Disaster Tracking System

for hazardous events and losses and damages

National Workshop on Climate Change and Disaster Related Statistics

Amman, Jordan

04 Dec 2024

UNDRR
UN Office for Disaster Risk Reduction

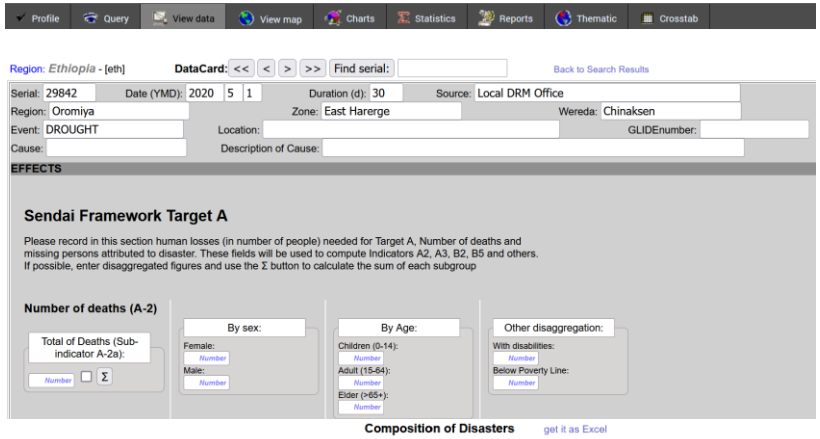
Early Warnings for All

DesInventar

Disaster Information Management System

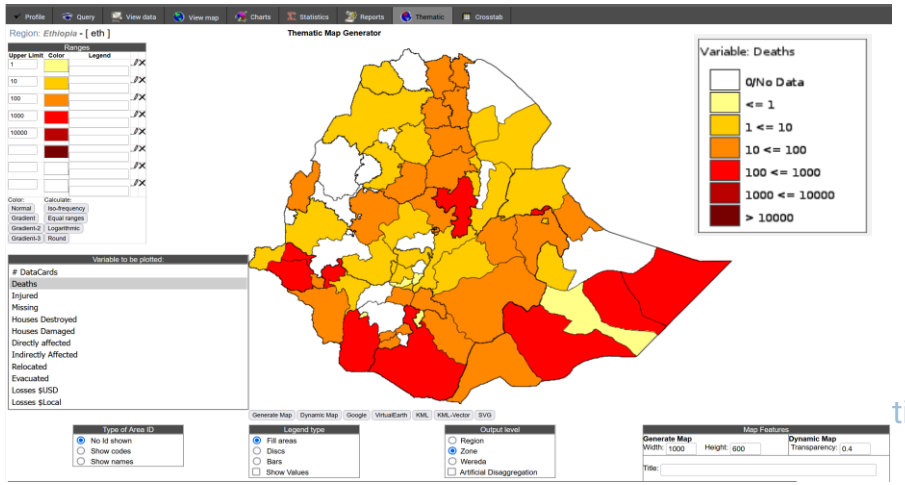
desinventar.net

110 countries with sub-nationally disaggregated disaster losses and damages databases +750,000 disaster events recorded since 1994.



Composition of Disasters get it as Excel

Event	DataCards	Deaths	Injured	Missing	Houses Destroyed	Houses Damaged	Indirectly Affected	Directly affected	Relocated	Evacuated	Losses $USD	Losses $Local	Education centers	Hospitals	Damages in crops Ha.	Lost Cattle	Damages in roads Mts
Building slide	1						3										
CONFLICT	356	1650	3455	210	300418	19253	775786		659448						10912	759	
Covid-19	1		4														
DROUGHT	3995	3920				10	76642721		637						354725	2553647	
EARTHQUAKE	6	5	7		12		19544									1369	
FIRE	797	854	872		3668	1613	76717		5259						195560	1138	
FLOOD	1449	3303	23343		21681	8970	10359967		1359513			2429535	8	1	548725	357974	
FOREST FIRE	31	4			905		750660		2230						100084	11	
FROST	7						7560								10372		
HAILSTORM	250	67	11		1347	14	287623		39121						84445	3523	
HEAT WAVE	2						8										
Land slide	211	461	2745		1556	711	96871		133209						13715	1143	
Livestock Disease Outbreak	147														1015	19228	
OTHER	137	446	1172				10004								2551066	35699	
PLAGUE	7467	196	22335				363355								5305852	293962	
RAIN	39	32					77895								2870	122	
SNOWSTORM	1						763										
STORM	5						3900								115	150	
THUNDERSTORM	32	47	17		13										10	217	
WINDSTORM	22	3			199		3473								600	13	



- **Comprehensive picture**: human, economic, housing and infrastructure losses at subnational levels
- **Nationally owned systems** (mostly): government definitions, no thresholds, data validated in country
- **Methodology and system**: homogeneous and customization (extension variables)
- **Analytics:** Overview profile, Customized statistics, and downloadable data for further analyses
- **DesInventar Sendai**: since 2018 Sendai Framework targets and indicators alignment, enabling stream-lined reporting including Sendai Framework Monitor and SDGs

Ethiopia DesInventar:

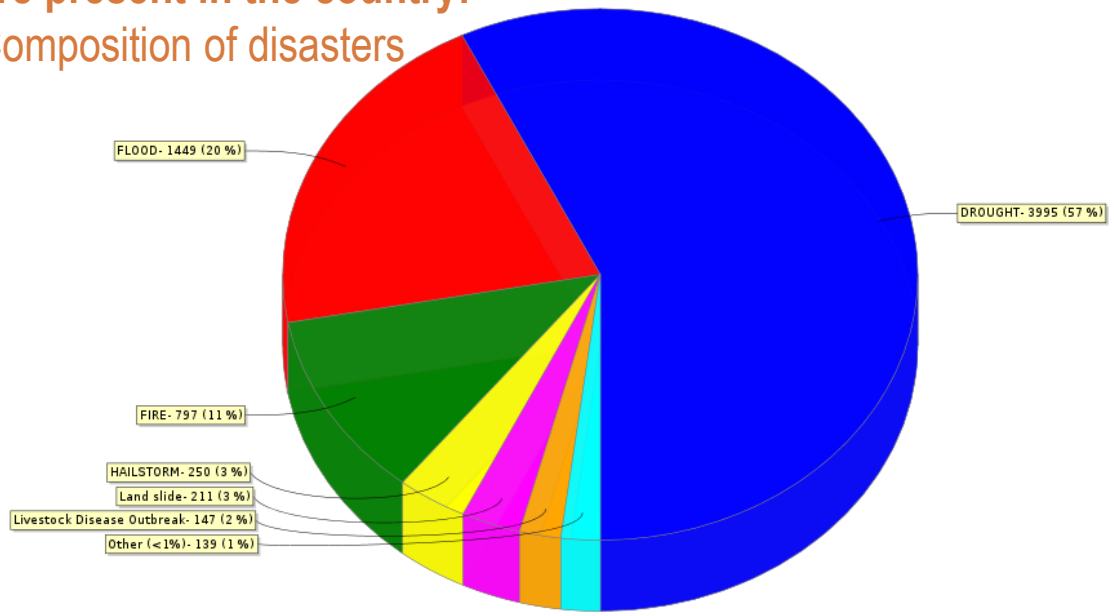
- **15,000** events
- most data available from **1991 - 2020**
- **Localized:** Data available at regional, zonal and woreda levels

Disaster tracking to inform MHEWS at national and local levels

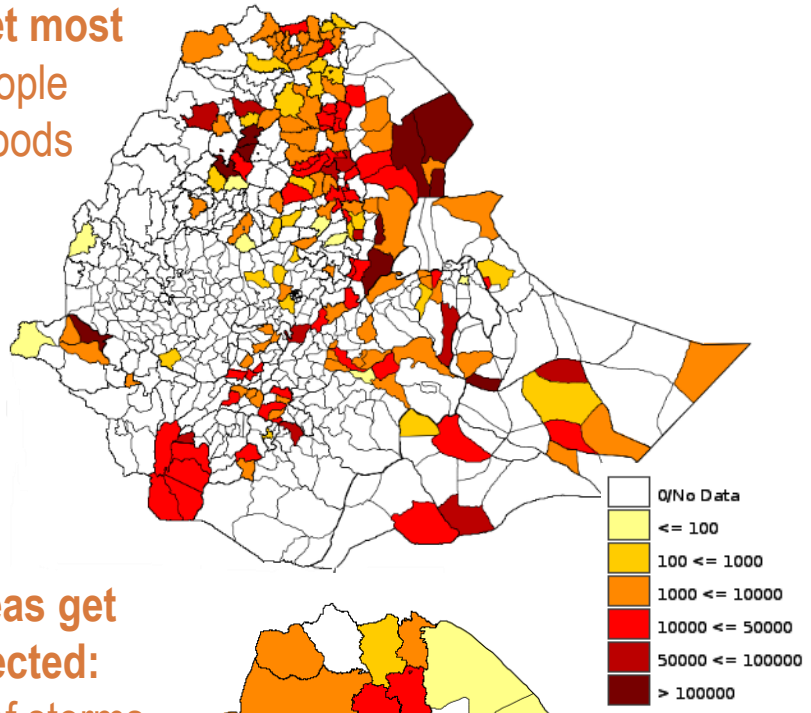
DesInventar
Disaster Information Management System

Example: Ethiopia

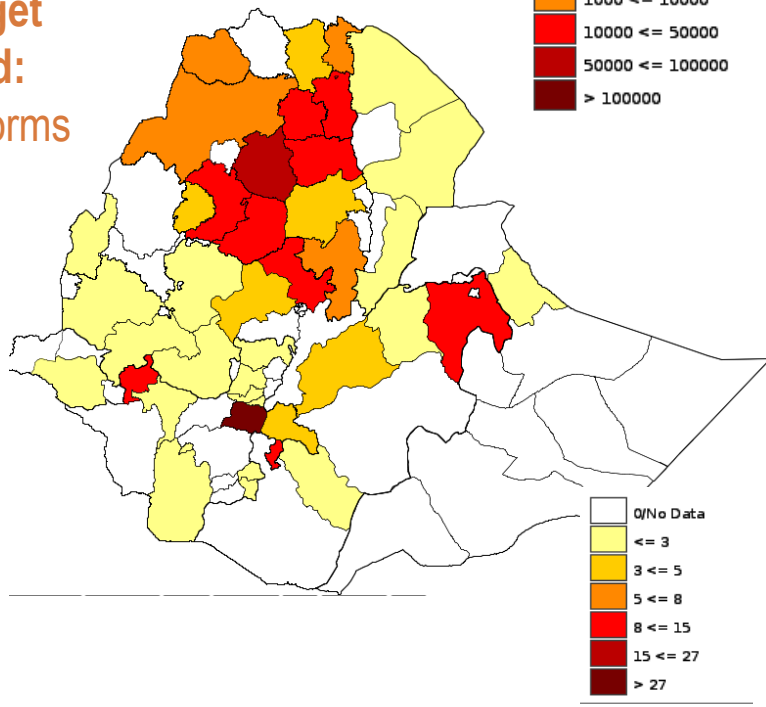
Which types of hazards are present in the country: Composition of disasters



