



Federal Ministry  
for Economic Cooperation  
and Development



# Disaster Risk Management

Approach and Contributions of  
German Development Cooperation

# Contents

Foreword . . . . .	3
<b>Section 1</b>	
<b>What does Disaster Risk Management do? . . . . .</b>	<b>4</b>
1.1 Global Trends and Developments. . . . .	7
1.2 Underlying Risk Factors . . . . .	9
1.2.1 The Effects of Climate Change. . . . .	9
1.2.2 Poverty . . . . .	10
1.2.3 Urbanisation and Interlinked Economic Cycles . . . . .	11
1.2.4 Conflict, Fragility and Violence . . . . .	12
1.3 The Approach of German Development Cooperation . . . . .	14
1.4 Non-State Actors. . . . .	16
1.5 Global Initiative on Disaster Risk Management . . . . .	17
1.6 G7 Climate Risk Insurance Initiative . . . . .	18
<b>Section 2</b>	
<b>International Stakeholders and Processes . . . . .</b>	<b>19</b>
2.1 Hyogo Framework for Action . . . . .	19
2.2 The Sendai World Conference 2015 . . . . .	20
2.3 Other Cooperations. . . . .	21

### Section 3

<b>Disaster Risk Management in Practice: Examples from German Development Cooperation . . . . .</b>	<b>22</b>
3.1 Indonesia: High-tech system helps protect South-East Asian coasts . . . . .	23
3.2 Philippines: Crisis response helps to protect every village. . . . .	24
3.3 Haiti: Strengthening adaptation and prevention – resilience in risk areas . . . . .	26
3.4 Central Asia: Transborder cooperation leads to local results . . . . .	27
3.5 Asia-Pacific: Network for people with disabilities . . . . .	29
3.6 Afghanistan: Helping authorities and the population prepare for disaster. . . . .	30
3.7 Madagascar: Integrating aid and prevention, building on strengths. . . . .	31
3.8 Myanmar: Climate change adaptation and coastal zone protection . . . . .	32
Bibliography . . . . .	34
Abbreviations . . . . .	36



# Foreword



Disasters, such as the Indian Ocean Tsunami in 2004 and the earthquake in Japan in 2011, demonstrate that extreme events can have global impacts. Not only do they claim scores of human lives and cause huge economic loss. They also call for international solidarity and technical progress – I would like to highlight the German-Indonesian Tsunami Early Warning System (GITEWS).

German Development Cooperation wants to go one step further. We are working to improve prevention efforts and to establish a global disaster risk management system. Whether an extreme event becomes a disaster also depends on the vulnerability of the people and societies that are affected. Poor people in particular lack the resources to protect themselves adequately against the effects of extreme natural events. According to United Nations figures, almost 90% of disaster-related deaths occur in states with high poverty rates.

Studies predict that around 325 million people are acutely at risk from natural hazards and extreme weather events over the next 15 years if we do not succeed in reducing poverty and improving disaster risk management.

German Development Cooperation is working through bilateral and multilateral alliances to help implement a contemporary approach: in 2014 the German Federal Ministry for Economic Cooperation and Development (BMZ) launched the Global Initiative on Disaster Risk Management (GIDRM), which aims to make German expertise available to affected countries.

The year 2015 is a crucial year for international cooperation, also in the field of global disaster risk management. At the Sendai World Conference in March, we adopted a new global Framework for Disaster Risk Reduction. It aims to protect people from the impact of extreme weather events, with a focus on particularly vulnerable population groups. Germany supports the ambitious framework. We advocate for strengthened capacities of our partner countries in prevention and risk management.

We cannot prevent extreme natural events. But we can mitigate their negative effects. This brochure shows the diverse ways in which Germany is working to achieve exactly this.

A handwritten signature in blue ink, which appears to read 'Gerd Müller'. The signature is written in a cursive style.

Dr Gerd Müller, MdB  
Federal Minister for Economic Cooperation  
and Development

# What does Disaster Risk Management do?

A **disaster** arises when an extreme natural event (e. g. a storm, earthquake, flooding) strikes a vulnerable society. Whether a natural event becomes a disaster depends mainly on the social, economic, ecological and political characteristics of the society in question.

Present day **disaster risk management** seeks to reduce a society's vulnerability to extreme natural events so that even if such events occur they do not result in a disaster. Natural events can generally not be prevented – but their impact can be mitigated.

It should be borne in mind that **vulnerability** arises from the susceptibility, coping capacity and adaptive capacity of individuals, households, communities and states. Reducing vulnerability therefore involves reducing the factors that contribute to it at all levels. For this, the Federal Ministry for Economic Cooperation and Development (BMZ) has identified a number of relevant **success factors**:

- **Taking a multi-hazard approach** is particularly important at the present time. Effective disaster risk management has to take into account extreme weather conditions, such as heavy storms and large-scale floods, but also geophysical events such as earthquakes and volcanic eruptions. It is crucial to consider technical facilities and critical infrastructure here: as the example of Fukushima shows, the interaction of natural events and vulnerable technical facilities can produce cascading effects that have disastrous impacts on the population and cause extensive economic damage.
- Effective disaster risk management must always aim to analyse, take into account and – where possible – tackle underlying **risk factors**.

## DISASTER RISK MANAGEMENT

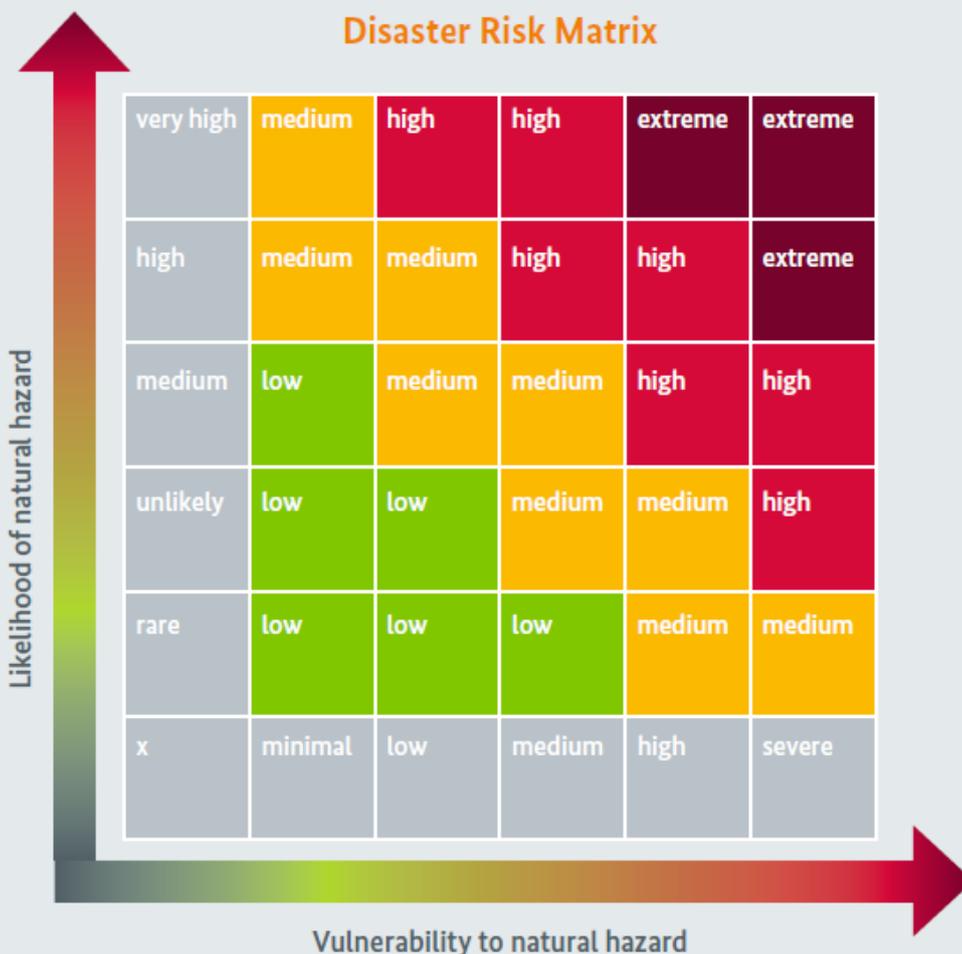
The process of planning, implementing, evaluating and adapting strategies, procedures and measures relating to the analysis, reduction and transfer of disaster risks, with the aim of reducing hazards and vulnerability and strengthening the coping and adaptation capacities of individuals, households, communities and state structures.

Disaster risk management is a continuous process that involves physical and non-physical measures and takes account of the underlying risk factors within a society. Disaster risk management aims to avoid the generation of new risks, improves resilience to the effects of natural events and contributes to sustainable development.

