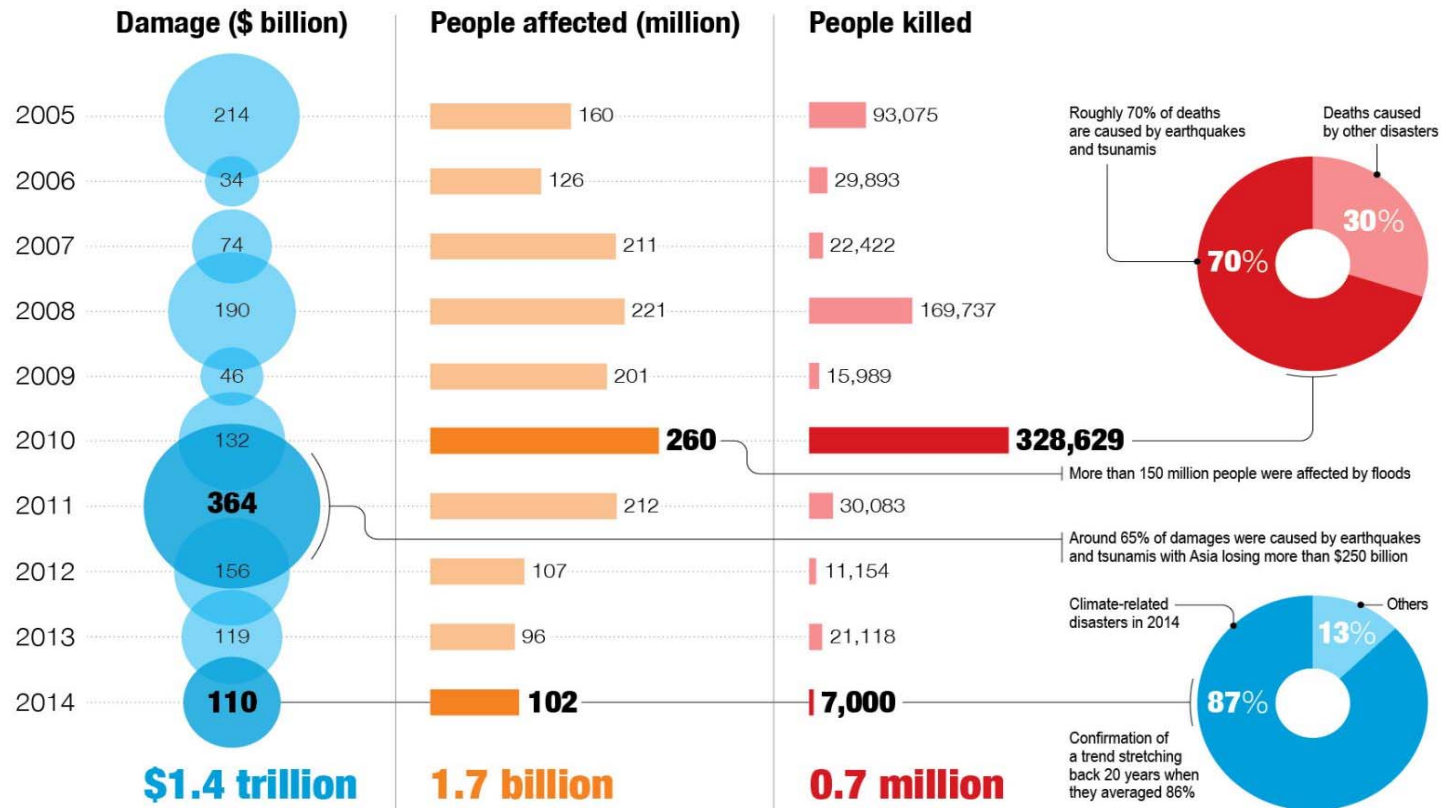




The role of Telecommunications/ICTs in Disaster Management



Disaster Impacts 2005 - 2014



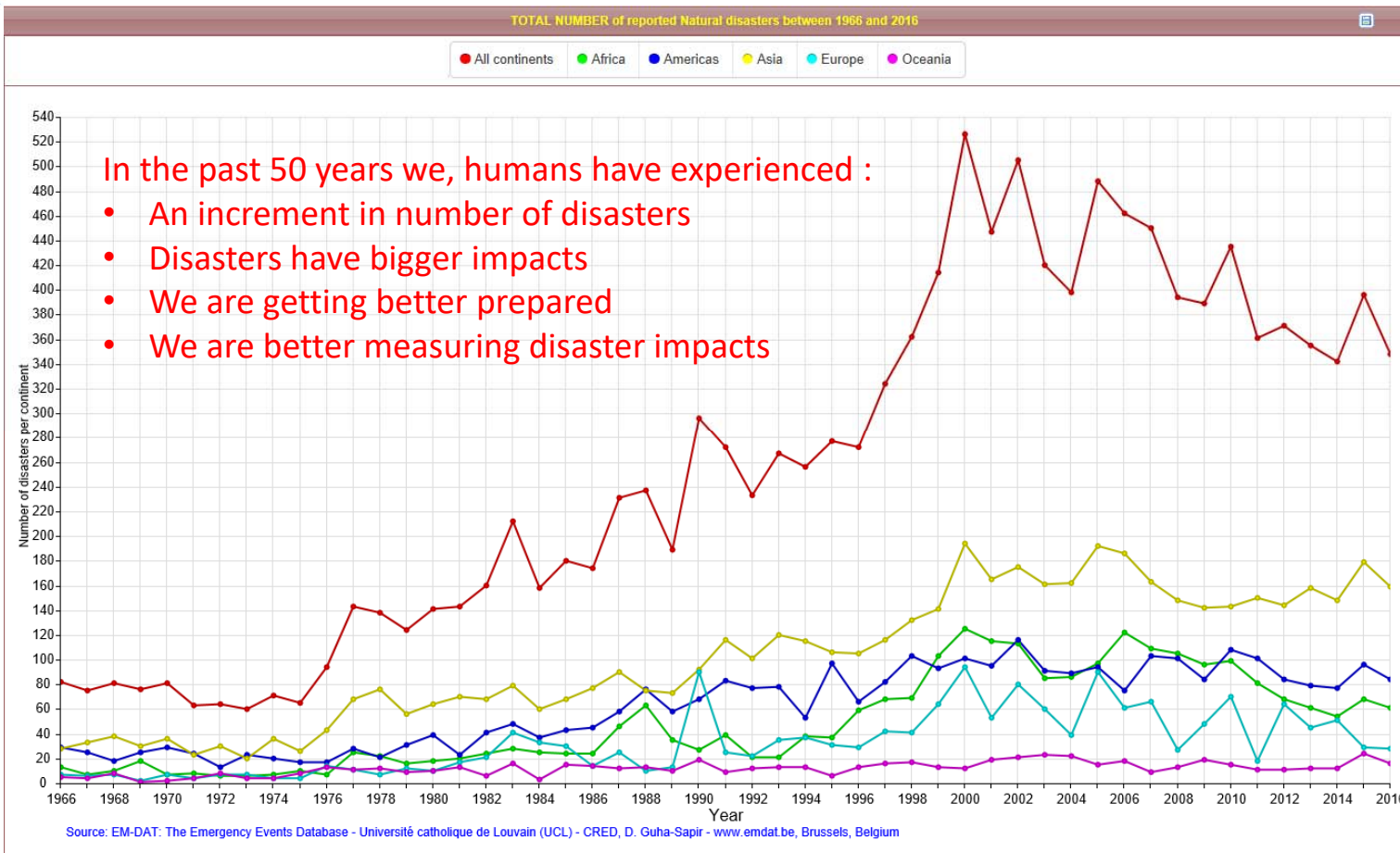
