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BIG DATA
& Data Science for Official Statistics

BILBAO 2024

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with Integrated Data

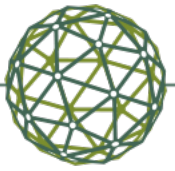
BILBAO. SPAIN | **10-14 JUNE 2024** | **#UNBigData2024**

Theory of Change: Putting Mobile Phone Data to work for policy

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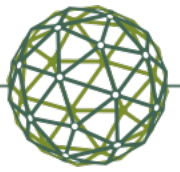




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Why did we develop a Theory of Change?

Theory of Change is essentially a **comprehensive description** and **illustration** of **how** and **why** a desired change is expected to happen in a particular context.

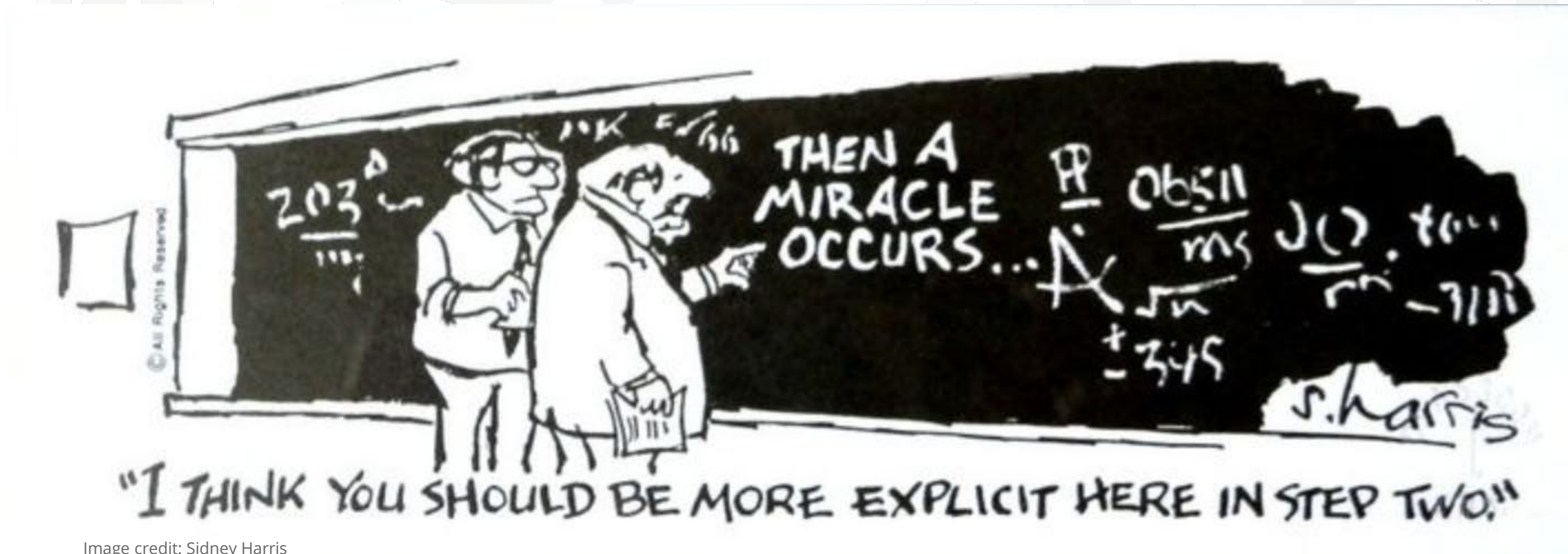
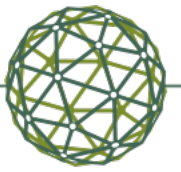


Image credit: Sidney Harris



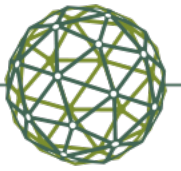
What you need to know about Theory of Change

Developing a Theory of Change allows you to map out or fill in this “missing middle” rather than ignore it or hope that a miracle will occur.

