wants to partner with us to come and easily integrate with our digital services. The objective was to allow faster and seamless technical integration by reducing the resources interactions. The beauty of the Ecobank Sandbox is that once you are integrated with our APIs, you are able to deploy in the 33 countries where we are operating with a full license. That's the story behind the sandbox, and it is fully aligned with our bank as platform strategy."***
>
> - Diallo Djiba, Senior FinTech Advisor, Ecobank

[8] *Ecobank API Portal*

[9] Datasphere Initiative (2022), *Sandboxes for data: creating spaces for agile solutions across borders*.

[10] Datasphere Initiative (2022), *Sandboxes for data: creating spaces for agile solutions across borders*.

Ecobank Operational Sandbox

Focus: Finance, **Type:** Operational, **Geographic scope:** Regional, **Sandbox Status:** In Operation, **No. of applications so far:** 1045, **No. accepted:** 109, **Duration of the sandbox:** 2 months, **Who Is behind this sandbox:** Ecobank

Why the Sandbox: Ecobank recognized the critical role fintech would play in shaping Africa's financial industry and thus decided to view fintech as partners rather than competitors. To this end, in 2017, Ecobank launched the Ecobank Fintech Challenges, aiming to identify promising fintech companies, foster partnerships, and demonstrate the bank's support for the fintech ecosystem. It was out of these challenges that Ecobank introduced its Sandbox initiative in 2019 as a gateway for seamless integration of fintech solutions into its systems.

Its design: Initially, the sandbox focused solely on enabling fintechs to develop solutions for payments and collections. It has since evolved into a comprehensive platform where API exchanges are securely published. This platform allows fintechs to perform integrations efficiently, reducing the need for direct involvement from Ecobank's technical team.

By eliminating the need for time-consuming manual coordination between Ecobank's technical team and fintech to establish secure API exchanges, the sandbox now provides a centralized and secure platform where APIs are published and fintechs can perform integrations efficiently. The platform presently hosts 30+ APIs, up from 4 at launch, with more being added regularly.

The next phase of development seeks to provide fintechs access to extensive banking data, moving beyond basic operational details and including valuable insights accumulated by the bank over the years. Such data will be accessible to approved fintechs, with the necessary customer authorization, to support services such as credit assessments.

Feedback from Sandbox Participants: Feedback from participants has varied based on their needs. In some cases, integrations were completed in days, exceeding the participants' expectations, while others took longer due to more stringent validation processes, particularly in cases of sensitive data or APIs. Overall, the feedback has been overwhelmingly positive, with increasing adoption rates and collaborations with Ecobank.

Additionally, there have been requests to expand the sandbox beyond technology to include compliance and business components, streamlining these aspects alongside the technological integration.

Incentives for Participants: Demand for the sandbox has been exceptionally high, reflecting the significant value it provides to participants. Seemingly, Ecobank did not need to offer additional incentives, as the inherent benefits of the partnership were compelling enough. Its partnership model allows fintechs to focus on innovation and developing digital solutions, while the bank ensures compliance and provides a reliable infrastructure; enabling fast and seamless deployment in markets.

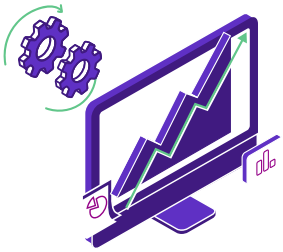
The primary costs associated with the running of the sandbox relate to API platform development and maintenance, ensuring its security, and allocating resources to support fintechs during integration and after they go live.

Challenges in Implementation: The primary challenges were allocating dedicated development resources and ensuring robust security for both partners and the bank, particularly when enabling secure API exchanges.

Results/Benefits: Ecobank evaluates the performance of its sandbox initiative through various metrics. Key indicators include the platform's growth in transaction volumes, the automation of previously manual processes, and the number of companies engaging with its services. By 2024, the sandbox had 230 participants, with 56 going live.

Its success stories have included Togo's Semoa, which used Ecobank's Express Cash API to create a wallet allowing non-Ecobank users access to the bank's ATMs, and Kenya's Fingo, which built a youth-focused digital banking platform using the Express Account API. Other successes relate to the payment API, which grew from a transaction volume of $100,000 four years ago to over $160M in 2024.

Recommendations to other Regulators: Ecobank advises that when setting up operational sandboxes, it is crucial to ensure the sandbox addresses specific needs. Engaging stakeholders like compliance, legal, security, and external regulators early helps streamline implementation. Additionally, building the APIs platform to scale is key to supporting growth and accommodating new innovations as they come on board.



Case study 2: The Communications Authority of Kenya's CA Regulatory Sandbox: a unique case of an ICT sandbox.

Enhancing innovative connectivity by deploying offline microservers to overcome content distribution barriers in Kenya's basic education.

Background

The Communications Authority (CA) regulatory sandbox is defined by the Communications Authority of Kenya as "an alternative regulatory tool that allows innovators to test emerging ICT products and services in a controlled environment."[11] It is one of a kind on the continent, where most sandboxes have focused on the financial sector. The CA regulatory sandbox was set up to enable enhanced collaboration between ICT innovators and the Communications Authority of Kenya, as it works to safeguard the interests of consumers of ICT products and services. Launched in 2023, the CA regulatory sandbox is set up to test a broad spectrum of products and services including emerging technologies such as IoT devices, AI driven services, and smart city solutions.[12]

[11] Communications Authority of Kenya (n.d), *Regulatory Sandbox, Homepage*, (Accessed 27 January 2025).

[12] Communications Authority of Kenya (n.d), *Regulatory Sandbox*, (Accessed 31 October 2024)

Findings from an interaction with representatives from the CA Regulatory Sandbox

> ***"I believe the sandbox environment is supposed to be a very interactive process which has to be distinguished from the typical regulatory licensing… The future is in a collaborative regulator, and we are looking at sandbox as a door towards that kind of area."***
>
> - Communications Authority of Kenya

The CA Regulatory Sandbox

Focus: ICT (Information and Communication Technology), **Type:** Regulatory, **Geographic Scope:** National (Kenya), **Sandbox Status:** In Operation (nascent stage), **No of applications so far:** 3, **No accepted:** 1 (two under consideration), **Duration of the sandbox:** Initial Period up to 12 months (with possibility of extension of up to additional months) **Who is behind this sandbox:** Communications Authority of Kenya (CA)

Why the Sandbox: The CA regulatory sandbox was established to address the regulatory challenges posed by rapidly evolving technologies and services, especially within the ICT sector, which now often fall outside the scope of traditional tiers of regulatory frameworks. Recognizing these gaps, the CA sought to explore a more adaptive approach, by creating a flexible environment where new technologies could be explored without the immediate constraints of existing regulations. The sandbox allows regulators to understand emerging technologies and assess their regulatory implications, while innovators test their solutions under regulatory oversight and interact with consumers in a controlled setting.

Its design: Still in its nascent stages, the sandbox has been designed to encourage participation by eliminating application fees. Although monetary provisions exist within the framework, the Authority has opted to waive these fees to remove financial barriers that might discourage innovators. This decision reflects the sandbox's focus on fostering inclusivity and innovation.

Feedback on the Application Process: Feedback from the initial application process highlighted its time-intensive nature as it had been the pilot case and done from scratch. The process involved bringing on board the person to understand different impacts and benefits of a sandbox environment, assisting them with preparing the application and assembling the necessary requirements.

Additionally, feedback from participants highlighted the need for an interactive application process, which the CA has addressed through its online platform. The platform helps the regulator to handle applications and eventually, it's supposed to assist with interacting with other sandboxes and regulators within a sandbox environment whose creation the authority is championing through the policy experimentation initiative Global Innovation and Entrepreneurship Centre in Kenya, under the International Telecommunication Union (ITU) Acceleration Centers' Programme.

Applicants whose solutions neatly fit within existing regulatory frameworks are generally not admitted into the sandbox, underscoring the need for a better understanding of the sandbox's unique objectives.

Incentives for Participants: The sandbox provides several incentives, including waived application fees, direct access to the regulatory authority, exemption from certain regulatory requirements during the testing phase, and flexibility in meeting compliance obligations. Specifically, innovators are granted access to critical resources such as spectrum frequency,[13] which is often highly competitive. This access allows them to test their solutions in real-world environments, ensuring practicality and relevance, and creating a conducive space for experimentation while maintaining a focus on real-life applicability.

While the sandbox offers regulatory leniency, consumer safety remains a priority. Participants are required to implement robust risk mitigation measures and adhere to agreed-upon parameters to ensure consumer protection during testing.

Challenges in Implementation: A key challenge has been the lack of public awareness and understanding of the sandbox concept, which both the general public and persons applying to join the sandbox face. Many potential applicants confuse the sandbox with other innovation support environments, such as incubators, or assume it offers financial support, which is not the sandboxes' primary objective.

Results and Anticipated Outcomes: The sandbox has so far only admitted one participant and is currently processing two additional applications. While tangible outcomes such as new regulations or detailed reports are yet to materialize, the CA anticipates that the sandbox will inform adjustments to existing regulations to accommodate new innovations, foster new applications as awareness grows, and address emerging challenges through new regulations. For innovators, the sandbox would offer visibility and credibility, particularly for early stage startups and organizations, which can enhance their ability to secure funding and scale their solutions.

Dissemination of Learnings and Results from the Sandbox: The CA has undertaken efforts to disseminate its learnings and enhance public awareness, including through campaigns targeted at relevant stakeholders. It is also collaborating with other sandboxes, particularly the Capital Markets Authority Sandbox, and is supporting the development of sandboxes in the health sector. The CA has also developed primary framework documents that clearly outline the sandbox's objectives, processes, and requirements.

Recommendations to other Regulators: The CA emphasized the importance of stakeholder communication through continuous feedback loops and collaboration with both internal and external experts to address the diverse demands of the sandbox environment. It also highlighted the need for a robust governance framework to define roles, manage risks, and streamline processes. Flexibility in balancing regulatory leniency with risk management is essential, as is the development of online platforms to facilitate applications, monitor progress, and ensure data visibility for stakeholders'.

