Towards a Big Data Revolution for the Planet

11-13 September 2023
United Nations Office in Vienna

United Nations HQ, Vienna, Austria

Day 1 - DEAL Expert Group Meeting, 2023 | Vienna, Austria
High-level Opening

The first meeting of the Data for the Environment Alliance (DEAL) Expert Group took place between 11-13 September 2023 at the United Nations Office in Vienna. Over the course of the meeting, over 100 experts from finance, government, international organizations, business, Big Tech, the Earth observation community, research, citizen science, and other sectors gathered for both plenary sessions and hands-on "deep dives" in smaller groups. This report focuses on interventions in plenary sessions.

11 September 2023

Opening and Setting the Scene

In opening remarks, Executive Secretary of the UN-SPBF and Head of the Secretariat of the DEAL Initiative, Shereen Zorba introduced the DEAL Initiative, noting it responds to the failure to achieve environmental goals since the 1972 Stockholm Conference and seeks to leverage reliable and real data on the environment to achieve those goals. This first Expert Group Meeting, she noted, is the first to draw on such multi-sectoral expertise and seeks to "challenge the status quo" to develop a "new vision" of how to empower science-based environmental decision-making and greater accountability and transparency across sectors.

IPCC Executive Secretary Abdalah Mokssit noted the periodic scientific assessments the IPCC provides to governments were "all about big data," including socio-economic data, satellite data, business data, and physics data. He called for increased funding to address climate data gaps, particularly in the global South, noting other challenges include data access, lack of resources, data quality and standardization, and the inclusion of marginalized voices and communities in data production and interpretation. Findable, accessible, interpretational, and usable is essential to inform climate action, he concluded, stressing that "knowledge will shape the future".

Day 1 - DEAL Expert Group Meeting
Shereen Zorba, Executive Secretary, UNSPBF

> "Challenge the status quo to develop a new vision."

Day 1 - DEAL Expert Group Meeting
Abdalah Mokssit, Executive Secretary, IPCC

Niklas Hedman, Director, UN Office for Outer Space Affairs (UNOOSA) pointed to the multiple usages of satellites in orbit, which produce reliable, reproducible, and comparable data in real-time and can inform environmental monitoring and strategies to mitigate and adapt to environmental degradation. Only space data can provide the global coverage to safeguard the planet, he noted, with half of environmental indicators relying on it.

Day 1 - DEAL Expert Group Meeting
Niklas Hedman, Acting Director, UNOOSA

In a video statement, Kristen Michal, Minister of Climate, Estonia, described the rationale for the launch of DEAL to support the development of a global environmental data strategy, and called for renewed momentum for DEAL. He said Estonia seeks to become a digital state and increasingly base decision-making on data, noting ongoing usage of environmental data for issues such as waste management.

Day 1 - DEAL Expert Group Meeting
Opening video address : Kristen Michal, Minister of Climate, Estonia

Driving Value from Data: Deconstructing the Narrative and Unchaining the Value Chain

——— Out of the Box ———

Antoine Halff, Chief Analyst and Co-Founder, Kayrros, said there is a "fundamental disconnect between our awareness of climate change and our ability to do anything about it" because we are either lacking environmental data or because of unreliable data, such data self-disclosed by companies. He stressed that "today we have the solution" thanks to a proliferation of new sources of data and increased ability to process it: algorithms powered by artificial intelligence, he explained, can process data extracted from satellites, fusing data from different fleets and with local sensors. Hurdles include short-term pushback from industry and from countries as data collection infringes sovereignty, and long-term needs for a culture of transparency within companies and for new public-private business models to manage data collectively. He called for "global owners of data to help harmonize data and distribute it fairly," noting international organizations are uniquely positioned to take that role.

———

"Global owners of data to help harmonize data and distribute it fairly."

———

Day 1 - DEAL Expert Group Meeting
Antoine Halff, Chief Analyst and Co-Founder, Kayrros

Holger Harreis, Senior Partner, McKinsey & Company, said that while data was a "lifeblood" for making decisions for sustainability, it is challenging to do this globally due to the lack of accessible and comparable data of quality. He drew parallels between the lead-up to the economic meltdown of 2008 – before which there were no global standards on how to measure risk in the banking sector – and the current state of global environmental data, noting much could be learned from the Financial Stability Board in creating principles-based regulation.