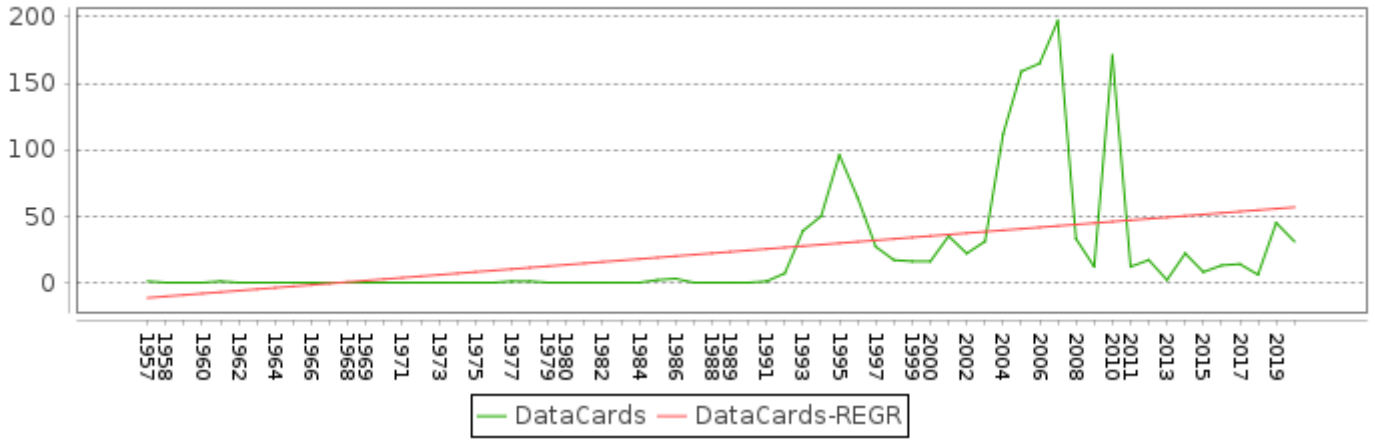
Which areas get most affected: People affected by floods



Which areas get most affected: Frequency of storms



What is the trend in disasters: Frequency of floods



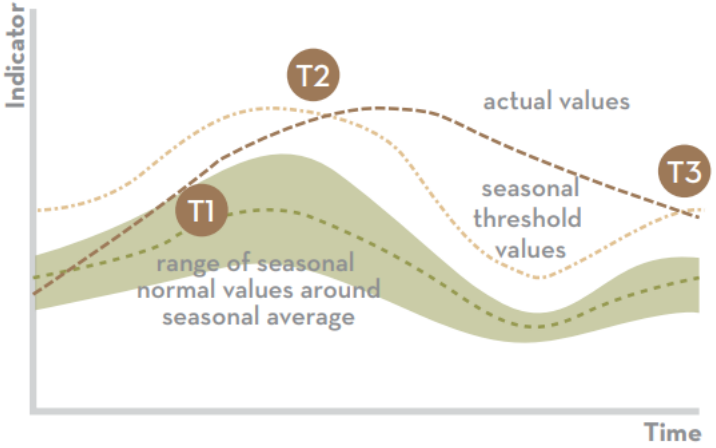
Historic data for impact-based analysis and early actions identification

inventar
Disaster Information Management System

Example: Ethiopia

Impact –hazard curves for setting EA triggers

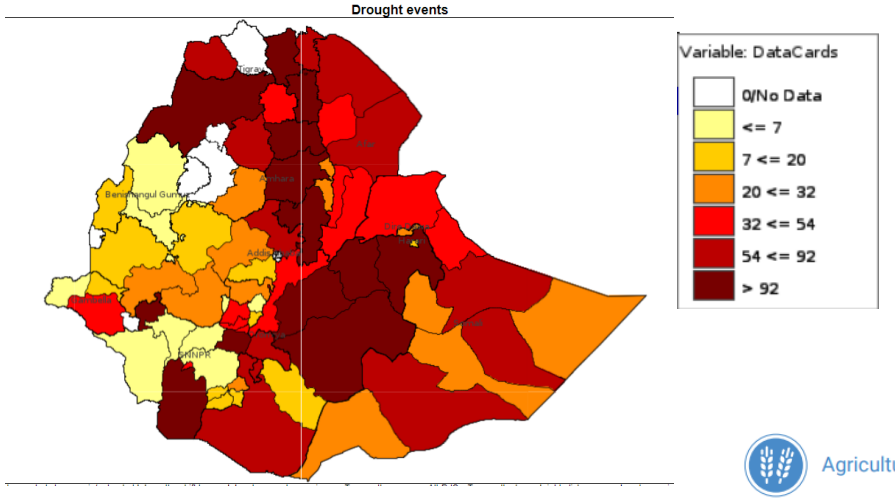
What impacts in the past? Which seasonal and spatial patterns?



