

INSTITUTIONAL ARRANGEMENTS AND SPATIAL INFORMATION INITIATIVES FOR DISASTER MANAGEMENT IN INTERNATIONAL ORGANIZATIONS

Compendium

2018

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EXECUTIVE SUMMARY

The compendium will serve as an information reference and resource tool, for students, researchers, scientists and other users, on the institutional arrangements and spatial information initiatives for disaster management in international, regional or national organizations of international repute and reach. Further, it discuss the key points about these aspects.

A number of organizations are working on various aspects of disaster management as per their mandate. As the sheer number, geographic scale and mandate of these organizations is quite huge, it is not easy for individual/s to know which sub-organization or department of an organization is working on disaster management and with what kind of focus. Currently, there is a lack of comprehensive information booklet available on such institutional arrangements. Subsequently, it is much more difficult to know in a comprehensive manner whether spatial information is provided by such institutions on disaster management.

The purpose of this compendium is to address this need and thus fill the gap. The information has been provided in a comprehensive and overview manner for the UN system which has the largest network of organizations working on disaster management. Similarly, World Bank, European Union, ASEAN, SAARC and other regional and national agencies of international scope and repute have been included in the present document.

The institutional arrangements and the initiatives for information presentation in spatial format by such institutions, presented in this compendium, provide practical and concrete examples of international, regional and national actors actively engaged in context of disaster management. We hope that knowledge about such institutions and the spatial presentation of information they use or disseminate, will increase the understanding and awareness of the linkages between various aspects of disaster management and its socio-economic-environmental impacts.

Moreover, users of this compendium can follow-up with the various actors who are implementing programmes on disaster management, thus promoting the interaction with groups and organizations working in the fields of human rights, conflict management, socio-economic and environment management. The compendium defines the term “disaster management” broadly, to include disaster risk reduction, prevention, mitigation, preparedness, resilience, response, reconstruction, rehabilitation and recovery.

INTRODUCTION

World is facing increasing intensity of disasters, natural or anthropogenic, which could lead to the significant loss of human lives, economy and environment. The increased urbanization, without proper planning or assessing the potential scale of disasters occurring, is making such catastrophic events more disastrous. Many international organizations are involved in disaster management on regional or global scale such as United Nations (UN), World Bank (WB), European Union (EU), The International Federation of Red Cross and Red Crescent Societies (IFRC), South Asian Association for Regional Cooperation (SAARC) etc. It is essential that organizations involved in disaster management should have the proper information for potential assessment of disaster event allowing proper planning for increasing the resilience of such areas or to perform relief activities in the most vulnerable areas. Disaster Management by international organizations include early warning systems as well as disaster relief and recovery operations. This inevitably calls information technologies to play a vital role in the effectiveness of the system.

Disaster Management requires an understanding of area demography, settlements, terrain, landcover, weather, natural resources, population density, infrastructure availability etc. Spatial information is essential to capture the spatial heterogeneity of the parameter values. With the advancement of Geographical Information System (GIS) and Remote Sensing technologies, the digital mapping has become a global norm for different applications. Disaster Management is one of such applications.

OBJECTIVE

The objective is to provide a comprehensive review on institutional arrangements and spatial information initiatives for disaster management by organizations of international scope.

INSTITUTIONAL ARRANGEMENTS AND SPATIAL INFORMATION

With the increasing intensity of disasters, global awareness towards disasters has increased. This has led to several institutional arrangements as a response by the national and international organizations. With different focus aspects of early warning, prevention, risk reduction, preparedness relief, recovery, resilience etc., these arrangements have a common goal and that is the disaster or crisis management. Information collection, analyses and dissemination is a part of the activities of most of these organizations. With the advancement in spatial science based technologies, presenting the information in spatial formats has become a common practice which adds locational value to the presented information. Many organizations involved in disaster management have taken initiatives to present the information. Many portals and websites perform this purpose on different geographic scales.

UNITED NATIONS

UN Resolutions¹

A general framework was created for humanitarian emergency efforts of United Nations, in the form of UN General Assembly Resolution No A/RES/46/182 dated 19 December, 1991. This intergovernmental legislative framework has expanded since its adoption in 1992 which reflects the broadening the humanitarian attempt and response of UN towards changes in environment.

The General Assembly (GA) adopted its first major resolution A/RES/54/219 on disaster risk reduction (DRR) in 1999. Further, more resolutions were adopted by the GA, which are as follows:

- A/RES/61/200 dated 16 February 2007 Natural disasters and vulnerability
- A/RES/60/196 dated 2 March 2006 Natural disasters and vulnerability
- A/RES/59/232 dated 22 February 2005 International cooperation to reduce the impact of the El Nio phenomenon
- A/RES/58/214 dated 23 December 2003 International Strategy for Disaster Reduction
- A/RES/58/215 dated 23 December 2003 Natural disasters and vulnerability
- A/RES/56/195 dated 21 December 2001 International Strategy for Disaster Reduction

Hyogo Framework²

The World Conference on Disaster Reduction was held from 18 to 22 January 2005 in Kobe, Hyogo, Japan, and adopted the present Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters (here after referred to as the “Framework for Action”). The Conference provided a unique opportunity to promote a strategic and systematic approach to reducing vulnerabilities and risks to hazards. It underscored the need for, and identified ways of, building the resilience of nations and communities to disasters.

Sendai Framework³

The General Assembly, Recalling its resolution 67/209 of 21 December 2012, in which it decided to convene, in early 2015, the Third World Conference on Disaster Risk Reduction, as well as its resolutions 68/211 of 20 December 2013 and 69/219 of 19 December 2014 and its decision 69/556 of 5 March 2015, 1. Expresses its profound gratitude to the Government and the people of Japan for hosting the Third United Nations World Conference on Disaster Risk Reduction, from 14 to 18 March 2015, and for providing all the necessary support; 2. Endorses

¹ South Asian Disaster Knowledge Network, 2014; Website: http://saarc-sadkn.org/un_resolution.aspx

² UNISDR, Preamble, Hyogo Framework for Action 2005-2015*, Building the Resilience of Nations and Communities to Disasters, World Conference on Disaster Reduction 18-22 January 2005, Kobe, Hyogo, Japan, *Extract from the final report of the World Conference on Disaster Reduction (A/CONF.206/6)

³ United Nations, 2015; A/RES/69/283. Sendai Framework for Disaster Risk Reduction 2015–2030, Resolution adopted by the General Assembly on 3 June 2015 [without reference to a Main Committee (A/69/L.67)], Sixty-Ninth Session, Agenda item 19 (c)

the Sendai Declaration and the Sendai Framework for Disaster Risk Reduction 2015–2030 adopted by the Conference, which are contained in annexes I and II, respectively, to the present resolution. 92nd plenary meeting 3 June 2015.

There are several institutional arrangements and major initiatives under United Nations which work on different aspects of disaster management. The UN contributes to:

- Building national, regional and local/cities capacities for disaster risk reduction in support of development and disaster recovery efforts;
- Undertakes research, produce earth observations on and monitors hazards, exposure and vulnerability;
- Generates weather and seasonal predictions to support preparedness and early warning systems;
- Sets norms, manages awareness campaigns, addresses underlying risk factors, and makes risk informed investments.

Twenty-nine (29) specialized organizations in the UN system contribute with their respective expertise, networks and resources to the reduction of disaster risk and collaborate to deliver as one at the global, regional and country level⁴.

United Nations Plan of Action on Disaster Risk Reduction for Resilience⁵

UN Plan of Action on Disaster Risk Reduction for Resilience has been the guiding framework since 2013 for the UN system support in disaster risk reduction (DRR), largely based on the cumulative efforts of the UN to support the Hyogo Framework for Action. This revised plan, entitled: “UN Plan of Action on Disaster Risk Reduction: Towards a Risk informed and Integrated Approach to Sustainable Development”, has been prepared in light of the new international policy and operational context, in particular, to ensure coherence with respect to climate change risk and the broader 2030 Agenda for Sustainable Development, as well as to address the challenges identified in the reviews of progress.

It provides actions to align with the forthcoming UN system-wide strategic approach to climate change, such as:

- System-wide and joined approaches for integrating disaster risk reduction and climate change adaptation in UN development efforts;
- Coherent approaches in the support by the UN for measuring the loss and damage of disasters and climate change; and,
- Joint monitoring of progress in integrating risk reduction and climate change adaptation in UN operational work.

While the revised plan has a time horizon of 2030, to align itself with the Sendai Framework and the broader 2030 Agenda for Sustainable Development, it also recognizes the need to accelerate support to countries on key priorities by 2020.

⁴ Website: <http://www.unisdr.org/who-we-are/unisdr-in-un>

⁵ United Nations Plan of Action on Disaster Risk Reduction for Resilience: Towards a Risk-informed and Integrated Approach to Sustainable Development, January, 2017, Advanced Version

United Nations International Strategy for Disaster Reduction⁶

The UN General Assembly adopted the International Strategy for Disaster Reduction in December 1999 and established United Nations Office for Disaster Risk Reduction (UNISDR), the secretariat to ensure its implementation. Its mandate was expanded in 2001 to serve as the focal point in the United Nations system to ensure coordination and synergies among disaster risk reduction activities of the United Nations system and regional organizations and activities in socio-economic and humanitarian fields (GA resolution 56/195).

UNISDR works with the wider UN system at headquarters and field levels. Its core areas of work includes ensuring disaster risk reduction is applied to climate change adaptation, increasing investments for DRR, building disaster-resilient cities, schools and hospitals, and strengthening the international system for DRR.

As the UN office for disaster risk reduction, UNISDR supports the implementation, follow-up and review of the Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework) adopted by the Third UN World Conference on Disaster Risk Reduction on 18 March 2015 in Sendai, Japan.

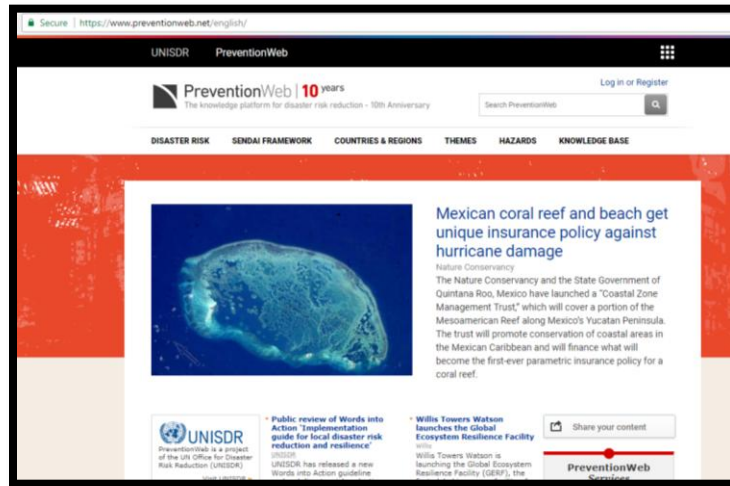
Thirteen (13) UN organizations – Food and Agriculture Organization (FAO), United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), United Nations Population Fund (UNFPA), UN-HABITAT, United Nations Children's Fund (UNICEF), United Nations Office for Project Services (UNOPS), World Food Programme (WFP), World Meteorological Organization (WMO), World Health Organization (WHO), United Nations Educational, Scientific and Cultural Organization (UNESCO), United Nations Volunteers (UNV) and the World Bank - have prioritized disaster risk reduction in their 2014-2017 strategic work plans and included disaster risk reduction in their results-based monitoring frameworks. This represents a 70% increase in comparison with the previous work planning cycle.

Supported by UNISDR, Cameroon, Ecuador, the Former Yugoslav Republic of Macedonia, India, Jordan, Moldova, Nepal, Pakistan, Paraguay, Sri Lanka, Sudan, Togo and Venezuela are among the countries which approved new UN country development frameworks or United Nations Development Assistance Framework (UNDAFs) that reflect disaster risk in development planning. A regional UNDAF with key disaster risk reduction elements was developed in the Pacific, while strong cooperation with UNDP and UN Resident Coordinators enabled UNISDR to strengthen disaster risk reduction implementation in Djibouti, Lebanon, Mauritania and Serbia. In Africa, UNISDR supported the UN Interagency Group in building disaster risk reduction into inter-agency activities.

⁶ Website: <https://www.unisdr.org/>

PreventionWeb⁷

It is a project of UNISDR launched in 2007 to serve the information needs of the disaster risk reduction community. PreventionWeb.net, under United Nations International Strategy for Disaster Reduction (UNISDR), is a collaborative knowledge sharing web platform. Its primary purpose is to facilitate an understanding of the subject of disaster risk reduction (DRR) and the work of professionals in this area by providing current news and views on the topic, and tools for exchange and collaboration.



Under Section ‘Countries and Regions’, it gives a global map and option to choose a country for which disaster related content could be accessed. Global Risk Data Platform, a spatial tool and other external resources including maps could also be accessed.

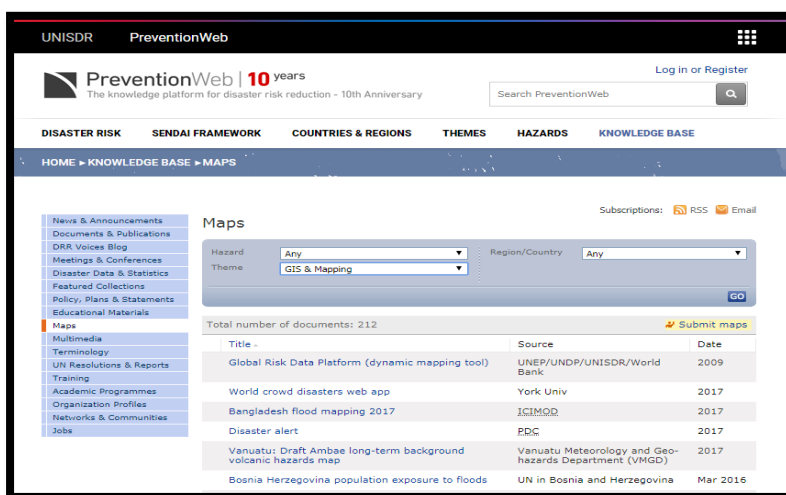


Under Section ‘THEMES’, different sub-sections such as “Early-Warning” and “GIS and Mapping” etc. along with other sections, allow to search information (spatial and non-spatial) for

⁷ Website: <https://www.preventionweb.net>

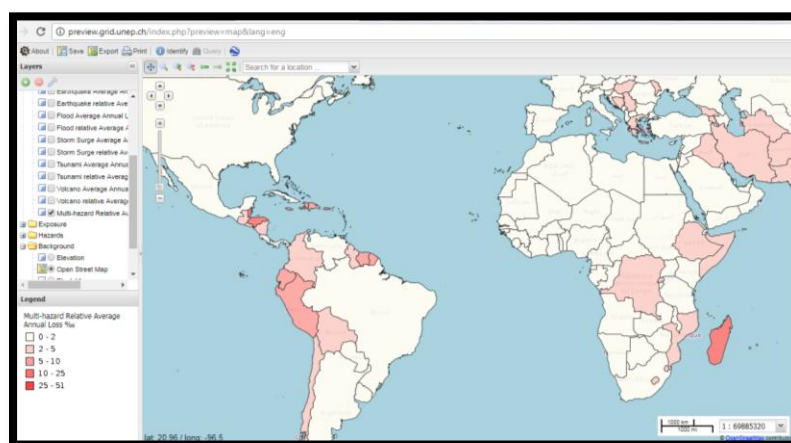
various sectors by using different categories i.e. By Content Type, Theme, Hazard, Organization Type, Region and Year.

Under Section ‘Knowledge Base’, sub-section ‘Maps’ provides access to .pdf maps with different selection options of Hazard, Theme, Region/Country.



Similarly sub-section ‘Disaster Data and Statistics’ gives access to country wise disaster data and country profiles along with some publications having information in spatial formats.

Preventionweb also gives access to several ‘Data Viewers’ Under Section ‘Disaster Risk’ such as Global Risk Data Platform in an interactive manner where administrative, physical features can be selected in the context of disaster.



Source: UNEP⁸

⁸ Website: <http://preview.grid.unep.ch/index.php?preview=mapandlang=eng>

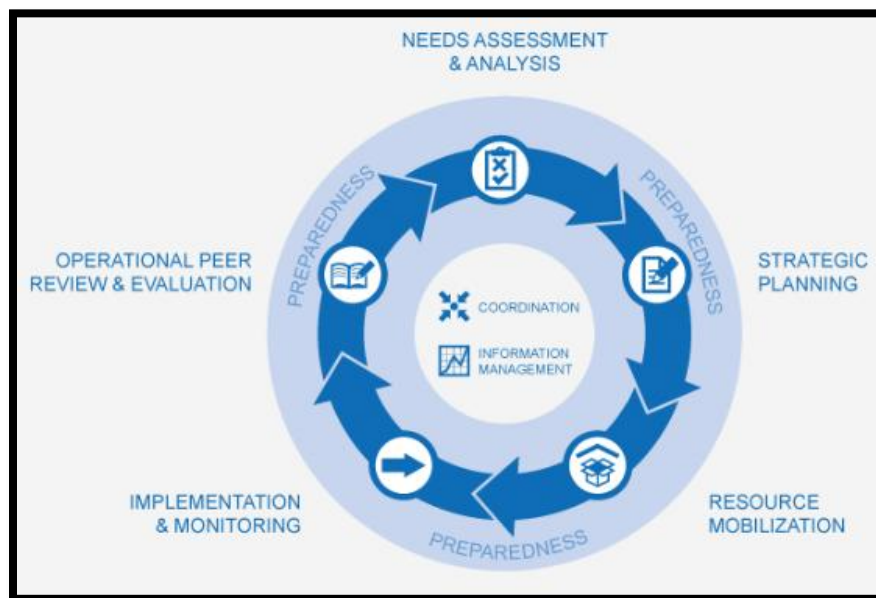
United Nations Office for the Coordination of Humanitarian Affairs⁹

United Nations Office for the Coordination of Humanitarian Affairs (OCHA) is the part of the United Nations Secretariat responsible for bringing together humanitarian actors to ensure a coherent response to emergencies. OCHA also ensures there is a framework within which each actor can contribute to the overall response effort.

OCHA is not an operational agency directly engaged in the delivery of humanitarian programmes, and its added value is as facilitator, thought leader and global advocate, providing support to the humanitarian system. OCHA's role is to bring together humanitarian actors to ensure a coherent response to emergencies. The core function of the organization is to mobilize and coordinate effective humanitarian action in partnership with national and international actors; advocate the rights of people in need; promote preparedness and prevention and facilitate sustainable solutions.

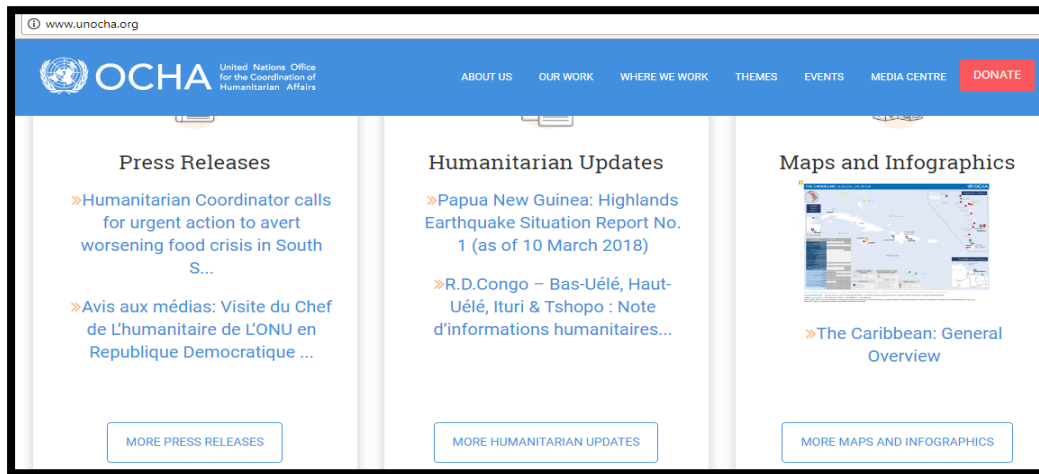
OCHA carries out its coordination function primarily through the Inter-Agency Standing Committee (IASC), which is chaired by the Emergency Relief Coordinator (ERC). Participants include all humanitarian partners, from United Nations agencies, funds and programmes, to the Red Cross movement and NGOs.

The humanitarian programme cycle (HPC) is a coordinated series of actions undertaken to help prepare for, manage and deliver humanitarian response. It consists of five elements coordinated in a seamless manner, with one step logically building on the previous and leading to the next.



⁹ Website: <http://www.unocha.org/>

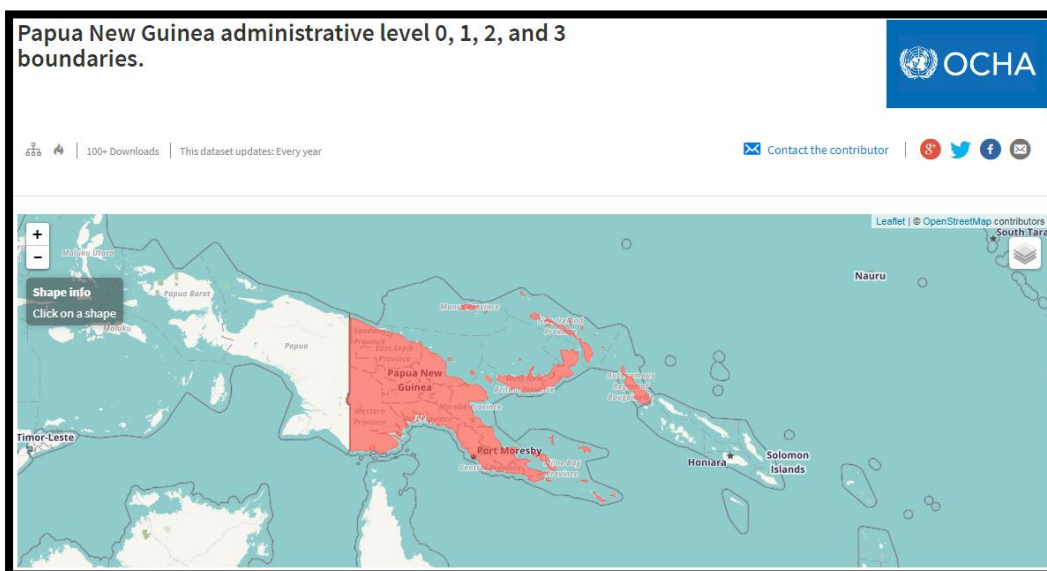
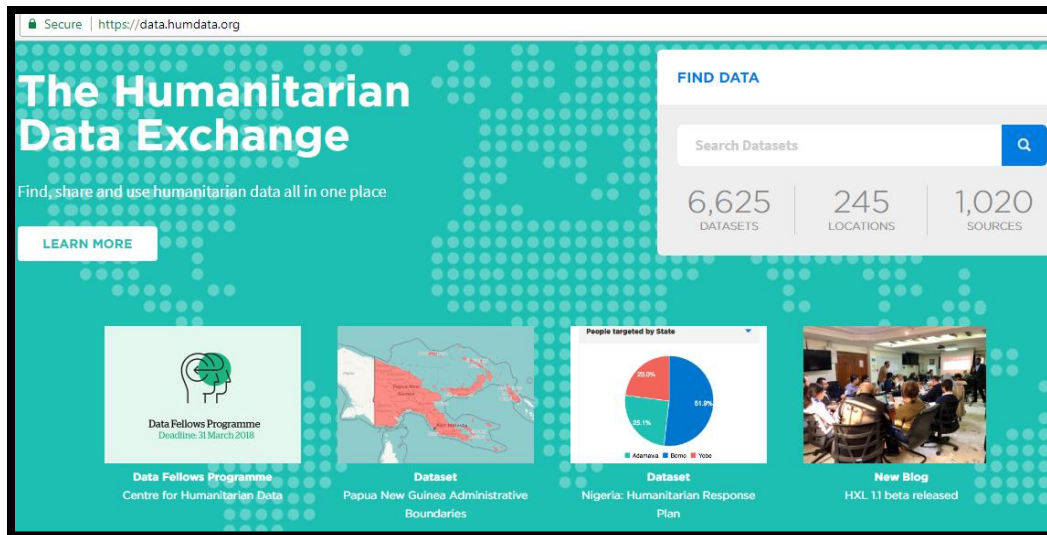
On the home page, it has a dedicated section ‘Maps and Infographics’ to provide information in a spatial or graphical manner.



Under Section “What We Do → Information Management”, OCHA provides access to many resources which provide spatial information for different purposes. These are listed below:

Humanitarian Data Exchange

The Humanitarian Data Exchange (HDX) is an open platform for sharing data, launched in July 2014. The goal of HDX is to make humanitarian data easy to find and use for analysis. Our growing collection of datasets has been accessed by users in over 200 countries and territories. The HDX team, based in North America, Europe and Africa, includes OCHA staff and a number of consultants. It has a ‘Dataset’ section which provides spatial information through a viewer and allows to download shapefiles for administrative boundaries, outlines of refugee camps etc.



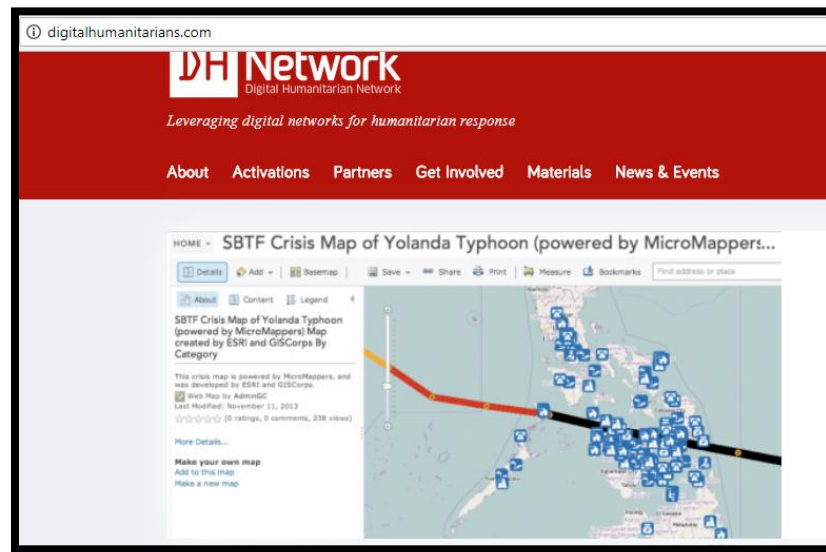
Source: HDX¹⁰

Digital Humanitarian Network

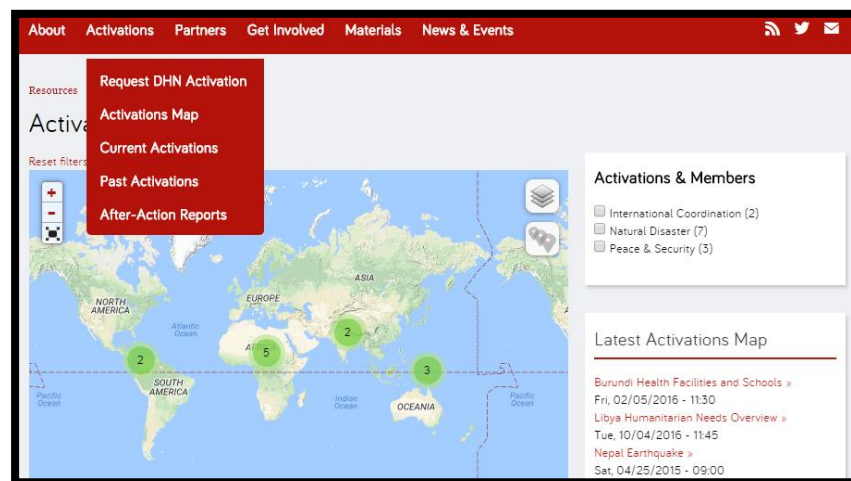
The Digital Humanitarian Network (DHN) is a network of organizations that provide information-based response and relief services to communities affected by disaster events and formal response actors directly servicing these populations. Since it was founded in 2012, the DHN has provided crisis informatics, visualization, mapping and technical development to a range of formal actors.