Key useful learnings from the global financial crisis included:
1. Having a common goal and ambition – which he called a "global north star";
2. Sequencing areas of value;
3. A commitment to pragmatism;
4. Establishing principles and standards;
5. Promoting systematic measurements and accountability;
6. Setting incentives as well as sanctions;
7.   "Starting simple", with clear steps; and
8. A strong focus on talent and education.

Noting that the UN could play a key role in being a standard-setter globally, he concluded that "all the pieces of the puzzle are already in place: the technology is there; the operating systems are there. We need to set the overall aspiration."

"All the pieces of the puzzle are already in place: the technology is there; the operating systems are there. We need to set the overall aspiration."

Day 1 - DEAL Expert Group Meeting
Holger HarreisSenior Partner, McKinsey & Company

In a subsequent Q&A, Halff discussed how public-private collaboration could be operationalized, particularly around issues of intellectual property. Harreis noted flexibility and pragmatism in devising principles-based regulations to promote global acceptance, as learned after the global financial crisis.

Checks and Balances Part I:
Inside the UN and the Multilateral System.
Do we have a problem?

Alexandre Caldas, Director, Early Warning, UNEP and Chair of the UN Geospatial Network, said big data can be used to improve early warning systems and mitigate risks. He put forward three core ideas: the importance of partnerships, including within the UN, citing the UN Geospatial Network which includes 42 UN entities as an example; the centrality of early warning systems, noting we must move beyond disaster risk forecasting and rapid onset to include slow-onset hazards (e.g., air pollution; sea level rise); and the potential of learning to bring different layers of data together to make sense of it and predict other patterns, such as migration.

Dany Ghafari, Environmental Indicators for the SDGs, UNEP, shared his experience devising a methodology within UNEP to collect and standardize data to monitor the SDGs' environmental indicators. Challenges included data gaps in national reporting strategies, as well as less data around the SDGs' environmental rather than social and economic indicators. He described three levels of data, including global data (level 1), national data collection (level 2), and supplementary information (level 3), highlighting the usages of satellite data in level 1.

Day 1 - DEAL Expert Group Meeting
Alexandre Caldas, Director Early Warning UNEP,
Chair UN Geospatial Network

Day 1 - DEAL Expert Group Meeting
Dany Ghafari, Environmental Indicators for the SDGs,
UN Environment Programme

Reina Otsuka, Lead, Digital Innovation Data and Climate, UNDP, noted three big challenges in implementing Multilateral Environmental Agreements (MEAs) at the national and local levels. First, noting that data produced globally cannot be used in local-level interventions, she asked: "can we zoom in and out of the different data?". Second, she highlighted that inequalities exist in data collection capacity, asking how this gap can be closed, including by supporting countries in leveraging citizen data rather than big data. Third, she called for better communication between policymakers and scientists. She highlighted her support for a principles-based approach to environmental data governance, which could accommodate diversity across the countries in which UNDP works.

Eva Duer, Programme Lead, UN InforMEA, explained over 500 MEAs exist, including 25 global ones, which are hosted across the UN system. Each of these, she continued, generates data produced by countries, as mandated. She then explained how these diverse sets of data were being brought together using an interoperable approach to standardize reporting formats and taxonomies, and called for greater quality and consistency in data reporting strategies.

Day 1 - DEAL Expert Group Meeting
Reina Otsuka, Lead Digital Innova on Data & Climate, UN Development Programme

Day 1 - DEAL Expert Group Meeting
Eva Duer, Programme Lead, UN InforMEA

Annalisa Minelli, Italian Institute for Environmental Protection and Research and UNEP Mediterranean Action Plan, described a cooperation effort between countries in the 4 Mediterranean region to fill "missing links" on data and infrastructure in the Mediterranean

Area through the Knowledge Management Platform. This effort, she highlighted, includes both European and non-European countries and respects a series of guiding principles: fair, accessible, interoperable, and reusable (FAIR) data.

Day 1 - DEAL Expert Group Meeting
Annalisa Minelli, Knowledge Management Officer, Italian Institute for Environmental Protection & Research / UNEP Mediterranean Action Plan

———

"Fair, accessible, interoperable, and reusable (FAIR) data."

