



# Communities of Practice on Nature based solutions for Building Urban Resilience

Guwahati, Assam

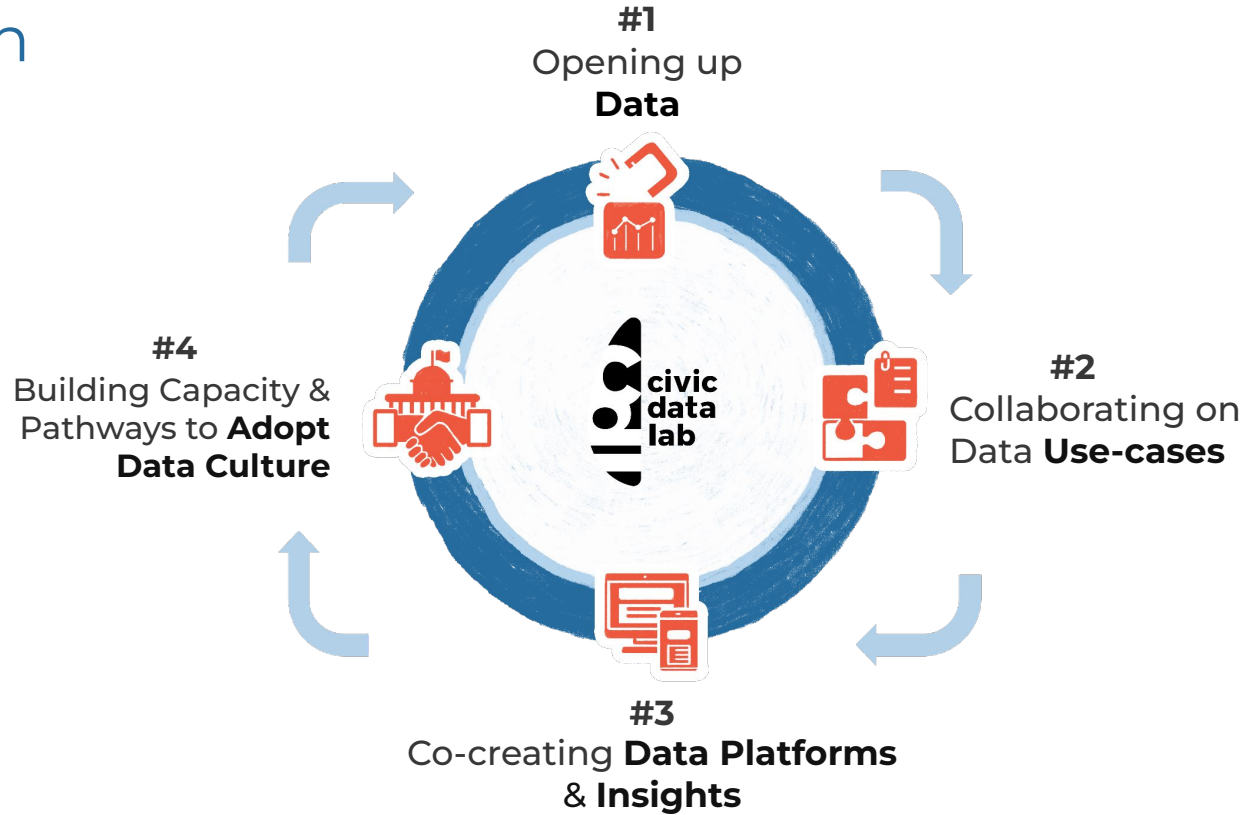




We work at the intersection of **data**, **technology**, **design** and **social science** to strengthen access to public information, evidence-based decision-making and citizen participation in governance. CivicDataLab (CDL) harnesses the potential of open knowledge movements to strengthen the **data-for-public-good ecosystem** and enable citizens to engage in matters of public reform. We work closely with governments, non-profits, think-tanks, media houses and universities to enhance their data and technology capacity to better data-driven decision-making at scale.