Source: UNISDR



Number of Natural Disasters (1966-2016)

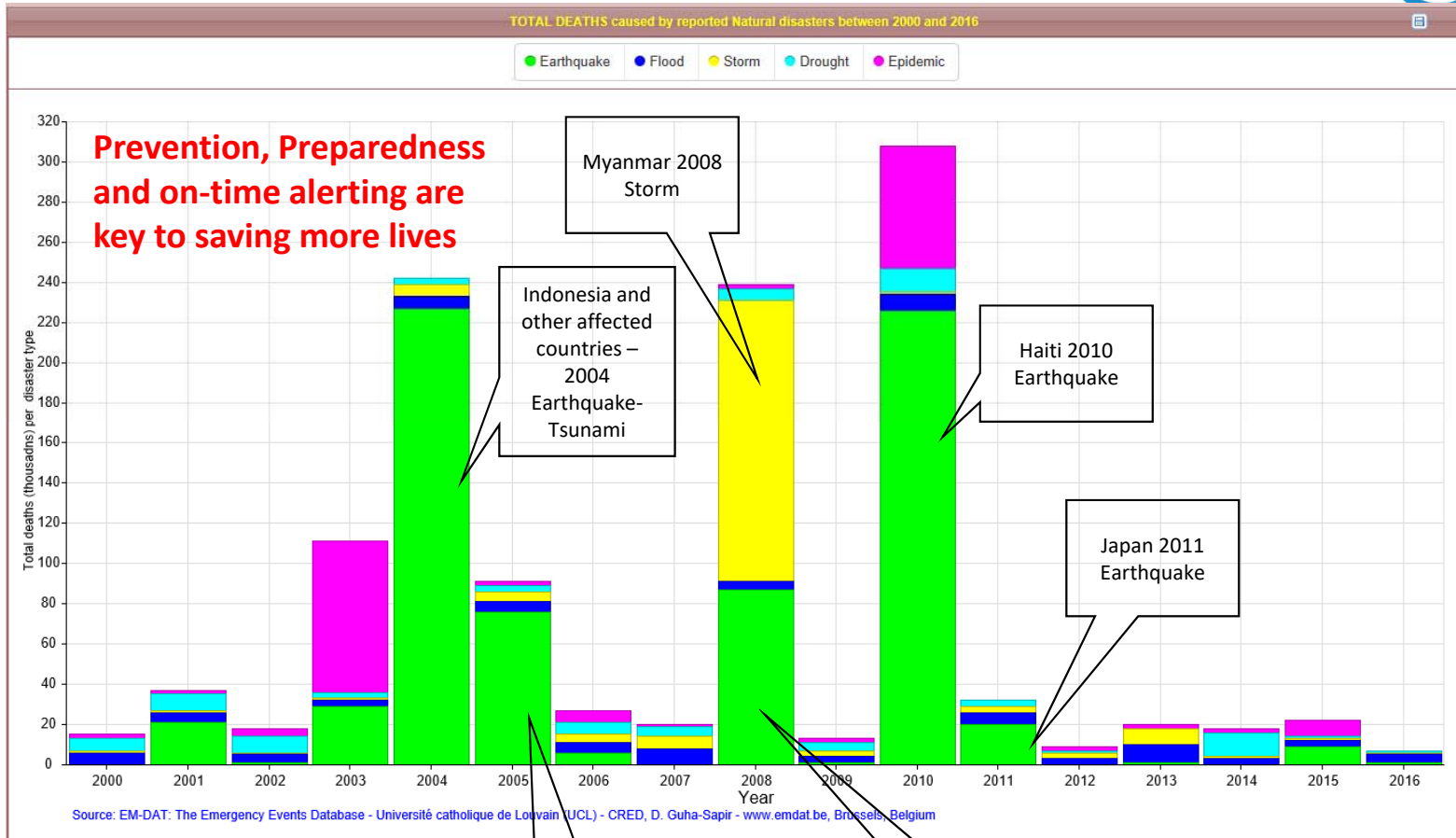


9-20 October





Lost Lives (2000-2016)