Establishing thresholds for EW indicators
Source: IFRC.

Identification of Early Action/AA protocols

What sectors had been affected and how in the past?



Source: Ethiopia Anticipatory Action Framework OCHA/ CERF

Challenges with disaster loss database systems and needs

Challenges and limitations	Needs and responses
Relationship b/w hazard and impacts not clear or consistent	Better tracking of hazards and disaster impacts: Engagement of NDMOs and NMHS
Lack of data to understand and address differential impacts across populations	Disaggregated data to understand differentiated impacts on different sectors, different groups
Governance and institutionalization	Government ownership, data governance first, maturity alignment, people-centred rollout
Supply driven and technology-first	Use cases (why) for demand driven data value chains – early warnings being a critical use case
Data management and analysis	Strong analytics and visualization focus with support and services
Costing losses and damages	Better data standards & methodologies; Stronger engagement of statistical offices

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A new generation disaster tracking system

Tracking
hazardous events
and
losses & damages

Capacity Development

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Strengthen data value chain – inputs, processes, outputs

1. Identify use cases

= purposes for which data is used;
Inform collection, analysis and product development

2. Acquire:
Data collection, access or aggregation

as per common standards and classifications

3. Transform:
Technological solutions and capacity to transform data,

integrate, import and export

4. Analyze:
Functionalities

and technical support for **analysis** (descriptive, diagnostic, predictive, prescriptive) **and statistics**

5. Visualize:
Enhanced visualization

with interactive options (e.g., dashboards, charts, thematic / geographic maps, etc.).

6. Interpret:
Capacity development and technical support

to interpret, extract insights and implications for decision-making

7. Act:
Decision support tools

for better policies and programs at all levels.

Adapted from: United Nations. (2022). Data Strategy of the Secretary-General for Action by Everyone, Everywhere: with Insight, Impact and Integrity 2020-22

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Use cases, data value chain, users and producers

Identify use cases, data needs and gaps

= purposes for which data is used;
Inform collection, analysis and product development

Use cases

- Evidence and understanding of disaster and climate change impacts
- Building, informing, and calibrating vulnerability and risk models
- **Informing early warning systems (impact-based forecasting), early action, preparedness for response and recovery**
- Informing resilient recovery - post-disaster needs assessments
- Better disaster risk reduction financing and informed insurance products
- Benchmarking success (or failure) of resilience building measures

Act: Decision support & tools

for better policies and programs at all levels.

Data users and producers

- National Governments – also Sub-national / Local Governments
- Development Partners including Regional Organizations
- Humanitarian Actors
- Financing Sector and Insurance Sector
- Science and Technology Networks
- UN System

Opportunities in context of EW4ALL

- Enhance impact-based analysis and warning.
- Inform identification of most effective action to mitigate impact
- Assess effectiveness and track progress on reducing impact.

