



TReNDing: The Achievements and Lessons of a Global Research Network on Data

SDSN TRéNDS 2015-2024



Current Co-chairs

Shaida Badiee (Open Data Watch); Muchiri Nyaggah (Local Development Research Institute)

Current Members

Lisa Bersales (Philippines' Commission on Population and Development); Geoffrey Boulton (University of Edinburgh); Grant Cameron (Consultant and past SDSN TRenDS Director); Jillian Campbell (UN Convention on Biological Diversity); Calogero Carletto (The World Bank); Samantha Custer (AidData); Jessica Espey (University of Bristol and past SDSN TRenDS Director); Alex Fischer (Monash Sustainable Development Institute); Dilek Fraisl (International Institute for Applied Systems Analysis); Jonathan Glennie (Global Nation); Jeanne Holm (Open Data Collaboratives); Tom Moultrie (University of Cape Town); Virginia Murray (UK Health Security Agency); Tom Orrell (Development Gateway: An IREX Venture); Francesca Perucci (Open Data Watch); Philipp Schönrock (Centro de Pensamiento Estratégico Internacional); Eduardo Sojo (NovaGob Mexico Foundation)

Former Co-chairs

Laveesh Bhandari (Indicus Foundation); Robert S. Chen (Center for International Earth Science Information Network)

Former Members

Sabina Alkire (Oxford Poverty and Human Development Institute); Gilberto Câmara (Group on Earth Observations); Kate Crawford (AI Now); Nicolas de Cordes (Orange, France); Xiaolan Fu (University of Oxford); Chukwudozie Ezigbalike (United Nations Economic Commission for Africa); Enrico Giovannini (Rome University 'Tor Vergata'); Bram Govaerts (International Maize and Wheat Improvement Center); Bronwyn Harch (University of Queensland); William Hoffman (World Economic Forum); Guo Huadong (Chinese Academy of Sciences); Molly Jahn (University of Wisconsin-Madison); Marc Levy (Center for International Earth Science Information Network); Emmanuel Letouzé (Data-Pop Alliance); Steven Ramage (Group on Earth Observations); Barbara Ryan (World Geospatial Industry Council); Keith Shepherd (World Agroforestry Centre); Eric Swanson (Open Data Watch)

FOREWORD

Over the past decade, I have had the privilege of serving as the co-chair of TReNDS and being part of this remarkable network. It has been inspiring to witness its growth and the significant contributions it has made to the field of development data during these pivotal years of the data revolution.

As we stand at the crossroads, contemplating the future of our network, it is essential to pause and reflect on the incredible journey we have undertaken together. This report encapsulates the valuable lessons learned, the significant achievements unlocked, the transformative impact we have had on advancing the field of development data, and the pathway forward.

Throughout this decade-long endeavor, we have fostered a collaborative environment that has thrived on innovation, knowledge sharing, and partnership. Our collective efforts have not only propelled the network forward, but also pushed the boundaries of what is possible in harnessing data for development.

From pioneering research initiatives to forging strategic partnerships, our network has been at the forefront of driving change and empowering communities through data. With our focus on use of innovative approaches along the data value chain scalable in low income and low capacity countries around the world, we have witnessed the power of data to inform policies, drive impactful interventions, and shape the narrative of development.

As we bid farewell to this chapter of our network's journey, it is important to acknowledge the tireless dedication and passion of all those involved. The achievements we celebrate today are a testament to the collective brilliance, unwavering commitment, and shared vision of our members.

While the network may be going through a significant change, its legacy will endure. The knowledge, experiences, and insights gained will continue to inspire future endeavors in the realm of development data. The impact we have made will resonate in the hearts and minds of those who have been impacted by our work.

I extend my deepest gratitude to those who have been a part of this network, whether as a member, a supporter, or a collaborator with a very special thanks to Jessica Espey who had the vision and courage to help start this network in 2014 and to William and Flora Hewlett Foundation for believing in us and providing financial support. Thanks also to the Members of the network and Secretariat and SDSN management. Your contributions have been instrumental in shaping the success of our collective journey.

As we turn the page towards new possibilities, let us carry forward the spirit of collaboration, innovation, and excellence that defined our network. May this reflection report serve as a testament to our accomplishments and a source of inspiration for the future development data collaborations.

With heartfelt appreciation,

Shaida Badiie

Co-Chair, TReNDS Network

Managing Director, Open Data watch

PREFACE

SDSN TReNDS was born from a project that commenced in 2014, which aimed to cost necessary improvements in national statistical systems to monitor the SDGs. Leading data practitioners and thinkers were convened by the UNSDSN to provide informed estimates of the range of costs associated with surveys, censuses, geospatial data layers and so on. The end report, **Data For Development: A Needs Assessment for SDG Monitoring and Statistical Capacity Development**, provided a robust set of figures for data advocates and champions to make the case for increased investment in data systems. Such a costing hadn't been done for over 10 years and never by a group as multi-sectoral and multi-disciplinary. The impact was considerable; the figures were showcased at the Addis Ababa Financing for Development Conference in April 2015, were cited by the Senior Vice President of the World Bank and spurred a host of related work on the cost of statistical improvements in key SDG sectors. The work also seeded an idea; that a multidisciplinary expert group of data researchers, academics and practitioners should meet regularly to discuss the challenges and opportunities associated with data for development. This group would be reflective; a space for critical thinking and broad-sectoral analysis. Their insights would help to guide the multiplicity of actors working to support the monitoring of the SDGs and ensure evidence-informed policy and decision-making so countries could build modern and robust national statistical systems, which capitalise on new technologies and opportunities in a careful and sustainable manner. The UNSDSN, with its connections to the office of the UN Secretary General and remit to convene and communicate science advice was a natural home institution.

10 years since SDSN TReNDS' inception, the mission and value proposition remain valid - there is a clear necessity for thoughtful analysis of the use of data for national sustainable development- but other dynamics have come to the fore, not least of all the necessity to steer, govern and regulate rapid technological innovation, including artificial intelligence. TReNDS is struggling to keep pace with these broad-ranging questions of governance and accountability and so is at an inflection point. Ten years since our creation we ask; what have we learned? What have we achieved? And what is our remit (and the remit of other entities in this space) in supporting the use of data and promoting a just, equitable, efficient and unbiased environment for data use, to support sustainable development now and in the future?

ACKNOWLEDGMENTS

This report was written by former TReNDS director, Jessica Espey, on behalf of the current TReNDS membership and secretariat. It has been reviewed by the members and views expressed represent those of the network membership. It should be cited as follows:

SDSN TReNDS (2024) TReNDing: The achievements and lessons of a global research network on data, SDSN: New York.

TReNDS members, past and present, would like to express their gratitude to the staff of UNSDSN for the support provided to the network and its secretariat for the past ten years. Particular thanks to the amazing staff who have been part of the TReNDS secretariat since 2014, including Jessica Espey, Melika Edquist, Sandra Ruckstuhl, Hayden Dahmm, Alison Holder, Alyson Marks, Jay Neuner, Cameron Allen, Tom Orrell, Leslie Rae, Maryam Rabiee, Stephanie Pietras, Grant Cameron, Castelline Tilus. Thanks too to the many wonderful past and present Co-chairs of TReNDS, including Shaida Badiie, Robert Chen, Enrico Giovannini, Laveesh Bhandari, and Muchiri Nyaggah. Shaida Badiie in particular (with her wonderful team at the Open Data Watch) has offered strategic vision, technical knowledge, and operational guidance to the network for over a decade, whilst Bob Chen has been a consistent supportive presence, teaching us all about the value and potential of geospatial data. We cannot thank them enough. The Members would also like to thank their major donors, most notably the William and Flora Hewlett Foundation, and the wonderful project officers, Sarah Lucas and Chris Maloney, who have provided unwavering support, both financial and personal, since the beginning. Thanks are also extended to GIZ, SIDA, The Gates Foundation and The Kresge Foundation for their contributions.

TABLE OF CONTENTS

01	Introduction	7
02	Celebrating our achievements:	10
	Thought-leadership	10
	Demonstration projects	14
03	Lessons from running a research collaborative	16
04	Observations on the changing data landscape:	21
	Leaving no one behind	22
	Big data and the geospatial revolution	23
	Evolving national data systems	23
	Capacity and application challenges in the global south	24
	Open Data	24
	Data privacy and ethical governance	25
	A growing digital divide	25
05	The role of a future data collaborative	28
	References	34

01. INTRODUCTION

In 2015 the UN Sustainable Development Solutions Network (SDSN), a special initiative of the UN Secretary General, established a new thematic network on data and statistics. The Thematic Research Network on Data and Statistics (TReNDS) aimed to convene leading data actors to discuss the power and potential of data to improve equitable progress on future Sustainable Development Goals (SDGs) and to catalyze policy change by providing new insights from a wide variety of non-governmental data sources. Whilst data was presented as a tool to monitor progress, it was also being discussed by UN deliberators as fundamental to driving SDG implementation. A wide range of issues were under discussion, such as how to capitalize on new private sector data innovations, how to sift through and use big data, how to govern national and third-party data, and how to capacitate low and lower-middle income country actors with the necessary skills and resources to modernize their data and statistical systems to benefit from these advancements. SDSN proposed the creation of TReNDS, a global virtual think-tank on data for development, to critically reflect on these questions and provide expert advice to the UN system and member states attempting to harness greater volumes of data for sustainable development purposes.

As a global virtual think-tank, TReNDS would involve academics and practitioners from government, the private sector, academia and non-governmental organizations to critically reflect on key data challenges and how to mobilize data for the public good. A particular priority was how data capacity and use could be improved in the global south to support sustainable development policy and progress on the SDGs. As one member described it, “the group was rightfully concerned with the political economy of data and how it could be best used in the global south.” Three co-chairs were identified from a National Statistical Office (NSO), an international data organization, and an academic center, to ensure the breadth of stakeholders working in the data for development space were reflected in the group. Furthermore, private sector representatives participated as Members.