———

David Jensen, Digital Transformation Global Coordinator, UNEP, addressed the question: are MEAs fit for purpose in the digital age? Noting there is "an emergency" in relation to the governance and monitoring of these agreements, he listed their "seven deadly sins":

1. Limited online digital reporting;
2. No third-party verification on national reporting data;
3. Limited access to global data-sets for verification;
4. Lack of agreement on semantic taxonomies and reporting for data standards;
5. As a result, MEA secretariats are unable to aggregate data globally;
6. Lack of feedback loops to know whether financing is working.

He stressed that digital technologies could have a transformative impact on MEAs implementation, calling for agreement on which headline indicators could be monitored through satellite monitoring, on semantic taxonomies and data standards globally, on how to deploy Artificial Intelligence and Large Language Models to extract and analyze data from national reports, and on designing digital public infrastructure to implement MEAs.

During an ensuing discussion, Shereen Zorba called for honesty in assessing the state of global environmental data. She underscored the UN primarily aggregates rather than produces data, and that tools to measure the usability of said data for decision-making are essential. She also reminded that "decision-makers" encompass more than governments, and that, for progress, summits such as UN Climate Conferences should include verifiable reporting by all stakeholders, including the private and financial sectors.

"Are MEAs fit for purpose in the digital age?"

Day 1 - DEAL Expert Group Meeting
David Jensen, Digital Transformation Global Coordinator, UN Environment Programme

Putting Impact Before Data

Ivetta Gerasimchuk, Director, Sustainable Energy, International Institute for Sustainable Development (IISD), underscored the need to not just collect data, but to ensure it is useful. Citing the Energy Policy Tracker, a digital platform that analyzes data on public finance for energy around the world during the Covid-19 recovery in 40 countries, she called for using data to promote accountability. The Tracker, she explained, encouraged greater public scrutiny, which in turn engendered a sharp increase of public money going to clean energy. She credited this success to using credible, government data that could not be challenged, to choosing key use cases, as well as to devising an effective communications platform.

Day 1 - DEAL Expert Group Meeting
Ivetta Gerasimchuk, Director, Sustainable Energy, International Institute for Sustainable Development

Day 1 - DEAL Expert Group Meeting
Joe Papineschi, Chairperson, Eunomia

Johannes Friedrich, Director of Climate Data, World Resources Institute, underscored the need for increased reflexivity before building a data product. He articulated three questions that can assist in the process: First, "do we truly need to build something?" He underscored the need to confirm use cases and understand who the audience for the data is. Second, "are we the right people to do it?" This begs the question of organizational ownership and partnerships. Third, "is data enough?" After data is published, he noted, it is important to guide others to turn it into decisions.

Day 1 - DEAL Expert Group Meeting
Johannes Friedrich, Director of Climate Data, World Resources Institute

———

"Is data enough?"

———

Joe Papineschi, Chairperson, Eunomia, called for developing appropriate metrics alongside negotiating an MEA, using the Intergovernmental Treaty on Plastic Pollution as an example.
Stressing the need to address potential mismatch between objectives and data sources, he argued that plastic pollution in the Ocean, for example, is best understood in the context of waste management rather than in the context of pollution. Thus, he continued, citizen science data is crucial to understanding what is happening on land and where the hotspots are. Furthermore, he contested that data for monitoring progress necessarily be about outcomes, noting that, as exemplified by the case of waste management, it can be about input.

A discussion on marine litter with comments and questions from the floor ensued. One participant noted the challenge of siloed funding, calling for integrated funding to synchronize inland and marine-related projects. Other Experts asked how manipulation of data to support policies that do not support the environment could be avoided, with Ivetta Gerasimchuk noting the need for IGO-government interaction, and Johannes Friedrich underscoring the need to standardize data and work with those who use it.

Changing the Trajectory: What do we need to do differently for better impact?

Laurent Durieux, Head of International Cooperation, French Institute of Research for Development, said the Expert Group Meeting comes at the "perfect moment" as "now more than ever" Earth Observation data and what it brings to the multilateral agenda must be addressed. Underscoring the importance of cooperation, he gave an example of an impactful use case, the partnerships for Forests, Nature and Climate, which includes the Forest Carbon Leadership Programme and the Carbon Leadership Programme and seeks to contribute to the 30% biodiversity target agreed on at COP15. To manage the data emerging from these programmes, a first step is to identify the areas to protect that could have the most impact, drawing on interdisciplinary sustainability science. Then, multistakeholder partnerships and capacity development must be implemented, along with integrated infrastructures of data that include space data and citizen science, among others.