[13] Spectrum is a sovereign asset where the use of the airwaves in a country is overseen by the government or the designated national regulatory authority, which manages it and issues the needed licenses. Spectrum frequency refers to the number of repetitions of the wave you see in a second and is measured in Hertz or multiples of it.

Admitted Participant's Experience with CA's Sandbox

Engineer Kara, the first admitted participant into the CA regulatory sandbox, developed an offline-focused microserver aimed at addressing content distribution challenges in basic education. Although initially unfamiliar with sandbox activities and lacking all the necessary requirements to participate in the CA sandbox, he successfully navigated the application process with the CA's support.

Reflecting on his experience, Kara noted the application process was lengthy and could benefit from better structuring. He cited delays that arose from both government procedures and his own timeline. However, he appreciated the comprehensive support and knowledge-sharing provided by the CA throughout the process.

Kara faced challenges in establishing a solid operational footing within the sandbox, reporting limited progress after a month. He observed that the nascent nature of the sandbox activities in the ICT sector may require some time navigating aspects such as hardware, software, or networking development. Additionally, navigating intellectual property issues has been a hurdle, indicating that distinguishing his innovation from existing technologies has proven complex.

Despite these challenges, Kara hopes to leverage the CA's partnerships from both technological and business standpoints. He views the sandbox as an opportunity to gain insights into how regulations impact his innovation. He highlighted the unique access the sandbox provides, such as experimenting with internet gateway technologies under the CA's directives—an opportunity otherwise inaccessible due to prohibitive commercial costs.

''It is a good idea to have regulation relaxed so that I can fit my products into the regulatory framework and reflect on how regulation impacts my intended solution beyond even the innovation. For instance, one of the opportunities that is coming up is that I can work at an Internet gateway based on the Communications Authority giving the directives to that gateway for me to go in there and experiment with one or two things. On my own I certainly would not get that opportunity. I'd just get a commercial bill which I would not be able to afford.''

Case study 3: South Africa's Intergovernmental Fintech Working Group (IFWG) Regulatory Sandbox (RSB): a case study for responsible sandbox implementation practices.

From enabling crypto asset testing to advancing index insurance for farmers, the IFWG sandbox paves the way for enriched regulatory frameworks in South Africa.

Background

In April 2020, the IFWG which is made of financial sector regulatory authorities and policymakers launched the regulatory sandbox (RSB) in South Africa. The RSB provides a controlled and live environment for financial sector innovators to safely test new financial products or services. These tests are conducted against existing regulations and under the responsible supervision of IFWG members, with input from relevant regulators.

The RSB has been recognized as a valuable initiative capable of driving necessary changes to support financial sector innovation. For example, the RSB provided participants with regulatory clarity for innovations that do not neatly fit within existing frameworks. Additionally, it offered temporary relief within the existing legislative and regulatory framework for products that might infringe on current regulations. It is also credited for its willingness to explore 'controversial' fintech applications such as blockchain and crypto, [14] [15] something most sandboxes in the region are hesitant to do.

Findings from an interaction with Financial Sector Conduct Authority (FSCA) representative regarding the IFWG Regulatory Sandbox (RSB)

> ***"I think a multi regulator sandbox, especially in the fintech space, will be more valuable than a single regulator. Given that fintech is cross cutting, you would want a number of regulators to be sitting in the room, monitoring the testing and sharing their perspectives from different angles."***
>
> - Senior Specialist, Financial Technology, FSCA

IFWG Regulatory Sandbox

Focus: Finance, Type: Regulatory, **Geographic scope:** South Africa, **Sandbox status:** In Operation, **No of applications so far:** 52, **No accepted:** 10, **Duration of the sandbox:** 6 months, **Who is behind this sandbox:** South African Intergovernmental FinTech Working Group

[14] BitKE (2023), *3 Out of 4 Products in the South African Regulatory Sandbox Inaugural Cohort are Blockchain and Crypto-based*, (Accessed on 31 October 2024)

[15] My BroadBand (2021), *All the cryptocurrency projects being tested in South Africa's regulatory sandbox*, (Accessed on 31 October 2024)

Why the Sandbox: In 2016, South Africa's key financial sector regulators recognized the growing impact of Fintech in driving innovation and decided to collaborate by forming the South African Intergovernmental FinTech Working Group to better understand the associated risks and opportunities. Acknowledging gaps in their understanding of the local Fintech ecosystem, they conducted a diagnostic study, the Scoping Report, in 2019 to map the landscape. Based on the findings, they propose establishing an Innovation Hub which is supported by 3 facilitators - Regulatory Guidance Unit, RSB and IA. These initiatives aim to bring regulators closer to the Fintech landscape, providing Fintechs with a platform to engage regulators, test their innovations against existing regulations, and explore potential regulatory improvements or new frameworks.

Its design: The RSB is one of the facilitators within the Innovation Hub. It is a collaborative and coordinated effort of IFWG, with active participation from the Financial Intelligence Centre (FIC), the Financial Sector Conduct Authority (FSCA), National Treasury, the National Creditor Regulator (NCR), the South African Reserve Bank (SARB), Competition Commission (CC) and the South African Revenue Service (SARS). The FSCA and the SARB manage the day to day activities of the Innovation Hub.

With the aim to provide regulatory clarity to industry and insight to innovation for regulators, the RSB prioritizes applications that offer meaningful insights into innovation and regulatory challenges in key policy areas. FinTechs can apply at no cost but must have a fully developed solution and fund their own testing, as regulators do not cover associated expenses.

The RSB collaborates with regulators to grant temporary regulatory relief, allowing approved innovators—both regulated and unregulated—to test products that challenge or do not fit within existing frameworks. Each participant enters a formal agreement with relevant regulators, outlining the test plan, parameters, risk mitigation measures, and a typical six-month testing period. While participants must comply with existing regulations, entry into the sandbox does not alter their licensing status or imply regulatory approval.

Feedback: Participants have highlighted that testing within the sandbox brings them closer to regulators and provides a deeper understanding of regulations. Initially, a participant may have certain perspectives, but the testing process helps clarify previously unclear areas.

Incentives for Participants: The regulatory sandbox offers no upfront incentives but provides fintechs and regulators with crucial regulatory clarity. Designed for innovations that challenge existing regulations, it grants approved participants exemptions to test solutions in a controlled environment. Successful testing yields indirect benefits such as regulatory insights, regulatory exemptions, and licensing guidance, helping fintechs align with frameworks.

Additional benefits include: improving regulators' and innovators' understanding of risks and opportunities in financial innovation; testing new business models that fall outside existing regulations; live testing with real customers under regulatory supervision and restrictions; informing policy development for responsible innovation; fostering competition, efficiency, and financial inclusion; and enhancing compliance through industry engagement and clarification of regulatory uncertainties.

Challenges in Implementation: Challenges included inefficiencies in the initial cohort-based approach, leading to a transition to a rolling application process. The six-month testing cycle required adaptation due to varying regulator timelines in the multi-regulator setup. Delays also stemmed from late involvement of subject matter experts, highlighting the need for early and clear communication, particularly for cross-cutting fintech innovations. The large number of applications proved challenging and took some time to process with the group of regulatory SMEs, while assessing the need for and feasibility of regulatory relief proved complex given the broad range of applications. Clear roles and responsibilities were critical, as final decisions on sandbox entry and contracting rested with the regulator overseeing the specific test. Balancing agility with realistic timelines was also essential to ensure meaningful engagement between applicants and regulators.

Out of 52 applications in the first cohort, only 9 advanced to testing. Most applications (26 of 45) failed to move past the SME review because of a misalignment between what the applicants sought to achieve and the regulatory focus areas (regulatory appetite). In this regard, some of the specific reasons provided were that: existing regulatory requirements may apply and the RSB should not serve as an avenue for regulatory arbitrage; similarly proposed business models potentially fell within what regulators had already stated to be undesirable or where regulators had already previously decided on a specific regulatory treatment; and applicants were being overly ambitious in terms of what was feasible within the RSB as operated by the IFWG.

Results/Benefits: The first cohort of the sandbox received about 52 applications, with 9 advancing to testing, and 8 achieving successful outcomes. For example, some tests focused on crypto assets at a time when South Africa lacked specific regulations for them. The test provided valuable insights that helped inform the country's regulatory stance on emerging topics such as crypto assets and index insurance. A notable case involved Santam which aimed to clarify the treatment and appropriate regulatory framework for index insurance as an insurance product. The case tested successfully and regulators are contemplating developing a regulatory framework which caters for this kind of product.

In some cases, while testing was successful, regulators determined that they were not yet ready to make a decision in terms of amending existing regulation. However, these outcomes still proved valuable, as they provided critical insights into new innovations and informed regulatory approaches. Beyond regulatory advancements, the sandbox also showcased unique innovations from participating companies, and even in instances of existing technologies, regulators gained valuable knowledge and learning opportunities.

Dissemination of Learnings and Results from the Sandbox: The Sandbox activities, insights, and recommendations are documented in the Feedback Report available on the innovation hub website. Information about fintechs testing in the sandbox is regularly updated on the website. At the time of the interview, efforts were underway to enhance the reporting of testing outcomes.

Recommendations to other Regulators: Clear communication of sandbox objectives, participation criteria, and focus areas to attract suitable applicants. A regulatory guidance unit alongside the sandbox enhances effectiveness. In fintech, a multi-regulator sandbox is preferable for cross-sector oversight. Early engagement with applicants and closer collaboration among regulators ensure a streamlined, end-to-end approach.

Insights from Wendy McCallum, a professor of Stellenbosch Business School who conducted a study on the conditions for effective adoption of sandboxes focusing on South Africa's IFWG sandbox.[16]

Prof. McCallum highlighted capacity constraints, which emerged from her findings from both the regulators and the participants. She provided an example where fintech regulators are highly skilled in financial sector regulation but could benefit from training in technology to conduct technical due diligence. She noted that while outsourcing such expertise can work, it often comes with its own risks and additional resource requirements. She also emphasized that one of the key benefits of sandboxing is its ability to facilitate bidirectional learning, where stakeholders learn from each other.