The mission statement and core objectives of the group aimed to drive a shift in the way governments approach, use and value data and to do so by:

- Convening data experts from across disparate communities to serve as an information and educational hub on data for sustainable development.
- Providing thought-leadership on new forms of monitoring and new information systems to make data more relevant for policy and program development.
- Identifying information-innovations that could help drive progress on the SDGs, doing so in part through ‘Solutions Initiatives’ (identifying and documenting promising scalable projects or solutions).
- Providing technical support to SDSN’s national and regional networks who work with governments on SDG implementation, and with other international data actors such as the Global Partnership for Sustainable Development Data (GPSDD) – a new global platform initiated on the recommendation of the UN High-Level Panel on the Data Revolution, to bring together diverse data providers and users to catalyze new partnerships and innovations.

Nearly ten years later, many of these objectives have been fulfilled. TRenDS has brought together highly diverse data actors to critically reflect on key data for development challenges, as evidenced by its Member-led flagship reports, **Counting on the World** (2017) and **Counting on the World to Act** (2019). It has provided thought-leadership, for example putting forward evidence-based reports and briefings on new modes of working across National Statistical Systems (NSS), including the novel recommendation for creation of Chief Data Officer (CDO) positions to help shepherd evolving NSS. Such ideas have been presented to and debated by a range of governments within the UN Statistical Commission (UNSC) (Perucci 2024). Further testifying to the thought-leadership and impact of the network, in 2019, then TRenDS Director was invited to share the learning from TRenDS in a World View article for Nature, one of the most prestigious scientific journals in the world (Espey 2019). Working with national and local partners, TRenDS has catalyzed and documented information innovations such as the sharing of data between the Bogota Chamber of Commerce and the Departamento Administrativo Nacional de Estadística (DANE), the Colombian Statistical Agency (as well documented by the TRenDS Data Reconciliation Initiative) (TRenDS and CEPEI 2018). TRenDS members have also consistently worked with national governments and international partners to promote evidence-informed approaches to data curation and management in support of the SDGs. These examples and the many more discussed herein testify to the tremendous impact and contribution of this global virtual think-tank group.

In 2024, the world looks very different. The 2015 ambition to “Leave No One Behind” has been upended by the COVID-19 pandemic that “wiped out more than four years of progress on poverty eradication and pushed 93 million more people into extreme poverty in 2020” alone (UN 2022; 3). Furthermore, refugees and internally displaced populations have skyrocketed due to conflicts in Palestine, Sudan, Ukraine, Syria (to name a few) and environmental crises. As of late 2023, the Office of the United Nations High Commissioner for Refugees (UNHCR) estimated 103 million people were forcibly displaced (up from 65 million in 2015), which means they are outside of any formal monitoring system (cannot be captured by a census or household survey) and are lost to official statistics (UNHCR 2022). The political economy of data in many countries remains or has become extremely challenging (as per the findings of Sandefur and Glassman in 2015). Whilst underinvestment has been a problem since the SDGs started, it is worsening. According to the PARIS21 PRESS report international support for data and statistics amounted to USD 542 million in 2020, a decrease of over USD 100 million and USD 155 million from 2019 and 2018 levels, respectively. “This was the biggest drop in funding since the start of the SDG era” (PARIS21 2022; 12).



And against this political and economic upheaval, is rapid technological innovation – not least of all in the field of Artificial Intelligence (AI) – and a growing digital divide. Whilst more and more of the world's citizens have internet-enabled devices like smartphones, access to the internet is still highly variable and grossly inequitable across regions. As of 2022, 2.7 billion people (a third of the world) do not have access to the internet and 53% of the world does not have access to high-speed broadband (Signe 2023). Internet penetration is 89% in Europe and only 40% in Africa (ITU 2022).

Faced with these new challenges and transformative dynamics TReNDS is at cross-roads. Does it continue with its previous business model – focusing on critical thinking and showcasing small-scale innovative practices pertaining to sustainable development that have the potential to transform data and information systems in low-capacity governments around the world? Or does it evolve; broadening its remit, audience, and ambition to engage with the thorny and seemingly intractable data-related issues of the day? A third option is the network's closure; recognizing the valuable contributions the group has made over a decade of work, but also the enormity of today's data challenges and the necessity to take a more specific sectoral or localized approach to developing responses.

This report does not provide a definitive answer. That is for TReNDS' members, partners, and the broader global data community to decide. What it does do is take a step back, calling out and recognizing TReNDS achievements, but also highlighting our very personal journey and the lessons we have learned about the external landscape and our own internal practices. Whatever TReNDS' future, we hope these reflections will prove useful for other data actors in this space who may very well take up where we leave off, establishing collaboratives to engage with the critical data for development research questions of the day.

A note on methodology:

This report has been prepared drawing upon a rich library of TReNDS' publications (available on the group's website: <https://www.sdsntrends.org>), as well as internal documents and memos, including 10 years of donor reports and assessments. It has also benefited from the inputs of numerous key informants, including a great many of the TReNDS members themselves. Whilst public references have been provided wherever possible, some information may be derived from internal UNSDSN / SDSN TReNDS documents. If readers have any queries on these assertions or wish to know more, they are welcome to contact the TReNDS secretariat at: [\[trends@unsdsn.org\]](mailto:trends@unsdsn.org).

02. CELEBRATING OUR ACHIEVEMENTS

Thought leadership

Ten years on since our first publication - **Data for Development** –TRENDS has curated a broad and highly diverse portfolio of research and policy-focused outputs. 55 outputs have been made available on the **TRENDS website**, ranging from short-form briefings of 5 or so pages, to long-form reports of 40+ pages. The thematic coverage is highly diverse, covering topics from citizen science to population data standards, and institutional governance.

Of particular note are the two flagship reports, **Counting on the World** (2017) and **Counting on the World to Act** (2019), which are repeatedly singled out by members as products they use in their own work and as documents that have been widely referenced. One member noted “the confidence that TRENDS’ work and reports have given me” to speak about data governance, whilst another member noted that elements of the report had been mimicked in his community; “mimicking is the best form of flattery and shows there was a particular need for that kind of thought-leadership.” Both outputs were written collectively by the whole membership through workshops in New York (Spring and Fall 2016), Bristol (Spring 2018) and New York (September 2018) and through online discussions.

Positive feedback on the reports were received from a wide array of actors including the Chief Statisticians of Mexico, Denmark, Colombia, and the Philippines, as well as the Liberian and Danish Ambassadors to the UN. Of particular interest to many governments was the recommendation pertaining to the creation of Chief Data Officers (CDOs), to serve as data stewards for evolving statistical systems. The proposal was inspired by observation of the role of CDOs sub-nationally, within cities, and not least of all by TRENDS member, Jeanne Holme who was then Los Angeles’ CDO, resulting in a series of blogs and **spin off papers**. Following the publication, the TRENDS Director was invited to serve on the UNSC’s High-Level Group on Partnership, Coordination and Capacity Building to advise on new governance models for statistical systems.

“To cope with the exponential growth in data producers and the boom in potential data sources for monitoring sustainable development, countries should create a position of Chief Data Officer (CDO). The CDO should work alongside chief statisticians, NSO staff and stakeholders to survey, catalogue, and harness the broad swathe of non-official data available from third parties and to propose ways in which new sources of data and information can be brought into the national SDG monitoring process.”

Source: SDSN TRENDS (2017) *Counting on the World*, SDSN: New York, pp. 25.

Following successful launch events for both reports, TRenDS decided to focus on increased communications and media promotion. In 2019, for example, the TRenDS Director was invited to present the work and the lessons for technology governance at the Massachusetts Institute of Technology (MIT) and at the Davos World Economic Forum (WEF) in Switzerland. In January 2020, the group released a **roundtable discussion** showcasing report insights, which received more than 2000 views. Our Spring 2020 TRenDS Meeting also featured a partnership with media group, Devex, and included a **high-level segment** featuring discussion between Jeffrey Sachs and Francesca Perucci discussing key themes in the reports. The event attracted more than 300 online participants.

The Counting on the World publications were unique for being vision statements, collectively written by all the membership, but the TRenDS secretariat also worked with specific members on knowledge products in different sectoral domains. In 2018, for example, SDSN TRenDS and member William Hoffman of the World Economic Forum collaborated with the University of Washington and NYU's Govlab to launch the Contracts for Data Collaboration project (C4DC). The objectives were to support countries to establish data sharing agreements with third parties – be they private or public actors- to better enable and facilitate new data collaborations. It was the members observation that whilst many in the Global North (and indeed the whole SDG agenda) were getting excited about the potential for public-private data partnerships, many governments lacked the capacity and knowledge to negotiate fair and appropriate data sharing agreements to ensure their data was not exploited in the process and their interests were protected. We aimed to do that by demystifying the complexity of data sharing agreements and the various legal provisions contained therein. We did this by providing an analytical framework through which to analyze and assess the robustness of data sharing agreements, and by creating an online library of legal clauses which captured the key elements involved in a collaboration, helping to minimize the misunderstandings that often occur when negotiating data sharing. In total 43 agreements were identified and made available open access (often following very protracted negotiations with the parties involved) on the project website (<https://contractsfordatacollaboration.org/library/>), alongside a series of user guides and contract analyses. A particular contribution was the adaptation of this work during the COVID-19 epidemic, to focus on equitable ways for low-capacity governments to negotiate data sharing agreements with technology companies and third parties in haste, to help them monitor the epidemic. In mid 2020, we published a **set of guidance for national policy makers** (Dahmm 2020). We also worked with Tom Orrell, TRenDS member and Director of Data Ready, to publish an analysis of '**Sunset Clauses**' e.g. provisions to safely and carefully manage the end of emergency data sharing measures post COVID-19 (CfDC 2021). According to one member "the contracts project was very important in my country, demonstrating how contracts need to be crafted" to ensure effective data governance and meaningful engagement. Various members have noted however that whilst it is a highly useful technical resource, it has been insufficiently promoted with national governments and other interested parties and could be more effectively disseminated to maximize ongoing use.

A second key area of thematic research and activity has been citizen science and supporting members, Jillian Campbell and Dr. Dilek Fraisl to lead a program of research on citizen science methodologies and approaches. With TRenDS' support, Campbell and Dr. Fraisl and several other stakeholders partnered with the Ghana Statistical Service (GSS) to use citizen science to monitor SDG 14.1.1b (marine litter) along Ghana's coastline. The project was successful in bringing together key stakeholders to build confidence and use of the techniques. It has helped to raise awareness of citizen science in Ghana and encouraged greater discussion on the value of non-traditional data sources for SDG reporting. As a result of the project, the Ghana Environmental Protection Agency (EPA) and the GSS validated the data for official SDG reporting of SDG 14.1.1b, making Ghana the first country to report on this indicator using citizen science data. Findings from

this work, presented in scientific papers, reports and StoryMaps (such as Fraisl et al., 2023), have been made available on TReNDS' website: <https://www.sdsntrends.org/citizen-science-project>. As one member remarked "the citizen science project has caught a wave of ideas and is helping to broaden understanding of such approaches all around the world."