Day 1 - DEAL Expert Group Meeting
Laurent Durieux, Head of International Cooperation, French Institute of Research for Development (IRD)

Jan Burck, Senior Advisor, German Watch, spoke about the impact of monitoring tools such as the Climate Change Performance Index (CCPI), developed 20 years ago to track transparency and corruption. Impact areas include giving ammunition to journalists and NGOs to keep politicians accountable, in climate lawsuits against countries to support arguments, and in financial markets to rate sovereign bonds, with the CCPI increasingly developing into a global standard for the "climate proofing" of capital invested into sovereign bonds.

Day 1 - DEAL Expert Group Meeting
Jan Burck, Senior Advisor, German Watch/ Climate Change Performance Index

Edward Anderson, Senior Resilience Specialist, GFDRR, The World Bank, described the Digital Earth Partnership Initiative, which partners with space agencies and satellite data to increase the resilience of development investments by World Bank. He described challenges in obtaining up-to-date data on disaster risk in Africa, noting fast, unplanned urbanization trends and data scarcity in these settings. Yet, he said, there is an economic argument for investing in data, calling for increased financing in data collection and for a blended approach that would include connecting data obtained through Earth Observation with local actors – including end and future users, citizen science, and universities – and Artificial Intelligence technologies.

Martin Brocklehurst, Chair, Citizen Science Global Partnership, said citizen science can bridge the democratic deficit around MEAs, which stems from citizens not understanding or being committed to them. Technology, including internet, mobile phones, and AI systems, can help citizens collect "real-life" data at scale: this both creates behavioral change and more detailed and accurate data, and, in return for data, citizens receive useful information back to mitigate health, economic, and other risks. He called for a UNEA convention on citizen science to integrate it into all MEAs.

—————

"Technology, including internet, mobile phones, and AI systems, can help citizens collect 'real-life' data at scale."

—————

Day 1 - DEAL Expert Group Meeting
Edward Anderson, Senior Resilience Specialist, GFDRR, The World Bank

Day 1 - DEAL Expert Group Meeting
Martin Brocklehurst, Chair, Citizen Science Global Partnership

Down to Earth: Unlocking the Scalability of Space Technology for Environment

Helen Burdett, Head, Tech Strategy, Climate and Nature, World Economic Forum, noted that, despite an exponential growth in the supply of earth data, some challenges faced in applying it for better use include the high cost of data, changes in business models, harmonization,usability, and granularity. She highlighted that understanding demand, or the lack thereof, reveals the lack of awareness of the potentiality and the value of this data, in particular around return on investment in using this data. Thus, she called for measuring the value of the same use cases both for financial return and for sustainability, particularly in the areas where data use is expected to grow, such as insurance, agriculture, and transportation.

Day 1 - DEAL Expert Group Meeting
Helen Burdett, Head Tech Strategy, Climate and Nature, World Economic Forum

> "Some challenges faced in applying it for better use include the high cost of data."

Eduard Escalona, Space Downstream Market Officer, EUSPA, described efforts to increase the adoption of satellite data such as Copernicus by the private sector not just in complying with and reporting on environmental policies but also to benefit in their operations. For businesses to reap these businesses, he continued, this high volume of data must be managed, made accessible and interoperable, and then adequately processed and analyzed. He called for raising awareness of the potential of this data by showcasing useful use cases among decision-makers.

Day 1 - DEAL Expert Group Meeting
Eduard Escalona, Space Downstream Market Officer, EUSPA

Christian Hauglie-Hanssen, Director General, Norwegian Space Agency, said that, despite terabytes of new satellite data, "we have data but no information" due to lack of communication between international institutions, governments, and service providers; lack of awareness of the services data can offer; lack of robust regulation; lack of guidance on how to use data locally; and challenging business models. Government programmes and funding can act as critical intermediaries, he said, citing examples such as the EU Copernicus programme and Norway's NICFI Satellite Data Programme which enables 18,000 registered users from 138 countries to access free, high-resolution images, which can help manage environmental resources. Democratizing access to environmental data is essential, he concluded, through openness in data management and increased open access to data.