# Our Process to Strengthen **Data-Driven Governance**



# Our Initiatives



**Public  
Finance**



**Law &  
Justice**



**Open  
Contracting  
India**



**Urban  
Development**



**Digital Public  
Goods**



**Climate  
Action**

# Risks and effects of Climate Change

Global Risks Report 2024

## Top 10 risks



"Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period."

### 2 years



### 10 years

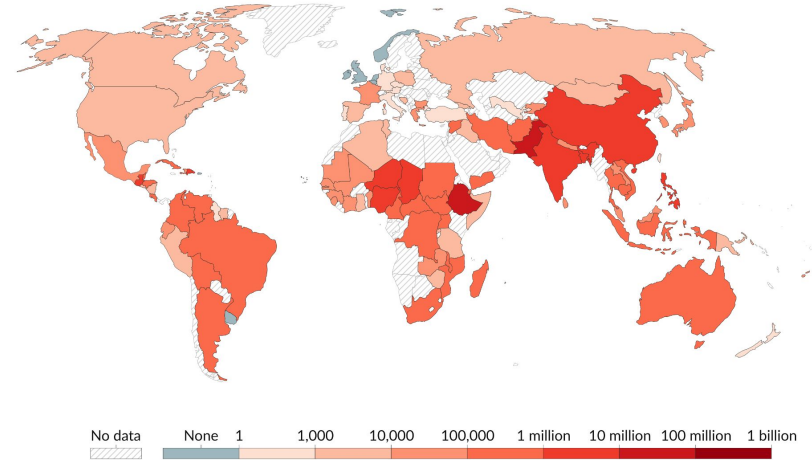


Risk categories | Economic | Environmental | Geopolitical | Societal | Technological

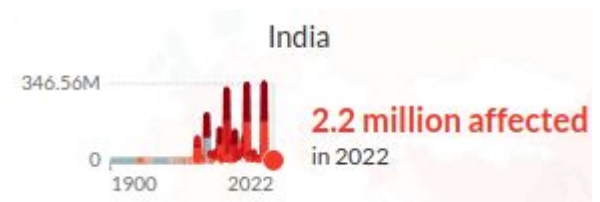
Source: World Economic Forum Global Risks Perception Survey 2023-2024.

## Total number of people affected by disasters, 2022

Disasters include all geophysical, meteorological and climate events including earthquakes, volcanic activity, landslides, drought, wildfires, storms, and flooding. The total number of people affected is the sum of injured, requiring assistance and homeless.



Source: Our World in Data based on EM-DAT, CRED / UCLouvain, Brussels, Belgium - www.emdat.be (D. Guha-Sapir)

