

# Alliance Development Works

**Brot**  
für die Welt

welt  
hunger  
hilfe

terre des  
hommes  
Hilfe für Kinder in Not

m)  
medica international

MISEREOR  
MILIEUSWERK

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+

Focus: health and healthcare



# WorldRiskReport 2013

In cooperation with



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Institute for Environment  
and Human Security

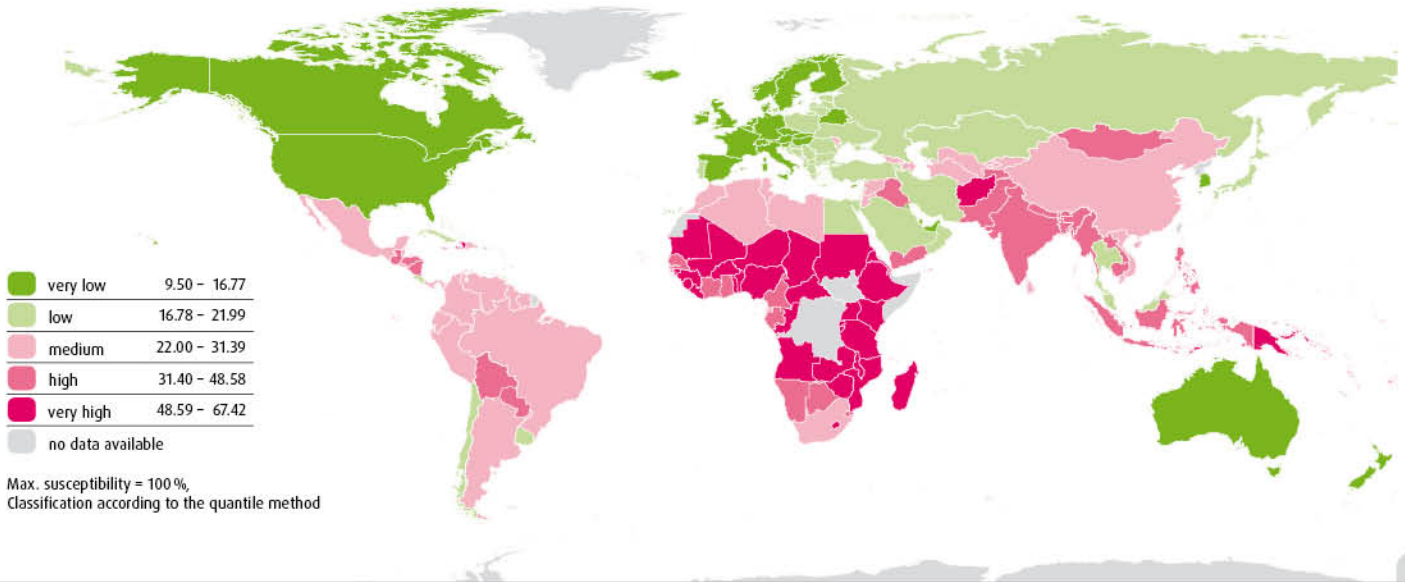


universität**bonn**

Together for people in need.

## Susceptibility

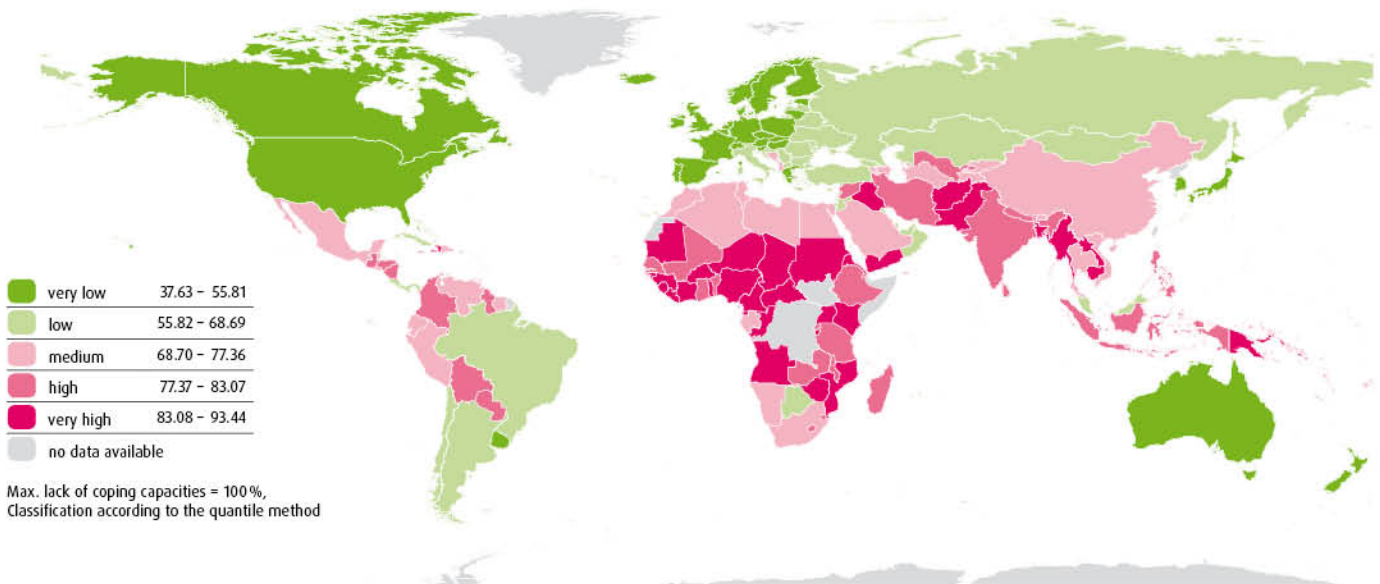
dependent on public infrastructure, nutrition, income and the general economic framework



Map B1  
Map B2

## Lack of coping capacities

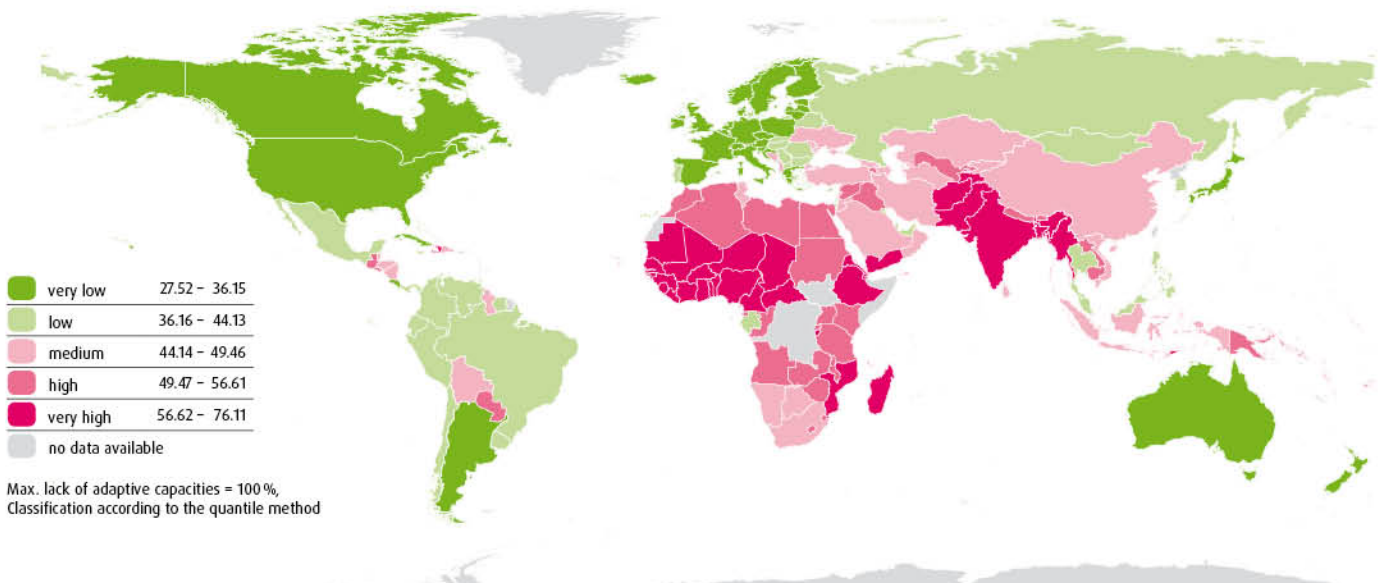
dependent on governance, medical care and material security



Map B3

## Lack of adaptive capacities

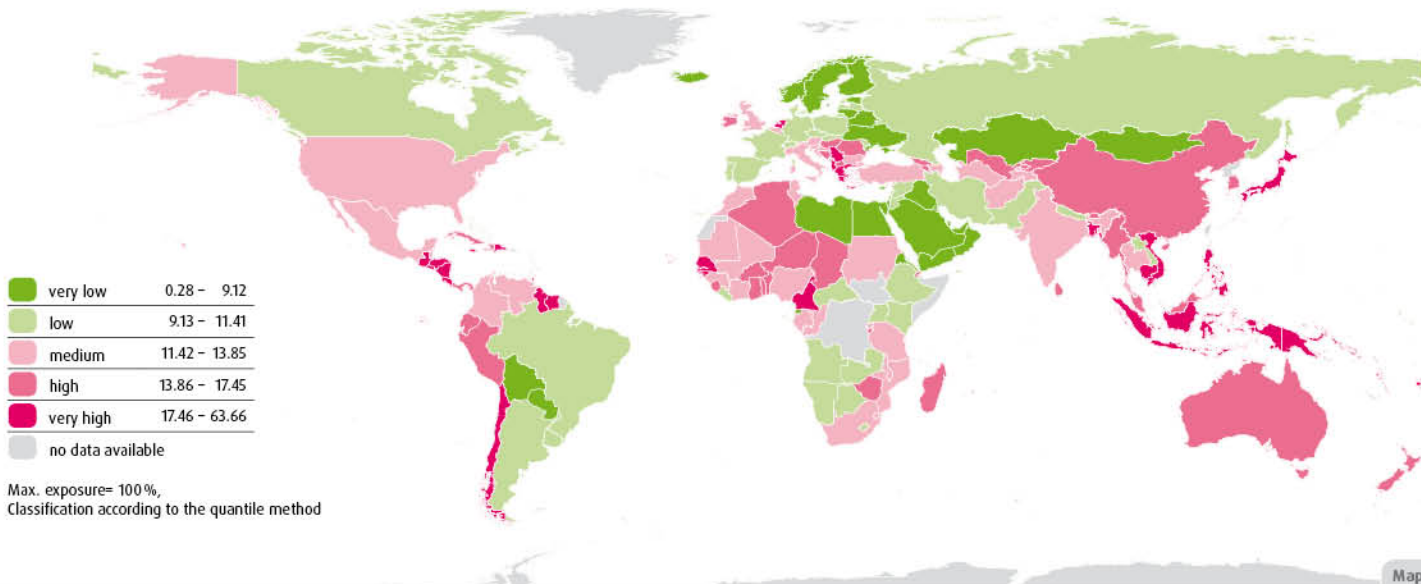
related to future natural events and climate change





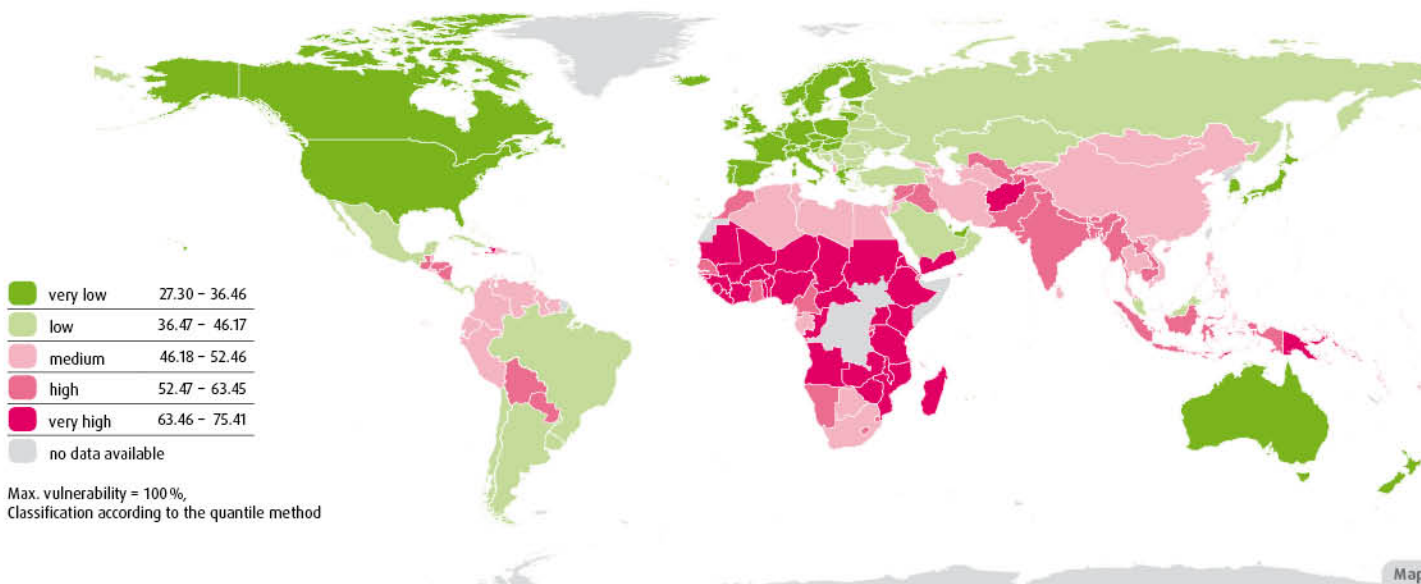
## Exposure

Exposure of the population to the natural hazards earthquakes, storms, floods, droughts and sea level rise.



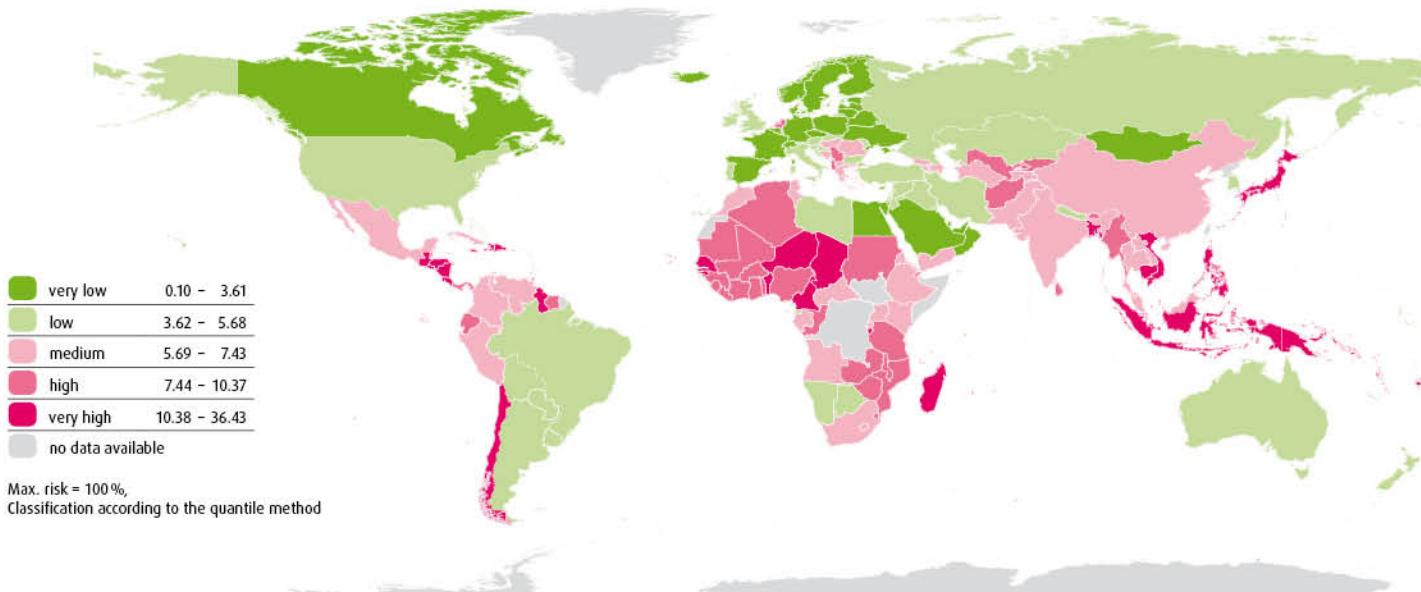
## Vulnerability

Vulnerability of society as the sum of susceptibility, lack of coping capacities and lack of adaptive capacities



## WorldRiskIndex

WorldRiskIndex as the result of exposure and vulnerability





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The background of the slide is a blurred photograph of a medical drip chamber and IV tubing. The drip chamber is white with a blue stopcock and a black adjustment knob. The tubing is clear plastic. The text is overlaid on a white rounded rectangle.

# 1. Assessing risk, reducing vulnerability

Peter Mucke

Whether it be drought, cyclone, earthquake or floods, when an extreme natural event hits a village or a town, the extent of harm to people crucially depends on what the population's health status has been prior to the event – and on how well healthcare also works in crisis and disaster situations. In a nutshell, “health and healthcare” are decisive factors in risk assessment. The WorldRiskReport 2013 focuses on this theme.

It's about more than the issue of how hard the force of nature has hit the people. A country's risk of becoming the victim of a disaster is not determined solely by its exposure to natural hazards, but to a crucial extent also by the society's state of development. For a country that has sufficient financial means at its disposal as well as functioning government and civil society structures, that counters recurrent natural disasters with an adaptive strategy and that is willing to invest in adapting to changes in framework conditions such as weather and climate extremes will also be hit less hard by extreme natural events. It is, as specialists say, less vulnerable. Adopting this fundamental understanding of risk, the WorldRiskIndex calculates the risk of disaster for 173 countries worldwide by multiplying exposure to natural hazards by precisely such vulnerability.

The Index is composed of indicators in the four components of **exposure** to natural hazards such as earthquakes, cyclones, floods, droughts and sea level rise, **susceptibility** depending on infrastructure, nutrition,

housing conditions and economic framework conditions, **coping capacities** determined by governance, preparedness and early warning, healthcare, and social and material security, and **adaptive capacities** relating to future natural events and climate change.

With its focal topic of **"Health and Health-care"**, this year's WorldRiskReport looks at important elements in the measurement of vulnerability. For a society with high health standards and healthcare that is affordable for all will be less vulnerable when it is hit by an extreme natural event. Just like every other index, the WorldRiskIndex can only consider indicators for which comprehensible, quantifiable data are available on a global scale. For example, this could be the proportion of population undernourished, the number of physicians and the number of hospital beds per 10,000 inhabitants. However, health is a multidimensional construct that impacts on society in manifold ways, as described in Chapter 2.1. And there is more to healthcare than just the number of physicians and hospital beds. For example, while the importance of traditional or neighborly support and remedial structures cannot be quantified as a rule, it can hardly be overestimated. For primary healthcare, which can save lives in many cases, certainly does not always require a university degree in medicine.

The WorldRiskReport 2013 deals with very different aspects of the focal topic. The complicated links between health and healthcare on the one hand and vulnerability on the other are looked at more closely in qualitative terms. For example, it becomes apparent that it is particularly the infectious diseases, which, basically, are easy to prevent, that have a disastrous impact on a society's health, as Chapter 2.2 explains.

Whereas a child in Germany need not fear diarrhea as a deadly threat, 13 percent of fatalities among children under five years of age in

### The term developing countries:

Finding the right word for the "poor countries" in Africa, Asia and Latin America is not unproblematic. For one thing, different terms are used by the various global organizations (the UN, UN organizations, the World Bank) in this context. Second, any expression one might use will be questionable. "Third World" is a term that the countries thus referred to will hardly appreciate. "Developing countries" suggests that the countries in North America or Europe are developed and the countries in the other continents are underdeveloped. Of course we do not subscribe to such a simple view, but we have nevertheless opted for using the term developing countries (not in inverted commas) in this report. In accordance with UN practice, it refers to all countries in Africa, Asia (with the exception of Japan, South Korea and Taiwan) and Latin America, including the emerging countries.



India are due to severe diarrhea. And even if it does not result in death, the disease as such is a serious impediment to the development of both the child and society as a whole. Worldwide, almost 650,000 children under the age of five years died of diarrhea in 2011 — more than of malaria and HIV/AIDS together. The Map of the World on pages 40/41 illustrates a crucial driver of the incidence of infectious diseases: the proportion of a country's people who have no access to closed systems of feces disposal. And these are an incredible 1.035 billion people worldwide, with three quarters of them concentrated in just five countries.

Chapter 2.3 takes a closer look at groups that are especially vulnerable in crisis and disaster situations. For example, women living as refugees in the impoverished Northeast of India who have become pregnant are particularly vulnerable, as the fate of the young mother Anjali and her daughter Aisha shows.

Just like all other areas of life, health has long ceased to be exempted from the general

trend of economization. Chapter 2.4 shows that large areas of healthcare have turned into goods and services that are traded on the market and are subject to profit-seeking. In developing countries in particular, gaps in provision owing to a lack of finance for healthcare can be severe (World Map on pages 42/43). One yardstick for the level of healthcare is the proportion of out-of-pocket payments (OOPS), i.e. what people have to pay for themselves beyond free-of-charge government services or secure provision of healthcare via health insurance. Here, the poorest of the poor fall by the wayside: those people who have to live on less than the bare minimum of USD 1.25 a day. How are they supposed to pay for the treatment and drugs they need in Myanmar, for example, where there is an 80.7-percent OOPS proportion? In countries with a high OOPS proportion and a low level of public healthcare, healthy life expectancy is significantly reduced. Whereas people in Germany (OOPS proportion: 12.4 percent) live 69 years on average without any lasting disease or disablement,

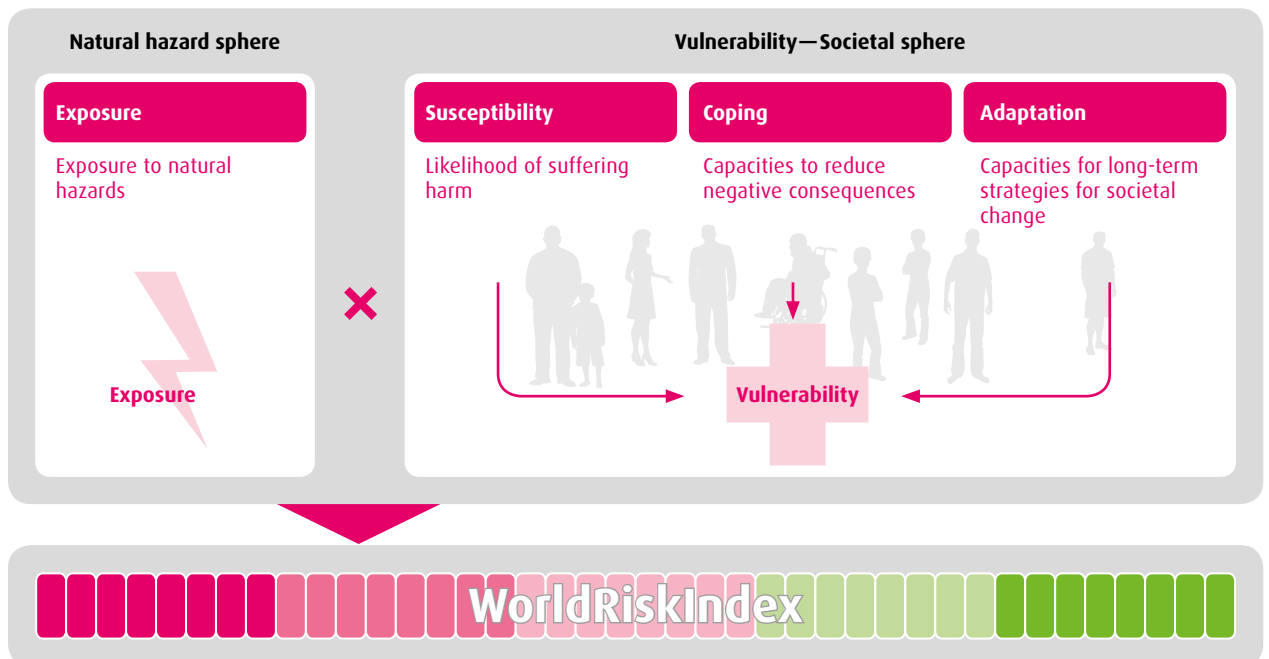


Figure 1: The WorldRiskIndex and its components

the level in Afghanistan (OOPS proportion: 84.4 percent) is just 47 years.

It is also against the background of such global injustice that the WorldRiskIndex seeks answers to the following questions:

- + How probable is an extreme natural event, and how likely is it to affect people?
- + How vulnerable do the natural hazards make the people?
- + To what extent can societies cope with acute disasters?
- + Is a society taking preventive measures to address natural hazards to be expected in the future?