"Norway's NICFI Satellite Data Programme which enables 18,000 registered users from 138 countries to access free, high-resolution images."

Huadong Guo, Director General, Big Data for SDGs Research Centre, Chinese Academy of Sciences said space technology can be useful for SDGs monitoring, noting Chinese SDG satellite into space called SDGSAT-1, which has been able to contribute to the monitoring of 7 SDGs. This includes a range of applications, including assessing the impacts of earthquakes or sea ice monitoring. He said SDGSAT-1 data is now made available globally, with 200,000 images shared with scientists from 75 countries. Noting the launch of the Sustainable Development Satellite Constellation Plan, he called for greater collaboration in sharing data.

Day 1 - DEAL Expert Group Meeting
Huadong Guo, Director General, Big Data for SDGs Research Centre, Chinese Academy of Sciences

Day 1 - DEAL Expert Group Meeting
Christian Hauglie-Hanssen, Director General, Norwegian Space Agency

"SDGSAT-1 data is now made available globally, with 200,000 images shared with scientists from 75 countries."

Charles Mwangi, Director, Kenya Space Agency, said it is a misconception that Africa does not have data; rather, it is not documented because, among others, of a lack of demand for data;lack of accessibility; lack of technical and infrastructural capacity, including on the statistical front; lack of clarity on who should lead in determining priorities; and lack of infrastructure to host data once it is collected. He outlined data gaps in data are due to lack of both hardwares (e.g. computing, storage) and software (e.g. visualization software). He said a key way forward to make data accessible, interoperable, and reusable is to aggregate data sets, and described the Kenya Space Agency's Data Hub, which seeks to create reliable value from data for the private sector and policy-makers.

"It is a misconception that Africa does not have data; rather, it is not documented."

Day 1 - DEAL Expert Group Meeting
Charles Mwangi, Director, Kenya Space Agency

Ruud Grim, Programme Manager, Space for Sustainable Development, Netherlands Space Agency, said there are paths for earth observation to directly impact citizens. He described the Netherlands' Geodata for Agriculture and Water Program, which supports 25 projects worldwide and reaches 4.1 million users. He stressed the need for user-centric design, noting partnerships with NGOs and drawing on citizen science were essential to understand the needs of, and act as intermediaries with, farmers. He also stressed the importance of adapting communications with users to contexts, noting that, for example, mobiles and SMS were widely used in East Africa.

"There are paths for earth observation to directly impact citizens."

Day 1 - DEAL Expert Group Meeting
Ruud Grim, Programme Manager, Space for Sustainable Development, Netherlands Space O ce

Governance, Gaps and Opportunities

Stefan Jensen, Acting Head of Programme Data and Information Services, European Environment Agency, described gaps and opportunities in data governance from an institutional perspective. He spoke about the need to explore new data sources such as socio-economic data, to make changes in the culture and practice of data sharing, to increase digital literacy, including for governments, and to further integrate AI in institutional activities. Opportunities include, he said, ambitious policy efforts such as the European Green Deal, that will demand consideration of new data, including from the business side, combination of data, and new standards. Pointing to useful frameworks such as the EU Data Strategy, he called for embracing the growth in data volume to improve policy advice, and to automate data management, where possible.

> "Ambitious policy efforts such as the European Green Deal, that will demand consideration of new data."

Day 1 - DEAL Expert Group Meeting
Stefan Jensen, Acting Head of Programme Data and Information Services, European Environment Agency

Sally Radwan, Chief Digital Officer, UNEP, described existing work on data at UNEP and potential paths forward for the Expert Group to feed into it. At UNEP, she explained "digital and data" are key to tackling the triple planetary crisis and "two sides of the same coin" when thinking about sustainable digitization. Challenges faced include data fatigue, with calls for more actionable insights instead of information, siloed data platforms that do not naturally flow into decisions, and a lack of clear mechanisms for data exchange. She asked the Expert Group to reflect, from their own vantage point, on how data exchange can be made easier, suggesting these reflections could feed into a Global Environmental Data Strategy, mandated to UNEP's at UNEA-4. She posed three questions to be thought of: first, should standards be created per issue area, e.g. climate, biodiversity, or is a global framework needed? Second, what are the key use cases, the questions that we are trying to answer? And, third, what else but standards is needed, such as, for example, a global data clearinghouse?