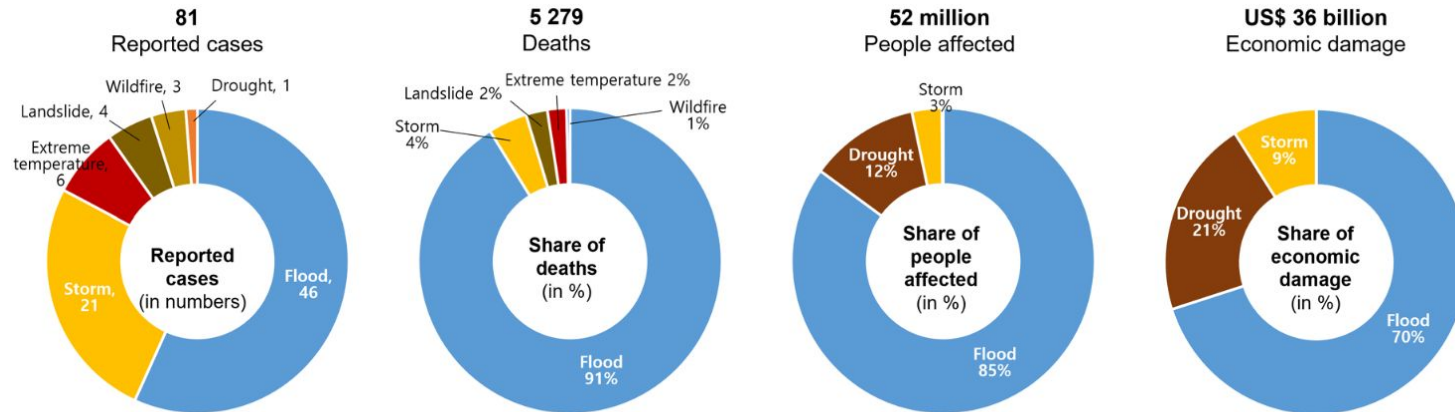


# 83% of Natural Hazard Events are Floods & Storm events

## Asia is the world's most disaster-prone region

In 2022, over 83% of reported natural hazards were flood and storm events

Floods were the leading cause of death, people affected, and economic damage by a substantial margin.



**Figure 18.** Overview of 2022 disasters in the Asia region.

*Source:* Economic and Social Commission for Asia and the Pacific (ESCAP); EM-DAT. ESCAP calculations are based on data from EM-DAT, accessed on 14 February 2023.

*Note.* The economic damages of some disaster occurrences are not presented in the figure due to data unavailability. In the figure, only cases reported in EM-DAT are considered.



# CDL in Assam

2018

**Building Data & Tech Capacity** for Depts - ASPIRe collaboration

2019

Assam - **first state to commit to “Open Budgets”** - Assam Budget Explorer

2020

With UNICEF Assam, we **piloted** U-Report based **Pre-Budget Surveys**

2021

We **Analysed Public Procurement Data** Assam & **Started OCI**

2022

**Public Procurement Reforms** & IDEA-FRM

2023

Working with State for **Launch of Green Budget**. Start of **IDS DRR**

2024

Working towards **GPP** and **IDS DRR**

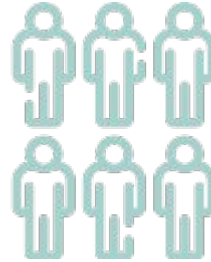
# An overview of **Floods in Assam**



39% land area is flood prone.  
Covers **90%** of the districts.



**400,000 Hectares** of  
Agricultural Land affected each year



**3 million people** affected  
and 100+ lives lost on average



**36 million USD** worth of  
property damage each year



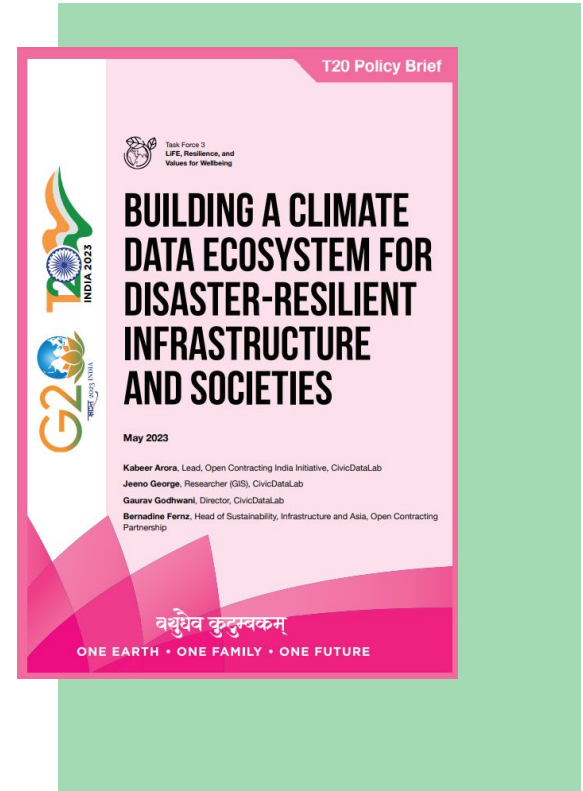
# Data-Driven Planning for DRR Challenges

- **Data** can help **State and District Disaster Management Authorities** to prioritise public funds (procurement, budget, SDRF allocation) in most vulnerable regions to build long term resilient strategically.
- However, **datasets** related to climate change and disaster management in India **remains in silos**, often lack the **interoperability and quality** to be able to be consumed by machine.
- Additionally, processing such vast amount of data to derive insights for decision making is a challenge in itself.