In the WorldRiskIndex 2013, the exposure values taken as a base are the same ones as last year's, since no updates were available. This is why all changes in the disaster risk relate to changes in vulnerability – and ultimately, it is vulnerability that human action can address, that can be changed through political measures and at which the work of the seven Alliance members Brot für die Welt, CBM Christoffel-Blindenmission, Kindernothilfe, medico international, Misereor, terre des hommes and Welthungerhilfe always aims, too.

**[www.WorldRiskReport.org](http://www.WorldRiskReport.org)**

The print version of the WorldRiskReport has a volume enabling it to be read quickly. The texts of the Report are supplemented by maps, diagrams and pictures to illustrate their content. More in-depth information, scientific details of the methodology applied and tables are available at [www.WorldRiskReport.org](http://www.WorldRiskReport.org). There, the 2011, 2012 and 2013 Reports can be downloaded, too.

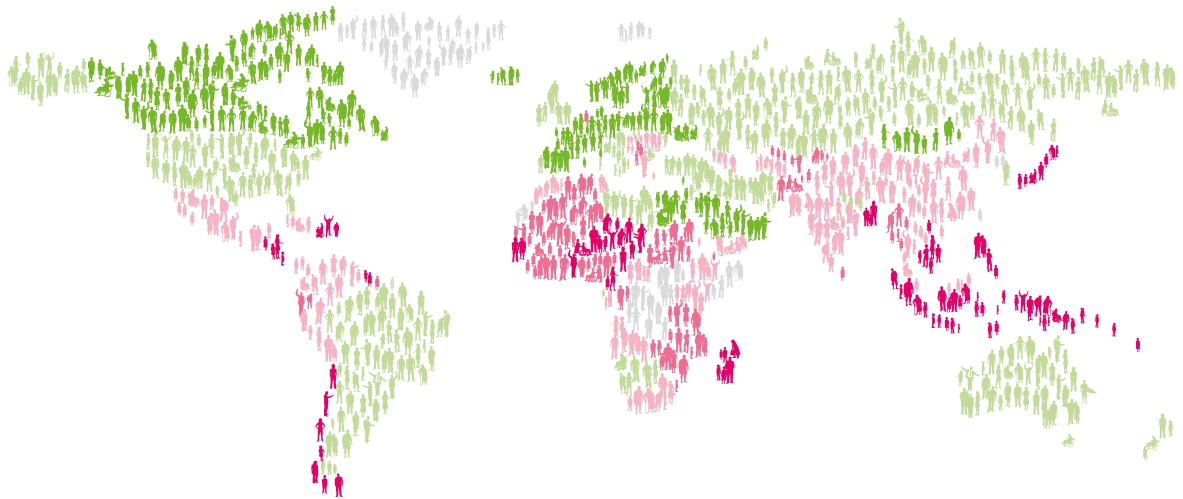
Important developments in individual countries in the most recent past have also had visible impacts on the WorldRiskIndex 2013. For example, the civil wars in Syria and Libya, the Japanese people's loss of trust in their government owing to the mismanagement of the Fukushima disaster or, also, the accelerated decline of Zimbabwe under the yoke of the Mugabe dictatorship have resulted in significantly poorer risk values for these countries.

**The concept of Alliance Development Works** is to view emergency aid and development cooperation as an entity and link up the two more closely in practice. Risk assessment, prevention, and coping and adaptive strategies are components of this concept.

The claim formulated by the Alliance in the WorldRiskReport 2011 continues to apply: "Whether it be an earthquake or a tsunami, a cyclone or floods, the risk of a natural event turning into a disaster always depends only partly on the force of the natural event itself. The living conditions of the people in the regions affected and the options available to respond quickly and to provide assistance are just as significant. Those who are prepared, who know what to do in the event of an extreme natural event, have a greater chance of survival. Countries that see natural hazards coming, that are preparing for the consequences of climate change and are providing the financial means required will be better prepared for the future.

Alliance Development Works publishes the WorldRiskReport to look at these links at global level and draw forward-looking conclusions regarding assistance measures, policies and reporting."

## Results at a glance



The global hotspots of disaster risk are in Oceania, Southeast Asia, the southern Sahel and Central America, as the WorldRiskIndex 2013 shows (see table on the right). There, a high level of exposure to natural hazards coincides with very vulnerable societies. A very high level of exposure is a significant risk driver, but a society's high level of development can substantially counteract this, as the example of Greece shows. As far as exposure is concerned, the country is ranked 24th among the countries most at risk. But thanks to social, economic, ecological and institutional factors, Greece has reduced its disaster risk enormously, and in risk ranking worldwide, it comes up 71st. While the impacts of the recent drastic cuts are also going to have a negative effect on the health sector over the coming years, Greece has so far been able to maintain a relatively good position in the WorldRiskIndex. The counterexample is Eritrea. With a very low exposure position of 147, the extreme level of vulnerability, at rank 3, has resulted in the country being positioned 93rd in the WorldRiskIndex, putting it in the same risk class as Greece. In terms of vulnerability, Eritrea's situation is typical of that of many African countries. Among the 15 countries with the highest level of vulnerability, alongside Haiti and Afghanistan, there are 13 African countries. Among the 15 countries most at risk worldwide, there are eight island nations. Owing to their proximity to the sea, they are exposed to cyclones, floods and sea level rise to a particular extent.

### WorldRiskIndex

Rank	Country	Risk (%)
1.	Vanuatu	36.43
2.	Tonga	28.23
3.	Philippines	27.52
4.	Guatemala	20.88
5.	Bangladesh	19.81
6.	Solomons	18.11
7.	Costa Rica	16.94
8.	Cambodia	16.90
9.	El Salvador	16.85
10.	Timor-Leste	16.37
11.	Papua-New Guinea	15.90
12.	Brunei Darussalam	15.80
13.	Mauritius	15.18
14.	Nicaragua	14.89
15.	Japan	14.10
.....		
146.	Germany	3.24
.....		
159.	Singapore	2.49
160.	Israel	2.49
161.	Norway	2.35
162.	Egypt	2.34
163.	Finland	2.28
164.	Sweden	2.26
165.	United Arab Emirates	2.10
166.	Bahrain	1.81
167.	Kiribati	1.78
168.	Iceland	1.55
169.	Grenada	1.44
170.	Saudi Arabia	1.32
171.	Barbados	1.16
172.	Malta	0.61
173.	Qatar	0.10





चलता-फिरता  
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## 2. Focus: Health and healthcare

A society's vulnerability towards natural hazards depends considerably on its health and healthcare. But in times of the global financial crisis, the health systems worldwide are being subjected even more strongly to economic principles. The poorest of the poor are suffering most from the austerity and privatization measures. Their already unacceptable vulnerability threatens to continue to rise. And yet they are the ones who are, as a rule, most hard-hit by extreme natural events.

## 2.1 Health and healthcare as risk factors

Michael Marx

**H**ealth is an essential aspect of risk assessment in the context of disasters. A society's poor state of health and insufficient healthcare are crucial drivers of vulnerability and, hence, of risk factors. However, the causal link works both ways. Not only do health and healthcare determine the disaster risk, but disasters have a negative impact on a society's state of health and its healthcare system. Research on the impacts of disasters shows that mortality represents only a small part of the impact spectrum (UNDP 2004). For example, after earthquakes or floods, injuries have the greatest impact. Just like infectious diseases, chronic diseases,

mental health or disablement, they belong to what are known as the morbidity indicators. Morbidity refers to the frequency of a disease related to a certain section of the population. The ratio between morbidity and mortality in connection with disasters is rated as 3.5 to 1 (CRED 2006). This means that for each dead person, there are 3.5 sick or injured people. With the Disaster Characteristics Assessment Scale, crucial characteristics can be assigned to different disasters: predictability, lethality, extent and delay in outbreak.

For example, earthquakes feature a high lethality, a short delay in outbreak (limited time for early warning), a low level of predictability and geographically localized impacts. In contrast, famine disasters that develop only slowly are at the opposite end of this scale (Guha-Sapir 1986, Guha-Sapir and Lechat 1986b). The course of development that a disaster may assume is a crucial factor in assessing suitable preventive as well as curative measures in the health sector.

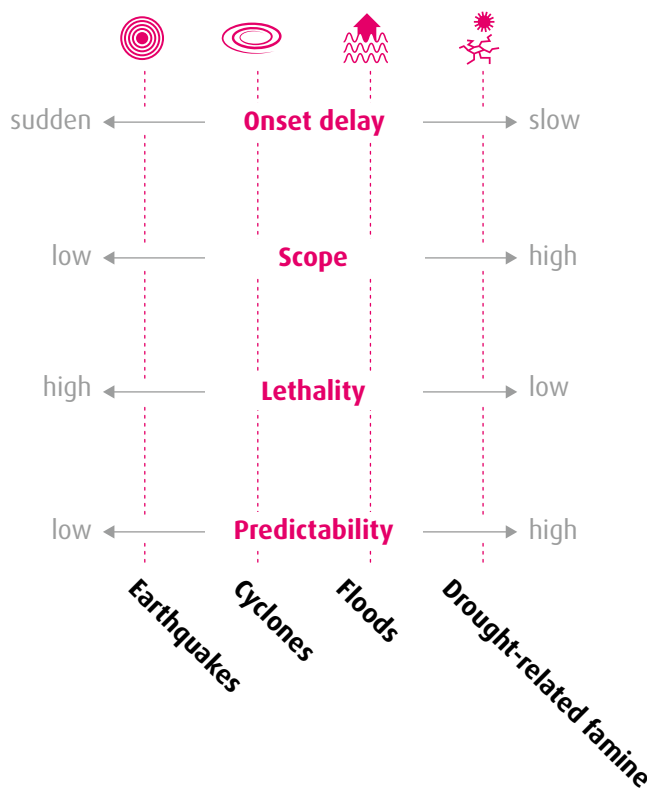


Figure 2: "Disaster Characteristics Assessment Scale" (Guha-Sapir 1986; Guha-Sapir and Lechat 1986b)

### "The double burden of diseases"

Independently of the type of natural hazards, developing countries are generally more vulnerable than industrialized countries owing to the usually poorer initial situation of the population. The acute, usually infectious diseases have long ceased to be the only illnesses that people in developing countries suffer from. For a number of years, "civilization diseases", i.e. chronic, non-communicable diseases (NCD), have also been spreading in the countries of the South. They include cardiovascular conditions, diabetes, chronic lung diseases, cancer and depression (Miks and Ledig 2012). These diseases occur more frequently in older age, and since life expectancy is steadily growing in all countries the world over, their proportion is continuously

increasing. According to the WHO, 63 percent of fatalities worldwide were caused by these chronic diseases in 2008, 80 percent of which were in emerging and developing countries.

NCD pose a considerable challenge for the healthcare systems of the developing countries, which have so far above all been oriented on the treatment of acute episodes of disease. This widening range of diseases is turning into a double burden of diseases for the already weak healthcare systems of these countries, which are struggling with what are sometimes massive financing problems (also see Chapter 2.4).

In order to develop action strategies to reduce the health hazard in these countries, we first of all have to answer two basic questions:

- + How do we define “health”?
- + What is a “health system”?

According to the WHO, health is a “state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. This definition underscores the important aspect that health has not only a biomedical but also a psychosocial dimension. Already in the mid 19th century, Rudolph Virchow recognized the interacting effects of poverty, disease and underdevelopment. Factors determining health and causing disease occur above all in the living and working conditions (including income, education, social integration) and environmental conditions (including water and energy supply and the availability of transport). Food plays a very important role as well. The influence of social status on health is undisputed. As a rule, poorer people are more ill and have less access to medical facilities. To varying degrees, this applies to industrialized and developing countries alike.

In other words, health is a complex good that is influenced by manifold variables. One important variable is the functionality of the health system (Phalkey et al. 2010). In its 2000 World Health Report, the WHO defines a health system as the totality of organizations, actors and initiatives whose aim it is to maintain and promote health and appropriately treat diseases and disabilities that occur. This definition covers activities outside the health services such as health promotion and traditional healers and midwives as well as traffic safety measures (WHO 2000). To address these various components, the WHO developed a framework concept in 2007 that illustrates the basic roles of a health system with the aid of six building blocks (WHO 2007). These building blocks are:

- + Leadership and governance
- + Healthcare
- + Human resources
- + Financing
- + Drugs and medical technology
- + Information systems.

These components mutually influence one another, and their manifold interplay is an indispensable precondition for a functioning health system.

Critics have pointed to an insufficient representation of the interaction between these building blocks and with other sectors outside health. A more recent WHO analysis (Savigny and Adam 2009) acknowledges the danger that individually supported components can segment and thus block a holistic development of the system.

### **More than mere provision**

According to this more recent definition, a health system reaches far beyond a super-

ficially perceived system providing health services. Rather, it is a complex social system in which the various actors — the target population including the patients, service providers, government officials, funding organizations, representatives of other sectors — are in permanent interaction and thus in a state of constant internal development (World Bank 2007). Thus it represents not a mechanical but a complex, adaptive, i.e. open system.

This system as a whole is, in turn, embedded in a complex field of influence comprising genetic and social factors, the environment and other sectors such as labor, education and agriculture/nutrition.

So how can measures to reduce health hazards in the countries of the South be designed — both independently of disaster situations and during or after a disaster?

Basically, there are two aspects to bear in mind here: at the level of the individual and at the level of the system. Health promotion and prevention address the former. Health promotion refers to a preventive strategy aimed at recognizing and strengthening health potentials and factors protecting health and enabling people to treat their own health in an independent and responsible manner (WHO 1986).

The Ottawa Charta adopted in 1986 (Siebert and Hartmann 2010) encourages a reorientation from a view focusing on disease to health promotion and the issue of how health develops. It refers to three central action strategies:

- + actively campaigning for health by influencing political, economic, social, cultural and environmental and behavioral factors
- + promoting skills and enabling people to take self-determined action
- + active and lasting cooperation between all actors.

The Ottawa Charter and its political approach have since proven their worth in practice, as is borne out by numerous laws relating to health issues, such as environmental and industrial safety laws, road traffic acts or food regulations.

Prevention is aimed at avoiding or slowing down the development of risk factors and the genesis of diseases. One distinguishes measures focusing on people (behavioral prevention) and measures addressing the conditions in which people are living and working (conditional prevention). Behavior-related measures are to enable individuals to improve their personal health prospects through self-determined action (e.g. refraining from smoking, promoting physical exercise and good nutrition), whereas condition-related measures aim at social, ecological and economic framework conditions (e.g. workplace safety, emissions reduction).

### Prevention is worthwhile

Health promotion and prevention are an effective first step towards challenging the spread of chronic diseases that create the disastrous “double burden of diseases” for developing countries. And they are an important step in strengthening capacity to cope with disasters or prepare for them in the sense of adapting. Also, the long-term positive economic effects of health promotion are undisputed. Greater fitness of those concerned results in their being able to take more strain and develop greater productivity in professional and private life as well as a lower level of absence from work owing to sickness (Aldana 2001). This figures out both from a business management and a national economy angle.

Since the first UN Summit on the topic of NCD in September 2011, in which 132 countries participated, the NCD have been high on the international political agenda. An intensive international and partly controversial discussion



on strategies and implementation has been started. What are the roles that the family, the community and the government have to assume? Should the government urge people to change their behavior? Should it allow “risky behavior”, or should such behavior even be punishable?

There is agreement on the issue that both treatment and prevention and health promotion have to cover the social causes of diseases and can only be effective and lastingly successful if they are based on transsectoral approaches.

This is the interface with the second aspect that needs addressing in the context of measures to reduce the health risk in the countries of the South: the health system. Here, a distinction has to be made between supporting and strengthening the system. Support comprises measures aimed at one or more acute problems of the system and usually leading to short-term success – e.g. construction measures, the distribution of mosquito nets or salary increases for a certain period. It also includes measures relating to certain selective disease programs. Success depends on the extent and duration of investment, although it can generally also be achieved within a short period.

### **Strengthening the system as a long-term task**

In contrast, measures seeking to strengthen the health system cause more comprehensive and lasting changes in the system as a whole – e.g. in the organizational structure, efficient management or personnel skills development. Usually, success can only be reached in the long term. Nowadays, the strengthening of health systems is attributed a key role in achieving the health targets (e.g. of the Millennium Development Goals) and in preparing for possible disasters.

Various principles and demands regarding improvements in the functioning of the health system are regarded as indispensable to reaching such goals:

- + Improving accessibility for the population as a whole: geographical, cultural, social, financial accessibility
- + Reaching out to the respective target groups for preventive and health promotion measures
- + Equity in service provision: Equal access to services addressing the same needs for all citizens
- + High quality of service provision: considering proof-oriented methods, quality management and the efficient employment of resources..

These principles and demands have to be applied to all building blocks of the system:

→ **Leadership and governance** (also referred to by the WHO as stewardship) first of all refers to the responsible role that governments assume in the health sector and how they relate to the actors in the sector. This comprises steering the entire health system –public and private – in the interest of the public.

→ **Provision of healthcare:** Healthcare services should be easily accessible and affordable for all and provide high-quality, effective services addressing respective needs. This applies both to individual measures and those related to the population as a whole, and in the area of prevention as well as in that of curative and rehabilitative medicine. As a rule, the health services are organized at three levels of the health system: health centers at the primary level, district hospitals as referral facilities at the secondary level and major hospitals and specialized facilities at the national, tertiary level. Here, the services of both the government and the private and not-for-profit operators are included. Alternative models of provision offering the population easier

access can be tested and integrated — for example community based health workers and traditional midwives as well as information campaigns (social marketing).

→ **Human resources:** Health workers form the central contact point between the population and the health system. A sufficient number of qualified health personnel are crucial to the quality of the health services. At an average 42 percent, personnel costs account for the largest proportion of the

consequences of the health personnel crisis are manifold and mutually conditioned: training of an insufficient number of health workers, inadequate pay levels and few other performance incentives, difficult living and working conditions and enticement and exodus of health workers to other, better-paid sectors or abroad, especially to Europe, North America and Australia. For example, 37 percent of the physicians trained in South Africa are working in OECD countries (Mundt,

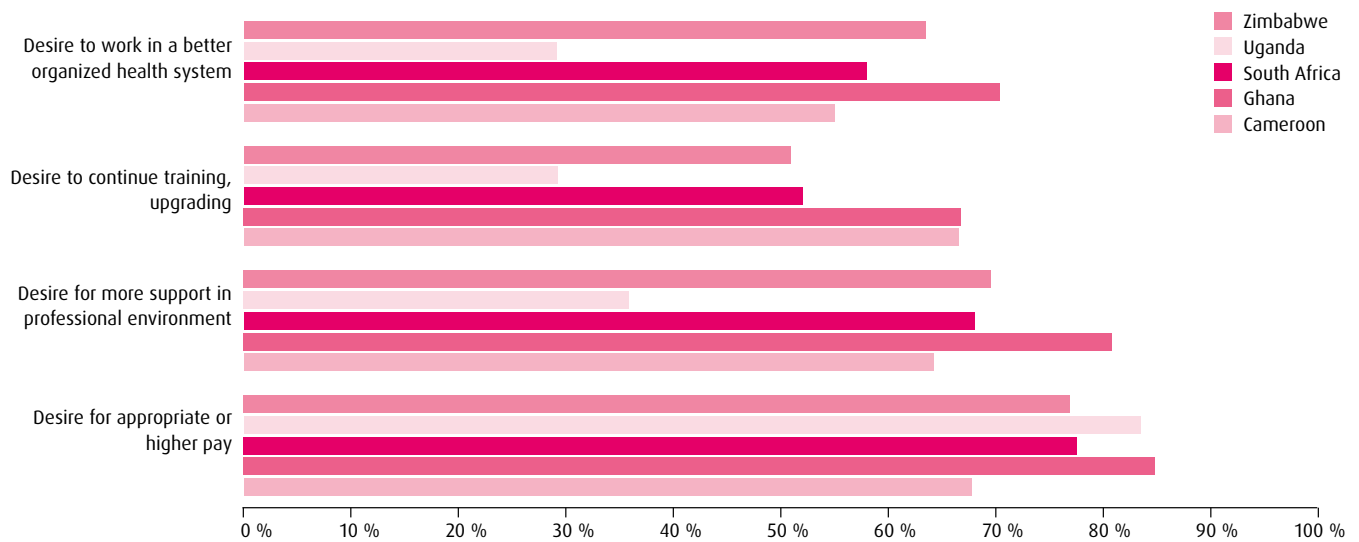


Fig. 3: Reasons for exodus of medical personnel from five African countries (Stilwell et al. 2004)

worldwide health budget. On a world scale, there is a lack of more than four million health specialists, 1.5 billion in Africa alone. Within individual countries, too, there is often an extremely unequal distribution of medical personnel — 60 percent of all nurses and 75 percent of all physicians work in towns (WHO 2006). The causes and

2011). The exodus of health personnel frequently results in the closure of health facilities, above all in rural areas. Often, inadequately trained personnel have to be taken on. Corruption also plays a role, for example when unofficial payments are demanded for services in order to top up salaries.

→ **Financing:** Only a small number of African countries have attained the target set by the African Union in the 2001 Abuja Declaration of spending 15 percent of the government budget on health. The WHO estimates that at most, eight of the 49 income poor countries are going to raise sufficient revenue to achieve the targets stipulated in the Millennium Development Goals (MDG) by 2015. Thus the need for support continues to be high (WHO 2010). The WHO devoted the World Health Report 2010 to the financing of health systems (WHO 2010). In the context of global health financing, efforts are being made to mobilize additional funding to achieve the MDG with innovative financing methods, such as the International Financing Facility (IFF) or the use of debt swaps. The IFF is a fund that was launched in 2006 to raise additional finance on the capital market for immunization (GAVI). So far, a total of 6.3 billion US dollars has been reached. This fund is supported by Australia, South Africa, Brazil and seven European countries, but not by Germany. The World Bank acts as a fund administrator. In a debt swap, a debtor country is relieved of a debt by a creditor country provided that the sum involved is spent in the debtor country e.g. on combating poverty, on schools or on the health system. A functioning system of mutual health financing is aimed at ensuring that people have access to health services they happen to need while being safeguarded against ruinous expenses and resulting impoverishment. Thus there is a close link between health financing aspects and social security. A nationwide achievement of this goal is also referred to as universal coverage. Revenue is raised via prepayment systems (public tax revenue, health insurance contributions, external financing contributions) or direct payment such as service fees (out of pocket payments). Most countries have a mixture of prepayment and fee systems. Appropriate regulations have to be applied for sections of the population that are particularly disadvantaged, such as the poor, disabled

people or orphans, in order to enable their access to health services — e.g. community certificates or vouchers. Pooling of revenue allows for a balancing of risks between the users as long as fees are calculated on a uniform basis rather than relating to risk. Thus contributors with a low disease risk subsidize people with a high disease risk, and emergencies resulting in ruinous expenses in the event of illness are avoided. However, both tax-financed and health insurance prepayment systems require a sophisticated institutional framework that most of the developing countries cannot provide at the moment.

→ **Drugs and medical technology:**

Access to affordable vital drugs, vaccines and technologies whose quality and effectiveness is assured represents a vital building block of the health system and is also stipulated in the Millennium Development Goals. Although nearly all countries in the poorest regions of Asia and Africa have introduced the Essential Medicines List as the basis of logistics and procurement, up to 50 percent of the population still have only restricted access to these medicines. The AIDS pandemic, an aging population and the increase in chronic diseases are a further burden. Each year, millions of people die as a result of diseases that could be treated or prevented with the aid of safe and affordable essential medicines and vaccines. Twenty to 60 percent of expenditure in the health sector is spent on medicine and medical products alone and exerts a heavy burden on the government budgets. At the same time, ten to 25 percent of public procurement expenditure worldwide is lost through corruption (WHO 2009).

→ **Information systems:** Every health system needs an information system that provides reliable data on a) the factors influencing health b) the efficiency of the health system and c) the population's state of health. Possible threats to the public through acute epidemics or other health hazards require special atten-

tion. Without this information, it is impossible to analyze a situation, set priorities, plan measures. that match needs and are efficient, monitor their implementation and evaluate impacts.

Today, modern information systems bear two essential characteristics. They are no longer paper-based but computer-aided, and they are no longer limited to national or sub-national dimensions but are conceived at a global or regional level in a transnational sense (Reichertz 2006). Here, data quality as well as data security are of paramount importance.

In a nutshell, multi-sectoral or trans-sectoral cooperation in strengthening the health system can generally develop in all areas of society but above all affects the areas of labor and social affairs, education, environment and agriculture/food. Experience has shown that it is in these sectors that the chief causes of restricted health can be found.