¹⁰ <https://data.humdata.org/>

The purpose of the DHN is to leverage digital volunteers in support of 21st century humanitarian response. More specifically, the aim of this network-of-networks is to form a consortium of Volunteer and Technical Communities (VandTCs) and to provide an interface between formal, professional humanitarian organizations and informal yet skilled-and-agile volunteer and technical networks. The idea is to review activation-requests and rapidly liaise with the different volunteer and technical teams who are members of the DHN to build a Solution Team best able to act on a request. The Coordinators aim to provide a response to every request within 24 hours.



Under Section ‘Activations’, it provide access to spatial information under various sub-sections.

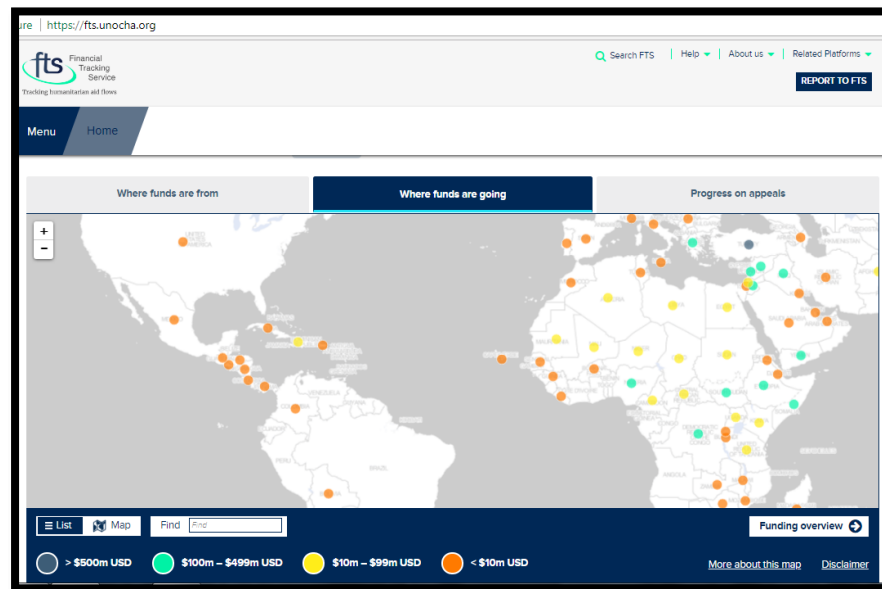


Source: digitalhumanitarians¹¹

¹¹ <http://digitalhumanitarians.com/>

Financial Tracking Service

OCHA also has a unique Online Financial Tracking System (FTS). FTS is the primary provider of data on humanitarian funding. It collects reports on humanitarian funding flows submitted by Government donors, UN-administered funds, UN agencies, Non-Governmental Organizations (NGOs) and other humanitarian actors and partners, including the private sector. It provides “Data Visualization” feature to visualize overview of funding by Donor, by recipient and progress on appeals.



Source: FTS¹²

Global Disaster Alert and Coordination System

Access is provided for Global Disaster Alert and Coordination System
(GDACS is explained further in detail in a separate section)

ReliefWeb¹³

ReliefWeb is a specialized digital service of the OCHA. ReliefWeb has been the leading source for reliable and timely humanitarian information on global crises and disasters since 1996. It offers information in the form of reports, maps and data.

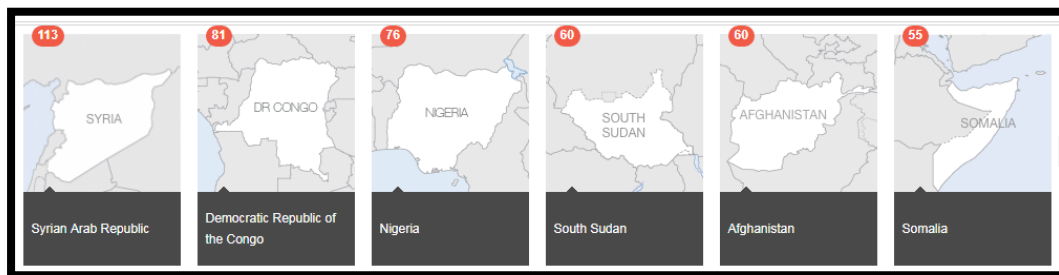
ReliefWeb has the following main functions:

- Monitors and collects information from more than 4,000 global information sources

¹² Website: <https://fts.unocha.org/>

¹³ Website: <http://reliefweb.int/>

- The website Home Page gives the Headlines, with brief story, along with clickable access to the full story, about the disaster/crisis situation in different parts of the world. It also gives country-wise updates, accessible through maps, with number of updates mentioned for each given country. In the lower part of Homepage, under Section ‘Tools’, it provides “Location Maps”, produced by ReliefWeb, highlights a country, its capital and the surrounding regions.



Under this dedicated section for Updates, it allows countrywise list of updates. These updates can refer to news from the similar websites like Global Information and Early Warning System (GIEWS). It also provides a Search option with only Report or Maps/Infographics option. Other available filters are organization, themes, formats, disaster type, vulnerable group, language, original publication data and publishing date.

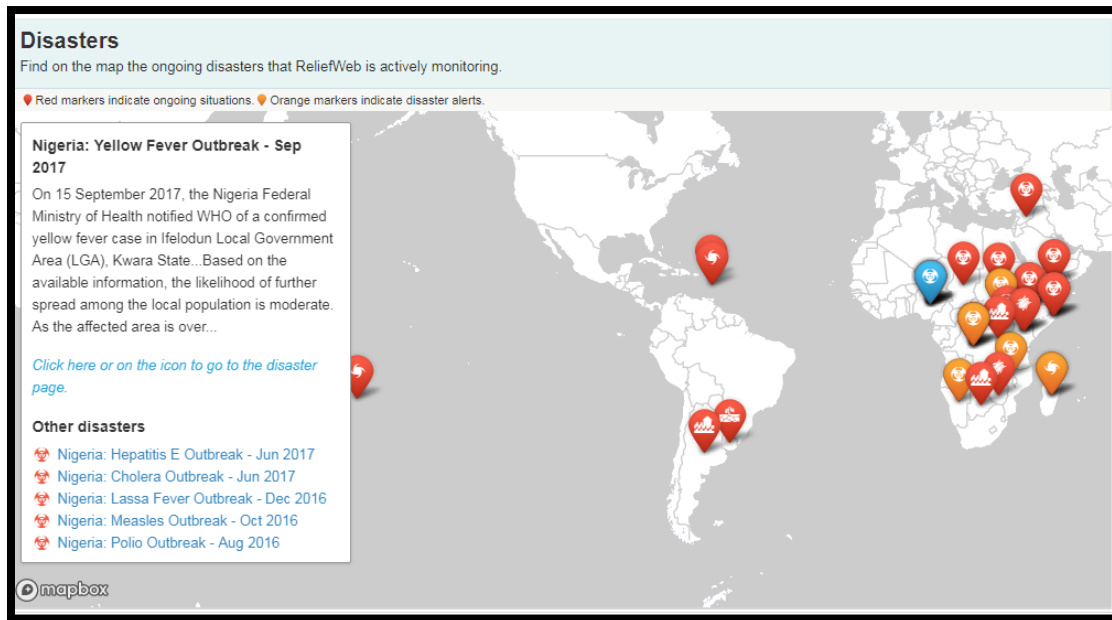
This section, allows Browse by country for overviews, news, analysis and maps on crises and disasters. A red point beside the country name denotes an ongoing crisis or disaster.’



¹⁴a Website: <https://reliefweb.int/countries>

Disasters

Reliefweb monitors certain disasters actively. This section provides information in spatial format about such disasters.



Source: Reliefweb^{15b}

Inter-Agency Standing Committee¹⁶

The Inter-Agency Standing Committee (IASC) is the primary mechanism for inter-agency coordination of humanitarian assistance. It is a unique forum involving the key UN and non-UN humanitarian partners. The IASC was established in June 1992 in response to United Nations General Assembly Resolution [46/182](#) on the strengthening of humanitarian assistance. General Assembly Resolution [48/57](#) affirmed its role as the primary mechanism for inter-agency coordination of humanitarian assistance.

The IASC's overall objective is inclusive coordination, while maintaining a relatively limited number of "members" to ensure functionality and focus. For 2016 and 2017, the priorities of the IASC Working Group were as follows:

- Effective Response to Emergencies and Protracted Crises
- Accountability and Inclusivity
- Displacement and Protection Outcomes
- Financing

The members of the IASC are the heads or their designated representatives of the UN operational agencies (UNDP, UNICEF, UNHCR, WFP, FAO, WHO, UN-HABITAT, OCHA and IOM*). In

^{15b} Website: <https://reliefweb.int/disasters>

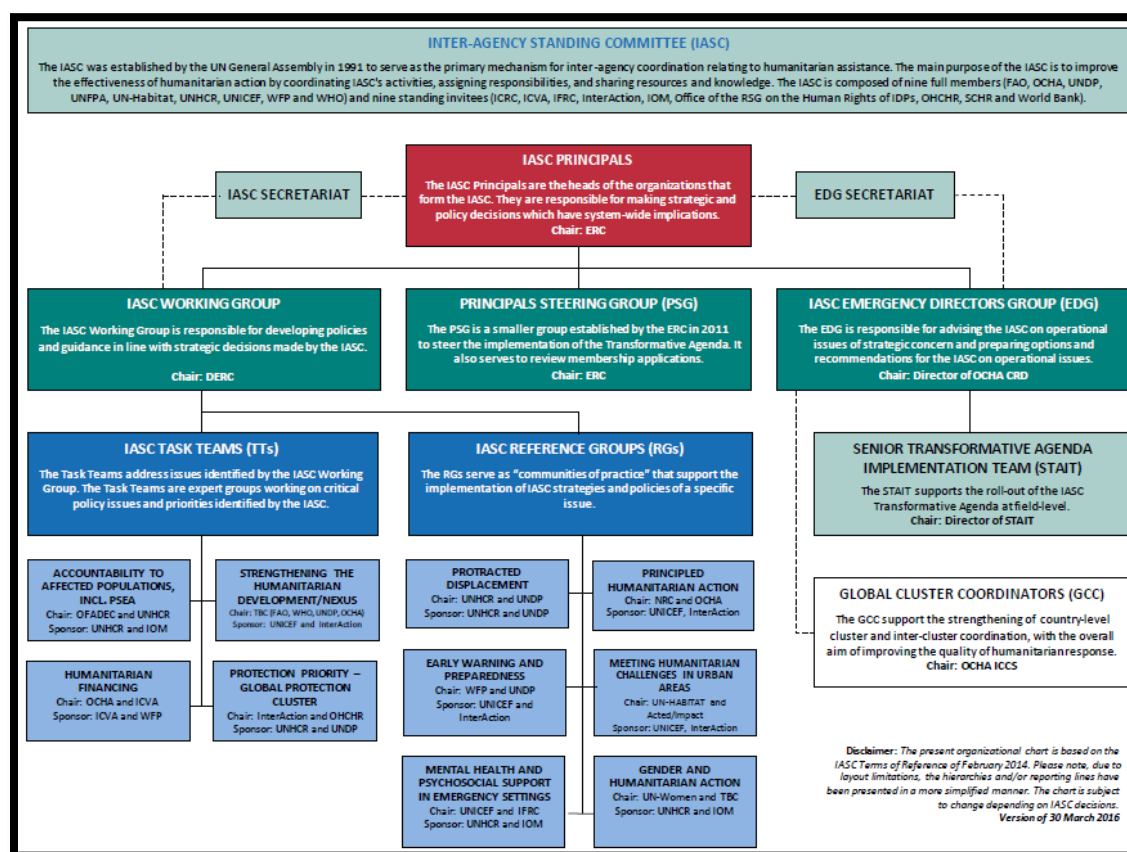
¹⁶ Website: <https://interagencystandingcommittee.org/>

addition, there is a standing invitation to ICRC**, IFRC, OHCHR***, UNFPA, the Special Rapporteur on the Human Rights of Internally displaced people (IDPs) and the World Bank. The NGO consortia International Council of Voluntary Agencies (ICVA), InterAction and Steering Committee for Humanitarian Response (SCHR) are also invited on a permanent basis to attend. The IASC is chaired by the ERC.

*International Organization for Migration

**International Committee of the Red Cross

***Office of the United Nations High Commissioner for Human Rights



Humanitarian Early Warning Service

The Sub-Working Group on Preparedness was established in 2001 with the aim of strengthening and promoting inter-agency preparedness, contingency planning and early warning processes across the IASC community of humanitarian actors. Among key contributions, the SWG publishes the quarterly IASC Early Warning-Early Action Report and has been instrumental in setting up the Humanitarian Early Warning Service Website (HEWSweb).

The IASC Humanitarian Early Warning Service (HEWSweb) is an inter-agency partnership project aimed at establishing a common platform for humanitarian early warnings and forecasts

for natural hazards. The main objective of HEWSweb is to bring together and make accessible in a simple manner the most credible early warning information available at the global level from multiple specialized institutions.



Under Tools section,

United Nations Environment Programme¹⁷

The United Nations Environment Programme (UNEP) is the leading global environmental authority that sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system and serves as an authoritative advocate for the global environment.

UNEP's work focuses on 7 cross-cutting thematic priorities:

1. **Climate Change:** Strengthen the ability of countries, in particular developing countries, to integrate climate change responses into national development processes
2. **Disasters and Conflicts:** Minimize threats to human well-being from the environmental causes and consequences of existing and potential natural and man-made disasters.
3. **Ecosystem Management:** Ensure that countries use the ecosystem approach: the holistic management of land, water and living resources to promote conservation and sustainable use to enhance human well-being.
4. **Environmental Governance:** Ensure that environmental governance and interactions at the country, regional and global levels are strengthened to address environmental priorities.
5. **Chemicals and Waste:** Minimize the impact of harmful substances and hazardous waste on the environment and people.
6. **Resource Efficiency:** Fostering sustainable consumption and production by leading global efforts to ensure natural resources are produced, processed and consumed in a more sustainable way.
7. **Environment under Review:** Providing open web platforms, services and access to timely, substantiated knowledge about the environment and emerging issues to allow for informed decision-making.

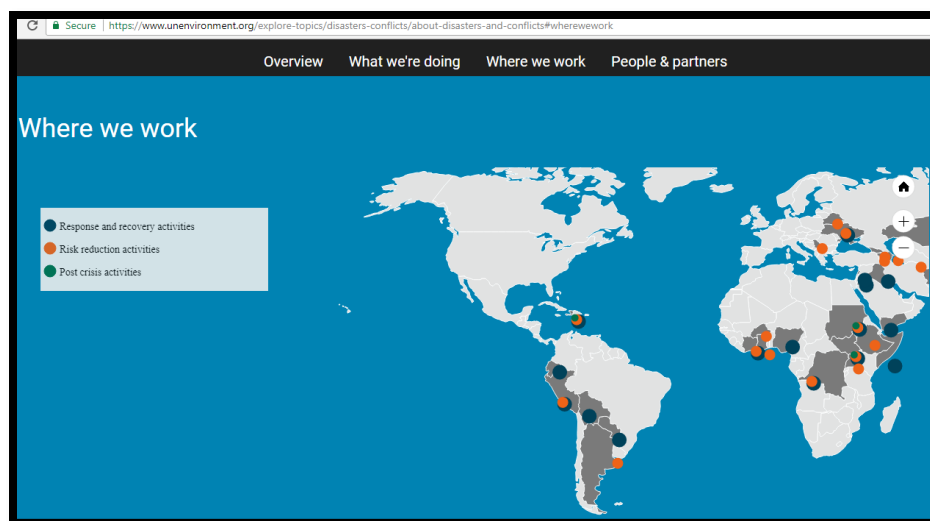
Headquartered in Nairobi, Kenya, UNEP works through its divisions, regional, liaison and out-posted offices, plus a growing network of collaborating centres of excellence. UNEP also hosts several environmental conventions, secretariats and inter-agency coordinating bodies.

The Conventions include:

- The Convention on Biological Diversity
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora
- The Minamata Convention on Mercury
- The Basel, Rotterdam and Stockholm Conventions
- The Vienna Convention for the Protection of Ozone Layer and the Montreal Protocol
- The Convention on Migratory Species
- The Carpathian Convention
- The Bamako Convention
- The Tehran Convention

¹⁷ Website: www.unep.org

Under Section ‘Explore Topics’, there is a dedicated sub-section called “Disaster and Conflicts” which shows that work of UNEP under this theme is divided into four categories of Risk Reduction, Preparedness and Response, Recovery and Country Programmes. A map shows the locations of UNEP work classified under categorized.



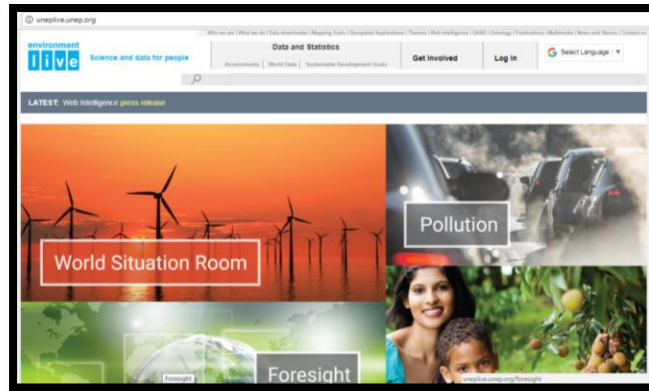
Source: UN Environment¹⁸

Environment Live¹⁹

Environment Live provides the UN Member States open access to information and knowledge on the environment at the global, regional and national levels. It supports Environmental Policy through Foresight, Outlooks and Assessments and providing Capacity Building for countries to achieve the Goals of Agenda 2030 and Sustainable Development. Environment Live provides up-to-date information for citizen-science, communities of practice and impact stories and case-studies on the environment and people. More than 3455 data flows from 193 countries are available in Environment Live and the platform is continuously updated.

¹⁸ Website: <https://www.unenvironment.org/explore-topics/disasters-conflicts/about-disasters-and-conflicts#wherewework>

¹⁹ Website: <http://uneplive.unep.org/>



It has a menu section “Data and Statistics” with three sub-sections:

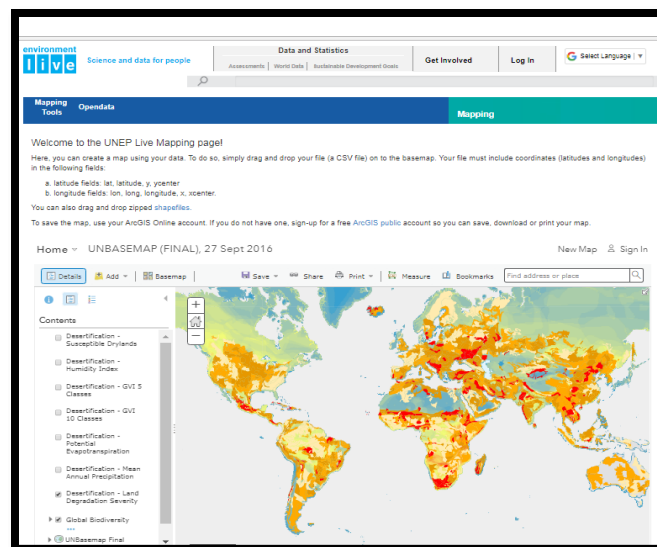
- Sub-section ‘Assessments’ provides regional assessment reports having maps for each region like Latin America, USA, Asia, Europe, Africa etc. Maps are provided for various indicators related to ecosystem, environment, water, agriculture, dams, hunger index etc. This subsection also provides a global Excel/CSV database of Sustainable Development Goals Indicators indexed by Country or by Area or by SDG Indicator and also global assessment report on various SDGs’ indicators.
- Sub-section ‘World Data’ has a Global Data Downloader country wise non-spatial data for popular SDG indicators. It also provides Data and Maps for six UN environment regions such as Air Quality Index, Yearly Flood Occurrence, Electricity Access etc. for Asia and Pacific.
- Sub-section ‘Sustainable Development Goals’ provides a service called ‘Synergy’ which allows to link SDGs’ indicators with related conventions. It has a very interesting analytic service called ‘Web Intelligence’. Citizens and organizations can use its dashboard to explore the latest environmental information on UNEP Live. A word tree shows in which context terms such as *air quality*, *biodiversity* and *climate change* are discussed around the world. The geographic map displays origin and location targets of a communication, making it easier to track emerging stories and environmental trends. The entity map enable users to explore relations among different organizations, individuals, or places. Decision makers highly value the built-in capabilities to spot geographic patterns, identify shifts in opinions on environmental matters, and track stakeholder influence.



Source: UNEPLive^{20a}

It also has a Section “Mapping Tools” with access to a geospatial portal which allows to create your own maps using a (free) ArcGIS Online public account; explore and share maps about people and businesses, landscapes, the climate etc.

It gives you access to interactive open data by clicking any one of the Sustainable Development Goal (SDG) goal box given at the website. You can import a zipped shapefile (ZIP), a table (CSV), a Global Positioning System (GPS) Exchange Format (GPX), or a GeoJSON file.

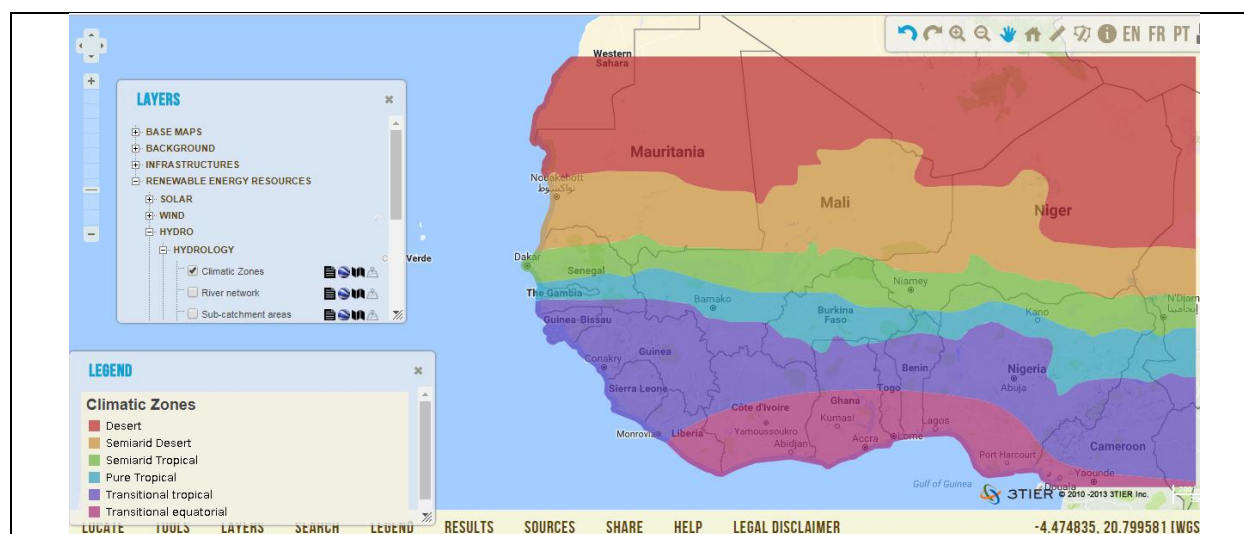


Source: UNEPLive^{21b}

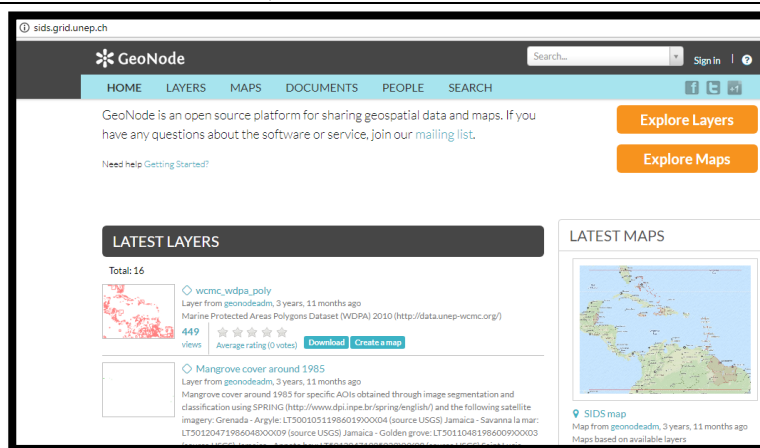
^{20a} Website: <http://uneplive.unep.org/webintelligence>

^{21b} Website: <http://uneplive.unep.org/mapping>

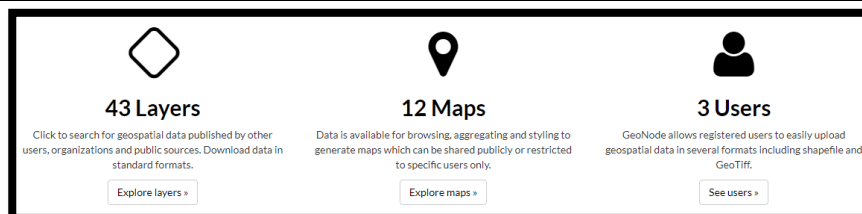
The Section “GeoSpatial Applications” provides linkages to various interactive analytical webgis/webmap applications:



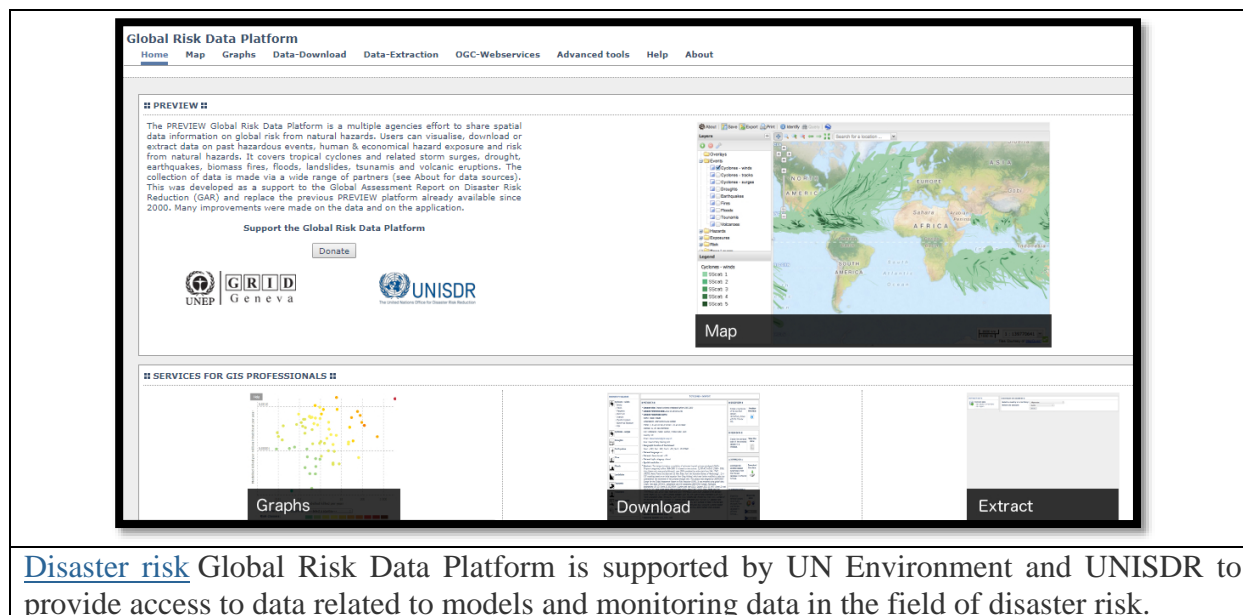
Energy (renewable) [ECOWREX](#) (mapping application on renewable energy potential and demand in 21 West-African countries)



[Climate change](#) This platform provide access to data (and report) on Ecosystem based approaches for climate change adaptation in the Caribbean SIDS.



