Data Ecosystem mapping for climate-induced migration in Cameroon: Towards trustworthy data institutions.

An exercise for the ODI/Microsoft Peer-Learning Network

By

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Introduction

The International Centre of Expertise in Montreal for Artificial Intelligence (CEIMIA) is one of the two centre of expertise of the Global Partnership on AI (GPAI); a multi-stakeholder initiative launched in 2020, bringing together leading experts from science, industry, civil society, international organizations and governments that share values to bridge the gap between theory and practice on AI by supporting cutting-edge research and applied activities on AI-related priorities. In particular, GPAI worked to explore real-world use cases and operationalisation strategies where data trusts could offer societal benefit with a focus on AI and climate action. One of the use cases considered was climate migration, where important challenges, as well as opportunities to improve how data is collected, shared and used, were highlighted.
As one of the two Centers of Expertise of GPAI, CEIMIA has carried forward this priority by exploring how data institutions could make a difference in climate-induced migration. The goal is to support novel data institutions and data governance practices that promote the safe, fair and equitable sharing of data and empower individuals and communities to enact their data rights, enabling an environment of trust for the development of responsible AI applications, in service of the UN Sustainable Development Goals. With this objective in mind, this paper presents the first step towards Trustworthy Data Institutions for Climate-induced Migration in Cameroon.

Context and rationale

Climate change is driving displacement, causing conflicts and making life harder for refugees in settlements. Several organizations including UN agencies are working to better understand and document key drivers of migration as well as the impact of Climate Change. That is why, considering the potential of Artificial Intelligence to be harnessed responsibly to accelerate positive environmental action, CEIMIA/GPAI has put climate action at the top of their agenda[1].

Indeed, data and artificial intelligence have a vital role to play in helping us understand and tackle this climate crisis, from predicting climate-induced migrations to extreme weather events. However, as with data systems at large, individuals and communities tend to have little say in how data is collected, used and shared for climate action. Data trusts and other forms of 'bottom-up' data stewardship have emerged to reverse this trend and empower people to take part in the data economy[2].

We aim to explore how data institutions (with a wider lens than data trusts) and AI applications could make a difference on climate migration and empowering local organizations & communities. With data institutions defined as organizations that steward data on behalf of others, often towards public, educational or charitable aims[3]. However, we all agree that we will not be able to achieve these goals if we do not fully understand the local data ecosystem. Hence the pertinence of mapping the data ecosystem (stakeholders and their interactions).

Methodology

To map the data ecosystem on climate climate-induced migration, we have chosen Cameroon as a pilot country. Cameroon is part of the Lake Chad Basin (Nigeria, Niger, Chad and Cameroon); a region grappling with a complex humanitarian crisis with over 3.2 million people displaced due to floods, droughts and farmers-herders conflicts.

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[1] https://gpai.ai/projects/responsible-ai/environment/
[2] https://gpai.ai/projects/data-governance/data-trusts-in-climate-interim-report.pdf
[3] https://theodi.org/article/what-are-data-institutions-and-why-are-they-important/

After a literature review and interview of some key stakeholders (organizations and migrant communities) in Cameroon, we used the ODI Data Ecosystem Mapping tools[4], to identify key organizations working on climate-induced migration.

According to the Open Data Institute (ODI), the Data Ecosystem Mapping tool is for anyone who wants to understand and visualize a data ecosystem. It helps map the actors, data infrastructure and value exchange across a data ecosystem. A data ecosystem map illustrates the different actors in a data ecosystem, and how value is exchanged across it. A data ecosystem consists of data infrastructure, and the people, communities and organizations that benefit from the value created by it. Data infrastructure is made up of data assets, standards, technologies, policies and the organizations that steward and contribute to them.

Key Findings

Actors

We found three main categories of organizations:

- **Data stewards**: which are organizations responsible for collecting, managing or ensuring access to a database. It appeared that in the case of climatic migrations in the Lake Chad basin, it is primarily the UN organizations.
- **Data intermediaries:** which aggregate data in the ecosystem. These organizations are mainly International non-governmental organizations receiving fundings from the Data stewards, to operationalize programs and projects in Lake Chad Basin. Amongst them, we have identified: *GIZ, Red Cross, Plan International , CARE International, SNV, Catholic Relief Services (CRS)*.
- **Data contributors or local organizations**: they contribute to the dataset, either knowingly or unknowingly. These organizations are receiving fundings directly from the Data stewards or from data intermediaries to collect data in

[4] The ODI Data Ecosystem Mapping Tools
https://theodi2022.wpengine.com/wp-content/uploads/2019/06/ODI-Data-Ecosystem-Mapping-%E2%80%93-print-at-home-guide-A4-%E2%80%93-2019-06-26.pdf

the country. Local organizations can be divided into two sub-categories: non-governmental and governmental.

The non-governmental organizations we met with are mostly associations, foundations or groups of civil society organizations. Their areas of intervention are mainly related to: farmers/herders conflicts, floods/droughts, deforestation/reforestation, prevention, support and capacity building of affected local communities.