(BMZ, based on IPCC 2012)

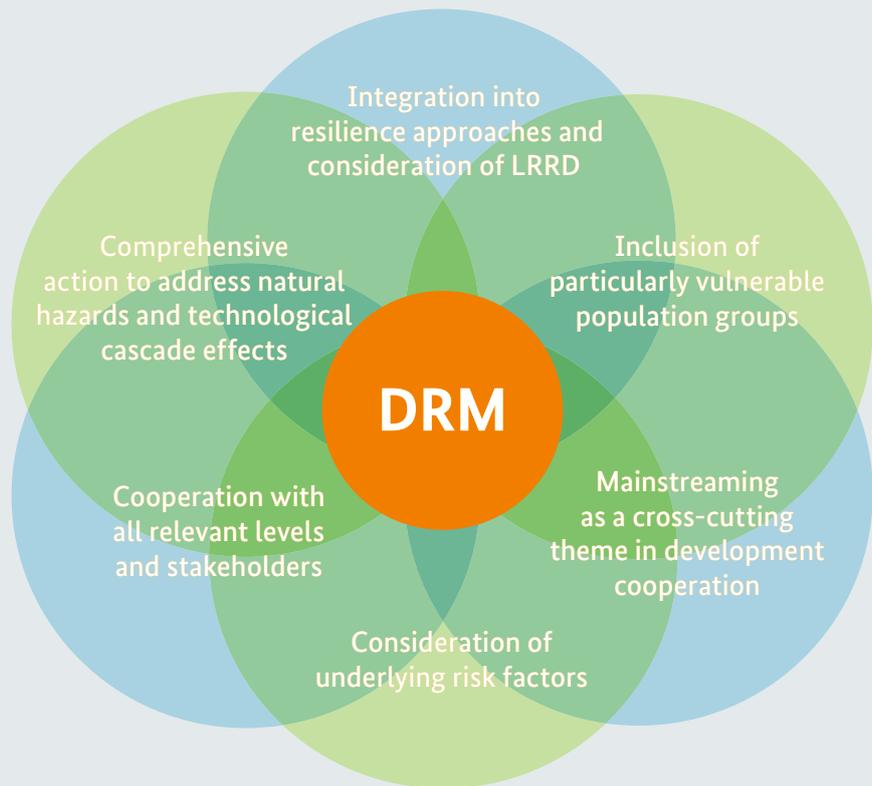
Specific risk factors can have very different implications for different population groups within a society or groups in particular geographic areas. Special difficulties arise if risk factors such as extreme poverty, fragile statehood and the effects of climate change occur in combination, further increasing the vulnerability of the population.

→ In the context of immediate disaster response, the concept of **Linking Relief, Rehabilitation and Development (LRRD)** should always be taken into account. This concept is also described in the BMZ Strategy on Transitional Development Assistance (BMZ, 2013).



**DIAGRAM 1:** The interaction between an extreme natural event and a vulnerable population, ecosystem or infrastructure can create risk. If vulnerability is heightened, e.g. by severe poverty or other factors, or if natural events become more pronounced, e.g. as a result of climate change, the risk increases.

## Success Factors of Effective Disaster Risk Management



**DIAGRAM 2:** Taking into account the success factors of disaster risk management fosters sustainable impact.

Disaster risk management must also be regarded as an essential aspect of the broader concept of **resilience**. This can be seen as the capacity to withstand extreme natural events and cope with their consequences. However, the term also refers to the capacity to withstand and cope with man-made crises such as armed conflict. BMZ regards these fields of activity as complementary rather than mutually exclusive. In development cooperation with countries affected by both disaster and conflict or fragility, improving resilience therefore involves reducing vulnerability to natural events.

- In analysing and tackling the causes and consequences of disasters, BMZ adopts a **multi-level approach**: BMZ development projects should always be embedded in the local, national and international context and involve cooperation with relevant state agencies, civil society and the affected population. Additionally, the private sector and research

institutions play a crucial role. To achieve sustainable results, technical measures should regularly be linked to non-technical measures.

- Disaster risk management should also be designed to pay special attention to **particularly vulnerable population groups (inclusion)**. This means that the specific needs and abilities of women, children, older people, people with disabilities and people in extreme poverty must be taken into account when planning and implementing disaster risk management measures.

**RESILIENCE** is the ability of people and institutions – whether individuals, households, local communities or states – to withstand acute shocks or chronic stress caused by fragile situations, crises, violent conflict or extreme natural events, and to adapt and recover quickly without compromising their medium and longer-term prospects.

*(BMZ, Strategy on Transitional Development Assistance, 2013)*



The increase in the frequency and severity of extreme weather events is a global phenomenon.

→ Ultimately, disaster risk management can only succeed if it is regarded as a **cross-cutting issue** that cannot be addressed in isolation from other development and investment projects. In concrete terms, this means that the planning and implementation of projects from different specialist fields such as construction, agricul-

ture or education in vulnerable areas should include elements of disaster risk management. Conversely, projects that focus on disaster risk management should be closely linked with projects in other areas of expertise and should inform them if possible.

## 1.1 Global Trends and Developments

All over the world, people are at risk of being affected by natural hazards. The consequences for those affected can be catastrophic: the average number of people affected by disasters each year since 1990 is estimated to be between 216 million (CREA, 2014) and 255 million (IFRC, 2013).

These high figures can partly be traced back to world population growth. The United Nations predict that the world population is likely to rise from around 7.2 billion to 9.6 billion by 2050 (UNDESA, 2014). Population growth continues to

increase significantly in the poorest countries of the world – and it is in these countries that almost 90% of disaster-related deaths occur (UNDP, 2013).

Furthermore, destructive weather extremes have increased sharply in recent decades as a result of climate change. According to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), published in 2014, the number of extreme weather events recorded has roughly tripled since 1980. The reports cites floods, droughts, storms, extreme temperatures,



The consequences of disasters can be handled in many ways – as is shown by this example from the Indonesian province of Aceh, where some of the damage that could not be repaired has been preserved as a reminder and memorial.

earthquakes and tsunamis as the most frequent natural hazards (*IPCC, 2014*).

In recent years the number of deaths caused by disasters has begun to fall for the first time – but economic losses have risen. The Office of the United Nations Strategy for Disaster Risk Reduction (UNISDR) identified in its 2013 Global Assessment Report that worldwide economic losses from disasters have totalled over 100 billion US dollars annually since 2010.

The more affluent industrialised nations are not immune to the impacts of hydrometeorological or geophysical events either, as disasters in the USA (Hurricane Katrina, 2005), Japan (tsunami, 2011) and Central Europe (floods, 2013) have shown. The damage can be particularly severe if a natural event strikes critical infrastructure, such as transport, energy or communication networks. The effects on the population and the economy are often tremendous.

The link between disaster vulnerability and poverty mentioned in the previous section is confirmed by the World Bank and by the United Nations (*UNDP, 2014; World Bank, 2013*). Major disasters such as the Indian Ocean Tsunami of 2004 (over 230,000 deaths), Cyclone Nargis in Myanmar

in 2008 (around 140,000 deaths) and the devastating earthquake in Haiti in 2010 (over 200,000 deaths) often hit poor countries particularly hard (*UNDP, 2013*). Geographic location is just one of a number of risk factors in such situations. Another crucial aspect is a society's level of development.

Given the potential consequences of extreme natural events, disaster risk management not only needs to be incorporated into individual development cooperation projects but must also be mainstreamed as a cross-cutting issue. Unless risks are reduced and managed on an ongoing basis, the destructive force of natural events and the technological disasters they trigger will repeatedly claim human lives, reverse economic growth and development progress as well as exacerbate poverty.

BMZ therefore adopts a holistic approach to disaster risk management. The success factors outlined at the start of this section must be implemented systematically if a sustainable reduction of the prevailing risk is to be achieved. At the same time, the best possible solutions to residual risks must constantly be sought, and public and private development and investment projects in developing countries must prevent the creation of new risks wherever possible (see also Section 1.3).



Developments such as desertification and soil erosion have disastrous consequences.

## 1.2 Underlying Risk Factors

### 1.2.1 The Effects of Climate Change

The gradual changes in atmospheric conditions that accompany global warming are affecting ecosystems and natural events. As a result, events that are potentially hazardous to humans – such as floods, storms, extreme temperatures and droughts – will become more frequent and more intense in various parts of the world (*IPCC, 2014*).

Not all destructive natural events are influenced by climate change and its consequences. However, the increasing frequency and intensity of weather-related extreme events can only be explained by global climate change (*GIZ, 2012*). There have been 330 destructive natural events in 2013 alone that have claimed human lives, caused severe destruction or resulted in significant economic loss (*CRED, 2014*).

As such events become more frequent, households, communities and states reach the limits of their coping and adaptive capacities more quickly. Without appropriate countermeasures, this increases the risks to humans, habitats, infrastructure and economic processes in many parts of the world (*IPCC, 2014*).

In the partner countries of German Development Cooperation, around three-quarters of the poor population lives in rural areas and often has no alternative to farming and fishing to build a livelihood and to provide for food and a modest income. The rises in food and corn prices that have become increasingly frequent in recent years demonstrate that many markets are already vulnerable to current weather extremes. This often affects low-income population groups and people living in poverty particularly severely (*WFP, 2009*).

The United Nations World Food Programme warns that the number of people affected by hunger could increase further if the impacts of climate change and extreme natural events continue to affect populations that do not have the resources to take preventive measures (*WFP, 2009*). However, measures to improve resilience to disasters can reduce the risks to humans and the environment (*FAO, 2014*).

German Development Cooperation has risen to the challenge. Germany is one of the largest donors worldwide to support measures in the fields of disaster risk management and climate change adaptation through bilateral and multilateral financing instruments. It is also active in areas such as devising new cultivation strategies for agricultural produce, testing more resilient crop varieties, and developing insurance against harvest failure and other losses for low-income farmers.