Even the most resilient nations face large human and economic losses

Pakistan 2005 Earthquake

China 2008 Earthquake



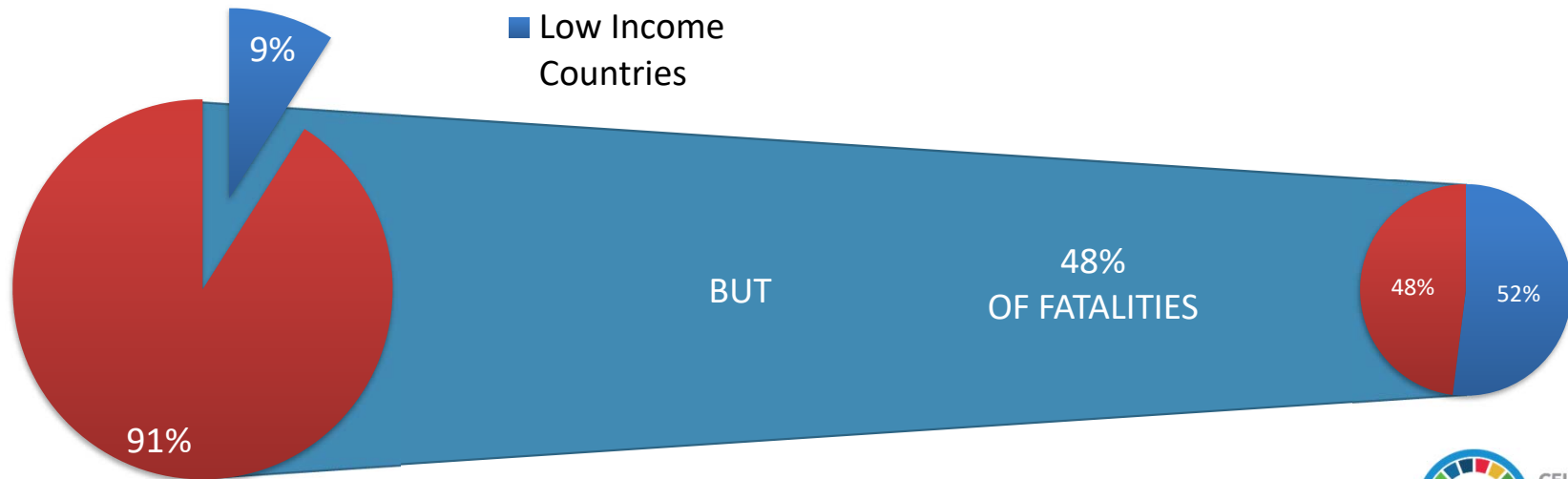


DISASTERS AFFECT EVERYONE



but they impact poor and vulnerable the most

LOW INCOME COUNTRIES ACCOUNT ONLY FOR 9% OF THE WORLDS DISASTERS ...