### **Health as a human right**

Precisely because weak health systems often even exacerbate the fatal impacts of disasters, it is crucial for health to be addressed in the United Nations Human Rights Charter of 1948. Article 25 states: “Everyone has the right to a standard of living adequate for the health and well-being of himself and his family, including food, clothing, housing and medical care and necessary social services”. The UN Social Pact of 1976, which obliges the government to create the conditions “which would assure to all medical services and medical attention in the event of sickness” (Article 12), puts these aspects into more concrete terms. Thus the right to health opens up a claim to access to the existing infrastructure of public healthcare. Healthcare services must above all be accessible and affordable for those concerned. Currently, this demand is being emphasized considerably by the propagation of universal coverage.

Traditional health “impact” analyses often overlook the fact that a community’s resilience is a function of the socio-demographic, socioeconomic, sociopolitical, socio-cultural and socio-structural variables (Phalkey et al. 2010). In spite of the close mutual relations between social, health and economic effects, the focus continues to be largely on isolated impact assessments.

What counts today is to overcome the theoretical limits and simplifying dichotomies of health and healthcare in order to understand the risks of disasters and their impacts on human life and the social and economic sectors. We are convinced that only a holistic understanding of health and disease within the functional domain of a health system can enable an effective limitation and prevention of harm, both in normal circumstances and in connection with disasters.



## The 1892 cholera outbreak in Hamburg

### Eels from the tap

“Gentlemen, I can hardly believe that I am in Europe.” Robert Koch is shocked as he inspects the “Gängeviertel” in the Port of Hamburg in the summer of 1892. The Hanseatic City has requested the assistance of the Director of the Institute of Hygiene in Berlin following an outbreak of cholera in the poor district with its narrow alleys, damp basement flats and shared toilets that are not linked to the sewage system.

In 1892, the month of August is unusually hot, and the water levels of the Elbe and Fleete rivers are correspondingly low—ideal conditions for germs to multiply. And there is an abundance of them. For when the tide comes in, the dirty water of the docks builds up towards the water intake point two miles up the Elbe. There, the water for the “Gängeviertel” is taken from the river without being cleaned. At the other end of the leaky pipes, it is not only murky water that comes out of the taps. Worms and elvers are by no means a rare occurrence.

While there has long been awareness of a risk to health, the Hamburg Senate and the City Parliament have been unable to agree on the construction of a filtering plant in neighboring Altona for decades. They prefer to invest in prestigious projects in order to enhance the city’s image as a “gateway to the world”. The 5,000 emigrants from Russia who also want to go through this gateway on their journey to America are suspected to have brought the cholera pathogen to Hamburg. The sewage from the shacks along the America Quay that the emigrants use for the night in the Port of Hamburg flow untreated into the Elbe—and therefore back to the intake point for the drinking water mains.

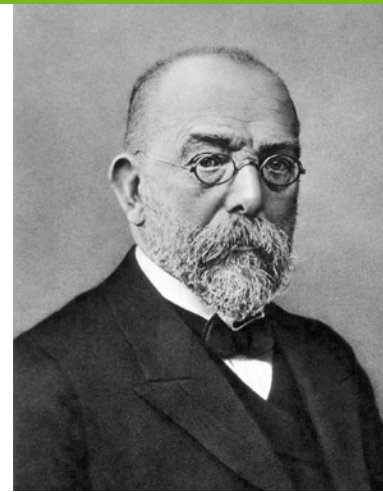
When cases of cholera start to occur in the docks area, the authorities first of all play down the gravity of the situation. Out of consideration for the economy, the fatalities are kept secret, and no measures are taken. Clean bills of health are still being issued for emigrant ships even after the outbreak of the disease, so that the cholera pathogen can find its way to New York, where, however, there is no outbreak of the disease thanks to the determined action of the authorities. In Hamburg however, the disaster can take

its course unhindered. From mid August 1892 on, there is a rapid increase in the number of people infected with the disease. Regardless of this, the authorities seek to cover up the facts. The press also keep a low profile or publish misleadingly reassuring news. The people in the docks area continue to drink the contaminated water.

Only when the extent of the epidemic can no longer be kept secret is action taken at last. The medical authority informs the public with leaflets and posters about the link between water quality and disease, and tank carts deliver clean water, while public hot food stalls provide people with meals free of bacteria. Schools are closed. Trade activities and traffic grind to a standstill. The wealthy citizens have long left the city. Dockers are busy day and night disinfecting roads and houses with different chemicals such as chlorinated lime, carbolic, lysol and creolin, bringing the sick away and digging graves.

The sad toll of the epidemic is 16,596 people who have contracted cholera, 8,605 of whom die. The human disaster is accompanied by economic harm totaling more than 400 million Deutschmarks. Subsequently, the “Gängeviertel” are radically redeveloped, and new zoning laws are enacted. The dirty shacks for emigrants in the docks area are pulled down and replaced by new accommodation. In April 1893, Bernhard Nocht takes the newly created office of port physician. Nocht, who studied under Robert Koch, is to monitor compliance with hygienic precautionary measures and, should the need arise, sound an early warning. Today, the Bernhard Nocht Institute is one of the worldwide leading institutions in the field of tropical medicine.

On the 1st May 1893, the filtering plant of the Hamburg Waterworks is completed, and in 1896, Hamburg is Germany’s first town to erect a waste incineration plant. It was with this development that the Hanseatic City had reached modern times in Europe, not only to Robert Koch.



## 2.2 Combating disasters with clean water

Thomas Kistemann, Katrin Radtke

The mechanism is obvious. Whenever cyclones, floods or earthquakes coincide with insufficient water supply, ailing sanitary infrastructure and a lack of hygiene standards, there is always the danger of water sources becoming polluted and pathogens entering drinking water. Inadequate hygiene education and knowhow about simple measures to reduce the risk of infection worsens the situation. Diseases involving diarrhea, hepatitis A and E infections and leptospirosis are examples of the health consequences. This is no different in wars and conflicts.

The availability of clean drinking water is a crucial factor when it comes to health or disease — and therefore, frequently, also determines whether an event is going to turn into a disaster at all.

In Syria, for example, access to drinking water, sanitary infrastructure and hygiene articles has worsened so much after two years of war that a significant increase in diseases has been established (WHO 2013, see showcase on page 25). Following an outbreak of cholera, Haiti was also forced to announce a sanitary state of emergency just a few months after the earthquake in 2010, which claimed up to 250,000 lives. Around 270,000 people became infected, while more than 5,000 died of the disease, which had been caused by polluted drinking water.

### The significance of water, sanitary infrastructure and hygiene for health

The availability and quality of water and sanitary infrastructure, and the facilitation of personal hygiene, to which it is extremely closely linked, are of central importance regarding an individual's health, but also in terms of the health, prosperity and economic development of whole societies. In the more affluent parts of the world, clean water,

sanitary infrastructure and hygiene (WASH) and the resulting absence of WASH-related health risks are regarded as commonplace. However, this does not apply to a considerable proportion of the world's population. It can be reckoned with that this situation will tend to get worse over the next few decades owing to global climate change. These prospects already prompted the United Nations to refer to a world water crisis ten years ago (UN 2003). In December 2010, the UN General Assembly then decided to declare 2013 World Water Year.

### What is lacking

WASH deficiencies comprise the following health-endangering factors: the quantitative lack of available freshwater, the lack of water that is qualitatively suitable for the different needs of human beings (drinking, bathing, washing, cleaning, irrigating, cooling, etc.), the lack of sanitary infrastructure, resulting in pathogens and harmful chemicals short-circuiting via the fecal and oral propagation paths and causing health hazards, and a lack of hygiene.

+ Quantitative WASH deficiencies: Water for human use is becoming scarce. World population is growing by approx. 80 million people annually, and the annual demand for water of approx. 3,800 trillion liters (Oki and Kanae 2006) for agricultural (74 percent) and industrial production (18 percent) as well as for covering domestic water requirements (eight percent) is even rising at a disproportionately high rate, by an annual approx. 64 trillion liters (UN and Unesco 2009). Around one third of the world's population are affected by water shortage (Kummu et al. 2010): more than 768 million people are without adequate drinking water supply, and around 2.5 billion people lack adequate sanitary infra-

structure (Unicef and WHO 2013). Both from a global perspective and comparing the urban and the rural situation, there are enormous discrepancies, as Illustration 4 on page 26 and the annual “Blue Footprint” show: USA: 2.48 million liters per capita; China, Kenya, Congo, Ethiopia: 600,000 to 800,000 liters; world average: 1.24 million liters (UN und UNESCO 2009). Presently, around half of the population of the less developed countries are living in quantitative water shortage conditions. For a quarter of the population in Sub-Saharan Africa, the water required daily is procured involving a time effort of more than 30 minutes. Seventy-two percent of this work is performed by women and girls.

- + Qualitative WASH deficiencies: Only half of the children in less developed countries have access to “better” drinking water, and even fewer have access to sanitary infrastructure. The situation continues to be particularly critical in Africa, where around 37 percent of the population had no access to “better” drinking water and just 16 percent had a water tap in their household in 2008. Here too, the difference between urban and rural population has to be additionally stressed. The term “better” drinking water relates to the origin of the water and not to its being safe in terms of hygiene when it is used (Unicef and WHO 2013). Thus drinking water is regarded as “better” if it comes from a central domestic water connection, a public standpipe, a protected well or a protected spring or is collected via rainwater harvesting. However, independently of this, drinking water may be of insufficient quality hygienically at the time of use, for example through transportation or storage in unclean vessels.

## Case study: Pakistan



### Strengthening resilience after the floods

Again and again, devastating floods occur in the mountainous regions of the northern province of Khyber Pakhtunkhwa. Since the great floods in the summer of 2010, which, according to official statements by Pakistan’s government, directly affected more than 20 million people throughout the country, there have been several outbreaks of severe precipitation in Khyber Pakhtunkhwa. The last floods so far were caused by the monsoon in 2013, although their impact was less devastating than in 2010. Since July 2012, together with its local partner organization, the Environmental Protection Society (EPS), Welthungerhilfe has been running a project to promote the population’s resilience in the field of WASH (water, sanitation and hygiene) with which corresponding infrastructure is to be restored and improved. The aim is also to have reduced the population’s susceptibility to renewed disasters after conclusion of the project in 2014. All project activities contribute to long-term development in the region.



Around 21,700 people affected by the floods in ten Union Councils in the Districts of Shangla and Kohistan are benefiting from the project. Committees have been formed in the villages that are supporting the planning and construction of 19 drinking water supply plants and will later on ensure a sustainable operating and maintenance system.

continued on page 23 →

- + **Chemical or organic pollution:** The most important sources of pollution worldwide are industrial wastewater and agriculture. The most important contaminators regarding health include organic compounds and heavy metals from industry, acid substances from mining and the atmosphere and nutrients and pesticides from agriculture (UN 2003). Human and animal feces may contain pathogens that can be taken up via water and food if they are not properly disposed of and can thus cause diseases (Herbst and Kistemann 2007).

In flood events, too, the impaired quality of water has a negative impact on people's health. This is caused by the flooding of sanitary and drinking water infrastructure and by burst pipe.

### Health consequences

The WASH deficiencies impact on health in many ways. In its most extreme form, a quantitative shortage of water will lead to dying of thirst, while more frequently, a scarcity of water will have an indirect impact on human health. The remaining amount of water is usually only available with a poorer quality, so that personal and domestic hygiene is restricted. Alone a quantitative reduction will already result in insufficient washing methods and frequencies, which can lead to so-called water-washed diseases such as trachoma, relapsing fever and typhoid. A lack of hygiene owing to an insufficient amount of water for hand-washing can also contribute to becoming infected with common pneumonia pathogens. In addition, there are the indirect consequences of water shortage such as poorer food security, conflicts between different users and restrictions regarding many livelihood activities (such as operating a small-scale industry).

Water-associated diseases occur worldwide either endemically (at a permanently raised

level regionally) or epidemically. They are broken down into four groups (RIVM 2000):

- + Water-borne diseases are caused by an intake of microbiologically or chemically contaminated water. Classic examples that can be traced back to fecal pollution of the water and that usually feature a small infection dose include cholera, typhoid, dysentery, hepatitis A and E and amoeba dysentery.
- + Diseases caused by a lack of water occur because of insufficient personal and domestic hygiene owing to this water scarcity. The pathogens are transmitted from individual to individual or via contaminated surfaces. The range of diseases comprises eye, skin and diarrhea diseases, respiratory tract diseases and pneumonia as well as diseases transmitted by lice and ticks.
- + Water-based diseases such as dracunculiasis and schistosomiasis are caused by aquatic organisms, above all worms, that spend their life cycle in different habitats and move from aquatic mollusks, above all snails, to another definitive host.
- + Vector-borne diseases are transmitted by insects living or breeding in water. Malaria, dengue fever, sleeping disease and filariasis belong to this group.

It is estimated that around half of the people living in less developed countries depend on chemically polluted water resources, which raises the incidence of the corresponding diseases. In PR China, more than 85 percent of all sickness cases relating to chemical contamination are caused by wastewater emissions. Increased cancer rates result from a lack of wastewater treatment (Wu et al. 1999).

More recent estimates relate around nine percent of the global disease burden to water and hygiene, and even 20 percent in the group



of small children (up to four years). Each year, three million people, most of them children (1.8 million), die of diseases caused by a lack of safe drinking water, insufficient sanitary infrastructure and poor hygiene. If all effects — such as infection via the intake of water, a lack of water, insufficient personal, domestic or agricultural hygiene, vectors breeding in water and contaminated aerosols — are combined, then an estimated 80 percent of diseases worldwide can be attributed to inadequate water supply, and half of all hospital beds throughout the world are occupied by patients suffering from diseases related to water problems.

Diarrheal diseases cause 1.4 million deaths a year among children, 88 percent of which are associated with WASH (Prüss-Ustün 2008). Small children (up to four years) are at particular risk: 700,000 died in 2011. Last decade, diarrhea killed more children than the number of humans who lost their lives in all the armed conflicts since the Second World War. It is typical for children in developing countries to have four to five diarrhea episodes a year. They weaken the children affected both physically and mentally and stunt their development, often marring them for the rest of their lives. Diarrheal diseases also raise mortality owing to other diseases by weakening immune resistance. A major proportion of children in less developed countries suffer from parasitical intestinal infections which in turn are conditioned in particular by WASH deficiencies. Parasites use up nutrients, aggravate malnutrition, and slow down the physical and mental development of children, also resulting in interrupted school attendance (UN and UNESCO 2009). Numerous studies have confirmed both that the range of water-related diseases is growing and the incidence of many water-related infections is increasing. Changes in human behavior (such as mobility and frequent absence from home), new technologies with a high level of water consumption or the threat of contamination (for example air conditioning, new industrial and agricultural processes)

## Case study: Pakistan

→ continued from page 21

In addition to drinking water supply, 300 latrines, five sealed footpaths with side drainage ditches and ten solid waste collection points with foundations are being built, serving respectively as models for further construction ventures. Education campaigns and training for multipliers as well as the distribution of 1,200 hygiene kits complement the construction measures.

The project operator, EPS, is ensuring that the villages will again have electricity supplies — from renewable sources. To this end, 18 micro hydropower plants are being planned together with the village inhabitants and are to be built in collaboration with local companies. In order to make the villages more accessible again, five pedestrian bridges are being restored. EPS is checking all technical measures for longevity, improved functionality and efficiency. Care is taken that a disaster-proof mode of construction is applied, especially with a view to earthquakes and floods. Here, too, a model character for other construction ventures is sought.

In order to ensure sustainability, the population is trained in maintenance and repairs. This is supplemented by supervision and support of improvements in the hygiene situation as well as by training and mobilization campaigns on disaster preparedness. In 2010, landslides, rock fall and flooding caused massive damage to water supply systems. Pipes and reservoirs, distribution equipment and walling of wells were destroyed, also because they had already been showing deficiencies owing to wear and tear and inappropriate maintenance previously. The few available sanitary facilities sustained severe damage by the floods as well. Only a quarter up to a maximum of one third of all households had access to simple latrines. And only few of the existing, locally built latrines fulfill the basic requirements for adequate sanitary facilities. These requirements include interrupting the transmission chain of pathogens that represent health hazards. Being prepared for renewed severe flooding will demand more than merely restoring the situation before the floods. The project measures are to significantly improve the WASH situation, and thus make an important contribution to strengthening the population's resilience.

*Katrin Radtke*

as well as developments in medicine (for example the development of resistance to antibiotics and insecticides), deforestation and hydraulic engineering projects are among the causes (WHO, WMO und UNEP 2003).

Changes in drain-off conditions owing to the climate and the hydraulic engineering projects, which are also aimed at preventing seasonal or regional water scarcity, can result in a lower flow velocity, stagnation and evenly regulated water levels. This encourages the occurrence of water-based diseases such as schistosomiasis and vector-borne infections like malaria and dengue fever because the respective intermediate host (e.g. snails) or vector (e.g. mosquitoes) will then find more favorable living conditions (RIVM 2000).

### Strengthening resilience

A wide range of approaches are available to prevent diseases developing through polluted water in the wake of a disaster. Over the last few years, the concept of resilience has increasingly gained importance. It indicates that disasters can only be overcome in the long run by strengthening the ability of societies or sections of the population to recover from difficulties. Resilience is a holistic concept because it can be promoted in a wide range of areas. Promoting resilience in the WASH sector is one of the key starting points for improving the overall resilience of societies. However, in order to implement such promotion, the corresponding political frameworks have to be created at national level first. Access to water resources is governed by national legislation on water, which is either linked to land tenure or exists as an independent right of usufruct. In areas with a scarcity of water, such rights are often the cause of conflict. Many governments neglect the establishment of the necessary legal and political frameworks, do not have appropriately qualified personnel, or there is simply a lack of sufficient engagement and interest. Causes of shortcomings

can also be identified in the context of international donor policies. In 2010, for example, the WHO reported that almost two thirds of Official Development Assistance (ODA) for the WASH sector was concentrated in urban areas. Moreover, just 42 percent of ODA for the WASH sector flows into the least developed countries (WHO 2010).

There are various options to enhance resilience in the areas of water, sanitary infrastructure and hygiene:

- + Water supply sources can be diversified, i.e. dependence on a single water source is reduced by tapping other water sources. In dry periods in particular, depending on a single source of water can result in overuse and lead to pollution. The most important alternative water sources include collecting rain and surface water (for example in rock basins or by building small earth walls) and the treatment of sanitary water.
- + Since groundwater systems are usually affected by droughts much later than traditional supply systems such as springs or surface water systems, improved access to groundwater is a key variable in reducing the disaster risk posed by a drought.
- + Technical adaptation will help additionally. Simple measures can make water supply systems such as water reservoirs, springs, community standpipes and water mains systems more disaster-resistant. In order to prevent untreated wastewater from penetrating springs and water tap systems, for example, these have to be positioned higher than latrines.

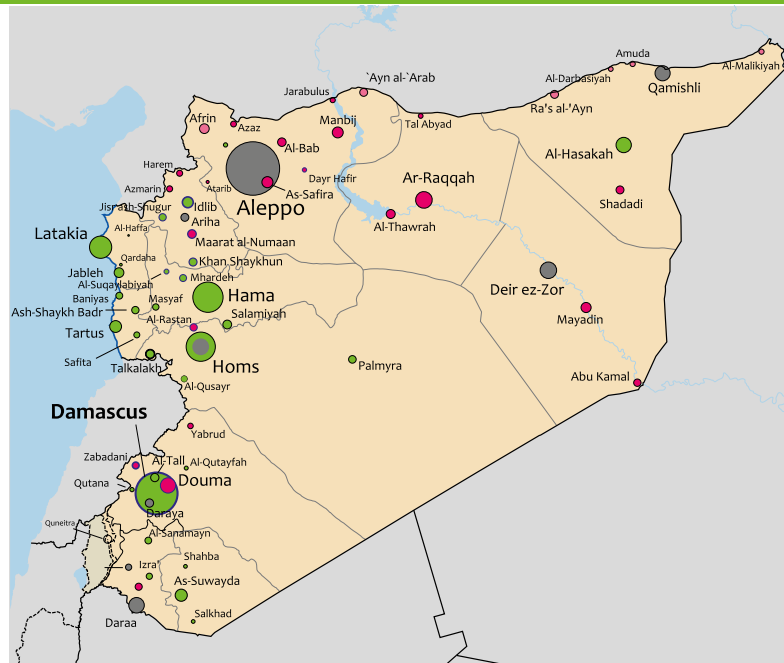
The latrines themselves have to be built at a slightly raised level in order to prevent water from pouring into them in the event of flooding. At the same time, they can be protected against water penetrating from underneath by building concrete pits.

### Syria: from political conflict to health crisis

The pictures from Syria that have been reaching us frequently and on a regular basis are often shocking. The struggle between President Assad and the opposition is literally bleeding the country to death. The impacts on the provision of healthcare for the population are also dramatic, as the Health Report by World Health Organization (WHO) of the 5th June 2013 shows. The Report reveals how a political conflict has brought about a humanitarian crisis—both in Syria itself and in the neighboring countries absorbing Syrian refugees. A total of 6.8 million people are in need of humanitarian aid, 400,000 have been injured, and 80,000 have lost their lives. The WHO reports that caring for the injured and those in need is only possible to a very limited degree: “The health system is severely disrupted, compromising the provision of primary and secondary health care, the referral of injured patients, treatment of chronic diseases, maternal and child health services, vaccination and nutrition programmes as well as communicable disease control.”

There have been massive impacts on the infrastructure of medical facilities. According to the WHO, 37 percent of the hospitals are unserviceable, and 20 percent are damaged. In those facilities that are still functional, the lack of medical expertise, particularly regarding injuries and anesthetics, and the absence of specialist laboratory personnel complicate professional care. This applies in particular to those regions that are strongly affected by violence. But even if a hospital does maintain its services, it will usually be difficult for the population to get to it in the first place. Roadblocks and persistent clashes are obstructing access to medical and humanitarian aid.

The grave shortage of medicines represents a further massive problem, for there has been a 90-percent collapse in local production, and supplies are mostly difficult to organ-



ize. In particular, there is a lack of essential medicine such as anesthetics, analgesics and infusions as well as medicine to treat chronic diseases. The WHO puts financial aid required to provide the entire country with the medicine needed for one year at 900 million US dollars, out of which 467 million US dollars is required alone for the provision of life-saving medicine.

The Report also points to an increased risk for mothers and their children. Owing to access to healthcare being obstructed, delivery bears considerable risks. In addition, as a result of the civil war, the inoculation rate regarding all important vaccines dropped strongly, from 81.5 percent (on average between 2008 and 2011) to 70 percent in 2012.

The WHO is concerned about the danger caused by infectious diseases in Syria and the refugee camps in the neighboring countries. There is a significantly greater risk owing to overcrowding, poor water supply, a lack of sanitary and waste management and interruptions in inoculation and transmission monitoring. In order to recognize epidemics at an early stage and take timely action, the WHO is currently extending its disease early warning system in cooperation with its partners.

Data: WHO Health Report Syrian Arab Republic, 05.06.2013

In all measures aimed at improving water and sanitary provision, it is always important to involve the population in planning and implementation and invest in hygiene education measures. Many projects in the WASH sector fail because of their being focused on purely technical elements, and without the involvement of the population, there will be no sustainable solutions that are supported by the people themselves (Welthungerhilfe 2013).

### Realizing the human right to water

In the context of the Millennium Development Goals (MDGs), the international community set itself the task in 2000 to halve the proportion of people without access to better drinking water by 2015. It is a considerable accomplishment that this goal has already been achieved, and this shows that changes are

possible. However, there is no reason to be complacent. More than 768 million people are still without access to clean water, and around 2.5 billion, well over a third of humanity, do not have sufficient sanitation (Unicef and WHO 2013).

In July 2010, after many years of discussion and debate, the UN General Assembly adopted a resolution on the human right to water. Two months later, the UN Commission on Human Rights passed a resolution according to which the human right to water and sanitary infrastructure was to be part of the human right to decent living conditions. While this does not imply any enforceable obligation, on such a basis, civil societies can exert political pressure on their respective governments and assert these rights.

What must be regarded as highly problematic in this context is the growing trend towards a



Fig.4: percentage of population with access to "better" drinking water and "better" sanitary infrastructure in 2011 (source: WHO / UNICEF Joint Monitoring Programme for Water Supply and Sanitation, 2013)



privatization of water (of both the sources and the supply systems). At present, around an eighth of the world population are provided with water by private companies (Pinsent Masons LLP 2012). These may be local firms or corporations that operate on a global scale. The largest global players are from Europe. Regarding its impact on rates, efficiency, quality and health, privatization of water supply is a highly controversial subject in debates. This applies in particular to less developed countries, where the World Bank was among those who urged a privatization of water supplies for major metropolises.

Examples such as that of Bolivia show that the privatization e.g. of urban and rural water supply, the introduction of franchising mechanisms and the establishment of water markets

have failed to secure access to and the affordability of water in particular for the poor. The ecological conservation of water is also frequently neglected.