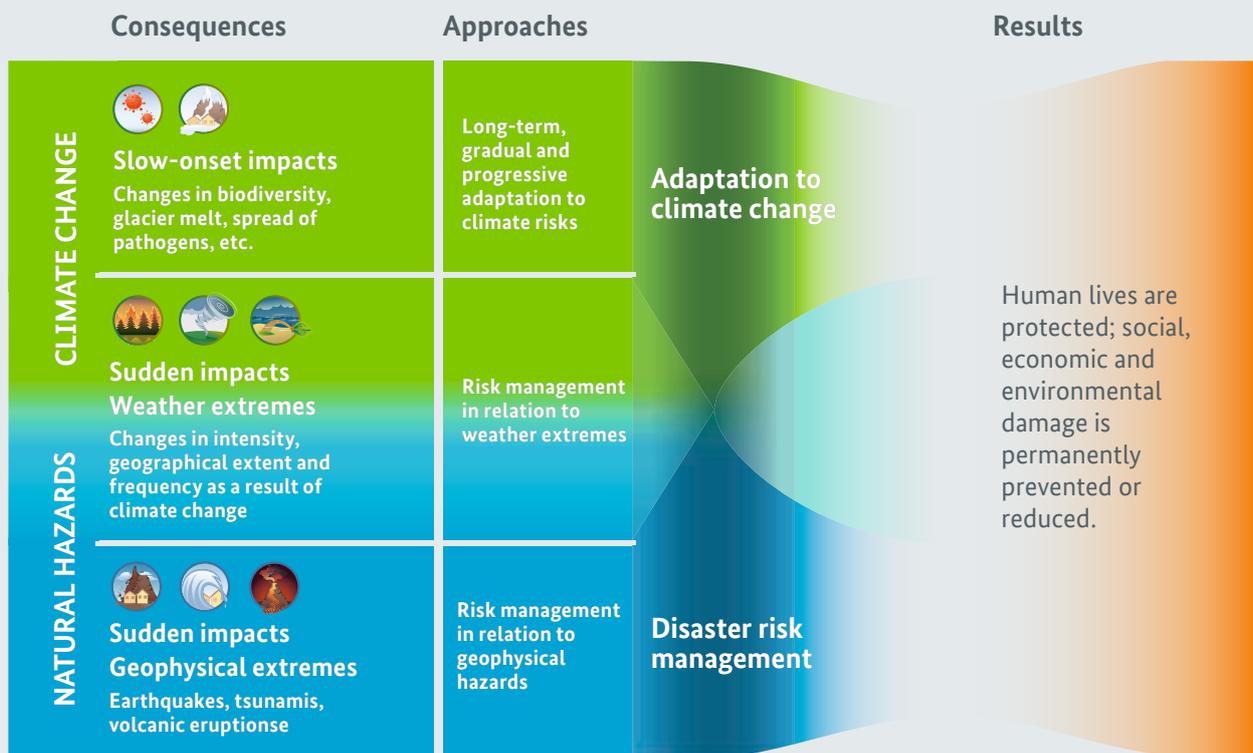
By signing the United Nations Framework Convention on Climate Change (UNFCCC), Germany has explicitly committed to help developing countries **adapt to the impacts of climate change** and finance climate change mitigation measures. There is constructive overlap between the complementary fields of climate change adaptation and disaster risk management (see also Diagram 3). In addition to global climate change, the major challenges of the 21st century are poverty, increasing urbanisation and fragility, conflict and violence.

### 1.2.2 Poverty

Poverty and the associated increase in vulnerability to severe shocks is one of the main causes of deaths in the wake of destructive natural events. The United Nations have identified that in the last three decades less than three per cent of deaths directly resulting from disasters have occurred in highly developed countries, while more than half the deaths have occurred in less developed countries – despite the fact that these countries were by no means affected by the largest number of natural events (UNDP, 2014).

People affected by poverty are often forced to live in areas whose geographical location renders them particularly exposed to destructive natural events such as floods, droughts, avalanches and storms. In addition, their lack of reserves means that they are often hit hardest not only by the immediate, but also by the long-term consequences, which may include loss of home and livelihood, epidemics and rising food prices, economic crises and loss of income or the need to flee (IPCC, 2014).

## Intersection between disaster risk management and adaptation to climate change



**DIAGRAM 3:** The technical disciplines of climate change adaptation and disaster risk management overlap and complement each other.



In addition to major disasters such as tropical storms that attract attention in the media, climate change also results in 'slow-onset' effects, such as droughts.

For a variety of economic, political and sometimes cultural reasons, older people, children, people with disabilities and households managed by women are particularly affected by disasters. These population groups must therefore be specifically prepared for disasters and included in the planning and implementation of all preventative measures so that their perspectives, needs and capacities for action can be effectively taken into account.

Access to education and information also plays a key role. Hazard-amplifying human behaviour in risk-prone areas often results from the material pressures of poverty on the inhabitants as well as their lack of knowledge. An example of this is the overuse of existing natural resources and the resulting soil degradation.

Strengthening coping and adaptive capacities and thus reducing vulnerability to external shocks and threats protects livelihoods and helps to prevent production losses. Such action makes a fundamental contribution to long-term poverty reduction. Scientific population forecasts for the next 15 years assume that without progress in global poverty reduction and simultaneous disaster risk management, there could be around 325 million extremely poor – and hence particularly vulnerable – people living on less than 1.25 US dollars per day in the world's 49 most disaster-prone countries by 2030 (ODI, 2013). German development policy aims to break this cycle of poverty and vulnerability.

### 1.2.3 Urbanisation and Interlinked Economic Cycles

Not only is the global population increasing – the distribution of people is also shifting rapidly. Around half the world's population of 7.2 billion people now live in cities. It is estimated that by 2050 at least two-thirds will do so (UNDESA, 2014).

Moreover, the UN forecasts that by 2025 there will be at least 37 megacities with more than 10 million inhabitants (UN Habitat, 2013). Today, there are already 28 such cities, 16 of which are in Asia. In 1990 there were only ten (UNDESA, 2014).

Alongside the positive effects of urban growth, the need for affordable food, clean water, health care for all, energy supplies and urban infrastructure will impose a severe burden on existing resources in many places. In megacities such as Manila, Mumbai, São Paulo and Lagos, the capacity of the infrastructure and social supply systems is already overstretched. According to the United Nations, such metropolises are under increasing threat from natural hazards such as flash floods, storm surges, landslides and storms (UNDESA, 2014). As a precaution against earthquakes, earthquake-resistant building codes need to be introduced and implemented urgently in densely populated areas.

The inhabitants of informal settlements are particularly vulnerable. It is assumed that around a billion people – one-seventh of the world's population – live in homes affected by uncertain land tenure. These homes are often located in flood-prone areas or on slopes at risk from landslides and are usually without access to urban sewerage, waste disposal or emergency response systems. Schools are of primary concern because of the potentially large numbers of children present when a disaster strikes, yet they are often not built to the necessary standards (e.g. in terms of earthquake resistance). Special attention should therefore be paid to them in both urban and rural areas.



Densely populated, often poor neighbourhoods in developing countries are frequently particularly hard hit.

It is predicted that by 2015, two-thirds of the world's population will be living in coastal regions. In view of the slow but steady rise in sea level, this will pose challenges for the very existence of a number of urban centres (OECD, 2012). The safety needs of a world population that is set to grow by around two billion in the coming decades and the speed of the climatic changes expected in the same period will need to be addressed in the development of a comprehensive, integrated system for dealing with global disaster risks (OECD, 2012). In urban areas in particular, the private sector also plays an important part in developing innovative and efficient solutions (UNISDR, 2012).

#### 1.2.4 Conflict, Fragility and Violence

More than 1.5 billion people worldwide live in fragile and conflict-afflicted countries (UNDP, 2014). The populations of these countries are particularly vulnerable towards extreme weather events as cases such as the devastating Haiti earthquake in 2010, typhoon Haiyan in the Philippines in 2013 or the recent Nepal earthquake in April 2015 illustrate.

From 2005–2009, more than 50% of people affected by 'natural' disasters lived in fragile and conflict-affected states (ODI, 2013).

The high vulnerability of these countries is closely linked to the causes of conflict and violence and the fragile structures of governments and society: For instance, some regions are neglected due to conflict and therefore do not have the infrastructure to manage disasters. Access to the often secluded areas is difficult, which impedes a timely response after the occurrence of a natural hazard. Fragile states lack the capacity to effectively manage disaster risk. Insufficient state legitimacy leads to a lack of trust and acceptance for state-run projects including those for disaster risk management. Additionally, weak security institutions increase the risk for looting or riots in the aftermath of disasters. Accordingly, the World Development Report 2011, which focuses on the interlinkage between conflict, violence and fragility, emphasises the high vulnerability of fragile states towards disasters (World Bank, 2011). Development projects, which address the root causes of fragility, conflict and violence, foster mechanisms of peaceful cohabitation, and improve the basic

conditions for inclusive development can therefore contribute to increased resilience.

The consequences of extreme weather events can have a negative impact on weak institutions or violent conflict and reinforce the spiral of violence. Extreme weather events can trigger migration, lead to a loss of already accumulated peace dividends, or fuel competition over scarce resources and thus, exacerbate fragile situations. Effective disaster risk management can therefore contribute to crisis prevention or prevent the exacerbation of crisis or conflict in fragile and violence-afflicted states.

On top of that, extreme weather events and the following disaster risk management provide opportunities to overcome fragility. Recovery and reconstruction measures are an opportunity to build resilient infrastructure and services and take

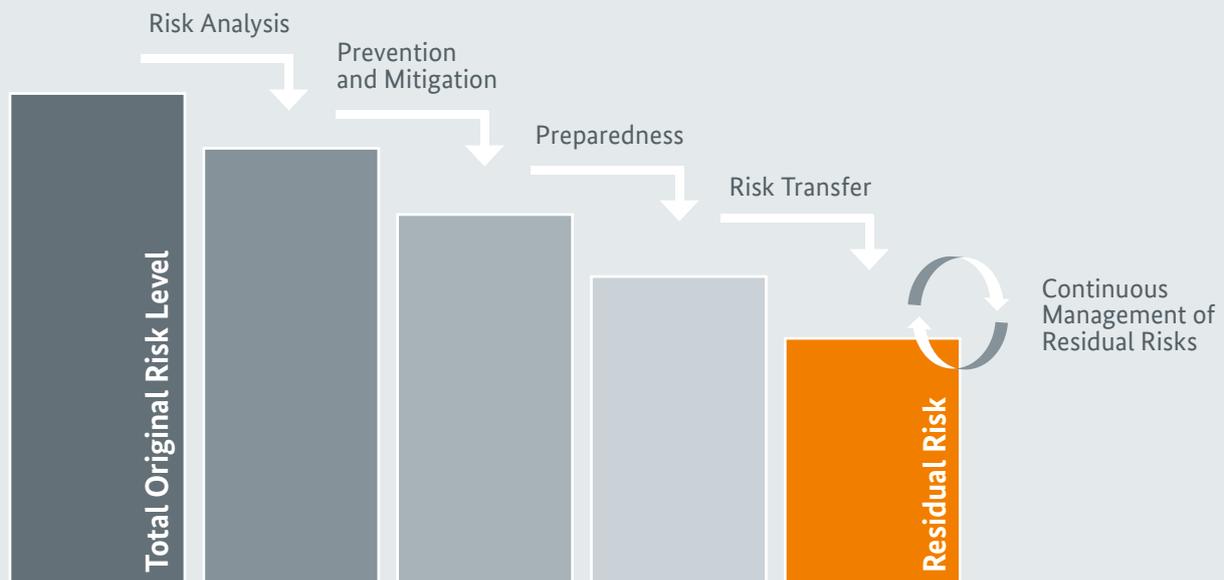
advantage of linkages to peacebuilding and reconciliation as for example happened in the Indonesian province of Aceh in the aftermath of the Indian Ocean Tsunami of 2004. The specific context of conflict, fragility and violence has to be taken into account in order to be able to identify and benefit from available opportunities.