A long-standing project of SDSN TReNDS is POPGRID. Established in 2018 and now into its 7th year, the **POPGRID Data Collaborative** (POPGRID) aims to bring together and expand the international community of data providers, users, and sponsors concerned with georeferenced data on population, human settlements, and infrastructure. The Collaborative works to improve data access, timeliness, consistency, and utility; support data use and interpretation; identify and address pressing user needs; reduce duplication and user confusion; and encourage innovation and cross-disciplinary use. The Secretariat is led by TReNDS and the Center for International Earth Science Information Network (CIESIN), directed by former TReNDS Co-chair, Dr. Robert Chen. Support is generously provided by the Bill & Melinda Gates Foundation.

Major achievements have been the publication of the POPGRID report, **Leaving No One Off the Map**, which aimed to overview, analyze, and make recommendations for the use of gridded population datasets in a wide range of application areas, such as in disaster response, health interventions, and survey planning (Rabiee and Dahmm 2020). Specifically, the report compared seven gridded population datasets from POPGRID, including an analysis of the underlying data, methods and basic assumptions, and the corresponding strengths and limitations of each dataset in simple terms, thereby helping countries and different public service actors to know which dataset to use and when for their different policy challenges. The POPGRID collaborative has been successful in bringing together highly diverse geospatial data producers, from public, private and third-party spheres including internet.org at Facebook, Oak Ridge National Laboratory, ESRI, the US Census Bureau, NASA and Worldpop at the University of Southampton, amongst others, to establish standards and criteria for the uses of different geospatial data layers. The Collaborative and its members have also worked closely with national governments to explain the various uses of geospatial data and encourage its greater application and uptake. As one TReNDS member and former National Statistician observed, "POPGRID work showed me how satellite imagery and big data are very useful in addressing questions related to SDGs and implementation."



Academic recognition

As a knowledge-focused network eager to establish itself as a thought-leader on issues of data for development and wider data governance challenges, receiving academic recognition was paramount. This recognition would testify to the quality of our work, the depth of analysis contained, and ensure our perspectives were not only valuable for the policy community but contributed to the wider academic debate about data for development and data in governance, thereby ensuring peer recognition.

Whilst the first two years of the network's operations were predominantly focused on organizational coherence, initiating programmes, and producing *Counting on the World* (2017), from 2018 onwards a concerted effort was made to better disseminate learning from our activities in academic articles, book chapters and through academic partnerships. Examples include showcasing the Local Data Action initiative's work through the book chapter "OneNYC and the SDGs" published by Columbia University Press (Espey and Mesa 2018) and subsequently through the chapter "Top-Down and Bottom-Up Approaches to the SDG Monitoring Challenge" published by Springer Nature (Espey 2021). In 2019, TReNDS member Dr. Dilek Fraisl, Director Jessica Espey, and a host of other partners showcased research into citizen science with a *Nature Sustainability* article on citizen science (Fritz et al. 2019), which was followed by another peer-reviewed **Sustainability Science** article acknowledging TReNDS' intellectual support (Fraisl, Campbell et al., 2020). Both papers have been highly cited as they pioneered a new field of research on citizen science and the SDGs. With TReNDS' financial and research support, Dr. Fraisl went on to develop this work, focusing on marine litter in West Africa (Fraisl and Seidu 2023; Fraisl, See, et al., 2023; Olen 2022). In 2019 the work of TReNDS was discussed in a *World View* perspective article for the academic giant *Nature* (Espey 2019). This invitation spurred subsequent collaboration with *Nature*, including a three page spread showcasing TReNDS work in the publication (**Nature Research & TReNDS 2020**) and the co-hosting of a conference, **Science for a Sustainable Future**, which is now into its fourth year. Finally, during the COVID-19 pandemic, TReNDS was invited to contribute to the Springer Nature Handbook of Global Health, specifically writing the chapter on "Innovations in Disease Surveillance and Monitoring" (Espey and Dahmm 2021).

These examples serve to demonstrate the academic credibility and standing TReNDS, as a group, has acquired, building upon the excellent knowledge and reputations of its members, but also establishing itself as an entity in its own right, with valuable and timely academic insights in the data for development space.

Demonstration projects

A strategic objective of TReNDS from the outset has been to identify information-innovations that could help drive progress on the SDGs, doing so in part through 'Solutions Initiatives' (promising scalable projects or solutions). With such projects, TReNDS acts as a knowledge partner, facilitating discussions, collaborations, and documenting practices, with the aim of attracting attention and potentially investment to promising initiatives that seem scalable. One such initiative instigated in 2016 and concluded in 2020 is the Data Reconciliation Project. In 2016, DANE Colombia conducted a data gap analysis, revealing that 16 percent of SDG indicators in Colombia were missing data (or methodologically unclear) and 30 percent had only partial data. In response, TReNDS and Colombian partner, Centro de Pensamiento Estratégico Internacional (CEPEI), worked together to explore the governance and technical requirements for effective data sharing and reconciliation between different public and private data producers in Colombia to help fill crucial SDG data gaps. TReNDS Member, Philipp Schönrock and his team at CEPEI, brokered a partnership between the Bogotá Chamber of Commerce and DANE to share data on select indicators, standardize the formats of their data, and work together to support SDG reporting. The project partners hypothesized that the implementation of a technological data reconciliation platform would support this process. In 2019, project partners documented the process, successes, and challenges of this technological approach – not least of all recommending a move away from data reconciliation platforms and an emphasis on human capacity and training- and raised awareness of the potential of data sharing in support of the SDGs. The project was then replicated in other cities across Colombia, including Cali, and was presented to the Latin American Chambers of Commerce Association in 2019. The initiative evolved and is now working on how to better understand the scope of public-private data initiatives focusing on SDG-related policy areas in the Global South.

A key insight from this project was the importance of collaborating with really embedded and capacitated local partners. As one member noted, TReNDS' "data reconciliation work was particularly effective because of good partners like the Bogota Chamber of Commerce and CEPEI" who not only led it but had the networks and contacts to disseminate learning and take it to scale within the region.



Another particularly commended project was the **Local Data Action Initiative**, a collaboration between SDSN TReNDS and SDSN's USA-Sustainable Cities Initiative (USA-SCI). It aimed to create a library of case studies and technical knowledge documenting how to engage with and monitor the SDGs at city and regional levels. Knowledge was curated in consultation with city staff, technical partners, and other stakeholders. This global initiative stemmed from initial work under USA-SCI supporting SDG data initiatives in the U.S. cities of San José, California, Baltimore, Maryland, and New York, New York. Focus areas were indicator localization, the use of data platforms, third party data use and national to local data integration. Nine local case studies were commissioned following a competitive call for submissions, with recipients receiving microgrants to write up their local activities and observations. Case studies ranged from documenting metropolitan governance and data use questions in Brazil to trying to find new data sources to track evictions (and monitor SDG 16) in Baltimore, Maryland, USA and developing a city-level SDG data system in Patiala, India. Overall, the grantees' experiences revealed their local SDG data efforts had had impact in seven areas:

- 01** Broadening political support for the global sustainable development agenda,
- 02** Supporting national SDG monitoring initiatives,
- 03** Promoting action when national leadership was missing,
- 04** Localizing indicators while also promoting coordination and comparison across regions and cities,
- 05** Evaluating and expanding beyond official data sources,
- 06** Incentivizing discussions on relative progress,
- 07** Promoting inclusion.

The findings from these studies were subsequently presented to members of the SDG Cities Leadership Network, at the Global Mayors Forum, to the leadership of United Cities and Local Governments, and published within two book chapters (as highlighted above). As one TReNDS member and a former Director within the UNSD noted, "the cities work was invaluable. No one else was looking at this level. And when TReNDS stopped working on city-level SDG monitoring and data governance it died as there were no other entities who had the space, time or mandate to do it."

03. LESSONS FROM RUNNING A RESEARCH COLLABORATIVE

After ten years of research, program development, partnership, communications work and policy-engagement, a whole host of highly successful and some ineffective initiatives, TReNDS has identified 7 key lessons about running effective research collaborations.

1. In-person meetings to stimulate co-creation

The first and most expressed remark about the TReNDS network is that it has provided a unique space for Members to engage on critical topics and to have time “to think and to learn from actors I might otherwise not have engaged with.” One Member noted that he repeatedly uses TReNDS “as a model for how you encourage deep thinking and foster accountability through critical reflection in policy systems that very rarely take the time to do this. It’s a reflective mechanism for the data for development community.”

A crucial mechanism for encouraging critical group reflection has been biannual whole network meetings, with at least one of these taking place in-person. Member meetings have taken place in New York, London, Bristol, Bogota, Cartagena, Cape Town, Dubai, and San Francisco, often coinciding with strategic events, such as UN WDFs, to minimize annual air travel. In-person meetings generally took place over 2 days, with part of the meeting a review of existing activities, part of the meeting a discussion on a cross-cutting theme or idea, and part focused on collective writing or feedback on draft group outputs. The latter activity was found to be particularly conducive to group discussion and debate, where actors could engage with drafted material or ideas and provide feedback based on their sectoral experiences and learning. Members remembered impassioned and stimulating discussions amongst the membership on topics as varied as urban data and local SDG monitoring, data sharing and regulation, and data colonialism.

Meetings also took place online, via the platforms Microsoft Teams, Google Meet and Zoom, not least of all during COVID19 pandemic, but members repeatedly stressed that they derived more from the physical gatherings; “virtual engagements are not the best way to build collective sense of identity.”

2. A technically competent and well supported Secretariat

Crucial to the coherence and productivity of the network was the Secretariat. According to one member “TReNDS punched above its weight, but particularly when the Secretariat staff were actively involved, seeding ideas and playing a strong coordination role.” Individual personalities were also emphasized and the importance of finding staff who would listen to members but also push them to explore new topics and themes. To do this technical competence amongst the Secretariat was crucial, with staff being trained in relevant disciplines and having their own knowledge portfolios. When resources were tight, capacity was also found by sharing staff time between the Secretariat and Open Data Watch (ODW), one of the co-chair organizations. This provided specialist expertise when needed and support with communications work.