In order to minimize the disaster risk in the WASH sector, governments are going to have to insist on the realization of the human right to water. They must see to it that the improvement of water supply, sanitary infrastructure and hygiene is also high on the agenda of the debate on the follow-up agreement to the MDGs and the development of so-called Sustainability Goals (SDGs) after 2015. Given climate change and a rising number of disasters (EM Dat 2013), it has to be ensured that disaster preparedness and the strengthening of resilience are integrated as goals in the sense of development that is viable in the long run.

## 2.3 Why some people are particularly vulnerable

Joost Butenop, Sonja Weinreich

**A**village for displaced persons near Paradip Garth, in the Federal State of Orissa. People living here, in the Northeast of India, lost just about everything in the great floods in the late summer of 2012: from their houses offering them shelter to all their possessions. Like Raavi and Anjali, who are living in a makeshift straw hut with their three children when Anjali again becomes pregnant. Many people in their community belong to the most vulnerable groups, who comprise large families, single parents, elderly and disabled people or those belonging to the lowest caste, the Dalit.

Most people living here are at risk of being particularly hard hit by disasters and natural hazards. This vulnerability becomes apparent not only when extreme natural events occur, but also in everyday life — for example after little Aisha was born. For in the night follow-

ing the birth of Aisha, Anjali, the mother, starts bleeding. The traditional midwife who assisted with the home delivery is hastily called from the neighboring village. The old woman finds Anjali lying on her mat at home, hardly responsive. She urgently advises to take her to hospital as quickly as possible. But the trip to the small district hospital in the little town of Cuttack takes over an hour. Raavi, the father, persuades a lorry driver to give his baby, his wife and himself a lift in the lorry's load area — he pays his week's wage of ten US dollars for this makeshift ambulance service.

### Maternal and children's health

Every day, an estimated 800 women worldwide die of preventable complications related to pregnancy and delivery. While maternal mortality declined by 47 percent between

1990 and 2010, it still amounted to more than a quarter of a million cases (273,000) in 2011 (UN MDG 2013). The risk of dying of complications during pregnancy is four times higher for women in Africa than it is e.g. in Asia and more than 150 times higher than in industrialized countries (SWI 2011). For every dead pregnant woman or mother, there are an additional 20 cases of women suffering a chronic disease or permanent disability related to pregnancy or delivery (UNFPA 2012).

Four key risks are identified as causes:

1. **Health seeking behavior:** The number of risky home deliveries continues to be high, and very often, women wait too long before they seek medical assistance because they cannot afford the costs of treatment and transport this involves.
2. **There is a lack of qualified midwives.** In Africa and Asia, less than half of all deliveries are accompanied by physicians or trained midwives. As a result, complications in pregnancy such as bleeding, obstructed labor and infections are not treated fast and professionally. Necessary surgery, such as a Caesarian section, cannot be carried out, or if it is, it often comes too late. Together with extremely unsafe, risky abortions carried out by medical laypersons, these factors are responsible for 80 percent of all maternal deaths.
3. **The consequences of “poverty-related diseases”, e.g. malaria and HIV/AIDS.** Pregnant women are more at risk to a severe course of malaria, which, especially in the tropics, is widespread among those who live in poor conditions.
4. **Disadvantages, neglect and discrimination of women and girls because of their social status and gender roles bear**

considerable health risks — e.g. because of poorer access to medical services and sexual violence, women and girls are more vulnerable.

Children’s health is closely linked to this. Worldwide, 3 million newborn babies die each year because of premature birth, a low birth weight and infections such as sepsis. In addition, there are 2.6 million stillbirths. Considerable progress has been made in reducing mortality among infants and young children, not least because of the Millennium Development Goals. Mortality among under-5-year-olds has dropped by 41 percent over the last 20 years (UN MDG 2013).

However, in total, almost seven million children died in 2011 before reaching their fifth birthday (CME 2012 and UN 2013). More than 70 percent of these deaths could have been prevented by simple means. The most important ones include measures applied at home such as exclusive breast-feeding during the first six months of life, oral rehydration with a sugar and salt solution and bed nets.

Maternal and children’s health are important indicators of a country’s level of healthcare services and health. If a health system cannot even support the wellbeing of pregnant women and newborn children, this is a reliable sign of the system’s weakness. This weakness also affects the other vulnerable groups — in the communities as well as in society as a whole.

### Single parent and destitute

When the lorry arrives at the hospital, Anjali’s breathing is hardly perceptible. The only physician at the hospital is not around. Raavi is told that the physician is being paid his monthly salary in the provincial capital today. In the casualty unit, the nurse prescribes v. fluids. Raavi is handed a prescription and sent to the chemist’s to buy the solution for the infusion and the infusion set, since the hospi-

tal does not have these things in store. Anjali is admitted to the women's ward, washed and treated. There is no intensive care unit here.

Early in the afternoon, the doctor returns and examines Anjali, who has lost consciousness in the meantime. For months, the small laboratory where blood tests can be performed has run out of suitable reagents, and the laboratory assistant has not been present for a number of weeks because, under these conditions, there is no work for her to do. Therefore, an obviously urgently needed blood transfusion can no longer be performed. In the evening, Anjali develops a high temperature. Further infusions do not help. With the large distance involved, referral to another hospital is out of the question. The nurse applies an antibiotic, but it is too late. In the same night, Anjali, weakened by the considerable loss of blood, dies of blood poisoning. Devastated, Raavi returns to his village with little Aisha — as a single parent with four children.

### Vulnerable people, vulnerable groups

In a developing country with high birthrates, children under the age of 5 years account for an average of 12 to 20 percent of the total population, while 2 to 4 percent are infants below the age of one year. Correspondingly, 2 to 4 percent of the population are pregnant or nursing mothers. This number also depends on the respective birthrate and is based on a lactation period of one year. This means that, if an earthquake affects 100,000 people, in planning aid measures, one has to bear in mind that 2,000 to 4,000 pregnant or nursing women and well over 10,000 children need to be considered. Furthermore, approx. 1,000 deliveries have to be reckoned with over the next three months, out of which 2 to 4 percent will require a Caesarian section (Schmitz 2013).

People with disabilities who depend on special support or special aids account for 3 to 10 percent of the total population. They include,

## Case study: Haiti



### A window to life

One of the important elements of emergency assistance and rehabilitation is psycho-social support and trauma care. In Haiti, terre des hommes has been supporting the project partners "Unité de recherche et d'action médico legal" (URAMEL) and also, since 2013, "Fondation IDEO" (FOI). In the wake of the earthquake in January 2010, URAMEL worked with children from the camps in the capital Port-au-Prince. Some of the children attracted attention through, on the one hand, extremely timid, withdrawn behavior and on the other by being aggressive and restless, often in combination with hardly being able to concentrate. When working with these children, their parents and teachers, it frequently became apparent that their psychological stress was very complex. The source was not only the disaster itself but also previous experiences, and in particular, those involving violence.

Traumatic experiences that have not been sufficiently dealt with will lastingly disrupt people's lives. They have an impact on their capacity to act and communicate. Sometimes, experiencing a

 terre des hommes  
Hilfe für Kinder in Not

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for example, those whose sight or ability to walk are impaired, persons who cannot escape from a hazard, and persons with a hearing deficiency or who are deaf and are not reached by acoustic warning signals and information. Older people account for 15 to 20 percent (depending on the definition, e.g. from the 60th year of their life on). The proportion of older people with disabilities, also those that may be caused by chronic diseases, will be high. Further groups that are at particular risk or particularly vulnerable in crises or disasters include:

- + people affected by poverty
- + single-parent households
- + migrants
- + orphans and children who have been separated from their families
- + people without access to social services
- + members of marginalized groups
- + membership of a low caste.

It is very difficult to correctly establish the values of the respective proportion of vulnerable groups in a population. One example is that, while around 15 percent of the world's population are living with a disability according to the United Nations, in many developing countries not all people with disabilities are registered. This may be because they have not been identified, because their disabilities are kept secret and they are hidden by their families (UN 2007).

However, increased vulnerability can also be a direct consequence of crises/disasters, particularly through:

- + loss of possessions
- + loss of employment and sources of income
- + destruction of houses, of shelter
- + serious diseases or injuries/disabilities
- + loss of or serious illness among family members through the disaster (injured people, people gone missing and deaths)

## Targeted analysis

It is absolutely crucial to learn from the affected themselves what they can do to cope with disaster risks and problems and what capacities they have to do so. Planning disaster preparedness and humanitarian aid always has to set out from an optimally accurate establishment of the needs of vulnerable people or vulnerable groups. It has to be identified which capacities are lacking e.g. through:

- + limited access to resources of the community (e.g. homeless or marginalized people)
- + restricted options for individuals to express their special needs or assert their own rights (for example people with disabilities)
- + severe health impairment (creating, for example, dependence on medical or technical assistance or medicines)
- + lack of mobility to be able to adequately respond to hazards (e.g. older people or people with difficulty walking)
- + isolation or lack of support networks (such as homeless people, older people/orphans)
- + cultural or language isolation from the community (for example refugees, indigenous groups, migrants).

All these characteristics develop their devastating force under one certain condition: poverty.

In the course of humanitarian aid and reconstruction and rehabilitation, the aim is always to reach the most vulnerable people and sections of the population in particular. Often, however, it is not obvious and therefore difficult to establish the most vulnerable in a needs assessment. Again and again, for example, people with disabilities are “overlooked” because their special needs are also negated by their own families owing to discrimination and stigmatization. This has an impact not only during an extreme natural event but in particular also during the subsequent aid measures. Against this background, it is all the more important to actively integrate people with disabilities — and other vulnerable persons— into



disaster risk reduction programs. They can be an important resource when it comes to planning measures for disabled people (also see project example on page 33). For example, deaf people who understand sign language can communicate with deaf people who don't, obtain information from them or pass it on to them.

Older people with chronic diseases are particularly vulnerable. Because of their experience of life, older people can often provide special knowhow that is vital for survival in disaster situations or of importance in disaster prevention. The basic principle of integration and participation of the affected in prevention and project planning applies to all vulnerable groups. They know the worries and needs of people best and can decide which problems need to be solved most urgently.

### Effective aid

Just like disaster preparedness, emergency aid aims at saving lives, mitigating suffering and enabling the victims to get back to a decent life. The measures required to achieve this internationally agreed goal are clearly defined. There are recognized standards and guidelines regarding the minimum requirements for appropriate shelter, food supply, water supply and sanitary installations, protection against violent attacks and primary healthcare. The latter also comprises vaccinations (particularly against measles), supply of drugs and pregnancy examinations and midwifery as well as psychosocial and legal support in the wake of violence (SPHERE 2011).

These standards and the indicators relate to the UN Millennium Goals, which up to 2015 will be an important international guideline for the targets that need to be achieved to make emergency aid efficient and reduce vulnerability. For example, the most important measures to reduce maternal and child mortality are sufficiently well-known and can be implemented with a relatively low effort:

## Case study: Haiti

→ continued from page 29

disaster can evoke suppressed traumatic events. If traumatic stress is not appropriately dealt with, reactive frustration and helplessness can evoke long-term effects, including depression, alcohol and drug abuse, and aggressions.

Often, children can already be supported with playful activities: care and a space allowing them to express their feelings, simple breathing exercises for stabilization or a guided imagining of a safe place. In addition to such stabilization, some children require further psychological assistance.

Methods used by the 20 psychologists working for URAMEL and FOI include EMDR (Eye Movement Desensitization and Reprocessing). The key element in EMDR therapy is guided eye movements. The patient follows the fingers of the therapist with his or her eyes as the therapist's hand moves alternately to the right and the left. These movements are comparable to the eye movements in the REM sleep phase, in which the events of the day are processed. Thus EMDR supports processing and self-healing. Its aim is to address traumatic experiences that have been stored without being processed. The aim is to process these experiences and reintegrate them.

Experiences in Haiti show that, on average, four to five sessions will already help the patient to overcome post-traumatic stress that has developed as a response to a single event. So far, the two project partners have reached a total of around 12,500 people. About a third of them required additional individual therapy support. If severe or long-lasting traumatization, caused for example by experiencing recurring violence, has to be addressed, the psychologists work with the patients during an average of ten to twenty individual or group sessions.

Not every child that has undergone terrible experiences needs professional psychological treatment. And not all of the children who have had therapy are resilient against facing extreme events in their lives that may traumatize them again. Therefore, psycho-social activities must not only be reactive but also have to aim at strengthening children and their communities so that they can actively and self-determinedly shape their own lives.

*Wolf-Christian Ramm*

- + Promoting prenatal healthcare and availability of essential midwifery health services including emergency surgery
- + ensuring that newborn babies are breast-fed for six months
- + treating diarrheal diseases with rehydration solutions (especially in the developing countries, which is only ensured in 35 percent of cases)
- + further improvements in vaccination coverage and the range of vaccines against potentially deadly diseases such as measles or frequent pathogens of pneumonia among children
- + availability of antibiotics to treat pneumonia (so far they are available in only 30 percent of cases)
- + improvements in the hygiene situation. More than a third of all people worldwide have to live without basic sanitation. This is a considerable hygiene risk and is a major factor in the spread of infectious diseases (WHO and UNICEF 2013).

Ideally, acute emergency aid is linked to forward-looking reconstruction and disaster prevention. The aim is to reduce vulnerability and enhance the resilience of those affected — especially with a view to recurrent natural events such as the floods.

### Rice alone is not enough

After returning from the district hospital and his wife's funeral, Raavi is struggling for the survival of his four children, above all newborn Aisha. In spite of the difficult circumstances, she makes it through the difficult phase after being born. Weighing just 2,800 grams, she loses half a kilogram without her mother's nourishing milk, which would also strengthen her body's defenses. Just like her brothers and sisters, she is fed with rice. Nourishing milk substitute is rarely available since the family cannot afford it. Again and again, Aisha has diarrhea, since the milk powder is mixed with contaminated water. The family has too little firewood to sterilize the water by boiling. Shortly before her first birthday, Aisha is weighing just five kilograms, half of what a child her age ought to weigh. Her hair is thin and reddish-blond, which is a visible sign of chronic malnutrition.

This makes her particularly susceptible to diseases such as diarrhea, influenza, measles and pneumonia. Just like Aisha, many children also lack vaccination. She belongs to the 20 percent of children worldwide who are not vaccinated against measles. Especially after disasters like the floods in Orissa, a lack of vaccination can prove deadly — not only in poor regions such as the northeast of India.

## Case study: India

### Preventing disabilities through first aid

At the age of 18 years, Paulus Masih had an accident in which his left foot was seriously injured. "If I had known then about first aid what I do today, I wouldn't be disabled now," Masih says today. He is one of 3,500 disaster relief workers in Northwest India. He was trained by the Emmanuel Hospital Association (EHA), which has been a project partner of the Christian Blind Mission in New Delhi for many years. In eight of the 28 Indian Federal States, with a total population of 128 million people, the first responders are now integrated in a network of regional crisis centers. One special focal area of activities is calling on and involving people with disabilities. For they are often the first ones to be hit by a disaster and the last to get help.

Nearly every year, disasters such as floods, earthquakes or storms leave a trail of devastation that severely harms the people themselves, their livelihoods and infrastructure. In order to be able to act quickly in the event of disaster and not leave disabled people behind, preparations have to be made for an emergency. These include developing a disaster network and the compilation of contingency plans, in cooperation with both disabled people and other vulnerable groups. And then there are very concrete measures that have to be considered. For example, wherever ramps have been added to entrances to hospitals and to pharmacies, handrails have been fitted to toilets or connecting corridors without steps have been built in hospitals, people with disabilities can make use of public aid services in the event of a crisis. In addition, there is the protection of important apparatus against damage by firmly securing it (earthquakes tremors) and by installing it on a high plinth (floodwater).

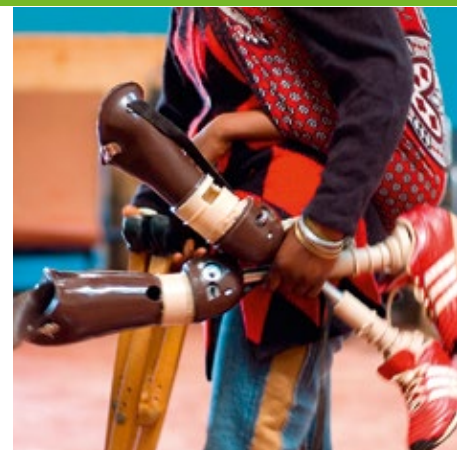
In this manner, a disaster preparedness program has been developed that also demonstrates how inclusion can be achieved at low cost and with only little additional effort. The people affected take part in the preparatory and train-

ing measures themselves and attend the disaster prevention committees. A model hospital project is being implemented this year. The preparedness program is also being presented at regional and national conferences in order to encourage other organizations and government bodies to implement the respective projects and to draw up individual disaster control plans for individual health facilities.

The 3,500-member disaster team, in which disabled and non-disabled people are involved, some of them in an honorary capacity and some of them on a professional basis, serves as a contact point for the entire region. Not only physicians and nurses but also teachers, policemen, taxi-drivers and many other volunteers from the communities have undergone training in first aid, resuscitation measures and the basics of disaster relief. And thanks to this training, they are now also able to assess the special needs of disabled people. Paulus Masih is both a victim of disaster and an aid worker. He belongs to the 127 key persons who act as independent instructors for further volunteers in their respective region.

It is also their task to remind local organizations and government representatives of their responsibility towards people with disabilities, to raise an early alarm and also to have both disaster preparedness plans and first aid plans available in sign language and braille. Masih is certain that, "thanks to the large number of disaster relief workers, an injury like the one I sustained will no longer cause any lasting disability in the future".

*Ulrike Veismann*



## 2.4 The creeping disaster—global health in crisis

Kirsten Schubert, Thomas Gebauer

The news reaching us from Greece is shattering: “Growing numbers of suicides due to the greatest economic crisis since 1929”, “Chronically ill lacking access to medicine”, “Doubling in the number of HIV infections”. They remind us of the link between socioeconomic factors and people’s health. Austerity policies in times of crisis have been proven to cost human lives. Disasters such as wars, famine or floods are going to have a far more tragic impact among a world population shaken by financial crisis—if the right to good public healthcare for all is not given priority.

“The global economic downturn has profound importance for the health and well-being of populations and is likely to worsen health inequity. The people who are already most exposed to vulnerability and disadvantage feel the effects of the global economic downturn more strongly, similar to the effects of natural disasters”, health scientist Sir Michael Marmot noted in his interim report for the World Health Organization (WHO) in 2011 (Marmot 2011). With the end of the financial crisis in late 2007, the world economic crisis set in, and given its extent, it is easily comparable to the Great Depression of the 1930s. Already in its first years, a hundred million people were plunged into poverty by rising energy and food costs (WHO 2009).

Evaluating experience from previous economic crises, the WHO called on the Member States to seek to ensure that „the economic crisis is not turning into a social and health crisis” (ibid.). Its warning went unheeded.

### Poor preconditions for health

While the economic crisis started in the industrialized countries, it is going to have its most dramatic impacts in developing countries (Ortiz and Cummins 2013). The decline in overseas direct investment and return remit-

tances from relatives abroad or the drop in development aid adds to the consequences of crisis within previously already fragile health and social welfare systems. Thus the partner organization of medico international “Centro Ecuménico Antonio Valdivieso” (CEAV) in Nicaragua reports that a major proportion of the money that it used to receive from Spanish organizations is no longer available. In many countries, development aid money for health accounts for a considerable proportion of health expenditure—often up to 50 percent. In times of crisis, this dependence can quickly lead to disaster.

Spending on health worldwide reflects extreme inequality which cannot be explained by a lack of resources, since enough is available for everyone—only that it is extremely unequally distributed. Eighty-four percent of the world’s population live in the developing and emerging countries of the South. However, they account for just 29 percent of the global Gross Domestic Product (GDP). They bear 92 percent of the world’s health burden but have just 16 percent of global expenditure on health at their disposal (Moon and Omole 2013). The per capita health expenditure ratio is revealing, too. In Germany, it is 3,573 US dollars a year, and in Uganda just 10 US dollars, i.e. 350 times less (WHO 2013). One consequence of this imbalance is that in Germany, people live up to an age of 81 years on average, while life expectancy in Uganda is at 56 years.

### No saving on health

Economic crises, such as the Great Depression, the debt crisis of the developing countries or the Asian crisis towards the end of the 20th century, but also sudden transformation processes, such as the one that Russia saw after the disintegration of the Soviet Union, are proven to have cost many people’s lives. Sui-



cide statistics, child mortality and the incidence of chronic diseases shot upwards — although they did not do so to the same degree everywhere. In their survey published in May 2013, the two health scientists Stuckler and Basu demonstrate that the extent of harm to health owing to “economic disaster” is a consequence of the political measures taken by governments. The core issue is whether they opt for an austerity and budget consolidation policy or whether they promote social and health programs. From the Great Depression up to the euro crisis, it can be scientifically proven again and again that “the true threat to public health is not the recession as such but the austerity programs” (Stuckler and Basu 2013).

Thus the impressive developments that had taken place in some African countries in the 1950s and 1960s, such as the halving of child mortality or the extension of public health and education systems, were ruined all at once in 1980, when the debt crisis set in. A massive increase in the price of oil, rising interest rates and the decline in exports owing to protectionism among the industrialized countries coincided with cuts in public budgets. Similar developments could be observed in Latin America in the 1980s and 1990s. The major financial actors, the International Monetary Fund (IMF) and the World Bank, developed structural adjustment programs, which were the precondition for debt relief or external investment in the crisis-shaken countries. In addition to trade liberalization and the elimination of subsidies, this also included cuts in the health budget.

The dubious assumption that these conditionalities would result in economic growth failed to materialize. Rather, the measures forced the countries to carry out a neoliberal reform of their economic and social systems and secured access for the industrialized countries to natural resources. There were times when countries such as

## Case study: South Sudan



### The crisis still goes on after the war

South Sudan continues to be in a state of crisis despite the end of the war. For more than 20 years, civil war raged in the region until a peace treaty was signed by the conflict parties. In 2011, after a referendum, South Sudan declared its independence from the Republic of Sudan and is now the youngest state in the international community. But regardless of independence, peace and an economic upswing have not yet come to the country. Eighty-six percent of the population are living below the poverty line. People’s everyday life is characterized by the flaring up of internal conflicts and continuing disputes with the Republic of Sudan. In addition, there are border disputes with paramilitary groups from Uganda.

**Brot  
für die Welt**

The civil war and the lasting crisis have destroyed social and economic infrastructure, and public healthcare hardly exists. Eighty percent of the few existing health services are operated by civil society organizations and the Churches. Otherwise, the poor in particular would lack any access to these services. Brot für die Welt is supporting the Action Africa Help International (AAHI) organization, which provides comprehensive primary healthcare.

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Zimbabwe or Nicaragua were spending between a quarter and half of their revenue on debt repayment – often several times the amount of their health and education budgets.

In the current crisis in Europe, the IMF, together with the European Commission and the European Central Bank, is formulating the conditions for debt relief. They are very similar to the structural adjustment programs of the 1980s and 1990s. The Structural Adjustment Participatory Review Initiative (SAPRI) launched by the World Bank in 1997, which documented the disastrous developments at the time and led to a reorientation less than twenty years ago, appears to have been forgotten since. However, the impacts of the Greek health budget being cut by almost half were predictable – ranging from a lack of medicines and dressing material through an exodus of health specialists and a rising number of HIV infections to increased influenza mortality (Bonovas and Nikolopoulos 2012). The question must be permitted whether this was consciously accepted as a possible consequence of the measures.

In many developing countries, too, the IMF continues to be active in providing support for governments. Presently, the following IMF structural adjustment programs are on the agenda (Ortiz and Cummins 2013):

- + eliminating or reduction of subsidies, including fuel, agriculture and food products (in 100 countries)
- + wage bill cuts/caps, including the salaries of education, health and other public sector workers (in 98 countries)
- + rationalization and further targeting of safety (in 80 countries)
- + pension reform (in 86 countries)
- + healthcare reform (in 37 countries)
- + labor flexibilization (in 32 countries).

## Structural adjustment through privatization

The reforms called for in the health sector include, in particular, cuts in government services and medical personnel and usually go hand in hand with increases in out of pocket payments for healthcare facilities or the purchase of medicines. In the field of the social security system, the IMF often recommends restricting the public security nets and welfare to the poorest sections of the population – as is the case in 25 industrialized countries and in 55 developing countries, such as Nicaragua, Sudan, Zambia, Mali or Haiti (Ortiz und Cummins 2013). Usually, this is difficult to implement both administratively and politically, and given the large number of vulnerable groups in the population, also above the poverty line, it is not recommendable. Rather, comprehensive public healthcare is urgently needed that is pre-financed on a mutual basis: the rich for the poor, and the healthy for the sick. As the WHO notes, this is also the most efficient way of financing (WHO 2010).