The principles for action, which are described in the BMZ Strategy on Development for Peace and Security, play a vital role with regards to the vulnerability of fragile states towards natural disasters (BMZ, 2013b). Development activities should be designed to be context-specific, follow the principle of 'do no harm', align strategies with existing local structures as well as taking a long-term perspective in order to ensure sustainable resilience building.



Vulnerability towards extreme weather events can be exacerbated by violent conflict and state fragility.

## Staircase Model of Disaster Risk Management



**DIAGRAM 4:** Disaster risk is progressively reduced and continuously re-examined.

### 1.3 The Approach of German Development Cooperation

A **disaster risk** arises when a society is exposed to natural hazards but lacks the capacity or resources to protect itself adequately against the potential effects.

Various tools can be used by development cooperation to influence disaster risk:

- Risk analysis
- Prevention and mitigation
- Disaster preparedness
- Transfer of residual risks

To these can be added:

- Active measures to avoid creating new risks
- Disaster-resilient reconstruction after damaging events
- Special measures for adaptation to climate change

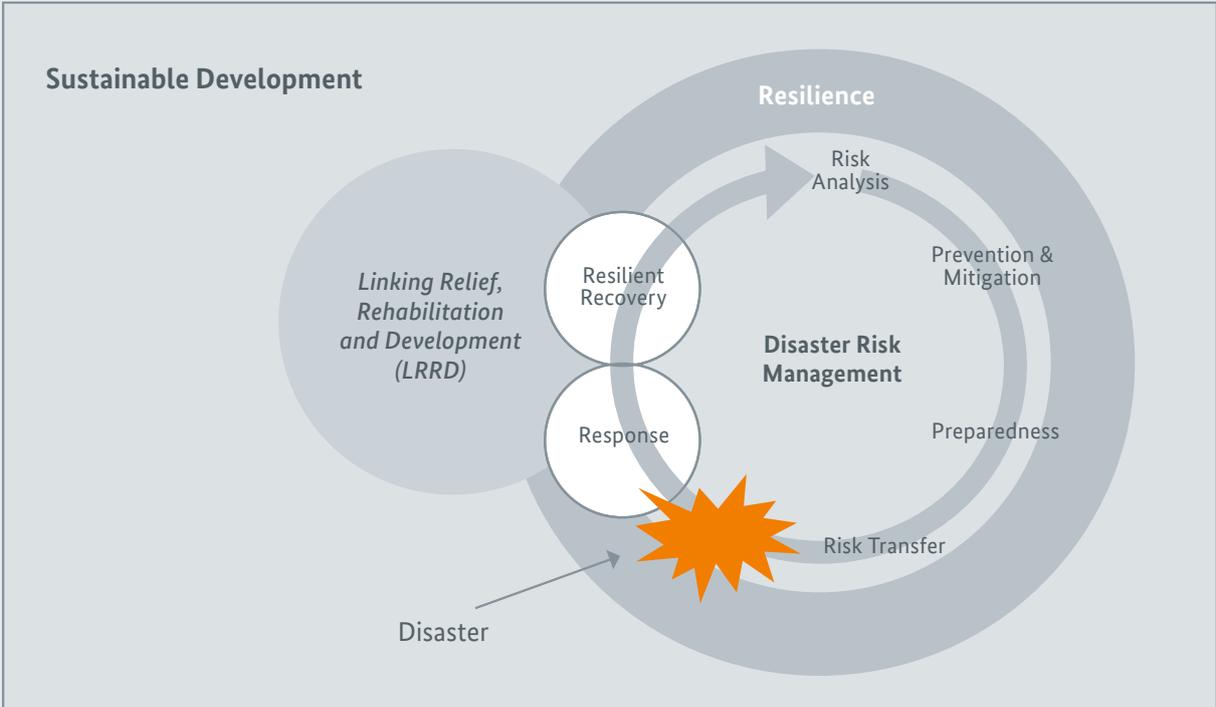
Diagram 4 illustrates the different stages of risk reduction. It should be noted that the stages described should not be seen as rigidly separated from each other – in order to exert the greatest possible influence on the overall risk, each stage contributes to the planning and organisation of the other stages.

The **risk analysis** examines hazards in relation to a society's vulnerability, in order to evaluate potential damage and losses. Among other things, this involves assessing the intensity of a natural hazard and the probability that it will occur, identifying the key risk factors for a society, drawing up damage scenarios and evaluating measures for an effective reconstruction in the event of a disaster.

**Disaster prevention and mitigation** covers activities aimed at preventing the occurrence of harmful natural events and, if one does occur, restricting its consequences to the greatest extent possible. Prevention and mitigation measures may involve construction (e. g. dykes and flood protection walls, and also ecosystem-based approaches to flood and erosion control, such as planting mangrove forests) or normative and non-material measures (e. g. land-use restrictions in flood risk areas). Collaboration with environmental and disaster management agencies is an important aspect of prevention and mitigation. In addition, greater emphasis is now being placed on the inclusion of planning and finance ministries so that both public and private projects can be evaluated in a risk-aware manner from the start.

**Preparedness** enables a rapid and effective response in the aftermath of a disaster. Important elements include emergency precautions and evacuation plans for facilities such as hospitals and schools, training of rescue and emergency services, and the establishment of early warning systems. Such systems will promptly identify and assess hazard and issue warnings to the authorities and the population so that an effective response can be ensured. Effective institutions and an appropriate legal and administrative framework are essential to prevention, mitigation and preparedness; in the development context, the creation or reform of these institutions and frameworks is often essential. The commitment of volunteers is another important aspect. In this context, BMZ complements the humanitarian aid projects of the Foreign Office.

### Disaster Risk Management as a Pillar of Sustainable Development



**DIAGRAM 5:** The diagram illustrates the links between the stages of disaster risk management. These are not necessarily implemented successively; they can overlap and merge. Correctly implemented, disaster risk management improves resilience and promotes sustainable development.

Internationally, the use of financial solutions for disaster risk management is known as **risk transfer**. For example, insurance schemes adapted to local conditions can ensure rapid financial assistance in the event of a disaster. Risk funds set up jointly by countries with a high disaster risk provide another means of mobilising funds quickly in an emergency.

In development cooperation, as with other public or private investment projects, it is essential to **avoid creating new risks**. BMZ therefore advocates for careful risk analysis in all its projects in risk-prone areas, including (but not limited to) building projects.

## 1.4 Non-State Actors

The Federal Government supports the view that private sectors, civil society, academia and the government have a shared responsibility to tackle global challenges (Charter of the Future, BMZ, 2015b). The knowledge and innovations from the private sector, civil society and research institutions have to be taken into account in order to foster the development of technical disaster prevention towards a timely and comprehensive disaster risk management approach. BMZ aims to integrate central actors and use non-state capacities in order to achieve sustainable impact.

The UN has repeatedly pointed out the links between disaster risk and development and reaffirmed the benefits of a cross-cutting approach: in 2013 it devoted its annual report to the special role of the private sector in disaster risk management. The report makes clear that while the private sector is exposed to risk as a stakeholder, it is also a potential pioneer of innovative solutions. The integration of disaster risk management into

Finally, **disaster-resilient reconstruction** seeks to draw appropriate lessons from a disaster and to include disaster risk management measures in the reconstruction process. Thus, in addition to restoring infrastructure and services as quickly as possible, reconstruction also aims to secure the foundation of a society's livelihood for the long term. BMZ's approach always takes into account the LRRD success factor (see Section 1), thereby ensuring that immediate and short-term measures also contribute to sustainable development. Another aspect of this is safeguarding the future of the implemented measures irrespective of the donor.

business strategies of private firms additionally improves sustainability and resilience and increases competitiveness (UNISDR, 2013).

The active integration of civil society is of vital importance. Civil society actors include engaged citizens, non-governmental organisations and social movements, which can drive bottom-up change and awareness raising within society. They often have a direct link to the target groups and people on the ground and are therefore better able to mobilise civic engagement than state actors. Civil society actors possess crucial experience and knowledge, which can be a valuable resource for the state.

Moreover, the science and research community can play a vital role in disaster risk management by providing scientific data, which can be used to inform policymakers and practitioners. Technical capacities and practical solutions are also increasingly provided by universities and research institutions.

## 1.5 Global Initiative on Disaster Risk Management

In order to respond more effectively and systematically to the challenges posed by growing disaster risks, the German Government has launched the Global Initiative on Disaster Risk Management (GIDRM), which is managed by the Federal Ministry for Economic Cooperation and Development (BMZ).

The aim of the Initiative is to bring together German and regional experts from governments, the private sector, civil society and academia to promote mutual learning across national borders and to develop and pilot solutions. The GIDRM seeks to engage in a close cross-stakeholder cooperation in which all relevant agencies are involved.

The German ministries involved – the Federal Ministry for Economic Cooperation and Development (BMZ), the Federal Ministry of the Interior (BMI), the Federal Ministry for Economic Affairs and Energy (BMWi), the Federal Ministry of Education and Research (BMBF) and the Federal Foreign Office (AA) – aim to explore new forms of

cooperation with aspiring partner countries taking an inter-ministerial approach. Existing German Development Cooperation projects can be used as a starting point and as such play an important role.