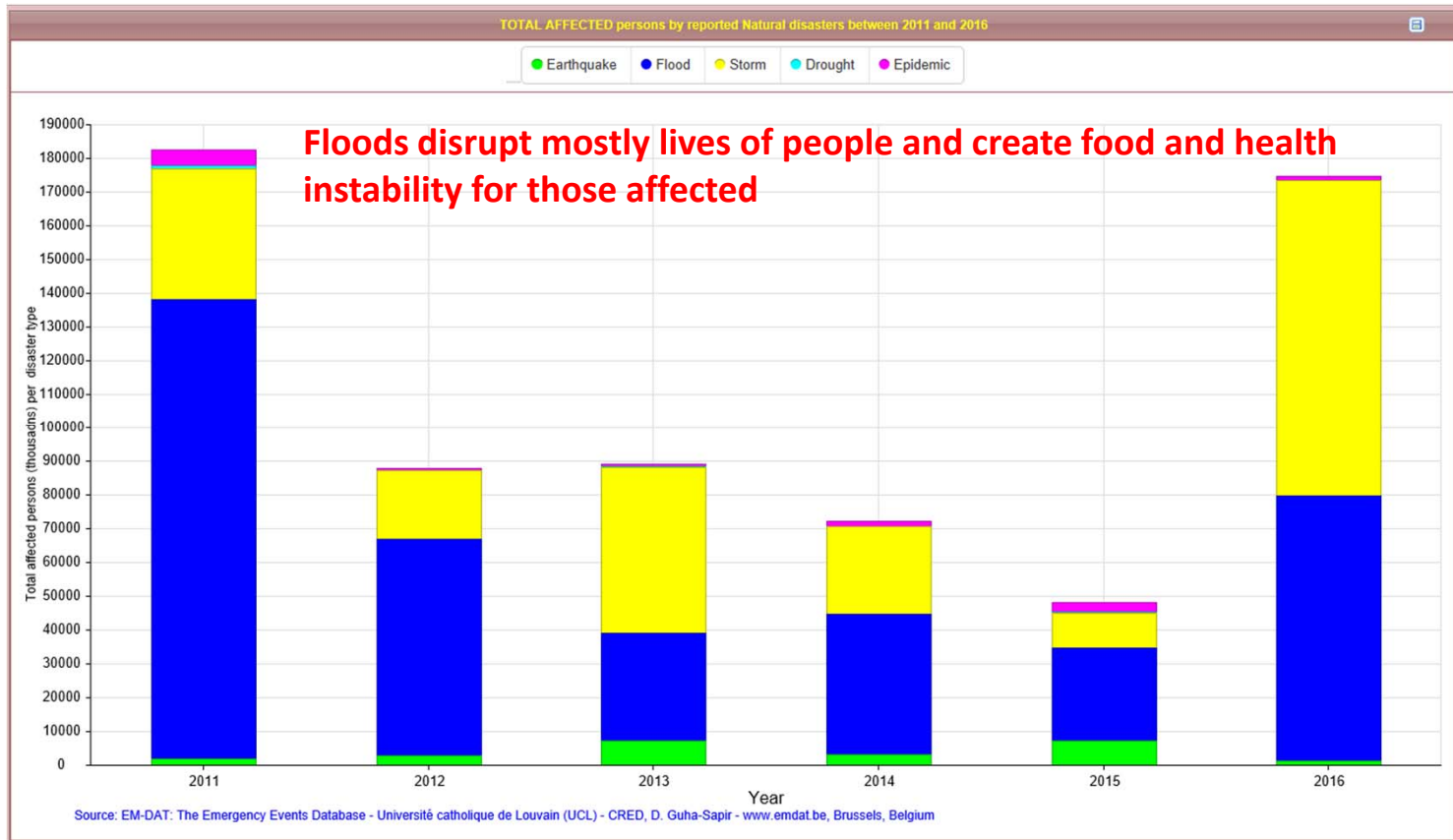


Source: WB, <http://siteresources.worldbank.org/EXTSDNET/Resources/Sendai-Brochure-Map2.pdf>



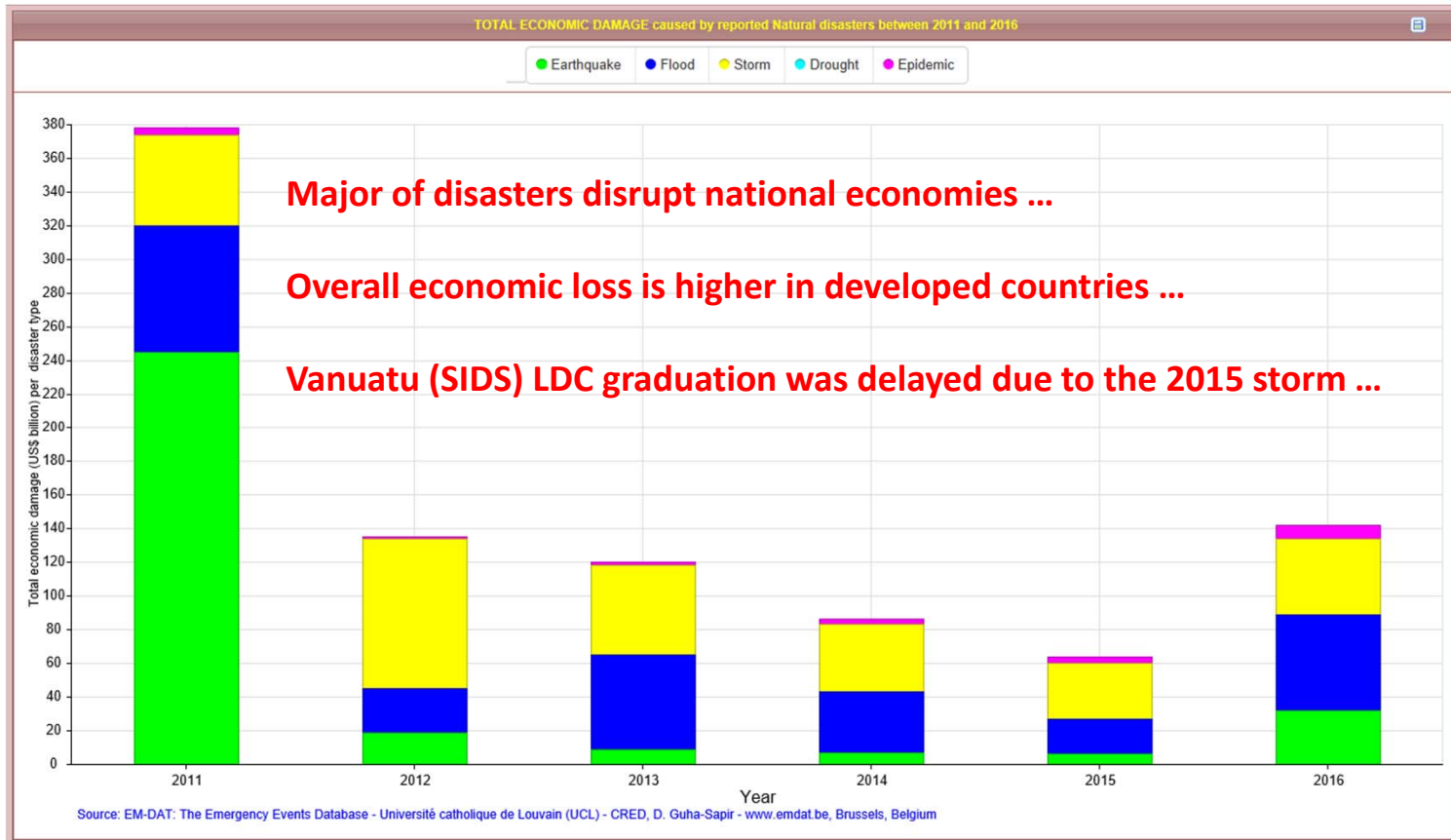


Affected Population (2011-2016)