One of the biggest problems that the countries of the South are facing is that the overwhelming majority of the population are not financially safeguarded in the event of illness (Moon und Omole 2013). As a rule, anyone seeking health services has to make out-of-pocket payments. Such individualized health financing does not make sense from a health policy angle and, what is even more important, is highly unfair. It excludes those from appropriate healthcare who need it most given their situation. To poor people and those without means, who are usually sick more often, out of pocket payments often represent insurmountable obstacles. Since they simply cannot afford it, sick people avoid seeing a physician or going to hospital. Each year, the WHO estimates, 100 million people are driven into poverty because they have to finance “disastrous health expenditure” privately (WHO 2010).

The user fees that the World Bank advocated for a long time are highly controversial, too. Originally, they were supposed to serve as a barrier to prevent an “overuse” of medical facilities. But they pass on responsibility for health to the poor, or, as WHO Secretary General Margret Chan puts it, “user fees have punished the poor” (WHO 2010).

The individualization of health costs via private payments is accompanied by the privatization of public hospitals, a measure that tight public budgets serve as a reason for. Whereas pressure on the public health system is mounting, the development of the private health sector continues, just like the World Bank has demanded for many decades. The debate on the pros and cons of the private health sector is shaped considerably by ideological convictions, an analysis of more than 2,300 scientific articles recently revealed (Braithwaite et al. 2010). Especially in the case of the developing countries, there is a lack of data on the impacts of privatization on access to healthcare. Many countries in Africa, Latin America and Asia have only weakly developed public healthcare systems. Underfinanced, ailing public hospitals for the lion's proportion of the population contrast with well-equipped private hospitals for the elites.

However, it has not been possible to prove scientifically that the private sector is more efficient, can cope with more pressure and is more effective medically. Rather, an increasing amount of unnecessary examinations and surgeries are being performed some of which even violate medical standards (Basu et al. 2012).

What is overlooked is that the poor and impoverished can only assert their right to health where a public-supported healthcare system exists. Health is an important public good that is linked to social responsibility and commitments. In contrast, in the case of a private hospital operator or philanthropic associations, those in need can, at best, apply for support, but they cannot take legal action to enforce it.

## Case study: South Sudan

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Effects of malnourishment, insufficient water supply, a low vaccination density, a large number of unintentional and early pregnancies and a high level of HIV/Aids cases are being combated. AAHI is an international organization that is based in Nairobi and engages in humanitarian and development activities in East Africa.

The Republic of South Sudan is nearly twice as big as Germany, but it has a mere nine million inhabitants. There is virtually no infrastructure, and the road network is hardly developed. People have to go miles to get to the next health centers. This is why AAHI has set up a network of 100 health facilities covering the whole country. By providing medicine and medical and logistical support, primary healthcare is ensured for 8,000 people a month. Education activities and primary healthcare services aim to combat maternal mortality, which, at more than 2,000 women per 100,000 births, is the highest in the world. That every tenth child should die of preventable diseases such as diarrhea, undernourishment, malaria or measles is soon to be a thing of the past. This comprehensive health program that AAHI is conducting benefits more than half a million people.

For the future of people in South Sudan, the sustainable development of an efficient health system is crucial. However, there is also a lack of medical personnel. Every second health center has an insufficient number of physicians, midwives or nurses. In order to bridge this gap, AAHI is training personnel on a continuous basis who are then taken on by the national health service. And through intensive dialogue between AAHI and the government, far-reaching progress is being made in government training programs for health personnel. Furthermore, consulting provided for the Health Ministry and the training of administrative personnel support the creation of capacity at Federal State level and the development of a reliable health policy. For it will only be possible to improve the health situation in South Sudan when local people are strengthened and the government structures are in working order. This would be an important contribution to getting out of the crisis.

*Mareike Haase*

Furthermore, a well-established public health service is essential for good prophylaxis and surveillance — especially in times of crisis. But profit-oriented private providers of health services are only interested in preventing diseases to a certain degree — unless pharmaceutical, medical engineering or nutritional supplement products are employed that earn them revenue.

The benefit of private healthcare also depends on whether it is capable of providing for the population in times of disaster and crisis. People who have suddenly lost their possessions or secure income can no longer afford private supplementary insurances and contributions and turn to public institutions, which is what the WHO also predicted in its 2009 Report (WHO 2009). In Greece, for example, the intake of patients by public hospitals increased by 20 percent between 2009 and 2011 (Kentikelenis und Papanicolas 2012).

### Rethinking is vital

Public-financed, high-quality healthcare and prevention are essential to reduce a population's vulnerability. The WHO, as well as many renowned scientists, is therefore calling for anti-cyclic health financing: more money in times of crisis — especially since there can be no doubt that demand has increased significantly (WHO 2009). Quite generally, the issue of sustainable health financing urgently needs settling. The inequalities described above are untenable from a human rights perspective, and they are causing unnecessary suffering. One way out would be to replace development aid steered by vested interests with obligatory compensatory financing systems. Such a demand, which was already raised by medico international in the late 1990s, was presented by Anand Grover, UN Special Rapporteur for the Right to Health in his report to the UN General Assembly in 2012.: “Realization of the right

to health in the developing world is thus also dependent upon the availability of sustainable international funding for health, which should ultimately be realized through an obligatory, treaty-based regime founded upon the principle of global solidarity.” (Grover 2012)

Most countries throughout the world continue to lack systems of compensatory public, mutual health financing, whether it be via taxation or health insurances. It is not without reason that the WHO also put the goal of Universal Health Coverage (UHC) right at the top of the agenda in the planned revision of the Millennium Development Goals, which are to be newly agreed in 2015. In stark contrast to this, social security systems are presently being eliminated in Europe and many other countries. In Greece, more than 30 percent of the population are no longer medically insured.

The human right to health is enshrined in Article 12 of the International Covenant on Economic, Social and Cultural Rights. Only if society — and hence also its governments and its institutions — recognize healthcare as a collective task, as a public good that must not be left up to the market, can it become and stay a reality. In times of crisis, this simple insight is all the more true.



## Case study: El Salvador

### Health politics from below

El Salvador faces the challenge of reducing the country's extreme social disparities. One of the most important changes is taking place in the healthcare system, which was previously characterized by privatization. Now ideas are coming to bear that were already being practiced by the liberation movement during the civil war, when health promoters were looking after the people. The core element in the health reforms is the introduction of "Equipos Comunitarios de Salud Familiar" (ECOS), which address the population's health problems at village and urban district level and operate in a nationwide network.

As a rule, these healthcare teams consist of a physician, two nurses, and two health promoters who, in addition to providing concrete healthcare, perform preventive activities as well. They are making a crucial contribution to healthcare also becoming available to people in poor and remote districts who previously had no access to it. Since the beginning of the reforms in 2009, 380 of these ECOS have started working in the 141 poorest communities in El Salvador. In addition, there are 28 "ECOS Especializados" with personnel specializing in areas such as dental medicine, midwifery or dietetics who ensure that special treatment is available at local level.

Large numbers of promoters who were trained and employed by civil society organizations such as "Asociación de Promotores Salvadoreños" (APROCSAL), which is supported by **medico internacional**, over the last few years to provide primary healthcare services have been integrated in the new ECOS. Furthermore, the national rescue system has been improved through the introduction of 170 ambulances whose area of operation also includes remote villages. In addition, social determinants of health have been addressed in the context of the reform process, for example by tackling the causes of diseases such as contaminated drinking water and poor housing conditions and discussing sustainable solutions in cross-sector round-table debates. Ninety percent of El Sal-



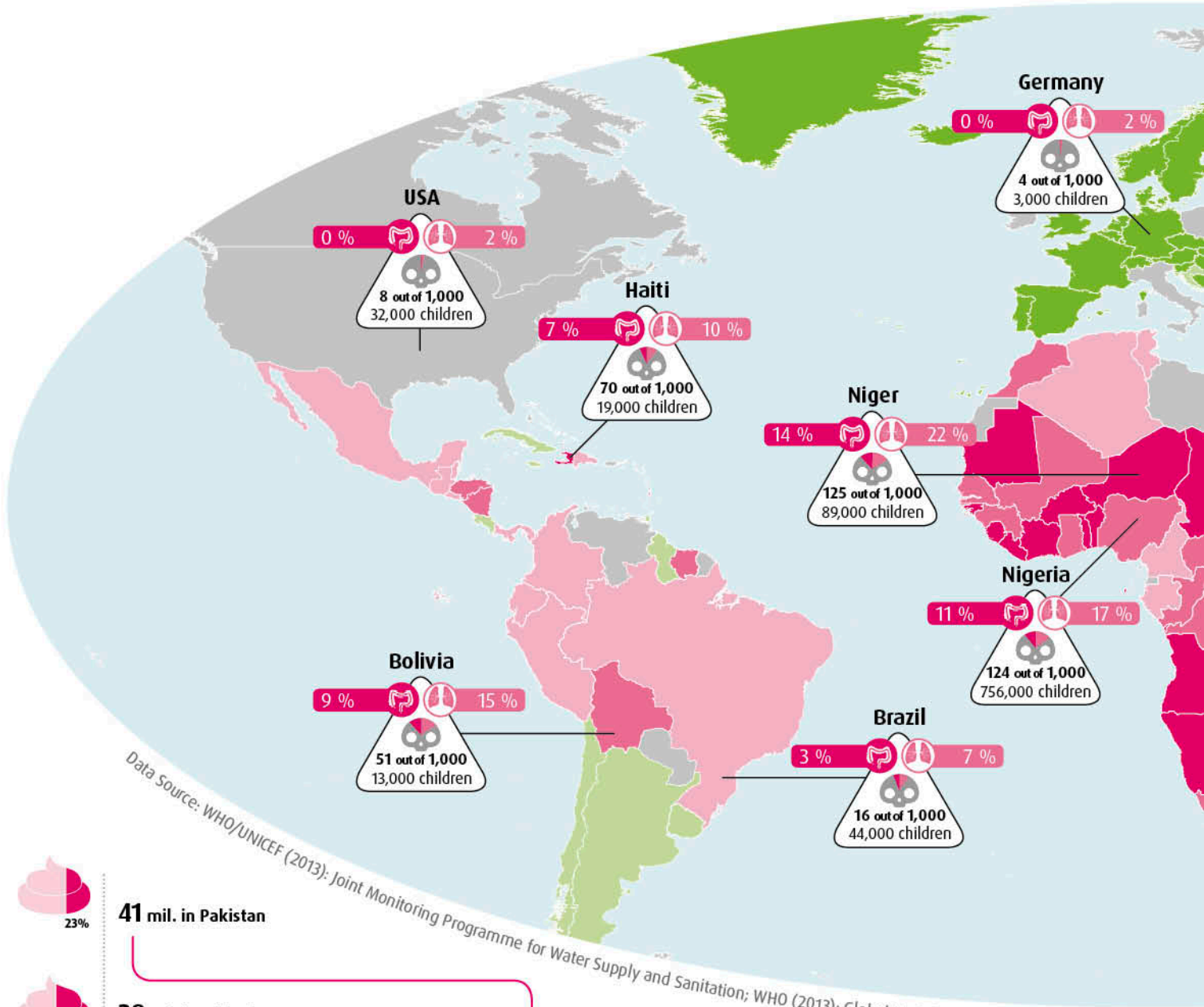
vador's total area is regarded as a risk zone for extreme natural events such as hurricanes and volcanic eruptions, causing this small Central American country—with its 21,000 square kilometers the size of Germany's Federal State of Hesse to regularly feature among the ten countries with the highest disaster risk. When floods developed throughout the country following several days of continuous rainfall in late 2011, via the network of community health committees, **medico internacional** were able to provide immediate emergency relief for the people affected by distributing food, hygiene kits, medicine and plastic tarps.

In 2014, elections will be held in El Salvador. The "Grass-roots Health Reform" supported by **medico internacional** for more than twenty years has been successfully and sustainably integrated in government policy. Above all, the level of democracy achieved in health policy thanks to the people's ownership gives rise to hopes that this far-reaching concept will also be continued after the elections.

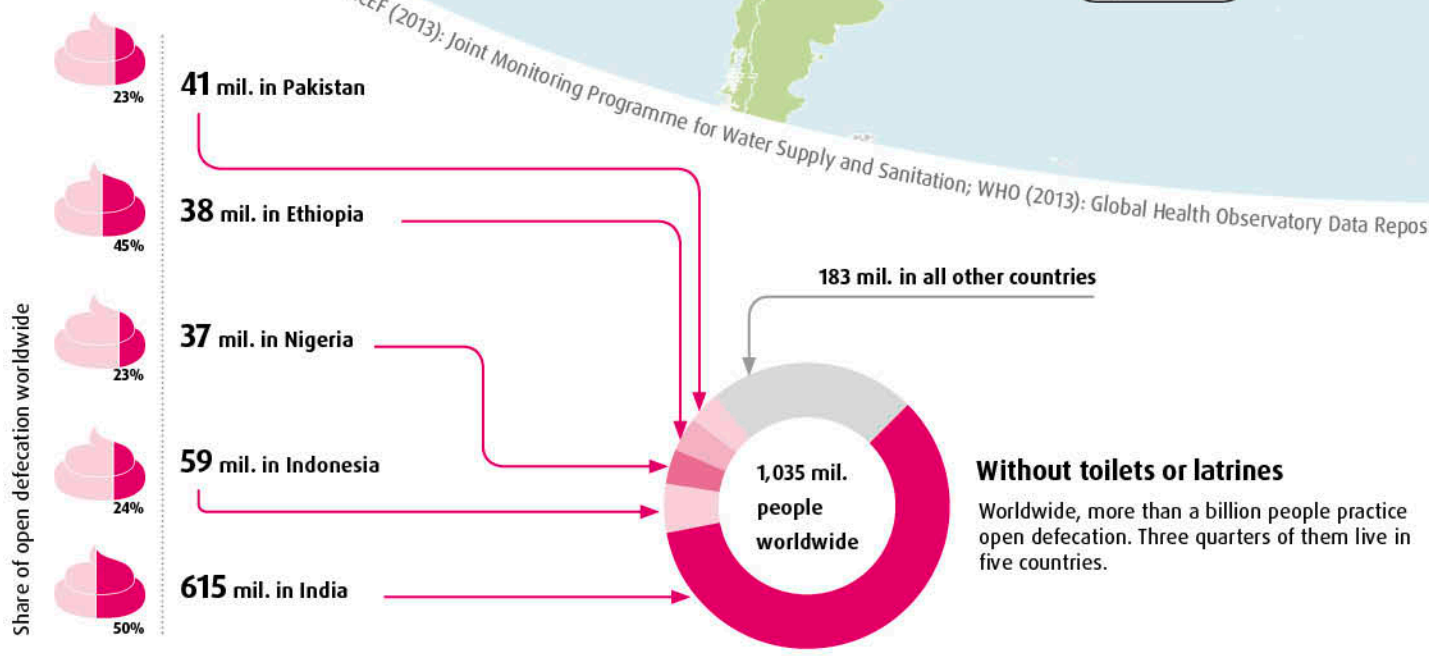
*Kirsten Schubert*

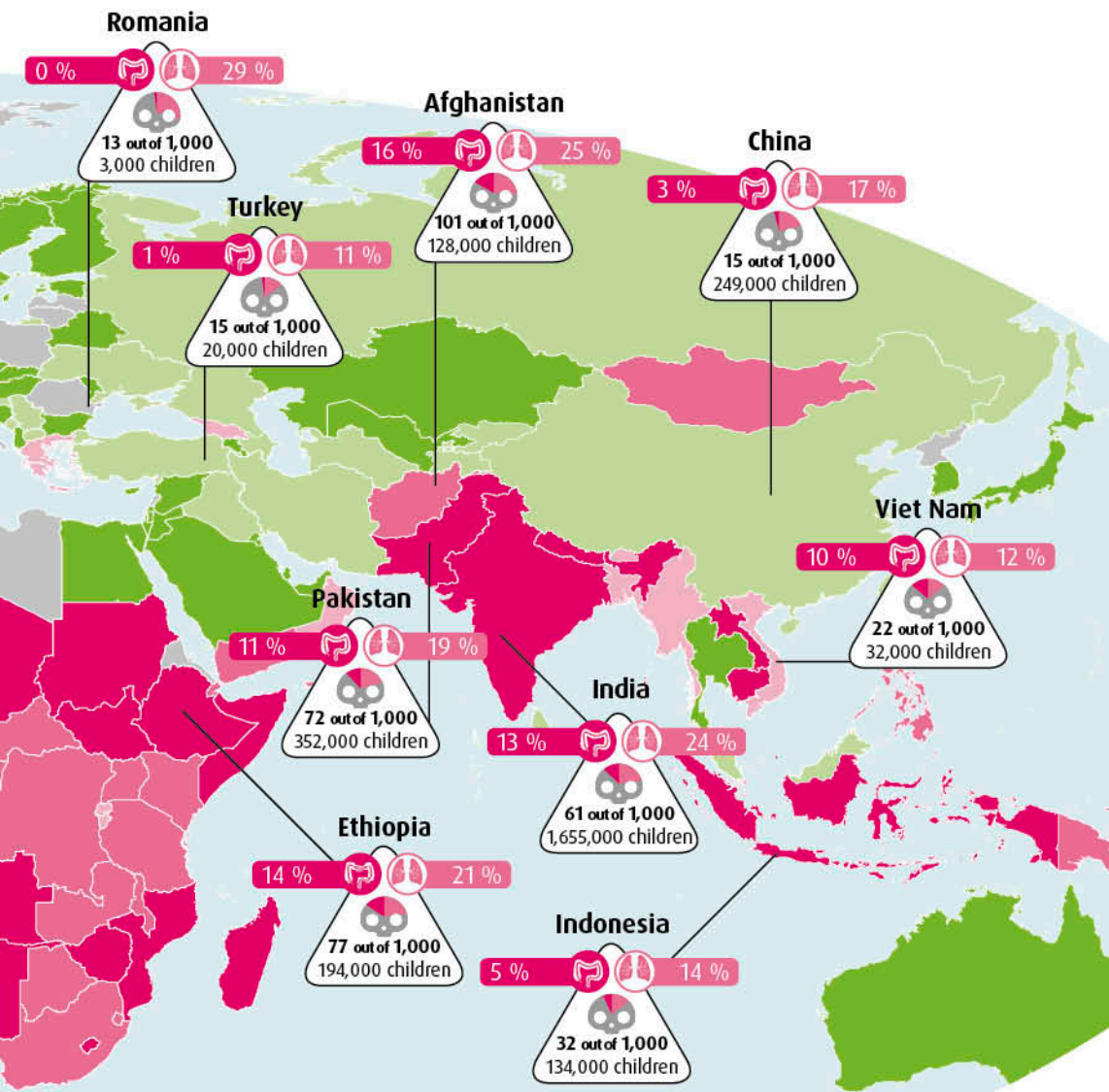


# Hygiene and child mortality



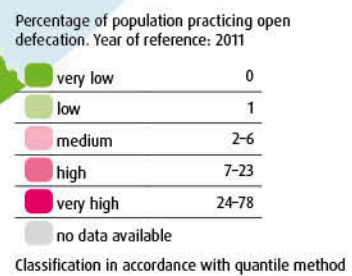
Data Source: WHO/UNICEF (2013): Joint Monitoring Programme for Water Supply and Sanitation; WHO (2013): Global Health Observatory Data Repository;





This diagram shows the link between hygiene and child mortality. The World Map of Open Defecation in the background shows where feces are disposed of without toilets or latrines. Severe diarrhea is a frequent result of such practice. Open defecation is also a sign of further hygiene deficiencies, such as a lack of washing one's hands. This dramatically increases the danger of pneumonia. In India, where 50 percent of the population practice, or are forced to practice, open defecation, diarrhea (13 percent) and pneumonia (24 percent) are responsible for more than a third of all deaths of children under the age of five years. By contrast, in Germany, where the rate of open defecation approaches 0, two percent of deaths among children under the age of five years are accounted for by pneumonia and zero percent by diarrhea. Worldwide, 2,000 small children die of diarrhea and 3,500 of pneumonia every day. A large proportion of these cases could be prevented. Alone by washing one's hands with soap, the infection rate of diarrhea can be reduced by 48 percent, and that of pneumonia by 25 percent.

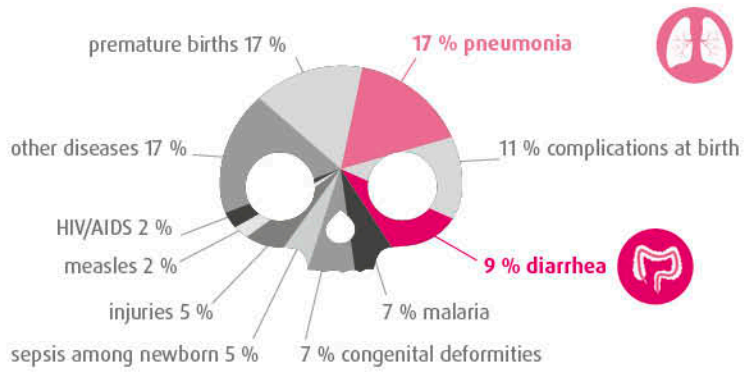
### World map of open defecation



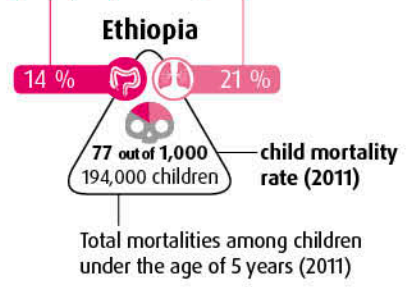
World map of open defecation  
UN Inter-agency Group for Child Mortality Estimation: Levels & Trends in Child Mortality. Report 2012.