[EcoDRR](#) This global UN Environment platform has been designed for identifying areas where ecosystems should be either restored or protected to provide protection services against selected natural hazards (currently floods, tsunamis, tropical cyclones and related storm surges as well as landslides)

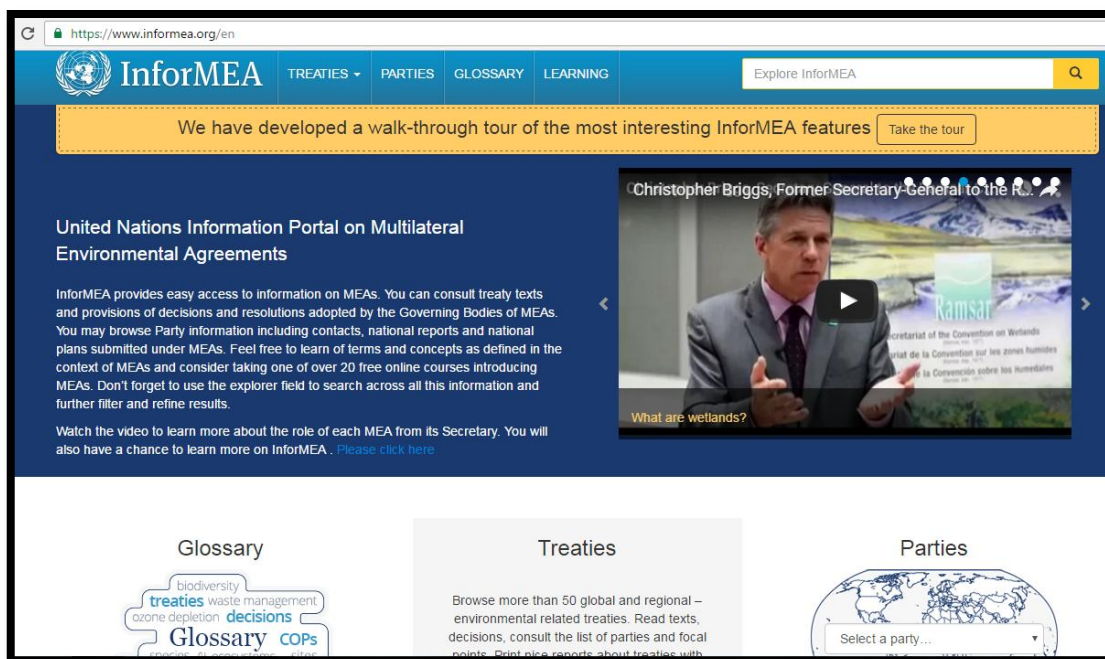


Information Portal on Multilateral Environmental Agreements²²

UNEP facilitates an initiative which brings together Multilateral Environmental Agreements (MEA) Information and Knowledge Management (IKM). Initiative brings together MEA to develop harmonized and interoperable information systems for the benefit of Parties and the environment community at large. InforMEA is the first project established by this Initiative. Information Portal on Multilateral Environmental Agreements (InforMEA) harvests Conference of the Parties (COP) decisions and resolutions, news, events, MEA membership, national focal points, national reports and implementation plans from MEA secretariats and organizes this information around a set of agreed terms.

INFORMEA provides access to information on Multilateral Environmental Agreements.

²² Website: <https://www.informea.org/en>



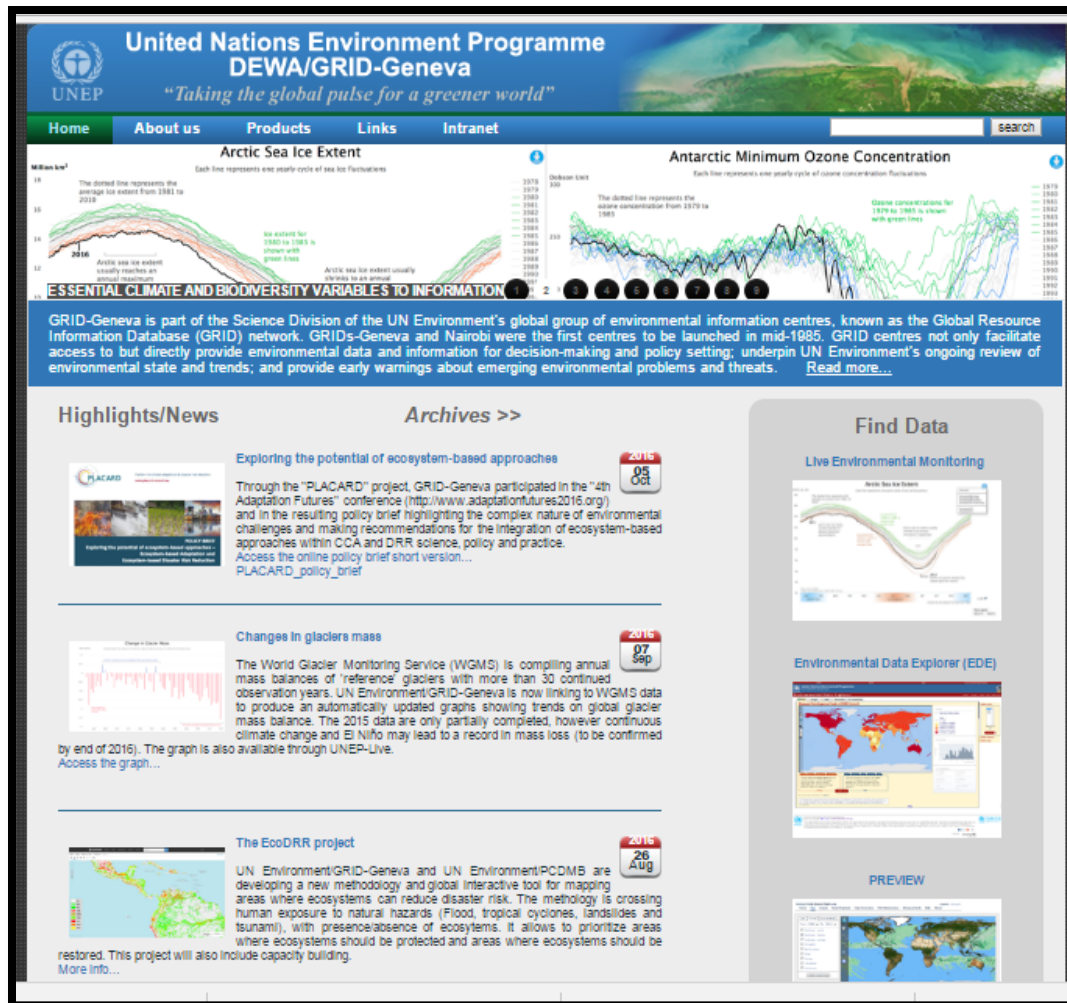
On Home page, it gives a tool ‘Parties’ to geographically visualize the information about parties to treaties and protocols.

UNEP- Division of Early Warning and Assessment/Global Resource Information Database -GENEVA²³

GRID-Geneva is part of the Science Division of the UN Environment's global group of environmental information centres, known as the Global Resource Information Database (GRID) network. GRIDs-Geneva and Nairobi were the first centres to be launched in mid-1985. GRID centres not only facilitate access to but directly provide environmental data and information for decision-making and policy setting; underpin UN Environment's ongoing review of environmental state and trends; and provide early warnings about emerging environmental problems and threats.

On Home page, it provides access to many interactive spatial information platforms.

²³ Website: <http://www.grid.unep.ch/index.php?lang=en>



Under Section "Products", it has two sub-sections 'Geospatial Data' and 'Maps and Graphics'. Under Geospatial Data, GRID's archives provide numerous high quality geospatial data sets at various scales (global, continental, national and subnational) on a variety of environment related themes.

GRID centres collectively hold thousands of digital maps at various scales (global, continental, regional, national and sub-national) covering a wide variety of human and natural environmental themes. GRID-Geneva produced various sets of maps to support a wide variety of partner organizations.

Under Section "Geodata", global geospatial data can be found as GRID Core Datasets include a selected set of basic fundamental geospatial data held by Grid-Geneva, and collected from external sources, which are directly accessible through a weblink. It has a global geographical extent and ensure Interoperability and services. This section also has a local geospatial data also such as for Switzerland and Geneva data.

United Nations Office for Outer Space Affairs²⁴

The United Nations Office for Outer Space Affairs (UNOOSA) is the United Nations office responsible for promoting international cooperation in the peaceful uses of outer space. UNOOSA serves as the secretariat for the General Assembly's only committee dealing exclusively with international cooperation in the peaceful uses of outer space: the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS).

UNOOSA is also responsible for implementing the Secretary-General's responsibilities under international space law and maintaining the United Nations Register of Objects Launched into Outer Space.

Through the United Nations Programme on Space Applications, UNOOSA conducts international workshops, training courses and pilot projects on topics that include remote sensing, satellite navigation, satellite meteorology, tele-education and basic space sciences for the benefit of developing nations. It also maintains a 24-hour hotline as the United Nations focal point for satellite imagery requests during disasters and manages the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER).

UNOOSA is the current secretariat of the International Committee on Global Navigation Satellite Systems (ICG).

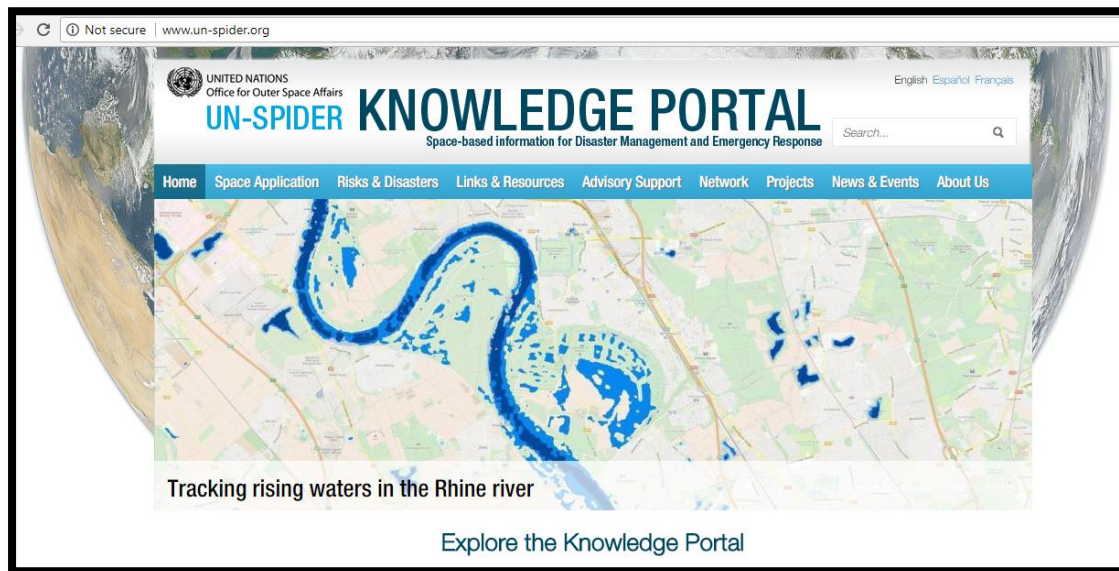
UNOOSA also prepares and distributes reports, studies and publications on various fields of space science and technology applications and international space law. Documents and reports are available in all official languages of the United Nations through this website.

UNOOSA is located at the United Nations Office at Vienna, Austria.

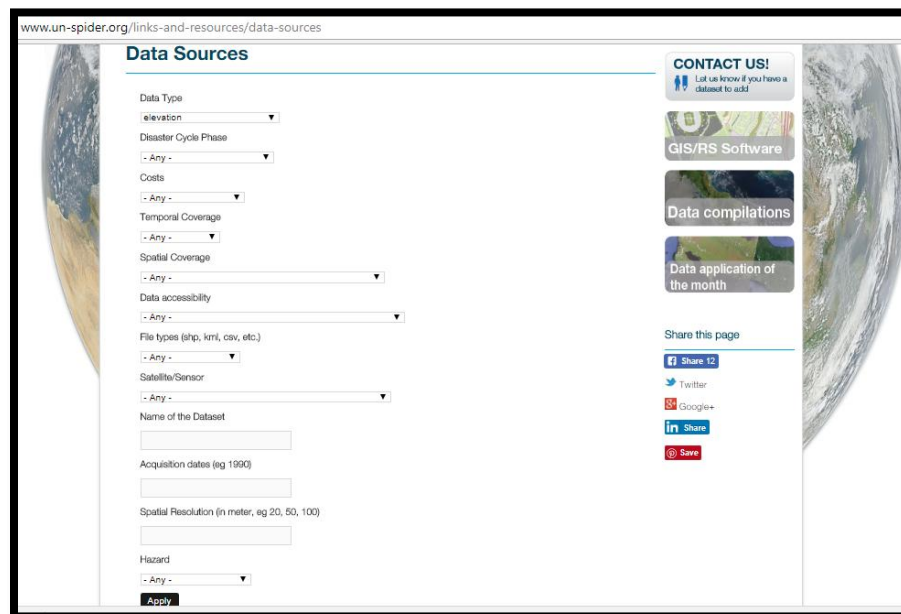
²⁴ Website: <http://www.unoosa.org/>

UN-Spider Knowledge Portal²⁵

The UN-Spider Knowledge Portal is a resource developed by UNOOSA (UN Office for Outer Space Affairs). It is the United Nations Platform for Space-Based Information for Disaster Management and Emergency Response.



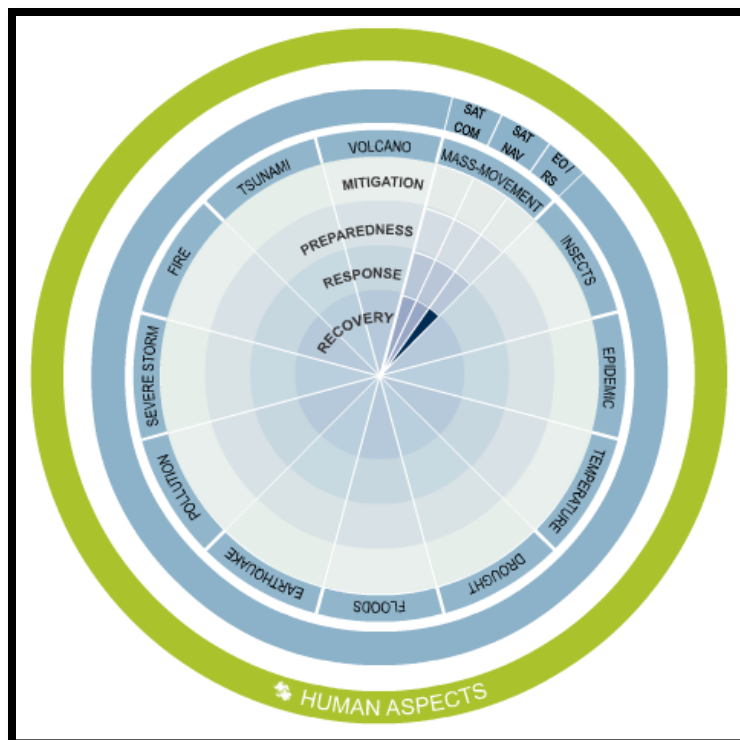
Under Section ‘Links and Resources’, sub-section “Data Sources”, provides access to various data in spatial format.



²⁵ <http://www.un-spider.org/>

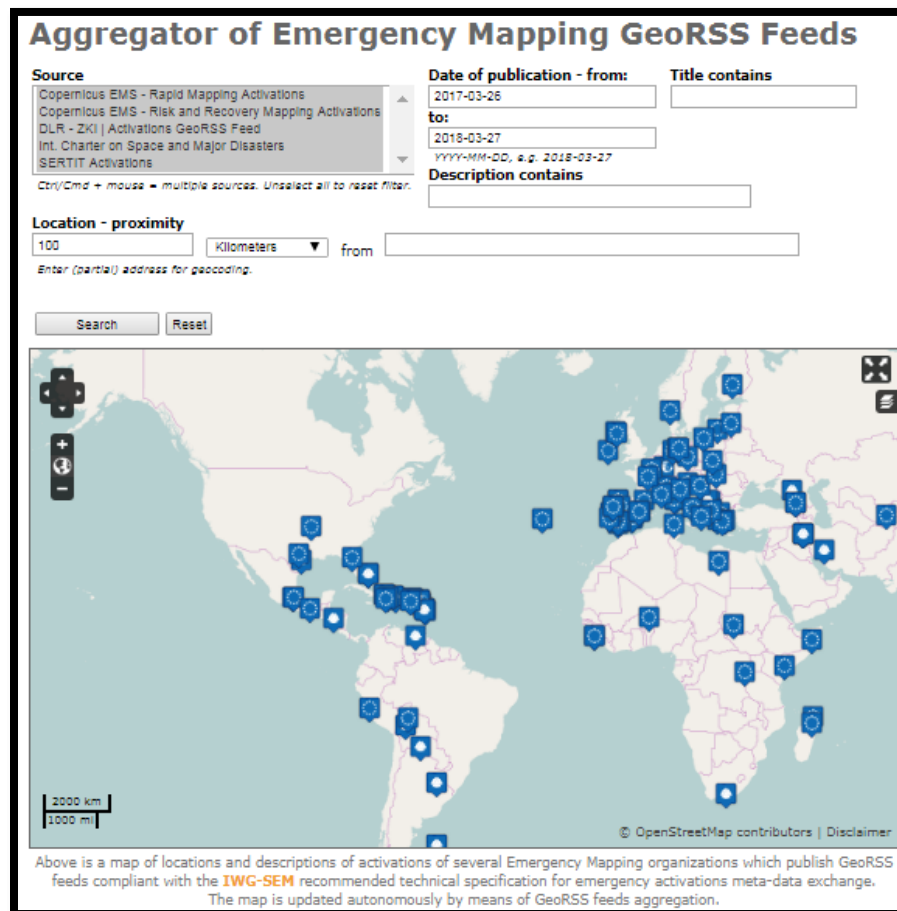
| Name of the dataset | Data Type | Costs | Hazard | Data accessibility |
|--|---|------------------------|---|---|
| Digital Elevation Model - SRTM 1 Arc-Second 30m (NASA, NGA) | elevation | free | | export data |
| Hazards Data Distribution System Explorer (HDDS) (USGS) | elevation, hazard specific data, satellite data or aerial image | free with restrictions | Earthquake, Forest Fire, Flood, Mass Movement, Pollution, Severe Storm, Tsunami, Volcanic Eruption | export data, export map |
| MapMart - Global Mapping Solutions | baseline data, elevation, hazard specific data, land use, land cover data, satellite data or aerial image | paid | Drought, Earthquake, Extreme Temperature, Forest Fire, Flood, Mass Movement, Pollution, Severe Storm, Tsunami | export data, export map |
| Land Cover Map (ISCGM) | elevation, land use, land cover data | free | | export data, export map |
| Regional Centre for Mapping of Resources for Development (SPOT, Landsat, GeoEye) (RCMRD) | baseline data, elevation, hazard specific data, land use, land cover data, satellite data or aerial image | free | Drought, Earthquake, Extreme Temperature, Pollution, Tsunami | export data, export map, statistical data (e.g. graphs), visualization of data (e.g. web GIS or real time monitoring), web processing/cloud computing |
| Global Multi- | elevation | free | | export data, export |

It has a unique **Space Application Matrix** under Section ‘Space Application’, which provides access to satellite generated spatial information for various types of disasters.



Aggregator of Emergency Mapping GeoRSS Feeds

Based on the given GeoRSS technical specifications, several emergency mapping entities are sending GeoRSS feeds with basic and initial information on their current emergency mapping activation. The technical specifications are available at <http://www.un-spider.org/network/iwg-sem>.



Food and Agriculture Organization²⁶

An intergovernmental organization, FAO has 194 Member Nations, two associate members and one member organization, the European Union. Its employees come from various cultural backgrounds and are experts in the multiple fields of activity FAO engages in. FAO's staff capacity allows it to support improved governance inter alia, generate, develop and adapt existing tools and guidelines and provide targeted governance support as a resource to country and regional level FAO offices. Headquartered in Rome, Italy, FAO is present in over 130 countries.

It has 6 key priorities:

1. Help eliminate hunger, food insecurity and malnutrition
2. Make agriculture, forestry and fisheries more productive and sustainable
3. Reduce rural poverty
4. Enable inclusive and efficient agricultural and food systems
5. Increase the resilience of livelihoods to threats and crises

FAO develops mechanisms to monitor and warn about multi-hazard risks and threats to agriculture, food and nutrition and to inform countries on successful risk reduction measures that they can include in all policies related to agriculture. FAO assists countries to increase the resilience of households, communities and institutions to more effectively prevent and cope with threats and disasters that impact agriculture, food security and nutrition.

Food and Agriculture Organization has a dedicated section for dealing with Emergencies, disasters, hazards and conflicts of various types. It works towards increasing the resilience of people and their livelihoods to these threats and crises. FAO's resilience strategy is based on four pillars:

1. Govern risks and crises - legal, policy and institutional systems and regulatory frameworks
2. Watch to safeguard - Information and early warning systems on food and nutrition security and transboundary threats.
3. Apply risk and vulnerability reduction measures - Protection, prevention, mitigation and building livelihoods with technologies, approaches and practices across all agricultural sectors.
4. Prepare and respond - Preparedness for and response to crises in agriculture, livestock, fisheries and forestry

Its mandate is to keep the world food supply/demand situation under continuous review, issue reports on the world food situation, and provide early warnings of impending food crises in individual countries for countries facing a serious food emergency, FAO/GIEWS and the World Food Programme also carry out joint Crop and Food Security Assessment Missions (CFSAMs). Their purpose is to provide timely and reliable information so that appropriate actions can be taken by the governments, the international community, and other parties.

²⁶ Website: www.fao.org

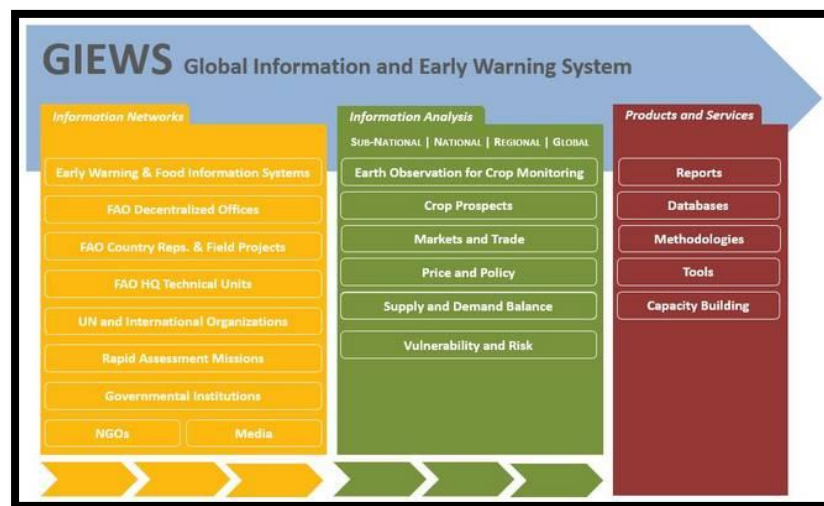
FAO Statistics-

The FAO statistics webpage <http://www.fao.org/statistics/en/> gives links to various other interesting statistics websites for different themes such as:

- Food and Agriculture
- Trade and Markets
- water, <http://www.fao.org/nr/water/aquastat/maps/index.stm>
- Forestry Statistics
- Fisheries and aquaculture

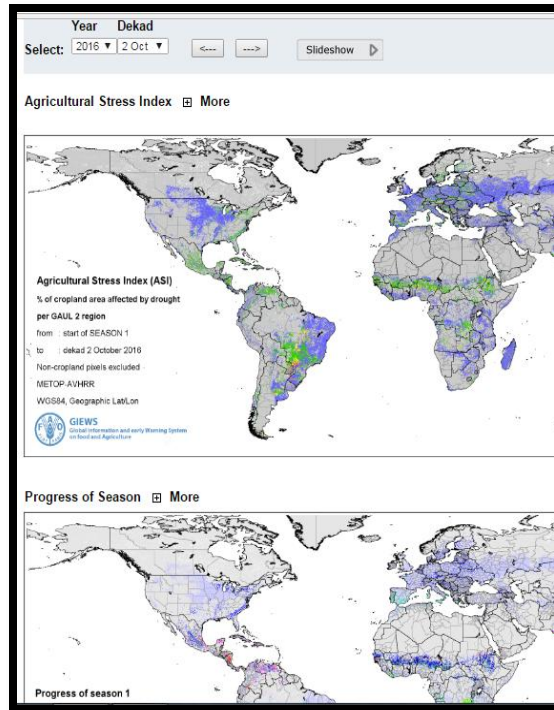
Global Information and Early Warning System²⁷

The Global Information and Early Warning System on Food and Agriculture (GIEWS) issues regular analytical and objective reports on prevailing conditions and provides early warnings of impending food crises at country or regional level. At the request of national authorities, GIEWS supports countries in gathering evidence for policy decisions, or planning by development partners, through its Crop and Food Security Assessment Missions (CFSAMs), fielded jointly with WFP.