The Initiative has focused initially on the cooperation with seven countries in Asia (Bangladesh, China, India, Indonesia, Myanmar, the Philippines and Thailand). Plans to extend its activities to Latin America and Africa are currently being put into action. The Initiative is intended to raise Germany's profile in the field of disaster risk management and provide effective means of meeting the demand for specialised services and technologies 'made in and with Germany'.

The GIDRM has three priority areas:

- 1) Disaster Response Preparedness and Civil Protection
- 2) Critical Infrastructure and Risk-sensitive Economic Cycles
- 3) Early Warning Systems

### 'HOTEL RESILIENT' – AN INNOVATIVE EXAMPLE OF DISASTER RISK MANAGEMENT IN PRACTICE

Tourism is one of the fastest-growing sectors in the Asia-Pacific region but also one of the most exposed. In many countries, the tourism industry plays an important role in advancing development and makes a significant contribution to the local, national and global economy. In order to improve the management of disaster and climate risks and to strengthen the resilience of the tourism sector in the Asia-Pacific region, the GIDRM is collaborating with the office for the United Nations International Strategy for Disaster Reduction (UNISDR) and the Pacific Asia Travel Association (PATA). The 'Hotel Resilient' initiative aims to develop internationally recognised standards for hotels and resorts. These will enable hotel owners to reduce the degree to which their businesses, as well as tourists and neighbouring communities, are exposed to risks associated with extreme natural events. By complying with these standards, hotels, resorts and tourism destinations can demonstrate their disaster risk management capacities and the safety of the hotel site to potential customers, insurers and financiers. 'Hotel Resilient' builds on strong partnerships with government representatives from the respective government agencies for tourism and disaster management, with the private sector (e. g. hotel associations, hotels, resorts and tour operators) and with civil society in the current focus countries of Indonesia, the Maldives, Myanmar, the Philippines and Thailand.

## 1.6 G7 Climate Risk Insurance Initiative

In the context of the G7 Presidency, Germany initiated the Climate Risk Insurance Initiative in May 2015. The proposed goal of the Initiative is to significantly increase the insurance coverage of people against negative impacts of climate-related extreme weather events until 2020. It addresses particularly poor and vulnerable people in developing countries and reduces insecurity and vulnerability towards weather-related disasters, which are projected to increase due to climate change.

In the framework of a comprehensive climate risk management, Climate Risk Insurance is an effective tool to provide timely and reliable support to cover loss and damage and assist affected regions and people directly. Additionally, insurance can set incentives for preventing and reducing risks and potential damages from extremes.

The Initiative has the ambitious target to increase the number of people covered by insurance from currently 100 million to 500 million. In order to achieve this target, the Initiative aims at implementing a comprehensive approach, creating the necessary enabling environment for insurance in countries and regions strongly affected by climate change. Further, the Initiative invests in the extension of existing insurance pools, e.g. the African Risk Capacity (ARC), Caribbean Catastrophe Risk Insurance Facility (CCRIF) or the Pacific Catastrophe Risk Assessment & Financing Initiative (PCRAFI), as well as in the creation of new innovative insurance schemes, where access to insurance is still lacking. Germany has already pledged to contribute 150 million Euro and made climate change adaptation a key topic on the agenda of the G7 Summit.



Federal Minister for Economic Cooperation and Development, Dr. Gerd Müller, presents the Climate Risk Insurance Initiative at the G7 Stakeholder Conference 2015 in Berlin.

# International Stakeholders and Processes

## 2.1 Hyogo Framework for Action

In 2000, the members of the United Nations launched the United Nations International Strategy for Disaster Reduction (*UNISDR*) and set up the United Nations Office for Disaster Risk Reduction in Geneva to implement the strategy. With support from Germany, UNISDR coordinates the work of a number of international organisations, states, non-governmental organisations, technological and financial institutions and civil-society organisations.

In January 2005 – only a few weeks after the severe seaquake in the Indian Ocean and the devastating tsunami – the second World Conference on Disaster Reduction was held in Hyogo. At the conference, 168 UN member states adopted a joint framework action plan, which the German Government has since helped to implement.

At the end of the period of the so-called Hyogo Framework for Action (HFA) 2005–2015, UNISDR completed the assessment and review of the implementation as well as identified gaps and future challenges. While mortality rates have decreased in the case of some hazards, extreme weather events continue to have heavy impact and disaster risk has been rising over the past ten years. Progress can be noted in the areas of sensitisation and political engagement for disaster risk management (*UNISDR, 2015*). The HFA contributed to the development of institutions, policies and legislation and strengthened capacities for risk assessment and identification, disaster preparedness, response and early warning capacities and in reducing specific risk. A few of the underlying drivers of disaster risk however have only been addressed insufficiently (see also Chapter 1.2).

## 2.2 The Sendai World Conference 2015

The Third United Nations World Conference on Disaster Risk Reduction was held in Sendai, Japan, in March 2015. The UN Secretary-General Ban Ki-Moon and World Bank Group President Jim Yong Kim as well as numerous heads of states and ministers were among the 6,500 participants from 187 countries. The conference was the largest of its kind on the topic until date.

At the end of the conference, the Sendai Framework for Disaster Risk Reduction 2015–2030 was adopted. The German Government was represented in the negotiations by an inter-ministerial working group consisting of BMZ, AA and BMI. Experts from the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, the German Committee for Disaster Reduction e. V. (DKKV) and civil society actors were also part of the German delegation.

The main goal of the new framework is the prevention of new and the reduction of existing disaster risks and vulnerability as well as to increase preparedness measures and strengthen resilience. The four priorities for action are:

- 1) Understanding disaster risk,
- 2) Strengthening disaster risk governance to manage disaster risk,
- 3) Investing in disaster risk reduction for resilience,

- 4) Enhancing disaster preparedness for effective response, and to “Build Back Better” in recovery, rehabilitation and reconstruction.

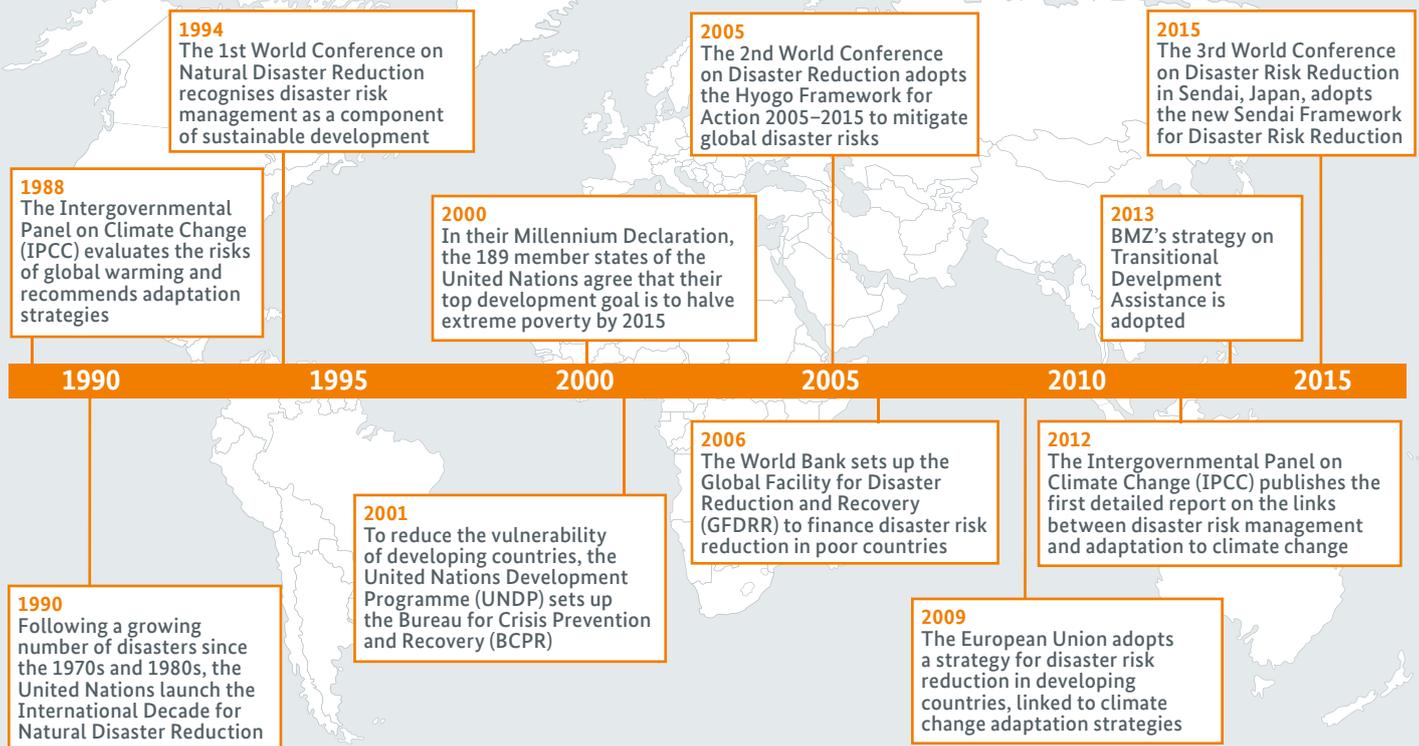
Notable innovations include:

- A shift from disaster management to disaster risk management,
- A stronger focus on recovery, rehabilitation and reconstruction as well as on preparedness,
- A more explicit articulation of the governance for disaster risk,
- recognition of the importance of well-functioning health systems,
- A call for strengthening the use of science and technology,
- A more comprehensive approach towards disaster risk,
- A section explicitly on the role of stakeholders and
- A strong call for the mobilisation of investment.

