The State of Land Data in Africa: Fueling Africa's Future

Charl-Thom BAYER, Namibia and Laura MEGGIOLARO, Italy

Key words: open data, land data, data governance, land administration

SUMMARY

Access to land data is crucial for good land governance and supports the development of transparent land administration systems for informed decision-making. Measuring access to data fills a critical gap in the land sector, as our society grows ever-more dependent on data for decision-making and problem-solving. The African Union AGENDA 2063 roadmap promotes good governance, democracy, human rights, the rule of law and access to information. Access to information is a fundamental right in and of itself as well as an enabling right, and is guaranteed by the African Charter on Human and Peoples' Rights and the Sustainable Development Goals. The AU has adopted a "*soft law*" (African Model Law on Access to Information) to support the drafting of legal frameworks and demonstrates the high-level commitment from continental leadership.

The Land Portal is advocating for more open access to information and is developing a comprehensive indicator on the accessibility of land data (SOLIndex). The SOLIndex is another step in the maturing links between open data and land administration. It complements global efforts to measure the state of land data and make land data more open.

The paper describes the theoretical framework for the development of the SOLIndex situating it within the multiple contexts of *land administration*, *open data,* and *land data*. It showcases the positive correlation between access to information laws and positive impacts on the openness of land data in 15 African countries. Despite the positive developments in improving legal frameworks for access to information; data and information on land tenure, use, development and value is still not widely available. It is recommended that countries should continue to i) improve the legal and regulatory environment for access to information, ii) improve publication of data already in the public domain and iii) maximise use of existing open data platforms to make an immediate impact in opening up land data for re-use.

The State of Land Data in Africa: Fuelling Africa's Future (12521)
Charl-Thom Bayer (Denmark) and Laura Meggiolaro (Italy)

FIG Working Week 2024
Your World, Our World: Resilient Environment and Sustainable Resource Management for all
Accra, Ghana, 19–24 May 2024

The State of Land Data in Africa: Fueling Africa's Future

Charl-Thom BAYER, Namibia and Laura MEGGIOLARO, Italy

1. INTRODUCTION

Access to land data is crucial for good land governance. In an increasingly digital world driven by data, information and knowledge, the role of land data and information has never been more critical to the development of transparent land administration systems, informed decision making and empowered society and individuals.

The need for information as a driver of development is reflected in AGENDA 2063 (African Union, 2013), representing Africa's ambitious roadmap for transforming the continent into a global powerhouse. It promotes good governance, democracy, human rights, and the rule of law through 20 high-level goals emphasising access to information as an important enabler. Access to information is afforded a significant role and importance in Africa's development and governance and demonstrates the high-level commitment from continental institutions.

The increased focus on open data, along with its potential opportunities, have not yet been fully embraced in the land sector, with Davies & Chattapadhyay (2019) describing links between land administration and open data as "*relatively new*" and requiring more work. Thus, the Land Portal has worked for greater understanding and deepening of the links between land administration and open data while recognising the central role that governments play in information ecosystems as one of the primary custodians of land and data about land.

The paper will present and discuss the state of land data in Africa and explore in detail the preliminary analysis of the State of Land Information Index (SOLIndex), which will launch with a focus on 15Africa. The paper presents the results from the pilot SOLIndex conducted in 15 African countries as well as review the status and progress on the implementation of the AU legal framework for opening up access to data and information on the continent. The paper identifies key challenges and opportunities in support of more equitable access to information.

It supports the objective of promoting evidence-based land policymaking and contributes towards deepening the commitment and capacity for land administration. Assessing the role of African countries as proponents of open land data can provide valuable insights and perspectives to global policy platforms on improving access to information for sustainable development.

The Land Portal developed and refined its State of Open Data Research methodology first trialed in 2019 in Kenya, Tanzania, South Sudan and Uganda (Mey, Odhiambo, & Tejo-Alonso, 2019). The State of Land Information (SOLI) methodology is used to assesses how complete

and how open land data is at the country level and has been scaled up and applied in fifteen countries[1] in Africa. At the same time the Land Portal partnered with the Open Data Charter (ODC) to develop the Open Up Guide for Land Governance (Bayer & Booth, 2021) to support governments to make land data more open. It also partnered with the Global Data Barometer (GDB) to develop the Land Module (GDB, 2022), which measures the state of land data in relation to tenure and use.

In order to build a "*society, benefitting people and the planet*" (FIG Council, 2023) and to give effect to Africa's role in sustainable land administration, the Land Portal is advocating for more open access to information and developing a more comprehensive indicator on the accessibility of land data. Informed by the experience of developing and tracking the state of land data through the Land Module, the SOLI and the OUG, the Land Portal considers it necessary to expand and broaden the scope for the development of a more comprehensive State of Land Data Indicator – SOLIndex. The SOLIndex is another step in the deepening links between open data and land administration. It complements global efforts to measure the state of land data and make land data more open and can serve as a diagnostic and inform us about the most actionable interventions needed to open up land data at country level.

2. METHODOLOGY

The development of the SOLIindex draws on existing theoretical frameworks for land administration, open and land data as well as a human rights approach to the development of indicators. This allows us to construct the conceptual framework for the SOLIndex. It describes the core concepts and situates the SOLIndex within the multiple contexts of **land administration**, **open data,** and **land data**. The conceptual framework is the glue that integrates our understanding into a systematic and intentional process for connecting these constituent components into a coherent research study (Ravitch & Carl, 2021) describing the state of land data globally. This allows us to communicate about our SOLIndex and build upon existing knowledge while creating and contributing new knowledge across the land and data communities. As we develop new knowledge and deepen our understanding of the terrain, we continue to refine, improve and integrate new aspects to the conceptual framework. This iterative nature is evident from the development and deepening of our understanding, since the first SOLI research in 2019, to the SOLIndex which is currently under development (2023) and how it might look in 2024/2025 as part of the GLO. The indicators are developed using a human rights approach (United Nations, 2012).