Under the Section “Data and Tools”, there is a sub-section ‘Earth Observation for Crop Monitoring’, Global Information and Early Warning System on Food and Agriculture (GIEWS) monitors the condition of major foodcrops across the globe to assess production prospects. To support the analysis and supplement ground based information, GIEWS utilizes remote sensing data that can provide a valuable insight on water availability and vegetation health during cropping seasons. In addition to rainfall estimates and the Normalized Difference Vegetation Index (NDVI), GIEWS and FAO NRC Division have developed the Agricultural Stress Index (ASI), a quick-look indicator for early identification of agricultural areas probably affected by dry spells, or drought in extreme cases.

²⁷ Website: <http://www.fao.org/giews/en/>



Global Fire Information Management System²⁸

The **Global Fire Information Management System (GFIMS)** integrates remote sensing and GIS technologies to deliver MODIS hotspot/fire locations and burned area information to natural resource managers and other stakeholders around the World. It provides **hotspot/fire information** and data through Global Fire Email Alerts; Interactive WebGIS - Web Fire Mapper including Monthly Burned Area images; Latest hotspot/fire data downloads (ESRI shape and text files, NASA WorldWind Plugin, Google™ Earth KML, OGC WMS); Subsets of MODIS images and Country statistics of historical fires (tables, charts, maps and GIS files).

²⁸ Website: <http://www.fao.org/nr/gfims/en/>

United Nations Framework on Climate Change²⁹

The UNFCCC entered into force on 21 March 1994. Today, it has near-universal membership. The 197 countries that have ratified the Convention are called Parties to the Convention.

The UNFCCC is a “Rio Convention”, one of three adopted at the “Rio Earth Summit” in 1992. Its sister Rio Conventions are the UN Convention on Biological Diversity and the Convention to Combat Desertification. The three are intrinsically linked. It is in this context that the Joint Liaison Group was set up to boost cooperation among the three Conventions, with the ultimate aim of developing synergies in their activities on issues of mutual concern. It now also incorporates the Ramsar Convention on Wetlands.

Preventing “dangerous” human interference with the climate system is the ultimate aim of the UNFCCC.

UN-Intergovernmental Panel on Climate Change³⁰

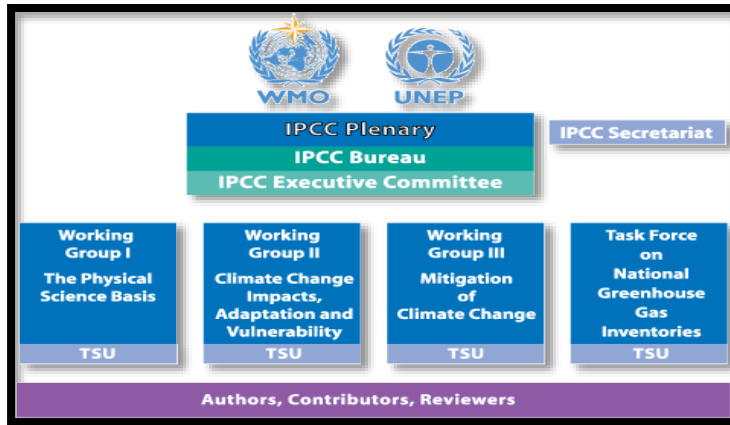
The Intergovernmental Panel on Climate Change (IPCC) is a scientific body under the auspices of the United Nations (UN). It reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change. It does not conduct any research nor does it monitor climate related data or parameters. The Panel takes major decisions at Plenary Sessions of government representatives. A central IPCC Secretariat supports the work of the IPCC.

-

The IPCC is currently organized in 3 Working Groups and a Task Force. They are assisted by Technical Support Units (TSUs), which are hosted and financially supported by the government of the developed country Co-Chair of that Working Group/Task Force. A TSU has also been established to support the IPCC Chair in preparing the Synthesis Report for an assessment report. Working Group I deals with "The Physical Science Basis of Climate Change", Working Group II with "Climate Change Impacts, Adaptation and Vulnerability" and Working Group III with "Mitigation of Climate Change". Working Groups meet in Plenary session at the level of government representatives. The main objective of the Task Force on National Greenhouse Gas Inventories is to develop and refine a methodology for the calculation and reporting of national greenhouse gas emissions and removals.

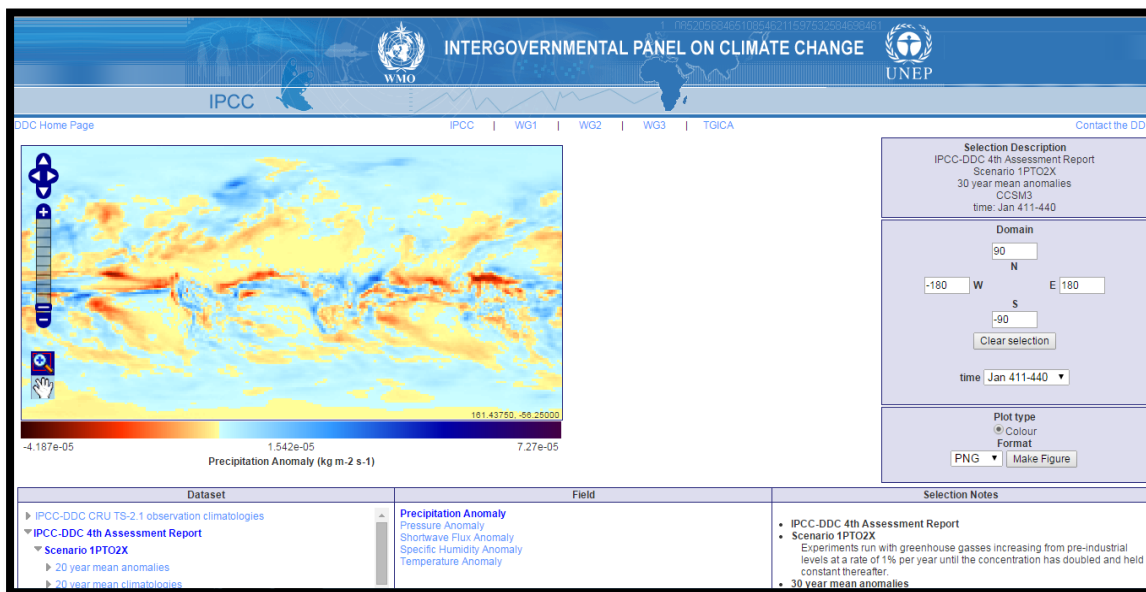
²⁹ Website: http://unfccc.int/essential_background/convention/items/6036.php

³⁰ Website: <https://www.ipcc.ch/>



Data Distribution Centre³¹

Data Distribution Centre (DDC) of IPCC provides climate, socio-economic and environmental data, both from the past and also in scenarios projected into the future. Technical guidelines on the selection and use of different types of data and scenarios in research and assessment are also provided. It provides maps for data visualization.



The IPCC Data Distribution Centre provides access to observed data covering the physical climate (e.g. global distributions temperature and rainfall), atmospheric composition, socio-economic information (e.g. national population and income data), and impacts of climate change.

The DDC contains data produced from Integrated Assessment Models (IAMs), Carbon-cycle Models, General Circulation Models, and Earth System Models.

³¹ <http://www.ipcc-data.org/maps/>

United Nations Children's Fund³²

UNICEF was established on 11 December 1946 by the United Nations to meet the emergency needs of children in post-war Europe and China. Its full name was the United Nations International Children's Emergency Fund. In 1950, its mandate was broadened to address the long-term needs of children and women in developing countries everywhere. UNICEF became a permanent part of the United Nations system in 1953, when its name was shortened to the United Nations Children's Fund.

During emergencies and humanitarian contexts, children are especially vulnerable to disease, malnutrition and violence. UNICEF focuses on these children and their families – on the essential interventions required for protection, to save lives and to ensure the rights of all children, everywhere.

UNICEF humanitarian action encompasses both interventions focused on preparedness for response to save lives and protect rights as defined in the Core Commitments for Children in Humanitarian Action (CCCs) in line with international standards and guided by humanitarian principles, as well as UNICEF contributions to address underlying causes of vulnerability to disasters, fragility and conflict through both its support in response to humanitarian crises, as well as through its regular programmes.

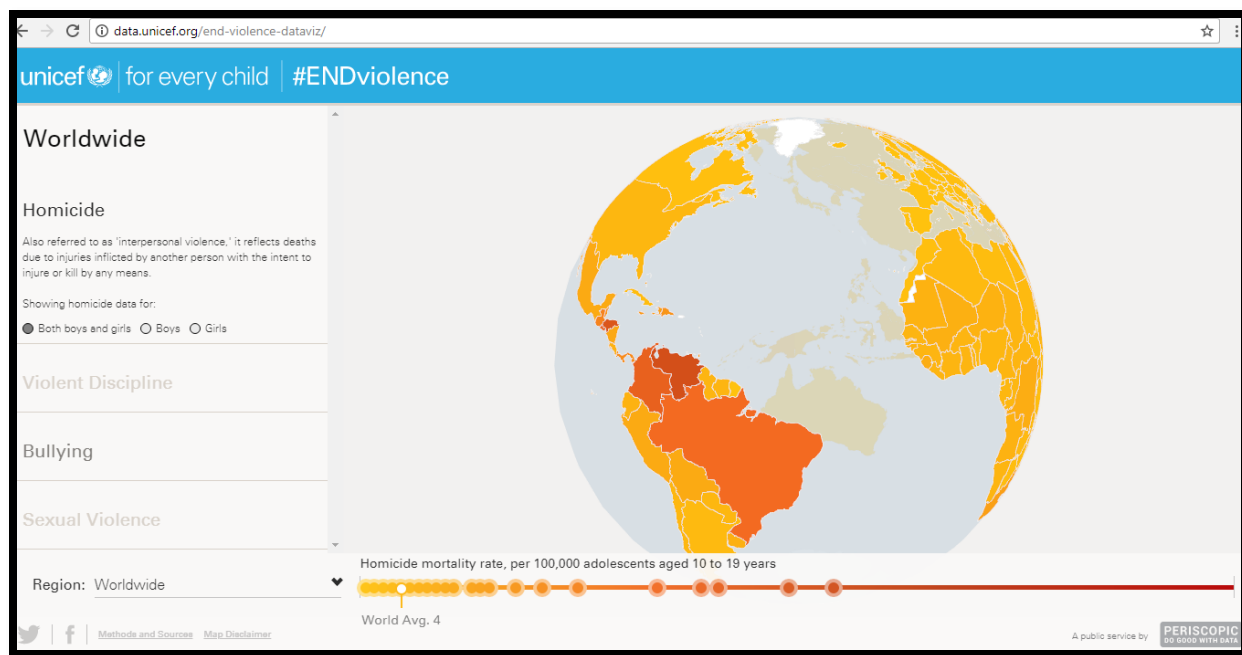
The Office of Emergency Programmes (EMOPS) is the focal point for emergency assistance, humanitarian policies, staff security and support to UNICEF offices in the field, as well as strategic coordination with external humanitarian partners both within and outside the United Nations system.

Data Centre

This website <https://data.unicef.org/about-us/> is a gateway to open data and analysis on the situation of children and women worldwide.

Under Section 'Resources', it gives access to many Web Applications related to children survival, education, particular diseases etc. For eg., Resources→Resources Type→Interactive Data Visualization.

³² Website: <http://www.unicef.org/>



Source: Unicef data³³

United Nations Population Fund³⁴

The mandate of UNFPA, as established by the United Nations Economic and Social Council (ECOSOC) in 1973 and reaffirmed in 1993, is (1) to build the knowledge and the capacity to respond to needs in population and family planning; (2) to promote awareness in both developed and developing countries of population problems and possible strategies to deal with these problems; (3) to assist their population problems in the forms and means best suited to the individual countries' needs; (4) to assume a leading role in the United Nations system in promoting population programmes, and to coordinate projects supported by the Fund.

UNFPA works in more than 150 countries and territories that are home to the vast majority of the world's people. Its mission is to ensure that every pregnancy is wanted, every childbirth is safe and every young person's potential is fulfilled.

UNFPA works closely with governments, UN agencies, community-based organizations and other partners to ensure that reproductive health is integrated into emergency responses. UNFPA deploys hygiene supplies, obstetric and family planning supplies, trained personnel, and other support to vulnerable populations, and works to ensure the needs of women and young people are served through both an emergency and the reconstruction phase. It provides information about its interventions on a country scale in a spatial manner.

³³ <http://data.unicef.org/end-violence-dataviz/>

³⁴ Website: www.unfpa.org

SITUATION OVERVIEW

Estimates calculated based on UNHCR data as of October 01, 2013

779,000 refugees

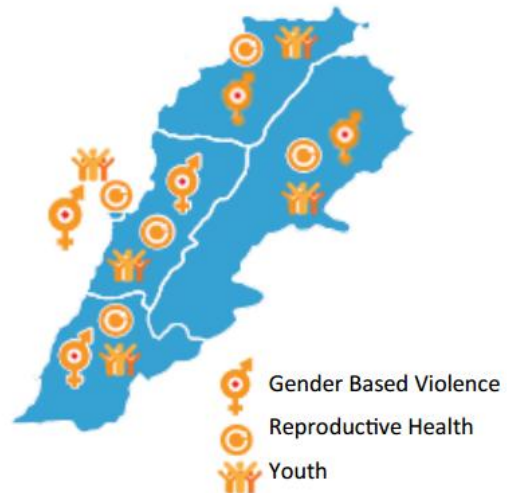
- 678,100 registered
- 101,000 awaiting registration
- 157,470 households
- 78% women and children

UNFPA's humanitarian response covers displaced Syrians, displaced Palestinians, and Lebanese communities as many refugees are living with host families in the poorest areas of the country

MAP OF UNFPA's MAIN INTERVENTIONS



More details: <http://goo.gl/maps/hgNkD>



United Nations Population Fund: Delivering a world where every pregnancy is wanted, every childbirth is safe, and every young person's potential is fulfilled.

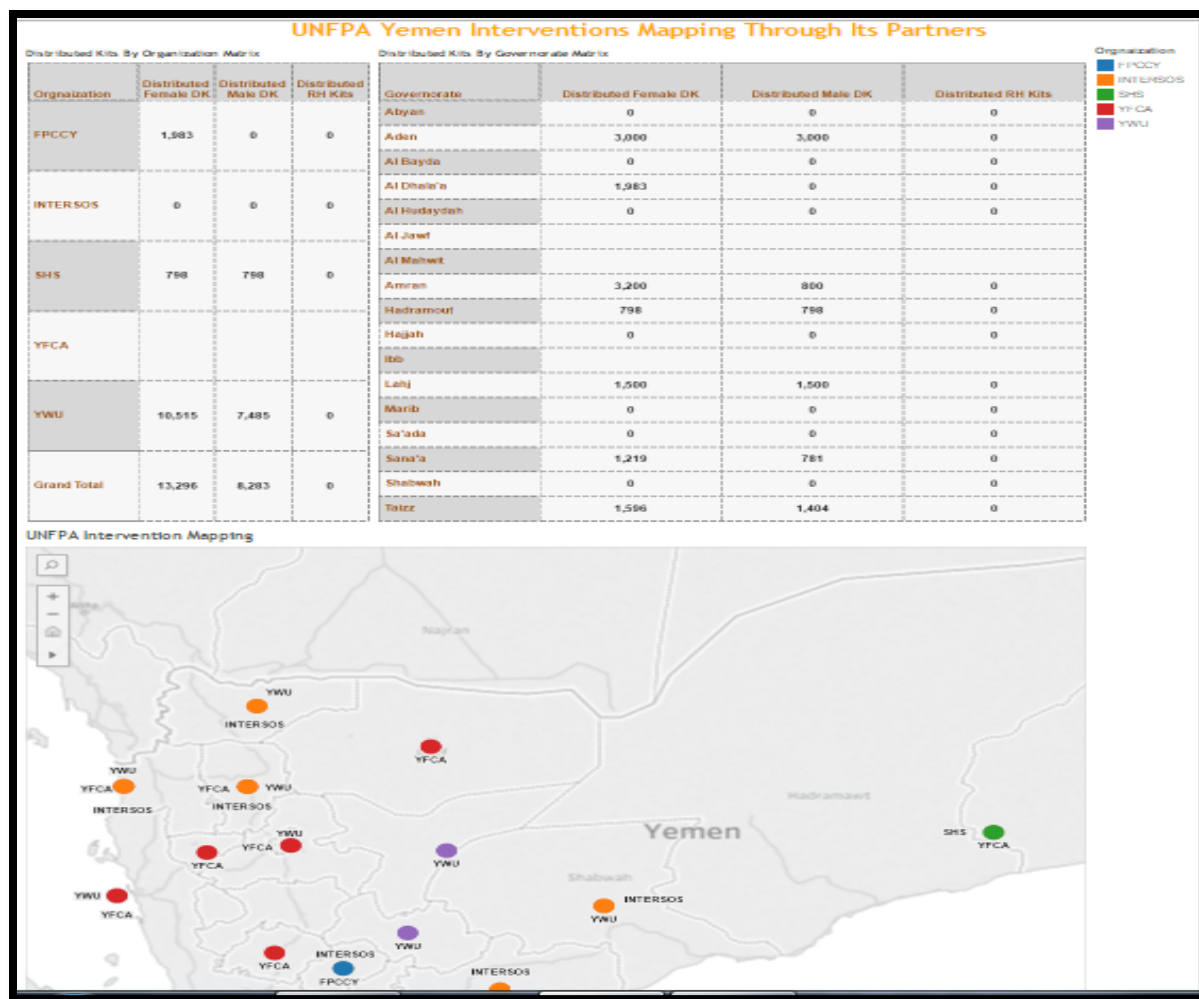
UNFPALebanon

www.unfpa.org.lb

@UNFPALebanon

Source: UNFPA^{35a}

^{35a} <http://www.unfpa.org.lb/Documents/UNFPA-Humanitarian-Factsheet-4.aspx>

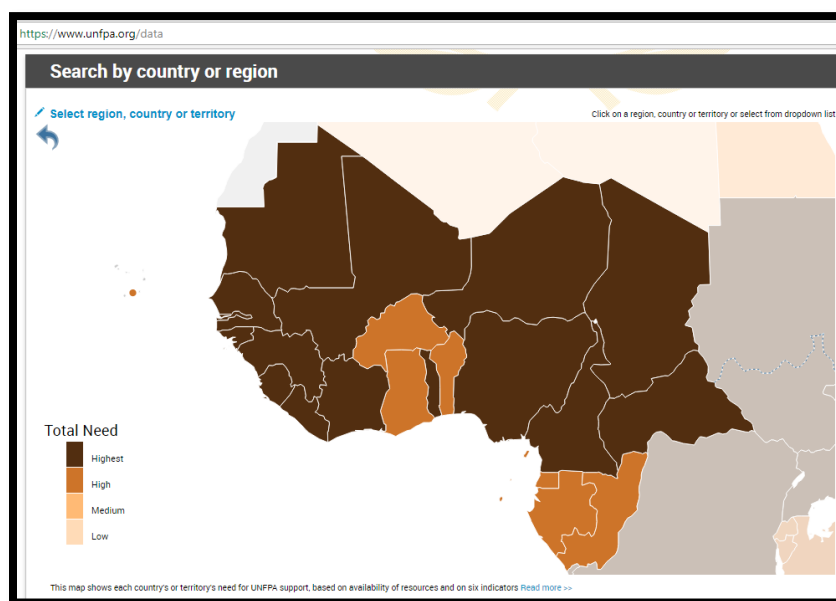


Source: UNFPA^{36b}

^{36b}

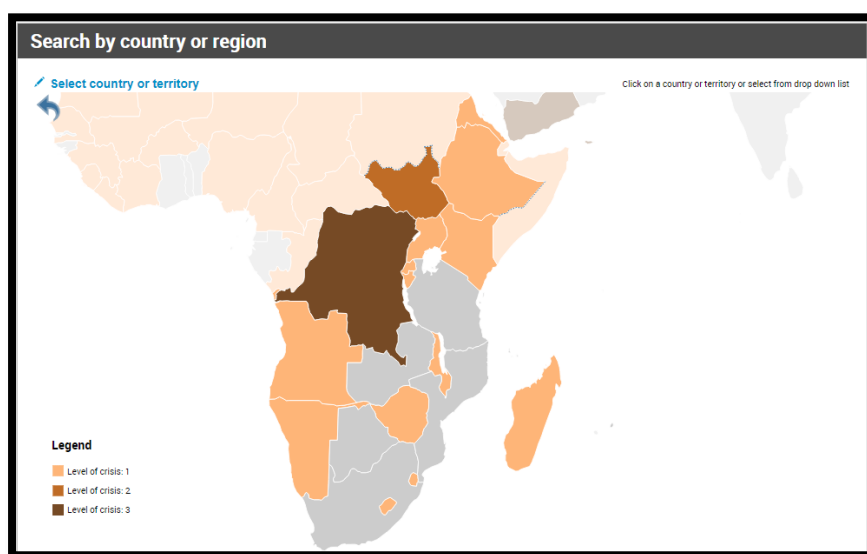
http://public.tableau.com/views/UNFPAYemenInterventionsMappingThroughItsPartners1/UNFPAYemenInterventionsMappingThroughItsPartners?:embed=yand:showVizHome=noand:display_count=yand:display_static_image=yand:bootstrapWhenNotified=true

Under Section “Data”, it provides information about each country's or territory's need in a spatial manner for UNFPA support, based on availability of resources and on six indicators.



Source: UNFPA^{37c}

Under Section “Emergencies” on the Home page, it gives information about each country's or territory's level of crisis in a spatial manner.



Source: UNFPA^{38d}

^{37c} Website: <https://www.unfpa.org/data>

^{38d} Website: <https://www.unfpa.org/emergencies>

United Nations High Commissioner for Refugees³⁹

The Office of the High Commissioner for refugees was established on December 14, 1950 by the United Nations General Assembly. The agency is mandated to lead and coordinate international action to protect refugees and resolve refugee problems worldwide. Its primary purpose is to safeguard the rights and well-being of refugees. It strives to ensure that everyone can exercise the right to seek asylum and find safe refuge in another state, with the option to return home voluntarily, integrate locally, or to resettle in a third country. It also has a mandate to help stateless people.⁴⁰

Climate change and the environment has a big impact on our work at UNHCR. Since the 1990s, UNHCR has become increasingly committed to protecting the environment and of the environmental challenges associated with hosting a large population in a small area.⁴¹

At present, displacement risk is largely driven by the fact that more and more vulnerable people are living in disaster-prone areas. The majority of the 59.5 million people of concern to UNHCR are situated in 'climate change hotspots' around the world. They face the risk of secondary or repeated displacement due to natural hazards and the effects of climate change. Enhancing the resilience of people of concern and the communities hosting them is also a concern to UNHCR as a means to avoid secondary displacement.⁴²

Refworld⁴³

It is the database of the UN High Commissioner for Refugees providing information on refugees and disasters that impact them. It is a collection of:

- country of origin information, carefully selected from UNHCR, international, governmental and non-governmental sources.
- the core international treaties and agreements (such as those adopted by the United Nations and in the European Union), national legislation relating to UNHCR's mandate, and case law from international, regional and national courts.
- refugee policy documents and guidelines from a variety of sources.
- a host of handbooks and training manuals, as well as background documents from the United Nations and other sources.

³⁹ Website: www.unhcr.org

⁴⁰ Website: <http://www.un.org/youthenvoy/2013/09/office-of-the-united-nations-high-commissioner-for-refugees/>.

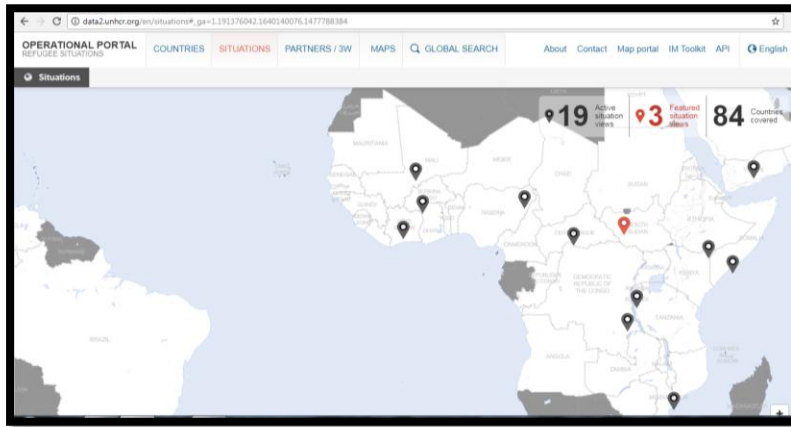
⁴¹ Website: <http://www.unhcr.org/environment-disasters-and-climate-change.html>.

⁴² UNHCR, THE ENVIRONMENT and CLIMATE CHANGE, UPDATED VERSION, October 2015

⁴³ Website: <http://www.refworld.org/docid/45d462192.html>

Emergencies Portal

This portal gives information about refugee situation through interactive map.



Source: UNHCR⁴⁴

World Food Programme⁴⁵

WFP is the food aid arm of the United Nations system. It promotes world food security in accordance with the recommendations of the United Nations and FAO.

Before intervening in a country, the first priority for WFP is to understand the food security situation of the population. WFP's food security analysis work is commonly known as VAM (Vulnerability Analysis and Mapping) and is carried out by over 150 analysts around the world. Analysts work closely with national governments, UN partners and NGOs. Their work informs the policies and programmes that WFP and its partners adopt in order to fight hunger in different circumstances. To collect, manage and analyse data, they use advanced technologies such as satellite imagery, Geographic Information Systems (GIS) and mobile data collection platforms such as smart phones, tablets and Personal Digital Assistants.

In emergencies, WFP brings food to where it is needed, saving the lives of victims of war, civil conflict and natural disasters. After the cause of an emergency has passed, it uses food to help communities rebuild their shattered lives.

When there is an emergency, the World Food Programme (WFP) quickly establishes how much food assistance is needed and the best way to deliver it to the hungry. To do this, it works with United Nations Emergency Assessment Teams. On the basis of the assessment, it draws a detailed plan of action and budget.

