

Loss and risk data in Europe

Requirements from the EU working group on loss data

www.jrc.ec.europa.eu

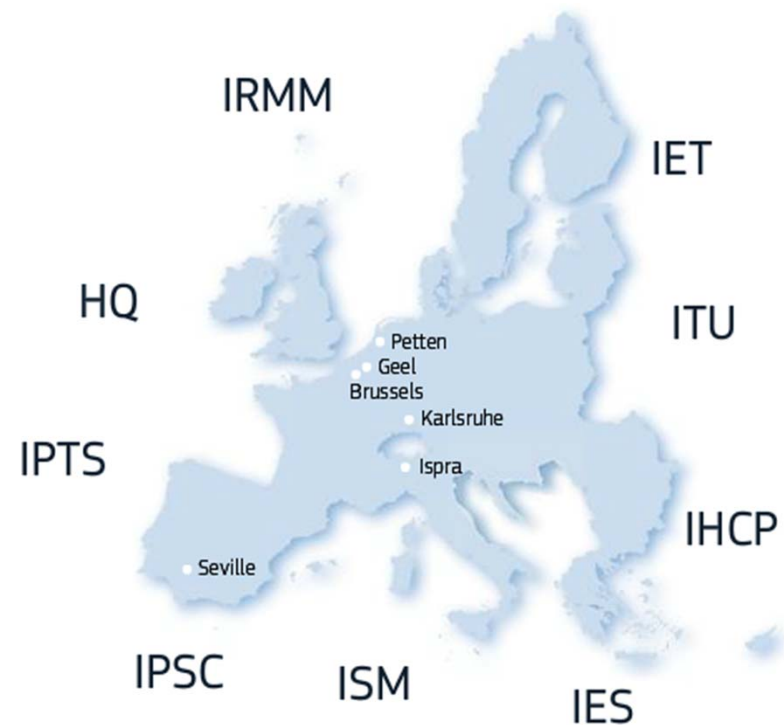


*Serving society
Stimulating innovation
Supporting legislation*

Joint Research Centre

The European Commission's
in-house science service

- Policy DGs
 - ECHO: Civil Protection, DRR, Humanitarian Aid
 - DEVCO: DRR, Development
- Global Security and Crisis Management
 - Remote sensing, Modelling, Language processing, Statistics
 - Disaster risk assessment



Support to EU Policy

- Civil protection legislation
 - Better risk assessment and communication in EU countries
 - Disaster loss data as key indicator
- Hyogo Framework for Action
 - European Commission represents position of EU
 - New monitoring framework
 - Outcome = disaster loss data
- Other policies
 - Sustainable Development Goals
 - UN Framework for Climate Change
 - EU Resilience Agenda
 - DIPECHO
 - Good humanitarian donorship

Key issues we're focusing on

- Developing Standards
 - Disaster Identifier
 - Peril types
 - Human loss indicators
 - Economic / damage loss indicators
- Handling of uncertainty
- Sustainable implementation
 - Business case that works in EU
 - Legislation options
- Use cases
 - DRR
 - Accounting
 - Modelling