Among the key challenges she identified in implementing sandboxes in Africa were the limited documentation of sandbox activities, whether successful or not. She recommended adopting a sandbox approach that includes evaluation and reporting on aspects such as objectives, types of participating companies, challenges, and activities. One of the challenges often arises from the intellectual property of participating companies she noted. To address this, she encouraged practitioners to use aggregated and anonymized approaches to reporting and share processes and say cohort closure reports. These could provide insights into the lessons learned, and the regulatory issues addressed. She also suggested informing sandbox participants in advance about what will be published to avoid pushback.

Case study 4: The World Economic Forum and UAE's TradeTech Regulatory Sandbox: a case that could impact cross-border trade across Africa.

With a Ghanaian company in its first cohort, the UAE's TradeTech sandbox sets sights on an Africa-focused initiative.

Background

The UAE TradeTech regulatory sandbox is a joint initiative by the World Economic Forum (WEF) and the UAE government which provides a controlled environment for testing innovative trade finance technologies. It aims to enable startups, financial institutions, and regulators to experiment with digital solutions such as AI and blockchain in real-world conditions. The sandbox serves as a platform for developing technology solutions that simplify cross-border trade, which has broad applications for emerging markets like Africa. The UAE Tradetech regulatory sandbox has **the potential to impact Cross-Border Trade across Africa**. The team is set to establish a dedicated sandbox in an African country to further support trade innovation on the continent. As seen in the interview findings below, it has already attracted participation from Africa.

[16] Wendy McCallum & Meshach J. Aziakpono, 2023. "*Regulatory sandbox for FinTech regulation: Do the conditions for effective adoption exist in South Africa?*," Development Southern Africa, Taylor & Francis Journals, vol. 40(5), pages 1100-1116, September.

Findings from an interaction with a representative from the UAE's TradeTech Regulatory Sandbox

> ***TradeTech regulatory collaborations allow countries to stay current with technological advances while ensuring regulatory compliance and security. For governments, such collaborations are key to economic resilience—they help create a business-friendly environment, attract foreign investment, and improve trade competitiveness. As digital trade grows, governments that embrace regulatory innovation are better equipped to navigate shifts in global trade.***
>
> - UAE TradeTech Regulatory Sandbox

UAE TradeTech Regulatory Sandbox

Focus: Trade Finance, **Type:** Regulatory, **Geographic scope:** Global, **Status:** In Operation, **No of applications so far:** 46, **No accepted:** 8, **Duration of the sandbox:** 9 months, **Who is behind this sandbox:** World Economic Forum (WEF) and the UAE Government (Ministry Of Economy and Abu Dhabi Department Of Economic Development)

Why the Sandbox: The UAE TradeTech regulatory sandbox was set up to offer a controlled environment for testing innovative trade finance technologies in order to bridge the gap between regulatory frameworks and emerging technologies such as AI and blockchain. The sandbox enables startups, financial institutions, and regulators to experiment with digital solutions in real-world settings, with the primary goal of improving efficiency, transparency, and compliance in trade finance processes.

Its design: The sandbox is the result of a multi-stakeholder approach including a close public-private collaboration where government entities such as the Central Bank of the UAE, Abu Dhabi Global Market (ADGM), Dubai Financial Services Authority (DFSA), and RegLab from the Ministry of Cabinet Affairs provide regulatory oversight, while private-sector participants contribute technical expertise and practical solutions that address real market needs. This balanced approach has helped the sandbox practitioners to ensure that regulatory standards align with innovation, making it easier to integrate new technologies into the existing regulatory landscape.

Sandbox Results: The sandbox has so far received **46** testing proposals from 21 countries across **Africa, Asia, Europe, Middle East**, and **Americas**, and covered a variety of use cases in trade finance and documentation. Out of these, **eight companies** were selected for the first cohort including a company from **Ghana**. This underscores the sandbox's potential to address trade finance challenges specific to SMEs in Africa, including credit solutions, traceability, and secure data exchange, showcasing its relevance to emerging markets and its role in fostering inclusive trade innovation.

The sandbox has established a regulatory reform roadmap to accommodate digital trade, producing insights that can shape international trade standards. Looking ahead, plans include establishing a dedicated sandbox in Africa to further support trade innovation on the continent.

Challenges in Implementation: The implementation of the UAE TradeTech regulatory sandbox has faced several challenges, including the complexity of aligning multiple regulatory frameworks across jurisdictions with varying standards and maturity levels. Ensuring robust data privacy and cybersecurity measures for sensitive trade finance data, particularly in cross-border contexts, remains critical. Stakeholder engagement has required significant effort to align the diverse interests of regulators, startups, and financial institutions while balancing limited resources. Integrating emerging technologies like AI and blockchain into legacy systems has posed technical and scalability hurdles, compounded by tight timeframes and resource constraints. Additionally, the lack of standardized metrics for measuring success has further complicated efforts.

Anticipated Impact: The sandbox has the potential to reshape trade regulation by showing how digital tools, such as AI and blockchain, can support streamlined and transparent trade finance practices. By aligning technology with regulatory standards, the sandbox could set new compliance benchmarks, lower costs, and enhance trust in global trade networks. This model could serve as a template for other countries, encouraging broader adoption of similar frameworks and advancing global regulatory modernization.

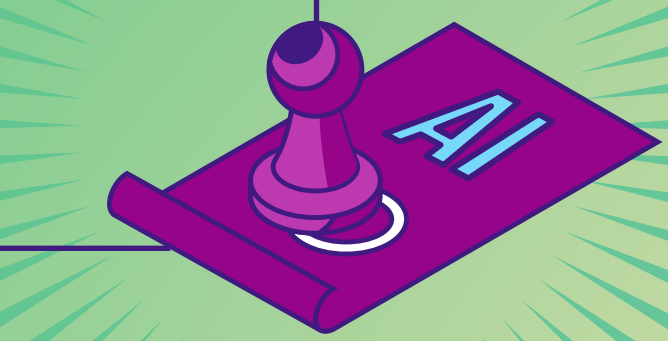
Dissemination of Learnings and Results from the Sandbox: Although the regulatory proposal is expected to be released in April 2025, the sandbox has already highlighted several key lessons. Specifically is the critical role of strong collaboration between regulators and the private sector in ensuring that solutions address real-world needs. The sandbox illustrates how public-private partnerships can drive the evolution of regulatory frameworks alongside technological advancements, thereby minimizing friction for users.

Recommendations to other Regulators: Best practices highlighted include engaging both public and private stakeholders early to ensure alignment, and incorporating multiple regulators across jurisdictions for broader applicability. Focusing on one core area per cohort allows for varied use cases within that focus, while setting clear objectives and phased milestones helps track progress and make necessary adjustments. Designing adaptable regulatory frameworks that evolve with emerging technologies supports iterative improvement, and maintaining transparent, regular communication with participants fosters collaboration and manages expectations. Additionally, developing the sandbox with scalability in mind ensures it can be applied to various markets with similar needs, enhancing its replicability and impact.

PART 2

POLICYMAKING IN THE AGE OF AI AND THE POTENTIAL OF SANDBOXES

> *"Only through testing and evolving AI governance can we develop robust systems to govern AI and genuinely improve people's lives. "*
>
> — Karen Bett, Senior Policy Manager, Data Equity and Inclusion, Global Partnership for Sustainable Development Data



AFRICA'S AI OUTLOOK

In our digitized world, with growing amounts of digital data available –both personal and non-personal–, countries and other stakeholders are exploring ways to leverage data's potential through tools like AI. AI creates various opportunities for social and economic development in Africa, as it can facilitate innovations across sectors, including healthcare, education, urban planning, and other industries, improving overall well-being and economic development.[17] And while research and dialogue have underscored the significant potential of AI to drive economic development in Africa, scholars also highlight the significant challenges that leaders must overcome to reap its benefits.[18]

As witnessed during COVID-19 response, data and AI hold great potential to manage public health crises, improve the effectiveness of healthcare service delivery[19] and foster innovation.[20] AI technologies can support governments in addressing community challenges through improved decision-making based on evidence and problem-solving capabilities.[21] AI is also reshaping financial services by driving fintech growth and enabling significant advancements in the sector, particularly through innovations aimed at increasing financial inclusion across the continent. Generative AI, in particular, presents new opportunities for enhancing customer engagement, streamlining operations, and developing personalized financial products.[22] According to the UNDP Regional Bureau for Africa, AI is creating new economic opportunities, innovative business models, and enhanced productivity, positively impacting the SDGs related to hunger, health, quality education, and clean energy.[23]

Several African countries have begun to embrace AI technologies, recognizing their potential role in economic and social development. A vibrant AI ecosystem is emerging, with lead technology hubs in South Africa, Nigeria and Kenya, and growing activities in Ethiopia and Uganda.[24]

However, the glaring challenges of harnessing AI stifle the opportunities that could further emerge. Key challenges include limited access to significant amounts of quality data, inadequate data storage and insufficient infrastructure to enable connectivity and broadband.[25] The region is also significantly lagging

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[17] Kohnert, D. (2022), *Machine Ethics and African Identities: Perspectives of Artificial Intelligence in Africa*, SSRN Electronic Journal

[18] Gwagwa, A., Kraemer-Mbula, E., Rizk, N., Rutenberg, I., & De Beer, J. (2020), *Artificial intelligence (AI) Deployments in Africa: Benefits, Challenges and Policy Dimensions, The African Journal of Information and Communication (AJIC)*, 26, 1-28

[19] AFDB (2022), *How Rwanda is using artificial intelligence to improve healthcare | African Development Bank Group - making a difference*, African Development Bank Group