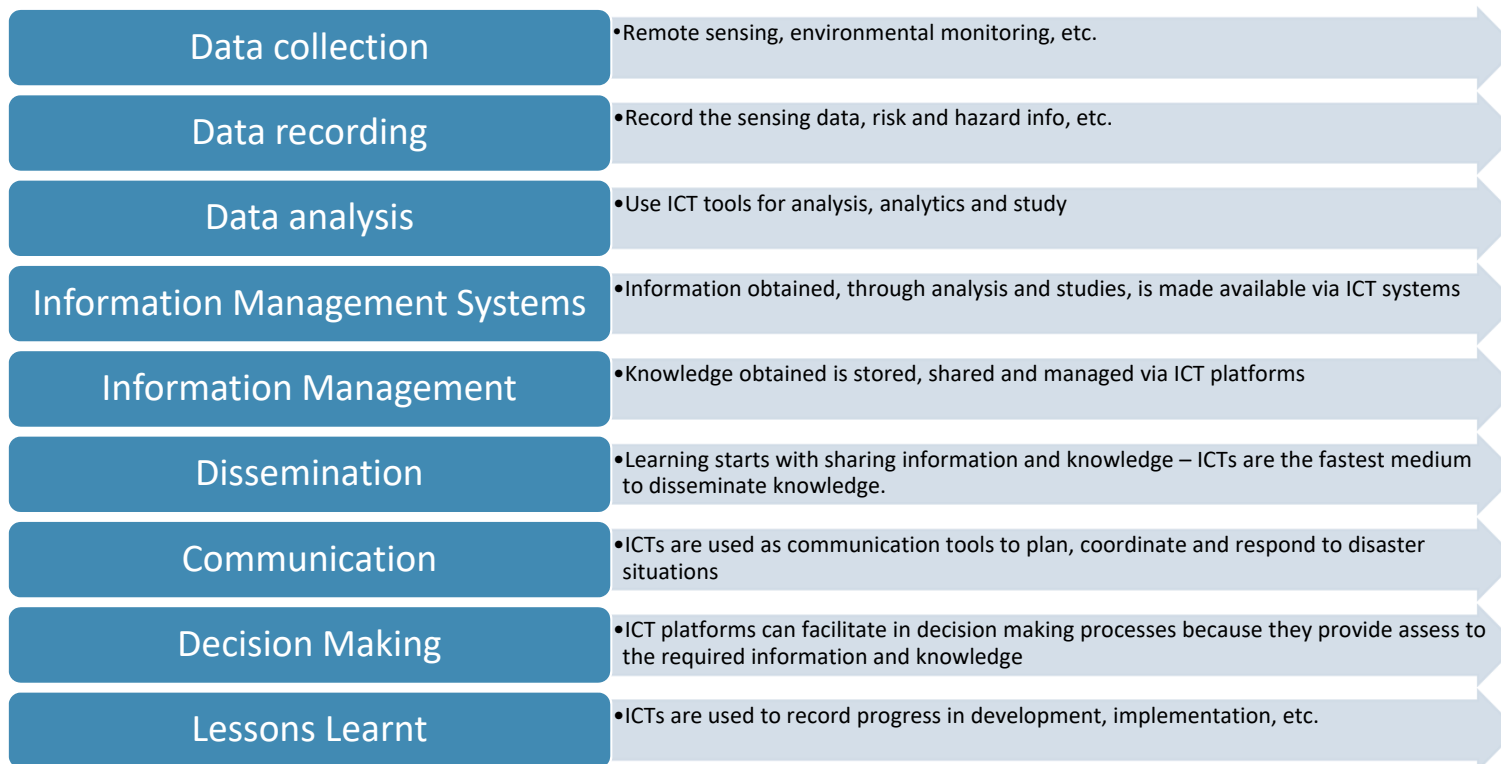


Economic Losses (2011-2016)



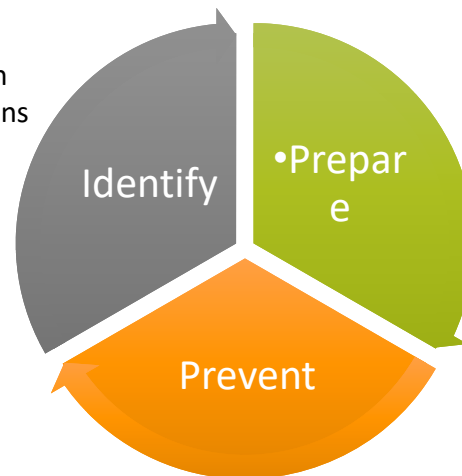


Use of Telecommunications/ICTs in DM



Uses of Information Systems in DRR

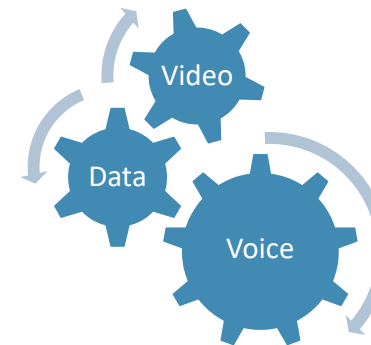
- Various databases and systems for information on mitigation strategies, policies and legislations
- Knowledge management solutions on best practices and lessons learnt.
- Hazard mapping
- Risks and vulnerability management systems



- Databases of human and institutional resources for emergency response
- Databases of skills and capacities
- Preparedness plans for response and recovery
- Information systems to manage, communicate and disseminate information to assist nation in preparedness and response



- Various databases and systems for information on mitigation strategies, policies and legislations
- Knowledge management solutions on best practices and lessons learnt
- Building code management, etc.