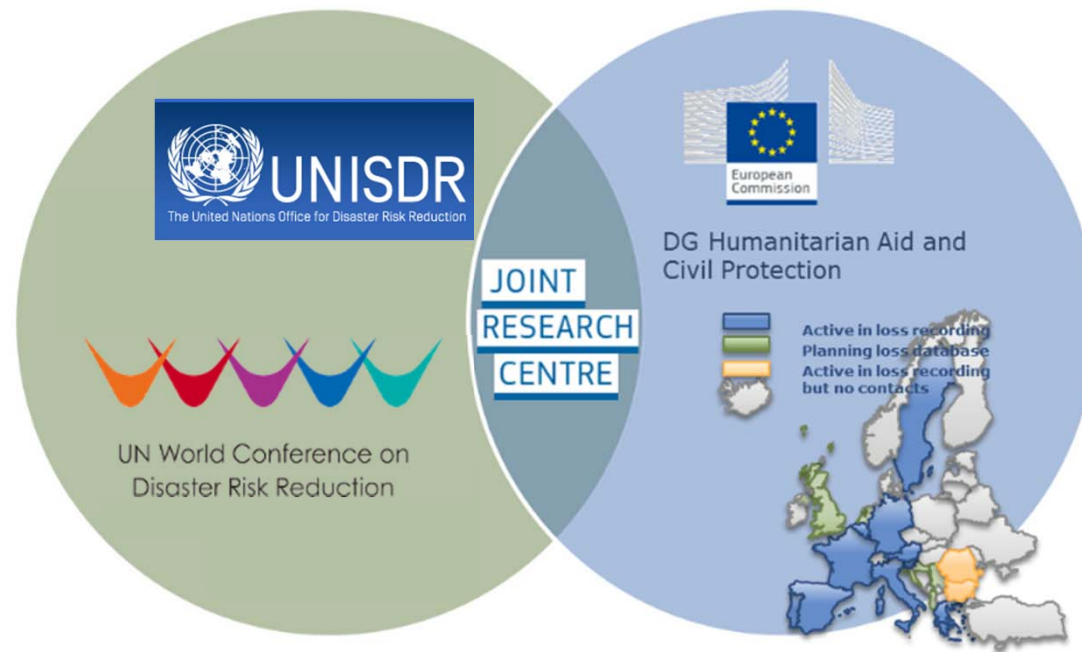
JRC and IRDR

- Contribution to IRDR with knowledge on state of the art in the EU
- Turn IRDR standards and practices into EU standards and practices