For BMZ, a strong coherence between the fields of disaster risk management and climate change adaptation is key for sustainable development. Additionally, BMZ advocates for the integration of conflict and fragility as a driver of risk. Assistance to developing countries through financial and technical cooperation, and the agreement of clear, quantifiable goals and review mechanisms are essential.



A variety of government stakeholders as well as actors from the private sector, civil society and academia were actively engaged at the Third UN World Conference on Disaster Risk Reduction in Sendai, Japan.



**DIAGRAM 6:** Historical development of the field of disaster reduction up to present day disaster risk management.

## 2.3 Other Cooperations

In addition to the implementation of the Sendai Framework for Disaster Risk Reduction, BMZ is involved in other international processes and partnerships. For example, the Global Facility for Disaster Reduction and Recovery (GFDRR) was set up in 2006 within the World Bank. It aims to improve the integration of disaster risk management in poor countries that are under particular threat. The Facility builds national risk reduction and preparedness capacities and supports financial protection and supports rapid assessment of damage following a disaster. The Facility is funded and actively managed by a number of donors, including Germany, which has become a donor in 2009. GFDRR works in partnership with UNISDR. In 2014, Germany was among the five biggest donors together with the United Kingdom, Japan, the European Union and Australia. As a result of long-time, active engagement in the Organisation,

BMZ takes the role as Co-Chair in the Consultative Group of the GFDRR from mid-2015 to mid-2016.

There is also collaboration with various regional organisations working in the field of disaster risk management. Partners include the Asian Disaster Preparedness Centre (ADPC), the Global Network of Civil Society Organisations for Disaster Reduction (GNDR) and the British Overseas Development Institute (ODI).

The Framework Convention as well as the Intergovernmental Panel on Climate Change is attaching increasing importance to international disaster risk management. In 2012 the World Climate Council published 'Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation', a highly respected special report on the links between climate change, extreme weather events and disaster risk.

# Disaster Risk Management in Practice:

## Examples from German Development Cooperation

Disasters of the last decade, such as the Indian Ocean Tsunami in 2004 and the seaquake in Japan in 2011, have demonstrated that local events can have global impacts. Although the number of disaster-related deaths has decreased in recent years, the global interconnection of economic cycles means economic losses have increased (*CRED, 2014*). These trends call for a holistic disaster risk management approach that is taken seriously by all stakeholders and sectors.

In addition, the number of extreme natural events is increasing as a result of climate change. This is a particular threat for urban agglomerations, which are also exposed to technological disasters. There is also a link between development level and disaster risk: vulnerability to extreme natural events, as well as to technology-related and man-made risks, increases the disaster risk. The subject of disaster risk management is already being taken very seriously by many particularly vulnerable countries. Efforts are being made to develop risk management structures that strengthen resilience to risks.

German Development Cooperation supports these countries in a variety of ways. For example, since the adoption of the Hyogo Framework for Action, there has been growing awareness within German Development Cooperation and in Germany's partner countries that disaster risks in particularly vulnerable countries must be taken into account as a matter of principle in all development projects. As described in Section 1, BMZ therefore considers it important to mainstream disaster risk management as a cross-sectoral task and to highlight its crucial role as a cross-cutting issue. Disaster risk management is increasingly being incorporated not only into specific individual projects but also into programmes relating to the environment, water, rural development, decentralisation and community development, urban development, peace and security, and education, among others. In addition, a cross-stakeholder approach is being supported through innovative schemes such as the Global Initiative on Disaster Risk Management.

In addition to the measures and approaches that have already been described, this section takes a more detailed look at the experience gained and

approaches taken in the field of disaster risk management in German Development Cooperation.

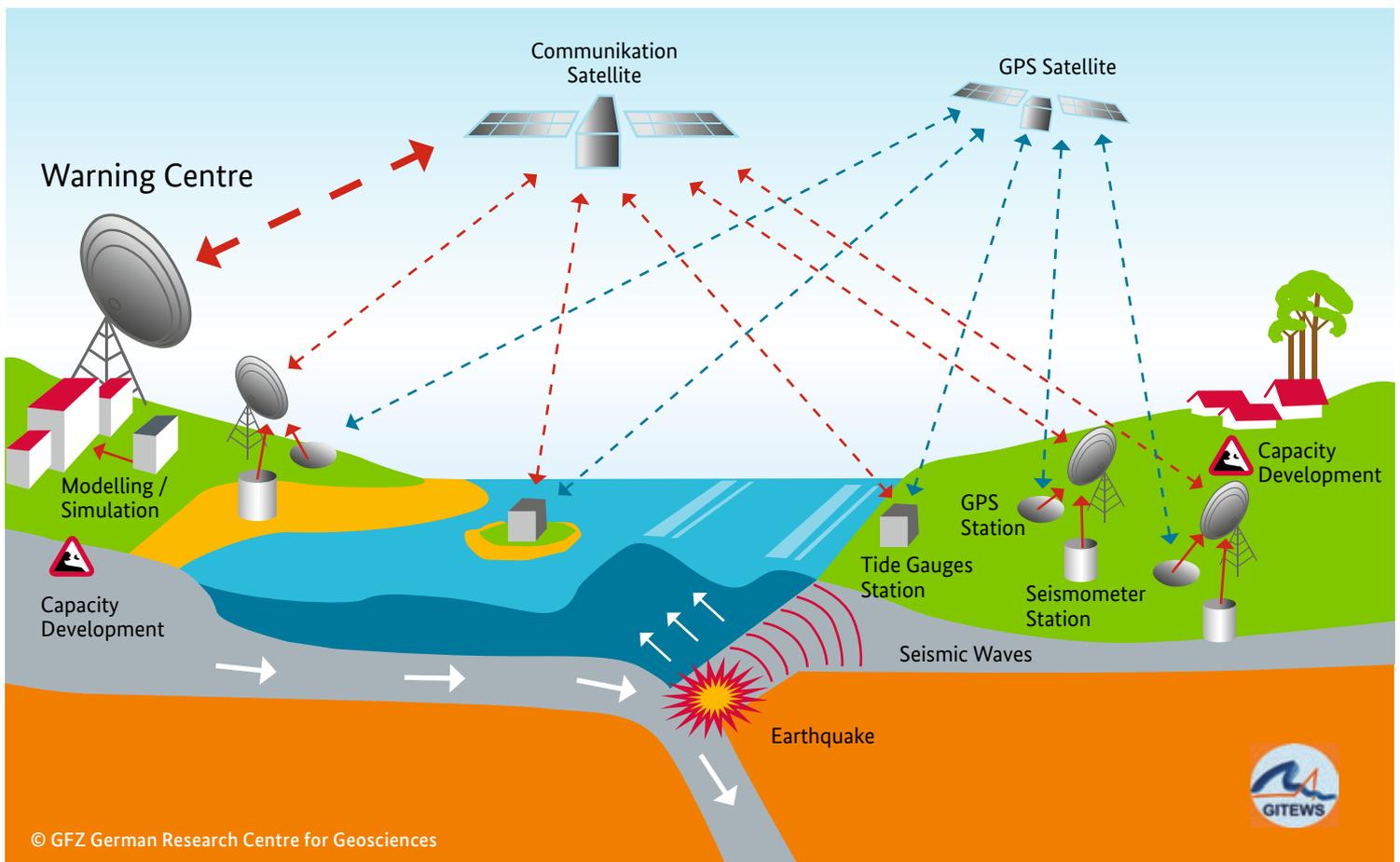
### 3.1 Indonesia: High-tech system helps protect South-East Asian coasts

#### Context:

When earthquakes shake the sea floor, the consequences for coastal communities in South-East Asian countries can be catastrophic. Yet it is not the seaquakes themselves that pose the hazard: it is the resulting tsunami waves that form at sea and are propelled rapidly towards the coast and offshore islands, reaching speeds of several hundred kilometres per hour. In December 2004, an extremely far-reaching tsunami killed an estimated 220,000 people in a number of coastal regions of South-East

Asia within a few hours. Japan's seaquake tragedy at the Fukushima nuclear reactor site in March 2011 demonstrated how the disaster potential of seaquakes can extend beyond the tsunami wave itself.

The coasts of the main Indonesian islands have very short warning time frames of about 30 minutes. For the islands off Sumatra there is virtually no prior warning time. Cities with over a million inhabitants, such as Padang on the south coast of Sumatra, are impossible to evacuate within the time available.



### Description of the measure:

The German-Indonesian Tsunami Early Warning System (GITEWS) is a project that has been carried out in the context of German funds committed to tsunami aid. GITEWS was originally funded by the German Ministry for Education and Research (BMBF) and BMZ. Japan, China, France, the USA and the United Nations Educational, Scientific and Cultural Organization (UNESCO) are also contributing to the system.

Tsunami warnings are issued less than five minutes after a seaquake, followed by updates or the all-clear. This requires technical innovations to be integrated into national and international disaster response capacities.

The system is based on 300 different land-based sensor systems. The warning takes place on the basis of very fast, precise earthquake recording and evaluation, which forms the heart of the warning system. The sophisticated system has been developed in cooperation with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH under the auspices of the German Research Centre for Geosciences (GFZ) in Potsdam. The system has been evaluated internationally and classed as one of the most advanced tsunami warning systems in the world.

The rapid measurement of earthquake parameters (location, depth, magnitude) using 160 seismometers on land allows a tsunami preview to be generated through modelling. A warning signal is

then raised on this basis. This first status report is substantiated further using additional data from GPS stations and tide gauges along the coast of Indonesia. Tide gauges equipped with GPS sensors are used to verify the existence of a tsunami. This reduces the time needed for an earthquake to be detected by the Warning Centre in Jakarta to a few minutes. In addition, scientists, disaster managers, national and local government workers and representatives of the local population have been taught what to do in the event of a strong earthquake and tsunami warning and what preventive measures can be taken.