The changing perspectives on land data and data more broadly have directed our approach to assessing the state of land data. Understanding that land data is not only about the recording of cadastral data, but may also include other sources of data, it is necessary to define this broadening scope. Data and the availability of data is not the only goal, but understanding how data is to be used and for what purpose are just as important. Thus, land data should be seen in the context of the land management functions it is expected to serve.

---

[1] SOLI research has been completed in Botswana, Ghana, Kenya, Liberia, Madagascar, Malawi, Mozambique, Namibia, Senegal, South Africa, South Sudan, Sudan, Tanzania, Uganda and Zambia.

2.1 Land Administration

Williamson, Enemark, Wallace, & Rajabifard, (2010) provides us with a theory tying together land administration and sustainable development. It provides us with the necessary understanding of the land administration functions, custodians and uses of land data. The new theory argues that the land administration functions (tenure, use, development and value) underpinned by an information system, are the key to understanding how land administration can contribute to sustainable development, and that the agencies implementing these functions are of much less importance.
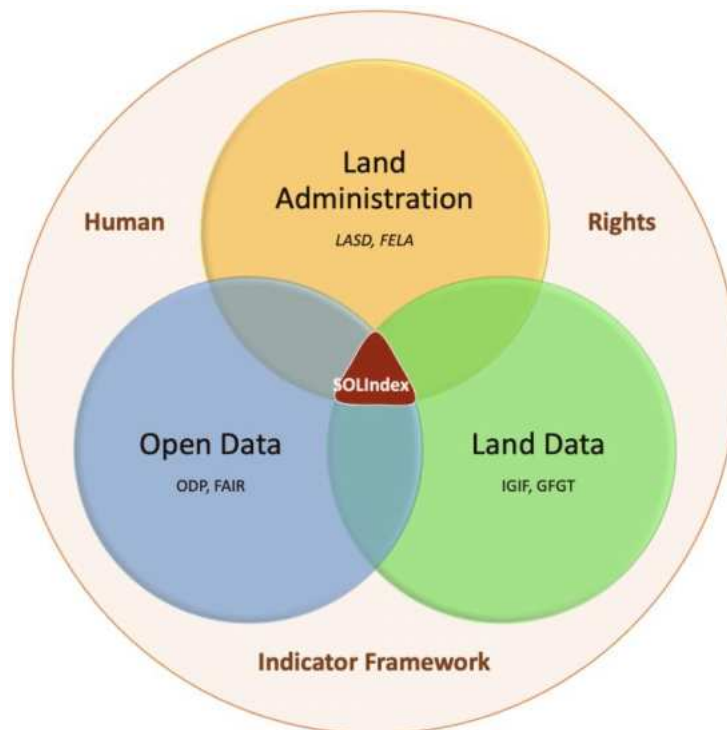

Figure 1: Theoretical Frameworks informing the SOLIndex

The Framework for Effective Land Administration (FELA) (UN-GGIM, 2020) builds upon the modern land administration theory by providing a guideline for how countries may "*develop, renew, reform, strengthen, modernise, or monitor land administration systems*". It links the theoretical framework for modern land administration to actionable pathways for supporting the achievement of the sustainable development goals. This includes one pathway on the role of data and the framework recognises that "*data relating to land tenure, land use, land value, and land development are fundamental geospatial data themes within any jurisdiction*". The SOLIndex defines land data as the data that derives from or is needed to inform the delivery of these four core land administration functions. Given the importance of legal and policy frameworks for transparency and good governance, the index also assess the extent to which legal and policy information is easily accessible.

The State of Land Data in Africa: Fuelling Africa's Future (12521)
Charl-Thom Bayer (Denmark) and Laura Meggiolaro (Italy)

FIG Working Week 2024
Your World, Our World: Resilient Environment and Sustainable Resource Management for all
Accra, Ghana, 19–24 May 2024

- Legal and Policy Information
- Land Tenure Information
- Land Use Information
- Land Development Information
- Land Value Information

2.2 Open Land Data

The Integrated Geospatial Information Framework (UN-GGIM, 2023) is a framework for creating an enabling environment for governments to be able to implement practical geospatial information initiatives. It advocates for and supports the use, sharing and access to spatial data and information in support of improved service delivery, decision making and innovation in support of national development. It also describes 14 Global Fundamental Geospatial Themes (UN-GGIM, 2023) including links to data on land tenure, value, use, and development. The focus is on fundamental data that cannot be derived from other data sets and that represent spatial phenomena on the surface of the earth. These data themes satisfy the "*urgent need for global fundamental geospatial data that could be harmonised in order to enable the measurement, monitoring and management of sustainable development in a consistent way over time and to facilitate evidence-based decision making and policy-making*".

Several open data frameworks and articulations exist to define and capture the important aspects and principles of openness, equity and transparency which are valued by the open data movement. In 2007, eight principles of open government data were defined by a gathering of more than 30 organisations in California (Malamud, 2007). In 2010 these principles were reviewed and subsequently defined in ten open data principles (Sunlight Foundation, 2010) and in 2015 the Open Data Charter adopted 6 open data principles to describe digital data that can be freely shared and reused (ODC, 2015). Reviewing and adopting these principles allowed us to identify ten open data criteria with which to assess the availability of open land data globally. The SOLIndex defines openness as the extent to which land data complies with the following ten criteria for openness.