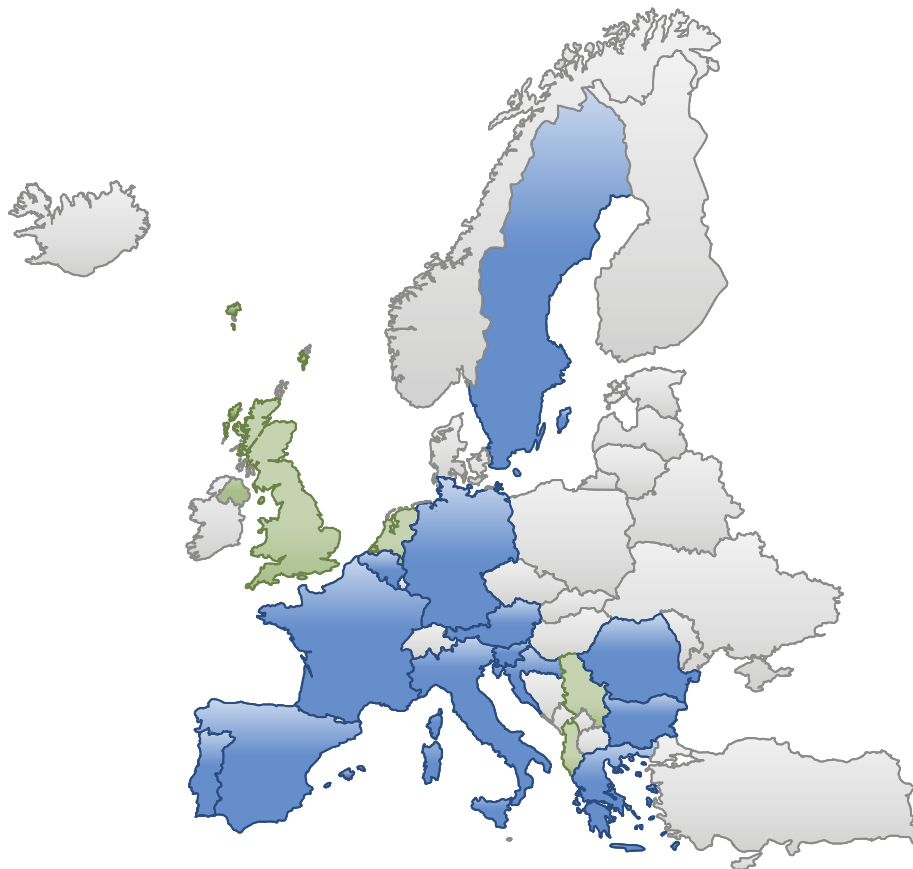


European Commission and UNISDR

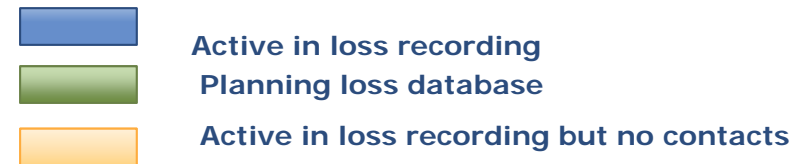
- Contribution to UNISDR indicator framework with knowledge on state of the art in the EU



Situation in Europe



...revealed so far (2014 June)



Main differences

- Data structure
- Methodology/standard used
- Mandated organizations
- Hazard types covered

Important similarities

- At least municipality scale
- Sectorial

...sometimes there is even more than one initiative within a country, usually not related, to serve different application areas (governmental, academic, insurances, ...)

Disaster loss data are key for DRR

Loss Data is important for DRR

- Carnegie meeting 2012
- Global Platform for DRR
- EU-US dialogue

Existing initiatives

- CRED EM-DAT
- UN: UNDP, UNISDR (GAR)
- IRDR Loss Data WG
- Insurance industry
- PDNA, DALA