Day 1 - DEAL Expert Group Meeting
Sally Radwan, Chief Digital Officer, UNEP

12 September 2023

Checks and balances – Part II: Capital markets

Liam Stoker, Lead Author, Reuters Global Sustainability Report, described challenges in measurement and reporting through the case of the Reuters Impact Global Sustainability Report 2023, which is based on qualitative and quantitative research. Noting it is essential to provide strategic insights to help some industries navigate disruptions, he said that most respondents of the Report measured success through emission reductions yet struggled with the reporting process. Increased reporting, he argued, will require investment in more technologies, which in turn means overcoming the reluctance to invest in it that can stem from a worry these might be obsolete soon.

He outlined three "material areas" to identify: material organizations, namely the key businesses whose evolution would be transformative for climate risk and opportunity; material regulation, which would help put a price on said risk and opportunity; and material metrics, which enable an organization to disclose what matters most rather than a larger range of less useful information.

Day 2 - DEAL Expert Group Meeting
Liam Stoker, Head of Research and Content, Reuters Event

Day 2 - DEAL Expert Group Meeting
Tim Nixon, CEO, Signal Climate Analytics

Tim Nixon, CEO, Signal Climate Analytics, said satellite data, in showing leakages in oil and gas, has made it clear "there is too much we do not know about some companies." He then offered an analysis of what effective corporate data disclosure entails. Stresing there is a lack of clarity among stakeholders on what areas would data disclosure matters most, he asked, "where is disclosure most material"?

> "There is too much we do not know about some companies."

Levent Ergin, Global Chief Strategist for ESG Sustainability, Informatica, said that, in the area of environmental disclosure, "we are where we were 20 years ago with the financial system," noting the latter has become quite "mature" in the European Union in terms of disclosure thanks to new taxonomies. He described a messy ESG reporting landscaping, stressing that there are over 400 voluntary reporting frameworks. To avoid reporting fatigue, he said, we need a "single language" and a standardized, global baseline for ESG reporting. He also stressed that ESG is only "the tip of the iceberg", and underscoring it must be complemented by: environmental data integration and collection; an environmental data catalogue; adequate environmental data governance; standards to evaluate environmental data quality; and environmental data democratization and collaboration to turn data assets into products.

> "We need a 'single language' and a standardized, global baseline for ESG reporting."

Day 2 - DEAL Expert Group Meeting
Levent Ergin, Global Chief Strategist for ESG Sustainability, Informatica

Zhang Li, Director, Green Inclusive Carbon Neutrality Center and Tao Lan, Founder and Chair, Green Inclusive Technology, said consumer data, including household data, was quite relevant for carbon reductions and calls for new digital tools. They described a cloud system for carbon reduction in China, where users can open a carbon account and record individual behavior. This product aggregates data, and allows citizens to achieve their carbon neutral goals.

Day 2 - DEAL Expert Group Meeting
Zhang Li, Director, Green Inclusive Carbon Neutrality Center

Day 2 - DEAL Expert Group Meeting
Tao Lan, Chairman of the board, Green Inclusive Technology Co., Ltd

Laura Létourneau, Advisor on Digital and Ecological Transformation, Office of the Prime Minister of France, called for "uberizing" the state, underscoring this concept would entail trusted digital platforms that enable various users to make decisions. In broad terms, she described efforts by the French government to leverage digital technologies for a fair environmental transition, including determining the right division of labor between public and private sectors in developing digital platforms; mapping different data sets; and choosing some priority use cases. She stressed, nonetheless, difficulties in finding out what was going on at the international level.

Day 2 - DEAL Expert Group Meeting
Laura Létourneau, Expert advisor on digital and ecological transformations, Office of the French Prime Minister

—————

"Efforts by the French government to leverage digital technologies for a fair environmental transition."

—————

Unpacking Interdisciplinary Data Strategies and Applications

Arne Bathke, Dean of the Faculty of Digital and Analytical Sciences, University of Salzburg, described the workflow used by statisticians and data scientists, stressing the data "shouldn't drive the process too much." Instead, the first step, he argued, is to ask sensible questions, and to then acquire the appropriate data and ensure its quality before moving on to generalization, insight generation and communication of key results for a target audience. He said academia can assist with building data literacy and breaking down silos through interdisciplinary approaches.