For local governmental organizations, we collaborated with the Ministry of External Relations (MINREX) and the National Institute of Statistics (INS). The INS[5], among other things is responsible for: a) making available the statistical data and indicators needed for economic and social management and b) setting up databases and ensuring the conservation of census and survey files carried out by public administrations and bodies subsidized or controlled by the State. It has a department dedicated to migration and climate change data management at the national level. At the Ministry of External Relations (MINREX)[6], there is a Sub-Directorate for Relations with the International Organization for Migration (IOM) and the United Nations High Commissioner for Refugees (UNHCR).

Dynamics in the data value chain

- Data collection activities are mostly funded by international organizations and according to their priorities. Therefore, local organizations (governmental and non-governmental) depend on external funding in order to broadly collect data on climate change and specifically collect data on climate migration.
- In the data collection process, local organizations are just collecting data for international organizations; or play the role of mediator between the former and local populations.

[5] the INS was created by Presidential Decree N°2001/100 Du 20 Avril 2001
[6] For the organizational chart, see the Décret présidentiel N°2013/112 du 22 avril 2013 portant organisation du Ministère des Relations Extérieures.

- Databases are owned and managed by international organizations; local organizations only have access to reports released by the former.

Figure 1 : *Actors in the climate migration data ecosystem in Cameroon*

A trustworthy Data ecosystem map

As part of the ODI/Microsoft Peer Learning Network, local organizations identified in Cameroon in collaboration with CEIMIA researchers continued to co-design the map with a focus on values that would ensure trustworthy data exchanges, inviting communities to play an active role in the data value chain by engaging various stakeholder organizations and local communities.

This is how we obtained the following trustworthy data ecosystem, which is built on a chain of trust (in green) around data, with actors who collaborate equally and have fair access to the different steps and infrastructures of the data workflow. Beyond trust, actors and infrastructures, we have also identified the desirable levels of commitment (in red) for true trustworthy data institutions: the full arrows indicate a mandatory commitment; while the dashed arrows indicate that actors can have the choice and freedom to commit or not.

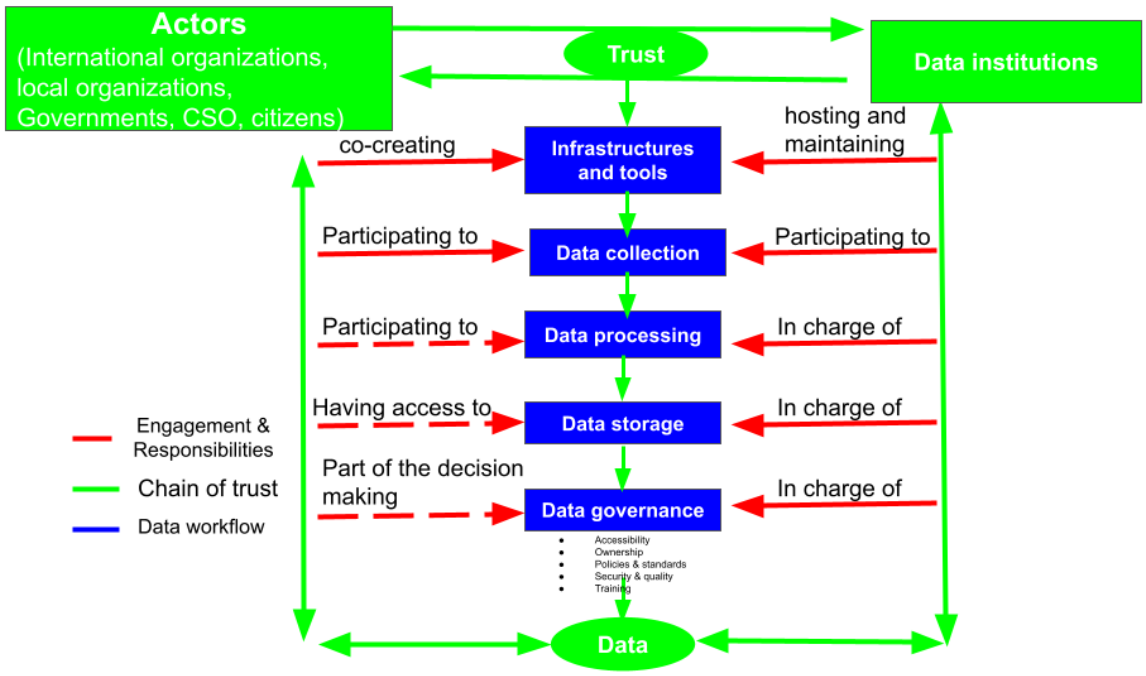

Figure 2 : *A Trustworthy Data Ecosystem map*

Conclusion

Presented in that way, there is a risk of missing the potential of this trustworthy data ecosystem; insofar as several actors would not grasp its usefulness at first sight. It is therefore crucial to develop a framework for trustworthy data exchanges that improves how data is being collected, stewarded, shared and used, to better serve the needs of communities and empower them to play an active role in the data value chain. The co-design of this framework that would be applicable to any situation (besides climate-induced migrations) is our next step.

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