It is designed to help make more explicit the link between **what a program or change initiative does** (its *activities* or *interventions*) and **how** these will lead to the **desired *outcomes*** and, ultimately, the main ***goal*** or **purpose** of the work.

It is also designed to help identify the ***assumptions*** that are being made about causality in the change process.

For more see: <https://www.theoryofchange.org/what-is-theory-of-change/>



What is the Theory of Change we're discussing today about?

Goal: Mobile Phone Data is put to work for Policy

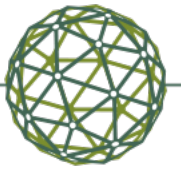
What does this look like in practice?

Mobile phone data is being used systematically to enhance the evidence base for policy and decision making

Mobile phone data is integrated into the national data system on a sustainable basis

The **national institutional environment is strengthened** with enablers and safeguards to responsibly use MPD for policy and statistics

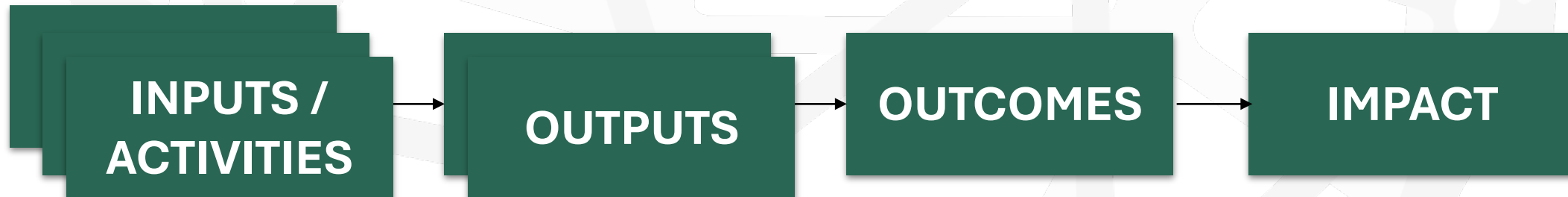
Using Mobile phone data, governments and other data users are to better able to assess and predict policy challenges, target solutions, and monitor real-time progress on a wide range of Sustainable Development Goals

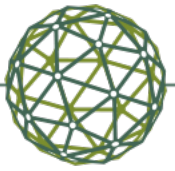


What will it take to achieve this goal of “MPD put to work for Policy”?

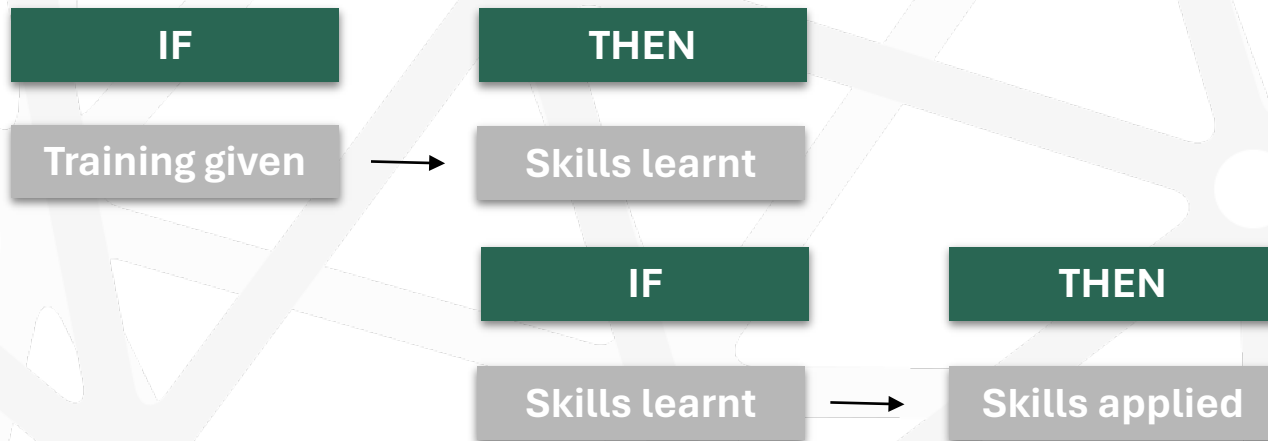
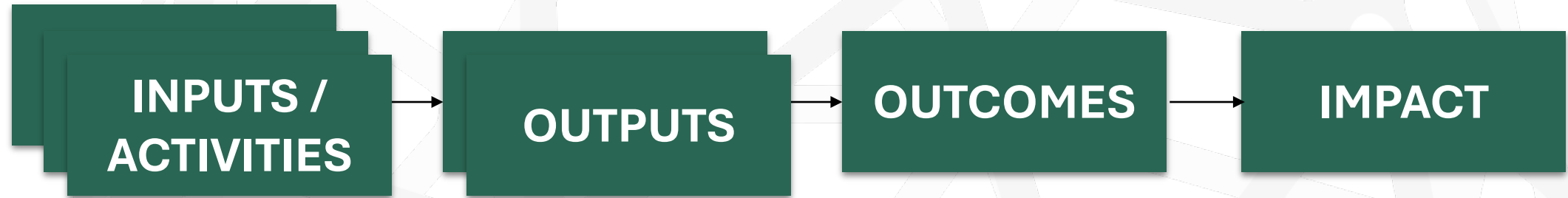
To answer this question we need to identify:

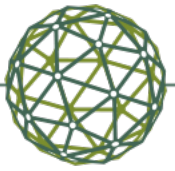
1. **What is needed** in order to achieve the goal?
2. What **factors** will enable the goal to be achieved?
3. What **pre-requisites or pre-conditions** need to be met?
4. What **interventions** can be made in order to create these conducive conditions?
5. What will be the **causal chain of events** that lead from one thing to another?
6. What are we **assuming** will be available or necessary?



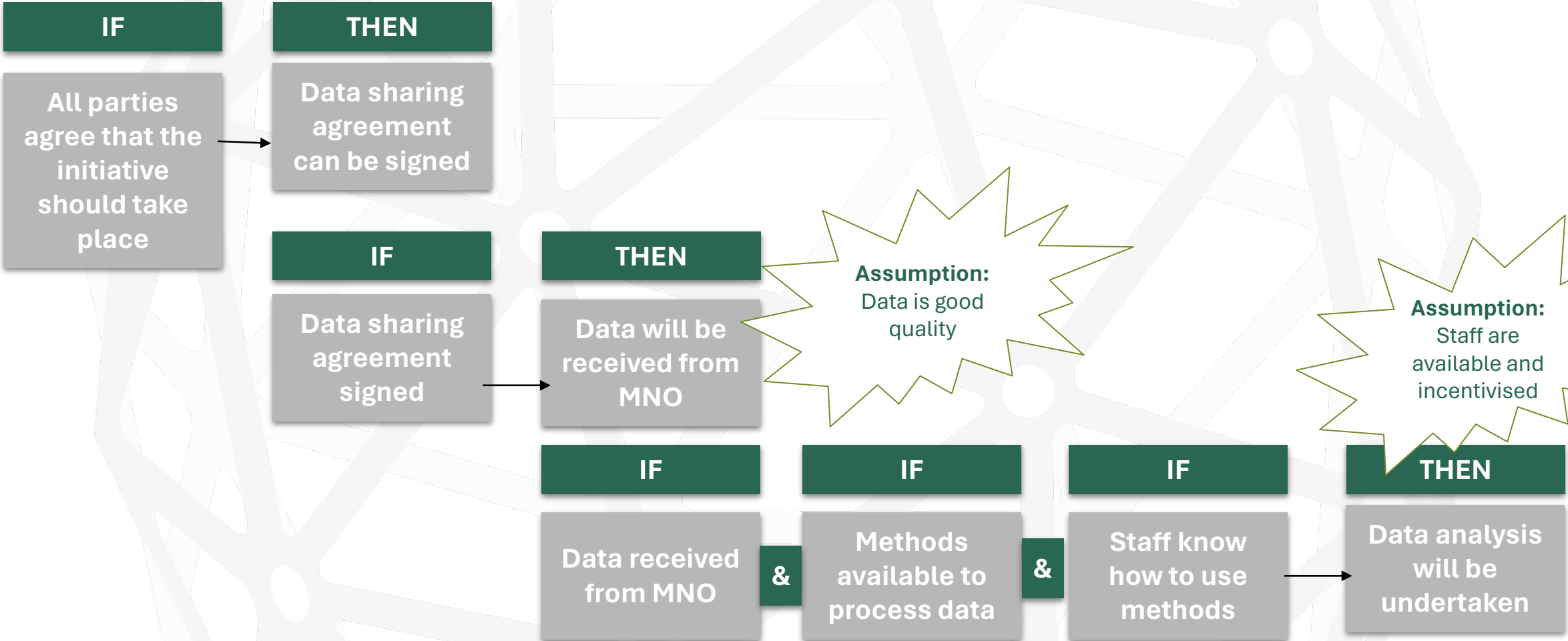


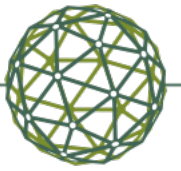
Example





Example 2: Getting to analyse MNO data