Members also commended the appointment of a dedicated Director for the network, who could provide strategic direction, undertake fundraising, and be an external advocate for the group’s work. Members noted that collaboratives often rely on the goodwill of the Membership, who often haven’t the time or resources to prioritize fundraising, strategic planning or even writing, on top of their own organizational concerns. Having a strong Secretariat who could remove the burden of fundraising and strategic planning was therefore highly beneficial, as long as the members felt that their activities reflected the Memberships’ interests and areas of expertise. Members highlighted the critical role that the Director plays to establish both organizational and substantive leadership and maintain close working relationships with the co-chairs, members, and with donors. In short, sustaining such a knowledge network is not possible without a strong and dedicated Director at the helm. In periods of transition (between two directors), members noticed a significant decline in productivity reaffirming the centrality of a senior and well capacitated central team.

3. Provocative themes and speakers

Members derived the most from the group, meetings and exchanges when specific topics and themes were set to inspire discussion, with opening remarks provided by expert speakers either from within or external to the membership. Members remembered excellent and stimulating presentations and discussions in Los Angeles, led by the office of the City Mayor, in Bogota, led by CEPEI and the Bogota Chamber for Commerce, and in New York, led by mobile telecommunications provider, Orange. These kick-off events helped to unite members with highly diverse interests and expertise around common themes, bringing the network’s household survey specialists, geospatial data scientists, and lawyers together around a specific issue or challenge. Conversely conversation often tapered off when one or other member presented on their specialist area, without appreciating the huge diversity of expertise in the room and the very different educational backgrounds (from economics, to statistics, to humanities, or public health) which often meant other members felt ill-equipped to contribute and became more of an information sharing session than a deep-dive discussion.

4. Maintaining a diverse membership

Whilst the diversity of the membership often presented some challenges – with members heralding from different backgrounds, training, and with very different skills- it was frequently highlighted as a considerable asset. As one member commented, “it was great to link groups of people from many parts of the world and across sectoral communities. The group was unique and highly needed, in that sense” and when well shepherded it resulted in “intense discussions and new ways of thinking and doing.” Members also provided specific examples of how cross-network collaborations had opened their eyes or changed their ways of working;

- “Working with Philipp’s CEPEI has been very good for me. He was able to show me how a CSO in a non-developing country could be impactful in the region but also globally.”
- “I remember of course the engagement of Jeanne Holme and the City of LA. The discussion brought together academics but also the local government. These were not the data people but the decision-makers, who were using our data and this was the community we needed to target to ensure uptake and use.”
- “TReNDS was different to any other research group I’d been in and was useful as it was multi-sectoral and multi-disciplinary.”
- “We were a community of practice; people who were across the globe and quite consciously trying to move the [data] discussion.”

There were some practical challenges however in maintaining a diverse group. By nature of being housed by SDSN, based in New York, the Membership and Secretariat was “bias towards the North... [albeit] with a gaze on the South.” Of particular note was the underrepresentation of data actors from across Sub-Saharan Africa (SSA) and parts of Asia. Conscious and continuous efforts were made to recruit additional members from both regions, but due to invitees’ limited capacity, these drives were only moderately successful. Whilst more than 5 African members and one South-Asian co-chair were invited to participate in the group over the decade, nearly all disengaged after a short-period of time due to local demands and time-constraints. Similarly, from the outset there was an underrepresentation of private sector actors within the group. Nicolas da Cordes from the telecommunications company, Orange, was initially a member, alongside William Hoffman of the WEF, but following Nicolas’ departure, no new private representative was identified to join. Secretariat staff noted that maintaining a diverse and representative membership was a continuous process that required constant reflection and dedicated attention, not just to recruit individuals but also to maintain relationships and ensure their continuous engagement.

5. Giving back to the members

For many of the members, TReNDS was particularly rewarding as it helped to amplify or kick-start their own personal research; “TReNDS supported my citizen science work right at the beginning, which was very rewarding. It really helped and amplified me.” Similarly, another member, who co-chairs a large network focused on disaster risk reduction noted that “TReNDS really helped us to kick start the work, supporting us with funding, visibility and dissemination, for example TReNDS helped us to run high-profile events.”

Other members found the return on investment less apparent, as whilst they understood the intrinsic value of the group, it seldom provided resourcing for their work or directly showcased it. They also remarked that the network was often hampered by “member’s capacity” as members were providing their time pro-bono or as part of their existing institutional affiliations and resourcing, with little time available or resourcing. In the first 4 years of operation, TReNDS did attempt to overcome this by offering small per diems to members to write outputs linking their work to common TReNDS themes or areas of enquiry, but for many the small resources involved (c. \$10,000 USD) was not considered sufficient to merit the additional time commitment.

6. Communication and stakeholder targeting

A common theme across external observers, donors and members remarks is that TReNDS produced high quality work on hugely important themes, but that often the work didn’t receive the attention it deserved and only some of its projects had demonstrable real-world impact. The two challenges most identified were underinvestment in communications and inadequate stakeholder mapping, targeting, and impact planning.

In the first 2 years of TReNDS operations, there was no communications support within the Secretariat or across the Membership. Outputs were produced by the SDSN central communications team, subject to their availability, or subcontracted to external communications contractors resulting in communications work being reduced to copy-editing and design. This was quickly noticed as a glaring problem. Intermediary measures were taken, such as bringing on a communications consultant to design a network communications strategy, but by 2018 resourcing had been found to recruit a full-time, dedicated communications post, who could not only assist with production and design work, but strategic communications planning, website management, and social media. Whilst the initial effects of this recruitment were slow to manifest, by late 2019 our external communications work had improved markedly, resulting in significantly increased scope and frequency of outreach efforts through niche and high-level events, better leveraging our partnerships and engagement tools, forging new media partnerships, publishing more op-eds in key outlets, among other strategic activities.

Over the course of 2019-2020 TReNDS hosted more than 9 international events in eminent forms such as UNSC, United Nations General Assembly (UNGA), Davos WEF, the Human Planet Forum (HPF), American Geophysical Union (AGU) and so on. During the 2020 UNGA, TReNDS participated in over 8 events, showcasing its research and learning in a variety of fora from the virtual SDG Action Zone to our data being used in the videos being prepared for the launch of the SDG Moment at the start of the 2020 UNGA. Throughout 2019 and 2020, TReNDS Secretariat staff and members joined Data for Now (D4N) partners in a series of global events including a multi-day workshop in Rwanda with NSOs and key private sector partners to determine pilot countries’ priority data needs and gaps, which enabled us to interact one-on-one with NSOs and other global experts about new data sources, and subsequent events in Colombia, Senegal, Paraguay, and the Great Lakes.

A new approach instigated in 2020, which continues to be a core pillar of TReNDS' work today, is to engage in and host international webinars, with large platforms like Geospatial World Media, Sci.Net, Devex, and Apolitical, reaching hundreds of data community stakeholders. We have also endeavoured to place more TReNDS content into other high-profile policy outlets and academic journals including Apolitical and Nature. We also refreshed and expanded our website, attracting 80% more users and 44,000+ page views per year. The return from these communications investments was quickly apparent, with TReNDS Members and Secretariat receiving more unsolicited enquiries, media attention, event invitations and invitations for collaboration, and strongly reinforcing the importance of strategic communications support. Nevertheless, with limited core, unrestricted funding the communications resourcing remained a single full-time recruit with some modest discretionary funding. They were forced to prioritize from the research portfolio and only amplify specific aspects of our work, leaving many fascinating project insights insufficiently promoted and communicated to key stakeholders.

A second determinant of TReNDS' impact was stakeholder targeting and engaging at the right levels; "one of the things TReNDS struggled with was accessing points of leverage." Members observed that TReNDS sometimes failed to identify the right levels, networks and intermediaries to work with to maximize the dissemination of their products and ideas. At the international level, work was predominantly focused on UNSC and the member state governments and permanent missions engaging with SDG related political processes within the High-Level Political Forum (HLPF) and UNGA. This meant oftentimes TReNDS representatives were engaging with highly technical / specialized statisticians, or career diplomats with little to know technical data training at all, and it was hard to jump between the two and tailor conversations. Select members led regional multilateral dialogues with the African Union (AU) and the Economic Commission for Latin America and the Caribbean (ECLAC) with considerable success for example showcasing and encouraging ECLAC to promote the data reconciliation work and our Local Data Action project, but this was contingent on members' available time, mutual benefit, and interest. TReNDS also conducted a range of activities nationally, for example supporting Senegal, Paraguay, Rwanda and many other countries to engage with the Data4Now project. Whilst these partnerships generated lots of interesting learning and oftentimes helped countries to fill crucial capacity gaps as they sought to strengthen their statistical systems for SDG monitoring, in later years TReNDS often ended up working as an implementation support partner with minimal time for focused observation and learning. Alternatively, insights gleaned were interesting but not considered widely replicable nor were they analyzed in such a way as to derive common lessons. One member summarized the problem as "TReNDS promoting such important ideas but to a world not always ready for those ideas and with TReNDS lacking the access to really promote the solutions."

A core ambition for TReNDS from the outset was to partner with GPSDD, to provide the careful analysis and research required for the platform's global partnership activities. It was initially proposed that TReNDS could act as a strategic advisory board or even as the proposed Technical Advisory Group for the GPSDD that was concurrently being initiated in 2015. This proposal was declined by the GPSDD Secretariat. Whilst numerous collaborative activities were pursued over the decade, such as the Return on Investment studies and the Data For Now project, and there were strong interpersonal relationships between both Secretariat teams, the two organizations never established a regular method for inputting TReNDS research and ideas into the operations of the GPSDD, which was oftentimes lamented by the members.