2020-22

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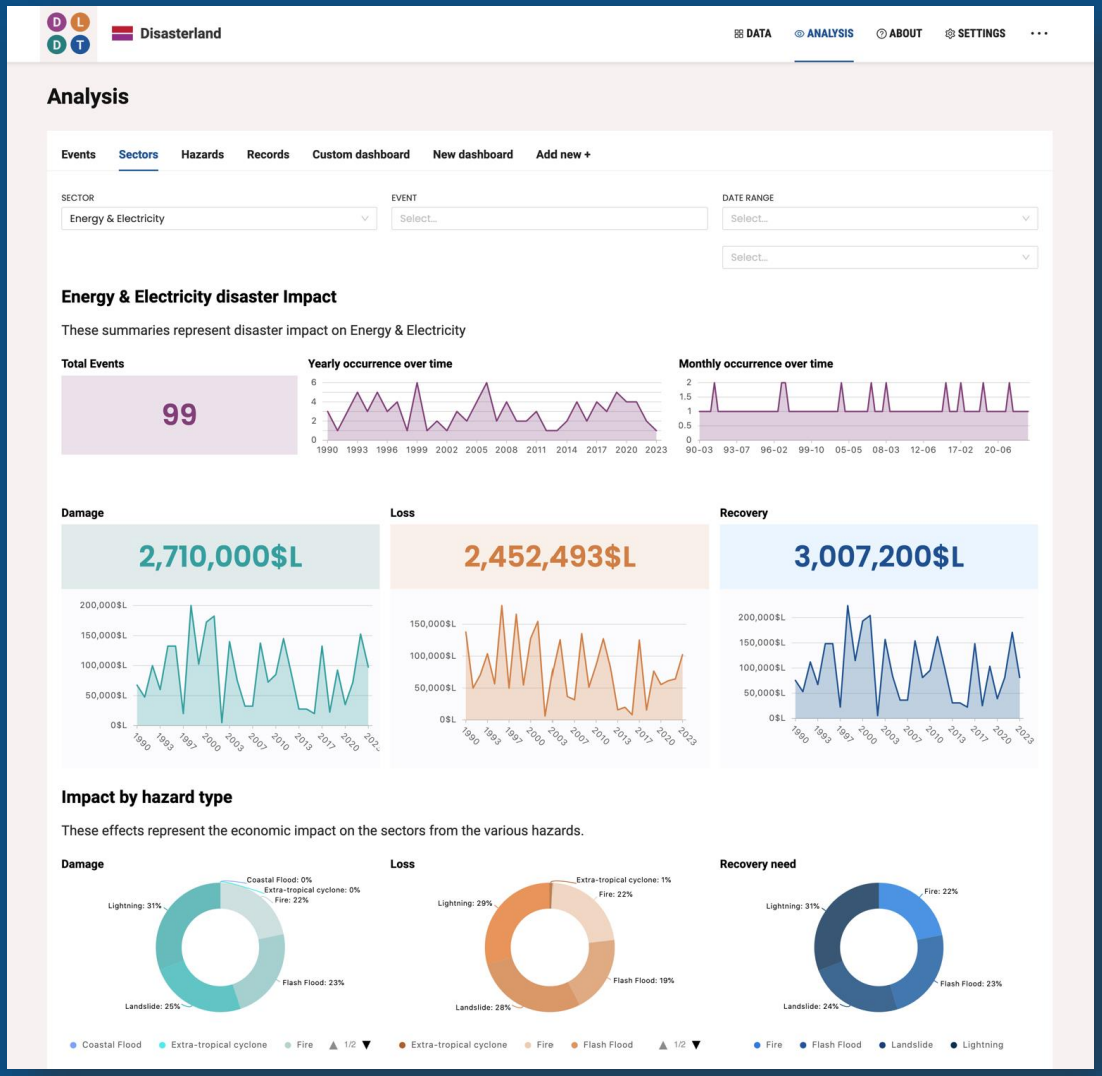
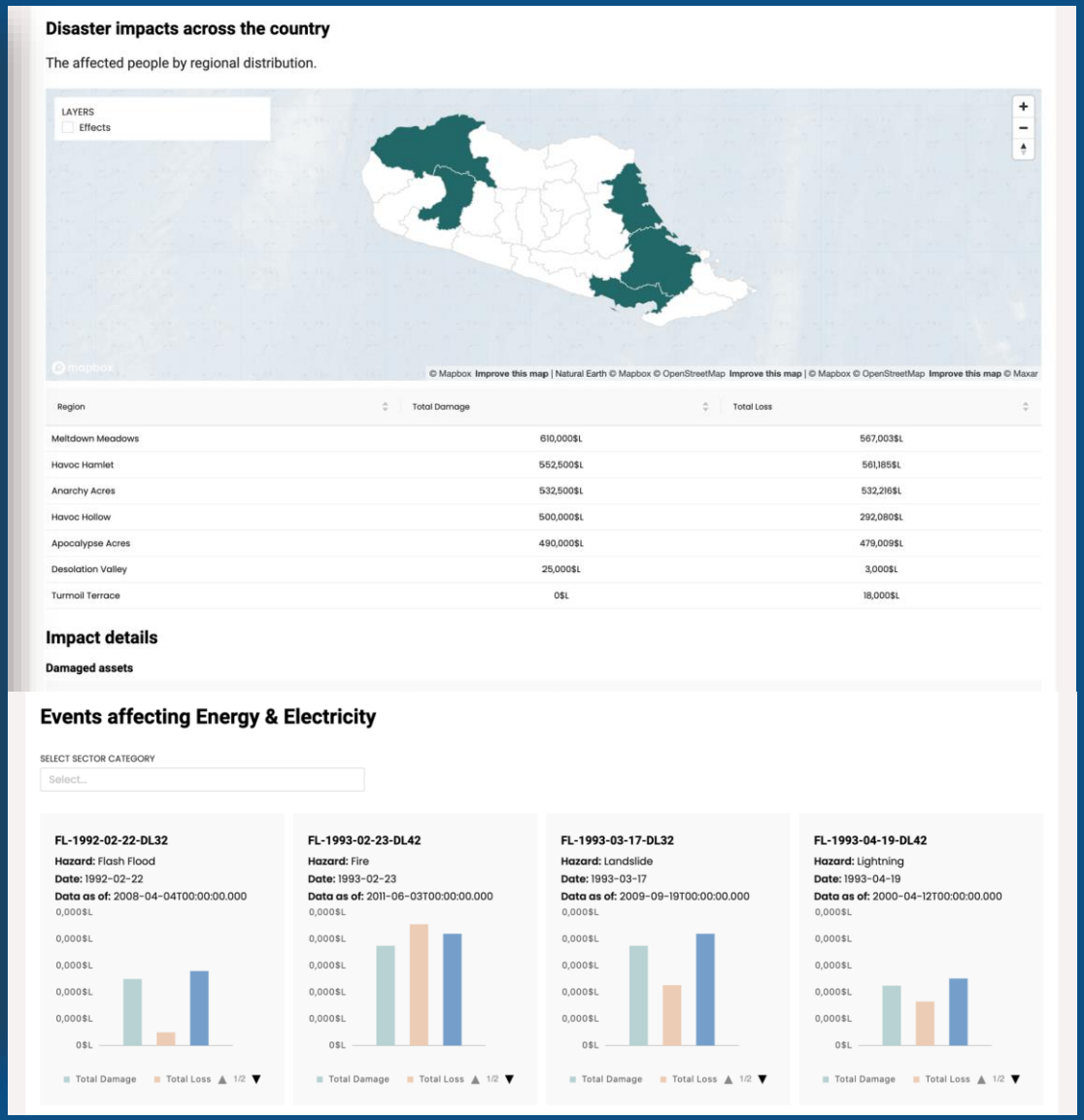
Prototype examples: New disaster tracking system for hazardous events and losses and damages