⁴⁴ Website: http://data2.unhcr.org/en/situations#_ga=1.191376042.1640140076.1477788384

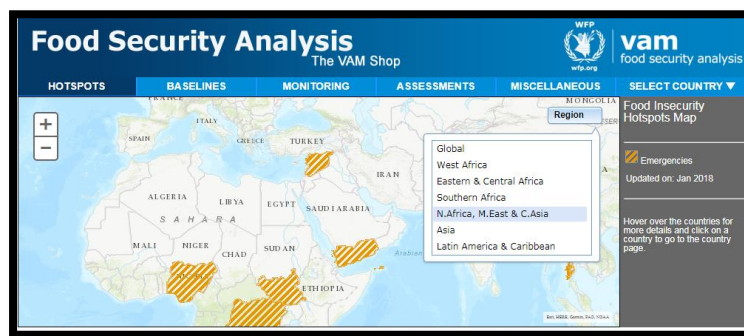
⁴⁵ Website: www.wfp.org

WFP's emergency operations cover three main kinds of crises:

- Sudden disasters: natural disasters which affect food access and/or cause population displacements, and which require special UN coordination procedures.
- Slow-onset disasters: these are usually droughts and crop failures.
- Complex emergencies: these can involve conflict, widespread social and economic disruption and large population displacements and usually involve UN coordination.

Food Security Analysis

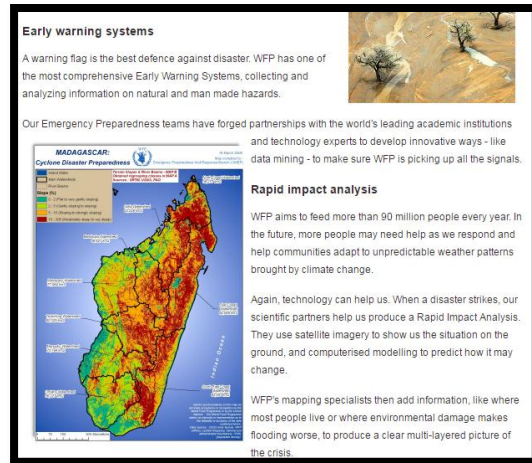
Under sub section “Food Security Analysis: Getting the Facts”, it gives link to a portal VAM: One Stop Shop presents Vulnerability Analysis and Mapping related information in spatial manner.



Source: WFP^{46a}

Under ‘Emergency Preparedness and Response’, it talks about Early Warning Systems using geospatial technologies. Using evidence-based well informed decisions for conflict, natural or economic hazards, WFP allocates resources and gets ready for operations. Using GIS, visualization of collated information is possible. Immediate impact of natural disasters on population, infrastructure or ground operations, could be shown through targeted geospatial analysis.

⁴⁶ Website: http://vam.wfp.org/?_ga=1.160189630.206946775.1477290937



Source: WFP^{47b}

World Meteorological Organization

WMO carries out its work through scientific and technical programmes. These are designed to assist all members to provide, and benefit from, a wide range of meteorological and hydrological services and to address present and emerging problems.

Some examples of initiatives of WMO are given below which provide information and analysis in spatial manner also:

The Global Energy and Water cycle Exchanges (GEWEX) project is dedicated to understanding Earth's water cycle and energy fluxes at the surface and in the atmosphere. It is a network of scientists gathering information on and researching the global water and energy cycles, which will help to predict changes in the world's climate⁴⁸.

The objective of the Programme on Hydrological Forecasting for Water Resources Management (HFWR) is to promote the application of hydrological modeling and forecasting techniques, and of risk assessment and management approaches to the risk reduction and prevention of water-related disasters⁴⁹.

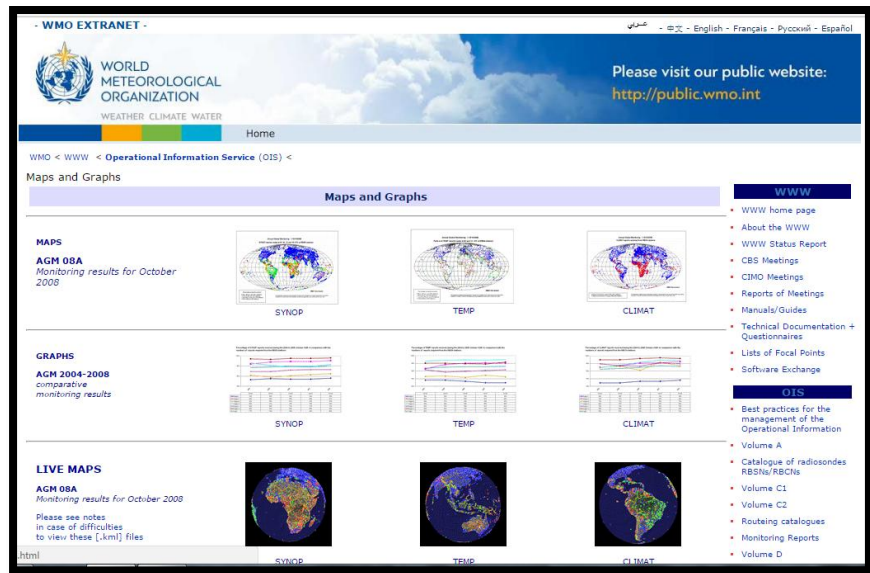
WMO also gives access to many maps, live maps and graphs⁵⁰.

⁴⁷ Website: <http://www.wfp.org/node/21981>

⁴⁸ Website: <https://www.gewex.org/about/>

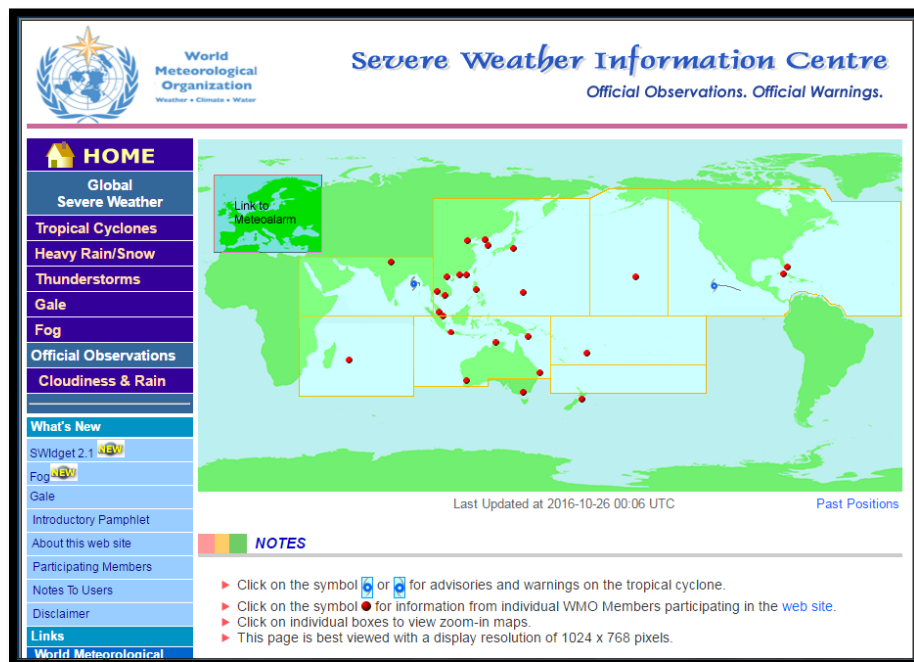
⁴⁹ Website: http://www.wmo.int/pages/prog/hwrf/for_appl.php

⁵⁰ Website: http://www.wmo.int/pages/index_en.html



Source: WMO^{51a}

Interactive maps for severe weather related events can be accessed on severe weather information centre website of WMO.



Source: WMO^{52b}

^{51a} Website: <http://www.wmo.int/pages/prog/www/ois/monitor/MapsGraphs/overview.html>

^{52b} Website: <http://severe.worldweather.org/>

World Health Organization

WHO is the directing and coordinating authority for health within the United Nations system. Its work includes providing leadership on matters critical to health and engaging in partnerships where joint action is needed; shaping the research agenda and stimulating the generation, translation and dissemination of valuable knowledge; setting norms and standards and promoting and monitoring their implementation; articulating ethical and evidence-based policy options; providing technical support, catalysing change, and building sustainable institutional capacity; and monitoring the health situation and assessing health trends.

The following are its main areas of work:

- Health systems
- Promoting health through the life-course
- Non-communicable diseases
- Communicable diseases
- Corporate services
- Preparedness, surveillance and response.

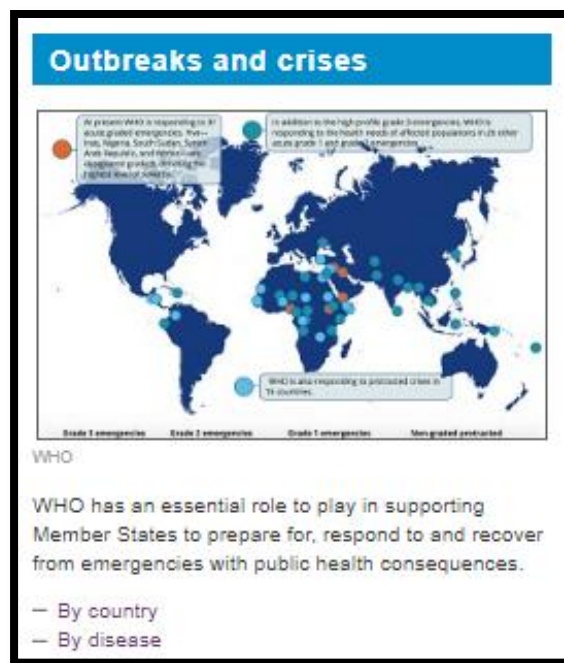
Requested and approved by Member States, a programme ‘ONE WHO EMERGENCIES PROGRAMME’ was initiated in 2016 to refine WHO’s role in emergency responses, adding stronger operational capabilities to our traditional technical and standard setting roles (WHO’S New Health Emergencies Programme, 2016). Recent and ongoing emergencies have helped to test and refine the programme, from the response to Ebola in West Africa and humanitarian crises in the Middle East, to the global response to the Zika virus and the yellow fever outbreak in South-Central Africa to the health consequences of El Niño. The programme is governed by the following principles:



Source: WHO^{53a}

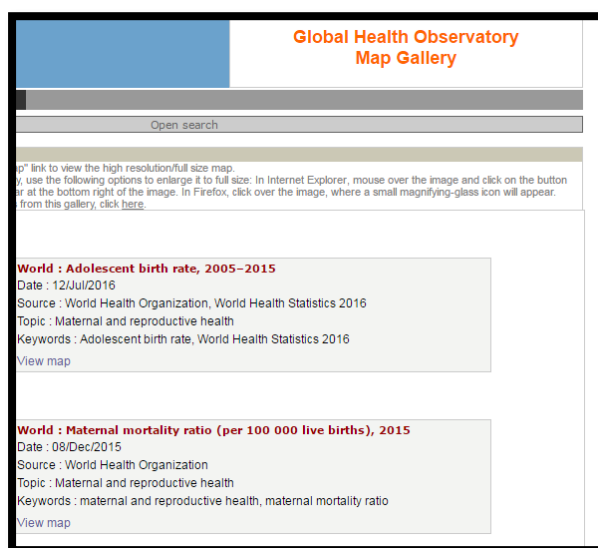
Under sub-section ‘Emergencies’ of Section “Outbreaks and Emergencies”, Outbreaks and Crises information is provided country as well as disease wise.

⁵³ Website: www.who.int



Source: WHO^{54b}

Under sub-section ‘Map Gallery’ of Section “Data” on the Home Page, it provides access to maps for indicators on various Health related themes.



Source: WHO^{55c}

Under sub-section ‘Data and Statistics’ of Section “Programmes”, Atlas of Health and Climate provide related information in spatial format⁵⁶.

^{54b} Website: <http://www.who.int/emergencies/en/>

⁵⁵ Website: http://www.who.int/gho/map_gallery/en/

⁵⁶ Website: <http://www.who.int/globalchange/publications/en/>

United Nations Development Programme⁵⁷

UNDP works in some 170 countries and territories, helping to achieve the eradication of poverty, and the reduction of inequalities and exclusion. It focuses on helping countries build and share solutions in three main areas:

- Sustainable development
- Democratic governance and peacebuilding
- Climate and disaster resilience

UNDP works to integrate issues of climate, disaster risk and energy at the country level, and focuses on building resilience and ensuring that development remains risk-informed and sustainable. UNDP maintains a US\$1.7 billion portfolio in climate change adaptation, mitigation and sustainable energy. Since 2005, at least \$1.7 billion has been invested in disaster risk reduction and recovery (UNDP-CADRI Mission).

International Organization for Migration⁵⁸

Established in 1951, IOM is the leading inter-governmental organization in the field of migration and works closely with governmental, intergovernmental and non-governmental partners.

With 169 member states, a further 8 states holding observer status and offices in over 100 countries, IOM is dedicated to promoting humane and orderly migration for the benefit of all. It does so by providing services and advice to governments and migrants.

IOM works to help ensure the orderly and humane management of migration, to promote international cooperation on migration issues, to assist in the search for practical solutions to migration problems and to provide humanitarian assistance to migrants in need, including refugees and internally displaced people.

IOM works in the four broad areas of migration management:

- Migration and development
- Facilitating migration
- Regulating migration
- Forced migration.

IOM activities that cut across these areas include the promotion of international migration law, policy debate and guidance, protection of migrants' rights, migration health and the gender dimension of migration.

Headquarters is responsible for the formulation of institutional policy, the development of guidelines and strategy, setting standards and quality control procedures, and for knowledge management. Headquarters has the following four departments under the Office of the Director General:

⁵⁷ Website: www.undp.org

⁵⁸ Website: www.iom.int

- Department of International Cooperation and Partnerships
- Department of Migration Management
- Department of Operations and Emergencies
- Department of Resources Management

The Department of Operations and Emergencies is responsible for overseeing IOM's activities related to resettlement, movement, logistics, preparedness and response in migration crises and humanitarian emergencies through recovery and transitional settings.

United Nations Convention to Combat Desertification⁵⁹

In 1977, the United Nations Conference on Desertification (UNCOD) adopted a Plan of Action to Combat Desertification (PACD). Despite this and other efforts, the United Nations Environment Programme (UNEP) concluded in 1991 that the problem of land degradation in arid, semi-arid and dry sub-humid areas had intensified, although there were “local examples of success”. As a result, the question of how to tackle desertification was still a major concern for the United Nations Conference on Environment and Development (UNCED), which was held in Rio de Janeiro in 1992. The Conference supported a new, integrated approach to the problem, emphasizing action to promote sustainable development at the community level.

The Rio Conference called on the United Nations General Assembly to establish an Intergovernmental Negotiating Committee (INC) to prepare, by June 1994, a Convention to Combat Desertification, particularly in Africa. In December 1992, the General Assembly agreed and adopted resolution 47/188 on this matter. The Convention was adopted in Paris on 17 June 1994 and entered into force on 26 December 1996, 90 days after the 50th ratification was received. 194 countries and the European Union are Parties as at April 2015. The Conference of the Parties (COP), which is the Convention's supreme governing body, held its first session in October 1997 in Rome, Italy. At UNCCD COP13 that took place in September 2017 in Ordos, China, the countries have agreed on a new global roadmap to address land degradation. The new UNCCD 2018-2030 Strategic Framework is the most comprehensive global commitment to achieve Land Degradation Neutrality (LDN) in order to restore the productivity of vast swathes of degraded land, improve the livelihoods of more than 1.3 billion people, and to reduce the impacts of drought on vulnerable populations⁶⁰.

As the global authority and normative reference on desertification, land degradation and drought (DLDD), the UNCCD promotes an enabling environment for policy responsiveness to existing policy gaps and ever evolving global challenges. National Action Programmes (NAPs) are the key instruments to implement the Convention. They are often supported by action programmes at sub-regional (SRAP) and regional (RAP) levels. Some of the policy barriers to addressing DLDD include the lack of information and data, and the need for reform and implementation of science-based policy frameworks⁶¹.

⁵⁹ Website: <http://www2.unccd.int>

⁶⁰ Website: <http://www.unccd.int/en/about-the-convention/history/Pages/default.aspx>

⁶¹ Website: <http://www4.unfccc.int/sites/NWP/Pages/item.aspx?ListItemId=11832&ListUrl=/sites/nwp/Lists/MainDB>

United Nations Relief and Works Agency for Palestine Refugees⁶²

Following the 1948 Arab-Israeli conflict, United Nations Relief and Works Agency for Palestine Refugees (UNRWA) was established by United Nations General Assembly resolution 302 (IV) of 8 December 1949 to carry out direct relief and works programmes for Palestine refugees. The Agency began operations on 1 May 1950.

In the absence of a solution to the Palestine refugee problem, the General Assembly has repeatedly renewed UNRWA's mandate. UNRWA is funded almost entirely by voluntary contributions from UN Member States. UNRWA also receives some funding from the Regular Budget of the United Nations, which is used mostly for international staffing costs.

It has contributed to the welfare and human development of four generations of Palestine refugees, defined as “persons whose normal place of residence was Palestine during the period 1 June 1946 to 15 May 1948, and who lost both home and means of livelihood as a result of the 1948 conflict.”

The Agency's services encompass education, health care, relief and social services, camp infrastructure and improvement, microfinance and emergency assistance, including in times of armed conflict.

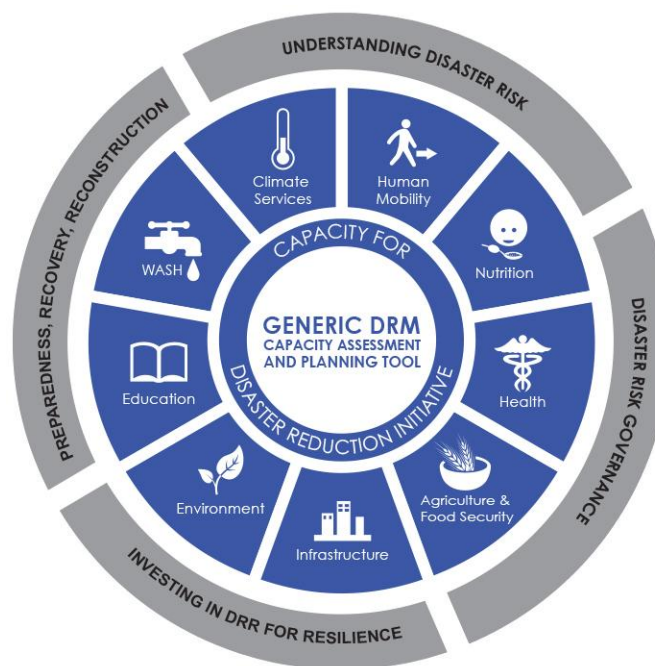
The Agency works in close coordination with UN country teams in host countries to develop contingency and emergency response plans through the prevention, preparedness, response and recovery phases. Normally, these operations are of short duration, though protracted humanitarian emergencies may require a sustained relief effort.

⁶² Website: www.unrwa.org

Capacity for Disaster Reduction Initiative⁶³

Established in 2007, Capacity for Disaster Reduction Initiative (CADRI) was set up as a mechanism aimed at responding to the need for a coordinated and coherent UN-wide effort to support Governments develop their capacities to prevent, manage and recover from the impacts of disasters, in line with the Sendai Framework for Disaster Risk Reduction (2015-2030).

CADRI brings together six United Nations organizations – FAO, OCHA, UNDP, UNICEF, WFP and WHO – and GFDRR, IFRC, UNESCO, UNITAR, UNOPS, WMO and IOM as observers to deliver coordinated and comprehensive support in capacity development for disaster risk reduction to countries at risk.



CADRI Partner Agencies aim to strengthen existing capacity development initiatives and programmes at all levels and work in collaboration with existing UN and non-UN coordination mechanisms to ensure a better alignment of support in capacity development in disaster risk reduction offered to countries.

⁶³ Website: <http://www.cadri.net/>

Global Disaster Alert and Coordination System

Global Disaster Alert and Coordination System (GDACS) is a cooperation framework under the United Nations umbrella. It includes disaster managers and disaster information systems worldwide and aims at filling the information and coordination gap in the first phase after major disasters. GDACS provides real-time access to web-based disaster information systems and related coordination tools. GDACS is managed by an Advisory Group. The Activation and Coordination Support Unit (ACSU) in the United Nations Office for Coordination of Humanitarian Affairs (OCHA) in Geneva acts as GDACS Secretariat.

Annual GDACS Advisory Group meetings are attended by disaster managers, scientists, map experts, webmasters and other professionals, to define standards for information exchange and a strategy for further development of related tools and services.

GDACS Services⁶⁴

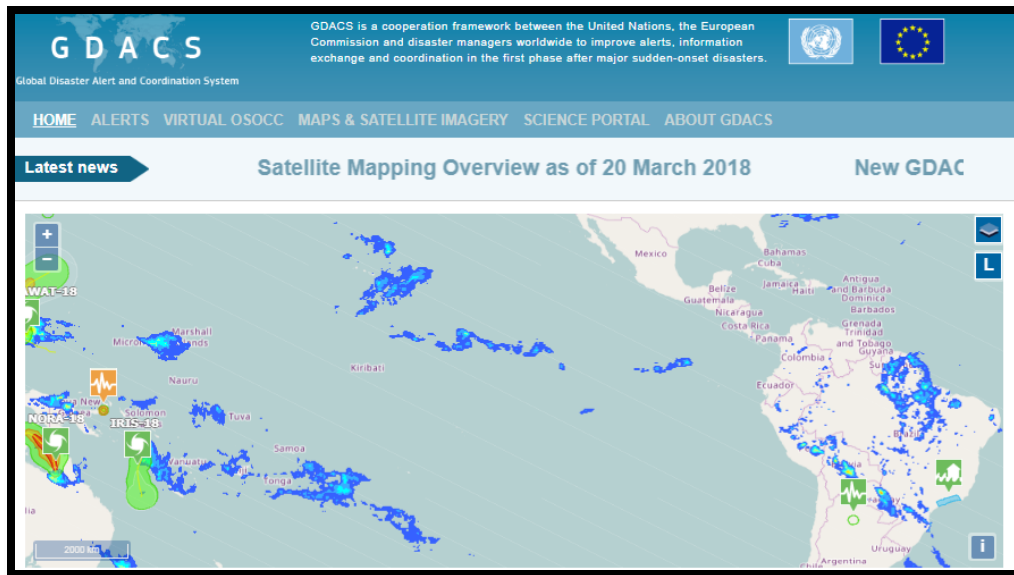
GDACS provides alerts and impact estimations after major disasters through a multi-hazard disaster impact assessment service managed by the European Commission Joint Research Centre. To this end, JRC establishes scientific partnerships with global hazard monitoring organizations. Flood disasters are provided by the Dartmouth Flood Observatory. Relevant data is integrated automatically into GDACS alerts and impact estimations.

GDACS develops standards and guidelines for international information exchange in disasters. It provides the real-time coordination platform “VirtualOSOCC” (<http://vosocc.gdacs.org>) to disaster managers worldwide. It coordinates the creation and dissemination of disaster maps and satellite images. This service is facilitated by the UN Institute for Training and Research (UNITAR) Operational Satellite Applications Programme (UNOSAT). Relevant maps are integrated automatically in VirtualOSOCC disaster discussions. Detailed weather forecast are provided rapidly on demand by SARWeather and integrated into VirtualOSOCC disaster discussions.

Many governments and disaster response organizations rely on GDACS alerts and automatic impact estimations to plan international assistance. Some 14,000 disaster managers from governmental and non-governmental organizations have subscribed to the VirtualOSOCC and use the tool for information exchange and coordination in the first disaster phase.

It provides latest disaster alerts through its map service.

⁶⁴ Website: <http://portal.gdacs.org/about>



Source: GDACS⁶⁵ a

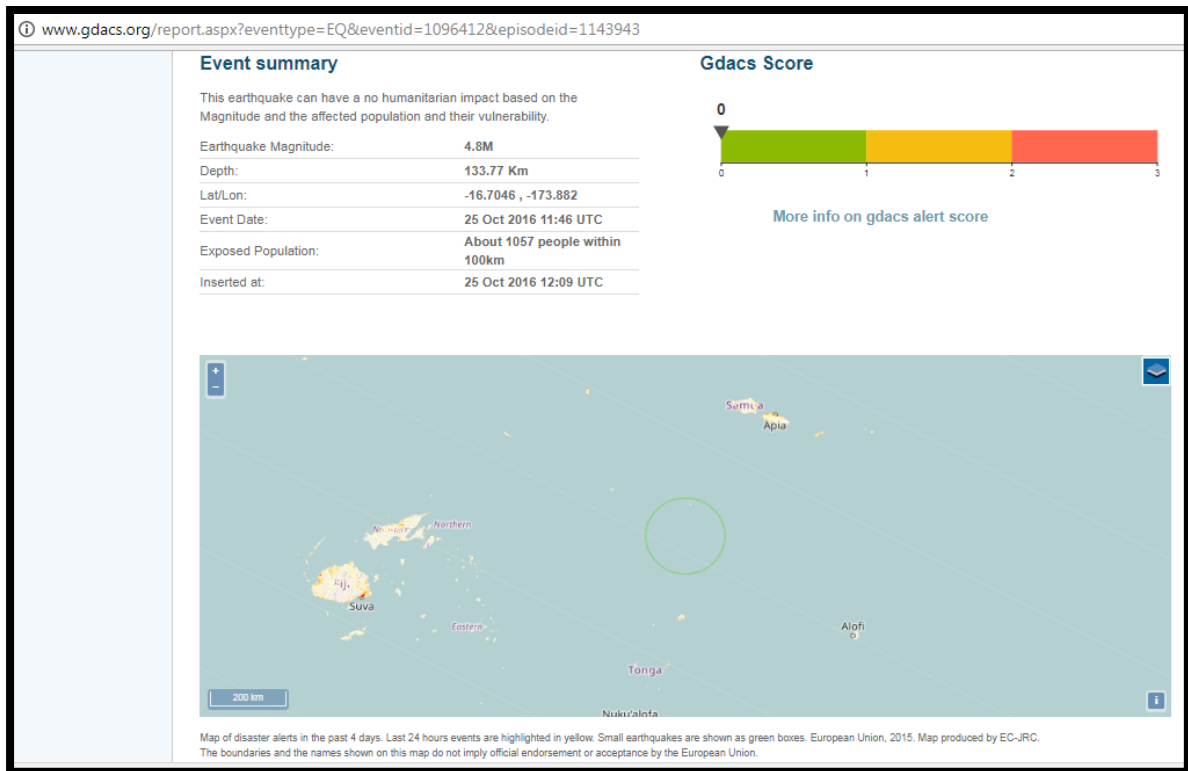
Under Section 'Maps, Data, Maps and Satellite Imagery' and 'Alerts', it gives access to relevant information to updates on alerts and the disaster events.