04. OBSERVATIONS ON THE CHANGING DATA LANDSCAPE

Whatever our own internal learnings and whatever attempts we've made to improve our practice, political, economic, and social dynamics have changed considerably since the network was established in 2015. The most overt moment of disruption was the COVID-19 pandemic which not only brought about catastrophic loss of life, but loss of earnings, changes in work practices, and a global societal shift encouraging even faster entanglement in the global virtual economy. In 2022, we decided to explore these dynamics head on and see how these changes were affecting the availability, accessibility, quality, and veracity of data for development. In 2023, we launched a report entitled, **Testing the Assumptions of the Data Revolution**, which explored 6 underlying assumptions asserted in 2015 by the UN Secretary General's Expert Advisory Panel on the Data Revolution. These were:

- 01** Technical Progress Would Enable Greater Data Use for SDG Monitoring
- 02** The SDGs Would be the Driving Force for Data Innovations for the Public Good
- 03** Information Gaps Would be the Major Reason for Policy Failure
- 04** The SDGs Would Enable Resource Mobilization for the Data Revolution, Accelerating Progress Towards Outcomes
- 05** The Public Sector Would Guide and Drive Data Innovations to Target Sustainable Development
- 06** Data Would be a Standardizing Force and a Mechanism for Greater Participation and Accountability

Following extensive consultation amongst the membership and key stakeholders, key conclusions can be summarized as follows. The Data Revolution's assumption that new technologies would boost data availability has proven true, yet big-data usage remains largely confined to the private sector, excluding earth-observation data. Improvements in data for policy design are less visible than for policy impact monitoring, making it hard to assess whether the SDG framework has actually spurred better evidence-informed policymaking. By contrast the COVID-19 pandemic has catalyzed considerable innovation, even with modest resources, suggesting financial barriers are not solely responsible.

Despite increased data production, it's unclear if policymakers' demand and usage have matured, raising concerns about whether data systems address essential policymaking needs. Since **A World that Counts**, the global statistical community has worked to mobilize funding for official statistics, yet many initiatives are still nascent. Progress in data innovation across sectors is evident, but there's limited evidence of a collective strategy. ESG corporate reporting standards exemplify significant multipolar innovation without substantial

public sector input. Questions remain about improving collaboration between government and non-government actors. Open data initiatives have promoted citizen participation and data literacy, though the link between data use and accountability remains complex and disputed (TReNDS 2023).

Augmenting these insights, we have also explored a number of key themes that have run through the data for development discourse for the past decade, including the importance of 'Leaving No One Behind' through better use of disaggregated data; the power and potential of big data and geospatial data; the necessity for institutional reform of NSOs; capacity and application challenges in the Global South; open data; data privacy; the growing digital divide. Member insights on each theme are summarized below, as well as reflections on future areas of work in each domain.

Leaving no one behind

In 2015, on the eve of the SDG agreement, the international development community was abuzz not only with the promise of a unified, consensus-driven sustainable development framework for the world, but of the power and potential of new technology to help achieve the lofty ambitions it contained. Central to the techno-phoria was data and the idea of harnessing the so-called "data revolution" to help monitor our progress at the most disaggregated levels, as well as to catalyze public and private innovation and planning.

A core component of the SDG agenda which encapsulated government commitment to both equity and the use of data was the commitment to "leave no one behind." The implication of this (or at least the interpretation by many development policy actors) was that by counting more people and monitoring more equitably we could ensure that all people counted and de facto benefited from policies and investments. For the nascent data community, the practical implications of this commitment were huge. "Leaving No One Behind" would involve disaggregated monitoring of all of the 149 SDG targets according to a wide range of dimensions; geography, age, gender, disability and so on. In 2015 therefore, the focus was on strengthening the bedrock of national monitoring systems e.g. by investing in censuses, household surveys and where censuses were impossible, by looking to alternative proxy measures such as the use of geospatial infrastructure estimates.

As of 2024, investments in core data layers remain crucial. According to the 2024 SDG Report, only half of all countries have two or more datapoints available for 51 percent of all indicators, making trend analysis exceedingly difficult, particularly for gender equality (SDG 5), climate action (SDG 13), and peace, justice and strong institutions (SDG 16) (UN 2024).

However, as time ticks on and we approach the 2030 deadline, the challenge of leaving no one behind gets more acute. It is estimated that COVID-19 "wiped out more than four years of progress on poverty eradication and pushed 93 million more people into extreme poverty in 2020" though the real magnitude of the challenge is unknown due to data constraints. Furthermore, refugees and internally displaced populations have skyrocketed due to conflicts in Palestine, Sudan, Ukraine, Syria (to name a few) and environmental crises. As of mid-2022, UNHCR estimated 103 million people were forcibly displaced (up from 65 million in 2015), which means they are outside of any formal monitoring system (cannot be captured by a census or household survey) and are lost to official statistics (UNHCR 2022).

To capture the disaggregated data needed, countries need to upgrade many parts of their data systems and establish better data governance and privacy practices. Increased monitoring burdens have placed a huge demand on over-strained and under capacitated statistical offices which, without corresponding investment, are unable to deliver the statistics required for policy-makers to deliver on their commitments.

Big Data including the geospatial data revolution

In 2015, one of the ways the public policy and data for development community expected to fill statistical gaps was by using big data and alternative monitoring methodologies. The 2015 IEAG report on the Data Revolution said that private data and data generated by people would enhance and ensure a steady flow of high-quality and timely information for governments (IEAG 2015). Whilst certain innovations have proven effective and have been taken to scale (many catalysed by the COVID-19 pandemic which saw an explosion in citizen-based reporting and citizen science initiatives and e-surveys), somewhat anticipated concerns have also arisen relating to lack of awareness, capacity and funding to initiate projects, legal and privacy issues, technical capability and methodological challenges which according to some is exacerbating a new kind of digital divide “a divide in the use of data-based knowledge to inform intelligent decision-making” (Hilbert 2013;1; Cameron et al., 2022).

A related area of promise and innovation which was widely heralded in 2015 as a solution to many of the gaps facing national statistical systems, was the better use of geospatial data. In particular, the potential for layering geospatial data over other infrastructure and household survey data to ascertain geographic disaggregation. Positively, this has been an area of considerable investment and attention, with a Working Group on Geospatial Information established under the IAEG-SDG, a roadmap for countries issued by the GGIM, and sizeable investments made in entities like GRID3 and the African Regional Data Cube. However, capacity gaps remain in many low-income countries and regions, where statisticians with geographic information systems (GIS) skills are lacking, furthermore, persistent challenges remain relating to inconsistencies in data standards and geospatial resolutions, making the work of communities like POPGRID all the more important and in need of attention and investment.

Evolving national data systems

In 2015, much attention was focused on NSOs as the bastions of data, monitoring and accountability across governments. In particular, the development community focused on how to resource and capacitate these entities and how their positions could be evolved from data producers to data coordinators, able to manage the broad data ecosystem. A recommendation put forward by TRenDS was that they work with a politically appointed CDO (discussed above), which has been taken forward, in part, in conversations about data stewardship, under the UNSC Working Group on Data Stewardship.

As of 2024, the capacity challenges facing NSOs are woefully apparent. They are still considerably under-resourced and have an ever-increasing mandate. Furthermore, the data ecosystem continues to grow at an exponential rate. To cope with this evolution, national data ecosystems will need reform. Ministries and all government departments need better data and analytical capacity. For NSOs, one option may be to promote the trend underway to evolve into quality assurance entities along the Data Value Chain, as opposed to just data producers and coordinators, responsible for vetting and verifying information used across government to inform decision-making (ODW 2018). And as champions for promoting data use, evidence-informed policy, and decision-making across government, thereby empowering them to work across Ministries and Departments.

Capacity and application challenges in the Global South

Whilst discussions race ahead in the Global North about AI, automation, new data analytics, privacy and control, the reality in many countries in the Global South remains as they were in 2015. NSOs and data departments continue to face issues of training and skill development, with many countries ill-equipped to partake in a decennial census, let alone consider the adoption of new technologies. Furthermore, the political economy of data in many countries remains or has become extremely challenging (as per the findings of [Sandefur and Glassman in 2015](#)). Whilst underinvestment has been a problem since the SDGs started, it is worsening. According to the PARIS21 PRESS report, international support for data and statistics amounted to USD 799 million in 2021, a 14% increase over 2020, which returned funding for statistics back to pre-pandemic levels. However, the underlying composition of funding is changing: the return to close to \$800 million in funding was driven by multilateral donors, which now contribute the biggest share of total funding for the first time. In addition, ODA loans make up a bigger portion of funding for statistics than ever before, which masks a decrease in grants in the total figures ([PARIS21 2023](#)). Although funding has somewhat recovered, as the COVID-19 pandemic showed, the necessity for ever timelier and more complex, interdisciplinary data collection and forecasting could not be more apparent. Meaningful analysis of the realities of data production, access, funding, and control in Global South countries is imperative if we are to support realistic advances in national data systems and provide solutions that match everyday realities.

Open data

Data has the power to affect transformative changes, but only if it is open and well used. The open data movement has been an important part of the data revolution with measurable advancements in recent years. TReNDS, through its Members, has been actively involved with the movement promoting it as an important policy without which it would be impossible for data to advance along the data value chain ([ODW 2022](#)). Promoting open data is not only good practice in data management, making data accessible, machine-readable, and free of licensing restrictions on reuse. It is also essential for effective governance, supporting safeguards for data protection, improving quality, and promoting better data stewardship as open data increases a focus on users and ensures responsiveness to data demands. In Uzbekistan, for example, open data is a cornerstone of the countries' transparency and anti-corruption initiatives.

There is a welcome consensus among countries on the "open by default" definition of open data, endorsed by the UNSC in March 2022. Most countries have made remarkable advancements in recent years in making their official data open and accessible. However, progress has been uneven. Some national data providers are still struggling to meet basic open data standards, such as publishing data in machine-readable formats. Others are moving forward to tackle complex questions, such as "how to increase the use of open data?" and "how can we make sure the benefits of open data are distributed equitably?"

Despite the widespread adoption of open data standards, progress in some countries has slowed or even reversed (as per the findings of the [Global Data Barometer](#)). The latest results of the [Open Data Inventory \(ODIN\)](#) includes additional evidence of progress-stalling, and in some cases, of the positive trends having slowed or reversed. The way forward requires sustainable and user-centric solutions to ensure that open data practices continue to grow and maximize benefits for the public good. More research is needed to monitor countries progress and investigate the enabling environments for sustaining progress on open data and links with data for policy. The role of the data stewards and chief data officers promoted by TReNDS provide a

strong foundation for setting up and getting value from open data policies across government agencies.