> "The first step is to ask sensible questions, and to then acquire the appropriate data."

Day 2 - DEAL Expert Group Meeting
Arne Bathke, Dean of the Faculty of Digital and Analytical Sciences, Professor of Statistics, and member of the Department of Artificial Intelligence and Human Interfaces, University of Salzburg

Technology Frontiers: Making the most of Digital and Analytics

Dave Thau, Global Data and Technology Lead Scientist, WWF, spoke about data monitoring in the context of the WWF, which works on biodiversity conservation. He described important features of the data sets upon which the organization relies on, which are for them to be regularly updated, in a timely fashion; geospatially partition*able; and locally relevant. He underscored that, while the WWF draws on external platforms for some data, it has yet to find external platforms for datasets useful for biodiversity conservation, such as multi-sensor data (such as acoustic data) and drones' data.

> *"Monitoring in the context of the WWF, which works on biodiversity conservation."*

Day 2 - DEAL Expert Group Meeting
Dave Thau, Global Data and Technology Lead Scientist, World Wildlife Fund (WWF)

Day 2 - DEAL Expert Group Meeting
Robert Parkin, Distinguished Engineer & Chief Data Scientist, IBM

Robert Parkin, Distinguished Engineer and Chief Data Scientist, IBM, underscored the importance of guiding principles when adopting a new technology, noting any technology needs to be open, trusted, targeted and empowering. He drew on the over 50 years of experience in data management of IBM to underscore the importance of data access and useability, of retaining the right amount of complexity while making it available to policymakers, and of making the most out of scale, including through cloud and AI technologies.

> *"The importance of guiding principles when adopting a new technology."*

Amen Mashariki, Director of Data Strategies, Bezos Earth Fund, stressed the need for inclusivity in data management, noting the question "Why Tech is not for All and Why it Should be" must be central to all decisions, including when using and developing AI-generated data. Calling for fairer practices, he underscored the rising cost of the technology itself, the biases against marginalized groups that exist within data, and extractive practices, namely the usage of data retrieved from communities to which nothing is given in return.

Day 2 - DEAL Expert Group Meeting
Amen Mashariki, Director of Data Strategies, Bezos Earth Fund

"The need for inclusivity in data management."

Payam Moussavi, Cloud Architect, Google Cloud, encouraged the audience to think about change around data management in more radical and imaginative ways, rather than to rely on incremental change. While some data might be imperfect, it is possible to start with smaller, more experimental projects first on key use cases, and to learn from failure, thus stressing the importance of being able to experiment securely and safely. Jonas Sødergran, Sustainability Solutions Manager, Google Cloud, described a cloud solution that he called "a game changer", i.e. the Google Landsat Timelapse Animation, a project involving data from eight separate satellites that have orbited the Earth since 1972. Google partnered with the project to sift through the millions of pictures Landsat has taken since its launch, stitching the best ones together to produce a publicly available time-lapse charting environmental changes over the past two decades. He underscored the human component of technology and data governance, calling for "humans to sit in a room and discuss" the application and applicability of technology to resolve meaningful and complex challenges.

Day 2 - DEAL Expert Group Meeting
Jonas Sodergran, Sustainability Solutions Manager, Google Cloud

"Humans to sit in a room and discuss the application and applicability of technology to resolve meaningful and complex challenges."

Data Systems for the Future – How Does That Look Like?

Mario Giovanni Molina, Manager of Geostatistics for Climate Change and Risk Management, El Salvador, said his country is the smallest and most populated country in Central America and is exposed to multiple climate-related hazards, which calls for risk management and monitoring solutions. Key data sources, he said, include satellites and monitoring networks from conventional telemetric meteorological stations. These are used to build scenarios, including climate models; and, despite limited resources, the country is working on consolidating the production and storage of data, as well as on national platforms for data access and use. He described cooperation with Google to improve government information services.

Day 3 - DEAL Expert Group Meeting
Mario Giovanni Molina, Manager of Geosta s cs for Climate Change and
Risk Management, El Salvador

"Despite limited resources, the country is working on consolidating the production and storage of data."