Prevention

Use of ICTs for:

- Development of plans for risk avoidance and minimizing disaster impacts on human lives and economy
- Establishing national social, demographic and economic profiles
- Land, water and environment management plans
- Maintaining network coverage information services
- Map hazards, vulnerabilities and record high-risk zones
- Geological and hydro-meteorological current and historical information
- Risk assessment and management
- Awareness creation, etc



Preparedness

Use of ICTs for:

- Mapping hazards and vulnerabilities as well as high-risk zones and population at risk
- Sharing information on hazard profiles for better decision making
- Communicating information on locations of shelters and critical infrastructure damage prevention plans
- Maintain information on access to telecommunication and electricity services
- Recording information on equipment, emergency personnel and volunteers for disaster response
- Establishing national multi-hazard early warning and alerting platforms
- Implementation and monitoring of NAMA, NAPA, NEP or NETP

NAMA - Nationally Appropriate Mitigation Actions
NAPA - National Adaptation Programme of Action

NEP – National Emergency Plan
NETP - National Emergency Telecommunication Plan



Response

Use of ICTs for:

- Sharing information on network and services availability
- Geospatial information on the disaster event: “Where is it? What is in the area? How do we get there?”
- Situational awareness and updates: affected communities, needs for rescue, roads repairs, shelter, etc.
- Connecting - families and friends platforms
- Enabling call-centers for affected citizens



Recovery

Use of ICTs for:

- Damage and needs assessment
- Infrastructure reconstruction
- Risk assessment and management
- Communication and coordination



Prevention



Concrete Uses of ICTs in Emergencies





Use of Mobile and Satellite Services in DM

Satellite Services

In 2004, Banda Aceh, Indonesia, Red Cross volunteers helped reunite more than 3,400 tsunami survivors with their families often using satellite phones.

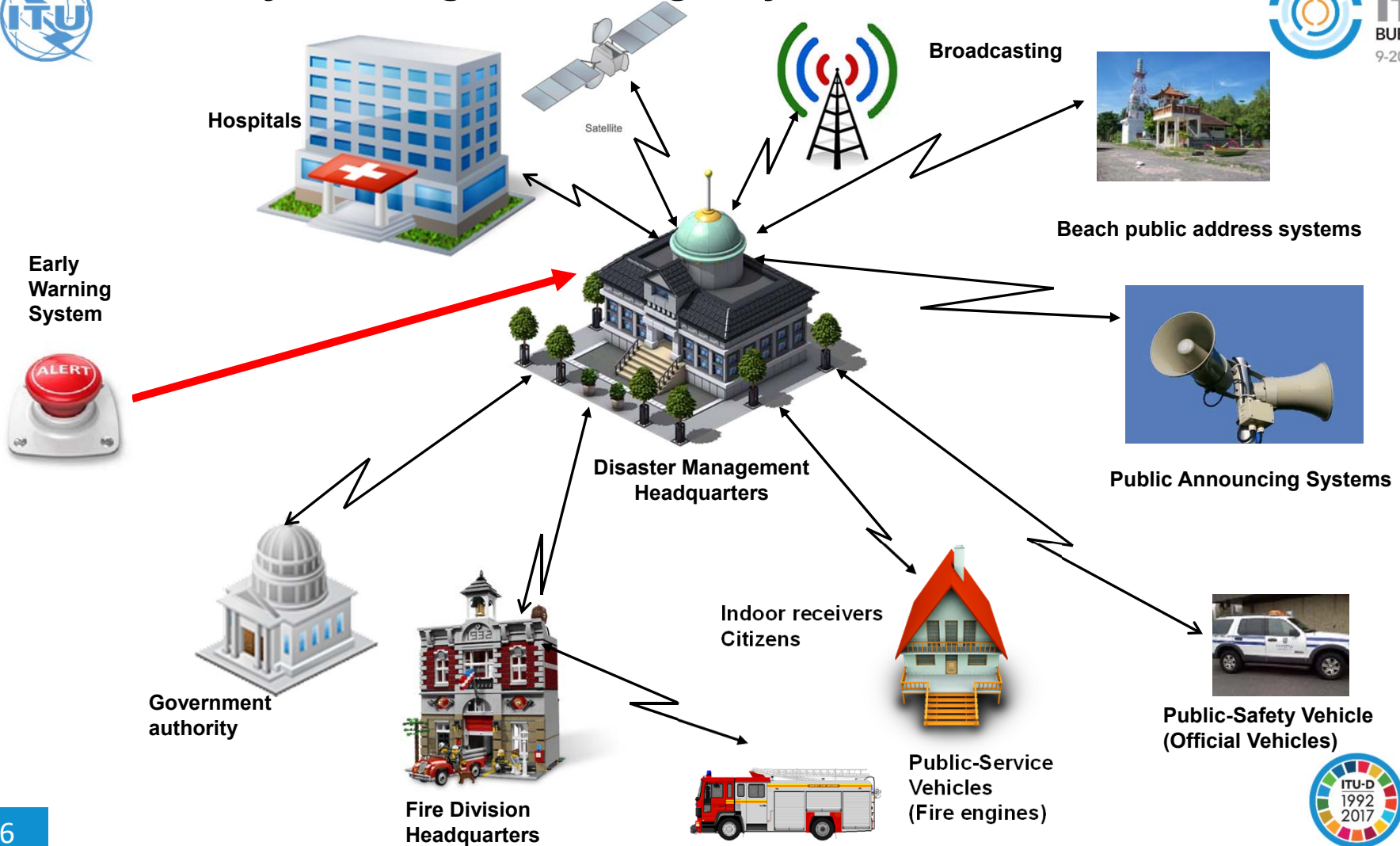


Mobile Services

Project 4636 was established in Haiti after the 2010 earthquake to meet the needs of the affected population through the use of Short Message Service (SMS). People were able to send SMS messages about their situation and needs to the short code “4636”, which Digicel, one of Haiti’s major mobile phone providers, made available to the public for free. Through collaboration among numerous governmental and non-governmental organizations and the use of data standards, these messages were forwarded to the Haitian diaspora living in the USA who then translated and added location specifics before routing this information to relevant response organizations to provide assistance.