Data privacy and ethical governance

Since its inception, data privacy and responsible governance has been at the heart of TReNDS' mission (as demonstrated by a wide range of projects and research outputs, and as recognised by our invitation to advise the UNSC high level group on stewardship and governance). Perhaps most innovative was our C4DC project which aimed to analyze and provide guidance to low-capacity countries negotiating data sharing agreements with third parties. This work has slowly fostered interest and attention amongst the wider data for development community, who are more and more aware of the ethical and governance questions pertaining to new data partnerships. In 2020, the Centre for Global Development (CGD) initiated a **Governing Data for Development** working group, and in 2021 the GPSDD kicked off a **Data Values project** aiming to provide consultation-based recommendations on data governance. In 2021, the World Development Report focused on "Data for Better Lives," and placed a strong emphasis on responsible governance and management. However, as of 2023, the governance debate has somewhat split. On the one hand are high-capacity countries racing ahead with attempts to regulate AI and automation, rolling out constant data privacy improvements and grappling to implement new standards like GDPR (all key issues which TReNDS has touched upon but has yet to meaningfully engage with). On the other hand, there are low-income countries whose data governance frameworks are piecemeal and in some cases non-existent. As highlighted by the **Head of Digital Infrastructure and Capacity Building for Smart Africa**, the fragmented data governance landscape across Africa is one of the most acute reasons for slow business investment and digital transformation across the region. Furthermore the political economies associated with the governance of data in the Global South are increasingly complex, due to the undue influence of powerful companies and private elites, with some academics arguing data is the new battleground for an **"information-security complex"** (Hicks 2021).

A growing digital divide

Related to the evolution of the governance debate above, is the growing digital divide between the Global North and the Global South. As one global south TReNDS member noted, "what is happening with data production, consumption and privacy in [the] Global South is very different to Global North." Whilst these growing divides affect the whole data value chain, of particular note is the lack of technical capacity development and skills transfer associated with many high-tech, big data, and geospatial initiatives, which is further perpetuating dependency of many Global South data offices and entities upon Global North partners (a topic explored in a **2021 TReNDS briefing on data colonialism**). As a second member noted, focusing on complex privacy and control arrangements is like "considering an engine upgrade on your car when most people are still riding bikes or travelling on foot." Understanding how investments, attention, and resources are allocated across geographic lines and the political realities of data management across different countries is therefore imperative for equitable progress in the data for development space.

Positively, the current draft Global Digital Compact working its way through the UN suggests political attention on these inequities. As of the 15th May, the draft commits to "close the digital divide within and between countries" (UN 2024; para 2), and has a specific focus on the equitable distribution of digital infrastructure, open data standards, strengthening policy and regulatory environments, ensuring digital tools uphold and respect human rights, preventing digital abuse, hatred and discrimination, and ensuring balanced, risk-based approaches to the development of new technology, including AI (UN 2024).

Africa and the Next Generation of Data Collaboratives

In the decade since TRENDS' was launched, the world has undergone a technological revolution that would be mind boggling even for the most forward-thinking futurist of 2014. From exponential leaps in computing power to the ubiquity of cloud storage and the rollout of 5G, we've witnessed an unprecedented acceleration in tech development. But even as we marvel at these advancements, a stark reality emerges: the Global South, particularly Africa, is not only at risk of being left behind it already is.

The digital divide isn't just widening; it's developing into a canyon. While the West debates the finer points of AI ethics, many African countries lack the basic digital public infrastructure (DPI) to even join the conversation. This disparity isn't just about access to shiny new technologies, it's about fundamental rights, representation, and the future of governance itself. It's also resulting in missed opportunities for the data revolution, especially the ambition to obtain data for the SDGs from new sources.

As we push for open data and technological advancement to support achievement of the SDGs, we must recognize that these efforts cannot exist in a vacuum. They must be accompanied, indeed, preceded by robust, evidence-informed frameworks for responsible AI and data governance.

The inaugural Global Index on Responsible AI serves as a sobering reality check and a point of departure for future data research collaboratives (Adams et al, 2024). While it doesn't paint a flattering picture of African countries, it reveals that even developed economies are struggling to implement truly responsible AI. For instance, across the board, there are limited to no actions being taken to address the gender and equality problem that plagues AI.

A notable action that contributes towards addressing this is the work done by the Center for Intellectual Property and Information Technology Law (CIPIT) at Strathmore University in Kenya. CIPIT conducted research investigating gender bias in African AI systems and products. Their paper titled, *The Default Gender in AI Assistant Technologies: Possible Impact*

on Women in Africa, examines the prevalence of gender bias in artificial intelligence systems. It reveals multiple forms of discrimination, including biased algorithms and gender stereotyping, challenging the notion of AI neutrality. The study emphasizes the need for cautious implementation of foreign AI technologies to prevent the importation of gender prejudices. It also calls for greater female participation in AI development as a mitigation measure.

Workers in the AI economy remain without protections, as the case of Motaung vs Samasource and Meta filed in Kenya illustrates, leaving workers exposed to mental health problems and exposed to potential harmful work environments (National Media Group, 2024). These gaps and others present both a challenge and an opportunity for Africa to leapfrog outdated approaches and set new global standards through evidence-informed approaches.

Some of the areas African countries need to consider prioritizing in AI, the digital divide and data governance are key issues that affect inclusion, human rights protections, and accountability. For instance, across the continent:

- 01** Children's rights in an emerging AI-powered continent remain largely unprotected.
- 02** The linguistic diversity of Africa is barely represented in AI systems, effectively silencing millions.
- 03** Government procurement of AI systems often occurs without the necessary expertise, potentially locking out vulnerable populations from essential services due to data and algorithmic biases inherited from systems designed and built outside the continent.

As we look to the future, the priorities for next-generation data collaboratives in Africa are clear: the development of mutually beneficial research and development partnerships that foster responsible AI. In addition, production of evidence that supports policy-makers and other decision-makers to establish policy environments that encourage innovation while safeguarding against exploitation.

Most importantly, these collaboratives should take into account the key principles TRenDS has highlighted in this report. For instance, inclusivity within a collaborative ensures that diverse views, approaches, and insights become available and contribute to eliminating bias. It also ensures efforts such as those related to linguistic diversity are led by people from, or close to, ethnic communities that are not adequately represented.

However, for a data collaborative to work, it takes financial resources. This is a cross-cutting issue across all four principles highlighted in the report. Ensuring adequate resources are mobilized will ensure the collaborative can generate and deliver value consistently during its lifetime. Finding the right funding partners who have the same values and vision, in addition to the resources for supporting the collaborative, can be key to a low-friction relationship over many years. TRenDS was fortunate to have those kinds of collaborators to ensure there was a strong Secretariat, the ability to communicate insights, and the ability to facilitate connections and collaborations between Members.

With only 6 years left until 2030, the stakes couldn't be higher. As illustrated in this report, evidence produced by collaboratives like TRenDS can be invaluable to stakeholders trying to ensure the ambition of the data revolution isn't undermined. With the right approach, Africa can be a global leader not only in responsible AI and data governance, but also in protecting the rights of the stateless, closing the digital divide, and establishing standards for data governance and reporting. By prioritizing ethical frameworks, investing in local talent, and fostering international cooperation, the continent can ensure that the benefits of the AI revolution are equitably distributed.

Data collaboratives on the continent and beyond should ensure the Africa we want is one where technology empowers rather than exploits, where data illuminates rather than obscures, and where AI serves the many, not just the few.

Written by Muchiri Nyggah

05. THE ROLE OF A FUTURE DATA COLLABORATIVE

Learning lessons from a decade of TReNDS' research, activities and operations, whilst also taking heed of the radically different context and operating environment we face today, we provide a set of recommendations. These are aimed at future collaboratives working at the nexus of research and policy on topics related to data production, curation, and governance. First, we lay out five areas of research which we believe are crucial considerations for anyone working to achieve sustainable development, and to do so with support and use of data. Then we highlight four key operational principles for research collaboratives, such as TReNDS, which we have found to be central to our most successful endeavours. These topics and principles are not intended to be exhaustive. They are a select handful of the areas and ways that we think those in the data for development space can have the most profound impact upon the pursuit of sustainable development in the short to medium term.

Topics for future research

01

The stateless

According to the UNHCR, approximately 4.3 million people are stateless worldwide (UNHCR 2022). A further 130 million people are expected to be forcibly displaced or stateless by the end of 2024, due to conflict, environmental destruction, persecution, economic migration and many other factors (UNHCR 2024). The number of stateless people today is roughly equivalent to the total population of the countries of Kuwait and Panama, meaning that as of 2024, there is an entire country's worth of people without legal representation, state protection, or monitoring. This is in dire need of redress. Without effective systems of civil registration, identification, and monitoring, these people cannot be adequately supported with humanitarian protection, basic services, adequate housing and much more.

Worryingly the actual number of stateless people worldwide could be much higher than the above figures suggest, as statelessness is often underreported and difficult to measure accurately. Stateless individuals are those who are not considered nationals by any country under the operation of its laws, leading to significant legal and social challenges. According to the Joint Data Centre on Forced Displacement, a significant data gap exists between the number of stateless people reported in UNHCR's statistical publications and the often cited but unverified global estimate of 10 million people. The 4 million figure is "based on statistics gathered at country-level from 76 States and then made available to UNHCR to collate, validate, and publish in Global Trends and other publications. Based on weaknesses in the reported data and the fact that most countries do not report any statelessness data at all, including many countries with the highest overall population figures, UNHCR is confident that the number of stateless people it reports is significantly lower than the real global number." (JDC n.d.)

For the data for development community, improving available information on those outside of formal statistical systems is imperative; focusing all of the best innovations in demographic mapping to help monitor and assist the world's most vulnerable.

02

Artificial Intelligence

A second critical area of research which is generating ever-increasing attention is artificial intelligence. As highlighted by recent meetings and reports led by the **World Bank, PARIS21**, Harvard Data Science Initiative, **McKinsey** amongst others, it has huge potential to support development efforts if the governance questions and challenges can be appropriately managed. A study published in Nature Communications, which used a consensus-based expert elicitation process, found that “AI can enable the accomplishment of 134 targets across all the goals” (79% of the targets) (Vinuesa et al., 2020; para 1). For data and statistical systems particular areas of opportunity include “helping to collect data faster, more accurately and more efficiently than humans,” automating collection and analysis of large datasets and helping to track policy impact through social media sentiment analysis (**PARIS21 2024; 3**).