Loss data for DRR: accounting

- Prioritize DRR actions
- Assess effectiveness of DRR

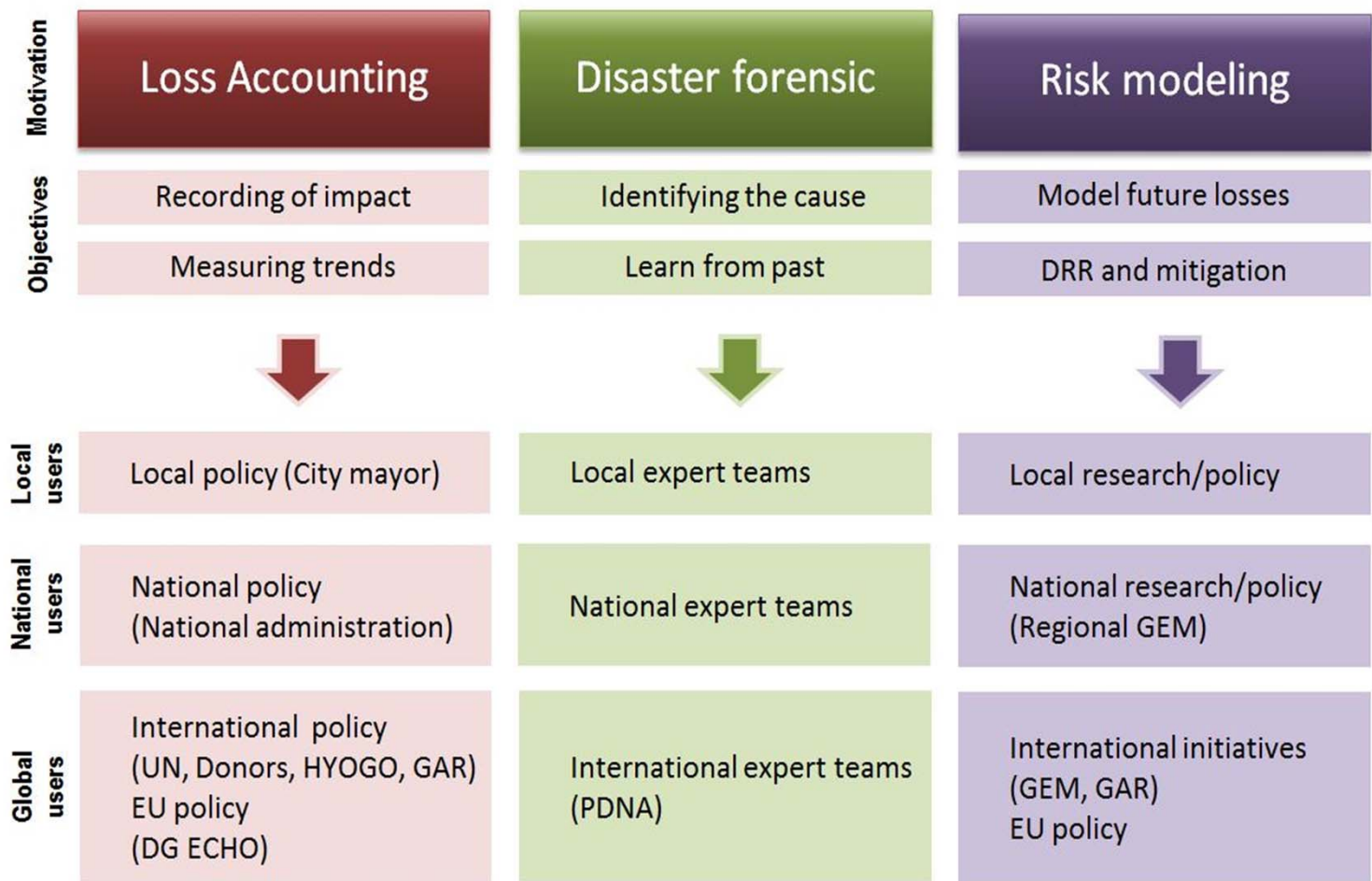
Loss data beyond DRR

- Risk modelling
 - Validation and calibration
- Forensics
 - What went wrong?
- Accounting
 - Risk transfer, Solidarity Fund, etc.