[20] Media Center (2023), *Powering Africa's Digital Health through Artificial Intelligence driven innovation*, Science for Africa Foundation

[21] Isagah, T., & Musabila, A. (2020), *Recommendations for artificial intelligence implementation in African governments: results from researchers and practitioners of AI/ML*, Proceedings of the 13th International Conference on Theory and Practice of Electronic Governance

[22] Eugénie Krijnsen and Maria Nazareth (2023), *Move fast, think slow: How financial services can strike a balance with GenAI*, PwC

[23] UNDP (2024), *Africa Development Insights | Artificial Intelligence for Development (Quarter 2 2024)*

[24] Kohnert, D. (2022), *Machine Ethics and African Identities: Perspectives of Artificial Intelligence in Africa*, SSRN Electronic Journal

[25] Kiemde, S., & Kora, A. (2020), *The Challenges Facing the Development of AI in Africa*, 2020 IEEE International Conference on Advent Trends in Multidisciplinary Research and Innovation (ICATMRI), 1-6.

behind regarding the availability of skilled workforce, as the education sector has not yet incorporated digital and AI competencies in curriculum development, and still faces historic systemic issues to ensure attendance, coverage and quality.[26]

In addition, there is a notable absence of effective policy and funding for AI research and innovation,[27] and is thus hindering actions to develop African AI. Responsible AI development in the region requires new and agile approaches that will facilitate uncovering and integrating African AI narratives to ensure context-responsive technologies.[28] For example policymakers need to consider gender equity, cultural, and linguistic diversity to ensure AI contributes to socio-economic inclusion across the continent.[29]

While countries have progressively worked towards an enabling governance environment for AI, the continent faces two key policy challenges: (1) fragmented national efforts, and (2) reliance on traditional regulatory approaches for AI, the data it requires, and the interconnected digital space. These areas are highly dynamic and demand more agile regulatory methods.

Several African countries have developed national AI strategies or legislations (e.g., Egypt,[30] Tunisia,[31] Benin,[32] Nigeria,[33] Mauritius[34]) that align with their unique national development goals and the UN Sustainable Development Goals (SDGs). However, strategies vary significantly from one country to another, leading to a lack of uniformity in both data and AI governance, creating a fragmented landscape where the level of AI governance maturity differs widely across the continent.[35]

There is hence a need to increase coordination of data and AI policies across the continent, as emphasized in the report on 'Cross-Border Digital Policies in Africa' by the Internet & Jurisdiction Policy Network

[26] Singh, B. (2023), *Challenges and Risks in Artificial Intelligence Particularly in the African Region*, International Journal for Research in Applied Science and Engineering Technology

[27] Kiemde, S., & Kora, A. (2020), *The Challenges Facing the Development of AI in Africa*, 2020 IEEE International Conference on Advent Trends in Multidisciplinary Research and Innovation (ICATMRI), 1-6.

[28] Eke, D., & Ogoh, G. (2022), *Forgotten African AI Narratives and the future of AI in Africa*, The International Review of Information Ethics

[29] Gwagwa, A., Kraemer-Mbula, E., Rizk, N., Rutenberg, I., & Beer, J. (2020), *Artificial Intelligence (AI) Deployments in Africa: Benefits, Challenges and Policy Dimensions*, The African Journal of Information and Communication

[30] MCIT (2021), *Egypt National Artificial Intelligence Strategy*, Ministry of Communications and Information Technology

[31] OECD (n.d) *Tunisia AI Roadmap*, OECD.AI Policy Observatory

[32] Ministry of Digitalisation and Digitization (n.d), *National Artificial Intelligence and Big Data Strategy*, (Accessed 25 January 2025)

[33] FMCIDE (2024), *National Artificial Intelligence Strategy*, The Federal Ministry of Communication, Innovation and Digital Economy, Nigeria

[34] Working Group on Artificial Intelligence (2018), *Mauritius Artificial Intelligence Strategy*, Mauritius Digital Promotion Agency

[35] Wakunuma, K., Ogoh, G., Eke, D., & Akintoye, S. (2022), *Responsible AI, SDGs, and AI Governance in Africa*, 2022 IST-Africa Conference (IST-Africa), 1-13; Townsend, B., Sihlahla, I., Naidoo, M., Naidoo, S., Donnelly, D., & Thaldar, D. (2023), Mapping the regulatory landscape of AI in healthcare in Africa, Frontiers in Pharmacology, 14.

(I&JPN).[36] The report calls for enhanced regional collaboration on AI-related trade policies and the development of proactive, robust regulatory measures at a regional level, rather than on an individual country basis. The need for this unified approach is also reflected by recent work from Research ICT Africa, which explores the intersection of AI and economic development in Africa.[37]

Africa's efforts to strengthen the AI governance ecosystem and data governance mechanisms could benefit from regulatory experimentation and agile approaches that promote effective stakeholder engagement. The African Union's Continental Artificial Intelligence Strategy is a promising start.[38] Further priorities should include adopting robust frameworks to address data-sharing challenges—particularly enabling cross-border data flows—harmonizing AI regulations across the continent, and advancing infrastructure development alongside skilling initiatives.[39]

While not a panacea to all regulatory and innovation challenges, sandboxes have emerged as an approach with great potential for cross-border and cross-regulatory collaboration and experimentation, providing a safe environment to foster regulatory and technical innovation. Moreover, sandboxes are structured in a way to boost novel technology and services using interactive processes and spaces for stakeholders to cocreate and foster transparency.

Agile methods such as sandboxes could support Africa's digital transformation in a range of areas, such as the testing of physical and non-physical infrastructures such as digital public infrastructures (DPI). Sandboxes can help effectively address the complexities and impacts of DPI, analyzing services to ensure they are inclusive, interoperable, and safe for all by providing a controlled environment for low-risk testing of new technologies and concepts.[40]

The early stages of data and AI governance in Africa presents an opportunity for a regional approach which puts the continent at the forefront of innovation, ensuring sustainable and inclusive growth for all its nations. Based on a review of several scholarly studies in the region, key recommendations suggest that Africa needs to:

Collaborate to regulate and create an enabling environment for AI (e.g., improve coordination of data policies and devise ways to achieve data sovereignty without data localization),

Innovate to address the continent's AI infrastructure and skills gaps, and

Unite to ensure Africa is included in global conversations and promotes inclusive data practices.

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[36] Internet & Jurisdiction Policy Network (2022),"*Framing, Mapping and Addressing Cross-Border Digital Policies in Africa: An Internet & Jurisdiction Policy Network Regional Status Report*".

[37] Sandra Makumbirofa et al (2024), *Navigating the intersection of artificial intelligence and economic development in Africa: Policy requirements and implications*, Research ICT Africa.

[38] African Union (2024), *African Union Continental Artificial Intelligence Strategy.*

[39] Dr Fola Adeleke (2024), *AI and International Trade: Optimizing the Potential for Africa's AI Economy*, African Observatory on Responsible Artificial Intelligence.

[40] Porciuncula, L., Tomlinson, S. and M. Rozo-Paz (2024), *Why sandboxes are key for responsible DPI*, Datasphere Initiative.

WHY DATA POLICY MATTERS

From health, climate to finance, almost all critical social and economic sectors could benefit from reliable and holistic data use and management alongside effective data governance practices. One of the pressing healthcare challenges in Africa is the fight against diseases such as malaria which could benefit from data driven approaches. However the health sector faces significant challenges ranging from inadequacy of data[41] to the low adoption of digital tools,[42] which hinders Africa's ability to generate and collect data that would inform effective healthcare practices. Furthermore, access and sharing personal health data is still a challenge due to several reasons including lack of proper guidelines and frameworks to make such data available for research.

Climate change, population growth and urbanization also present significant challenges requiring robust and accessible climate data to develop successful mitigation and adaptation strategies. Access to high-quality climate data is crucial for developing effective climate services that can help mitigate the impacts of climate change on agriculture, food security, and urban planning. Accurate data is also the foundation of effective humanitarian responses, and could support better actions for people on the move, migrants, and refugees, especially support in identifying higher-risk zones for environmental emergencies.[43]

In that regard, enhancing climate resilience requires data solutions such as the International Research Institute for Climate and Society's Climate Data Tool, which improves the availability of quality climate data and climate information products.[44] However the utility of these data sets is often hampered by the lack of a comprehensive overview of where and how to access them. Equipping policy and decisionmakers as well as civil society with the tools and knowledge to leverage these platforms is thus fundamental to developing African AI solutions for climate and other environmental risks.

Financial inclusion is another area where data and effective data governance is becoming key. Data-intensive technologies like digital identity systems rely heavily on personal data for their development and deployment and are often the foundation of broader digital payment systems. As African countries develop their own digital identity and payments systems as well as their overall digital financial ecosystem, more attention needs to be paid to the data behind these technologies and ensure that they are inclusive and safe by design.[45]

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[41] Musa, S., Haruna, U., Manirambona, E., Eshun, G., Ahmad, D., Dada, D., Gololo, A., Musa, S., Abdulkadir, A., & III, D. (2023), *Paucity of Health Data in Africa: An Obstacle to Digital Health Implementation and Evidence-Based Practice*, Swiss School of Public Health.

[42] ilenou, B., Nyirenda, J., Zaghloul, A., Lange, B., Doerrbecker, J., Schenkel, K., & Krause, G. (2021), *Availability and Suitability of Digital Health Tools in Africa for Pandemic Control: Scoping Review and Cluster Analysis*, JMIR Public Health and Surveillance.

[43] UNHCR (n.d), *Climate Change and Displacement*, (Accessed 26 November 2024).

[44] IRI (n.d), *Climate Data Tool (CDT)*, Colombia Climate School International Research Institute for Climate and Society (Accessed 31 October 2024).