Source: GDACS⁶⁶ b

⁶⁵a Website: <http://www.gdacs.org/default.aspx>

⁶⁶b Website: <http://www.gdacs.org/alerts/>



Source: GDACS^{67c}

^{67c} Website: <http://www.gdacs.org/report.aspx?eventtype=EQ&eventid=1096412&episodeid=1143943>

Over the past decade, the World Bank has emerged as the global leader in disaster risk management (DRM), supporting client countries to assess exposure to hazards and address disaster risks. It provides technical and financial support for risk assessments, risk reduction, preparedness, financial protection, and resilient recovery and reconstruction. The World Bank's annual DRM investment has increased steadily over the past six years—from \$3.7 billion in FY12 to \$4.4 billion in FY17.

In providing support for DRM, the World Bank Group (WBG) promotes a comprehensive, multi-sectoral approach to managing disaster risk.

The Social, Urban, Rural and Resilience Global Practice (GSURR) houses the World Bank's core DRM specialists and leads engagement with client countries on disaster risk and resilience. The Global Facility for Disaster Reduction and Recovery (GFDRR), a global partnership managed by the World Bank and supported by 37 countries and 11 international institutions, acts as a financing and technical body that supports DRM across the World Bank Group.

The World Bank Group and GFDRR work with more than 400 external partners on disaster risk management (DRM), including leading universities, the insurance sector, the risk modeling industry, civil society organizations, foundations, technical and development agencies of national governments, as well as UN and other multilateral agencies.

⁶⁸ Website: <http://www.worldbank.org/en/topic/disasterriskmanagement/overview#4>

Global Facility for Disaster Reduction and Recovery⁶⁹

The Global Facility for Disaster Reduction and Recovery (GFDRR) is a global partnership that helps developing countries better understand and reduce their vulnerabilities to natural hazards and adapt to climate change. Working with over 400 local, national, regional, and international partners, GFDRR provides grant financing, technical assistance, training and knowledge sharing activities to mainstream disaster and climate risk management in policies and strategies.

Under section “Bringing Resilience to Scale”, five priorities are mentioned.

Pillars of Action

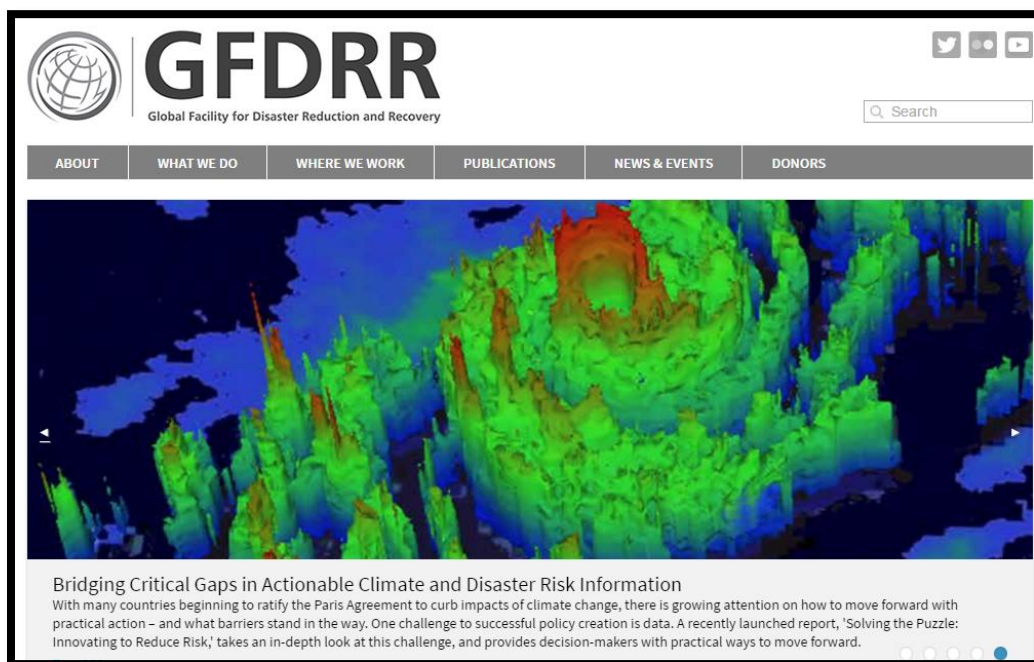
Pillar 1: Risk Identification

Pillar 2: Risk Reduction

Pillar 3: Preparedness

Pillar 4: Financial Protection

Pillar 5: Resilient Recovery



⁶⁹ Website: <https://www.gfdr.org/>

INTERNATIONAL FEDERATION OF RED CROSS AND RED CRESCENT SOCIETIES⁷⁰

Founded in 1919, the IFRC comprises 190 member Red Cross and Red Crescent National Societies, a secretariat in Geneva and more than 60 delegations strategically located to support activities around the world. The International Federation of Red Cross and Red Crescent Societies (IFRC) is the world's largest humanitarian organization. The IFRC carries out relief operations to assist victims of disasters, and combines this with development work to strengthen the capacities of its member National Societies. The IFRC's work focuses on four core areas: promoting humanitarian values, disaster response, disaster preparedness, and health and community care.

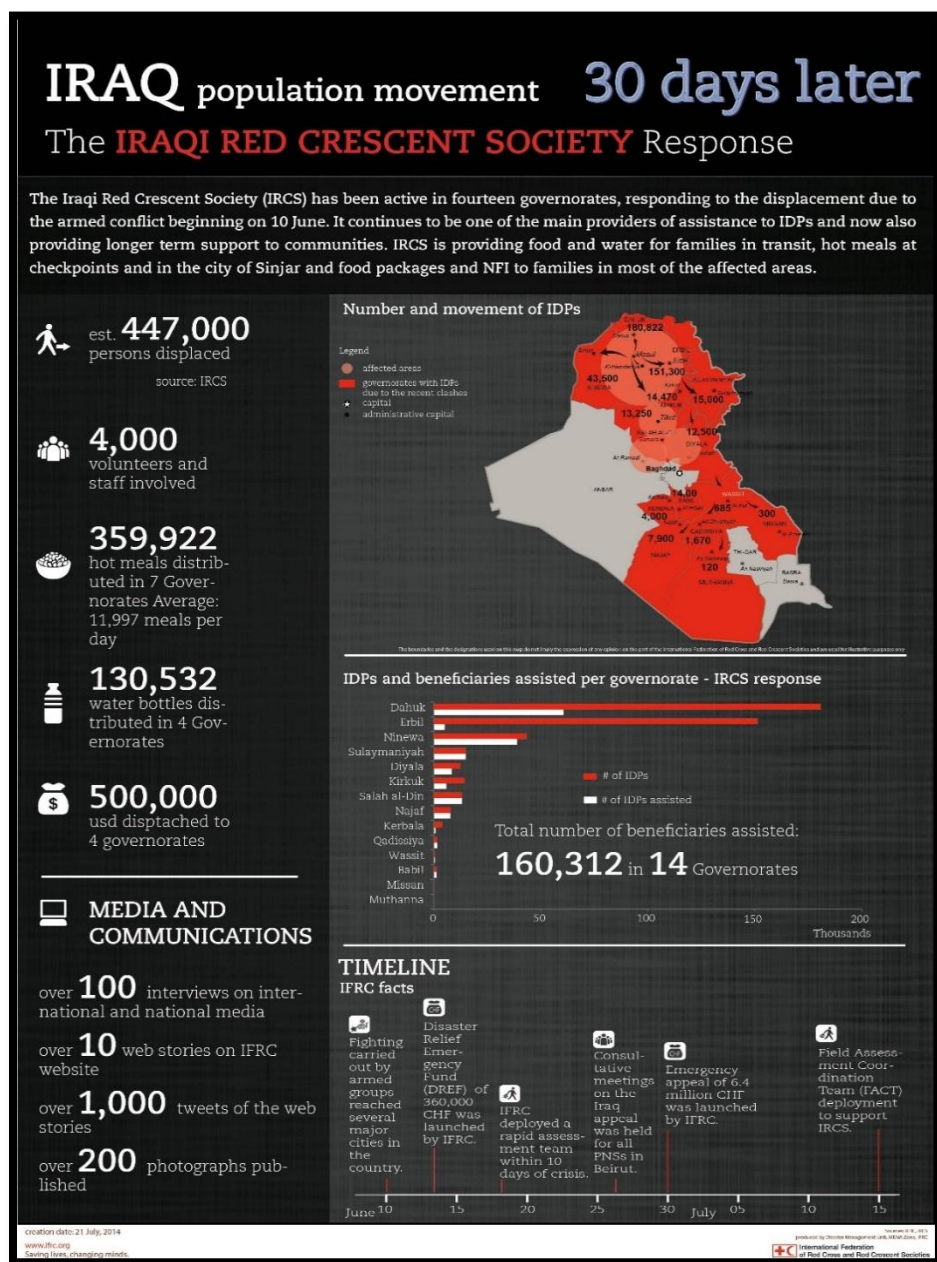
The unique network of National Societies - which cover almost every country in the world - is the IFRC's principal strength. Cooperation between National Societies gives the IFRC greater potential to develop capacities and assist those most in need. At a local level, the network enables the IFRC to reach individual communities.

The role of the secretariat in Geneva is to coordinate and mobilize relief assistance for international emergencies, promote cooperation between National Societies and represent these National Societies in the international field.

The role of the field delegations is to assist and advise National Societies with relief operations and development programmes, and encourage regional cooperation. The IFRC, together with National Societies and the International Committee of the Red Cross, make up the International Red Cross and Red Crescent Movement.

⁷⁰ Website: <http://www.ifrc.org>

Some information of national or regional scale on its disaster management related current operations can be found in spatial manner under Section “What-we-do” → ‘Disaster and Crisis Management’ → ‘Responding’ → ‘Ongoing Operations’.



Source: IFRC⁷¹

⁷¹ Website: <http://www.ifrc.org/en/what-we-do/disaster-management/responding/ongoing-operations/>

EUROPEAN COMMISSION

European Commission is the executive of European Union. The European Commission's Humanitarian Aid and Civil Protection department (ECHO) has developed a two-phase framework for assessing and analysing needs in specific countries and crises. This framework provides the evidence base for prioritisation of needs, funding allocation, and development of humanitarian implementation plans (HIPs).

The first phase is a global evaluation with two dimensions:

Index for Risk Management (INFORM) is a tool based on national indicators and data which allows for a comparative analysis of countries to identify their level of risk to humanitarian crisis and disaster. The Forgotten Crisis Assessment (FCA) identifies serious humanitarian crisis situations where the affected populations do not receive enough international aid or even none at all.

The second phase of the framework focuses on context and response analysis.

Integrated Analysis Framework (IAF) is an in-depth assessment carried out by European Commission's humanitarian experts. It consists of a qualitative assessment of humanitarian needs per single crisis, also taking into account the population affected and foreseeable trends. bal evaluation with two dimensions:

It supports:

- The work of the Inter-agency Standing Committee (IASC) related to assessment and analysis tools and guidance (such as the roll-out of the Humanitarian Programme Cycle).
- Funding of global needs assessment initiatives under the Enhanced Response Capacity (ERC) mechanism with partner organizations.
- Promoting efforts aimed at improving coordinated needs assessment methodologies and processes in humanitarian assistance, including through donor platforms, such as the Good Humanitarian Donorship (GHD) initiative.
- Supporting the global INFORM initiative, and national and regional assessments of the risk of humanitarian crises and disasters that are based on the INFORM methodology and process.

When a country is hit by a disaster which overwhelms its response capacity, European countries can provide assistance via the EU Civil Protection Mechanism. The Emergency Response Coordination Centre is the 24/7 operational hub of the Mechanism. It coordinates the delivery of civil protection assistance to disaster stricken countries such as relief items, expertise, intervention teams and specific equipment⁷².

⁷² Website: https://ec.europa.eu/echo/what/humanitarian-aid/needs-assessments_en

European Commission's Civil Protection and Humanitarian Aid Department

The European Commission's Civil Protection and Humanitarian Aid Operations department (ECHO) provides relief in all major crisis zones around the world including Syria, South Sudan, Yemen and Ukraine. It also contributes to tackling the refugee crisis in Europe, also by mobilizing EU civil protection channels.

The humanitarian assistance funded by the EU is delivered in partnership with UN agencies, international organizations and NGOs. EU humanitarian aid covers intervention areas such as: food and nutrition, shelter, health care, water and sanitation and education in emergencies. A large network of Commission's humanitarian experts in over 40 countries worldwide enables close monitoring of crisis situations and relief operations.

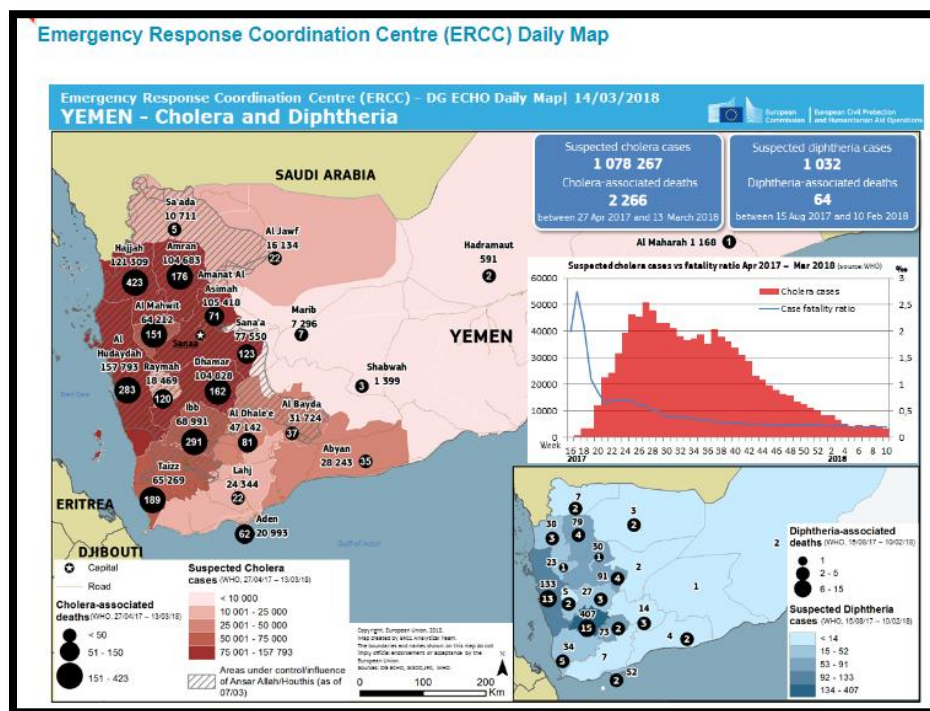
Emergency Response Coordination Centre

The Emergency Response Coordination Centre (ERCC), operated within ECHO, has been set up to support a coordinated and quicker response to disasters both inside and outside Europe using resources from 34 countries participating in the Union Civil Protection Mechanism.

It collects and analyses real-time information on disasters, monitors hazards, prepares plans for the deployment of experts, teams and equipment, and works with Member States to map available assets and coordinate the EU's disaster response efforts by matching offers of assistance to the needs of the disaster-stricken country. It has a “Maps” Section.

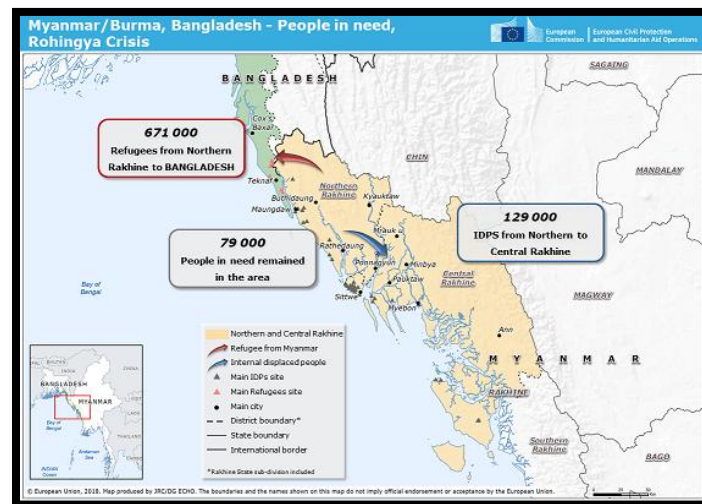
ERCC Daily MAP

Each day, ERCC publishes a map of the most important event or events.



ERCC Situation MAP⁷³

ERCC publishes Public Situation maps.



EU Aid Explorer⁷⁴

EU Aid Explorer is a unique web tool that provides easy access to clear, complete and accurate data on development and humanitarian aid around the world. Maps and graphs are used to visualize which donor is active where, which sectors and countries receive how much assistance and how funding changes over time. EU Aid Explorer has been developed by the European Commission Joint Research Centre. The added value of EU Aid Explorer is that independently of where the data is coming from, there is a standardized web interface through which this data is made available to users. Under Section “Infographics” various maps can be found.

Emergency Management Service⁷⁵

Emergency Management Service (EMS) of EU has two systems: Mapping and Early Warning System. Mapping system has two products: Rapid Mapping and Risk and Recovery.

Mapping⁷⁶

Rapid Mapping consists of the on-demand and fast provision (within hours or days) of geospatial information in support of emergency management activities immediately following an emergency event. The products are standardized. A large set of parameters are available, and the

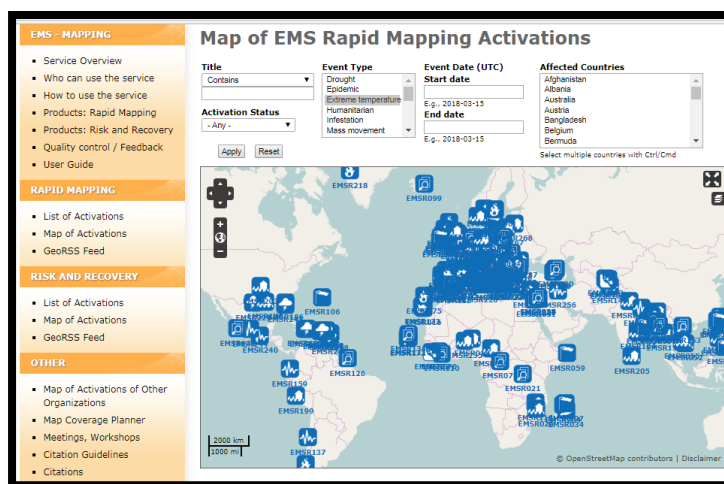
⁷³ Website: <http://erccportal.jrc.ec.europa.eu/>

⁷⁴ Website: <https://euaidexplorer.ec.europa.eu/>

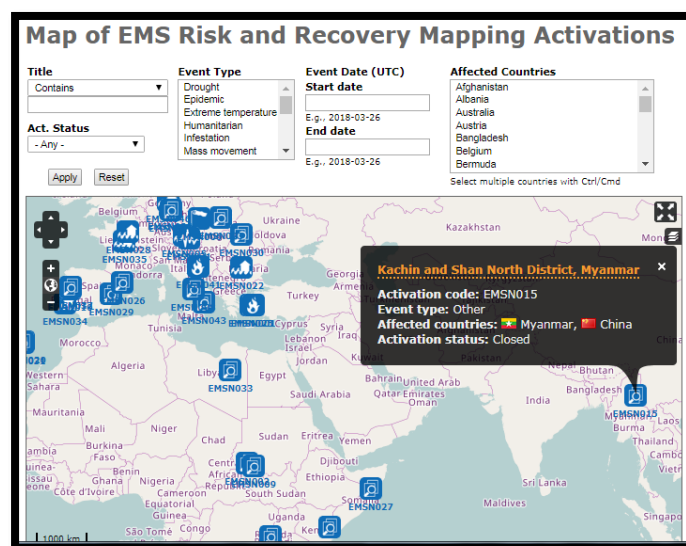
⁷⁵ Website: <http://emergency.copernicus.eu/mapping/map-of-activations-rapid#zoom=0andlat=25.17279andlon=36.61andlayers=00BT>

⁷⁶ Website: <http://emergency.copernicus.eu/mapping/map-of-activations-risk-and-recovery#zoom=2andlat=25.421andlon=10.31899andlayers=00BT>

user can choose among them when placing a service request. There are three standard products: Reference Maps, Delineation Maps (providing an assessment of the event extent) and Grading Maps (providing an assessment of the damage grade and its spatial distribution). Browse the list of activations to see some examples.

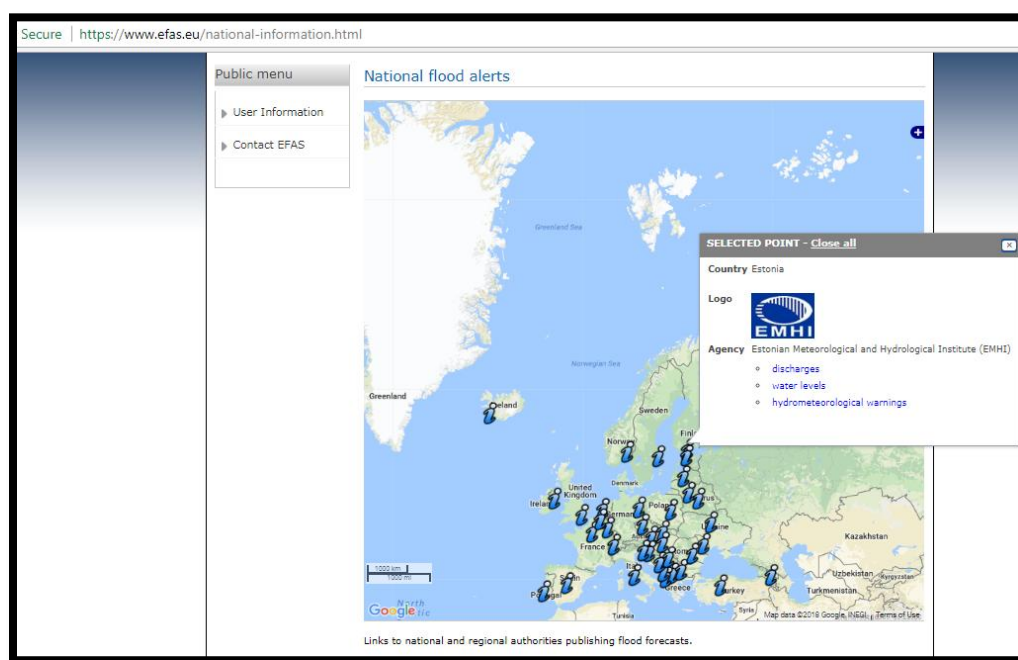


Risk and Recovery Mapping consists of the on-demand provision of geospatial information in support of Emergency Management activities not related to immediate response. This applies in particular to activities dealing with prevention, preparedness, disaster risk reduction and recovery phases. There are three broad product categories: Reference Maps, Pre-disaster Situation Maps and Post-disaster Situation Maps. Browse the list of activations to see some examples.



Early Warning Systems⁷⁷

The European Flood Awareness System has been developed and tested at the Joint Research Centre, the European Commission's in-house science service, in close collaboration with national hydrological and meteorological services, European Civil Protection and other research institutes. European Flood Awareness System (EFAS) aims at delivering added value information to the national hydrological services while at the same time providing a unique overview on the current and forecast flood situation to the European Commission's Emergency Response Coordination Centre (ERCC) of DG ECHO. EFAS provides Pan-European overview maps of flood probabilities up to 10 days in advance as well as detailed forecasts at stations where the national services are providing real time data. More than 30 hydrological and Civil Protection services in Europe are part of the EFAS network. Since September 2012 EFAS is part of the Copernicus Emergency Management Service (EMS, former GMES EMS). The EFAS network represents the first operational network for hydrology in Europe.

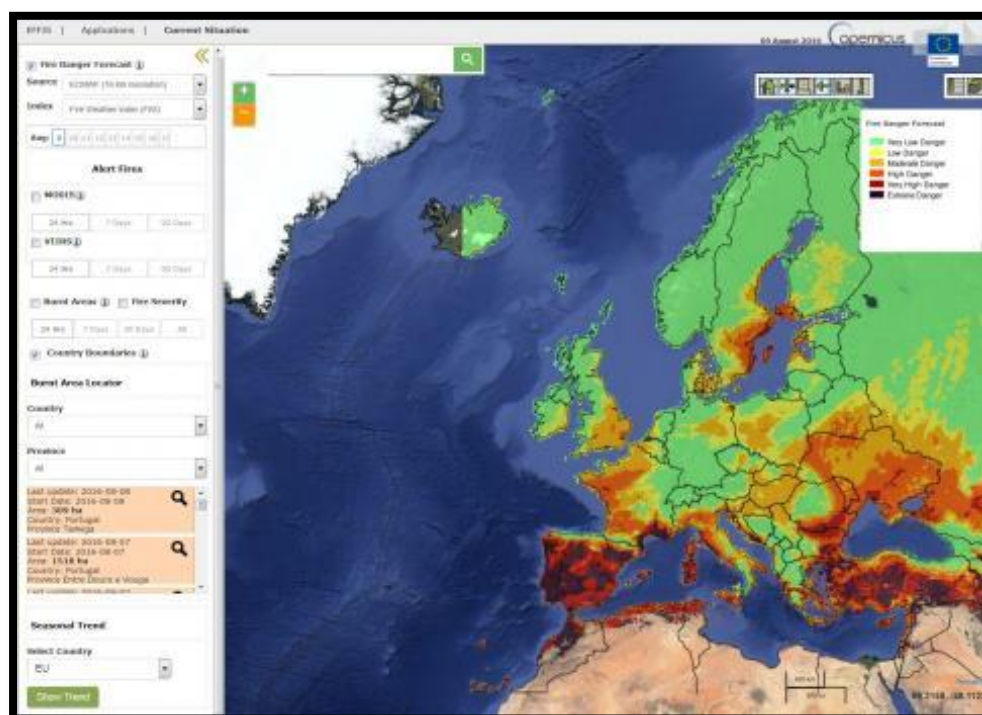


The European Forest Fire Information System consists of a modular web geographic information system that provides near real-time and historical information on forest fires and forest fire regimes in the European, Middle Eastern and North African regions. Fire monitoring in European Forest Fire Information System (EFFIS) comprises the full fire cycle, providing information on the pre-fire conditions and assessing post-fire damages.

Near-real time information on the first two modules mentioned above is provided through the so-called “current situation” viewer at <http://forest.jrc.ec.europa.eu/effis/applications/current-situation>.