# Intelligent Data Solution for DRR Solution

- **Unified Data Repository** for all needed datasets for efficient flood management in near real-time (**10 data sources**).
- **Actionable Data Insights** using a ML Model to drive strategic decisions for building long term resilience against floods in most vulnerable regions.
- **Enhanced Data Capacity** of decision makers to consume timely insights and prioritise public funds for disaster risk reduction





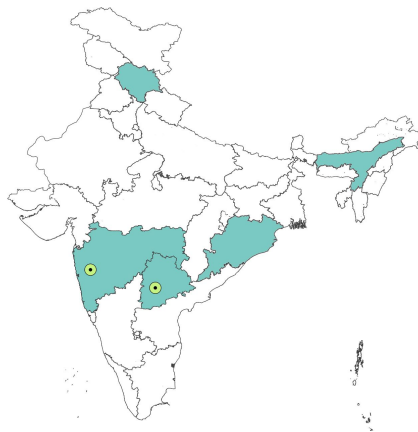
# Intelligent Data Solution for DRR

## Our Journey

### Project Deployment 2023-25

2

- Development of deployable solution to be institutionalized for decision making in Assam.
- Building capacity of stakeholders across scales for deployment.
- Expanding the solution to Himachal Pradesh & Odisha for more use cases.



### Project Scaling 2025 - 27

3

- Support deployment of solution in at least 10 Indian states.
- Provide knowledge support to scale the model across Asian countries with high disaster risk.



# Flood data ecosystem

## IDS DRR

### Satellite & Weather data



IMD, BHUVAN, Sentinal-2, NASADEM

### Demographic Data



Mission Antyodaya 2020 & Worldpop

### Past Damages



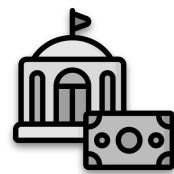
Flood Reporting & Information Management System (FRIMS)

### Infrastructure Access



Bharat Maps, NESAC, Assam Flood Hazard Atlas\*

### Coping Capacity (Govt. Fiscal Response)



Assam Tenders, SDRF Allocation (ASDMA)\*

# Flood data ecosystem

## Single point for all data

### Category

- Exposure
- Government Response
- Hazard
- Vulnerability

### Source

- Flood Related Informati...
- Global Curve Numbers (...)
- Assam Tenders
- BHUVAN
- Bharat Maps
- India Meteorological De...
- Mission Antyodaya
- North Eastern Regional ...
- SENTINEL-2
- WORLDPOP

### IDS-DRR

Intelligent Data Solution for Disaster Risk Reduction

Analytics Datasets Resources About us

#### Assam DRR : Datasets

Showing 10 datasets

SORT BY: A-Z

FILTERS

#### Category

- Exposure
- Government Response
- Hazard
- Vulnerability

#### Geography

- Assam

#### Format

- CSV
- PDF
- ZIP

#### Source

- Flood Related Informati...
- Global Curve Numbers (...)
- Assam Tenders
- BHUVAN
- Bharat Maps
- India Meteorological De...
- Mission Antyodaya
- North Eastern Regional ...
- SENTINEL-2
- WORLDPOP

#### WORLDPOP

Source : WORLDPOP

Last Updated : March 14, 2024 | Update Frequency : Yearly  
Reference Period : January 1, 2015 to December 31, 2023

[ZIP](#) [PDF](#)

[Exposure](#) [Vulnerability](#)

WorldPop (Lloyd et al., 2019) utilizes machine learning to get the correlations between population densities and a range of geographic covariate layers to dis-aggregate current census-based population counts...

#### North Eastern Regional Node for Disaster Risk Reduction (NERDRR)

Source : North Eastern Regional node for Disaster Risk Reduction (NERDRR)

Last Updated : March 14, 2024 | Update Frequency : One Time  
Reference Period : January 1, 1970 to January 1, 1970

[ZIP](#) [PDF](#) [CSV](#)

[Vulnerability](#)

North Eastern Regional Node for Disaster Risk Reduction (NERDRR) hosts various geospatial datasets related to Disaster Risk Reduction. One such dataset that is needed for Flood Management is the data on embankments.