[45] Rozo-Paz, M., Smye, J., Panda, S. (2023), *Enhancing Inclusion in Digital Identity Policies and Systems: An Assessment Framework*, Datasphere Initiative and Berkman Klein Center for Internet & Society at Harvard University

Traditional governance processes often struggle to bring all stakeholders together to effectively collaborate and often have a national focus which forgets that data issues transcend borders and jurisdictions. Data collected in Rwanda might be used to train AI systems in South Africa. It might also be used by European, American or Chinese companies. Data sharing, data access across borders and the spill-over effects of AI technologies across countries and jurisdictions point to the complexity of this issue, and the need to tap on new methodologies to shape governance frameworks.

Various political leaders in the African region are actively supporting policies and investments in data and AI, which has propelled governance actions. Nationally, interesting examples include the Rwandan government, for instance, which has developed interesting big data revolution projects like data portals through the National Statistics Office (NISR).[46]

Broadly, countries have embedded digital strategies in their national plans, developed instruments such as data protection legislation, AI and national data strategies.[47] Countries including Senegal,[48] Ghana,[49] Rwanda,[50] and Uganda,[51] have gone ahead to develop national data strategies. These national trends are also coming from a broader regional push for an African governance approach to data, AI and digital technologies in general. In fact, the African Union's AI Strategy[52] emphasizes the need for a people-centered, development-oriented approach to accelerate AI capabilities while ensuring adequate safeguards.

The push for the Africa Digital Single Market (DSM), an initiative under the AU Digital Transformation Strategy for Africa 2020-2030[53] is also another interesting element in the region's context. The DSM seeks to integrate digital trade components of the African Continental Free Trade Area (AfCFTA)[54] allowing seamless sharing of data and smooth flows of e-commerce across the continent.

Unlocking data raises important ethical considerations around data protection and privacy, which has led to a growing trend of data protection regulations across Africa. According to Data Protection Africa, as of January 2024, 65% of African countries had enacted data protection laws[55] and more countries are expected to follow suit due to a push from the African Union Convention on Cyber Security and Personal Data Protection.[56]

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[46] Data Portals (n.d), *National Institute for Statistics of Rwanda*, (Accessed 31 October 2024).

[47] Melody Musoni and Nneka Ekechukwu (2024), *Interactive tool: Data policies in African countries*, ECDPN The Centre for Africa-Europe Relations.

[48] Data Pop Alliance (2023), *Stratégie Nationale des Données du Sénégal - Résumé - Data-Pop Alliance*.

[49] SAS (2024), *Ghana develops its national data strategy in collaboration with Smart Africa and Team Europe*, Smart Africa.

[50] NISR (2017), *Rwanda National Data revolution and Big data*, National Institute of Statistics of Rwanda.

[51] Ministry of ICT and National Guidance (n.d), *Paving the way for a Data-driven Future through a National Data Strategy* (Accessed on 27 November 2024).

[52] African Union (2024), *African Union Continental Artificial Intelligence Strategy*.

[53] African Union (2020), *The Digital Transformation Strategy for Africa (2020-2030)*.

[54] African Union (2012), *The African Continental Free Trade Are*.

[55] Data Protection Africa (2023), *Mapping the progress (and delays) for data protection in Africa*, ALT Advisory.

[56] African Union (2014), *African Union Convention on Cyber Security and Personal Data Protection*.

The evolving landscape of data governance in Africa highlights the critical importance of establishing data policies and reflects the proactiveness and political will of African leaders to responsibly leverage data as a catalyst for socio-economic development. There is also a strong interest in experimenting with agile solutions to tackle obstacles in unlocking data and data-driven technologies like AI, while robustly addressing ethical considerations surrounding data protection and privacy.

HOW RESPONSIBLE REGULATORY INNOVATION CAN HELP

Policymakers, experts and other actors worldwide have started to explore the potential of agile regulatory mechanisms to approach data and AI governance from new angles. Agile methods[57] like anticipatory regulation, outcome-focused approaches and experimentation are increasingly being adopted by countries worldwide. Notably, anticipatory approaches are currently being materialized in Africa as data trusts such as in South Africa[58] where these trusts are being used to address data governance considerations by involving communities in the process and generating participatory mechanisms around data. Furthermore, some countries have gone ahead to innovate with other agile regulatory mechanisms such as sandboxes[59] aiming to increase inclusivity amidst new and complex challenges.

Leveraging the potential of sandboxes

Sandboxes offer a promising solution for navigating the complexities of data governance and AI regulation in Africa. As shown by the case studies highlighted in Part 1, by providing a controlled environment for experimentation, sandboxes enable stakeholders—such as policymakers, businesses, and communities—to collaboratively develop and test innovative approaches to data usage and governance. This interactive space fosters transparency and encourages co-creation, allowing diverse perspectives to shape effective policies.

In the context of the evolving data landscape and AI in Africa, sandboxes bridge the gap between rapid technological innovation and the slower pace of regulatory evolution making them an essential tool for AI governance as discussed in the Datasphere Initiative's Sandboxes for AI report.[60] They facilitate innovation while ensuring safety and compliance, setting up protocols, guardrails, and frameworks for building trust and maximizing societal benefits. The sandbox approach allows for a better understanding of how to minimize risks as AI is further embedded into daily lives and the operation of societies and economies.[61]

Sandboxes for environmental experimentation can foster responsible data exchange and the deployment of new regulatory approaches to tackle the climate crisis and ensure effective environmental governance.[62]

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[57] WEF (2020), *Agile Regulation for the Fourth Industrial Revolution: A Toolkit for Regulators*, World Economic Forum.

[58] Alison Gillwald (2022), *Data trusts to support participatory data governance in South Africa?*, Research ICT Africa

[59] Dylan (2023), *Regulatory Sandboxes in Africa*, Open Bank Project.

[60] Datasphere Initiative (2025), *Sandboxes for AI*.

[61] Porciuncula, L. (2024), *From catching up to leading: how sandboxes can shape the future of technology for people and planet*, Datasphere Initiative.

[62] Porciuncula, L. (2024),*The Sandbox Potential for Environmental Data Governance*, Datasphere Initiative

They can foster significant learning and mutual benefits through collaboration, improving not only environmental outcomes but also evaluating the technical, regulatory, and economic dimensions, especially in times when traditional regulatory frameworks fall short in enabling responsible data sharing and addressing privacy concerns.

Sandboxes are key in these contexts because they provide safe environments for experimentation, support trust-building, and foster a greater public understanding of emerging technologies, practices, rules, and norms. As public and private organizations adopt agile regulatory frameworks, sandboxes can help mitigate risks associated with data sharing across borders, ultimately leading to more robust governance structures. By harnessing these mechanisms, African nations can better leverage data as a catalyst for socio-economic development, ensuring that the benefits of AI and data-driven solutions are accessible to all.

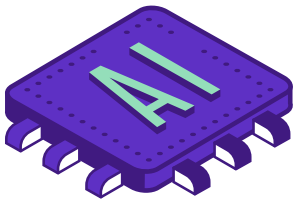
On the other hand, sandboxes are not always the ideal tool for regulatory or operational challenges especially in cases where the desired regulatory changes are straightforward. In such cases it may be more efficient to directly amend the legal framework instead of undertaking the costly and time-intensive process of developing a sandbox. Sandboxes are resource-intensive and require institutional readiness, clear objectives, and dedicated funding to ensure success. Without these foundational elements, their implementation may not yield the intended benefits.

Moreover, sandboxes need to be carefully designed and managed to deliver meaningful outcomes. Poorly executed sandboxes risk wasting resources, failing to address key challenges, or even creating confusion in regulatory or operational landscapes. Ultimately, the effectiveness of a sandbox lies not just in its deployment but in how well it is aligned with the specific context and objectives it seeks to address. Ensuring the effective and inclusive engagement of relevant stakeholders in a sandbox is also important and can depend on trust and awareness of actors such as SMEs and civil society in how to contribute and participate in a sandbox. Designing effective stakeholder engagement mechanisms and transparent communication of sandbox scope and results is also delicate and requires management and support. Therefore, while sandboxes can be transformative, their impact depends heavily on how thoughtfully and strategically they are designed and implemented.

SANDBOX POLICY AREAS: *INSIGHTS FROM ROUND TABLE DISCUSSIONS*

As part of the Africa Sandboxes Forum phase one and two, the Datasphere Initiative held a series of regulatory roundtables and working groups to understand specific sectors and issue areas where sandboxes are or could play a useful role in fostering responsible regulatory and technical innovations. The policy area summaries below identify the main highlights of the insights shared around the opportunities and challenges faced by African countries and potential ways sandboxes can be useful.

POLICY AREA 1: ARTIFICIAL INTELLIGENCE



> ***Sandboxes seem to work especially when technologies are fairly new or when it's not fully understood or when for example the human resource of the regulatory body does not have enough experience to regulate and they want to test this technology. So for AI it makes a lot of sense because there are so many unknowns that we are getting to know as we apply this technology."***
> — Ernest Mwebaze, Executive Director, Sunbird AI.

Context

Data and data-driven technologies such as AI are believed to be revolutionizing and keep transforming Africa due to their transformative potential once harnessed responsibly. Given their dynamic nature, these technologies cannot be effectively regulated by traditional mechanisms, necessitating more agile approaches to governance. It is often said that AI is as good as the data that goes into it. If global AI is fed by data coming primarily from the global north (the United States, Europe, and China), and less so from African data, this creates bigger chances of developing AI that is meaningless for the region or that cannot effectively enhance data value creation for Africa. The region is also fertile ground for potential data exploitation if robust data governance frameworks are not put in place to guide responsible and ethical use of African data in particular and AI technologies in general.

Challenges and Opportunities

- **There is a need for robust data governance to promote transparency, accountability, and ethical use of data in AI applications.** Data is central to the conversation around AI for various sectors, hence the need to prioritize robust data governance. This requires the development and implementation of responsible practices and intentional efforts to manage data effectively across its entire lifecycle. Key aspects include ensuring data interoperability and fostering a multi-stakeholder approach to address the complexities involved.