- **Online:** whether the dataset or particular category of information can be accessed online
- **Accessible:** whether the full dataset is accessible by anyone, whether there is a requirement to register, log in or request access.
- **Free:** whether access to the data requires the payment of a fee or whether it is free.
- **Timeliness**: whether the information is produced in a timely fashion.
- **Metadata:** consider the extent to which datasets have accompanying metadata
- **Standards:** consider which, if any, data standards were used when publishing the data.
- **Downloadable:** note whether the data is downloadable, or whether it may only be viewed.
- **License:** if the data is downloadable, note whether it is governed by a data licence, the type of licence and whether that is an open licence.
- **Machine Readable**: indicate whether the database or datasets are in machine readable formats
- **URI's**: note whether the data set incorporates or makes use of uniform resource identifiers (URIs).

2.3 Assessment and Measurement

Each data category as assessed through a series of questions to determine how complete the data is. Each question can be scored by choosing one of four possible answers with an attendant score.

How **complete/open** is the data for a particular category?
The kinds of data (Scoring - No, Little, Partial, Yes)

- Yes fully   Score = 3
- Yes partially   Score = 2
- Yes little   Score = 1
- No   Score = 0

$$\text{Data Category Completeness: } \frac{\sum_{n=1}^{12} P(n)}{Max\ P(N)} \times 100 = PS$$

The scores for each category are calculated and then averaged for all five data categories.

$$\text{Completeness Score (CS)} = \frac{PS+TS+US+DS+VS}{5}$$

In the same way each data category is assessed for how open the data is with regards to the ten openness criteria and using the same scoring systems as for completeness.

$$\text{Data Category Openness: } \frac{\sum_{n=1}^{10} OD(n)}{Max\ OD(N)} \times 100 = ODS$$

The scores for all five categories are calculated and the averaged for all five data categories.

$$\text{Openness Score (CS)} = \frac{OPS+OTS+OUS+ODS+OVS}{5}$$

The scores for openness and completeness are multiplied and then divided by 100 to generate the final SOLIndex country score.

$$\frac{CS \times OS}{100} = SOLIndex\ Country\ Score$$

The SOLIndex collects data on the four key information categories for tenure, use, value and development to assess how **complete** the digital information is**,** and how **open** that information is and computing an overall country score. By focusing on indicators related to land administration functions the SOLIndex enhances land-related services and contributes to making findings more actionable and complement existing land governance monitoring initiatives.

3. THE STATE OF LAND INFORMATION INDEX

3.1 A Developing Legal Environment for Opening up Data

Access to information is a fundamental human right as well as being an enabler of other human rights guaranteed by instruments such as the Universal Declaration of Human Rights (United Nations, 1948), the African Charter on Human and Peoples Rights (African Union, 1981) and the Sustainable Development Goals (United Nations, 2015). Access to information is a necessary condition for good governance and the provision of land related services such as housing, water, sanitation, transport and agricultural infrastructure. To give effect to the provision in the African Charter on the "*right of access to information*" the African Union drafted a "*soft law*" instrument on access to information to guide member countries in adopting legal frameworks to expand this right. The Model Law on Access the Information (ATI) for Africa (African Union, 2013) provides a standard on access to information legislation for the continent.

A review of the extent to which countries in Africa that have adopted ATI legislation reveals that as of the end of 2023, 52% (28 countries) of African countries have passed ATI laws, with an additional 17% (8 countries) currently in the process of enacting such legislation. Thus, two thirds of the African countries have enacted, or are in the process of enacting legislation, demonstrating a growing recognition among governments that access to information is a fundamental issue that needs to be addressed. Leadership in this regard extends beyond individual countries, with pan-African institutions like the African Development Bank adopting open access to information policies for internal fulfillment of their mission (African Development Bank, 2024).
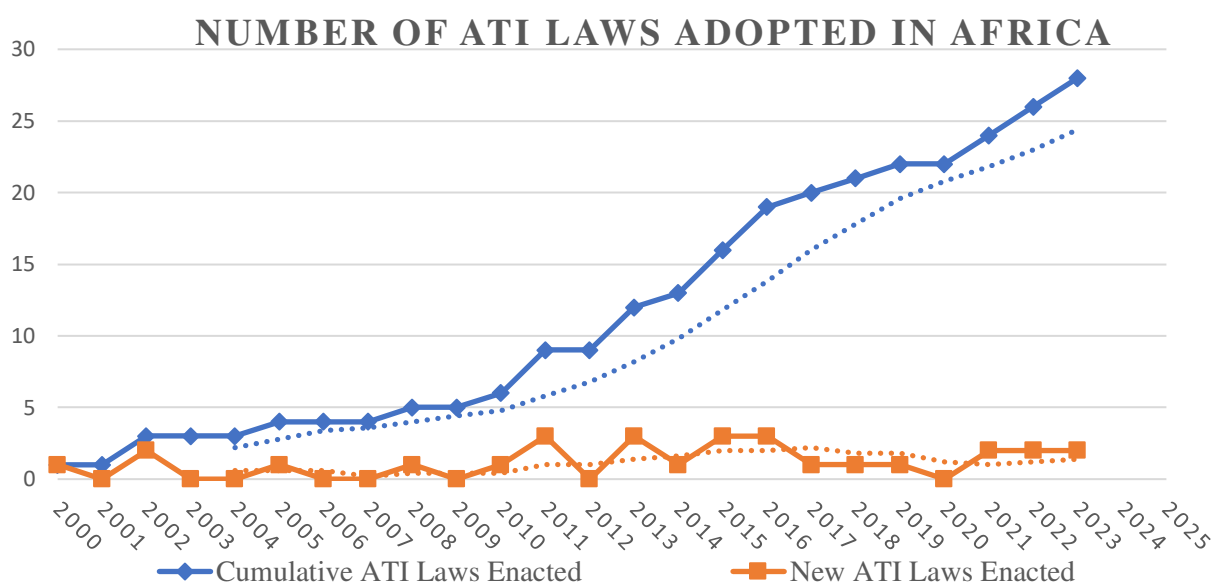

Figure 2: Rate of Adoption of ATI Legislation in Africa.