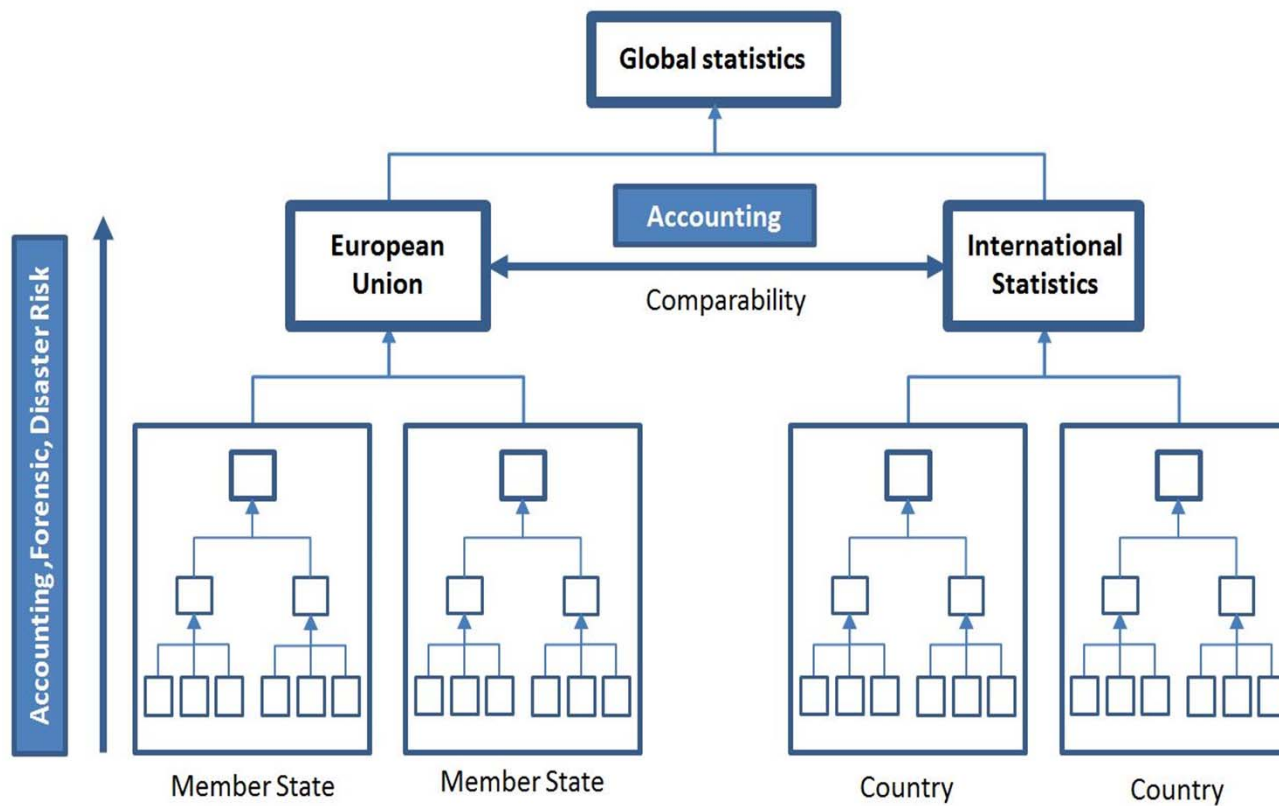
EU Working Group on Loss Data

- Study of Commission: opportunities and challenges in EU context
 - Report of JRC
- EU Working Group
 - Participating beyond EU
 - Joint meetings with IRDR
- Roadmap
 - 2014 State of the art document
 - 2015 Guidelines for EU

Applications: more than accounting



EU: internal processes + interoperability with intl.