### Causes of mortalities among children under the age of 5 years worldwide

Year of reference: 2011, sum deviates from 100 through rounding off



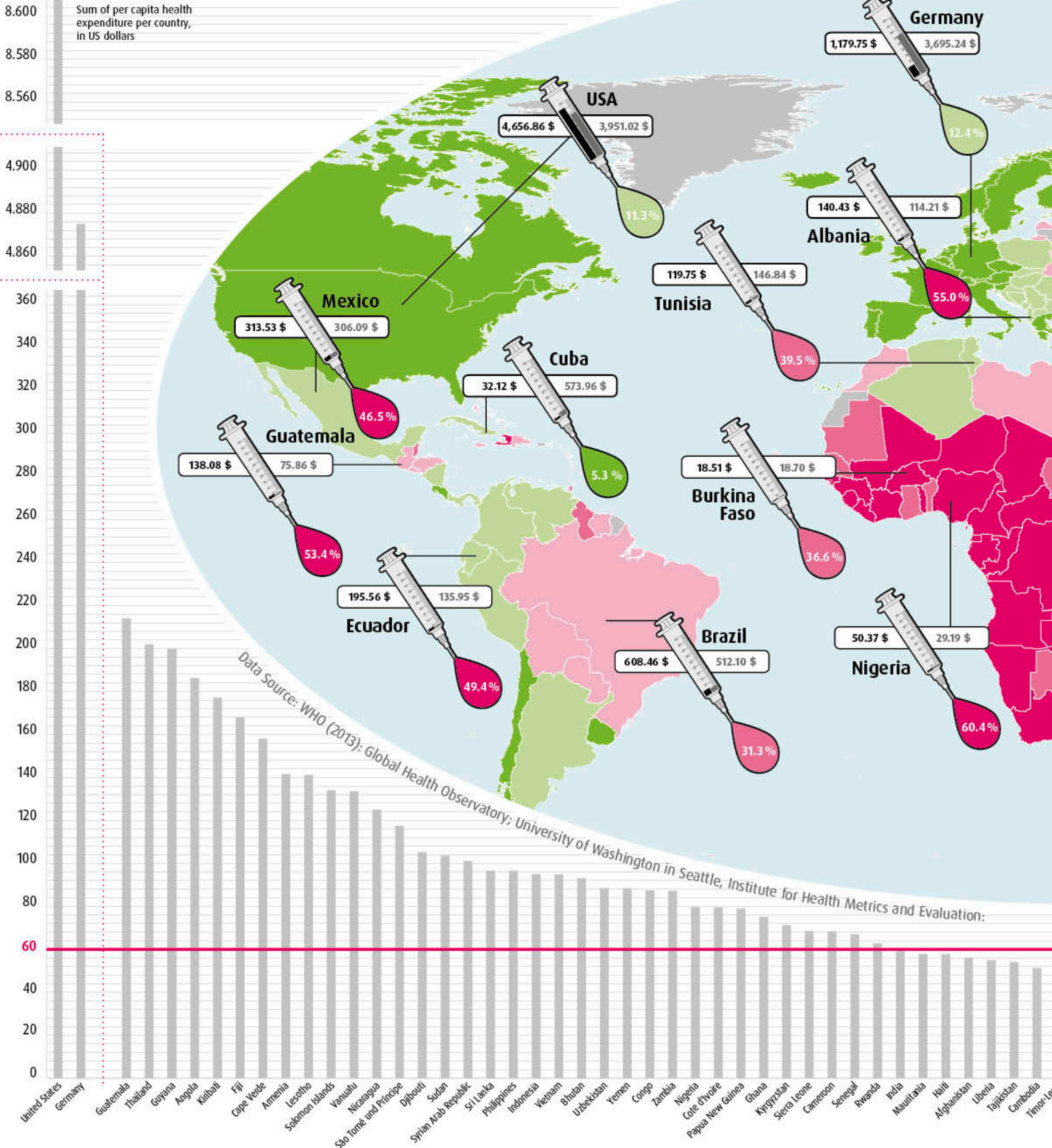
Share of diarrhea in all mortalities among children under the age of 5 years (2010)  
Share of pneumonia in all mortalities among children under the age of 5 years (2010)



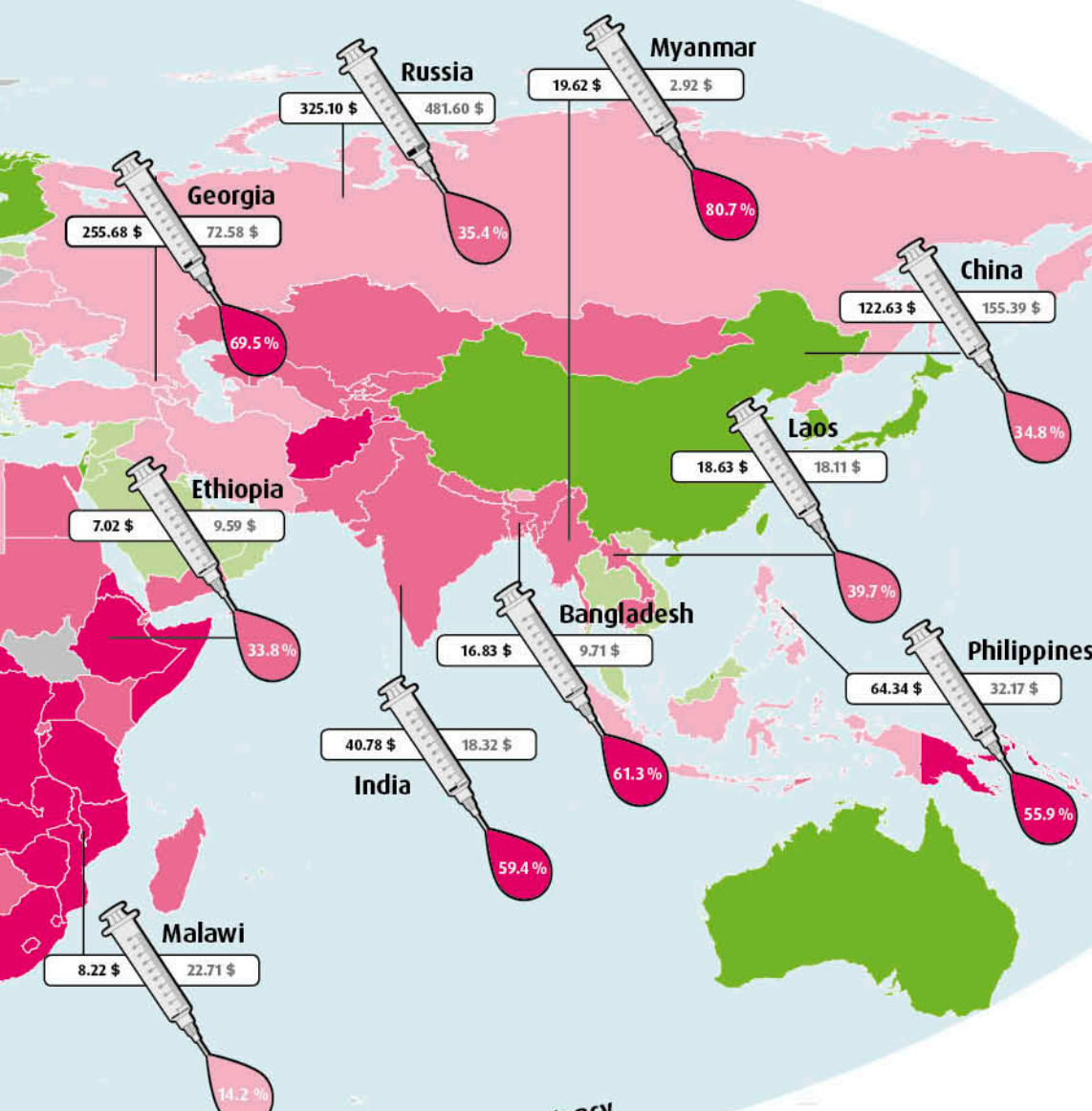


# Money and health

Sum of per capita health expenditure per country, in US dollars



This diagram illustrates the link between money and health. The map of the world in the background shows average healthy life expectancy, i.e. the number of years of healthy life, without impairment through disease or disabilities. This value also significantly correlates with the amount of money spent per capita on preventive health and healthcare. For 49 countries with a very low per capita income, the World Health Organization (WHO) assumes a basic per capita need of 60 US dollars a year (target value for 2015). The treatment of epidemic diseases such as HIV/AIDS, malaria and tuberculosis is not yet included in this basic value. The bar chart below shows that many countries fall far short of this value. Also, it is very important to analyze the proportion of health expenditure that every individual has to pay out-of-pocket, i.e. privately and beyond security provided by a health insurance or by free-of-charge public support. According to the WHO, an out-of-pocket share of more than 20 percent has "disastrous impacts". Especially if the cost of medicines and treatment is high in relation to the cost of living, this can spell financial ruin for families, e.g. if a Caesarian section has to be performed. Often, they will then have to go in debt or sell cropland that they depend on for food.



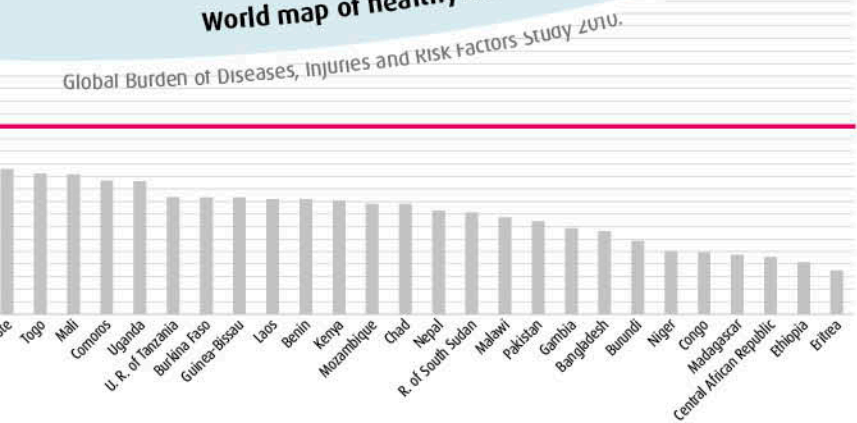
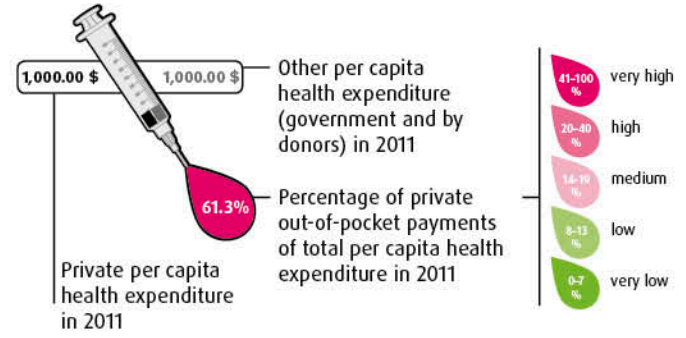
### World map of healthy life expectancy

Number of healthy life years per population average. Year of reference: 2010

very high	68-73
high	65-67
medium	61-64
low	54-60
very low	32-53
no data available	

World map of healthy life expectancy  
Global Burden of Diseases, Injuries and Risk Factors Study 2010.

### Health expenditure per country











### 3. WorldRiskIndex 2013

Torsten Welle, Jörn Birkmann, Jakob Rhyner, Maximilian Witting, Jan Wolfertz

Extreme natural events such as earthquakes, storms, floods, droughts or the future effects of sea level rise need not inevitably result in a disaster for a country. For example, a society which is less susceptible in the field of health and enjoys a high level of prosperity, can draw on experience with natural events, and by adapting to anticipated environmental and climate changes can significantly lower the risk of disaster and crisis and thus minimize the numbers of victims as well as ecological, cultural and economic losses and damage. The WorldRiskIndex shows the respective risk of becoming a victim of disaster pertaining to extreme natural events for 173 countries. The risk is at its highest where a high level of exposure coincides with very vulnerable societies.

## 3.1 The concept

The WorldRiskIndex characterizes the disaster risk for 173 countries that results from a combination of societal conditions and factors as well as areas with a potential for natural hazards to occur. The concept of the Index is to demonstrate that it is not solely the strength of an extreme natural event that is responsible for a natural hazard turning into a disaster but rather that a society's social, economic and ecological factors also play a crucial role (Birkmann et al. 2011; cf. IPCC 2012). The results of the WorldRiskIndex enable a comparison of countries with one

another, providing a description of a potential disaster. The Index cannot forecast individual disasters.

The Index consists of 28 indicators referring to data that is available worldwide and accessible to the public and is based on a modular structure divided into the four components of exposure to natural hazards, susceptibility, coping and adaptation. The assignment of the individual indicators to the components and weightings is represented in Illustration 4 on pages 48 and 49.

## 3.2 The terms

The World Risk Index is calculated by multiplying exposure by vulnerability. A detailed description of the method applied to determine the WorldRiskIndex is given in the WorldRiskReport 2011 (Birkmann et al., 2011) and available at [www.WorldRiskReport.org](http://www.WorldRiskReport.org).

- **Risk** is understood as the interaction between a hazard (earthquakes, floods, cyclones, droughts, sea level rise) and the vulnerability of societies. The results of the individual values for 173 countries are provided in the table in the Annex. The graphic representations of the Index are shown on Map C on the right fold-out page of the cover and on the World Map on pages 54 and 55.
- **Exposure** means that a certain good (generally: population, buildings, infrastructure components, environmental areas) is exposed to the impacts of one or more natural hazards (earthquakes, cyclones, droughts and floods). The World Map of Exposure (here: exposure of the population) can be seen in Map A on the right fold-out page of the cover.
- **Vulnerability** relates to social, physical, economic and environment-related factors that make people or systems susceptible to

the impacts of natural hazards and the negative effects of climate change. The term vulnerability also covers factors comprising the abilities and capacities of people or systems to cope with and adapt to the negative impacts of natural hazards. Vulnerability includes the components of susceptibility, coping capacities and adaptive capacities. The Vulnerability Map (Map B, right fold-out page of the cover) shows the global structures of vulnerability.

- **Susceptibility** is generally understood as the probability of sustaining harm should a natural hazard occur. Susceptibility thus describes a society's structural characteristics and framework conditions. Susceptibility is represented worldwide in Map B1 (left fold-out page of the cover).
- **Coping** refers to various abilities of societies to minimize the negative impacts of natural hazards and climate change via direct action and the resources at their disposal. Coping capacities comprise measures and abilities that are immediately available to minimize harm when a disaster strikes. For the calculation of the WorldRiskIndex, the opposite value, i.e. the **lack of coping capacities**, has been applied. It is the result of subtracting coping from the value of 1 (Map B2, left fold-out page of the cover).

→ **Adaptation** unlike coping, is understood as a long-term process that also includes structural changes (cf. Lavell et al. 2012; Birkmann 2010) and measures, as well as strategies to deal with the negative impacts of natural hazards and future climate change im-

pacts. The **lack of adaptive capacities**, i.e. the value of 1 minus adaptation, that is included in the WorldRiskIndex (Map B3, left fold-out page of the cover) is analogous to coping capacities.

### 3.3 Updating and modification of the indicators

For the calculation of the WorldRiskIndex 2013, a total of 15 out of the 28 indicators have been updated — all of them in the area of vulnerability. With regard to the remaining indicators, the previous data was retained as updated versions of the external data were not available at this time. This also applies to exposure.

The worksheets for the 28 indicators, together with the latest data sets and their sources, can be viewed at [www.WorldRiskReport.org](http://www.WorldRiskReport.org).

#### Susceptibility

Within the component of susceptibility, updated sets of data are available for four of the seven indicators:

- + Indicator C: Share of population undernourished
- + Indicator D: Dependency ratio (share of under 15- and over 65-year-olds in relation to the working population)
- + Indicator E: Share of the population living on less than USD 1.25 per day (purchasing power parity)
- + Indicator F: Per capita Gross Domestic Product (purchasing power parity).

#### Coping capacities

Within the component of coping capacities, updated sets of data are available for all indicators except for insurances:

- + Indicator A: Corruption Perception Index
- + Indicator B: Good governance (Failed States Index)
- + Indicator C: Number of physicians per 10,000 inhabitants
- + Indicator D: Number of hospital beds per 10,000 inhabitants.

#### Adaptive capacities

Within the component of adaptive capacities, updated sets of data are available for seven of the eleven indicators:

- + Indicator A: Adult literacy rate
- + Indicator B: Combined gross school enrollment
- + Indicator C: Gender parity in education
- + Indicator D: Share of female representatives in the National Parliament
- + Indicator I: Public health expenditure
- + Indicator J: Life expectancy at birth
- + Indicator K: Private health expenditure.



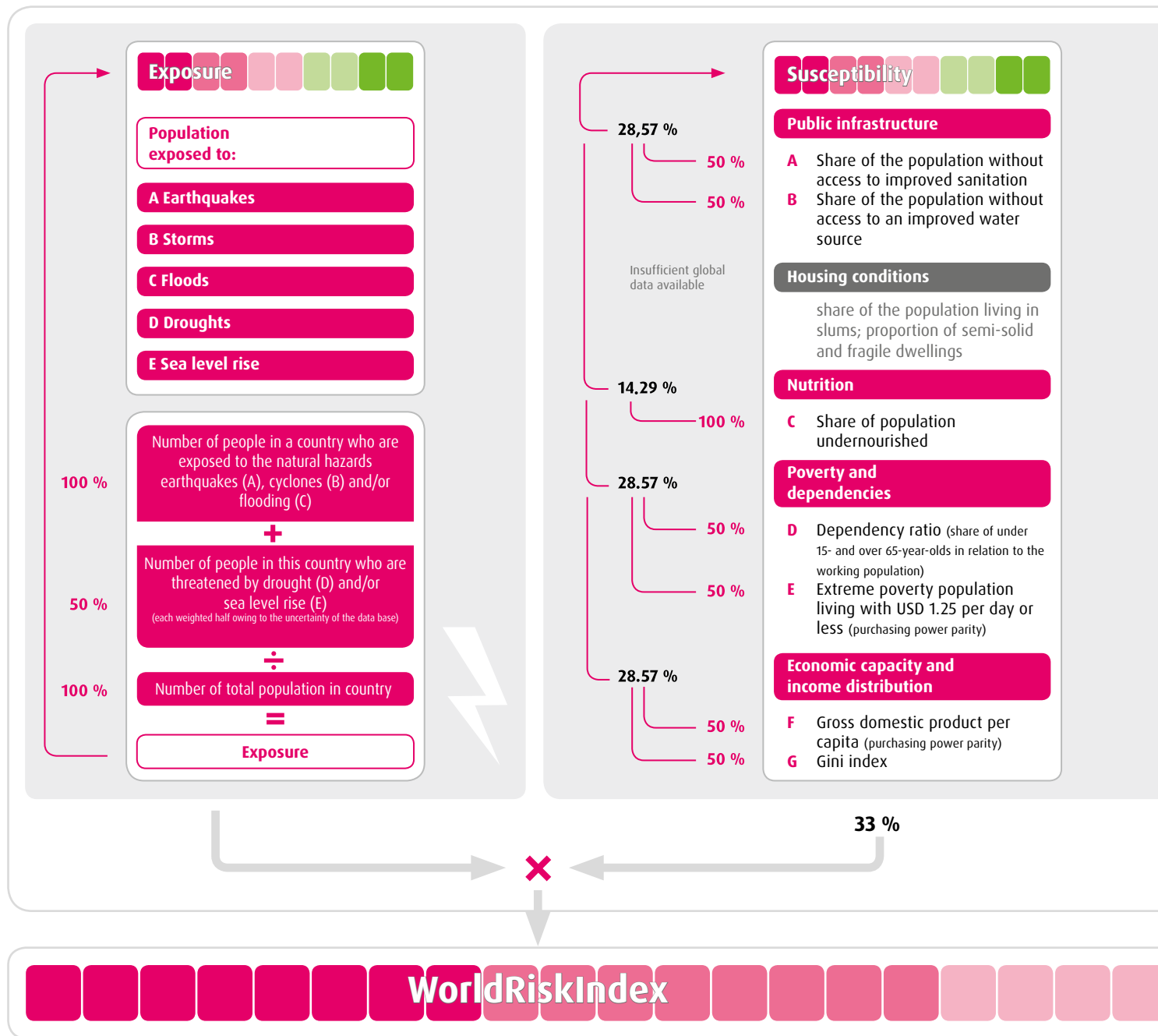
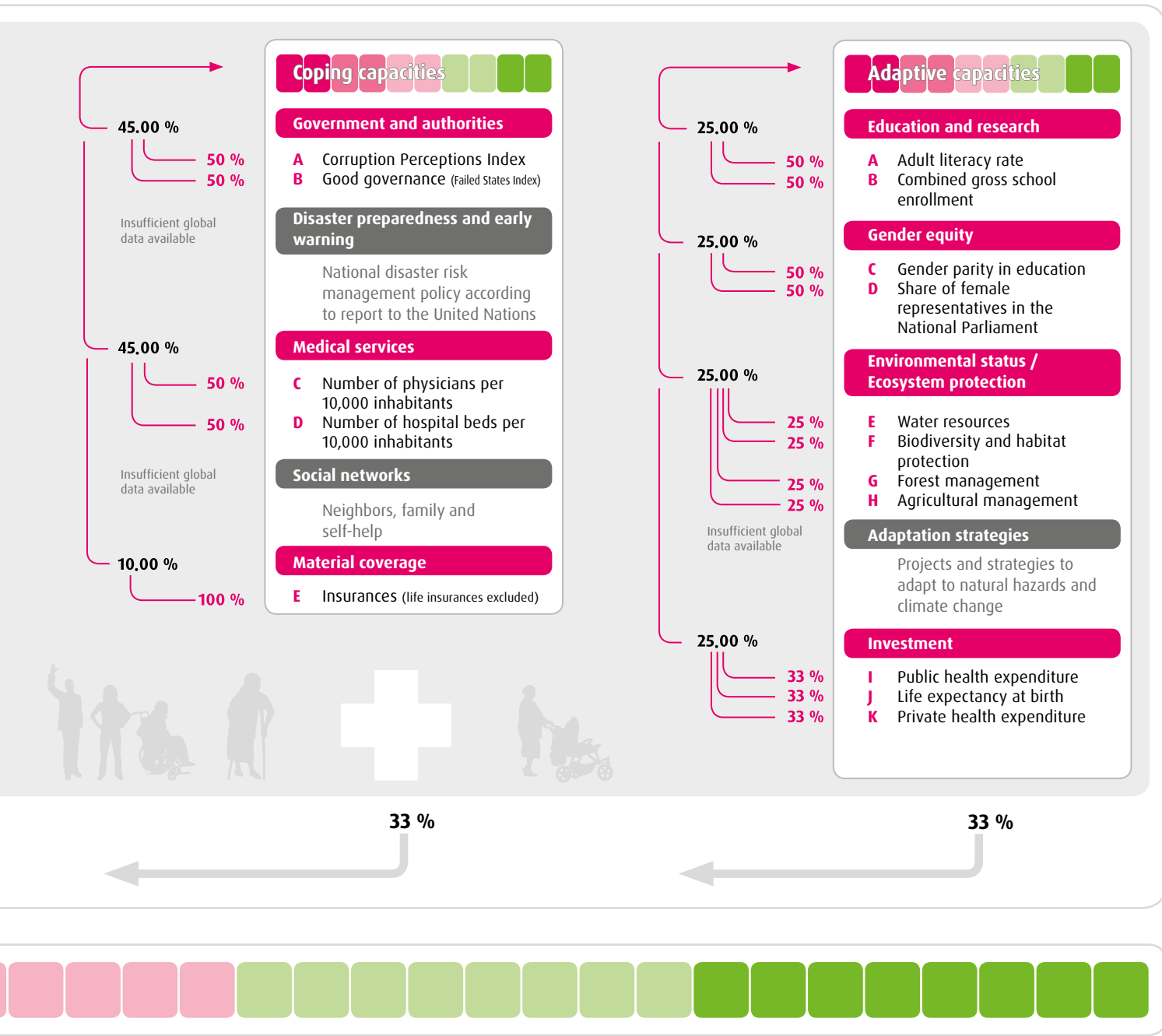


Figure 5: Calculation of the WorldRiskIndex

### 3.4 The WorldRiskIndex 2013

It generally applies in scientific discourse that modifications in indicators are difficult to interpret over a short or limited period of time since data quality and currency can vary considerably within the individual indicators (Freudenberg 2003; Meyer 2004). For an optimum level of comparability, all indicators would have to be from the same data source for all countries, and both a uniform base

year and a uniform method of establishing the data would have to be applied. However, this cannot be put into practice, which is why the data used can only provide an estimate. Moreover, the method used in the calculations and the subsequent method of classification for the WorldRiskIndex provides a basis for the comparison of individual countries with one another. Thus minor differences in the



individual indicators and hence the component values may result in shifts in ranking compared to the previous year even though changes in the country itself have been hardly perceptible. For this reason, care ought to be taken when making direct comparisons of the individual Index values with those of the WorldRiskIndex 2012. Nevertheless, bearing these uncertainties and framework conditions in mind, the values or country rankings of the previous year's and this year's Index can be

reviewed critically, and in particular, conspicuous shifts in the distribution of risks and vulnerabilities at global level can be analyzed.

Observations in the WorldRiskReport 2013 focus on vulnerability, since exposure relates to the same data base as in 2012 because updates were not available. This year, therefore, changes in the risk of individual countries can be traced back exclusively to changes in vulnerability.



Vulnerability can be successfully reduced in three ways: first, by reducing the susceptibility of societies, second, by improving coping capacities which are relevant in the case of a disaster, and third, by establishing and supporting long-term and sustainable structures within a society which we refer to as adaptive capacities (cf. Bündnis Entwicklung Hilft 2012).

In the following, for the components of susceptibility, lack of coping capacities and lack of adaptive capacities, some countries are given as examples of the updates having resulted in changes in the respective component values and these being the cause of a change in ranking and, partly, of a shift to another class in accordance with the quantile method.

### Susceptibility

The countries with a very high level of susceptibility (Map B1, left fold-out page of the cover) are first and foremost the countries of the Sahel zone and those in the tropical regions of Africa. The 15 countries with the highest susceptibility values comprise 14 African countries and Haiti.

Madagascar shows a conspicuous leap with regard to susceptibility. The susceptibility value of Madagascar has deteriorated, rising from 64.39 to 67.42, leading to a shift in position of six ranks. The reasons for this include the number of people who are undernourished, a figure that has risen from 25 percent to 33 percent. Furthermore, the proportion of people living on less than 1.25 USD per day has increased from two thirds (67.8 percent) to four fifths (81.3 percent) in comparison to the values of the WorldRiskIndex 2012. In addition, per capita Gross Domestic Product (purchasing power parity) is lower than it was in the previous year. In the “high susceptibility” class, El Salvador has moved from 28.92 percent and rank 79 in the previous year to 29.50 percent and rank 71. This is due both

to an increase in the share of the population undernourished by 3.3 percent and to a rise in the proportion of the population living on less than 1.25 USD per day.

### The 15 countries with the highest susceptibility worldwide:

Country	Susceptibility (%)	Rank
Madagascar	67.42	1
Mozambique	65.54	2
Tanzania	65.05	3
Liberia	64.05	4
Chad	63.62	5
Zambia	62.94	6
Eritrea	62.98	7
Burundi	62.50	8
Haiti	61.64	9
Niger	61.26	10
Sierra Leone	60.68	11
Central African Republic	60.01	12
Comoros	59.98	13
Zimbabwe	58.12	14
Ethiopia	57.24	15

In contrast, according to the data available, the values for Niger and Armenia have improved. Following 64.87 and ranked fifth in 2012, the susceptibility value for Niger this year is at 61.26, and it is ranked tenth. However, this still leaves Niger in the class with “very high” susceptibility. The improvement in the value is mainly due to the decline in the proportion of the population undernourished (by 3.4 percent) and the fact that the proportion of the population living on less than USD 1.25 a day has fallen significantly (by 22.3 percent in comparison to the previous year). Armenia remains in the class of countries with “medium” susceptibility, but its value has dropped from 24.02 last year to 21.47, and it has risen by ten ranks. This is due to both a reduction in the share of the population undernourished and to a decrease in the share of people living on less than USD 1.25 per day. In addition, per capita Gross Domestic Product (purchasing power parity) has grown significantly.