Whilst these are exciting opportunities, how they would work in practice remains to be seen. What will equitable partnerships between AI providers and country recipients look like? How will governments manage AI undercut human jobs and capacities? Ultimately, the “fast development of AI needs to be supported by the necessary regulatory insight and oversight for AI-based technologies to enable sustainable development. Failure to do so could result in gaps in transparency, safety, and ethical standards” (Vinuesa et al., 2020). For data research networks, such as TREnds, working through how AI intersects with the data value chain and practical implications of each stage should be a core mission, helping to empower low-capacity countries to engage with these new technologies in a safe and mutually beneficial way.

03

The digital divide

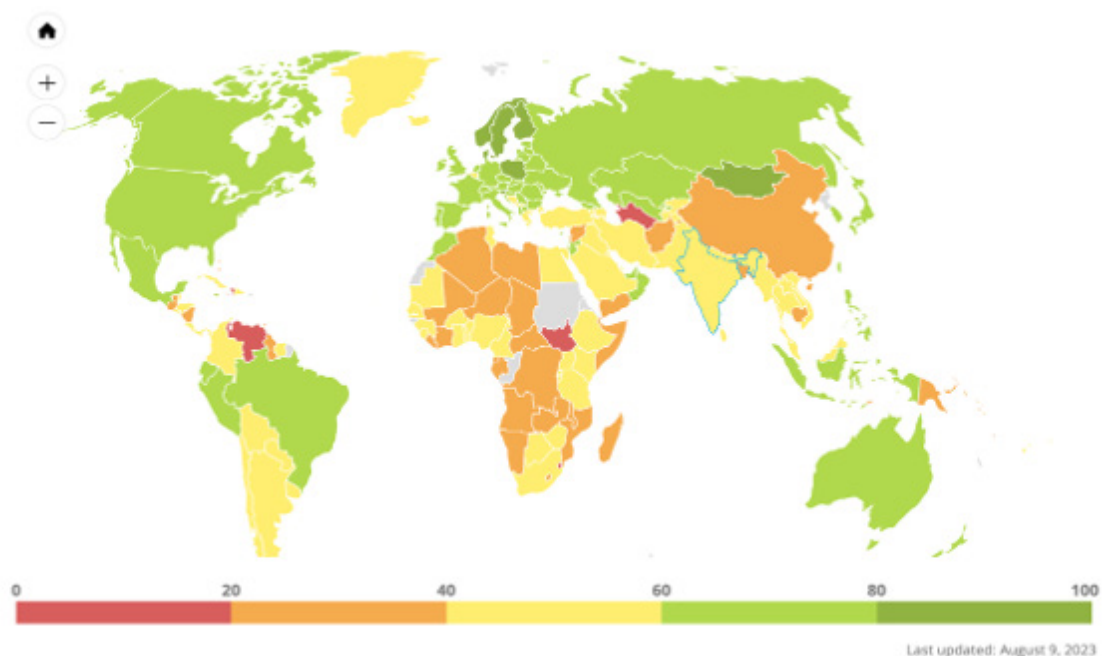
As noted above, a persistent challenge for anyone working in the data and development space is the growing digital and technological divide between the Global North and the Global South. Of particular concern is the lack of technical capacity development and skills transfer associated with many high-tech, big data, and geospatial initiatives, which is further perpetuating dependency of many Global South data offices and entities upon Global North partners. Data research actors must continue to study and understand capacity gaps and challenges, as well as tracking the skills and methodological competencies required to navigate new technologies so that those outside of global technological centres like Silicon Valley, Geneva, and Shenzhen are also able to engage with and capitalize upon latest technological innovations. Attention should also focus upon where strategic investments can reap the greatest rewards in terms of capacity development and technological up-skilling. Not every capital city in the Global South can become a technological power-house, but careful investments in key capacities such as an ability to work with GIS, do AI coding, and curate domain expertise, may ensure that future generations all over the world can work with the latest technologies to curate data for the public good.

Data governance, transparency and freedom

Crucial to improvements in data coverage, the use of new technologies, and closing capacity gaps is effective data governance and ensuring there are robust systems guiding data production, curation, communication and use. Particularly important is transparency and access to the statistics and data being collected by governments; both so citizens can monitor the information governments have, but also so that information can be used in manifold ways to design effective policies and interventions. Unfortunately, the latest data from the Open Data Inventory (ODIN) shows that all of Africa, bar Morocco, Southern Asia, Caribbean, and Pacific Islands continue to have low data openness. Whilst individual countries like Ethiopia, Gabon, Togo, Bhutan, Anguilla, and Palau have made progress in increasing the availability of open data, these regions continue to lag behind otherwise. Perhaps most concerning is that in many countries, the last few years have seen “a general push against openness” (Tomlinson 2022; para 5). Some attribute this to a general conservatism within global politics whilst others highlight personal data scandals, which have raised questions about how to regulate and structure the incentives for data to serve the right economic and societal outputs (Ibid).

Central to ensuring data transparency and openness is having robust institutional and regulatory frameworks to guide data communication and use. In March 2022, the UNSC endorsed the report of the Open Data Working Group that recommended the adoption by NSOs of the principle of “open data by default” of which open data licensing is an essential component. This is a promising development though as of 2022, “the use of an open licence remains the greatest shortcoming among all elements of data openness in 2022” (ODW 2023). For the data for development research and policy community, monitoring such developments and changes over time is a critical contribution. ODW and partners should continue to provide such measures to help national actors hold their leaders to account against international commitments and standards.

Figure 1: A map of the Open Data Inventory results 2022/2023



Source: Open Data Watch (2024). ODIN 2022/23 overall scores ranged from 1.3 to 90.4.

The figure above shows the scores for each country included in ODIN 2022/23.

Data reporting and standards

Another crucial area to which data research networks and collaboratives should seek to contribute is on data standardization. Despite considerable progress standardizing approaches to monitoring the 232 SDG indicators, there are many topics and issues for which there is no international consensus on the right way to produce, collate and report data. For example, in disaster monitoring and management, “there are so many fundamental disagreements. We still aren’t clear on how to report deaths in disasters. How can we monitor the different hazards in existence today if we don’t have commonalities on the basics?” (TReNDS Member 2024). Similarly, a recent analysis of the Emergency Events Database (EM-DAT) found that there are inconsistencies across a range of human health impacts, economic costs, ecological losses and other damages, direct and indirect. The result is a bias in reporting and subsequent interventions towards the most recorded events. Take for example heatwave records from 2000-2019. During this period, of the 87 percent of events with one or more human impact indicator, 48 percent came from European countries and 40 from Asia-Pacific countries, with only 9 and 4 percent respectively from the Americas and Africa (UNDRR 2023). The effects of these inconsistencies and reporting biases are profound, limiting our capacity to design and target effective disaster risk and reduction (DRR) strategies. TReNDS and other data collaboratives like it need to identify and research these gaps and inconsistencies, highlight their material effects, and advocate for better data standardization.

Principles for an effective research collaborative

In addition to highlighting much needed areas of research and collaboration, we also want to highlight four key principles that we believe have been central to our achievements over the past decade, and which may be instructive for other collaboratives in the future.

- 01 Inclusivity:** As discussed in section 3 above, a broad and inclusive membership is central to generate new, cutting-edge ideas, informed by a diversity of evidence, and to challenge conventional thinking. However, maintaining an inclusive network requires time and investment. Securing partners from certain regions and sectors is sometimes hard, due to different incentives or capacities, and requires considerable effort from the Secretariat and the Co-chairs, as well as dedicated financial resourcing.
- 02 Investing in research space:** TReNDS members have often reflected on the benefit and enjoyment they have derived from face-to-face interactions. Costing in dedicated time for 2–3-day meetings, with space for debate, critical thinking, and collective research or writing is essential to foster shared ideas and commonalities. This requires considerable planning and budget to support travel, per diems, appropriate workspaces, and a well-capacitated lead-author for collective outputs.
- 03 Research direction:** Whilst most of the original ideas of a collaborative come from the Membership, it is essential to have a strong and technically equipped Secretariat that can help to direct research activities, prompting discussion, provoking ideas, and giving the network draft papers and concepts to mull over and debate. Zero drafts and proposal documents help the Membership to jump straight into substantive topics and to collectively refine their ideas, particularly when they have limited time for group discussion. Conversely, open-ended discussion sessions, with no structured documents or proposals on the table, often end up in vague ideas rather than concrete collective proposals.
- 04 A focus on communications and impact:** As TReNDS learned in the first few years of its operation, you should never underestimate the importance of communications. Research work is only impactful if it is communicated effectively to key stakeholders and relevant interest groups. Investing in communications staff, strategies, technologies, and tools from the outset of a project can ensure its long-term efficacy and the durability of its insights long-after any given report is published and launched.