Conceptual Model: a tool for establishing a standard

Application Areas

- Accounting
- Forensics
- Risk modelling

Scope of loss databases

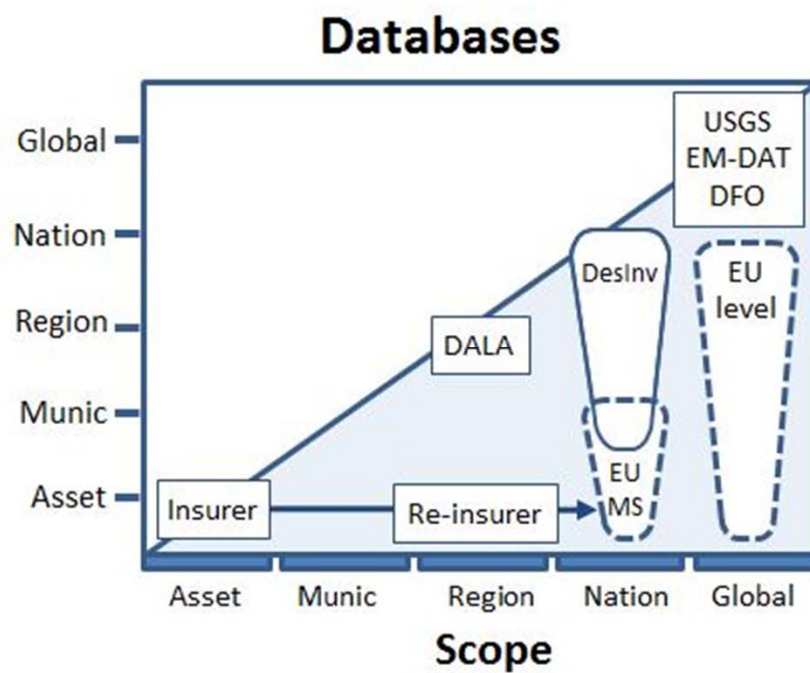
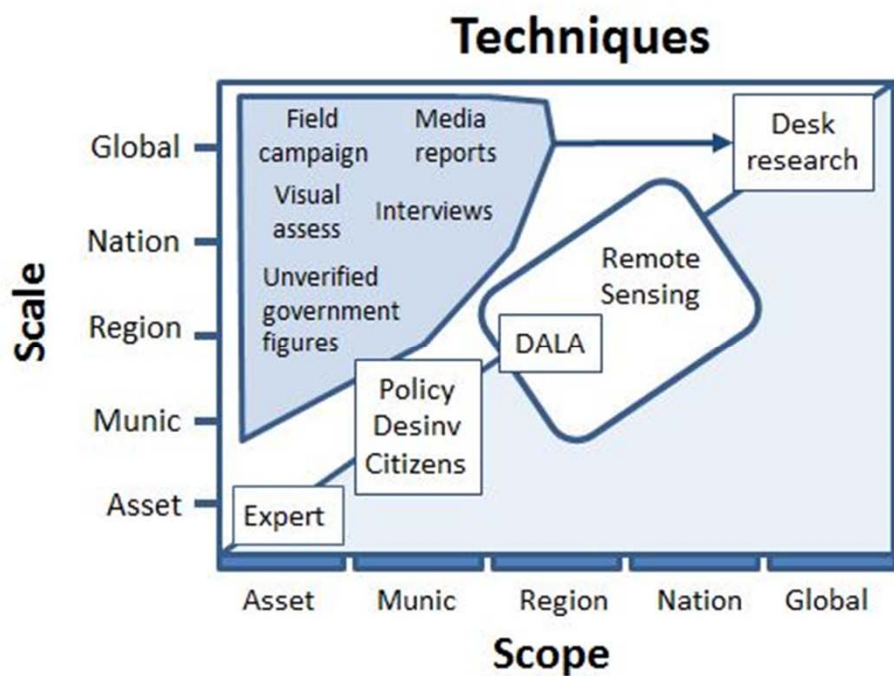
- Local, municipal
- Regional
- National
- Global

Scale of loss assessment

- Local: field campaigns, citizens
- Regional: dedicated orgs, remote sensing
- National: desk research
- Global: desk research, media monitoring

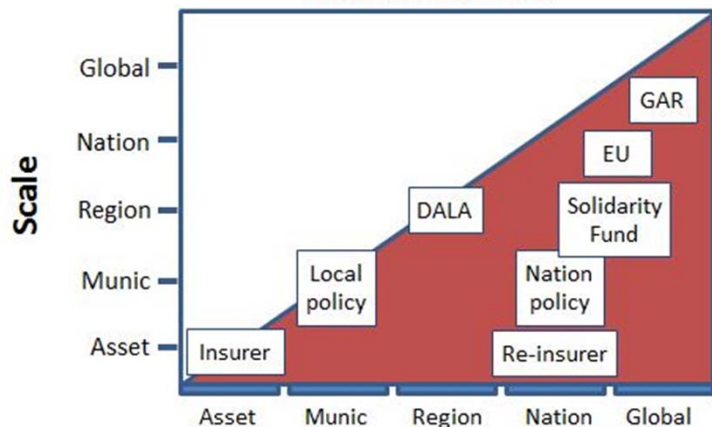
Tool for framing discussion, ambitions, technology and existing work

Scale (precision) and scope (coverage)