Example: Analysis by sector - dashboard





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Prototype examples: Responsive mobile design

Disasterland

Analysis

Events Sectors Hazards Records ···

DATE RANGE
2018-05-01 → 2023-05-30

74
Records

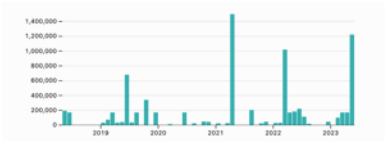
937
Effects

18
Events

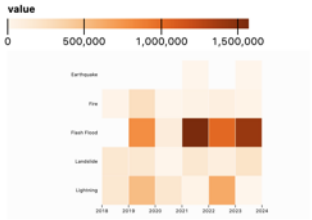
7,705,500
Total Damage

716,266
Total Loss

Total Damage by Month



Recovery Need by Hazard



Disasterland

Analysis

Events Sectors Hazards Records ···

SECTOR: Energy & E...
EVENT: Select...
DATE RANGE: Select...
Select...

Energy & Electricity disaster Impact

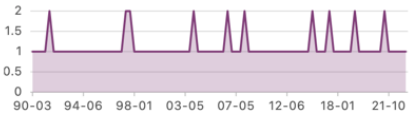
These summaries represent disaster impact on Energy & Electricity

Total Events

99

Yearly occurrence over time

Monthly occurrence over time



Damage

2,710,000$L

Loss

2,452,493$L

Recovery

3,007,200$L

Disasterland

New Event

* Name
Event name

National Event ID
National Event ID

GLIDE Number
GLIDE number

* Date
Event date

* Duration
Days

* Country
Select country

* Hazard
Select hazard

Source
WMO

Related Event
Type to search...