#### Flood Related Information Management System (FRIMS)

Source : Flood Related Information Management System (FRIMS)

Last Updated : March 14, 2024 | Update Frequency : Monthly  
Reference Period : May 15, 2021 to August 31, 2023

[ZIP](#) [CSV](#) [PDF](#)

[Vulnerability](#)

The Assam State Disaster Management Authority (ASDMA) maintains a robust data system that collects information on damages due to floods in every monsoon season. This data includes population affected by floods...

#### SENTINEL-2

Source : SENTINEL-2

Last Updated : March 14, 2024 | Update Frequency : Monthly  
Reference Period : January 1, 2019 to August 31, 2023

[ZIP](#) [PDF](#)

[Hazard](#) [Vulnerability](#)

Sentinel-2 is a wide-swath, high-resolution, multi-spectral imaging mission supporting Copernicus Land Monitoring studies, including the monitoring of vegetation, soil and water cover, as well as observation of inland waterway...

#### Assam Tenders

Source : Assam Tenders

Last Updated : March 14, 2024 | Update Frequency : Monthly  
Reference Period : April 1, 2016 to September 30, 2023

[ZIP](#) [PDF](#) [CSV](#)

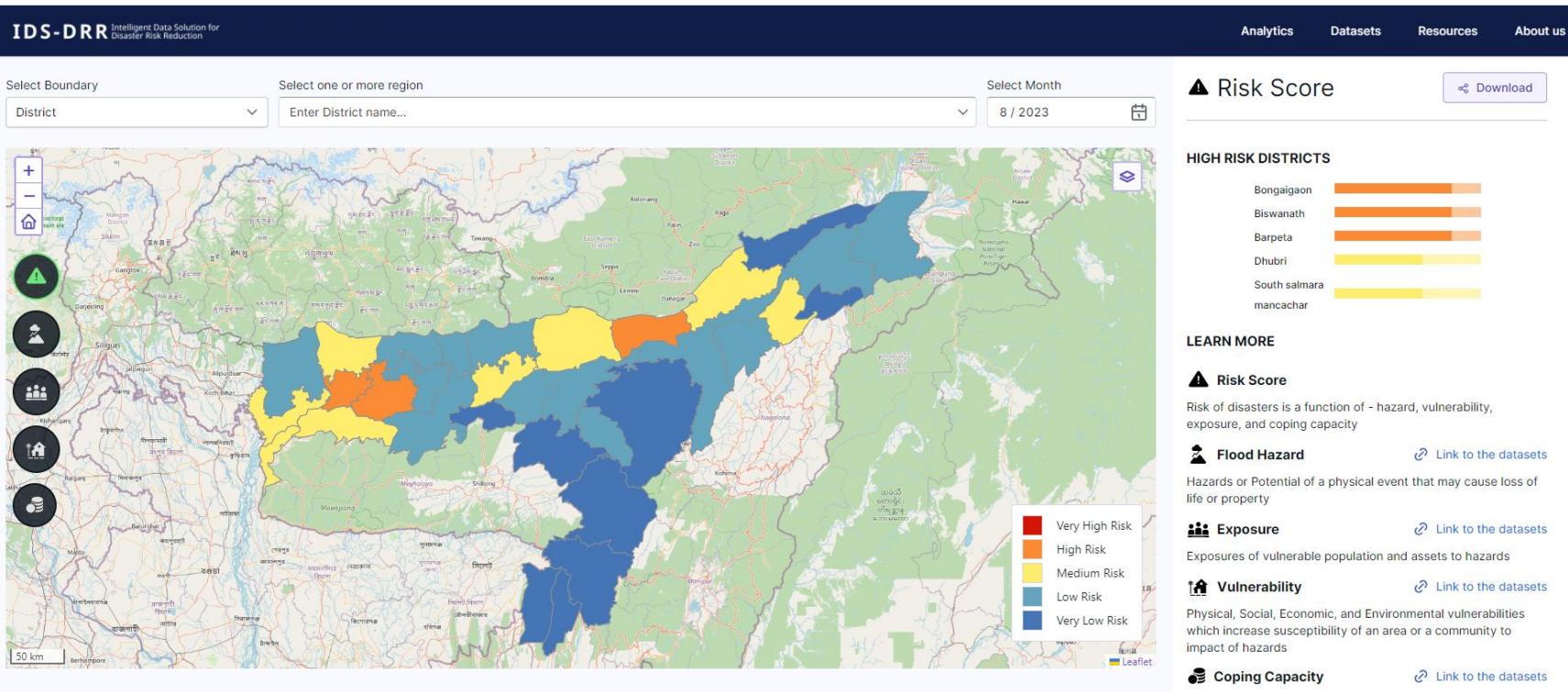
[Government Response](#)