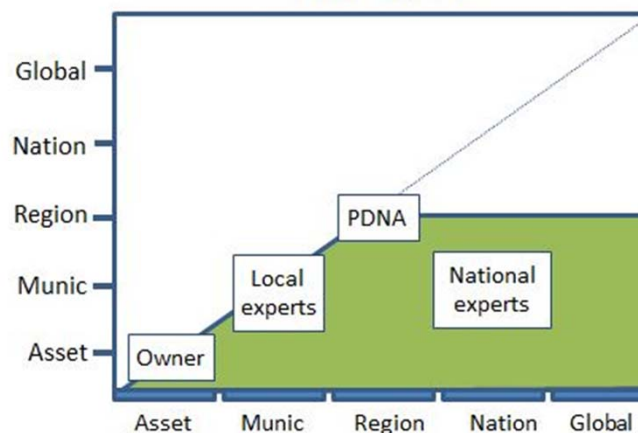


Requirements for application areas

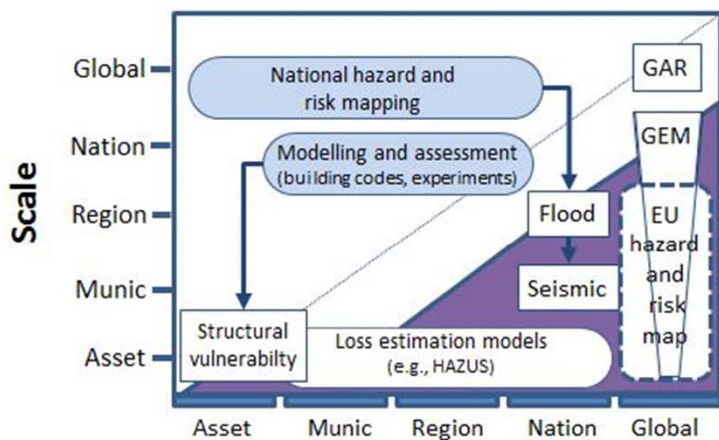
ACCOUNTING



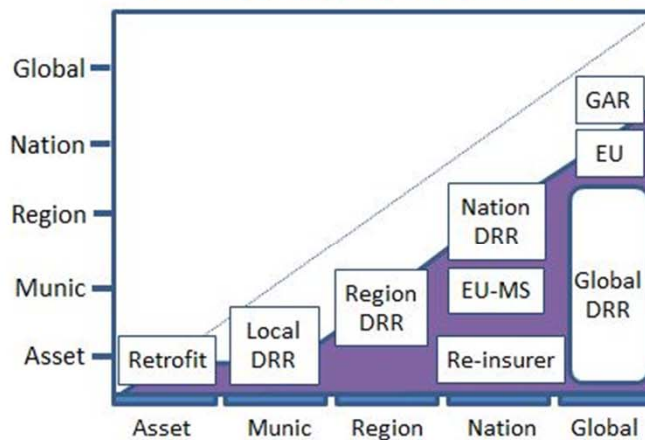
FORENSIC



RISK MODELLING



DISASTER RISK REDUCTION



Technical Standard: essential elements

- Principle: refer to existing relevant standards
- Loss data has three parts
 - Hazard: what caused the loss?
 - Record enough information for aggregation + linking to specialized db
 - Affected element: what was affected?
 - Must be developed strongly for most application areas → difficult
 - Loss: what is the damage and/or the loss?
 - Damage versus loss
 - Dimensions: Sectorial, Loss-bearer, Time/space

Standard

Data element		Standards or best practices to be considered			
Hazard event identification	Geographical information	Country code (ISO 3166-1 alpha-3 specification) Minimal spatial unit (NUTS classification - LAU2 level) Coordinates (latitude, longitude) of point or polygon			
	Temporal information	Event date and time: UTC time (h) Period: start date (dd/mm/yyyy) - end date (dd/mm/yyyy)			
	Hazard event classification	INSPIRE - HazardCategoryValue EM-DAT disaster classification			
	Event type specific attributes	Small set of severity indicators (e.g. like in GDACS) for search purposes			
	Hazard event identification number	Modified GLIDE number, used to link to more detailed hazard databases			
Affected elements	Georeferenced exposed element	Country code (ISO 3166-1 alpha-3 specification) Minimal spatial unit (LAU2) Coordinates (latitude, longitude)			
	Characteristics	General Hazard dependent			
Loss indicators describing damage/loss of exposed elements	Name of data field	Damage/loss category			
	Value of data field	Value Physical unit			
	Time stamps	Date (dd/mm/yyyy) of entry and Date of measurement and validation options for time dependent fields			
	Source and source type	Types: Official emergency management institutions, Academic and Scientific institutions, Media releases			
	Uncertainty	Methodology to describe uncertainty (statistical, interval, estimate, etc.) Reliability of sources (different priorities, different information)			