As part of the GITEWS project, capacity development measures have been set up with the local authorities and the local population in three test regions (Padang, Sumatra; Cilacap, South Java; Kuta/Sanur, Bali) and made mandatory. The measures include training in the functioning of the early warning system and developing hazard maps as a basis for evacuation plans, evacuation routes and future infrastructure planning. The decision-making and warning chain from national to local level has been defined and specified. GITEWS has thus laid the foundations for Indonesia's national disaster management strategy.

Responsibility for GITEWS was fully transferred to Indonesia in 2011. It has already demonstrated its effective functioning in connection with a number of strong earthquakes and tsunamis.

*For further information visit [www.gitews.de](http://www.gitews.de)*

## 3.2 Philippines: Crisis response chains reach every village

### Context:

The Philippines is one of the most disaster-prone countries in the world. The government of the Philippines makes disaster risk management a high priority. Nevertheless, faced with an average of 30 major floods in the region each year, local government units in the South-East Asian archipelago, which consists of more than 7,000 islands, are often unable to adequately protect the population and infrastructure from extreme natural events. There are significant problems to be addressed, including a lack of early warning systems, precautionary measures and emergency plans.

### Description of the measure:

Since 2005, local authorities and government representatives, with long-term support from GIZ, have set up Local Flood Early Warning Systems (LFEWS) in ten provinces. Around 750,000 people benefit directly from these systems. By the end of 2014 there were 18 such systems in use throughout the Philippines. There is growing demand for them from the Philippine authorities as they offer three major advantages: they are relatively inexpensive, technically robust and local populations are directly involved in the planning, and management of the system.



In each province that is covered by a system, local evacuation and communication centres are set up for the population, who often lives in rural areas, and emergency plans that are easy to implement are developed with authorities and communities. This means that basic disaster prevention mechanisms are built up around the early warning systems, bringing long-term benefits even to remote communities.

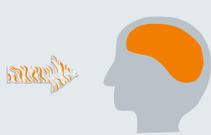
The complete system involves four integrated stages: continuous measurement and observation of river levels in the province; transmission of the data to an operations centre; triggering of the alarm chain in individual households and villages via district authorities if a flood is imminent; and activating the rehearsed evacuation plan in neighbourhoods and communities. The data on the extent and frequency of rising water levels also

provides important information for the preparation of risk maps, which can be used, among other things, for drawing up or modifying land-use plans.

If the early warning system detects a potentially dangerous rise in water level upstream as a result of heavy rain, it immediately sends this information to a regional operations centre, which in turn informs the local districts immediately. The alarm chain is then triggered: using simple but effective means such as mobile phone networks, short wave receivers and a system of bells with different signals for different alarm levels, thousands of families can be warned and instructed to either prepare for the previously publicised evacuation process or to implement it immediately. Disaster response teams and authorities in the districts have been trained and equipped to offer assistance.



Rain & River level gauges



Operation Centre



Municipality



Village



Household



Evacuation Centre

A network of simple evacuation centres provides people with an initial place of refuge if a disaster strikes. This system is geared to local conditions, which are usually relatively basic, but in some cases it is also supplemented by GIS data and satellite information. This enables the LFEWS to be operated by local governments inexpensively and in

accordance with local resources – the savings achieved through the prevention of damage significantly reduce the burden on private households and district budgets and have been found to repay the costs of maintaining the LFEWS after just one year of operation.

### 3.3 Haiti: Strengthening adaptation and prevention – resilience in risk areas

#### Context:

Haiti is the poorest country in the western hemisphere: some 54% of its inhabitants live in extreme poverty. For these people, access to sufficient food remains an issue. On the 2013 World Risk Index, which ranks countries by their disaster risk, Haiti is ranked 21<sup>st</sup> out of 173 countries.

Development in Haiti is hindered not only by the risk of earthquakes but also by lengthy droughts, tropical cyclones and heavy rainfall that damage life and property, natural vegetation, crops and physical infrastructure. As the population of Haiti has insufficient coping and adaptation capacity, extreme natural events frequently result in humanitarian disasters.

#### Description of the measure:

Since January 2014, Welthungerhilfe has been addressing these issues by continuing to strengthen the resilience of at-risk communities through a five-year project co-financed by BMZ that aims to reduce disaster risk in North-East Haiti.

The objective is to improve the food security of the rural population through disaster risk reduction and adaptation to climate change. The project is being implemented in cooperation with the decentralised structures of the Haitian Ministry of the Environment and Agriculture and with a local non-governmental organisation.

It supports state institutions in the participatory process of developing strategies for coping with shocks and stress and for adapting to change. Community-based groups are involved in local planning and decision-making processes in

connection with the designation of protected areas and land-use planning on the basis of risk assessments and the finalising of agreements on protection and use.

In addition, support is provided to households and individuals to help reduce the risk of loss. This work focuses on the use of farming methods that control erosion and absorb water, the safe storage of seed and harvested produce, diversification of crops, and activities to help people to supplement their income by engaging in non-agricultural activities. Measures to stabilise slopes (installing erosion channels and stone sills and walls; planting and afforestation) reduce damage to forests and farmland while also improving the water absorption capacity of the soil, which is important in the event of heavy rain. These practical slope stabilisation measures are accompanied by campaigns to raise awareness of the causes of soil degradation.

In addition, learning processes are supported in order to strengthen the capacities of local civil protection and environmental committees in relation to the planning, creation and maintenance of protective vegetation and protection systems and the development of climate change adaptation measures and ways of coping with the consequences of heavy rain, storms, floods and epidemics. State institutions, civil society groups and individual stakeholders work together to reduce the vulnerability of the population by improving nutrition, raising income and introducing risk reduction measures, and to reduce loss and damage after extreme natural events. This increases the resilience of communities in the project area.

*For further information visit [www.welthungerhilfe.de](http://www.welthungerhilfe.de)*



### 3.4 Central Asia: Transborder cooperation produces local results

#### Context:

Central Asia is a region with a high disaster risk. Three quarters of the population lives in earthquake-prone areas; many cities have experienced severe earthquakes. Extreme weather events (droughts, cold winters) have repeatedly led to disasters on a national scale. Because coping capacities are limited and much of the infrastructure is dilapidated, even relatively minor natural events such as heavy rain, floods and mudflows cause significant damage. Since 2007, BMZ has therefore been promoting disaster risk management in the two poorest countries of Central Asia, Tajikistan and Kyrgyzstan.

#### Description of the measure:

Measures are being carried out to improve disaster preparedness and self-help capacities of local communities in the Zeravshan Valley in Tajikistan. Some 300,000 people live in this particular poor and disaster-prone valley, which is largely cut off from the rest of the country by mountains and difficult to access in an emergency, especially in winter. Every year people in the most remote mountain villages are killed by flooding and flash floods, mudflows and landslides, and houses, roads and bridges are destroyed.



In 60 villages risk reduction measures (bank stabilisation, dykes, erosion control) have been put in place and bridges, roads and irrigation systems repaired. Rescue teams have been equipped, trained and integrated into the disaster management authority's communication system. The villages now have easy-to-read risk maps. District governments can update these maps and use them to plan risk reduction measures. The establishment of a rescue centre has improved the operational procedures of disaster risk and emergency management authority and the Red Crescent throughout the Zeravshan Valley.

Since 2011, the focus has been on promoting regional cooperation on emergency aid. Many areas of Central Asia could be supplied most effectively with aid from neighbouring countries, but the difficulty of crossing state borders means that this is not always possible. This is a particular problem in the Fergana Valley with its winding and almost impermeable borders.

The disaster risk and emergency management authorities and Red Crescent societies in the neighbouring provinces of Tajikistan and Kyrgyzstan have been equipped, trained and involved in joint measures.

Kazakhstan is receiving support in setting up a regional disaster risk reduction centre in Almaty. As a result of various initiatives, the country has become a driver of regional cooperation in Central Asia. Cooperation between the disaster risk and emergency management authorities of Kazakhstan, Kyrgyzstan and Tajikistan has been improved by supporting working meetings and disaster management exercises and organising joint study trips to Germany. In Kazakhstan, the Global Initiative on Disaster Risk Management, building on the project's activities, will also promote the establishment of partnerships with German disaster risk and emergency management units.

*For further information visit [www.giz.de](http://www.giz.de)*

## 3.5 Asia-Pacific: Network for people with disabilities

### Context:

The Asia-Pacific region is more severely affected by catastrophic natural events than any other region in the world. A disproportionately high number of people with disabilities are among the victims of disasters. On account of their limited mobility, the frequent lack of access to information and their social marginalisation, their lives are particularly at risk. Despite this, they are not automatically taken into account in disaster risk management systems. The Disability-inclusive Network for Asia and Pacific (DiDRRN) was launched in October 2012 during the 5th Asian Ministerial Conference on Disaster Risk Reduction in Yogyakarta to overcome this form of discrimination and include the issue in national and international political discourse, training programmes and catalogues of measures.

### Description of the measure:

The network brings together mainstream aid organisations, specialised non-governmental organisations and disability groups. Its purpose is to campaign for the inclusion of people with disabilities in disaster risk management through good-practice projects at local level, advocacy at national level and active participation in international conferences.

From the network's inception, BMZ has provided financial support for the activities of DiDRRN, which include actively involving people with disabilities and organising side events at regional and international conferences. This lobbying was continued during the process for the Post-2015 Framework for Disaster Risk Reduction and through the presence of DiDRRN at the Third UN World Conference on Disaster Risk Reduction in March 2015. The evaluation and presentation of local project work provides the basis for the necessary lobbying of specialist bodies and governments.

Measures in the project countries involve the training of disability organisations and disaster management stakeholders, press conferences, media work, social media and information campaigns for local people – with materials in Braille or videos in sign language. Measures also include workshops and curriculum development work with specialist bodies and organisations (including civil protection bodies and the military), drawing up local, inclusive disaster risk and emergency management plans, and organising disaster response preparedness and evacuation exercises together with people with disabilities.