Another 36 countries have data protection laws, indicating a strong focus on privacy and security as well. Having a legislative framework in place is critical, but does not say anything

7

The State of Land Data in Africa: Fuelling Africa's Future (12521)
Charl-Thom Bayer (Denmark) and Laura Meggiolaro (Italy)

FIG Working Week 2024
Your World, Our World: Resilient Environment and Sustainable Resource Management for all
Accra, Ghana, 19–24 May 2024

about how such frameworks are implemented, nor does it speak the quality of the legal framework. Of the 15 countries in the pilot SOLIndex 12 (80%) have enacted ATI legislation, the exceptions being Senegal (legislation pending), Madagascar and Botswana.

While access to information legislation on its own does not guarantee that data and information will be made more open, it is a necessary starting point. Taking into account the period of time (number of years) since countries have enacted ATI legislation, we see a strong positive correlation (**PCC = 0.73**) between having legislation in place as well and doing better with regards to the openness of land data and information based on the results from the SOLIndex pilot.

Country	Years (X)	SOLIndex (Y)	STD X	STD Y
Botswana	0.0	2.9	-1.1404294	-0.9197756
Madagascar	0.0	5	-1.1404294	-0.6285904
Senegal	0.0	4.5	-1.1404294	-0.6979202
Zambia	1.0	4.8	-0.9954595	-0.6563223
Namibia	2.0	12.2	-0.8504897	0.36975905
Ghana	5.0	13.4	-0.4155802	0.53615062
Malawi	7.0	9.7	-0.1256405	0.02310994
Kenya	8.0	12.5	0.01932931	0.41135694
Tanzania	8.0	7.7	0.01932931	-0.2542093
Sudan	9.0	1	0.16429914	-1.183229
Mozambique	10.0	12.1	0.30926898	0.35589308
South Sudan	11.0	1.9	0.45423881	-1.0584353
Liberia	14.0	10.2	0.88914831	0.09243976
Uganda	19.0	13.7	1.61399748	0.57774851
South Africa	24.0	31.4	2.33884664	3.0320242
PCC = 0.73				

Figure 3: Correlation between the number of years since enacting ATI legislation and the SOLIndex Score

CORRELATION BETWEEN THE PERIOD AND THE SOLINDEX
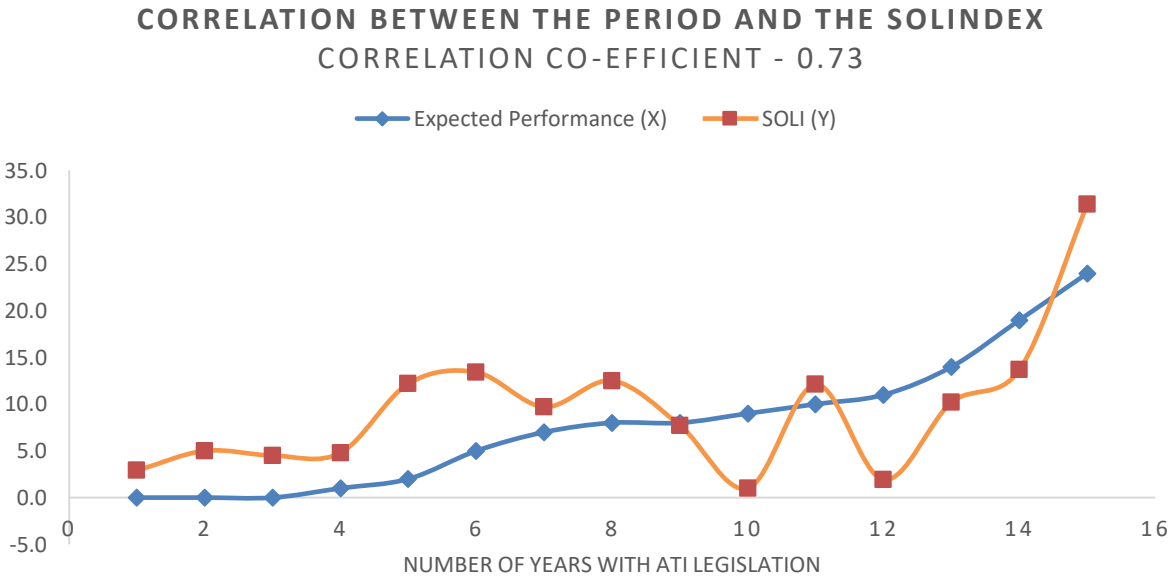CORRELATION CO-EFFICIENT - 0.73

Figure 4: Correlation between RTI legislation and the SOLIndex Score

This research recognises that there are many other issues that affect the degree to which data and information is made open at national level, such as the availability of resources and other capabilities within government. However, the results do show that government that have taken the decision to open up data (evidenced through the enactment of right to information legislation) tend to do better than those that have not done so. The adoption of access to information legislation correlates with better results in terms of the SOLIndex score, but some countries without specific legislation have made limited progress in opening land data based on pre-existing policies or regulations. In addition, countries with open data legislation such as Sudan and South Sudan have performed below expectations.