Loss/Damage categories	Tangible		Intangible
Direct damage to exposed elements	Physical damage to property	People directly affected	Cultural heritage Natural environment
Indirect loss/damage	Loss of flow	People indirectly affected	Loss of future usage (agriculture, forestry, tourism, ...)
Total loss/damage	Economic loss	Affected people	Economic loss/number-size of assets
Common denominator	Monetary value	Number of persons	-

Standard: aggregation

Asset level
exposed elements: individual assets [physical units]
buildings (non/residential) content/equipment products/stock/inventory civil work landscape

Municipality level			
	Sectorial (based on ECLAC)	affected elements [No/size of assets]	Sectorial (based on Solidarity Fund art.3)
social sector	residential education/ research culture/ recreation health sector public administration	building content/ equipment vehicles landscape	A) for immediate restoration to working conditions: (1) energy (2) water and waste water (3) telecoms (4) transport (5) health (6) education
infrastructure	energy drinking water and sanitation transport communications	building/civil work content	B) (1) temporary accommodation (2) rescue services
economic sectors	agriculture, forestry trade and industry tourism	building content/ equipment stock/crop vehicles landscape	C) (1) preventive infrastructures, (2) immediate protection of cultural heritage
other	clean-up cost emergency relief costs		D) Immediate cleaning up of disaster stricken area/natural zones.

Standard: damage to loss

DIRECT LOSSES + INDIRECT LOSSES = TOTAL LOSSES

Direct tangible losses		
Municipality/regional/national level		
Sectorial (based on ECLAC and Solidarity Fund art.3)	Affected elements	Who bears the loss (based on USA framework) [monetary value]
Residential education/research culture/recreation health sector public administration	building content/equipment vehicles landscape	insurer individual business government
Energy drinking water and sanitation transport communications	building/civil work content landscape	
agriculture, forestry trade and industry tourism	building content/equipment stock/crop vehicles landscape	
clean-up cost emergency relief costs		

Indirect losses	
Municipality/regional/national level	
Sectorial (based on ECLAC)	Who bears the loss (based on USA framework) [monetary value]
residential education/research culture/recreation health sector public administration	insurer individual business government
energy drinking water and sanitation transport communications	
agriculture, forestry trade and industry tourism	



Standard: sharing data

- Sharing principles based on INSPIRE
- Vision
 - standard data model, encompassing local to global scales
 - Implementation of sub-components, depending on scale/scope
- EU level
 - MS: have own system, or can use standard implementation (JRC)
 - Aggregation of MS data at EU level
 - Quality control to avoid bias

Implementation scenarios in existing MS contexts

	Scenario Local	Scenario Regional	Scenario Hazard/Sector
Mandated organisation	Local civil protection	National / Regional loss assessment centres	Hazard specific or sectorial national authorities
Strengths	Real time, Local, Citizens involved	Consistency, Complex assessments	Consistency, Hazard data / sector data
Weaknesses	Change of procedures	Not complete data, New centres needed, Citizens not involved	Training for loss, Bias towards hazard/sector, Citizens not involved
Cost	Low	Medium	Medium
Benefit	High	Medium	High
Loss accounting	High utility	Medium utility	High utility
Forensics	Medium utility	Medium utility	Low utility
Risk modelling	High utility	Low utility	High utility

Conclusions

Working group for recording loss database provide

- a technical framework of the conceptual model
- different levels at which a standard can be developed
- guidance to Member states for implementation,
- harmonisation of the loss data at international level
- sharing principles