- **Navigating external pressures while contextualizing AI Ethics for Africa is a challenge.** AI ethics in the African context is a critical area of focus, aimed at incorporating African values and perspectives into AI regulation. There is an opportunity for Africa to devise strategies that tailor AI regulatory approaches to foster the specific needs and contexts of African communities, while ensuring that no country is left behind.

- **The fragmented approach to AI regulation poses challenges and there is a need for actionable strategies.** Different countries have varying levels of development and implementation of AI policies, leading to inconsistencies and gaps in regulation. This fragmentation can hinder the effective governance of AI technologies and limit the potential for collaborative efforts. Furthermore, there is a pressing need to devise ways to turn existing policy instruments into actionable strategies in order to enhance the effectiveness of AI governance but also ensure that all countries, regardless of their current capabilities, can benefit from and contribute to the development of AI technologies.

- **There is a need to examine how AI fits into the broader continuum of digital transformation in Africa to foster sustainable and inclusive growth across the continent.** As African countries continue to embrace digital technologies, AI has the potential to significantly enhance various sectors, from healthcare and education to agriculture and finance. However, integrating AI effectively requires a strategic approach that aligns with ongoing digital initiatives. This involves understanding the unique challenges and opportunities within African contexts and ensuring that AI development and deployment are harmonized with existing digital transformation efforts.

Recommendations

- **Move from purely technical innovation to regulatory innovation:** To effectively govern AI technologies, it is essential to shift focus from purely technical innovation to regulatory innovation. Sandboxes provide safe environments where we can develop and stress test policy frameworks. These controlled settings allow for experimentation and refinement of regulatory approaches, creating a space to innovate at the policy level.

- **Devise ways to incentivize collaboration:** To foster the development of cross-cutting AI policies, it is essential to devise ways to incentivize countries to work together. By creating incentives for collaboration, we can encourage nations to share resources, knowledge, and best practices. This cooperative approach will help harmonize AI regulations across the continent, ensuring that policies are comprehensive and inclusive.

- **Create an enabling environment:** It is crucial to create an enabling environment for AI, starting with the establishment of prerequisite frameworks within Ministries, Departments, and Agencies (MDAs). Understanding how AI impacts these entities is essential before moving towards regulation. This can ensure that MDAs are well-prepared to integrate AI into their operations and contribute to the development of effective regulatory frameworks.

- **Use sandboxes to gather evidence for policy making:** Sandboxes provide an excellent environment to test regulatory interventions, allowing regulators to understand what works and what doesn't in a controlled setting. They serve as a valuable tool for gathering information that can be used as evidence in policy making, especially in situations where challenges are not yet clear. For instance, sandboxes can help find a balance between data protection and privacy while unlocking the value of data.

POLICY AREA 2: HEALTHCARE

> *"African countries have varying health policies and data regulations that hamper the scale of digital innovations. In such a case, sandboxes could allow health stakeholders to trial and test their policies and innovation in a safe space before their widespread adoption and implementation."*
> — Wanjiru Mburu, Digital Health Consultant, Qhala.

Context

More health related data is generated today than ever before through wearables, the exposure of research and public health interventions. Since the start of the COVID-19 pandemic an exponential amount of health data both personal and non personal has been generated and transmitted. This brings big public benefits, supporting decision making and interventions in the area of public health. At the same time, data protection challenges and growing data inequality can remain driven by the lack of data or the lack of access to and/or inappropriate use. Balancing the collective benefits of sharing personal health data with the costs and risks on individuals if they are identifiable, is increasingly challenging making data privacy and security essential. Emerging technologies and AI are touted as transformative tools for the health sector bringing vast opportunities but also new challenges to ensure privacy, security and interoperability of data systems.

Challenges and Opportunities

- **Africa's health sector is highly privatized and there are many different approaches to data governance.** Each country in Africa has their own ways of looking at data. Approaches vary from data protection to what is considered personal data, what types of data can be shared and what cannot be shared. This can bring challenges when it comes to designing health data standards.

- **In most countries in the region, data protection laws are either still being enacted or lag behind in implementation.** Some countries lack data protection laws altogether. This gap, coupled with insufficient efforts to raise public awareness means that citizens are unaware of their rights when it comes to health data protections.

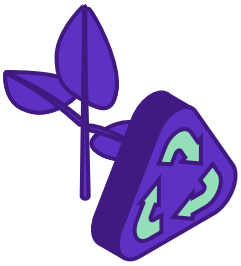
- **Health practitioners often face a mis-match between technical capabilities and governance approaches.** While interoperability was once seen as a backend system issue, it is now coming to the fore and manifesting as a key aspect of user-centric design and implementation of health systems. In the case of health it is particularly important that a digital system can interact with people.

- **While cloud computing is generally recognized as a safe and effective way of storing and accessing data, concerns have been raised concerns around whether foreign providers are compliant with national laws on the continent.** Many also would like to see more African innovations and investment supporting public services.

- **AI is transforming and complexifying health data governance.** This leads to some uncertainty about the types of investment that will be most helpful for the region as it embarks on its AI journey. There is an absence of regional dialogue on the personal data needed to train some AI models. For AI applications to be fit for the needs of African populations, datasets reflective of the diversity of countries' languages and cultures are needed. Currently, AI debate and investment in the data economy is led outside of Africa.

Recommendations

- **Sandbox experimentation can provide a shared platform for engaging and discussing issues to foster digital health innovations and regulatory experimentation.** Sandboxes also offer a space for experts to strengthen stakeholders' capacity to understand and plan for resource requirements and governance structures, guiding deployment and scaling.
- **Sandboxes can help clarify the roles of stakeholders and bring together innovators and technology more generally to the benefit of providers for health.**
- **Sandboxes are a good way to explore AI in health and specific types of solutions in clinical delivery and how AI can be developed in a responsible way.**
- **Sandboxes can also be used to test data breaches and privacy concerns which is particularly important in the health sector.** This can help build trust with users and promote public awareness around products and services that have already been tried, tested and approved by regulators.
- **Africa Centre for Disease Control and Prevention is part of a collaborative group to address the challenge of health data-sharing by developing a regulatory sandbox or digital innovation sandbox.** Such an initiative presents an opportunity to accelerate healthtech adoption and improve health outcomes across Africa.



POLICY AREA 3: CLIMATE AND SUSTAINABILITY

> *"We have seen public-private partnerships work in different areas. But how do we engage and build these partnerships when it comes to data? What should governments put in place to support these collaborations?"*
> — Diana Sang, Regional Director for Africa at the Digital Impact Alliance

Context

Africa faces unique challenges and opportunities in leveraging data and data-driven technologies to address climate crisis and environmental protections. Climate relevant data sets are vast for example, weather patterns, agriculture, tide patterns and transportation, and energy consumption are broad and overlapping. As climate events increase in frequency and size, scientists and governments need access to reliable data.

Data needs to not only be available at the national level but also the community level if it is to be leveraged effectively for climate action. In Africa, data access, shareability, and usability are often challenging due to a lack of standards limiting the ability for data-sharing and usability. Consistent data management standards and interoperability technical mechanisms for data sharing are important to avoid fragmentation and siloed data-sets which can often lead to a limited use of data-driven technologies to mitigate climate risks and damages.

Challenges and opportunities

- **Data availability, sharing and interoperability top on the list of issues facing climate practitioners.** A significant challenge facing climate and sustainability efforts in Africa is the mismatch between national commitments for climate goals and the sub-national availability of data. This discrepancy makes it difficult to scale data at a granular level. The data dilemma begins with the availability and accessibility of data. Even if data is available, there are issues related to data sharing that need to be navigated. Data interoperability and data ownership present further complications, highlighting the need for action along the entire data value chain.

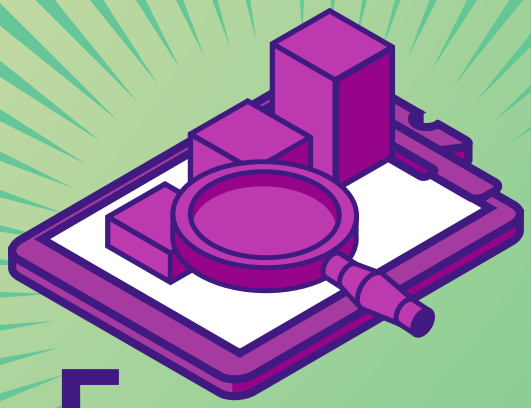
- **The high cost of quality data: Quality data is essential for effective climate and sustainability efforts.** However, obtaining high-quality data can be expensive. The costs associated with data collection, processing, and maintenance can be substantial, often requiring significant financial investment. This includes expenses for advanced technologies, skilled personnel, and infrastructure to ensure data accuracy and reliability.

- **The need for timely data in Africa's expanding cities. Africa is urbanizing at an unprecedented scale, with cities expanding rapidly.** In this urban context, there is a critical need for data to support the scaling of cities in a manner that keeps pace with their growth. Timely data is essential for planning and managing urban development, ensuring that infrastructure, services, and climate resilience measures are effectively implemented. Without adequate data, cities may struggle to address the environmental and social challenges that come with rapid urbanization.

Recommendations

- **Use sandboxes to foster the development of robust data collection and management practices. Sandbox experimentation allows organizations to test and refine their data collection methods in a controlled environment.** This approach helps identify and mitigate potential issues early, ensuring that the data collected is accurate, reliable, and secure. Furthermore, collaborating with policymakers in these sandbox environments enhances confidence in the proposed solutions and helps maintain political support and momentum for their implementation could help drive more effective data standards and governance practices.

- **Sandboxes can further be used to address data sharing issues in climate change mitigation efforts.** The sandbox environment facilitates the integration of diverse datasets, enabling stakeholders to develop and test innovative solutions for carbon footprint reduction, sustainable energy generation, and climate adaptation strategies.