## Lack of coping capacities

The cartographic representation of the lack of coping capacities (Map B2, left fold-out page of the cover) shows that countries with low capacities and resources for coping with a disaster event can be found predominantly in Asia and Africa, just like last year. A negative development in the value for the lack of coping capacities is particularly conspicuous in Zimbabwe. At 89.64, Zimbabwe is once again significantly worse off than it was in the previous year, at 87.74. This is predominantly due to poor values in the area of corruption and, in particular, in the area of healthcare.

### The 15 countries with the highest lack of coping capacities worldwide

Country	Lack of C. C. (%)	Rank
Afghanistan	93.44	1
Sudan	92.42	2
Chad	91.62	3
Zimbabwe	89.64	4
Haiti	89.63	5
Yemen	89.50	6
Guinea	89.39	7
Myanmar	89.11	8
Iraq	88.92	9
Central African Republic	88.62	10
Burundi	88.06	11
Guinea-Bissau	87.99	12
Nigeria	87.67	13
Eritrea	87.44	14
Côte d'Ivoire	87.13	15

Looking at all 173 countries, there have been individual major changes within the component of coping. For example, a significant worsening of coping capacities can be observed in Syria and Libya. In Syria, the value for the lack of coping capacities has risen by 1.61 points from 80.19 in 2012 to 81.80, and in Libya by 2.82 points, from 72.45 last year to 75.26. One of the reasons for these negative trends is an extreme worsening of the governance indicator “Good governance”. In comparison to the previous year for Syria, this indicator alone has moved from 85.9 points

previously to 94.5 points (higher values reflect worse situations). In the case of Libya, the indicator has even worsened by 61 ranks and by 61 points to 84.9 points.

In terms of the data available, Ethiopia has scored the highest positive jump, with its coping value rising by 8.29 percent. As a result, in the ranking of the lack of coping capacities, Ethiopia shifts back by 43 ranks and therefore moves out of the class of a “very high lack” from last year to the class of a “high lack”. One of the reasons for this is improved values in the area of corruption and healthcare (for example with regard to the number of hospital beds).

Within Europe, Moldova has improved by 4.34 points and by 13 ranks, which can be attributed to an improvement in the governance indicators of “Corruption” and “Good governance” as well as an increase in the “number of physicians per 10,000 inhabitants”. Thus Moldova is no longer among the countries with a “medium lack of coping capacities” but in the class with a “low lack”.

## Lack of adaptive capacities

The hotspot regions with regard to the lack of adaptive capacities (Map B3, left fold-out page of the cover) can be recognized in the Southeast Asian region and in Africa. Compared to the previous year, on the African continent, Burundi and Ghana have newly entered the class showing a “very high” lack of adaptive capacities, whereas Morocco has moved from the class of “very high” to the class of “high”.

Looking at all 173 countries, Saudi Arabia appears as a country with a high negative change in its adaptive capacities (from rank 103 at 44.78 percent in 2012 to rank 90 at 46.24 percent). One of the reasons for this is a reduction in combined gross school enrollment by 3.4 percent, a reduction in

gender parity in education and low public (19.3 percent less than in 2012) and private (26.3 percent less than in 2012) health expenditure. However, Saudi Arabia remains in the class of countries with a “medium” lack of adaptive capacities.

**The 15 countries with the highest lack of adaptive capacities worldwide**

Country	Lack of A. C. (%)	Rank
Afghanistan	76.11	1
Eritrea	72.57	2
Niger	71.76	3
Mali	69.25	4
Haiti	67.88	5
Chad	67.61	6
Pakistan	65.94	7
Sierra Leone	65.82	8
Mauritania	64.86	9
Burkina Faso	64.44	10
Guinea	63.88	11
Benin	63.54	12
Liberia	63.28	13
Nigeria	63.07	14
Comoros	63.00	15

In contrast, in the same class, the value and the rank of Nicaragua have seen significant improvements (from 48.21 and rank 77 in 2012 to 45.65 and rank 94), which is, among other factors, due to an increase in public and private health expenditure as well as improvements in “gender parity” thanks to a higher proportion of female representatives in parliament. In Europe, Turkey has improved from 49.40 and rank 69 in 2012 to 47.88 and rank 77. This development is based on an increase in combined gross school enrollment by five percent, a five-percent increase rise in the proportion of female representatives in parliament and higher public (19.8 percent more than 2012) and private (21.7 percent more than in 2012) health expenditure.

**Vulnerability**

On a worldwide scale, vulnerability is at its highest in Africa, followed by Southeast Asia and South Asia. These global distribution patterns of vulnerability are shown in the Vulnerability Map (Map B, right fold-out page of the cover). As a rule, the particularly vulnerable countries are also very highly susceptible while simultaneously bearing very low coping and adaptive capacities.

**The 15 countries with the highest vulnerability worldwide**

Country	Vuln. (%)	Rank
Afghanistan	75.41	1
Chad	74.28	2
Eritrea	74.23	3
Niger	73.21	4
Haiti	73.05	5
Sierra Leone	70.75	6
Liberia	70.31	7
Central African Republic	69.98	8
Mozambique	69.85	9
Guinea	69.20	10
Madagascar	69.18	11
Burundi	69.17	12
Nigeria	68.99	13
Mali	68.90	14
Comoros	68.56	15

**Exposure to natural hazards**

Since no updates on exposure were available, the World Map of Exposure (Map A, right fold-out page of the cover) shows the same hotspot regions as in 2012: Southeast Asia, Central America, the Pacific islands, parts of West Africa and Southeastern Europe and the countries along South America’s Pacific Coast. Therefore, the description in the WorldRisk Report 2012 (Welle et al. 2012) is recommended for a closer look at exposure to natural hazards.

## WorldRiskIndex

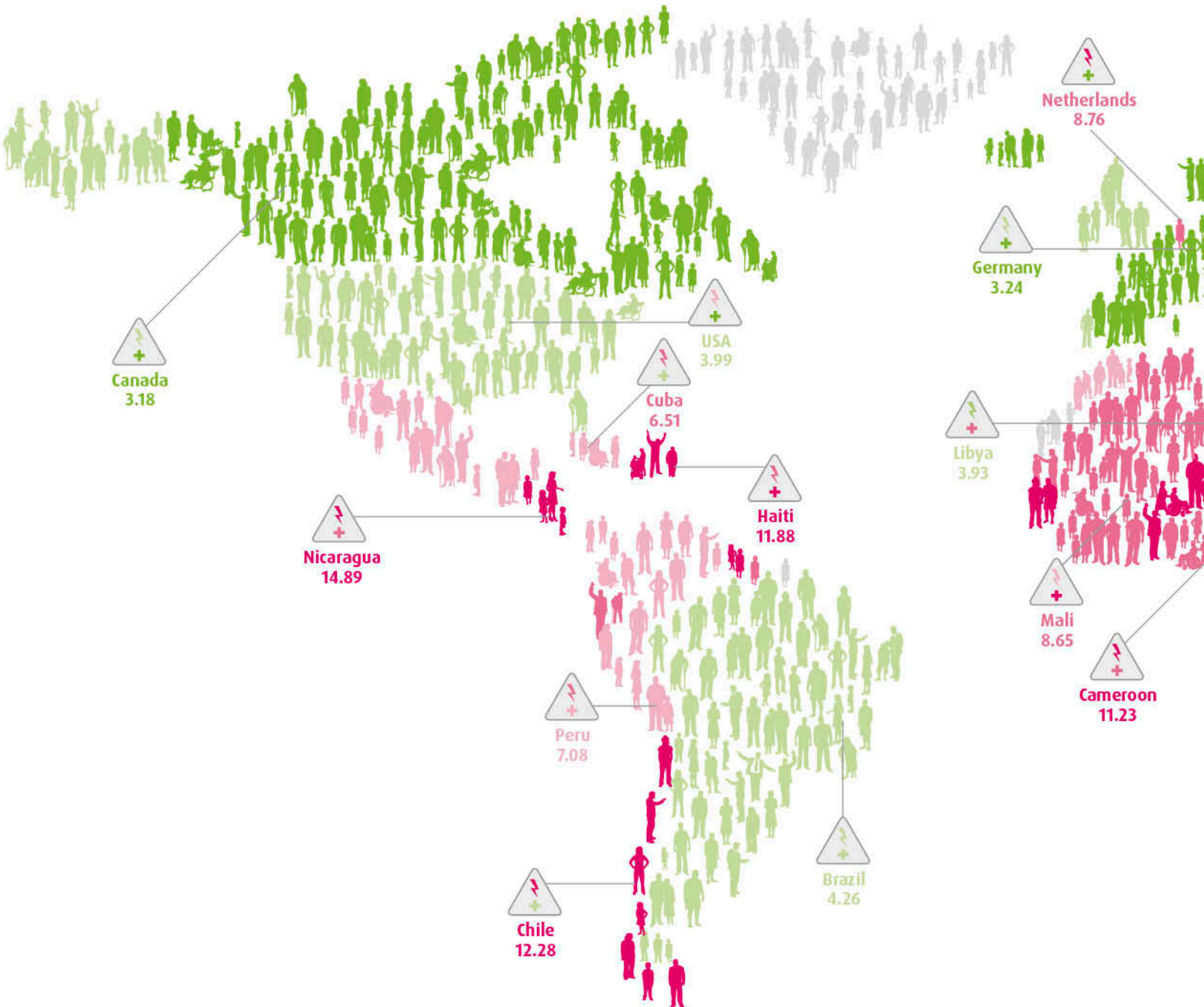
Just like in 2011 and 2012, the risk hotspot regions are in Oceania, Southeast Asia, Central America and the southern Sahel, where a high level of exposure to natural hazards and the impacts of climate change coincide with particularly vulnerable societies. The results of the individual values for 173 countries are listed in the two tables in the Annex. The graphic representations of the Index can be seen in Map C on the right fold-out page of the cover and on the World Map on pages 54 and 55.

Taking all 173 countries into account, a severe change for the worse becomes apparent for the Republic of the Congo, which has risen from 7.38 percent and rank 71 in the “medium” class to 7.57 percent, and hence ranked 64th, in the class with a “high” risk. Reasons for this include an increase in the proportion of the population undernourished and lower combined gross school enrollment. Ethiopia, however, can boast positive developments. It has risen from 7.81 points and rank 62 in 2012 to 7.38 points and rank 70, bringing it from the “high risk” class into the “medium risk” class. This is due to aspects such as improvements in the “governance” indicators and a rise in the adult literacy rate of ten percent. In Europe, the Netherlands has continued to worsen — although it is already ranked in the “high risk” class in any case. Having been at 8.49 points (rank 51) in 2012, the risk has now risen to 8.76 points (rank 46). The reasons for this are a worsening of coping capacities (e.g. “governance” indicators and per capita healthcare). In contrast, Bosnia and Herzegovina have improved from 6.63 points and rank 86 to 6.42 points and rank 91 within the “low risk” class, which, among other aspects, is due to improvements in the “governance” indicators and an increase in combined gross school enrollment.

The concept of the WorldRiskIndex shows that the risk of a country can be reduced by changes in vulnerability, i.e. in the societal sphere. For example, the results display that improvements in the “governance” indicators or, also, in the field of medical infrastructure, promote significant changes in coping capacities and hence reduce the index value for a country’s disaster risk. Recent international reports such as the Global Assessment Report 2013 (GAR) also show that e.g. improved healthcare facilities can reduce a country’s vulnerability and hence its overall level of risk (UNISDR, 2013).

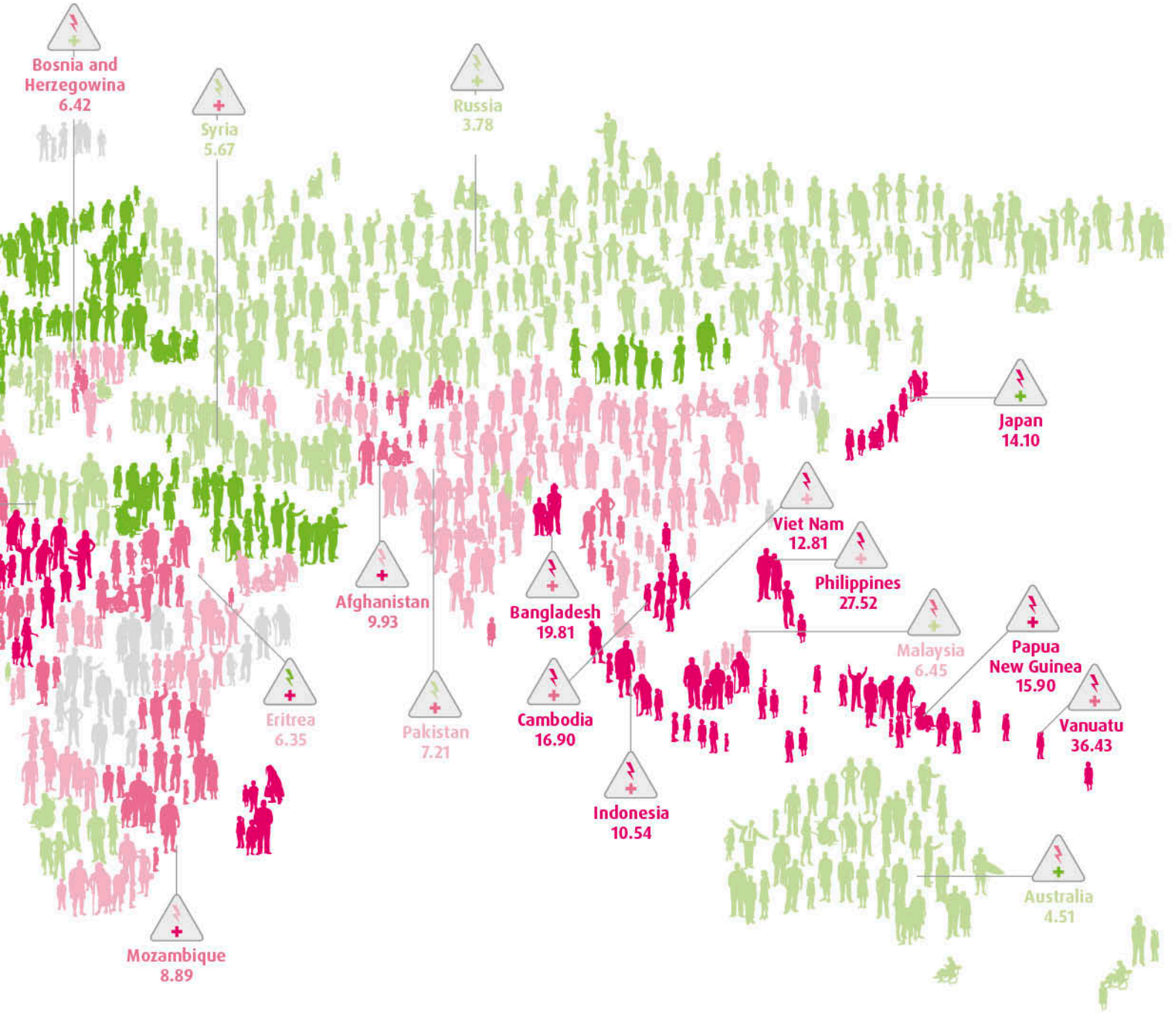
### The 15 countries that are most at risk worldwide

Country	Risk (%)	Rank
Vanuatu	36.43	1
Tonga	28.23	2
Philippines	27.52	3
Guatemala	20.88	4
Bangladesh	19.81	5
Solomon Islands	18.11	6
Costa Rica	16.94	7
Cambodia	16.90	8
El Salvador	16.85	9
Timor-Leste	16.37	10
Papua-New Guinea	15.90	11
Brunei Darussalam	15.80	12
Mauritius	15.18	13
Nicaragua	14.89	14
Japan	14.10	15



WorldRiskIndex (WRI)	Exposure	Vulnerability
very low 0.10 - 3.61	very low 0.28 - 9.12	very low 27.30 - 36.46
low 3.62 - 5.68	low 9.13 - 11.41	low 36.47 - 46.17
medium 5.69 - 7.43	medium 11.42 - 13.85	medium 46.18 - 52.46
high 7.44 - 10.37	high 13.86 - 17.45	high 52.47 - 63.45
very high 10.38 - 36.43	very high 17.46 - 63.66	very high 63.46 - 75.41
no data available	no data available	no data available





Country	WRI	⚡	+	Country	WRI	⚡	+	Country	WRI	⚡	+
Afghanistan	9.93 %	13.17 %	75.41 %	Japan	14.10 %	45.91 %	30.71 %	Netherlands	8.76 %	30.57 %	28.67 %
Australia	4.51 %	15.05 %	29.99 %	Cambodia	16.90 %	27.65 %	61.12 %	Pakistan	7.21 %	11.36 %	63.45 %
Bangladesh	19.81 %	31.70 %	62.50 %	Cameroon	11.23 %	18.19 %	61.71 %	Papua New Guinea	15.90 %	21.91 %	63.77 %
Bosnia and Herzeg.	6.42 %	14.02 %	45.78 %	Canada	3.18 %	10.25 %	31.02 %	Peru	7.08 %	14.40 %	49.17 %
Brazil	4.26 %	9.53 %	44.73 %	Cuba	6.51 %	17.45 %	29.35 %	Philippines	27.52 %	52.46 %	52.46 %
Chile	12.28 %	30.95 %	39.66 %	Libya	3.93 %	7.80 %	50.39 %	Russia	3.78 %	9.38 %	40.34 %
Germany	3.24 %	11.41 %	28.39 %	Malaysia	6.45 %	14.60 %	44.18 %	Syria	5.67 %	10.56 %	53.74 %
Eritrea	6.35 %	8.55 %	71.23 %	Mali	8.65 %	12.55 %	63.90 %	USA	3.99 %	12.25 %	32.57 %
Haiti	11.88 %	16.26 %	73.05 %	Mozambique	8.89 %	12.73 %	69.85 %	Vanuatu	36.43 %	63.66 %	57.23 %
Indonesia	10.54 %	19.38 %	54.46 %	Nicaragua	14.89 %	27.23 %	54.69 %	Vietnam	12.81 %	25.35 %	50.53 %

⚡ = Exposure + = Vulnerability

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## 4. What's missing: political determination and consistent implementation

Peter Mucke, Peter Schmitz

In all cultures and societies, health is a vital good of key significance to all people. Insufficient access to healthcare and prevention programs, poorly developed health promotion and a lack of infrastructure for the provision of water and sanitation already result in disease or even death in “normal times” — in disaster and crisis situations, things dramatically come to a head. Often, it is the poorest who become victims: the poorest of countries and the poorest in society. But among most national governments, as well as in the context of the international community, there has so far been a lack of consistent readiness to take action. Usually, responses are only triggered by disasters and crises, when there is extensive media reporting and the need for action can no longer be denied.



In the main, it is structural circumstances and a lack of willingness to spend money that are responsible worldwide, and in particular in the poorest countries, for the severe shortcomings in the health sector and in disaster prevention. These shortcomings cannot be eliminated merely by stepping up development aid. A new form of global health governance is needed at national, regional and international level – together with a coordinated, determined approach in implementing the international agreements and commitments.

- + Four essential political negotiation processes are relevant in this context that are all going to feed into respective world summits in 2015:
- + Post-2015 Process: discussion of a new global development agenda, preparation of follow-up agreements on the Millennium Development Goals (MDG) and compilation of Sustainable Development Goals (SDG)
- + World Climate Conference: negotiation of a Kyoto follow-up agreement
- + World Conference on Disaster Reduction:
- + follow-up agreement on the Hyogo Framework for Action
- + World Humanitarian Summit: discussion of general humanitarian aid issues.

### Post 2015: Comprehensive strengthening of health systems required

The internationally agreed Millennium Development Goals (MDG) come to an end in 2015, although they will continue to be an important reference frame in the Post-2015 Process. They have given important impetus to further developments in the field of health and healthcare. By defining measurable goals, at least as far as the verifiability of results is concerned, an important step has been taken in the right direction. The UN lists the following among successes achieved in implementation regarding health (UN 2013, abridged):

- + In the developing regions, the proportion of people having to survive on less than 1.25 dollars a day dropped from 47 to 22 percent between 1990 and 2010. Thus in 2010, around 700 million fewer people were living in extreme poverty than in 1990.
- + Over the last 21 years, more than 2.1 billion people gained access to improved sources of drinking water. The proportion of the population making use of such sources rose from 76 to 89 percent between 1990 and 2010.
- + Between 2000 and 2010, malaria mortality dropped worldwide by more than 25 percent. An estimated 1.1 million malaria fatalities were prevented in this period. By 2015, tuberculosis mortality is expected to have been halved in comparison to 1990 on a world scale and in several regions.
- + The proportion of undernourished people sank worldwide from 23.2 percent in the period of 1990-1992 to 14.9 percent in the period of 2010-2012.

Despite this, there continues to be an enormous need for action in the health sector (UN MDG 2013, abridged):

- + At 51 mortalities per 1,000 livebirths in 2011 (1990: 87), the mortality rate among children under the age of five years has dropped worldwide by 41 percent. However, this is not yet enough to reach the target of reducing child mortality by two thirds by 2015.
- + Worldwide, maternal mortality has dropped by 47 percent over the last two decades: from 400 mortalities per 100,000 livebirths in 1990 to 210 in 2010. However, the Millennium Goal target of reducing the rate by three quarters has not yet been reached.
- + Whereas the number of new infections had sunk, an estimated 34 million people were HIV-positive in late 2011.



- + From 1990 to 2011, an additional 1.9 billion people gained access to a latrine, flush toilet or other improved sanitary facilities. However, the Millennium Goal target has not been reached so far.
- + Areas where an urban-rural divide continues to exist include access to reproductive health and to clean drinking water. In 2011, in rural regions, just 53 percent of deliveries were performed by skilled medical personnel, compared to 84 percent in urban regions. Eighty-three percent of the population without access to an improved source of drinking water live in rural regions.
- + Stipulating the enforcement of access to effective, safe and high-quality health products and services for all in a new global agenda. This applies in particular to women and girls, and is aimed at further reductions in maternal and child mortalities as well as among the poorest and the most marginalized groups.
- + That indicators be developed with which the availability of appropriate resources for the treatment of all diseases, whether they be infectious or not, can be established in the development and extension of health systems.

The MDG were above all also criticized regarding a lack of financing regulations and an insufficient level of transparency. In addition, owing to the agreed, binding sub-targets, attention was often drawn more to individual aspects or segments rather than to a comprehensive understanding of health and health-care.

### Reminding international financiers of their duties

The Post-2015 Process has to link up with the goals achieved, taking the deficits already identified into consideration, but it simultaneously needs to reach beyond them. Regarding improvements in healthcare, especially also in crisis situations, a comprehensive approach is required to strengthen health systems.

On behalf of its member organizations, the development umbrella organization VENRO, to which the seven relief organizations of Alliance Development Works also belong, therefore demands in its latest policy paper (VENRO 2013):

- + “Enshrining the creation of effective and high-quality healthcare systems for all in the Development and Sustainability Agenda.

- + Adopting the human right to clean water and sanitation in a new framework.
- + That the targets and indicators consider barrier-free access to WASH at domestic level, in schools and health centers and at workplaces and the necessary links between WASH and other topics (health, education, gender, economic development and environmental protection) are reflected.
- + Making information and education activities on breaking taboos regarding sanitary care part of a new agenda so that the significance of hygiene can be understood by everyone.
- + Adopting a reduction of the disaster risk for particularly susceptible population strata and groups such as poor people, children and people with disabilities in the new agenda and establishing a strengthening of resilience as a goal.”

What will count is an accurate establishment of the responsibilities held by the international financiers, i.e. the national governments and the international institutions and thus providing for a democratic control of both financing and the implementation of the agreed measures. This has to be linked to a coordination of the measures between the financiers and the governments on the basis of what those concerned themselves deem necessary.

## Developing strategies against progressive climate change

Climate change has a wide range of impacts. While the types and the extent of these impacts are global, they may nevertheless differ within continents and, partly, within countries. It is undisputed that in particular the developing countries and the people living there are exposed to massive risks and are expected to bear the main burden of climate change. Climate change is also going to affect people's health, with direct and indirect impacts on:

- + disease patterns, incidence of diseases and causes of mortalities
- + food security and nutrition
- + water supply and sanitation
- + accommodation, settlement and the habitat available
- + frequency of extreme weather and climate events
- + flight and migration.

For example, rises in temperature and heatwaves have a direct impact on health. There is an increased incidence of cardiovascular problems or heatstrokes. Even in comparatively rich Europe, the heatwave in France in 2003 was already enough to stretch the country's healthcare to its limits. However, the health services in the developing countries are nowhere near as capable of caring for the additional patients in extreme weather events.