Public procurement datasets from the Assam Tenders website.

Interoperable  
datasets



# Leveraging Machine Learning Actionable Insights



# Flood tenders dashboard

## IDS DRR

Assam Flood Tenders Dashboard | 2022 ☆

This Dashboard allows one to find critical information about number of tenders, value of tenders, the type of tenders, sources of funds for the flood tenders and the tender performance of the state, the various districts and revenue circles.

Tenders Overview District Overview Annexure

Filter Box | Overview

fiscal\_year

DISTRICT\_FINALISED\_V5

tender\_revenueci\_fiINA

Department

Organisation\_Chain

tender\_category

Tender\_Stage

Scheme

Number of Flood Tenders

**4.39k**  
Number of Flood Tenders

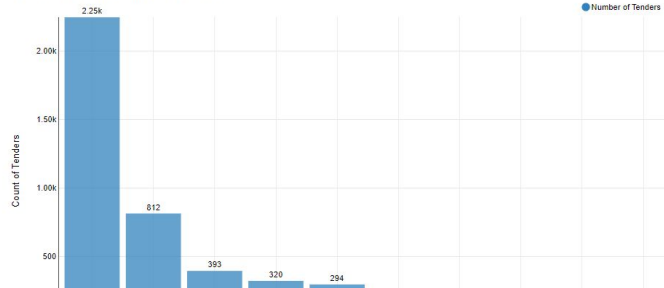
Total Value of Flood Tenders

**₹ 10.1kCr**  
Value of Flood Tenders

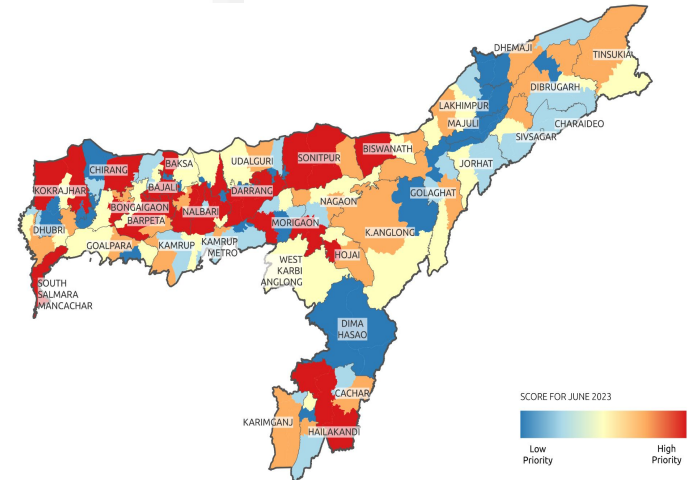
Count of Tender Inviting Authorities (Department)