Belinda Arunarwati Margono, Director of Forest Resource Inventory and Monitoring, Indonesia, described data management and communications efforts in her country, particularly with regards to natural resources. Indonesia's Ministry of Environment and Forestry, she said, considers geo-spatial datasets and earth observation data as crucial for decision-making. On data communication, she noted Indonesia is seeking to make available different types of datasets, including geospatial, statistical, and financial, an effort that requires data interoperability, as well as data security, quality, and reliability through regular updates.

Day 3 - DEAL Expert Group Meeting
Belinda Arunarwa Margono Director of Forest Resource Inventory and
Monitoring, Indonesia

Kevin Murphy, NASA's Open-source Science Initiative, described NASA's calls for open data, noting some of its datasets have over 300 million users, over half of which are outside of the United States. Stressing that "open data is now the standard, not the exception," he called for moving towards "open science" instead, which would involve usable data, namely trustworthy, reliable and accessible data, for decision-making. Open-source science, he continued, is a commitment to the open sharing of software, data, and knowledge as early as possible in the scientific process.

> "Open data is now the standard, not the exception."

Day 3 - DEAL Expert Group Meeting
Kevin Murphy, Chief Science Data Officer, NASA

Mathias Bornschein, Open Data Coordinator, German Environment Agency, said his agency is mandated to give policy advice based on research, to inform the public on environmental issues, and to monitor compliance with environmental legislation. Drawing on a national monitoring network, the agency then seeks to make this data findable, accessible, reusable, interoperable, drawing on Germany's open data law. It is essential, he noted, that scientists understand the role of metadata, and to be aware of the ecological footprint of research software and technical data. He highlighted new projects, including: building a portal that will make finding environmental data easier; capacity building and data literacy programmes; and research on AI and Big Data applications on energy consumption and others. He concluded by noting that "the challenge we face is not just about data, but about turning data into action".

Day 3 - DEAL Expert Group Meeting
Mathias Bornschein, Open Data Coordinator,
German Environment Agency

> "The challenge we face is not just about data, but about turning data into action."

Katrin Saarsalu-Layachi, Special Envoy for Climate and Energy Policy, Estonia, lamented the lack of clear mechanism for data exchange, and the siloed approach to big data at the UN and domestically. She stressed Estonia's leadership on digitization and the green transition – which has led to the country's first Climate Law and from which its support for DEAL stems. To achieve sustainability within planetary boundaries, she continued, quality and accessible data on the "footprints and cost of our actions" is essential for climate-informed decisions. With growing pressures on domestic budgets, data can expose the gaps between spending and climate measures. She highlighted Estonia's work on the next phase of data governance, including leveraging AI-powered data in governance, citing the example of a prototype AI to identify animals and birds.

Day 3 - DEAL Expert Group Meeting
Katrin Saarsalu-Layachi, Special envoy for climate and energy policy,
Ministry of Foreign Affairs Estonia

Various comments from the floor then underscored the need for a clear, structured, and modular approach to environmental data strategy, emphasizing the importance of government roles in setting standards and incentivizing private sector participation while ensuring the strategy remains practical and effective. Key themes included the transition from retrospective to proactive data use, the importance of creating a safe space for data sharing among various sectors, and the critical role of communication and awareness, particularly within governments. They highlighted the necessity of collaboration, with practical and impactful actions, ensuring that both the public and private sectors align towards common environmental goals while maintaining economic viability.

After hearing from rapporteurs from Deep Dive sessions, Sally Radwan, Chief Digital Officer at UNEP, offered concluding thoughts by noting that meeting discussions identified ways forward in four areas: on standards and data exchange, Experts cautioned against "reinventing the wheel," as standards do already exist, but offered productive suggestions such as creating thematic standards while recognizing differences in how data is collected around the world; on quality, they raised the need for a global clearinghouse for environmental data; on digital infrastructure, they warned this can be sometimes overlooked in discussions about data; and on sustainability, Experts had underscored the need to make the production and usage of environmental data sustainable with, among others, recommendations on how to optimize the supply chain of data. Sally Radwan then proposed the Expert Group identify several use cases – or specific data types – that can be used as pilots for data standardization. These could, she added, serve as the basis for a proposal to submit to Member States at UNEA-6.

Day 3 - DEAL Expert Group Meeting
Sally Radwan, Chief Digital Officer, UNEP

Towards a Big Data Revolution for the Planet
11-13 September 2023 | United Nations Office in Vienna