Description

SUBMIT

Disasterland

Data

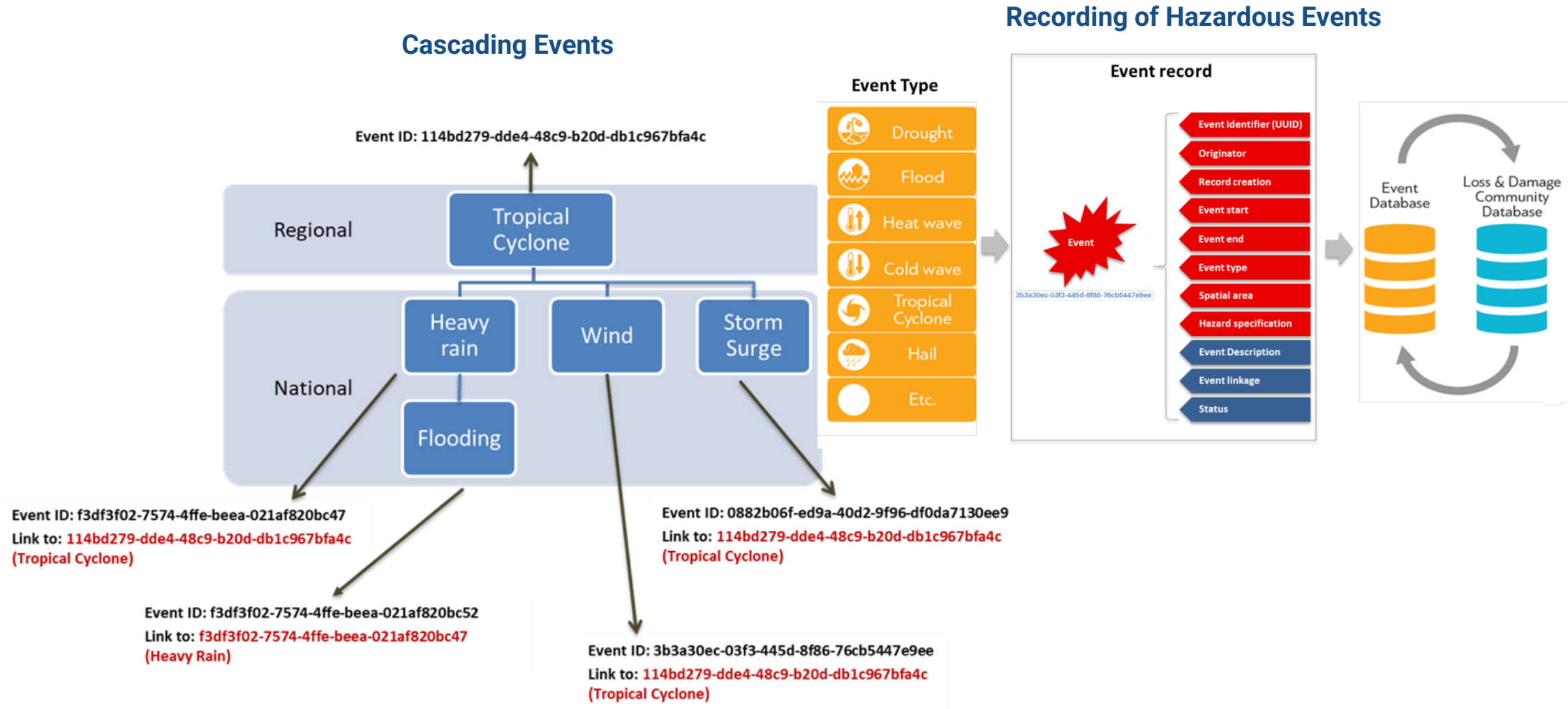
Record List Events Baseline ···

ADD EVENT

Name	UUID
disasterland flood test 1	b4deceec-2c54-4a72-9863
LT-2003-11-19-DL42	8a3ae8e9-8935-4b14-a8ba
LT-2003-05-25-DL24	7977bb80-8fdd-42ae-9262
FL-1997-07-08-DL51	22230541-b589-49eb-a3f6
LS-2015-11-07-DL41	bace4837-9454-4405-ae3
LT-2015-12-22-DL51	7bcb7681-28f2-4362-ad7e
FL-2018-01-22-DL41	fd77d495-631d-4eb1-ad30
FL-2013-10-03-DL41	ede2f82a-1069-4c44-8e93
LS-1997-04-01-DL51	8d4aefe1-9213-494b-aa34
FL-2001-09-21-DL42	3a16b920-2716-470b-9ad4
LS-2006-06-22-DL41	8b1ff80f-a822-4333-8231-
FL-2015-06-11-DL51	b0846f61-d497-4dda-a62e
LS-2019-01-29-DL41	90c4ff27-f880-4f98-93e6-
LS-2006-07-30-DL42	a29b5f1d-cb7c-41bd-9700-
FL-2014-05-07-DL32	6b458be1-295f-488f-b88c
FR-1994-08-08-DL42	ec507787-eb3e-4112-a181-
FL-2021-11-21-DL51	16797805-ebb8-4af7-9bea

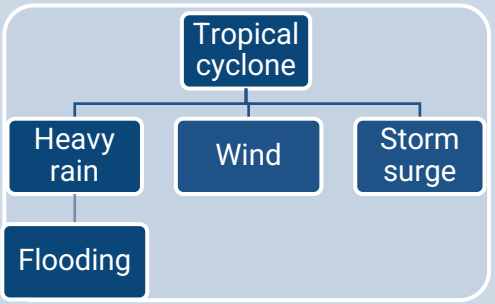
Innovation ‘Cataloguing Hazardous Events’ (WMO-CHE)

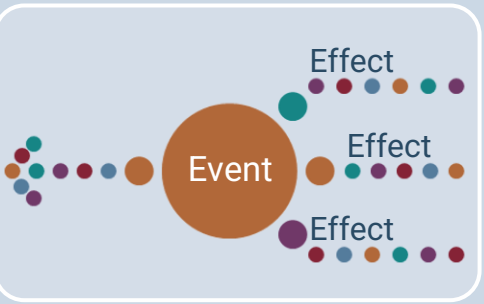
- Basis for **systematic recording of physical parameters of hazardous events** by National Meteorological and Hydrological Services (NMHS) and other mandated agencies
- **Methodology approved** by WMO Congress in 2019,
  Implementation plan and guidance approved by WMO Executive Council 76 in 2023 (Feb)



Strengthen interoperability – Cataloguing of hazardous events (CHE), event effects, statistics / classifications (standards / protocols)

Hazard parameters + Losses & Damages + Contextual





Cataloguing of hazardous events (CHE)

by

National Hydro Met Agencies, Geological Surveys, Volcanic / Seismic Observatories, Public Health, etc.

Recording of event effects – losses, damages, disruptions etc.

by

National Disaster Management Offices (NDMO) / DRR agencies / Civil Protection, etc.

Statistical baselines and context info– demographics, classifications etc.

by

Statistics Offices, Sector Entities, etc.

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Strengthen standardization - methodologies (selection)

1972
- Damage and loss assessment (**DaLA**)

1994
- DesInventar

2007
- Post disaster needs assessment (**PDNA**)

2015
- **Sendai Framework**

2016
- Cataloguing of hazardous events (**CHE**)

2017
- Report of the **OIEWG** on indicators and terminology…
- **SDG metrics alignment** for Sendai
- Data **readiness** review

2018
- **Technical guidance** for monitoring and reporting ... Sendai
- Sendai Framework Monitor **online portal**
- **Disaster-related statistics**

2020
- **Hazard definition** and classification review

2021
- Hazard information profiles (**HIPs**)

2022
- Data and digital **maturity** for DRR (**DDRRMM**)

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Strengthen governance & implementation

Governance Country / Member States Ownership	• Country / Member States ownership – Government official data • Translation • Institutional mechanisms to ensure multi-departmental or external data sourcing • Synergies – between national regulatory frameworks and international frameworks • User profiles – group for data input, viewing data, and creating reports
Data standards & methods	• Core variables for comparability • Documentation of standards and methods • Continue developing methodological frameworks for assessment • Strengthen collaboration with the statistical community and specialised agencies • Quality assurance tools – record duplication, missing data, open records, etc. • Data exchange, synchronisation, sharing – regional and global dashboards • Customisation – sectors, assets, categories etc.
Capacity development & technical support	• Technical support package, assistance, methodological guidance, manuals, training, etc. by UNDRR, UNDP, WMO and other partners. • Digital Disaster Risk Reduction Maturity Model (DDRRMM) • Regional and peer to peer learning promoted, communities of practice • Support to strengthen governance - not only on technological solutions • Learning layers with links and help
Use cases	• Common data uses facilitated, documented and shared