**30**  
Number of Departments

Top 10 Departments issuing Flood Tenders

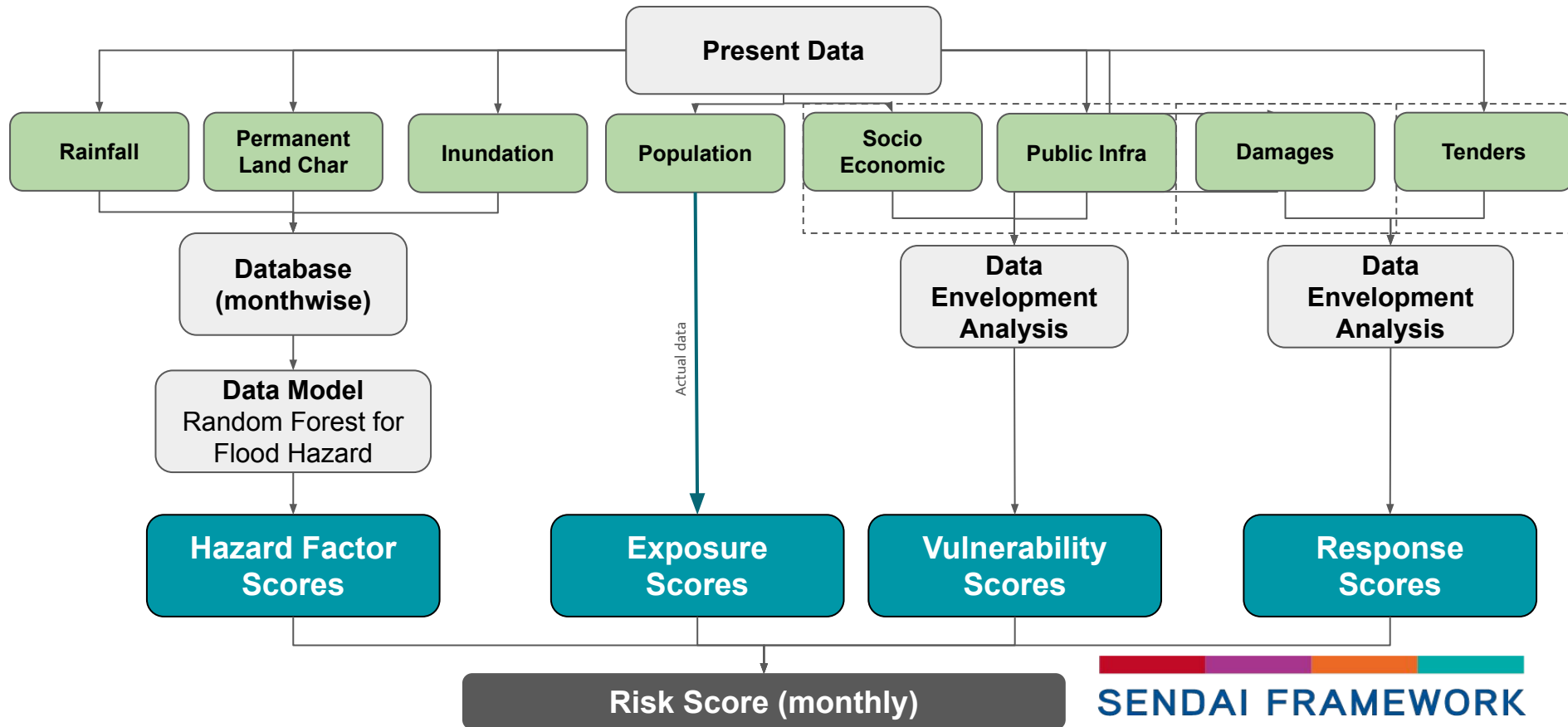


**Data-driven**  
decision making





# Our Approach to calculate the Scoring





# IDS DRR Roadmap Ahead

1. **Strengthening Capacity** of decision makers to leverage data for decision making at subnational and national level.
2. **Co-create Unified Data Access** for **city planning & administration** for different use cases
3. Replicate and deploy Intelligent Data Solution for Disaster Risk Reduction **in other vulnerable geographies in India and Asia.**
4. **Integrate and enhance citizen feedback loops** to strengthen participatory disaster risk reduction and green public finance management.

# CO-CREATE AND STRENGTHEN **OPEN DATA** AND **CIVIC ENGAGEMENTS** WITH US



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[info@civicedatalab.in](mailto:info@civicedatalab.in)