Taking into account an analysis of the quality and strength of the right to information legislation for accessing data held by government in each country (RTI, 2024), and applying that to the number of years for which a country has had legislation, we still found a strong positive correlation between RTI legislation and the SOLIndex Score.

3.2 Country Comparison

The results for the SOLIndex provide an insight into the state of data in the pilot countries in Africa. The results show us that the countries in the pilot, vary a great deal in the assessment with scores ranging from 31 (highest score) to 1 (lowest score). It is also possible to group the countries into roughly three categories by virtue of their scoring. Looking at the countries with a SOLIndex score in the bottom 25th percentile with a score of 5 or less, we find 6 countries.

These are Zambia (5), having only adopted ATI legislation in December 2023, the three countries that have not yet adopted ATI legislation (Madagascar (5), Senegal (5), Botswana (3)), Sudan (1) currently embroiled in a civil conflict and South Sudan (2), the youngest and one of the least developed countries in the world.
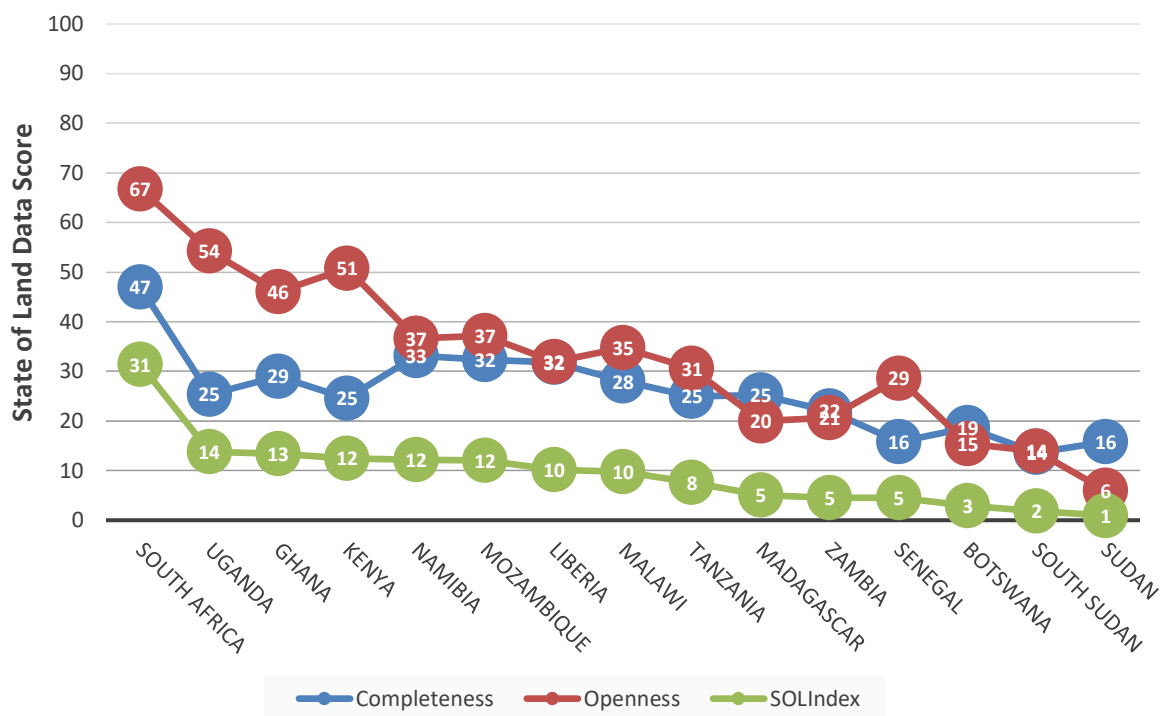
Country	SOLIndex Score	Comment
Zambia	5	Latest country to adopt ATI legislation (December 2013)
Madagascar	5	No ATI legislation enacted yet.
Senegal	5	No ATI legislation enacted yet.
Botswana	3	No ATI legislation enacted yet.
South Sudan	2	ATI Legislation but one of the least developed countries in the world.
Sudan	1	Relatively early adopter of ATI legislation but in the midst of a civil conflict.

Figure 5: Countries in the bottom 25th percentile of the SOLIndex.

On the other hand, we find South Africa, with the highest score of 31, but also being the first country to have enacted ATI legislation in 2000. The middle group of countries comprising the remaining 8 countries score between (8) and (14) on the SOLIndex and with the exceptions of Tanzania, all performing slightly above the average score (10) for the SOLIndex pilot.

The scores for **openness** and **completeness** are strongly correlated, perhaps unsurprisingly, but with the completeness indicator being generally lower than the openness indicators. What this means in practice that even where land data is published, it generally does not meet all the criteria for it to be considered fully open. The data reveals that much has already been done in Africa to improve access to data and information, but also that there is still a lot of room for improvement, both with regards to the publication of data as well as the technical aspects of how the data is published to increase the usability of the data.