Group Exercise (20 mins)

Take the resources you have on your table and:

1. Categorise and **order** the elements using the structure presented already for the Theory of Change:
 - a. Inputs/Pre-conditions
 - b. Outputs
 - c. Outcomes
 - d. Impact
2. Arrange them in a workflow so that they **follow the 'if X then Y' logic**
3. As you work, capture on separate sticky notes any assumptions that are implicit along the way, which will need to be true for the 'THEN' to be a reality.

The Structure

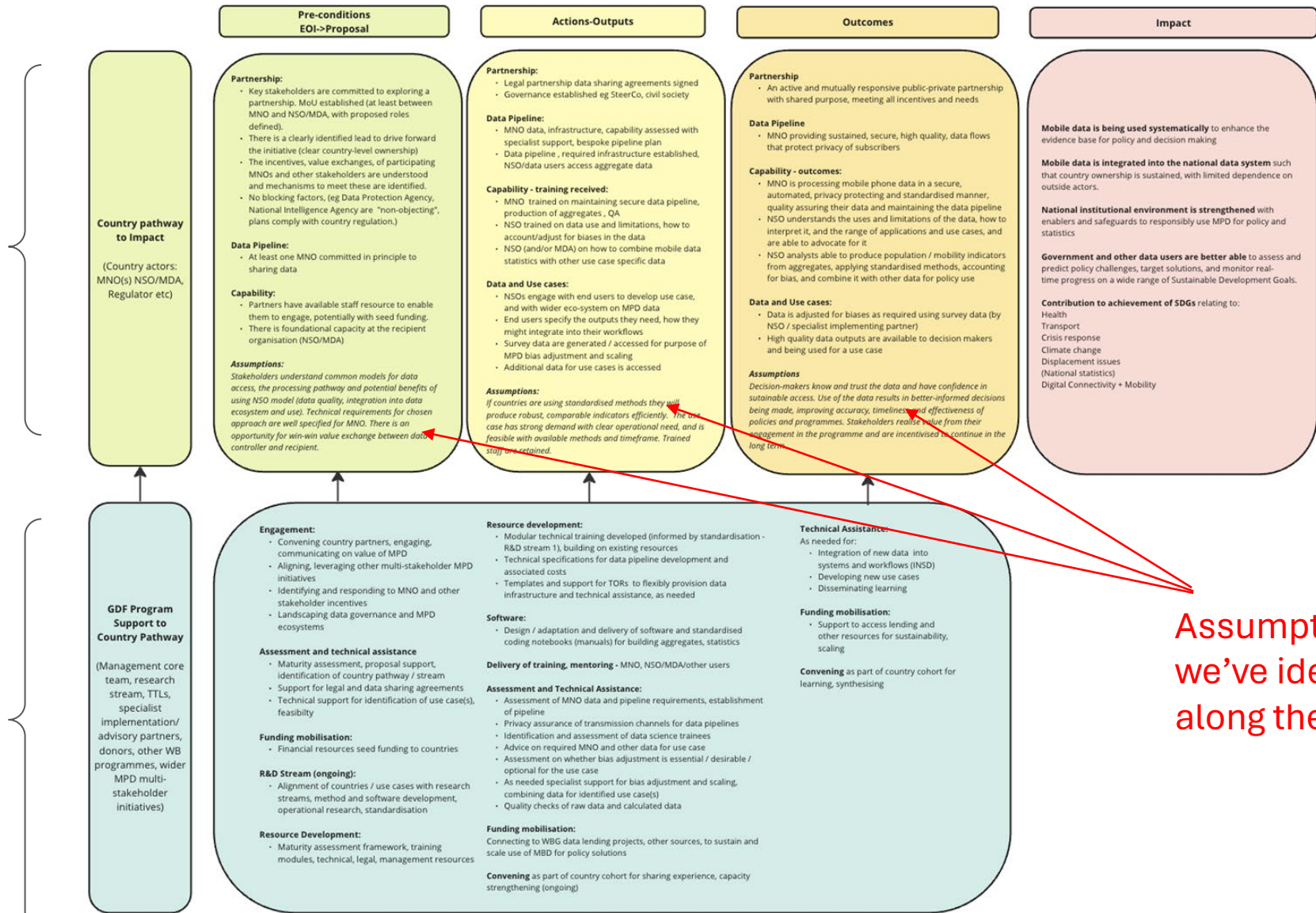
Two rows:

1. The **country-level** "pathway to impact"

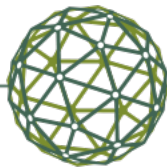
This represents a 'generic' Theory of Change at country-level

2. The MPD4P **program-level** inputs

This captures all the kinds of support that a country might need from the programme at different stages along it's 'pathway to impact'



Assumptions we've identified along the way



Pre-conditions EOI->Proposal

Partnership:

- Key stakeholders are committed to exploring a partnership. MoU established (at least between MNO and NSO/MDA, with proposed roles defined).
- There is a clearly identified lead to drive forward the initiative (clear country-level ownership)
- The incentives, value exchanges, of participating MNOs and other stakeholders are understood and mechanisms to meet these are identified.
- No blocking factors, (eg Data Protection Agency, National Intelligence Agency are "non-objecting", plans comply with country regulation.)

Data Pipeline:

- At least one MNO committed in principle to sharing data

Capability:

- Partners have available staff resource to enable them to engage, potentially with seed funding.
- There is foundational capacity at the recipient organisation (NSO/MDA)

Assumptions:

Stakeholders understand common models for data access, the processing pathway and potential benefits of using NSO model (data quality, integration into data ecosystem and use). Technical requirements for chosen approach are well specified for MNO. There is an opportunity for win-win value exchange between data controller and recipient.

Actions-Outputs

Partnership:

- Legal partnership data sharing agreements signed
- Governance established eg SteerCo, civil society

Data Pipeline:

- MNO data, infrastructure, capability assessed with specialist support, bespoke pipeline plan
- Data pipeline , required infrastructure established, NSO/data users access aggregate data

Capability - training received:

- MNO trained on maintaining secure data pipeline, production of aggregates , QA
- NSO trained on data use and limitations, how to account/adjust for biases in the data
- NSO (and/or MDA) on how to combine mobile data statistics with other use case specific data

Data and Use cases:

- NSOs engage with end users to develop use case, and with wider eco-system on MPD data
- End users specify the outputs they need, how they might integrate into their workflows
- Survey data are generated / accessed for purpose of MPD bias adjustment and scaling
- Additional data for use cases is accessed

Assumptions:

If countries are using standardised methods they will produce robust, comparable indicators efficiently. The use case has strong demand with clear operational need, and is feasible with available methods and timeframe. Trained staff are retained.