Early Warning and Emergency Telecommunication





Earth Observation



Japan - 2011

Social Media Use for Disaster Management



In 2010, **Philippines** authorities have praised social media sites like Facebook and Twitter with keeping the number of deaths caused by Typhoon Megi to only 10. Thousands of people were persuaded to move to safer places or take precautionary measures before Megi struck on 18 October 2010.

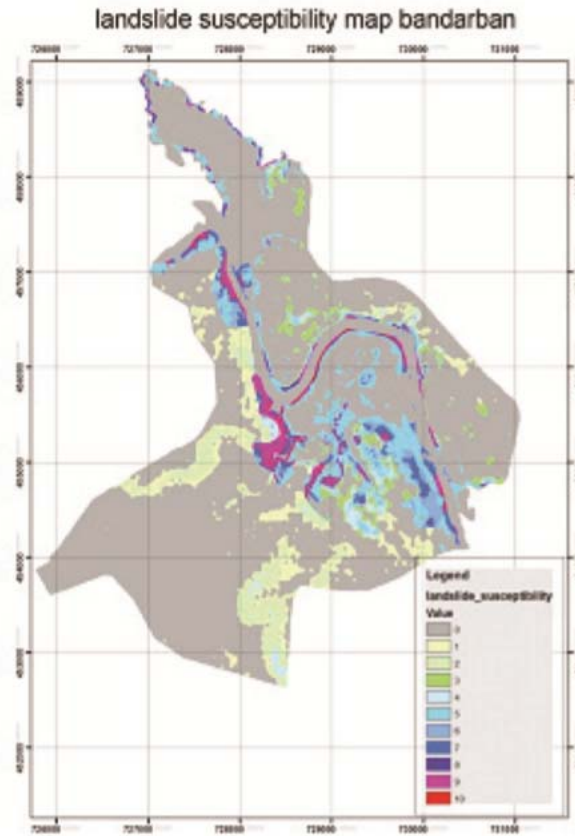
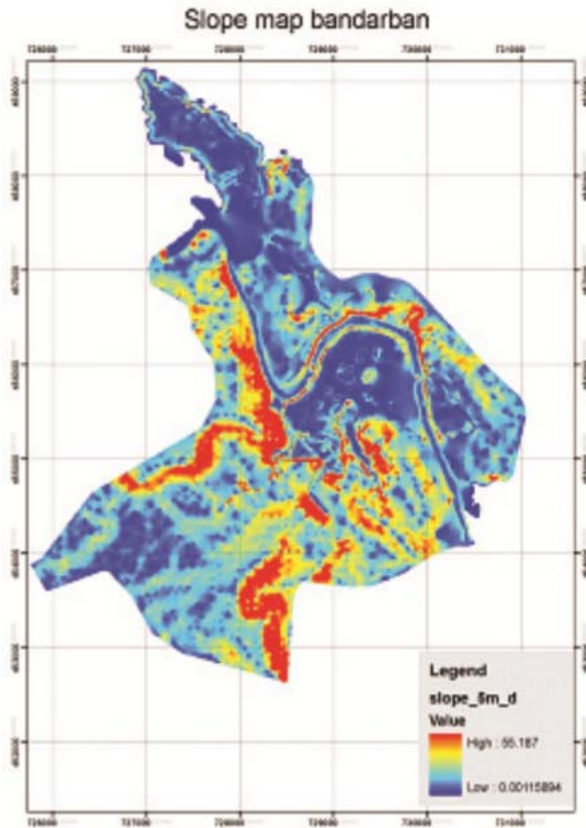
Fiji – National Disaster Management Office uses Facebook to communicate with their stakeholders and community. Information on activities and plans are shared.

And many **others use social media for various phases of disaster management**

Source: "In Brief: Social media network helps prevent disaster," IRIN News, 19 October 2010, <http://www.irinnews.org/Report.aspx?ReportID=90821>



Hazard Mapping – GIS Use



Source: Maps courtesy of ADPC.



CASE STUDY - MALAYSIA

STORMWATER MANAGEMENT AND ROAD TUNNEL (SMART)



STORMWATER MANAGEMENT AND ROAD TUNNEL (SMART)



OVERVIEW

Providing a solution to some of Kuala Lumpur's biggest flash flood problems, the Stormwater Management and Road Tunnel project or SMART has also provided a relief to traffic congestions, providing an alternative route going in and out of the city and significantly contributing to the economic growth of financial district.

The SMART project had also started a trend for tunneling in Malaysia, elevating the level of expertise of local civil engineers and advancing the capabilities of the tunneling industry as a whole.