9

The State of Land Data in Africa: Fuelling Africa's Future (12521)
Charl-Thom Bayer (Denmark) and Laura Meggiolaro (Italy)

FIG Working Week 2024
Your World, Our World: Resilient Environment and Sustainable Resource Management for all
Accra, Ghana, 19–24 May 2024

State of Land Data

The scores for **openness** and **completeness** are strongly correlated, perhaps unsurprisingly, but with the completeness indicator being generally lower than the openness indicators. What this means in practice that even where land data is published, it generally does not meet all the criteria for it to be considered fully open. The data reveals that much has already been done in Africa to improve access to data and information, but also that there is still a lot of room for improvement, both with regards to the publication of data as well as the technical aspects of how the data is published to increase the usability of the data.
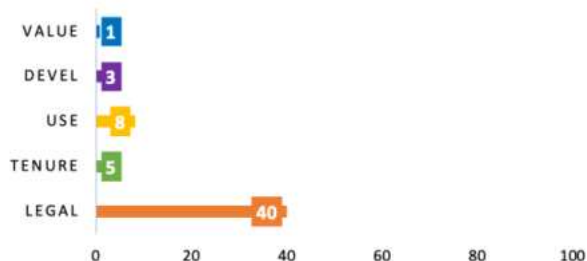

Figure 6: Overall SOLIndex Score for each data category.

If we examine the overall results for the SOLIndex for each of the five data categories we find that the legal and policy data scores much higher (40) than any of the other four data categories.

The scores for the other four land data categories indicate very low levels of data openness in general.

The assessment for completeness of land data and information in the pilot study, show that legal and policy data (bibliographic) is very complete, with an index score of (75). What this means is that the existing rules and regulations about land governance are generally completely available in digital formats and online. However, when assessing the policy information for openness we find that it is only partially open with an index score of (53). In one instance the laws and policies are not available for download, but only for viewing, although more generally the information is available for download as pdf file's. The most common shortcomings are that the legal information is not in the form of searchable online text (html), but only as a list of pdf documents. The legal and policy data category is also the only category where more information is published but where it is not very open. This is reversed for all the other land data categories.
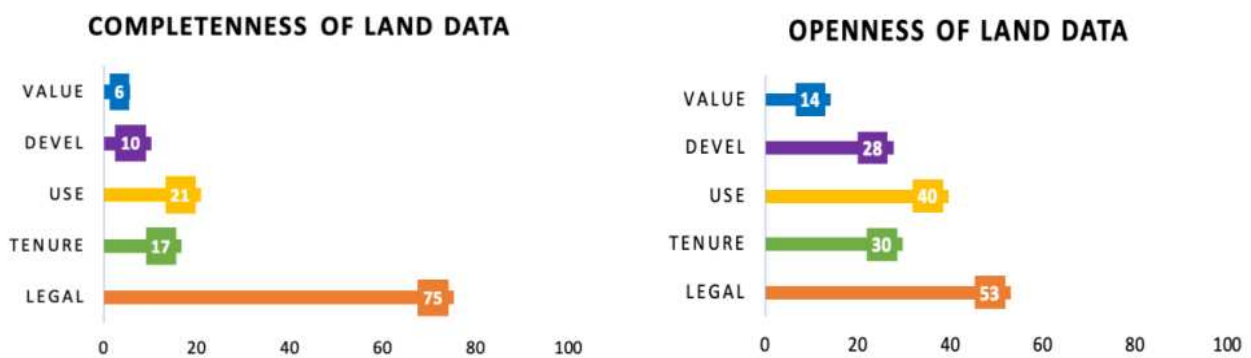

Figure 7: The overall completeness and openness score for land data and information.

Land use data and information is the next best performing category with an indicator score of (21) for completeness and (40) for openness. Data may be found on statistics portals such as those of Uganda (Uganda Bureau of Statistcs, 2024) or data portals such as the Environmental GIS of South Africa (Department of Forestry, Fisheries and the Environment, 2024) showcasing statistics on land cover changes or general land cover categories. While the scores for land use data may appear relatively high, this should not be interpreted to mean that 40% of land use data is open. Taking the result for completeness and openness together the index score for land use data is only (8), demonstrating that more can be done to improve the publication of land data in more open formats.

Limited land tenure, development and value data is openly published. Land tenure data scores (5) on the SOLIindex with component scores of (17) and (30) for completeness and openness respectively. Land development data has component scores of (10) for completeness and (28) for openness on the index with and overall index score (3). Similarly land value data and information only scores (1) on the SOLIndex with component scores of (6) and (14) for completeness and openness. These results indicate that land tenure data (core data on land parcels and the associated rights) which is a crucial link to support other land administration functions such as development (information on the processes by which land is developed) and

11

The State of Land Data in Africa: Fuelling Africa's Future (12521)
Charl-Thom Bayer (Denmark) and Laura Meggiolaro (Italy)

FIG Working Week 2024
Your World, Our World: Resilient Environment and Sustainable Resource Management for all
Accra, Ghana, 19–24 May 2024

land value (including information on land markets, land taxation, valuation rolls etc.) are generally not published and even where it may be published, it is of limited use and not very open. This makes the data much less interoperable and re-usable, limiting its utility for impact and innovation. It also reduces the ability to deliver on these services and does not encourage the use of data for other uses that may be of benefit for society.

4. CONCLUSION

Given the diversity of countries and their unique contexts in the pilot study, one must be careful about drawing conclusions that are not necessarily applicable in other contexts. South Africa has an almost quarter century long history of data transparency while Zambia has only approved and ATI law in December 2023, and some countries do not have an ATI law enacted at all. However, there are some conclusions that can be drawn from the pilot study.

- There is always more digital data than that which is published. Almost without exceptions when the research commenced, there was a universal refrain that there is no data, or that there is very little data. The situation revealed however that much more data is being collected and is in digital form, but that there is very limited sharing and publication of the land data in a systematic manner.