⁷⁷ Website: <https://www.efas.eu/national-information.html>

At the core of EFFIS lies the so-called Fire Database, which includes detailed information of individual fire records provided by the EFFIS network countries. Currently data in the database comprises nearly 2 million records provided by 22 countries. Information on the data in the database is provided through the fire history application of EFFIS at <http://forest.jrc.ec.europa.eu/effis/applications/fire-history/>



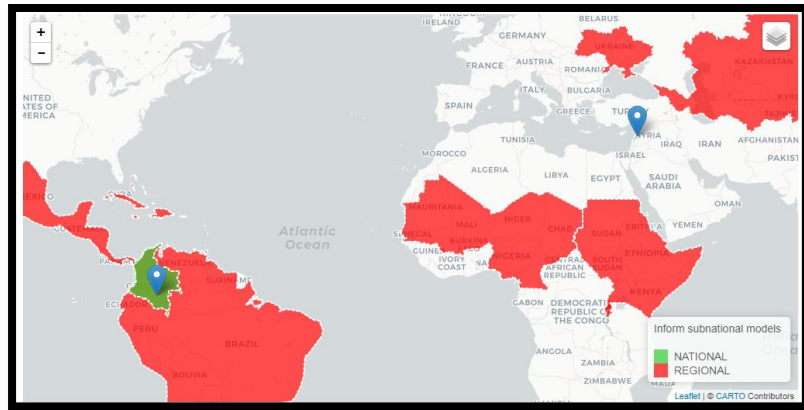
Source: efas⁷⁸

INFORM

INFORM (Index for Risk Management) is a global, open-source risk assessment for humanitarian crises and disasters. It is a Index for risk management. INFORM is a collaboration of the Inter-Agency Standing Committee Task Team for Preparedness and Resilience and the European Commission.

An INFORM Subnational risk index shows a detailed picture of risk and its components within a single region or country. It uses the same methodology and development process as the global INFORM, but is subnational in resolution. Developing an INFORM Subnational model is a locally owned and managed, cost-effective process that is supported by the global INFORM initiative.

⁷⁸ Website: <http://emergency.copernicus.eu/mapping/ems/early-warning-systems-efas-and-effis>



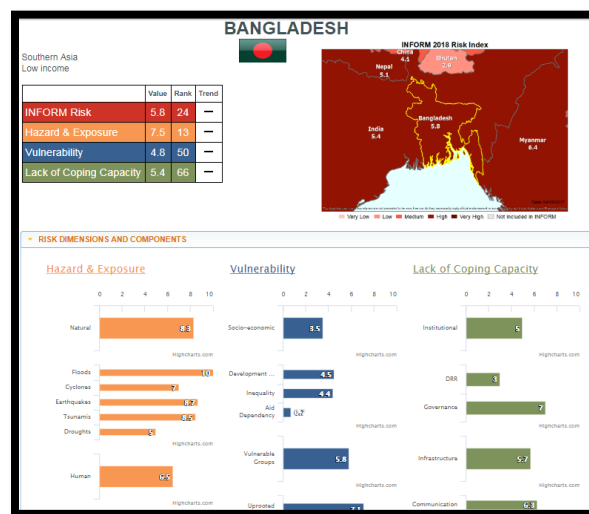
Source: INFORM^{79a}

Results and Data⁸⁰:

INFORM results are open and available in many formats. The Excel sheet contains all the source data and the calculation steps for functional levels, categories and dimensions. Results can also be consulted online, as country profiles, or as GIS data. Along with other maps, it also provide an interactive map system.

Country Profile:

Country Profile under INFORM provides countrywise in-depth information on various aspects such as Hazard, Vulnerability and Coping Capacity.



Source: INFORM^{81b}

^{79a} Website: <http://www.inform-index.org/Subnational>

⁸⁰ Website: <http://www.inform-index.org/Results/Global>

^{81b} Website: <http://www.inform-index.org/Countries/Country-profiles>

SOUTH ASIAN ASSOCIATION OF REGIONAL COOPERATION

The South Asian Association for Regional Cooperation (SAARC) was established with the signing of the SAARC Charter in Dhaka on 8 December 1985. SAARC comprises of eight Member States: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. The Secretariat of the Association was set up in Kathmandu on 17 January 1987⁸².

A SAARC Comprehensive Framework on Disaster Management and Disaster Prevention⁸³ is articulated. The Framework provides a platform for South Asian countries to:

- Establish and strengthen the regional disaster management system to reduce risks and to improve response and recovery management at all levels;
- Identify and elaborate country and regional priorities for action;
- Share best practices and lessons learnt from disaster risk reduction efforts at national levels;
- Establish a regional system to develop and implement regional programmes and projects for early warning;
- Establish a regional system of exchanging information on prevention, preparedness and management of natural disasters;
- Create a regional response mechanism dedicated to disaster preparedness, emergency relief and rehabilitation to ensure immediate response; and
- Create a regional mechanism to facilitate monitoring and evaluation of achievements towards goals and strategies.

SAARC Disaster Management Centre

It was set up in October 2006 at National Institute of Disaster Management (NIDM) premises, New Delhi, India. In November 2016, expanded the purpose by merging the other Regional erstwhile centres namely SAARC Meteorological Research Centre (SMRC Dhaka, Bangladesh); SAARC Forestry Centre (SFC, Thimphu, Bhutan); and SAARC Coastal Zone Management Centre (SCZMC, Male, Maldives) with SDMC. Chief Minister of Gujarat inaugurated the SAARC Disaster Management Centre at the Gujarat Institute of Disaster Management (GIDM), Gandhinagar, India on May 24, 2017. Its vision is to be a Centre of Excellence for regional cooperation and specialised service delivery to Member States for Disaster Risk Reduction, Response and Recovery for Sustainable Development^{84, 85}.

⁸² Website: <http://saarc-sec.org/about-saarc>

⁸³ SAARC Comprehensive Framework on Disaster Management

⁸⁴ Website: http://mea.gov.in/press-releases.htm?dtl/28482/Inauguration_of_SAARC_Disaster_Management_Centre

⁸⁵ Website: http://www.unescap.org/sites/default/files/Session_5_Nisargkumar_Dave_SAARC_Disaster_Management_Centre.pdf

ASSOCIATION OF SOUTH EAST ASIAN NATIONS

The Association of Southeast Asian Nations, or ASEAN, was established on 8 August 1967 in Bangkok, Thailand, with the signing of the ASEAN Declaration (Bangkok Declaration) by the Founding Fathers of ASEAN, namely Indonesia, Malaysia, Philippines, Singapore and Thailand. Brunei Darussalam then joined on 7 January 1984, Viet Nam on 28 July 1995, Lao PDR and Myanmar on 23 July 1997, and Cambodia on 30 April 1999, making up what is today the ten Member States of ASEAN. The ASEAN Charter entered into force on 15 December 2008⁸⁶.

ASEAN Agreement on Disaster Management and Emergency Response

The Association of South East Asian Nations (ASEAN) Agreement on Disaster Management and Emergency Response (AADMER) is a legally-binding agreement that promotes regional - cooperation and collaboration in reducing disaster losses and intensifying joint emergency response to disasters in the region. The AADMER is a regional agreement that legally binds all Member States to enforce its provisions in their respective territories.

AADMER contains provisions on disaster risk identification, monitoring and early warning, prevention and mitigation, preparedness and response, rehabilitation, technical cooperation and research, mechanisms for coordination, and simplified customs and immigration procedures. AADMER also provides for the establishment of an ASEAN Coordinating Centre for Humanitarian Assistance on disaster management (AHA Centre) to undertake operational coordination of activities under the Agreement (ASEAN Secretariat, 2009).

Article 24 (Financial Arrangements) sets out the establishment of the ASEAN Disaster Management and Emergency Relief (AADMER) Fund, to be administered by the ASEAN Secretariat under the guidance of the Conference of the Parties (COP). Article 24 further states that the Parties shall, in accordance with the decisions of the COP, make voluntary contributions to the Fund and that the Fund shall also be open to contributions from other sources such as international organizations, regional financial institutions and the international donor community (ASEAN Agreement on Disaster Management and Emergency Response Vientiane, 26 July 2005).

AADMER Work Programme 2016-2020⁸⁷

The current work programme is a five (5)-year rolling programme that seeks to build resilient ASEAN Community to reduce disaster losses and collectively respond to disasters. This shall be undertaken through the implementation of eight (8) Priority Programmes that cover the entire range of thematic areas in disaster management.

Priority 1: Aware: Risk Aware ASEAN Community

Priority 2: Build Safely: Building Safe ASEAN Infrastructures and Essential Services

Priority 3: Advance: A Disaster Resilient and Climate Adaptive ASEAN Community

⁸⁶ Website: www.asean.org

⁸⁷ AADMER Work Programme 2016-2020

Priority 4: Protect: Protecting Economic and Social Gains of ASEAN Community Integration Through Risk Transfer and Social Protection

Priority 5: Respond as One: Transforming Mechanisms for ASEAN's Leadership in Response

Priority 6: Equip: Enhanced Capacities for One ASEAN One Response

Priority 7: Recovery: ASEAN Resilient Recovery

Priority 8: Lead: ASEAN Leadership for Excellence and Innovation in Disaster Management

In terms of implementation, the current work programme maintains the four (4) strategic components namely: Risk Assessment, Early Warning and Monitoring (now renamed into Risk Assessment and Awareness); ii) Prevention and Mitigation; iii) Preparedness and Response; and iv) Recovery, as an effective categorisation of the work to be undertaken in the next 5 years. A fifth strategic component is established on Knowledge and Innovation.

Management, to systematically capture, consolidate, and disseminate all the knowledge on disaster management in the region. The six (6) building blocks namely: i) Institutionalisation; ii) Partnership; iii) Resource Mobilisation; iv) Information Management and Communication Technology; v) Outreach and Mainstreaming; and vi) Training and Knowledge Management, are now streamlined in each of the strategic components for a more integrated approach to the implementation of the work programme. Interlinkages are clearly established between the strategic components, and consequently the 8 priority programmes, to facilitate synergy and complementarity.

The ASEAN Committee on Disaster Management (ACDM) shall perform the following functions:

- a. Provide leadership and guidance towards fulfilling the goals and objectives of AADMER in pursuant of the vision of disaster resilient nations and safer communities within ASEAN;
- b. Initiate, direct and oversee the development, monitoring and implementation of the AADMER Work Programme and other related decisions and initiatives implemented by the respective Working Groups;
- c. Strengthen coordination with relevant ASEAN bodies to complement the implementation of disaster management activities and promote effective integration of relevant and related programmes and activities;
- d. Collaborate with ASEAN Dialogue Partners, international and multilateral agencies, civil society, academe, the Red Cross and Red Crescent Movement, the private sector, and other relevant partners and stakeholders, to advance the objectives of AADMER;
- e. Enhance sharing of resources and information on disaster management and promote collaborative disaster research activities;
- f. Plan and coordinate all activities required for convening of meetings, in coordination with the host Member State and ASEAN Secretariat; and
- g. Present reports and provide recommendations related to AADMER and other policy and strategic issues on disaster management to the COP to AADMER and AMMDM for their consideration.

ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management

The AHA Centre is an intergovernmental organization, established by the ten ASEAN Member States with the aim to facilitate cooperation and coordination of disaster management amongst ASEAN Member States. The Agreement on the Establishment of the ASEAN Coordinating Centre for Humanitarian Assistance on disaster management was signed by ASEAN Foreign Ministers on 17 November 2011, and witnessed by the Heads of State / Government of all ten ASEAN countries. In operationalizing its mandate, the AHA Centre primarily works with the National Disaster Management Organizations (NDMOs) of the ASEAN Member States. Furthermore, the AHA Centre also partners with international organizations, private sector, and civil society organizations, such as the Red Cross and Red Crescent Movement, the United Nations, and AADMER Partnership Group.

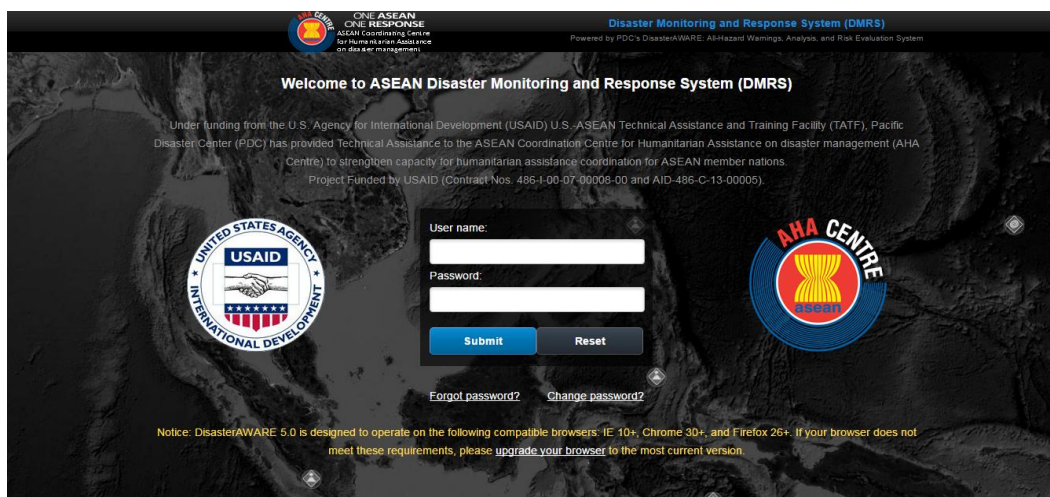
The AHA Centre reports its progress and activities to the ASEAN Committee on Disaster Management (ACDM) on a regular basis. The ACDM members consist of heads of NDMOs of the ten ASEAN Member States who serve as the Governing Board of the AHA Centre⁸⁸.

Disaster Monitoring and Response System (DMRS)⁸⁹

The Disaster Monitoring and Response System (DMRS) of ASEAN is one of the disaster monitoring tools utilised by the AHA Centre. The tool was designed in partnership with the Pacific Disaster Center (PDC), an applied science and information centre based in Hawaii, with the support of the Government of the United States of America. DMRS receives constant information feeds from the PDC system. It shows real time information of the hazards in the region as they happen, as well as hydrometeorological data, such as wind direction and speed, clouds, sea temperature, etc. The basic maps can be overlaid with additional information, such as basic population density data, location of airports and seaports, and major roads and infrastructure.

⁸⁸ Website: <https://ahacentre.org/about-us/>

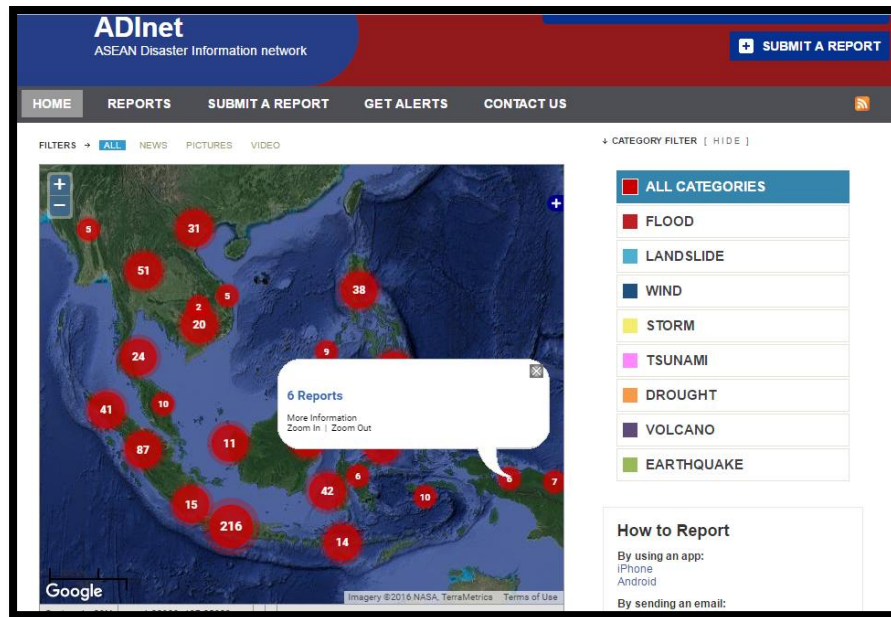
⁸⁹ Website: <http://dmrs.ahacentre.org/dmrs/>



ASEAN Disaster Information Net (ADINET)⁹⁰

The ASEAN Disaster Information Net (ADINET) is a repository of information concerning hazards and disasters that have happened in the region. The platform is open for public, which means that the public can submit information about any hazard and disaster to the AHA Centre. Thereafter, the AHA Centre will verify and validate any submitted information to ensure the accuracy of the data inputs. The AHA Centre can also add new information when relevant and as necessary. ADINET has been recording disaster information in the region since the AHA Centre was operational in 2012.

⁹⁰ Website: <http://adinet.ahacentre.org/>



Source: ahacentre⁹¹

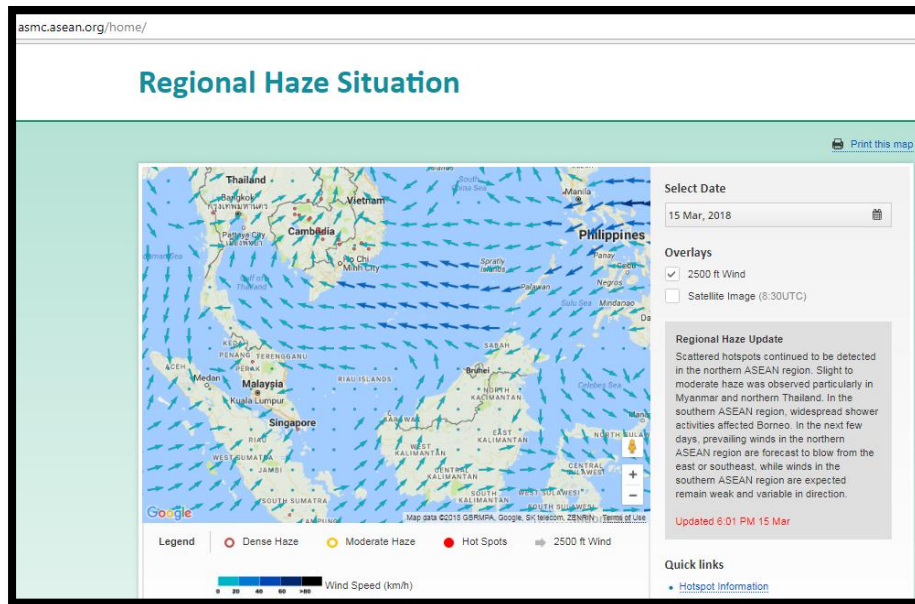
ASEAN Specialized Meteorological Centre⁹²

The ASEAN Specialised Meteorological Centre (ASMC) was established in January 1993 as a regional collaboration programme among the National Meteorological Services (NMSs) of ASEAN member countries. ASMC is hosted under Meteorological Service Singapore, National Environment Agency of Singapore.

The main objective of ASMC is to enhance regional capacity and strengthen support in the provision of meteorological services. Under the ASEAN Regional Haze Action Plan endorsed by the ASEAN Ministers of the Environment and implemented in 1997, the ASMC was appointed to monitor and assess land and forest fires and the occurrence of transboundary smoke haze affecting the ASEAN region. The countries monitored initially covered Brunei Darussalam, Indonesia, Malaysia and Singapore, and later extended in 2003 to cover the whole ASEAN region (Cambodia, Lao PDR, Myanmar, the Philippines, Thailand and Vietnam). ASMC also serves as a technical member for various inter-agencies committees in ASEAN region, providing information related to forest fires and smoke haze.

⁹¹ Website: <https://ahacentre.org/disaster-monitoring/>

⁹² Website: <http://asmc.asean.org/>



haze.asean.org

HAZE ACTION ONLINE

HOME ABOUT ACTION RESOURCES EVENTS CALENDAR NEWS MEMBER CONTACT LINKS

Understanding Fire and Haze

[Info on Fire and Haze](#)

Publications

- ASEAN Programme on Sustainable Management of Peatland Ecosystems 2014-2020
- ASEAN Agreement on Transboundary Haze Pollution - Reprint 2016
- ASEAN Guidelines on Peatland Fire Management
- ASEAN Peatland Management Strategy 2006-2020. Updated September

Haze Hotspot Map Today

Hover to magnify, scroll to re-size, click on the picture to go to the original source

Recent News

- MEDIA RELEASE: 12th Meeting of the Conference of the Parties to the ASEAN Agreement on Transboundary Haze Pollution**
August 11, 2016
- MEDIA RELEASE: 18th Meeting of the Sub-Regional Ministerial Steering Committee (MSC) on Transboundary Haze Pollution**
May 6, 2016
- MEDIA RELEASE: 11th Meeting of the Conference of the Parties to the ASEAN Agreement on Transboundary Haze Pollution**
November 2, 2015

Source: ASEAN⁹³

⁹³ Website: <http://haze.asean.org/>

REGIONAL CENTER FOR DISASTER INFORMATION FOR LATIN AMERICA AND THE CARIBBEAN

In 1990, the Pan American Health Organization established the Disaster Documentation Center (DDC) in San José, Costa Rica. Its purpose was to facilitate access to technical documentation on disasters to professionals in Latin America and the Caribbean. During the "Regional Strategy for Disaster Information Meeting", hosted by the Costa Rica National Risk Prevention and Emergency Commission in February 1997, several organizations committed to the expansion of the DDC and established Regional Disaster Information Center (CRID) as a co-ordination and inter sectoral collaborative platform for disaster information management.

The CRID is an initiative sponsored by six organizations that decided to join efforts to ensure the compilation and dissemination of disaster-related information in Latin America and the Caribbean.

These organizations are:

- Pan American Health Organization (PAHO) - Regional Office of the World Health Organization (PAHO/WHO).
- International Strategy for Disaster Reduction (ISDR/UN).
- Costa Rica National Risk Prevention and Emergency Commission (CNE).
- International Federation of Red Cross and Red Crescent Societies (IFRC).
- Coordination Center for Natural Disaster Prevention in Central America (CEPRENAC).

CRID's objectives include:

- Get to know the priority users and players within the milieu of DRR, to respond with greater effectiveness and efficiency to their requirements.
- Consolidate and generate new strategic alliances with partners and players relevant to the arena of risk management.
- Strengthen national and regional capacities in information management for disaster risk reduction through modern and current technical advice, seeking to create and strengthen networks.
- Improve CRID's capacities for information management aimed at attending emergencies and disasters⁹⁴.

⁹⁴ Website: http://www.cridlac.org/ing_que_es_el_crid.shtml

CARIBBEAN DISASTER EMERGENCY MANAGEMENT AGENCY⁹⁵

The Caribbean Disaster Emergency Management Agency (CDEMA) is a regional inter-governmental agency for disaster management in the Caribbean Community (CARICOM).

The Agency was established in 1991 as CDERA (Caribbean Disaster Emergency Response Agency) with primary responsibility for the coordination of emergency response and relief efforts to Participating States that require such assistance. It transitioned to CDEMA in 2009 to fully embrace the principles and practice of Comprehensive Disaster Management (CDM).

CDM is an integrated and proactive approach to disaster management and seeks to reduce the risk and loss associated with natural and technological hazards and the effects of climate change to enhance regional sustainable development.

CDEMA presently comprises eighteen (18) Participating States (PS): Anguilla, Antigua and Barbuda, Commonwealth of the Bahamas, Barbados, Belize, Commonwealth of Dominica, Grenada, Republic of Guyana, Haiti, Jamaica, Montserrat, St. Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Suriname, Republic of Trinidad and Tobago, Turks and Caicos Islands and the Virgin Islands. All CARICOM and Non-CARICOM Member States of the Caribbean region are eligible for CDEMA membership.

Since 2009, CDEMA's mandate has expanded to position the regional disaster management body more strategically to fully take up its role as facilitator, driver, coordinator and motivating force for the promotion and engineering of Comprehensive Disaster Management (CDM) in all Participating States.

CDEMA's functions are as follows:

1. mobilising and coordinating disaster relief;
2. mitigating or eliminating, as far as practicable, the immediate consequences of disasters in Participating States;
3. providing immediate and coordinated response by means of emergency disaster relief to any affected Participating State;
4. securing, coordinating and providing to interested inter-governmental and non-governmental organizations reliable and comprehensive information on disasters affecting any Participating State;
5. encouraging
 - (i) the adoption of disaster loss reduction and mitigation policies and practices at the national and regional level;
 - (ii) cooperative arrangements and mechanisms to facilitate the development of a culture of disaster loss reduction; and
6. coordinating the establishment, enhancement and maintenance of adequate emergency disaster response capabilities among the Participating States.

⁹⁵ Website: www.cdema.org

CDEMA governance mechanism supports the principles of Comprehensive Disaster Management within the context of broad stakeholder participation, whilst ensuring that the roles and responsibilities of the various organs are clearly defined for enhanced accountability and transparency in the areas of decision making.

CDEMA is governed through the Council, a Technical Advisory Committee (TAC) and the Coordinating Unit. The TAC comprise of the National Disaster Coordinators and representatives of specialized regional organizations, such as those engaged in technological, meteorological and seismological fields whose programmes are directly related to the regional disaster management agenda. The CDEMA Coordinating Unit is headquartered in Barbados.

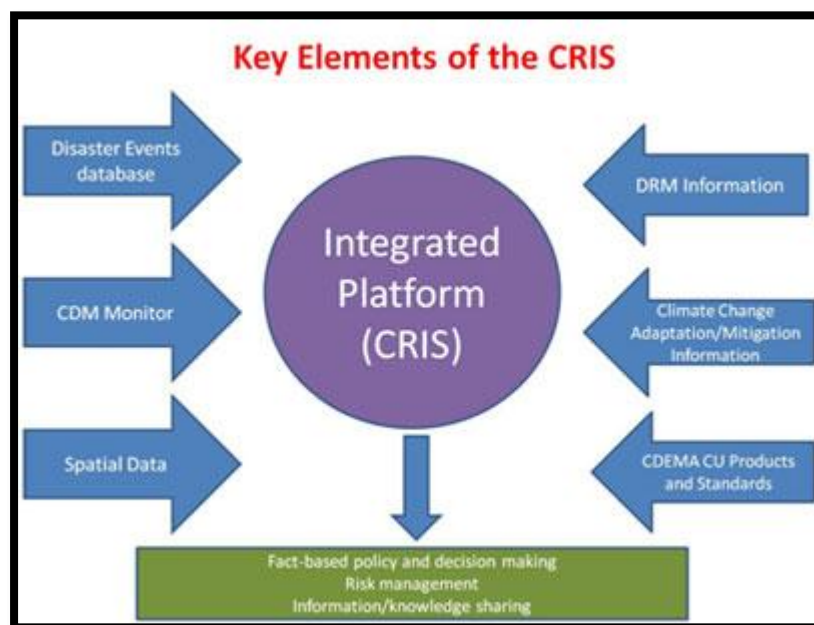
Virtual Library⁹⁶

The screenshot displays the CDEMA Virtual Library web application. The header features the CDEMA logo (Caribbean Disaster Emergency Management Agency) and the 'VIRTUAL LIBRARY' title, alongside the tagline 'Managing Disasters with Preparedness.' and a background image of a tropical landscape. The main content area is titled 'Digital Maps Collection : [0]' and 'Collection home page'. It includes a search bar with a 'Go' button, a 'Search CDEMA VL' section with links to 'Advanced Search' and 'Subject Search', and a 'Browse' section with links to 'Categories & Collections', 'Issue Date', 'Author', 'Title', and 'Subject'. A 'Registered users:' section provides links for 'Receive email updates', 'Login' (for authorized users), 'Edit Profile', 'Help', and 'CDEMA Home'. A search filter is set to 'In: Digital Maps Collection', and there are buttons for 'Search for', 'Go', 'or browse', 'Subject', 'Title', 'Author', and 'Issue Date'. A 'Subscribe' button is available for daily e-mail notifications, and a 'View Statistics' button is present. A disclaimer states that the maps are for use in disaster management activities and that reproduction is governed by copyright conditions. The footer includes a 'Powered by DSpace Software' notice and a copyright notice for 2002-2010.