OVERVIEW - SMARTunnel

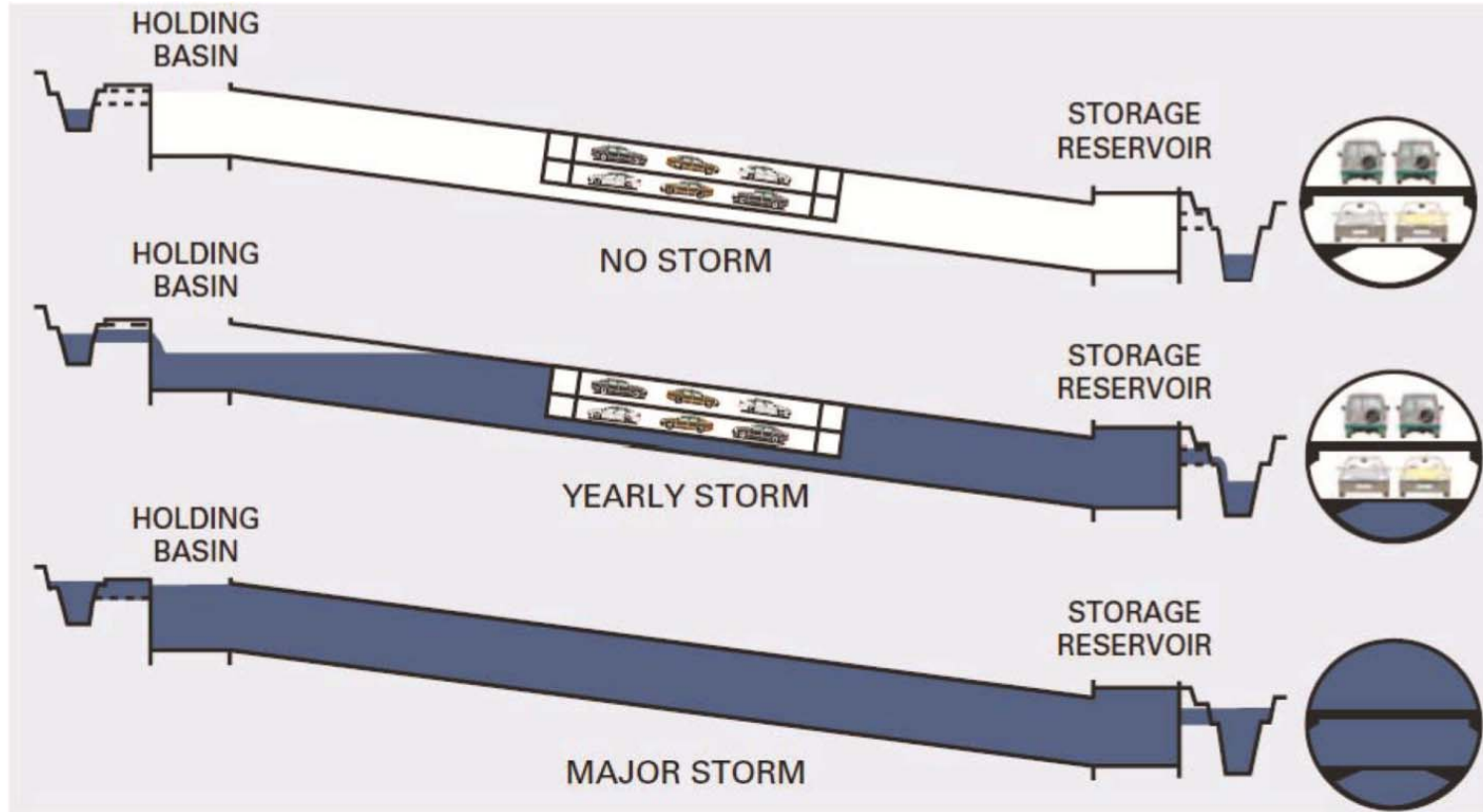
Malaysia, Kuala Lumpur's Stormwater Management and Road Tunnel (SMART) diverts potential floodwater away from the city's financial district through a **9.7 km long tunnel**. The system is a combination of barriers, flood gates and holding ponds. The unique aspect of this flood mitigation project is that it has a traffic bypass tunnel in the middle third section that has two traffic decks, each connected to flood gates that control the amount of water entering the road tunnel. As the volume of water that needs to pass through the tunnel increases, the road tunnels are closed one at a time, and water is allowed to flow in. A sophisticated Flood Detection System is installed to provide adequate warning time to evacuate traffic in the tunnel, to minimize traffic disruption, and operate tunnel floodgates. It is composed of a network of automatic and complex ICT systems that record rain estimates, river flow/level estimating stations, real-time telemetry and control operating system, and an ICT system that runs set of hydrological and hydraulic forecast models to make better decisions.



Source: https://en.wikipedia.org/wiki/SMART_Tunnel



Three Modes of Operation – SMART



Source: World Bank

Slide 22

GV15 I would delete this slide
Gray, Vanessa, 8/24/2017

Drones – Eyes from above



PrecisionHawk's Lancaster

In Disaster Management Drones are mostly used for:




- Situation Awareness, Reconnaissance, Surveillance
- Structural Inspection
- Search and Rescue
- Initial Damage Estimation

Drones for Disaster Management must be a complete solution, having:

- Data capturing, storage and processing
- Easy to fly, drive or dive
- Real time view with ability to direct, zoom, etc.



Big Data for development: preventing the spread of epidemics

SIERRA LEONE	REPUBLIC OF LIBERIA	RÉPUBLIQUE DE GUINÉE
<p>Call Detail Record (CDR) ANALYSIS : SIERRA LEONE</p> <p>Final Report</p>  <p>Telecommunication Development Sector</p> 	<p>Call Detail Record (CDR) ANALYSIS : REPUBLIC OF LIBERIA</p> <p>Final Report</p>  <p>Telecommunication Development Sector</p> 	<p>A N A L Y S E des relevés détaillés des communications (CDR): RÉPUBLIQUE DE GUINÉE</p> <p>Rapport final</p>  <p>Secteur du développement des télécommunications</p> 



Challenges

- National capacities to analyze data and high resolution satellite images
- Access to raw data/ data sharing/ interoperability of data
- Lack of national GIS data infrastructures
- Limited of access to high resolution satellite imageries
- Missing national, district and/or local level risk assessments
- National Emergency Communication Coordination





Opportunities

- Establish partnerships with earth observation data providers
- Build national capacity to use earth observation data
- Implement open data access policy for research and development
- Implement national GIS data infrastructure and risk information systems
- Establish knowledge management systems to manage all disaster data
- Establish partnerships with international partners
- Improve coordination on emergency telecommunication





THANK YOU