List of Past and Present TRENDS Members

NAME	COUNTRY	ORGANIZATION TYPE	GENDER	SKILLS
Sabina Alkire	United Kingdom	Academia	Female	Multidimensional poverty measurement
Shaïda Badiee	United States of America	International Non-profit	Female	Open data and official statistics
Laveesh Bhandari	India	Private Sector	Male	Economist
Lisa Bersales	Philippines	Government Agency	Female	National statistics and population data
Geoffrey Boulton	United Kingdom	Academia	Male	Geology, geospatial data, and Earth observation
Gilberto Câmara	Brazil	Government Agency	Male	Geoinformatics, spatial analysis, Earth observation, and GIS data
Grant Cameron	United States of America	Non-profit	Male	International development and official statistics
Jillian Campbell	Canada	International Organization	Female	Environmental data and international reporting
Calogero Carletto	United States of America	Intergovernmental Organization	Male	Poverty and household surveys
Robert S. Chen	United States of America	Research Institute	Male	Earth observation, geospatial data, and population
Kate Crawford	United States of America	Private Sector	Female	Social impact of big data
Samantha Custer	United States of America	International Non-profit	Female	Development aid and financial flows
Nicolas de Cordes	France	Private Sector	Male	Mobile phone data
Jessica Espey	United Kingdom	Academia	Female	Data for policy
Chukwudozie Ezigbalike	Nigeria	Intergovernmental Organization	Male	Data revolution for Africa and data communities
Alex Fischer	Australia	Academia	Male	Geospatial data and Earth observations
Dilek Fraisl	Austria	International Non-profit	Female	Citizen science
Xiaolan Fu	United Kingdom	Research Institute/ Academia	Female	Innovation, technology, industrialization, and economic development
Enrico Giovannini	Italy	Academia	Male	Statistician and economist
Jonathan Glennie	United Kingdom / Colombia	Non-profit	Male	Data and policy collaboratives
Bram Govaerts	Mexico	International Non-profit/ Research Institute	Male	Sustainable agriculture
Bronwyn Harch	Australia	Academia	Female	Modeling and decision-making science
William Hoffman	United States of America	International Non-governmental Organization	Male	Data for development and data privacy

Jeanne Holm	United States of America	Non-profit	Female	Technology and local monitoring
Guo Huadong	China	Research Institute/ Academia	Male	Remote sensing and GIS
Molly Jahn	United States of America	Academia	Female	Sustainable agriculture
Emmanuel Letouzé	United States of America	Non-profit	Male	Big data and data for development
Marc Levy	United States of America	Research Institute	Male	Environmental governance
Tom Moultrie	South Africa	Academia	Male	Demographics
Virginia Murray	United Kingdom	Government Agency	Female	Disaster risk reduction and health data
Muchiri Nyaggah	Kenya	National Non-profit	Male	Agriculture data
Tom Orrell	United Kingdom	International Non-profit	Male	Data privacy and governance
Francesca Perucci	United States of America	International Non-profit	Female	Official statistics and international reporting
Steven Ramage	Switzerland	Intergovernmental Organization	Male	Location data and GIS
Barbara Ryan	Switzerland	Intergovernmental Organization	Female	Remote sensing
Philipp Schönrock	Colombia	Non-profit	Male	Big data, data policy, and data sharing
Keith Shepherd	Kenya	International Research Institute	Male	Sustainable landscapes and information systems
Eduardo Sojo	Mexico	International Non-profit	Male	Economist and national statistics
Eric Swanson	United States of America	International Non-profit	Male	Open data and finance



REFERENCES

- Adams, R., Adeleke, F., Florido, A., de Magalhães Santos, L. G., Grossman, N., Junck, L., & Stone, K. (2024). Global Index on Responsible AI (2024). South Africa: Global Center on AI Governance. <https://girai-report-2024-corrected-edition.tiiny.site/>
- Allen, C., Cameron, G., Dahmm, H., (2021) Big Data and the Sustainable Development Goals: Innovations and Partnerships to Support National Monitoring and Reporting, Working Paper, SDSN TRenDS and Partners for Review, UNSDSN: New York.
- Contracts for Data Collaboration, (2021) Covid-19 and Data Sharing Agreements: The Potential of Sunset Clauses and Sunset Provisions, SDSN TRenDS and Data Ready, UNSDSN: New York.
- Dahmm, H., (2020) Laying the Foundation for Effective Partnerships: An Examination of Data Sharing Agreements, TRenDS Working Paper, UNSDSN: New York
- Dahmm, H., Moultrie, T., (2021) Avoiding the Data Colonialism Trap, TRenDS Blog, TRenDS, UNSDSN: New York.
- Espey, J., (2019) Sustainable Development will Falter Without Data, Nature 571, 299. doi: <https://doi.org/10.1038/d41586-019-02139-w>
- Espey, J., (2021) Top-Down and Bottom-Up Approaches to the SDG Monitoring Challenge. In: Abraham, D.B., Iyer, S.D. (eds) Promoting the Sustainable Development Goals in North American Cities. Sustainable Development Goals Series. Springer, Cham. https://doi.org/10.1007/978-3-030-59173-1_7
- Espey, J., Dahmm, H., (2021) Innovations in Disease Surveillance and Monitoring. In: Kickbusch, I., Ganten, D., Moeti, M. (eds) Handbook of Global Health. Springer, Cham. https://doi.org/10.1007/978-3-030-45009-0_16
- Espey, J., Mesa, N., Ruckstuhl, S.M., Prakash, M., " (2018) OneNYC and the SDGs: A City Strategy with Global Relevance". Smarter New York City: How City Agencies Innovate, edited by André Corrêa d'Almeida, New York Chichester, West Sussex: Columbia University Press, pp. 35-58. <https://doi.org/10.7312/dalm18374-005>
- Fraisl, D., Campbell, J., See, L. et al., (2020) Mapping citizen science contributions to the UN sustainable development goals. Sustain Sci 15, 1735–1751. <https://doi.org/10.1007/s11625-020-00833-7>
- Fraisl, D., Hager, G., Bedessem, B. et al., (2022) Citizen science in environmental and ecological sciences. Nat Rev Methods Primers 2, 64 (2022). <https://doi.org/10.1038/s43586-022-00144-4>
- Fraisl, D. and Seidu, O. (2023) "Combining Official Statistics and Citizen Science in Ghana to Address Marine Plastic Pollution." World Bank Blogs. <https://blogs.worldbank.org/en/opendata/combining-official-statistics-and-citizen-science-ghana-address-marine-plastic-pollution>
- Fraisl, D., See, L., Fonteneau, F., Jütting, J., (2024) AI through the lens of official statistics and the Sustainable Development Goals: The benefits and risks. Paris21. <https://www.paris21.org/sites/default/files/media/document/2024-07/ai-paper-formatted.pdf>
- Fraisl, D., See, L., Bowers, R. et al., (2023) The contributions of citizen science to SDG monitoring and reporting on marine plastics. Sustain Sci 18, 2629–2647 (2023). <https://doi.org/10.1007/s11625-023-01402-4>
- Fritz, S., See, L., Carlson, T. et al., (2019) Citizen science and the United Nations Sustainable Development Goals. Nat Sustain 2, 922–930 (2019). <https://doi.org/10.1038/s41893-019-0390-3>
- Hicks, J., (2021) A 'data realm' for the Global South? Evidence from Indonesia. Third World Quarterly, 42(7), 1417–1435. <https://doi.org/10.1080/01436597.2021.1901570>
- Hilbert, M., (2013) Big Data for Development: From Information- to Knowledge Societies. Available at SSRN: <https://ssrn.com/abstract=2205145> or <http://dx.doi.org/10.2139/ssrn.2205145>
- IAEG-SDG, (2015) A World That Counts: Mobilising the Data Revolution for Sustainable Development. UN: New York.

ITU, (2022) Internet surge slows, leaving 2.7 billion people offline in 2022, ITU Press Release, Available at: <https://www.itu.int/en/mediacentre/Pages/PR-2022-09-16-Internet-surge-slows.aspx> [Last accessed 1/8/24]

Joint Data Centre on Forced Displacement (2024) Improving statistics on statelessness, JDC Website. Available at: <https://www.jointdatacenter.org/improving-statistics-on-statelessness/> [Last accessed 1/8/24]

Nature Research and TRenDS (2020) Putting data to work for real-world SDG progress, Nature Research Custom Media and SDSN TRenDS. Available at: <https://www.nature.com/articles/d42473-020-00334-2>

Nation Media Group. (2024). Meta loses bid to get out of rights violations case. Nation. Africa. <https://nation.africa/kenya/business/meta-loses-bid-to-get-out-of-rights-violations-case--4503780#>

Olen, S.M. (2022) Citizen science tackles plastics in Ghana. Nat Sustain 5, 814–815 (2022). <https://doi.org/10.1038/s41893-022-00980-y>

Open Data Watch (2018) The Data Value Chain: Moving from Production to Impact, Data 2X and Open Data Watch, ODW: Washington D.C.

Open Data Watch (2022) Open Data Resource Guide, ODW: Washington D.C.

Open Data Watch (2023) Open Data Inventory 2023/24, Biennial Report, ODW: Washington D.C.

PARIS21, (2022) The Partner Report on Support to Statistics, PRESS 2022, PARIS21: Paris.

PARIS21 (2023), The PARIS21 Partner Report on Support to Statistics 2023: A Changing Landscape of Financing for Development and Gender Data. OECD: Paris.

PARIS21 (2024) AI through the lens of Official Statistics and the SDGs: What are the benefits and risks?, PARIS21: Paris.

Rabiee, M., Dahmm, H., (2020) Leaving No One Off the Map: A Guide for Gridded Population Data for Sustainable Development, POPGRID and SDSN TRenDS, UNSDSN: New York.

Sandefur, J., & Glassman, A. (2015). The Political Economy of Bad Data: Evidence from African Survey and Administrative Statistics. The Journal of Development Studies, 51(2), 116–132. <https://doi.org/10.1080/00220388.2014.968138>

SDSN TRenDS (2017) Counting on the World, SDSN: New York.

SDSN TRenDS (2019) Counting on the World to Act, SDSN: New York.

SDSN TRenDS (2024) Testing the Assumptions of the Data Revolution, SDSN: New York.

SDSN TRenDS and CEPEI (2018) Data Reconciliation: Process, Standards, and Lessons, UNSDSN: New York.

Signe, L., (2023) Fixing the Global Digital Divide and Digital Access Gap, Commentary, Brookings: Washington DC. Available at: <https://www.brookings.edu/articles/fixing-the-global-digital-divide-and-digital-access-gap/> [Last accessed 1/8/24]

UN (2022) The Sustainable Development Goals Report 2022, UN: New York.

UN (2024) Global Digital Compact, Revision 1, 15th May 2024. Available at: https://www.un.org/techenvoy/sites/www.un.org/techenvoy/files/Global_Digital_Compact_Rev_1.pdf

UN (2024) The Sustainable Development Goals Report 2024, UN: New York.

UNDRR (2023), Closing Climate and Disaster Data Gaps: New Challenges, New Thinking, United Nations Office for Disaster Risk Reduction: Geneva.

UNHCR (2022) Refugee Data Finder, Available at: <https://www.unhcr.org/refugee-statistics/> [Last accessed 1/8/24]

UNHCR (2024) Global Appeal Report, UNHCR: New York. Available at: <https://reporting.unhcr.org/global-appeal-2024-6383>

Vinuesa, R., Azizpour, H., Leite, I. et al. (2020) The role of artificial intelligence in achieving the Sustainable Development Goals. Nat Commun 11, 233 (2020). <https://doi.org/10.1038/s41467-019-14108-y>