⁹⁶ Website: <http://www.cdemavl.org/handle/123456789/7>

Caribbean Risk Information System

The Caribbean Risk Information System (CRIS) is a multi-faceted virtual platform that hosts risk management data and information accessible to stakeholders to facilitate analysis, research, greater awareness of risk management and climate change adaptation in the region. The CRIS contributes to the region's sustainable development efforts by enhancing and strengthening disaster risk and climate change information sharing to drive evidence based decision making processes at all levels.



Source: CDEMA⁹⁷

Caribbean Handbook on Risk Information Management⁹⁸

In 2014 the World Bank initiated the Caribbean Risk Information Program with a grant from the ACP-EU Natural Disaster Risk Reduction Program. A consortium led by the Faculty ITC of the University of Twente is responsible for conducting capacity-building workshops, generating training materials, and creating hazard maps to expand the capabilities within participating infrastructure and spatial planning ministries to use hazard and risk information for decision-making.

The main objective of this project is to build capacity of government clients in the Caribbean region, and specifically in the countries of Belize, Dominica, St. Lucia, St. Vincent and the Grenadines and Grenada, to generate landslide and flood hazards and risks information and apply

⁹⁷ Website: http://www.cdema.org/index.php?option=com_content&view=article&id=1577&Itemid=576

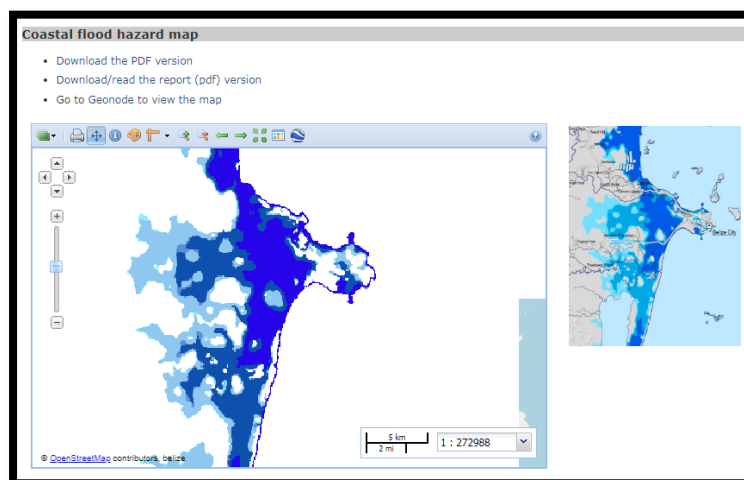
⁹⁸ Website: <http://www.charim.net/Zero-a>

this in disaster risk reduction use cases focusing on planning and infrastructure (i.e. health, education, transport and government buildings) through the development of a handbook and, hazard maps, use cases, and data management strategy.

The following sub-objectives are defined:

1. To make an inventory of the needs of each target country in terms of their capacity for spatial data collection, analysis and management, (landslide and flood) hazard and risk assessment, and integrate this information in spatial development planning and risk reduction planning.
2. To make an inventory of the tools available worldwide in terms of technical training manuals linked with practical applications and in terms of methodologies applied for flood and landslide hazard and risk assessment at different scales, as well as open source modelling tools for these hazard types.
3. To develop a theoretical framework for landslide and flood hazards and risks assessments, based on the review of existing quantitative and qualitative assessment methods and their appropriate use.
4. To develop nine national hazard mapping studies in the five target countries. One in Belize related to floods and two on each island for landslides and floods.
5. To develop a handbook to support the generation and application of landslide and flood hazard and risk information.
6. To develop a number of use cases of the application of hazard and risk information to inform projects and program of planning and infrastructure sectors. The methodology provides the overall framework for the use cases.
7. To make the handbook, data and methodology available through a pdf document and through a web-based platform, consisting of web-based databases, and a Decision Support system set-up for risk reduction planning.
8. To provide training courses based on the materials and the handbook, that is made available to the entire region through a web-based platform and distance education course.
9. To develop a Medium-term plan to overcome spatial data gaps and quality

It also provides Hazard maps for the 5 countries which can be downloaded as pdf.



ASIAN DISASTER REDUCTION CENTER⁹⁹

The Asian Disaster Reduction Center was established in Kobe, Hyogo prefecture, in 1998, with mission to enhance disaster resilience of the member countries, to build safe communities, and to create a society where sustainable development is possible. The Center works to build disaster resilient communities and to establish networks among countries through many programs including personnel exchanges in this field.

The Center addresses this issue from a global perspective in cooperation with a variety of UN agencies and international organizations/initiatives, such as the International Strategy for Disaster Reduction (ISDR), the Office for the Coordination of Humanitarian Affairs (OCHA), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), the World Meteorological Organization (WMO), and the World Health Organization Regional Office for the Western Pacific (WHO/WPRO).

Its activities include Information sharing on disaster reduction, Human resources development, and Building communities capabilities.

Section ‘Disaster Information’ provides links to later disaster information. Details of disaster are provided in spatial format also.

The screenshot displays the ADRC (Asian Disaster Reduction Center) website interface. At the top, the ADRC logo and name are visible. Below this, a red banner reads 'Details of Disaster Information'. The main content area shows information for a disaster in Indonesia: 'Indonesia : Flood, Landslide : 2016/09/20'. It includes links for 'GLIDE: FL-2016-000103-IDN' and 'Satellite Images (Sentinel Asia): ERIDL P000039'. A table provides further details:

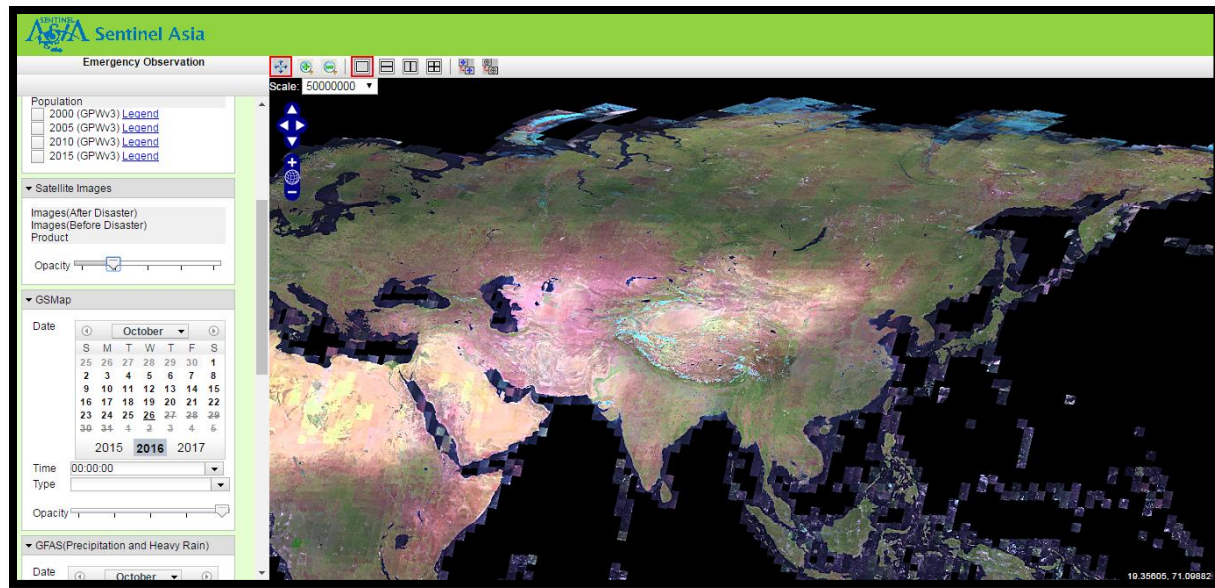
| | |
|---------------------|--|
| Duration | 2016/09/20 |
| Country or District | Indonesia |
| Name | Flood, Landslide |
| Outline | The floods hit the Garut area, about 200 km (125 miles) southeast of Jakarta, Indonesia on 20 September 2016 after torrential rain and killed more than 20 people. |

Below the table is a 'Summary' section with three tabs: 'Human Impact', 'Physical Impact', and 'Others'. The 'Human Impact' tab is selected. Under 'Related Links', there is a 'Report/Articles' section with two links: 'JIRC 2016/09/29' and 'AFP 2016/09/22'. The 'JIRC 2016/09/29' link is highlighted.

Source: ADRC¹⁰⁰

⁹⁹ Website: <http://www.adrc.asia/>

¹⁰⁰ Website: http://www.adrc.asia/view_disaster_en.php?NationCode=360andlang=andKEY=2141



Source: Sentinel¹⁰¹

¹⁰¹ Website:

<https://sentinel.tksk.jaxa.jp/sentinel2/webGISControl.jsp?requestId=ERPHAG000007andsubsetName=Emergency+ObservationandrequestIdDate=1476788400000>

INTERNATIONAL CENTRE FOR INTEGRATED MOUNTAIN DEVELOPMENT¹⁰²

The International Centre for Integrated Mountain Development (ICIMOD), based in Kathmandu, Nepal, is a regional centre with an aim for contributing towards understanding of mountain people about the increasing influence of globalization and climate change on the stability of fragile mountain ecosystems and the livelihoods of mountain people so as to adapt and utilize the new opportunities. It also addresses upstream-downstream issues. It serves the eight regional member countries of the Hindu Kush Himalaya – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan.

It has Regional Programmes (RPs) formulated with a view to long-term testing, piloting, and monitoring of innovative approaches; promoting transboundary cooperation, meeting capacity building needs in the region and delivering strategic results.

One such RP is Adaptation and Resilience Building. The HKH has been undergoing significant change over the past few decades such as accelerated natural resource degradation. Increased climate variability and climate change have further accentuated these changes, compounding vulnerability in the region while also opening up unexpected opportunities. The region requires efforts for a ‘transformative change’ and resilience building.

Disaster Risk Management¹⁰³

The Hindu Kush Himalayas have been experiencing an increased frequency of natural disasters such as landslides, avalanches, floods, flash floods, glacial lake outburst floods, debris flows, wildfires and earthquakes. Scientific and anecdotal evidence suggests that climate change is contributing to the increasing frequency and magnitude of most of these events. There is a general lack of knowledge on the availability and use of space-based information for disaster management.

ICIMOD’s engagement and interest in disaster risk management lies in promoting use and mainstreaming of information in decision making through piloting information system, mapping and assessment of hazard, vulnerability and risk at multi-levels, and rapid response mapping support. Special focus is given to integration of space technology with IT and telecommunication infrastructure to deliver disaster information at the community level and enable two-way communication between communities and disaster managers for effective response.

¹⁰² Website: <http://www.icimod.org>

¹⁰³ Website: <http://www.icimod.org/?q=23040>

A spatial framework can be created using geospatial technology for policymakers and managers in context of disasters and emergency management by instituting disaster sensitive planning and timely response. The framework can allow integrating relevant data layers to develop monitoring tool to identify hotspot areas, and decision support system that help in effective preparedness, quick response and efficient mobilization of resources for recovery.

Two such initiatives are mentioned here below:

Improving Livelihoods and Enhancing Resilience of the Rural Poor in the Hindu Kush Himalayas to Environmental and Socio-economic Changes (AdaptHimal)

-To enhance the resilience of the poor, especially women to social, economic and environmental change

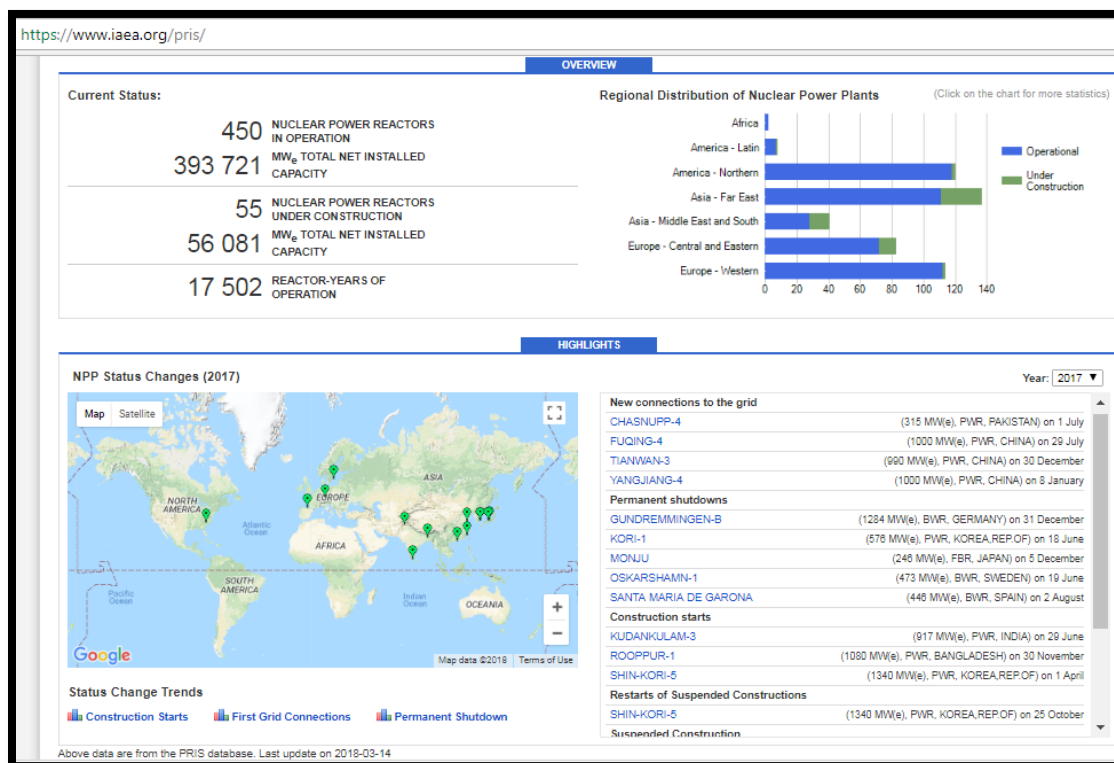
Himalayan Climate Change Adaptation Programme (HICAP)

- Aimed at contributing to enhanced resilience of mountain communities, particularly women, through improved understanding of vulnerabilities, opportunities, and potentials for adaptation.

INTERNATIONAL ATOMIC ENERGY AGENCY¹⁰⁴

The International Atomic Energy Agency (IAEA) was created in 1957 in response to the deep fears and expectations resulting from the discovery of nuclear energy. The IAEA Secretariat — the international body of staff tasked with running the Agency — is made up of a team of some 2500 multidisciplinary professional and support staff from more than 100 countries. The International Atomic Energy Agency is the world's central intergovernmental forum for scientific and technical co-operation in the nuclear field. It works for the safe, secure and peaceful uses of nuclear science and technology, contributing to international peace and security and the United Nations' Sustainable Development Goals.

It has a database called 'Power Reactor Information System' on nuclear power plants (NPP). It gives NPP status change with locations.



Source: IAEA¹⁰⁵

¹⁰⁴ Website: <https://www.iaea.org/>

¹⁰⁵ Website: <https://www.iaea.org/pris/>

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT

United States Agency for International Development (USAID) is the lead United States Government agency that works to end extreme global poverty and enable resilient, democratic societies to realize their potential.

With a focus on disaster prevention, response, recovery and transition, USAID is working to¹⁰⁶:

- Strengthen resilience by helping states and communities prepare for and mitigate the impacts of disasters to help people withstand crises rather than have to seek emergency assistance;
- Provide life-saving humanitarian assistance to save lives and alleviate suffering;
- Provide emergency food assistance while also sowing the seeds for recovery and resilience;
- Accelerate a rapid and durable recovery by supporting livelihoods, markets and the sustainable provision of basic services;
- Address underlying grievances that cause instability and conflict to wind down tensions before they ignite;
- Promote peaceful political transitions by strengthening civil society and respect for human rights, facilitating reconciliation, supporting effective democratic governance and fostering the resumption of basic economic activity; and
- Invest in the protection and empowerment of women and girls in countries affected by crisis and conflict to improve prospects for peace and security.

¹⁰⁶ Website: <https://www.usaid.gov/what-we-do/working-crises-and-conflict>

CLIMATE AND DEVELOPMENT KNOWLEDGE NETWORK

The Climate and Development Knowledge Network supports decision-makers in designing and delivering climate compatible development. It is done by combining research, advisory services and knowledge management in support of locally owned and managed policy processes. The Network works in partnership with decision-makers in the public, private and non-governmental sectors nationally, regionally and globally.

The Climate Development Knowledge Network is managed by an alliance of organizations led by PricewaterhouseCoopers LLP (PwC), and including Fundación Futuro Latinoamericano, LEAD International, LEAD Pakistan, the Overseas Development Institute, and SouthSouthNorth.

It work across four strategic themes:

- Climate compatible development strategies and plans
- Improving developing countries' access to climate finance
- Strengthening resilience through climate-related disaster risk management
- Supporting climate negotiators from the least developed and most vulnerable countries¹⁰⁷.

¹⁰⁷ Website: http://cdkn.org/about/?loclang=en_gb

INTEGRATED REGIONAL INFORMATION NETWORKS

After 19 years of award-winning humanitarian news and analysis, IRIN, originally the "Integrated Regional Information Networks", left the United Nations in January 2015 to relaunch as an independent, non-profit media venture. We have been providing ground reporting on humanitarian crises in a way nearly no other institution does. Outside the UN, we are even better positioned to play this critical role, drawing on the expertise, networks and credibility we have developed, and combining them with increased reach, a more innovative approach and a sharper voice.

Through a global network of more than 200 local correspondents, experienced editors and analysts, and an intimate knowledge of the humanitarian sector, IRIN provides insider multimedia news and analysis from hotspots in more than 70 countries.

It produces reportage, in-depth interviews, explainers, interactive maps, graphics, galleries, top ten lists, curated reading suggestions, guest commentary and more covering Africa, Asia, the Middle East, Europe and the Americas, and publish in English, French and Arabic¹⁰⁸.

¹⁰⁸ Website: <http://www.irinnews.org/content/about-us>

REGIONAL CONSULTATIVE COMMITTEE ON DISASTER MANAGEMENT¹⁰⁹

The Regional Consultative Committee (RCC) on Disaster Management, established in year 2000, is involved in advocacy and the exchange of experiences in disaster risk reduction (DRR). Asian Disaster Preparedness Center (ADPC) serves as its Secretariat. RCC member countries are from Central Asia, Middle East, South Asia and South East Asia.

RCC serves as an important forum for senior government officials in preparing for and following up on the outcomes of the Asian Ministerial Conferences on Disaster Risk Reduction (AMCDRR) and other significant regional events in the field.

RCC provides a consultative mechanism for:

- Guiding implementation of DRR in the Asian region;
- Promoting cooperative DRR programs on a regional and sub-regional basis; and
- Guiding the work of ADPC and its future directions.

Mainstreaming DRR Program of RCC has a DRR toolbox, Country Development Frameworks and Profile.

Asian Disaster Preparedness Center Secretariat

Asian Disaster Preparedness Center (ADPC), established in 1986, is active in many Asia countries. For the risk reduction on various levels in Asia-Pacific, ADPC deploys disaster risk management (DRM) information and systems.

Its portfolio focuses on DRM capacity building, improving DRM for cities and climate change, mainstreaming DRM into national and local development, improving DRM systems and undertaking disaster risk assessments. To achieve its aims in disaster risk reduction, ADPC works closely with local, national and regional governments, governmental and non-governmental organizations, donors and development partners¹¹⁰.

ADPC have identified six strategic themes and three cross-cutting themes of disaster risk management and describe how the global, regional, and national challenges posed by disasters and climate change are approached. The six strategic themes are risk governance, urban resilience, climate resilience, health risk management, preparedness for response, and resilient recovery¹¹¹.

¹⁰⁹ Website: <http://www.rccdm.net/>

¹¹⁰ Website: http://www.rccdm.net/1_4Adpc_secretariat.php

¹¹¹ Website: <http://www.adpc.net/igo/contents/adpcpage.asp?pid=1>

CONCLUSION AND RECOMMENDATIONS

It is evident that on a global scale, disasters, natural or human-induced, are making an impact on human lives and infrastructure. There is a strong awareness among the nations and international NGOs which are quite actively involved in disaster management through various institutional arrangements. Many institutions or organizations are providing services related to risk and disaster management but have different responsibilities and goals. United Nations (UN) is no doubt having the largest network of institutions involved into disaster management. Some are involved in coordination of overall disaster management such as Inter-Agency Standing Committee while some other are focusing primarily on specific parts of disaster risk reduction or response such as UNISDR or UNDP. Some institutions are specific theme focused and address the particular needs such as Health (WHO), Food Security (WFP) and Meteorology (WMO). In addition, International Conventions have a major role as they become an active instrument to take new initiatives such as UNFCCC. Outside UN, World Bank through GFDRR is also actively engaged in disaster risk reduction activities. Similarly, on regional level various institutions or groups are involved like SAARC, AADMER, CDEMA and ECHO of EU. On national level, USAID is an agency from United States which acts on global scale. International agencies like IAEA have also been mentioned. Regional forums like RCC on Disaster Management promote cooperative DRR programs on a regional and sub-regional basis involving national level disaster management organizations.

Regional Consultative Committee (RCC) on Disaster Management RCC serves as an important forum for senior government officials in preparing for and following up on the outcomes of the

From the content, it is clear that spatial information is widely used by different organizations under their disaster management framework. Some observations have been made, which are worth mentioning here:

1. Data is presented for various types of disasters by some agencies while some present only related to a specific type of disaster.
2. Some agencies like IPCC provide data about the dynamic environmental parameters such as rainfall, temperature which, when properly monitored and analyzed, could be used to alert stakeholders in a situation leading to disaster event.
3. Many agencies provide option to perform data extraction based on various filters such as Disaster Type, Geographic Area, Year, Theme and Organizations etc.
4. Most of the applications use Web Map Service (WMS) to portray spatial information of the globe or area of interest.

5. Many presentations use point and polygon geometry in various forms to symbolize the data on the background imagery. Some of them show continuous interpolated surfaces for the data. Some show satellite imageries with feature data overlaid.
6. Colour classified maps are used for point, polygon and interpolated surfaces whereas some represent data with size variations of point symbols.
7. Some presentations simply provide link to maps which could be sourced from different organizations while many other provide simple maps showing the data to be presented with legends. Layer display on/off facility, maps with pop-up boxes of information on click, statistical charts and numeric tables alongside the maps are a few mentionable characteristics of such presentations.
8. Some organizations have developed their own software for relaying the spatial information on specific themes while others have developed Atlases or the reports including maps to present the statistical facts. These software and atlases are usually on open access basis. Some organizations provide link to various news and reports which could be sourced from other organizations.
9. The information presented range from bio-physical parameters to socio-economic aspects.
10. Almost all of them present 2D information except two which provides link to 3D data in the form of downloadable elevation raster datasets or present it in the 2D map.

Despite the fact that many organizations have been established to deal with risk and disaster management and substantial progress has been made with response to disasters, still many issues need further attention.

- The coordination and communication between agencies has to be intensified and formalized. The exchange of information among these organizations should be based on open standards to facilitate the setup of common applications. Humanitarian Data Exchange (HDX) could be followed as an example of such open standards.
- There is a need to involve local communities and individuals more actively in the process of disaster management to make the efforts more sustainable. It is required to increase the awareness to risk and emphasize on capacity building and to engage more proactively the community using software tools for crowd data collection (like Ushahidi and Sahana foundation).
- The link between research (academia) and practice (politicians and other stakeholders) should be strengthened to allow research and development of innovative, low-cost, effective applications in support of both various disaster management organizations and stakeholders. One such area could be research on the impact of land administration and management on disaster risk prevention and recovery as well as including disaster management as integral part of mainstream urban planning and development.

References:

<https://www.ushahidi.com/>
<https://sahanafoundation.org/>

About the Authors



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I am pursuing PhD on using integrated geospatial approach for 3D cadastre based resilience planning from Swinburne University of Technology, Australia. I am M.A. (Economics) from JMI University, Delhi and M.Sc. (GIS) from ITC, the Netherlands. I have executed GIS based assignments in India, Netherlands, Germany and Kenya for academia, private consultants and government sector for more than 12 years with applications in hydrology, hydrogeology, climate change, landuse, soil, agriculture and transport planning. I have been the Dissertation Coordinator, Co-Supervisor and Visiting Faculty for MBA (Disaster Management) at a State university of Delhi. I was involved with feasibility study, systems analysis, programme management and content management at a bilateral Centre of Indian and French government for promoting advance research in Science & Technology. I have published more than 25 research papers on national and international level in the field of land administration & management, disaster management and GIS along with some reports and publications on GIS for hydrogeology, port infrastructure and 3D Spatial DBMS for Cadastral.

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I have graduated as a surveyor at the University of Architecture, Civil Engineering and Geodesy (Bulgaria) and obtained my PhD degree on [3D GIS for Urban Development](#) at the Graz University of Technology (Austria). I worked as a software programmer at the Central Cadastre (Bulgaria) and have been at academic positions at UACG (Bulgaria), the Institute for Geo-information Science and Earth Observation (ITC, the Netherlands), Graz University of Technology (Austria), Delft University of Technology (the Netherlands) and Siberian State University of Geosystems and Technologies (Russia). I have joined the University of New South Wales in January, 2018.

I supervise master and PhD students on topics related to 3D spatial modelling and analysis. My recent research concentrates on 3D Indoor modelling and navigation. I am an author and co-author of more than 300 papers and I have edited and co-edited 21 books. A full list of publications (downloadable) is available [here](#). I have been involved in the work of several international organizations. I am the president of [ISPRS TC IV](#) on Spatial Information science, the treasurer of [UDMS](#) and a co-chair of OGC [SWG IndoorGML](#). I have been actively participating in the organization of conferences such as 3D GeoInfo, Gi4DM, UDMS, Indoor3D and summer schools.