- All countries recognise access to information as an important right. The quality of the legal frameworks differ, as well as how they are implemented, but all the countries have access to information as a legal right, either by virtue of the constitution, ATI legislation, or legislation on the provision of statistical information.

- There continues to be a range of initiatives ongoing (past and present) to collect and develop land information systems, with varying degrees of success. In many cases these initiatives remain focussed on the improved collection of data for specialist land agencies, while less attention is paid to the more open publication of the existing data and improving access and interoperability of data.

- Legal and policy information tends to be the most open by quite a large margin, driven by partnership between government and the civil society (African Legal Information Institute). Data related to the land tenure functions of tenure, use, development and value is much less openly published. Despite this, there exists potentially very useful data on land use as well as on land development that could fairly easily be published as open data without any risk to privacy or security issues. These include land development plans and land use plans, which are often available only as image files (maps), but which could, with appropriate technical improvements be made much more open and interoperable.

- Practical instruments for the sharing and use of data that is already being collected, may be seen as a missing link. Even in countries with ATI laws in place, we see that data sharing agreements, policies, standards, licenses, frameworks often do not exist across

12

The State of Land Data in Africa: Fuelling Africa's Future (12521)
Charl-Thom Bayer (Denmark) and Laura Meggiolaro (Italy)

FIG Working Week 2024
Your World, Our World: Resilient Environment and Sustainable Resource Management for all
Accra, Ghana, 19–24 May 2024

government and other partners. The absence of these practical tools limits the access to data as well as the use and uptake of this data.

- There is increasing publication on (open) data portals by government organisations. They generally aim to increase the publication of statistical and spatial information online. Eleven out of the 15 countries have one or more spatial data portal where data can be viewed and downloaded (Uganda, Ghana, Namibia, South Africa, Kenya, Mozambique, Zambia, Malawi, Liberia, Madagascar, Senegal). Tanzania and Sudan have only mining data portals while Botswana and Sudan are really the exceptions with no open data portals. While the technical functional qualities of the data portals vary, as do the amount of data available, they represent existing capacity and a desire to make data more accessible and usable.

In conclusion, there are significant amounts of land related data that is already digital and some of which is being openly published on an increasing number if data portals. It demonstrates that, even if limited, there exists substantial capacity and resources at national level for the management of data. This represents real tangible progress and an opportunity to continue to improve the access to and use of land data. While the data that is published do not meet all the criteria for openness, with some technical refinements, more data can be made more accessible and interoperable. This represents an area of improvement as well as untapped potential for improving the land data ecosystem. The SOLIndex does provide an overview of land data openness in particular countries that can serve as a tool or diagnostic that can be used to promote data transparency, accessibility and interoperability.

5. RECOMMENDATIONS

Given the unique circumstances for each country, differences in legal frameworks, different historical development of land administration systems, care must be taken when interpreting these results. We have outlined three brief but interrelated recommendations that are common to all the countries in the pilot studies. Governments can concentrate their efforts around these three aspects to significantly improve the data published.

- Countries need to continue to develop their legal frameworks, data sharing agreements and policies to be able to make land data more accessible and interoperable. The research has shown those countries with the longest legal tradition of data openness tend to perform better with regards to making land data openly and completely available. This means that countries that are yet to adopt ATI legislation should prioritize it, and those that already have ATI legislation enacted, should continue to improve their legal frameworks and data sharing agreements (policies, licenses, standards) to support data access, interoperability and use.

- Improve the publication of data that already exists in the public domain in all countries by revising the legal and technical characteristics. Often the data is published in formats that do not support easy access and re-use of the data. Much of the data that is already

13

The State of Land Data in Africa: Fuelling Africa's Future (12521)
Charl-Thom Bayer (Denmark) and Laura Meggiolaro (Italy)

FIG Working Week 2024
Your World, Our World: Resilient Environment and Sustainable Resource Management for all
Accra, Ghana, 19–24 May 2024

published can be much improved by reviewing aspects such as the licensing information (adopting standard licenses) concerning use and reuse of the data, improving metadata, providing more data layers individually for download and using appropriate data standards.

- Improve the existing national data portals by incorporating data from national land information systems initiatives and creating strategic partnerships. Legal and policy data is generally scores relative well for the open publication due to partnership with government and civil society. Partnering with other stakeholders to publish data on tenure, development and valuation can help to create identify the right kind of data that is needed by society as well as increase the return on existing investments in data portals and data collection initiatives. The country examples with the partnership with the African Legal Institute could be a model, but there are also other types of arrangements such as data trusts that may be suitable.

Taking into account each countries particular state of development, initiatives that focus on improving the legal and regulatory environment, facilitate the publication of data that is already in the public domain and making better use of existing data publication platforms will allow countries to make an immediate impact in opening up land data for use.

REFERENCES

African Development Bank. (2024). *Data Portal*. Retrieved from AFDB Projects Portal: https://projectsportal.afdb.org/dataportal/

African Union. (1981). *African Charter on Human and People's Rights.* Addis Ababa: AU. Retrieved from https://au.int/en/treaties/african-charter-human-and-peoples-rights. Retrieved from African Union: https://au.int/en/treaties/african-charter-human-and-peoples-rights

African Union. (2013). *Agenda 2063: The Africa We Want.* Addis Ababa: AU. Retrieved from https://au.int/en/agenda2063/overview.

African Union. (2013). *Model Law on Access to Information for Africa.* Addis Ababa: AU. Retrieved from https://achpr.au.int/en/node/873.