PART 3

RESPONSIBLE REGULATORY AND TECHNICAL INNOVATION

Learnings, insights & recommendations to enhance the use and impact of sandboxes

> ***"Sandboxes also need to involve diverse stakeholders such as regulators, policymakers, researchers, civil society, the private sector, and end-users in their design, implementation, evaluation, and scaling-up."***
>
> — Adedeji Adeniran, Director of Research, and Ezra Ihezie, Research Associate, Centre for the Study of the Economies of Africa (CSEA)

LEARNINGS AND INSIGHTS

The development and implementation of sandboxes in Africa (even though predominantly in the financial sector) has provided valuable insights into the region's regulatory experimentation, creating an enabling environment for both regulatory and technical innovation ecosystems. The analysis of these sandboxes has also uncovered lessons and opportunities to broaden the use of sandboxes in more sectors and across national boundaries. The following section presents insights, learnings, and recommendations that are essential for realizing the full potential of sandboxes in the region.

More policy focus could take sandboxes' impact to the next level.

Insight: *Fintech innovation is the primary driver of sandboxes in Africa but there is an opportunity for sandboxes to enhance the policy-focus to better guide the sector's growth.*

Sandboxes in Africa have primarily been used in the financial sector, focusing on promoting innovation and financial inclusion to provide an enabling environment for novel fintechs that can reach underserved and unbanked populations. Successful innovative solutions that have been tested and approved for licensing in the sector are recorded in Mozambique's incubator sandbox[63] and Mauritius's Economic Development Board (EDP) regulatory sandbox.[64] Insights from Zambia's fintech sandbox,[65] and Rwanda's Central bank's sandbox[66] testify to the impactful support of the sandboxes to participants whose innovations were successful. South Africa's lessons from the Intergovernmental Fintech Working Group (IFWG) regulatory sandbox (RSB)[67] demonstrate the potential sandboxes have in advancing fintech innovation and regulatory learning.

However, despite the mapped sandboxes being largely regulatory in nature with the potential to advance both fintech and regulatory innovation, most lack a strong policy focus. There is little to no documentation about any new policies or modifications of the old policies made due to lessons from running sandboxes. For example, South Africa's IFWG evaluation report (the only sandbox with documented sandbox evaluation report)[68] highlights that completing RSB testing does not imply approval of the participants or their business models by the IFWG or its members. Participants must still comply with all existing regulatory frameworks outside of the RSB, where applicable and appropriate. The report goes on to recognize that regulatory changes are a lengthy and gradual process. Similarly, it is reported that the EDB's National Regulatory Sandbox License Committee in Mauritius resorted to issuing sandbox licenses until such a time as regulations are drafted to oversee innovations that are not currently covered by the current regulation.[69]

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[63] The Bank of Mozambique (2024), *Governor of the banco de moçambique launches the 5th edition of the regulatory sandbox*.

[64] Timm S. (2019), *Number of regulatory sandbox licenses granted by Mauritius body to fintechs grows to nine*, Ventureburn.

[65] Invyo Insights (2017), *FinTech Regulatory Sandbox in Zambia*.

[66] The New Times (2024), *Call for applications to Central Bank's Sandbox for Financial Innovations*.

[67] IFWG (2022), *First Regulatory Sandbox Report*, Intergovernmental Fintech Working Group South Africa.

[68] IFWG (2022), *First Regulatory Sandbox Report*, Intergovernmental Fintech Working Group South Africa.

[69] Timm S. (2019), *Mauritius's EDB has granted nine regulatory sandbox licenses so far*, up from five in January (2019), Ventureburn.

While sandboxes in Africa have been credited to results such as enhancing supervisory understanding of emerging technologies by the regulators,[70] which can inform adequate policy response, a study by Agpaytech[71] highlighted that 85% of regulatory sandboxes in Africa prioritize promoting financial innovation over shaping policy.

Beyond the increased support of innovations, sandboxes can lead to more adaptive and responsive regulatory frameworks. Stakeholders could benefit from enhanced capacity to drive these advancements that better support innovation and financial inclusion across the region.

Broadening the scope of sandboxes could increase their impact.

Insight: *Sandboxes in Africa are largely regulatory and at the national level, but there is a need for more sectoral, local and regional (operational and regulatory) sandboxes.*

Notably, 99% of the mapped sandboxes are at national level focused on generating a national impact in the fintech innovation ecosystems. In Kenya, for example, both the Communications Authority of Kenya and the Capital Markets Authority have implemented regulatory sandboxes to facilitate innovation in their respective sectors. Beyond Kenya, financial institutions in several countries including Ghana, Namibia, Rwanda, Tanzania, Zambia, and Mozambique have all launched national sandbox initiatives to promote innovation and foster regulatory agility. These and more sandbox initiatives in Africa have created a supportive and controlled policy environment that enables financial service providers to test innovative products, services, and business models. Building on these developments, there is a substantial opportunity to expand the scope of sandboxes to include operational innovation, knowledge building, and addressing challenges beyond regulatory requirements. This expansion could also encompass secure, collaborative data spaces that pool datasets and resources together under operational sandboxes for sector and regional experimentation.

Ecobank's pan-African banking sandbox, highlighted in the case studies, is a unique example of a cross-border initiative providing valuable insights. Efforts and resources could also be directed towards exploring cross-border data flows, fostering responsible data-sharing, and deploying new technologies and regulatory approaches at the regional level. On the other hand, while the implementation of local sandboxes (municipal or at a sub-national level) could test already limited capacity and resources, these sandboxes could enable more granular solutions and learnings for local start-ups and public authorities.

[70] Club of Mozambique (2018), *Mozambique Incubator extends access to financial services*, MozParks.

[71] Agpaytech (2023), *The Trajectory of Fintech Regulatory Sandbox in Africa 2023*.

More agile and participatory approaches can significantly enhance the effectiveness of sandboxes.

Insight: *Various sandbox iterations are taking place in the region and additional efforts are needed to promote transparency and participatory practices, assess their impact and leverage lessons learned.*

Various sandbox iterations in the region have not only been implemented as a sole experiment, but have opened the possibility for new cohorts to be created. Either by focusing on thematic areas or by leveraging the experience from previous cohorts, several sandboxes in the region have, to date, hosted more than one iteration. For example, Rwanda[72] has had seven cohorts of Rwanda's Regulatory Sandbox, Egypt[73] has had three editions of the Fintech Regulatory Sandbox, and Mozambique[74] has had five cohorts of the Incubator Sandbox with a running one having been launched at the beginning of 2024. The various cohorts and iterations seek to generate more value in each country, and demonstrate the willingness of various stakeholders to innovate through sandboxes.

Furthermore, there are now a few cases of sandboxes that have adopted the rolling basis approach as a means to enable new innovations to seek early regulatory approvals and to be deployed in real-time.[75] South Africa's IFWG regulatory sandbox evaluation report highlights this approach as a way to balance agility and responsiveness to innovation. The IFWG voted to move from a cohort-based to a rolling basis approach in the event that they decide to renew the sandbox. These examples underscore the need to assess the impact of sandboxes and leverage responsible practices.

While some information regarding sandbox results is available online regarding the sandboxes mapped, extracting insights and learning from most of the sandboxes' process and journey is challenging. Furthermore, the diversity of sandbox experiences in the region and their modularity require a thorough assessment to better understand the extent to which value is effectively being created. As experiences with sandboxes in the region increase, there is a need to learn about the responsible practices implemented, extract insights for other countries and leverage others' experiences. It is essential to evaluate the extent to which existing sandboxes have generated value and document and foster opportunities for individuals and communities to learn from their experiences.

South Africa has conducted an evaluation of its Intergovernmental Fintech Working Group (IFWG) regulatory sandbox, and thus provides a great learning opportunity for the region. The IFWG assessment report notes how the sandboxes' outputs translated into effective policy impact: "The insights gained are contributing to the further engagement on and development of the crypto asset regulatory framework in South Africa, including in respect of the implementation of the travel rule."[76]

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[72] National Bank of Rwanda (n.d), *Regulatory Sandbox* (Accessed 31 October 2024).

[73] Central Bank of Egypt (n.d), *Regulatory Sandbox*, (Accessed 31 October 2024).

[74] The Bank of Mozambique (2024), *Governor of the banco de moçambique launches the 5th edition of the regulatory sandbox.*

[75] Nunekpeku R. (2023), *Enhancing sandbox programs to aid commercial deployment of fintech innovations in Africa*, Making Finance Work for Africa.

[76] IFWG (2022), *First Regulatory Sandbox Report*, Intergovernmental Fintech Working Group South Africa.

More capacity and knowledge would help governments embrace sandboxes.

Insight: *Sandboxes are shaping regulators' understanding of new data-driven technologies in Africa and more resources are needed to enhance capacity and knowledge, helping governments embrace data value creation and responsible innovation.*

Innovators believe that sandboxes are of immense help, citing that they promise improved product development time, provide an opportunity for collaboration between innovators, and offer fintech companies a chance to position themselves to attract funding.[77] A notable example comes from Zimbabwe's fintech regulatory sandbox, which highlighted that being in direct communication with the authorities allowed any concerns to be addressed almost in real time.[78] However, some participants in the same sandbox expressed concerns about the bank's ability to effectively run the sandbox internally and its ability to protect their ideas and innovations during the testing phase. These challenges underscore the need for additional resources in terms of capacity-building for the regulators and the need to address risks associated with sandboxes and power responsible innovation. Moreover, research has reinforced the necessity of developing a pan-African regulatory platform to keep pace with rapid technological progress, citing how financial innovation serves as an extraordinary growth engine for Africa.[79]

Sandboxes are complex to set-up, resource intensive and require regulatory skills and capacity to design and participate in. The success of sandboxes largely depends on the extent to which the relevant government authority has set them up responsibly, adhering to minimum building blocks in areas such as data governance, stakeholder engagement, and transparency. Given the complexities and risks associated with sandboxes, there is a pressing need for additional resources in terms of capacity-building for the regulators to address risks associated with sandboxes and power responsible innovation.