Outcomes

Partnership

- An active and mutually responsive public-private partnership with shared purpose, meeting all incentives and needs

Data Pipeline

- MNO providing sustained, secure, high quality, data flows that protect privacy of subscribers

Capability - outcomes:

- MNO is processing mobile phone data in a secure, automated, privacy protecting and standardised manner, quality assuring their data and maintaining the data pipeline
- NSO understands the uses and limitations of the data, how to interpret it, and the range of applications and use cases, and are able to advocate for it
- NSO analysts able to produce population / mobility indicators from aggregates, applying standardised methods, accounting for bias, and combine it with other data for policy use

Data and Use cases:

- Data is adjusted for biases as required using survey data (by NSO / specialist implementing partner)
- High quality data outputs are available to decision makers and being used for a use case

Assumptions

Decision-makers know and trust the data and have confidence in sustainable access. Use of the data results in better-informed decisions being made, improving accuracy, timeliness and effectiveness of policies and programmes. Stakeholders realise value from their engagement in the programme and are incentivised to continue in the long term.

Impact

Mobile data is being used systematically to enhance the evidence base for policy and decision making

Mobile data is integrated into the national data system such that country ownership is sustained, with limited dependence on outside actors.

National institutional environment is strengthened with enablers and safeguards to responsibly use MPD for policy and statistics

Government and other data users are better able to assess and predict policy challenges, target solutions, and monitor real-time progress on a wide range of Sustainable Development Goals.

Contribution to achievement of SDGs relating to:

Health
Transport
Crisis response
Climate change
Displacement issues
(National statistics)
Digital Connectivity + Mobility

Country pathway to Impact

(Country actors:
MNO(s) NSO/MDA,
Regulator etc)

GDF Program Support to Country Pathway

(Management core team, research stream, TTLs, specialist implementation/ advisory partners, donors, other WB programmes, wider MPD multi-stakeholder initiatives)

Engagement:

- Convening country partners, engaging, communicating on value of MPD
- Aligning, leveraging other multi-stakeholder MPD initiatives
- Identifying and responding to MNO and other stakeholder incentives
- Landscaping data governance and MPD ecosystems

Assessment and technical assistance

- Maturity assessment, proposal support, identification of country pathway / stream
- Support for legal and data sharing agreements
- Technical support for identification of use case(s), feasibility

Funding mobilisation:

- Financial resources seed funding to countries

R&D Stream (ongoing):

- Alignment of countries / use cases with research streams, method and software development, operational research, standardisation

Resource Development:

- Maturity assessment framework, training modules, technical, legal, management resources

Resource development:

- Modular technical training developed (informed by standardisation - R&D stream 1), building on existing resources
- Technical specifications for data pipeline development and associated costs
- Templates and support for TORs to flexibly provision data infrastructure and technical assistance, as needed

Software:

- Design / adaptation and delivery of software and standardised coding notebooks (manuals) for building aggregates, statistics

Delivery of training, mentoring - MNO, NSO/MDA/other users

Assessment and Technical Assistance:

- Assessment of MNO data and pipeline requirements, establishment of pipeline
- Privacy assurance of transmission channels for data pipelines
- Identification and assessment of data science trainees
- Advice on required MNO and other data for use case
- Assessment on whether bias adjustment is essential / desirable / optional for the use case
- As needed specialist support for bias adjustment and scaling, combining data for identified use case(s)
- Quality checks of raw data and calculated data

Funding mobilisation:

Connecting to WBG data lending projects, other sources, to sustain and scale use of MBD for policy solutions

Convening as part of country cohort for sharing experience, capacity strengthening (ongoing)

Technical Assistance:

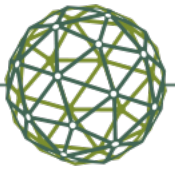
As needed for:

- Integration of new data into systems and workflows (INSD)
- Developing new use cases
- Disseminating learning

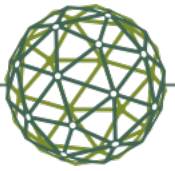
Funding mobilisation:

- Support to access lending and other resources for sustainability, scaling

Convening as part of country cohort for learning, synthesising



Discussion & wrap-up



Post-event poll

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Thank you very much!
For any questions, please contact:
[cathy.riley\[at\]flowminder.org](mailto:cathy.riley@flowminder.org)



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