The strength of the DiDRRN network lies in its extensive practical experience of participatory disaster risk management and of representing the interests of people with disabilities and providing them with practical support. At local and international level it is now recognised that people with disabilities must be included in disaster risk management and its international bodies and discourses. To date the project countries of the Asia-Pacific Network have included Bangladesh, Indonesia, Kiribati, Pakistan, Samoa, the Solomon Islands, Thailand, Toga, Vanuatu and Vietnam.

The consortium is headed by Malteser International; other members of the network are the Workers' Samaritan Federation (ASB), CBM, Handicap International, the Center for Disability in Development, the Pacific Disability Forum and the South Asia Disability Forum.

*For further information visit [www.didrrn.net](http://www.didrrn.net)*



### 3.6 Afghanistan: Supporting authorities and the population prepare for disasters



#### Context:

In Afghanistan, extreme natural events pose a threat to people's livelihoods, particularly in the north of the country. Badakhshan Province is especially vulnerable to disasters and each year large numbers of people as well as many houses and large areas of arable land are affected by landslides, avalanches, earthquakes, floods and droughts. In the past, peoples' capacity for self-help was very limited. External aid did not reach those who needed it for days or weeks after a disaster and the government's disaster risk management approach was mainly focused to repairing any damage that has occurred on an ad hoc basis. This included the provision of emergency aid and the rehabilitation of infrastructure. The province lacked the resources, expertise and strong institutions required to prepare for disasters.

As a result, extreme natural events destroyed livelihoods in Badakhshan on a regular basis, with the poor rural population hit hardest.

#### Description of the measure:

On behalf of BMZ, GIZ advised the provincial government, district authorities and local civil society groups in Badakhshan from September 2009 to December 2013. In addition, district emergency management committees were set up in 32 communities with a combined population of 45,000. These committees are becoming increasingly able to organise effective disaster risk management autonomously and provide mutual support.

A particular priority was the involvement of women: for example, in all the communities, women's committees or voluntary teams were set up alongside the men's committees.

Working with the local population and the provincial authorities, the project conducted risk analyses, mapped the at-risk areas and organised the training of rescue teams. Activities at community level were supplemented by specific infrastructure measures to reduce the disaster risk at particularly vulnerable locations. To institutionalise disaster risk management guidelines and instruments, the authorities at district level were also provided with advice and equipment to enable them to deliver aid to affected villages quickly and effectively in the event of a disaster.

In addition, the province's emergency plan was revised in collaboration with the Afghan National Disaster Management Authority (ANDMA), the Asian Disaster Preparedness Center (ADPC, based in Bangkok, Thailand), OCHA and the provincial departments of 22 ministries. This has resulted in practical procedures that can be used by the stakeholders involved. To enable the local authorities to improve coordination of their activities with all stakeholders, including international organisations, training in disaster risk management and IT systems was provided for relevant government representatives.

In Badakhshan – as in other parts of the world – the public schools are particularly vulnerable to disasters. They are often built outside the village on land that is inexpensive to buy (because it is at risk from rock falls, landslides or avalanches). If a disaster strikes, the damage and the loss of human life is likely to be particularly high. The project therefore helped the Ministry of Education incor-

porate disaster preparedness modules into teacher training at province level. Several hundred teachers and employees of the Ministry of Education were trained in disaster risk reduction for schools. Upon completion of the project, the training programme is continued by a local NGO.

*For further information visit [www.giz.de](http://www.giz.de)*

### 3.7 Madagascar: Integrating aid and prevention, building on strengths

#### Context:

Madagascar ranks second on the list of African countries most severely affected by extreme natural events. It regularly experiences cyclones, floods and droughts.

During the last 35 years more than half the island's 20 million inhabitants have been affected at least once by extreme events of this sort. As a result of climate change, disasters in Madagascar are likely to increase further.

This may lead to an increase in harvest losses, shortages of food and clean (drinking) water and events such as epidemics of diarrhoea, which are one of the most frequent health risks for survivors of disasters. Most of the rural population of Madagascar lack the knowledge and capacity to adapt agricultural practices to changing climatic conditions and adopt appropriate hygiene procedures.



### Description of the measure:

With financial support from BMZ, the German Red Cross (DRK) and the Malagasy Red Cross (MRC) have collaborated on a long-term project for disaster risk management and adaptation to climate change which is providing support to 6,000 households in 20 communities in the remote and disaster-prone region of Sofia in north-west Madagascar. The project uses the integrated resilience approach.

This approach links disaster risk management, food security and hygienic improvements. Measures are taken to strengthen the human resources and material capacities of the national society as a stakeholder in national disaster risk management, allowing the initiated activities to be continued after the project has come to an end in line with the concept of connectedness.

The first step, carried out in a participatory process, involves identifying the existing natural hazards and the present coping capacities and needs of the communities of Sofia. Appropriate adaptation strategies are then devised. At the same time, existing local disaster risk management processes/ structures (e.g. cyclone warnings broadcast over the radio) and information (e.g. observations of river flows) are incorporated into the project.

The aim of this participatory approach is to strengthen the self-help capacities and existing abilities of the communities and permanently increase their resilience. Because extreme weather events in Madagascar are projected to increase, the disaster management committees trained and equipped by the project are likely to be deployed regularly.

*For further information visit [www.drk.de/weltweit](http://www.drk.de/weltweit)*

## 3.8 Myanmar: Climate change adaptation and coastal zone protection

### Context:

The coastal zone of Rakhine state in Myanmar, South-East Asia, is deemed to be at particular risk from cyclones and resulting floods. Because the area is located at a low altitude, it is also particularly vulnerable to the effects of climate change, such as salination of agricultural land as a result of rising sea levels.

### Description of the measure:

This BMZ-funded project is designed to strengthen the resilience of the coastal population to disasters and the effects of climate change. Building on its extensive experience of community-based disaster risk management projects in the region, Malteser International is working in 93 coastal villages in Rakhine state. The project was launched in January 2013 and is due to run until the end of 2018.

At local level, the project adopts the approach of inclusive community-based disaster risk management (iCBDRM), while at regional and national level it advises on policy and provides support to state structures. In carrying out the individual measures, Malteser International cooperates with central partners at several levels, including the Relief and Resettlement Department (RRD) and other government departments (e.g. meteorology and hydrology) relevant to specific components, local fire brigades and national ministries.

On the civil society side, the project works with the Myanmar Environment Rehabilitation-Conservation Network (MERN) and the Myanmar Red Cross Society (MCRS). Following international calls to tender, some technical components have also been awarded to the Asian Disaster Preparedness Centre (ADPC). The objective of strengthening the resilience of the population in the coastal zone of Rakhine state is measured against three component goals:



Firstly, to improve overall disaster risk management capacities, local government authorities will be made more aware of climate change adaptation activities, so that the requirements of disaster risk management can be actively incorporated into the National Adaptation Programme of Action (NAPA). The measures include a study of climate-based early warning systems for coastal areas relating to the spread of infectious diseases that often occur in the wake of climate change.

Secondly, the coping capacities of the participating communities will be improved. Their vulnerability to storm and flood damage will be reduced by planting mangrove forests and setting up a community-based system of coastal zone management involving planning of adaptation to climate change.

Thirdly, a climate vulnerability analysis for the coastal region of Rakhine will be carried out to generate knowledge about options for successful climate adaptation in Myanmar.

*For further information visit  
[www.malteser-international.org](http://www.malteser-international.org)*

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# Abbreviations

<b>AA</b> Federal Foreign Office	<b>GITEWS</b> German-Indonesian Tsunami Early Warning System
<b>ADPC</b> Asian Disaster Preparedness Centre	<b>GIZ</b> Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
<b>BCPR</b> Bureau for Crisis Prevention and Recovery	<b>HFA</b> Hyogo Framework for Action 2005–2015
<b>BMBF</b> Federal Ministry of Education and Research	<b>IPCC</b> Intergovernmental Panel on Climate Change
<b>BMI</b> Federal Ministry of the Interior	<b>ISDR</b> International Strategy for Disaster Reduction
<b>BMWi</b> Federal Ministry for Economic Affairs and Energy	<b>LRRD</b> Linking Relief, Rehabilitation and Development
<b>BMZ</b> Federal Ministry for Economic Cooperation and Development	<b>MDG</b> Millennium Development Goal
<b>CERF</b> Central Emergency Response Fund of the United Nations	<b>ODI</b> Overseas Development Institute
<b>DFID</b> Department for International Development	<b>OECD</b> Organisation for Economic Co-operation and Development
<b>DiDRRN</b> Disability Inclusive Network for Asia and Pacific	<b>PATA</b> Pacific Asia Travel Association
<b>DIPECHO</b> Disaster Preparedness ECHO Programme	<b>PPP</b> Public Private Partnership
<b>DKKV</b> German Committee for Disaster Reduction	<b>SFDRR</b> Sendai Framework for Disaster Risk Reduction 2015–2030
<b>DRK</b> German Red Cross	<b>UNDESA</b> United Nations Department of Economic and Social Affairs
<b>DRM</b> Disaster Risk Management	<b>UNDP</b> United Nations Development Programme
<b>DRR</b> Disaster Risk Reduction	<b>UNESCO</b> United Nations Educational, Scientific and Cultural Organization
<b>ECHO</b> European Commission Humanitarian Office	<b>UNFCCC</b> United Nations Framework Convention on Climate Change
<b>EU</b> European Union	<b>UN Habitat</b> United Nations Human Settlements Programme
<b>FAO</b> Food and Agriculture Organization of the United Nations	<b>UNISDR</b> United Nations International Strategy for Disaster Reduction
<b>G7</b> Group of seven major industrialised nations	<b>WHO</b> World Health Organization
<b>G20</b> Group of the twenty most important industrialised and emerging countries	
<b>GFDRR</b> Global Facility for Disaster Reduction and Recovery	
<b>GFZ</b> German Research Centre for Geosciences	
<b>GIDRM</b> Global Initiative on Disaster Risk Management of BMZ	

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