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Approach - co-design and planned implementation

Understanding the need

- Discovery needs analysis
- Disaster loss data vision and roadmap
- Landscape and requirements assessment

Consultations, surveys
112 respondents,
31 governments,
stakeholders

Understanding capacities

- Assessment of data and digital maturity
- Analysis of comparable data systems
- Development of data strategies

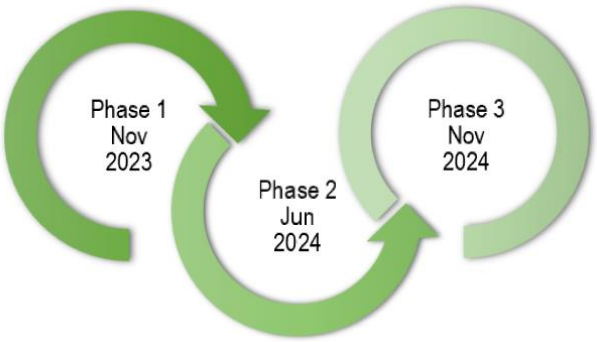
DDRRMM
13 countries

Prototyping

- Stakeholder expert consultation (29-30 Nov 2022)
- Joint statement by UNDP-UNDRR-WMO (Dec 2022)
- Prototype development 2022-2023
- Stakeholder feedback workshop (3-4 May 2023)
- Slow-onset events workshop (8-9 Nov 2023)

System development

- New system - development in modules [2023 - 2025]
- Country roll-out 2023 - 2025



WMO approves CHE in 2019

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2 December 2022

2023 delivery date for next generation disaster losses tracking system

Source(s): UNDRR Bonn Office

Tejas Tamobhid Patnaik/UNDRR

There was representation from some 40 countries during a two-day Technical Forum on 'Tracking of hazardous events and disaster losses and damage' hosted by the UNDRR Bonn Office.

8 November 2023

BO

Fast forwarding disaster tracking system to slow-onset events

Source(s): UNDRR Bonn Office

8 May 2023

Keeping track of disaster losses and damages

Source(s): UNDRR Bonn Office

Bonn, 8 May 2023

Six months after an initial workshop, more than 100 experts representing 30 countries and 20 international agencies came together in Bonn last week for a second technical workshop, Validation of the prototype for the new hazardous events and disaster losses and damages tracking system.

Related links

Disaster Losses and Damages tracking system

2023 delivery date for next gener disaster losses tracking system

COP28 UAE

Thank you for your attention

saira.ahmed@un.org

Risk Knowledge Programme Management Officer

Disaster-related/ Losses and damage data

UNDRR ROAS

Questions and discussion

Strengthening National disaster loss accounting systems and databases

Day 1:

Session Outline

1. **Current Jordan disaster losses and damages assessment and record system.**
2. **New Hazardous event and disaster losses and damages tracking system.**
3. **Questions & Answers**

Key session focus: how to strengthen application of historic disaster data (losses, damages and impact records) to enable impact-based early warning and early action?

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Early Warnings for All

Current Jordan disaster impact/post-event assessment and disaster loss database system (Desinventar)

- **What is the current disaster losses, damage and impact data collection and management processes?**

  - Background: how did it started, key objectives to establish a database, existing records (since xxx, type of variables), who is managing, where and how are data records kept?

  - Initial reflection on achievements, challenges and lessons learned in establishing and maintaining Jordan Desinventar/ disaster loss database.

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Current Jordan disaster impact/post-event assessment and disaster loss database system (Desinventar)

- **Discuss on current system for assessing disaster losses, damages and impacts – Data flows**

  - **Data collection process/ workflows. How are assessments in the ground conducted?** (administrative levels, methodologies (survey, remote, estimation, etc.) **standards and variables collected**, templates for assessments and reports, **coordination of assessments** (sectors' entities participation (agriculture, health, etc.)., paper base or digital? Government-led and/or other contributions(humanitarian partners? Crowd-sourced data?)

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Current Jordan disaster impact/post-event assessment and disaster loss database system (Desinventar)

- **Discuss on current system for assessing disaster losses, damages and impacts – Data management and analysis**

  - **Data management and analysis. How is field data collected stored and validated?** How is it aggregated and shared with higher administrative levels/national level? What is the quality control process in place**? Which information systems/platforms are used to manage, share and publish the data** (Desinventar, and others? Any collaboration with National Statistics office?

  - **Is there any process/methodological approach to link impact records to hazardous event as recorded by the National Meteorological Agency?**

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Current Jordan disaster impact/post-event assessment and disaster loss database system (Desinventar)

- **Discuss on current system for assessing disaster losses, damages and impacts – Data applications/use cases**

  - **What are the current applications/ use cases of the disaster losses, damages and impact information?** E.g. uses for hotspot analysis, priority hazard identification, vulnerability (e.g. Woreda risk profiling) and impact-based prediction; prioritizing investments in EW – EA and preparedness, etc.
  - **Who are the current users of the data?**
  - **EW-EA focused applications** :
    - What are the challenges on using the data for Early warning and early action?
    - What are the opportunities to enhance data usability and application for impact-based analysis?

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