RECOMMENDATIONS

With the enormous potential that sandboxes hold to boost collaboration between innovators and regulators, foster complex problem solving and equip policymakers and other stakeholders with agile governance tools, Africa now faces the challenge of expanding the impact of its sandbox experiences. The challenge lies in propelling responsible innovation through cross-border sandboxes for data, which support innovative solutions to develop responsible AI, sustainable actions and Digital Public Infrastructures (DPI) that address pressing regional issues. The following are our recommended next steps.

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[77] Mapuranga D. (2024), *Sandbox or Quicksand? An Analysis of Zimbabwe's Fintech Regulatory Sandbox*, Carnegie Endowment for International Peace.

[78] Reserve Bank of Zimbabwe (2021), *Fintech Regulatory Sandbox Guideline*.

[79] Alami H., Cisse O., Rawji M., Howard E. (2022), *Pan-African Regulatory Platform needed to boost Financial Inclusion*, The Africa Report

1 Communicate experiences and foster engagement

Those experimenting with sandboxes should cultivate a culture of openness, raise public awareness, and promote involvement in sandbox programs. This involves transparent communication campaigns and open consultations from the inception of sandbox design to its conclusion. Sandbox regulators and participants should develop targeted communication products aimed at the public to inform and educate, creating opportunities for dialogue and platforms for sharing insights and lessons learned. By actively sharing their experiences, they can foster participation across technical, operational, and regulatory domains.

2 Leverage comprehensive approaches to measure and enhance sandbox effectiveness

Sandboxes are credited for fostering learning, making it crucial to document results and make them accessible. The lessons learned from one sandbox can be transferable across geographies, sectors, and policy issues. This necessitates conducting rigorous impact assessments, tracking outcomes and indicators of success, and documenting best practices and lessons learned. Adopting comprehensive approaches that enable the assessment of sandboxes' impact on the innovation landscape and the sharing of responsible practices is an essential practice for public accountability and to determine what works and what doesn't, thereby informing the implementation of future sandboxes.[80]

3 Broaden sandbox applications to other sectors for socio-economic development

The sectoral deep dives provided a strong case for the potential of sandboxes to foster innovation. The increasing growth of regulatory sandboxes in the financial sector in Africa reflects a recognition of the need for flexible and adaptive regulatory frameworks to keep pace with rapid technological advancements. This calls for deliberate efforts to explore which areas in other sectors could best benefit from sandbox intelligence. Broadening the use of sandboxes to sectors such as healthcare, education, and agriculture is essential for Africa due to their potential to address critical challenges and responsibly drive socio-economic development.

4 Embrace sandboxes for digital policymaking

To face the complex and fast-changing nature of digital transformation in Africa, it is important that the region has the capacity and confidence to experiment with emerging technology and regulation. Experimentation settings like sandboxes are essential safe spaces for exploration, allowing not only for innovative regulatory approaches to data and data-driven technologies to be tested, but also for trust to be developed between public, private and other stakeholders. Sandboxes can help provide that space to innovate and create regulatory frameworks fit for the digital age amidst the demanding need for regulators to stay at the top of developments to maximize value and minimize risks posed to the people and the planet. As a response to the resource-intensive nature of sandboxes, stakeholders suggested that low-resourced countries that may struggle to support multiple sandboxes could consider centralized sandboxes strategically hosting a common sandbox between various ministries within central government institutions.

[80] Datasphere Initiative (2022), *Sandboxes for data: creating spaces for agile solutions across borders*.

CONCLUSION

Activities under the Africa Sandboxes Forum have successfully sparked increased attention to regulatory experimentation in Africa, at a critical time when data and emerging technologies like AI require urgent and thoughtful attention. As the discussion moves forward, it is essential that the right frameworks are in place to ensure the responsible governance of these technologies. While the ongoing data revolution presents enormous potential for economic growth and societal transformation, it also demands adaptive governance mechanisms capable of keeping pace with the rapid evolution of technology. The emerging examples of regulatory and operational sandboxes offer promising tools for tackling challenges that include systemic inequalities, inadequate infrastructure, and the need for inclusive market development. Sandboxes have shown their potential to test and refine digital services, technologies, and infrastructures across sectors, from fintech to healthcare. Expanding their use can foster innovation, enhance transparency, and support responsible policymaking in Africa's digital future.

The path that Africa takes now will set the stage for how it leverages data and all data driven technologies to address its unique challenges and seize new opportunities in sectors like healthcare, climate, agriculture, and finance. This report has outlined actionable recommendations that can be taken up by individual organizations and governments alike, setting stakeholders up to maximize the benefits of regulatory experimentation while minimizing risks by learning from the experiences of others. These recommendations support effective planning in the design, development, and implementation of sandboxes, ultimately enabling better governance in the fast-evolving digital landscape.

Through the Africa Sandboxes Forum, the Datasphere Initiative has engaged with a broad range of stakeholders across the continent, generating valuable insights on the potential of sandboxes for driving regulatory innovation. The roundtables, working groups, and interviews conducted during the project revealed a strong interest in leveraging sandboxes for digital policymaking, alongside a recognition of the need for greater investment, capacity, and collaboration. This report serves as a resource for stakeholders looking to experiment with sandboxes and highlights the specific opportunities for sandbox application in various sectors.

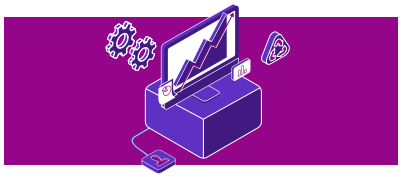
ANNEXES

ANNEX 1: SANDBOX RESOURCES

Explore our curated materials to deepen your understanding and elevate your sandbox expertise.

1 **5-minute** introduction to sandboxes

2 **Online course**: "A Guide to Cross-Border Sandboxes for Data"



3 **The report:** "Sandboxes for data: creating spaces for agile solutions across borders"

4 **The report:** "Sandboxes for AI: Tools for a new frontier"

5 **Blog:** "Debunking five myths about sandboxes for data"

6 **Blog:** "Outside the box: National and International Sandbox Experiences"

7 **Blog:** "How can sandboxes spur responsible data-sharing across borders?"

ANNEX 2: METHODOLOGY OF THE REPORT

This report synthesizes findings from four primary activities conducted during Phases 1 and 2 of the Africa Sandboxes Forum: 1) **Regulatory Roundtables**, 2) **Sectoral Working Groups**, 3) **Mapping and Analysis of Sandboxes in Africa**, and 4) **Case Study Research Interviews on Sandboxes for Responsible Innovation**. These activities aimed to foster deep community engagement and provide a comprehensive understanding of the landscape of sandboxes across the continent.

1 REGULATORY ROUNDTABLES

Four regulatory roundtables were held between November 2023 and May 2024, providing a platform for stakeholders to discuss regulatory challenges and opportunities related to data governance and technological advancements. Each roundtable focused on a different key topic:

- November 27, 2023: Introduction to the Africa Forum on Sandboxes and discussion of data governance challenges in Africa.
- January 24, 2024: **AI** policy and the interaction of local, regional, and international policies.
- March 21, 2024: Africa's challenges and opportunities in **climate change and sustainability**.
- May 24, 2024: The role of sandboxes in **health** data governance and innovation.

Each session included brainstorming on shared regulatory challenges and the role of sandboxes in addressing these issues.

2 SECTORAL WORKING GROUPS

Sectoral Working Groups focused on specific areas of innovation and policy, identifying key regulatory challenges and proposing sandbox-based solutions. The groups met periodically until March 2024 and covered the following sectors:

- **Health:** Explored how sandbox approaches can accelerate health-tech licensing while ensuring data protection and interoperability.
- **Finance:** Identified policy obstacles faced by fintech innovators and discussed how sandboxes could enable an interoperable pan-African financial ecosystem.
- **AI:** Investigated how AI tools and applications could inform fiscal and monetary policymaking in Africa.

Each working group developed concrete proposals for piloting sandboxes in their respective sectors, which were reviewed and discussed in the roundtables.

3 MAPPING AND ANALYSIS OF SANDBOXES IN AFRICA

A comprehensive desk review was conducted to map existing sandboxes across Africa, focusing on a country-by-country assessment. Sandboxes were categorized into three types—regulatory, operational, and hybrid—and analyzed based on several key parameters: the **sector or topic** each sandbox addresses, its **scope** (national or regional), **status** (whether completed, in operation, or unknown), as well as the **launch and end years** where applicable. Additional factors such as the **duration of operation, number of cohorts, coordinating entities, partners**, and the **sandbox goals** and **selection processes** were also considered. The analysis aimed to identify best practices and extract insights to inform the scaling and effective implementation of sandboxes across the continent, with particular emphasis on how these initiatives contribute to advancing data governance and fostering responsible innovation in diverse sectors.

4 CASE STUDY RESEARCH INTERVIEWS ON SANDBOXES FOR RESPONSIBLE INNOVATION

The case studies explore how sandbox environments have facilitated responsible innovation across various sectors, including finance, ICT, and health, in Africa. As part of the study, interviews were conducted with key stakeholders involved in four sandboxes: the **Communications Authority of Kenya (CA) Regulatory Sandbox**, the **South Africa Intergovernmental Fintech Working Group (IFWG) Regulatory Sandbox, Ecobank's Pan-African Operational Sandbox**, and the **UAE and World Economic Forum TradeTech Regulatory Sandbox**.

While the interviews yielded valuable insights, securing meetings with sandbox practitioners proved to be a significant challenge. Nevertheless, we successfully engaged all the sandbox regulators and a few other key stakeholders, including sandbox participants and academia. Despite these hurdles, the findings provide valuable lessons learned in sandbox development and offer a deeper understanding of the role of sandbox environments in advancing new approaches to data governance.

The findings from the regulatory roundtables, sectoral working group discussions, the desk research on sandbox mapping and the interviews with key stakeholders were synthesized to produce this report. The report aims to provide a comprehensive understanding of the current landscape of sandboxes in Africa, highlight common challenges and opportunities, and propose actionable recommendations for the future development and scaling of sandbox initiatives across the continent.

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