Bayer, C.-T., & Booth, K. (2021). *Open Up Guide for Land Governance.* Enschede: Land Portal. Retrieved from https://landportal.org/library/resources/open-guide-land-governance-version-20-following-public-comments.

Bayer, C.-T., & Meggiolaro, L. (2023, February). *Data 4 Development.* Retrieved from Land Ownership and the State of Open Data: https://www.d4d.net/news/land-ownership-and-the-state-of-open-data/#endnote1

Davies, T., & Chattapadhyay, S. (2019). Land Ownership. In W. S. T., *The State of Open Data: Histories and Horizons.* Cape Town/Ottawa: African Minds/IDRC. Retrieved from https://www.idrc.ca/en/book/state-open-data-histories-and-horizons.

14

The State of Land Data in Africa: Fuelling Africa's Future (12521)
Charl-Thom Bayer (Denmark) and Laura Meggiolaro (Italy)

FIG Working Week 2024
Your World, Our World: Resilient Environment and Sustainable Resource Management for all
Accra, Ghana, 19–24 May 2024

Department of Forestry, Fisheries and the Environment. (2024). *Data Downloads*. Retrieved from Environmental GIS: https://egis.environment.gov.za/gis_data_downloads

FIG Council. (2023). *FIG Council Work Plan 2023 - 2026*. Retrieved from FIG: https://www.fig.net/organisation/general_assembly/agendas_and_minutes/2023/agenda/app_11_FIG_Council_workplan-2023-2026.pdf

GDB. (2022). *Global Data Barometer*. Retrieved from Land Module: https://globaldatabarometer.org/module/land/

Global Data Barometer. (2022). *Global Data Barometer*. Retrieved from Land Module: https://globaldatabarometer.org/module/land/

ILC. (2024, February 20). *LANDex*. Retrieved from View and Use Data: https://www.landexglobal.org/en/datasets/view-and-use-data/

Land Matrix. (2024, February 20). *Land Matrix*. Retrieved from Data: https://landmatrix.org/list/deals/

Land Portal. (2024, February 20). *Land Portal*. Retrieved from SDG Land Tracker.: https://landportal.org/book/sdgs

Malamud, C. (2007). *Public.Resource.Org*. Retrieved from Open Government Working Group: https://public.resource.org/open_government_meeting.html

Mey, L., Odhiambo, M., & Tejo-Alonso, C. (2019). *State of Land Information: Uganda*. Enschede: Land Portal. Retrieved from https://www.landportal.org/library/resources/lp-soli-uga/state-land-information-uganda-uncovering-ugandas-land-information.

Miles, M., Huberman, A., & Saldaña, J. (2014). *Qualitative Data Analysis: A Methods sourcebook*. Thousand Oaks: Sage.

ODC. (2015). *ODC Principles*. Retrieved from Open Data Charter: https://opendatacharter.org/principles/

Open Data Charter. (2020). *Open Up Field Guide Methodology*. ODC. Open Data Charter. Retreived from https://opendatacharter.net/open-up-field-guides-methodology/.

Prindex. (2024, February 20). *Prindex*. Retrieved from Explore Our Data: https://www.prindex.net/data/

Ravitch, S., & Carl, N. (2021). *Qualitative Research: Bridging the conceptual, Theoretical and Methodological*. Los Angeles: Sage.

RTI. (2024). *Right to Information Rating*. Retrieved from Home: https://www.rti-rating.org/

Sunlight Foundation. (2010). *Ten Open Data Principles*. Retrieved from Sunlight Foundation: https://sunlightfoundation.com/policy/documents/ten-open-data-principles/

Uganda Bureau of Statistcs. (2024). *NSDP*. Retrieved from NSO Uganda: https://nso-uganda.opendataforafrica.org/joqygng/percentage-change-in-land-cover-area-by-type-2005-2019

UN-GGIM. (2020). *Framework for Effective Land Administration: A reference for developing, reforming, renewing, strengthening, modernizing, and monitoring land administration*. New York: UN-GGIM. Retrieved from https://ggim.un.org/meetings/GGIM-committee/10th-Session/documents/E-C.20-2020-29-Add_2-Framework-for-Effective-Land-Administration.pdf.

UN-GGIM. (2023). *Integrated Geospatial Information Framework: A strategic Guide to Develop and Strengthen National Geospatial Information Management.* New York: UN-GGIM.

United Nations. (1948). *Universal Declaration of Human Rights.* Geneva: UN. Retrieved from https://www.ohchr.org/en/universal-declaration-of-human-rights.

United Nations. (2012). *Human Rights Indicators: A Guide to Measurement and Implementation.* New York/Geneva: UN-HR. Retrieved from https://www.ohchr.org/sites/default/files/Documents/Publications/Human_rights_indicators_en.pdf.

United Nations. (2015). *SDGS.* Retrieved from United Nations: https://sdgs.un.org/goals

Williamson, I., Enemark, S., Wallace, J., & Rajabifard, A. (2010). *Land Administration for Sustainable Development.* Redlands: ESRI. Retrieved from https://cepa.rmportal.net/Library/natural-resources/Land%20Administration%20for%20Sustainable%20Development.pdf.

BIOGRAPHICAL NOTES

CONTACTS

Charl-Thom Bayer	Laura Meggiolaro
The Land Portal	The Land Portal
HUMLEBÆK	ROME
DENMARK	ITALY
Tel. + 45 4044 8568	Tel. + 39 347 124 6461
Email: charl-thom-bayer@landportal.info	Email: laura.meggiolaro@landportal.info
Web site: www.landportal.org	Web site: www.landportal.org