The increased occurrence of floods, cyclones or drought periods leads to a rise in infectious diseases because they often hit sanitary infrastructure and water supply for the population. For example, there will be an increased incidence of diarrhea and pneumonia if sanitation is insufficient (see Map of the World on pages 40/41). In addition, changes in weather conditions and temperature can result in carriers of diseases spreading and wandering to regions in which they were previously unknown.

This includes diseases transmitted by mosquitoes, such as dengue fever and malaria.

The health services therefore have to prepare for what are partly new disease patterns and, in some regions, an increased incidence of various different diseases. Preventive measures, hygiene, improvements in water supply and sanitation and the development of environmental medicine therefore gain considerable significance. Just like the present Millennium Goals, the new development goals that are to be agreed will be in jeopardy if climate change is not checked. Thus the 2015 Climate Conference belongs to the range of world summits that are highly relevant to health and healthcare.

## Equal access for all

In future, it has to be ensured internationally that equal access to healthcare is not influenced by economic and market interests. In 1978, the WHO adopted the Alma-Ata Declaration, in which participation and solidarity are established as principles and "Health for All" is demanded (WHO 1978). The central element referred to for this objective is Primary Health Care (PHC). This course was reaffirmed internationally by the WHO in 2008, in its "World Health Report: Primary Health Care – Now More Than Ever" (WHO 2008). This can be achieved locally if, as stipulated in the PHC approach, the population can codetermine and co-decide issues. In disaster aid, participatory approaches and cooperation with local organizations and groups can make a crucial contribution to involving victims as self-determined actors and decision-makers and to mobilizing and strengthening local resources. It is a global challenge to prevent dependence of decisions, including those made by the WHO, solely on the financially powerful donors. This applies both to the pharmaceutical industry and to private institutions such as the Bill & Melinda Gates Foundation.

## Millennium Development Goals



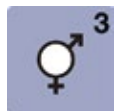
### 1 Eradicating extreme poverty and hunger

- Halving the share of people living on less than \$ 1.25 a day between 1990 and 2015
- Achieving full and productive employment and decent work for all, including women and young people
- Halving the share of people who suffer from hunger between 1990 and 2015



### 2 Achieving universal primary education

- Ensuring that all children, girls and boys, can complete a full course of primary schooling by 2015



### 3 Promoting gender equality and empowering women

- Eliminating gender disparity in primary and secondary education preferably by 2005, and at all education levels by 2015 at the latest



### 4 Reducing child mortality rates

- Reducing the under-five mortality rate by two-thirds between 1990 and 2015



### 5 Improving maternal health

- Reducing the maternal mortality ratio by three quarters between 1990 and 2015



### 6 Combating HIV/AIDS, malaria, and other diseases

- Having halted and begun to reverse the spread of HIV/AIDS by 2015
- Achieving universal access to treatment for HIV/AIDS for all those who need it by 2010
- Having halted and begun to reverse the incidence of malaria and other major diseases by 2015



### 7 Ensuring environmental sustainability

- Integrating the principles of sustainable development into country policies and programs and reversing the loss of environmental resources
- Reducing biodiversity loss, achieving a significant reduction in the rate of loss by 2010
- Halving the share of the population without sustainable access to safe drinking water and basic sanitation by 2015
- Having achieved a significant improvement in the lives of at least 100 million slum-dwellers by 2020



### 8 Developing a global partnership for development

- Addressing the special needs of the Least Developed Countries, the landlocked developing countries and the small island developing states
- Developing further an open, rule-based, predictable and non-discriminatory trading and financial system
- Dealing comprehensively with the debt problems of the developing countries
- Ensuring, in cooperation with the private sector, that the benefits of new technologies, especially information and communications technologies, are made available

## Health is a human right:

### Universal Declaration of Human Rights, Article 25

1. Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.

2. Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection.

(Resolution 217 A (III) of the United Nations General Assembly, December 10, 1948)

## Creating the necessary political framework

The impacts of crises and disasters are measured by the amount of victims, by how many are harmed by disease or injury and by how many lives have been claimed directly or indirectly. Today, standards are defined and backed by corresponding indicators and definitions on how healthcare can be ensured in disaster relief operations and in development cooperation. Health and nutritional status as well as the possible effects of deficiencies and deficits can be analyzed. In an acute disaster situation, this enables decisions to be taken on whether the provision of healthcare or, for example, water supply for the people corresponds to recognized minimum quantity and quality standards. Special measures can be derived from this in order to keep the number of sick or injured people at a minimum level. In addition, the indicators and standards are suitable for a forward-looking assessment of whether a society that comes into an emergency situation owing to crises or disasters will be able to cope with the ensuing problems and challenges.

So by and large, the methods are known. But political determination and consistent implementation are still lacking. This applies not only to the area of disaster relief. As a whole, both humanitarian aid and development cooperation are falling short of needs at present. Selective changes and selective aid may be achieved, but the need to take political action reaches much further. Far-reaching problems have to be solved, and this requires that fundamental political decisions be taken. Those who only think in the category of individual disasters and crises have the necessary measures at their disposal to address them. Risk and need analyses are familiar and suitable instruments that are widely made use of. But

all too often, this only happens in individual sectors. The measures taken in the event of crises and disasters are often fragmented and are carried out in a multitude of projects which, as a rule, lack coordinating. But successful disaster risk reduction, prevention and planning of adaptation call for a comprehensive approach. And they require binding international framework conditions. What is needed is development oriented on sustainability that not only combats symptoms but addresses the causes and does not eclipse critical issues: basic security benefiting everyone — comprehensive social security systems — abandoning the pursuit of profit in the health sector — global burden sharing of health financing.

## Health is a human right

The discussion in international bodies on health as a public good that has to be protected is nothing new. On the 10th December 1948, the UN General Assembly also adopted the right to health in the context of the Universal Declaration of Human Rights (UN 1948). This UN resolution continues to be the central reference frame for demands on national governments and international institutions. And today, the human right to health is still being violated in many places throughout the world, and in many ways. Asserting this human right — just like the rights to food and access to drinking water and sanitation in this context — continues to be on the agenda.



Country	WRI	Rank	Country	WRI	Rank	Country	WRI	Rank	Country	WRI	Rank
Afghanistan	9.93	39.	Eritrea	6.35	92.	Mauritania	8.26	53.	Thailand	6.34	94.
Albania	10.01	37.	Estonia	2.52	158.	Mauritius	15.18	13.	The former Yugoslav Republic of Macedonia	6.19	96.
Algeria	8.13	54.	Ethiopia	7.38	70.	Mexico	6.39	92.	Timor-Leste	16.37	10.
Angola	6.48	89.	Fiji	13.56	16.	Mongolia	3.10	150.	Togo	10.34	36.
Argentina	3.76	133.	Finland	2.28	163.	Morocco	7.13	75.	Tonga	28.23	2.
Armenia	6.97	79.	France	2.79	152.	Mozambique	8.89	44.	Trinidad and Tobago	7.65	63.
Australia	4.51	119.	Gabon	5.93	99.	Myanmar	9.10	42.	Tunisia	5.90	100.
Austria	3.80	132.	Gambia	11.71	22.	Namibia	5.68	104.	Turkey	5.52	106.
Azerbaijan	6.28	95.	Georgia	6.83	82.	Nepal	5.53	106.	Turkmenistan	6.57	86.
Bahamas	3.99	126.	Germany	3.24	146.	Netherlands	8.76	46.	Uganda	6.69	83.
Bahrain	1.81	166.	Ghana	8.81	45.	New Zealand	4.69	118.	Ukraine	3.14	149.
Bangladesh	19.81	5.	Greece	7.36	71.	Nicaragua	14.89	14.	United Arab Emirates	2.10	165.
Barbados	1.16	171.	Grenada	1.44	169.	Niger	11.62	24.	United Kingdom	3.71	135.
Belarus	3.31	145.	Guatemala	20.88	4.	Nigeria	8.32	52.	United Republic of Tanzania	7.99	56.
Belgium	3.42	142.	Guinea	8.32	51.	Norway	2.35	161.	United States	3.99	127.
Belize	6.62	84.	Guinea-Bissau	13.09	17.	Oman	2.74	154.	Uruguay	4.09	125.
Benin	11.32	25.	Guyana	11.65	23.	Pakistan	7.21	73.	Uzbekistan	8.66	47.
Bhutan	7.98	57.	Haiti	11.88	21.	Panama	7.49	67.	Vanuatu	36.43	1.
Bolivia	5.08	109.	Honduras	10.91	31.	Papua New Guinea	15.90	11.	Venezuela	6.16	97.
Bosnia and Herzegovina	6.42	91.	Hungary	5.69	103.	Paraguay	3.85	129.	Viet Nam	12.81	18.
Botswana	5.37	108.	Iceland	1.55	168.	Peru	7.08	77.	Yemen	6.03	98.
Brazil	4.26	123.	India	7.17	74.	Philippines	27.52	3.	Zambia	7.46	68.
Brunei Darussalam	15.80	12.	Indonesia	10.54	33.	Poland	3.46	141.	Zimbabwe	9.96	38.
Bulgaria	4.43	122.	Iran	4.92	113.	Portugal	3.80	131.			
Burkina Faso	9.72	41.	Iraq	4.83	116.	Qatar	0.10	173.			
Burundi	10.46	34.	Ireland	4.69	117.	Republic of Moldova	5.05	111.			
Cambodia	16.90	8.	Israel	2.49	160.	Romania	6.61	85.			
Cameroon	11.23	27.	Italy	4.88	115.	Russia	3.78	133.			
Canada	3.18	147.	Jamaica	12.15	20.	Rwanda	7.43	69.			
Cape Verde	10.80	32.	Japan	14.10	15.	Samoa	4.51	120.			
Central African Republic	6.57	86.	Jordan	4.88	114.	Sao Tome and Principe	3.35	143.			
Chad	11.06	29.	Kazakhstan	3.84	130.	Saudi Arabia	1.32	170.			
Chile	12.28	19.	Kenya	7.02	78.	Senegal	10.99	30.			
China	6.91	80.	Kiribati	1.78	167.	Serbia	7.53	65.			
Colombia	6.90	81.	Korea, Republic of	4.94	112.	Seychelles	2.58	157.			
Comoros	7.52	66.	Kuwait	3.70	136.	Sierra Leone	10.37	35.			
Congo	7.57	64.	Kyrgyzstan	8.43	50.	Singapore	2.49	159.			
Costa Rica	16.94	7.	Lao People's Democratic Republic	5.71	102.	Slovakia	3.63	138.			
Cote d'Ivoire	8.96	43.	Latvia	3.48	140.	Slovenia	3.69	137.			
Croatia	4.24	124.	Lebanon	5.05	110.	Solomon Islands	18.11	6.			
Cuba	6.51	88.	Lesotho	7.09	76.	South Africa	5.80	100.			
Cyprus	2.77	153.	Liberia	7.71	60.	Spain	3.38	143.			
Czech Republic	3.61	139.	Libyan Arab Jamahiriya	3.93	128.	Sri Lanka	7.67	61.			
Denmark	3.10	151.	Lithuania	3.18	148.	Sudan	7.87	58.			
Djibouti	9.84	40.	Luxembourg	2.68	155.	Suriname	8.55	49.			
Dominican Republic	11.28	26.	Madagascar	11.09	28.	Swaziland	7.65	62.			
Ecuador	7.77	59.	Malawi	8.02	55.	Sweden	2.26	164.			
Egypt	2.34	162.	Malaysia	6.45	89.	Switzerland	2.61	156.			
El Salvador	16.85	9.	Mali	8.65	48.	Syrian Arab Rep.	5.67	105.			
Equatorial Guinea	4.49	121.	Malta	0.61	172.	Tajikistan	7.35	72.			

**Countries not listed in the WorldRiskIndex**

Andorra
Antigua and Barbuda
Dem. People's Republic of Korea
Democratic Republic of the Congo
Dominica
Federated States of Micronesia
Liechtenstein
Maldives
Marshall Islands
Monaco
Montenegro
Nauru
Palau
San Marino
Somalia
South Sudan
St. Kitts and Nevis
St. Lucia
St. Vincent and the Grenadines
Tuvalu

Rank	Country	WorldRiskIndex	Exposure	Vulnerability	Susceptibility	Lack of coping capacities	Lack of adaptive capacities
1.	Vanuatu	36.43 %	63.66 %	57.23 %	34.66 %	81.27 %	55.77 %
2.	Tonga	28.23 %	55.27 %	51.07 %	27.72 %	80.56 %	44.94 %
3.	Philippines	27.52 %	52.46 %	52.46 %	33.74 %	80.47 %	43.16 %
4.	Guatemala	20.88 %	36.30 %	57.53 %	38.57 %	80.80 %	53.21 %
5.	Bangladesh	19.81 %	31.70 %	62.50 %	40.92 %	86.23 %	60.34 %
6.	Solomon Islands	18.11 %	29.98 %	60.40 %	43.96 %	84.15 %	53.09 %
7.	Costa Rica	16.94 %	42.61 %	39.75 %	21.58 %	64.10 %	33.58 %
8.	Cambodia	16.90 %	27.65 %	61.12 %	43.47 %	86.60 %	53.28 %
9.	El Salvador	16.85 %	32.60 %	51.69 %	29.50 %	75.69 %	49.88 %
10.	Timor-Leste	16.37 %	25.73 %	63.61 %	52.16 %	79.36 %	59.31 %
11.	Papua New Guinea	15.90 %	24.94 %	63.77 %	51.22 %	83.99 %	56.10 %
12.	Brunei Darussalam	15.80 %	41.10 %	38.44 %	14.48 %	64.69 %	36.15 %
13.	Mauritius	15.18 %	37.35 %	40.64 %	18.96 %	60.61 %	42.35 %
14.	Nicaragua	14.89 %	27.23 %	54.69 %	37.09 %	81.32 %	45.65 %
15.	Japan	14.10 %	45.91 %	30.71 %	16.84 %	40.08 %	35.22 %
16.	Fiji	13.56 %	27.71 %	48.93 %	26.14 %	75.30 %	45.35 %
17.	Guinea-Bissau	13.09 %	19.65 %	66.58 %	53.39 %	87.99 %	58.36 %
18.	Viet Nam	12.81 %	25.35 %	50.53 %	28.08 %	76.71 %	46.80 %
19.	Chile	12.28 %	30.95 %	39.66 %	20.71 %	58.65 %	39.63 %
20.	Jamaica	12.15 %	25.82 %	47.07 %	27.10 %	72.09 %	42.01 %
21.	Haiti	11.88 %	16.26 %	73.05 %	61.64 %	89.63 %	67.88 %
22.	Gambia	11.71 %	19.29 %	60.69 %	42.31 %	82.39 %	57.38 %
23.	Guyana	11.65 %	22.90 %	50.87 %	28.69 %	79.37 %	44.54 %
24.	Niger	11.62 %	15.87 %	73.21 %	61.26 %	86.62 %	71.76 %
25.	Benin	11.32 %	17.06 %	66.34 %	53.29 %	82.20 %	63.54 %
26.	Dominican Republic	11.28 %	23.14 %	48.74 %	28.31 %	73.06 %	44.86 %
27.	Cameroon	11.23 %	18.19 %	61.71 %	41.30 %	84.97 %	58.87 %
28.	Madagascar	11.09 %	16.03 %	69.18 %	67.42 %	82.68 %	57.43 %
29.	Chad	11.06 %	14.89 %	74.28 %	63.62 %	91.62 %	67.61 %
30.	Senegal	10.99 %	17.57 %	62.55 %	46.54 %	81.29 %	59.83 %
31.	Honduras	10.91 %	20.01 %	54.51 %	35.59 %	81.80 %	46.15 %
32.	Cape Verde	10.80 %	20.26 %	53.31 %	35.53 %	69.98 %	54.41 %
33.	Indonesia	10.54 %	19.36 %	54.46 %	33.01 %	81.79 %	48.57 %
34.	Burundi	10.46 %	15.13 %	69.17 %	62.50 %	88.06 %	56.94 %
35.	Sierra Leone	10.37 %	14.65 %	70.75 %	60.68 %	85.73 %	65.82 %
36.	Togo	10.34 %	15.56 %	66.49 %	52.49 %	85.01 %	61.96 %
37.	Albania	10.01 %	21.25 %	47.09 %	20.67 %	74.74 %	45.87 %
38.	Zimbabwe	9.96 %	14.96 %	66.60 %	58.12 %	89.64 %	52.05 %
39.	Afghanistan	9.93 %	13.17 %	75.41 %	56.67 %	93.44 %	76.11 %
40.	Djibouti	9.84 %	16.34 %	60.22 %	39.49 %	81.78 %	59.38 %
41.	Burkina Faso	9.72 %	14.32 %	67.86 %	55.60 %	83.53 %	64.44 %
42.	Myanmar	9.10 %	14.87 %	61.22 %	36.65 %	89.11 %	57.89 %
43.	Cote d'Ivoire	8.96 %	13.67 %	65.58 %	48.58 %	87.13 %	61.02 %
44.	Mozambique	8.89 %	12.73 %	69.85 %	65.54 %	83.88 %	60.13 %
45.	Ghana	8.81 %	14.48 %	60.79 %	46.65 %	77.58 %	58.15 %
46.	Netherlands	8.76 %	30.57 %	28.67 %	14.03 %	42.16 %	29.82 %
47.	Uzbekistan	8.66 %	16.18 %	53.52 %	31.39 %	78.07 %	51.11 %
48.	Mali	8.65 %	12.55 %	68.90 %	55.80 %	81.66 %	69.25 %
49.	Suriname	8.55 %	18.12 %	47.20 %	29.19 %	70.73 %	41.68 %
50.	Kyrgyzstan	8.43 %	16.63 %	50.71 %	27.20 %	76.28 %	48.64 %
51.	Guinea	8.32 %	12.03 %	69.20 %	54.33 %	89.39 %	63.88 %
52.	Nigeria	8.32 %	12.06 %	68.99 %	56.22 %	87.67 %	63.07 %
53.	Mauritania	8.26 %	12.47 %	66.19 %	48.77 %	84.95 %	64.86 %
54.	Algeria	8.13 %	15.82 %	51.39 %	23.04 %	77.36 %	53.77 %
55.	Malawi	8.02 %	12.34 %	65.00 %	55.76 %	83.07 %	56.17 %
56.	United Republic of Tanzania	7.99 %	12.01 %	66.49 %	65.05 %	82.64 %	51.80 %
57.	Bhutan	7.98 %	14.81 %	53.89 %	32.41 %	75.44 %	53.82 %
58.	Sudan	7.87 %	11.86 %	66.40 %	51.33 %	92.42 %	55.45 %
59.	Ecuador	7.77 %	16.15 %	48.14 %	27.00 %	74.72 %	42.69 %

Rank	Country	WorldRiskIndex	Exposure	Vulnerability	Susceptibility	Lack of coping capacities	Lack of adaptive capacities
60.	Liberia	7.71 %	10.96 %	70.31 %	64.05 %	83.59 %	63.28 %
61.	Sri Lanka	7.67 %	14.79 %	51.83 %	27.33 %	78.70 %	49.46 %
62.	Swaziland	7.65 %	12.76 %	59.95 %	44.89 %	80.84 %	54.14 %
63.	Trinidad and Tobago	7.65 %	17.54 %	43.60 %	18.81 %	69.54 %	42.45 %
64.	Congo	7.57 %	11.65 %	64.96 %	55.63 %	85.28 %	53.99 %
65.	Serbia	7.53 %	18.05 %	41.75 %	18.67 %	66.96 %	39.61 %
66.	Comoros	7.52 %	10.97 %	68.56 %	59.98 %	82.70 %	63.00 %
67.	Panama	7.49 %	16.45 %	45.50 %	27.97 %	67.15 %	41.37 %
68.	Zambia	7.46 %	11.37 %	65.67 %	62.94 %	80.38 %	53.68 %
69.	Rwanda	7.43 %	11.98 %	62.01 %	55.98 %	79.15 %	50.91 %
70.	Ethiopia	7.38 %	11.12 %	66.37 %	57.24 %	80.05 %	61.82 %
71.	Greece	7.36 %	21.11 %	34.88 %	16.89 %	52.01 %	35.74 %
72.	Tajikistan	7.35 %	12.98 %	56.64 %	35.61 %	76.96 %	57.35 %
73.	Pakistan	7.21 %	11.36 %	63.45 %	37.69 %	86.72 %	65.94 %
74.	India	7.17 %	11.94 %	60.06 %	39.31 %	80.31 %	60.55 %
75.	Morocco	7.13 %	13.25 %	53.80 %	28.97 %	75.82 %	56.61 %
76.	Lesotho	7.09 %	11.40 %	62.24 %	50.97 %	79.35 %	56.39 %
77.	Peru	7.08 %	14.40 %	49.17 %	29.48 %	73.97 %	44.06 %
78.	Kenya	7.02 %	10.69 %	65.73 %	55.94 %	85.40 %	55.85 %
79.	Armenia	6.97 %	14.51 %	48.04 %	21.47 %	71.29 %	51.36 %
80.	China	6.91 %	14.43 %	47.87 %	27.93 %	70.03 %	45.64 %
81.	Colombia	6.90 %	13.84 %	49.90 %	28.97 %	78.33 %	42.41 %
82.	Georgia	6.83 %	14.69 %	46.54 %	27.37 %	63.89 %	48.36 %
83.	Uganda	6.69 %	10.16 %	65.82 %	56.38 %	87.00 %	54.09 %
84.	Belize	6.62 %	13.31 %	49.70 %	28.10 %	74.23 %	46.76 %
85.	Romania	6.61 %	15.77 %	41.95 %	21.84 %	61.31 %	42.71 %
86.	Turkmenistan	6.57 %	13.19 %	49.83 %	25.98 %	75.80 %	47.71 %
87.	Central African Republic	6.57 %	9.39 %	69.98 %	60.01 %	88.62 %	61.32 %
88.	Cuba	6.51 %	17.45 %	37.33 %	19.15 %	57.04 %	35.79 %
89.	Angola	6.48 %	10.18 %	63.68 %	54.20 %	84.73 %	52.12 %
90.	Malaysia	6.45 %	14.60 %	44.18 %	20.60 %	68.35 %	43.57 %
91.	Bosnia and Herzegovina	6.42 %	14.02 %	45.78 %	19.33 %	69.88 %	48.13 %
92.	Mexico	6.39 %	13.84 %	46.17 %	23.05 %	72.32 %	43.14 %
93.	Eritrea	6.35 %	8.55 %	74.23 %	62.68 %	87.44 %	72.57 %
94.	Thailand	6.34 %	13.70 %	46.26 %	20.71 %	75.53 %	42.53 %
95.	Azerbaijan	6.28 %	13.16 %	47.72 %	22.94 %	71.16 %	49.06 %
96.	The former Yugoslav Republic of Macedonia	6.19 %	14.38 %	43.01 %	20.59 %	64.70 %	43.75 %
97.	Venezuela	6.16 %	13.15 %	46.85 %	23.50 %	74.84 %	42.22 %
98.	Yemen	6.03 %	9.04 %	66.67 %	48.40 %	89.50 %	62.12 %
99.	Gabon	5.93 %	11.95 %	49.63 %	33.03 %	74.61 %	41.24 %
100.	Tunisia	5.90 %	12.45 %	47.37 %	22.53 %	72.08 %	47.50 %
101.	South Africa	5.80 %	12.08 %	48.07 %	29.52 %	69.25 %	45.44 %
102.	Lao People's Democratic Republic	5.71 %	9.55 %	59.86 %	42.29 %	86.17 %	51.13 %
103.	Hungary	5.69 %	15.61 %	36.43 %	16.08 %	52.19 %	41.01 %
104.	Namibia	5.68 %	10.41 %	54.56 %	45.84 %	71.12 %	46.72 %
105.	Syrian Arab Republic	5.67 %	10.56 %	53.74 %	25.65 %	81.80 %	53.77 %
106.	Nepal	5.53 %	9.16 %	60.43 %	43.56 %	81.51 %	56.23 %
107.	Turkey	5.52 %	12.25 %	45.06 %	19.38 %	67.94 %	47.88 %
108.	Botswana	5.37 %	10.55 %	50.83 %	36.38 %	67.56 %	48.55 %
109.	Bolivia	5.08 %	8.98 %	56.64 %	43.58 %	78.76 %	47.60 %
110.	Lebanon	5.05 %	11.14 %	45.35 %	20.18 %	68.69 %	47.17 %
111.	Republic of Moldova	5.05 %	11.11 %	45.45 %	23.32 %	66.49 %	46.54 %
112.	Korea, Republic of	4.94 %	14.89 %	33.19 %	14.34 %	47.05 %	38.18 %
113.	Iran	4.92 %	10.19 %	48.25 %	18.40 %	79.08 %	47.26 %
114.	Jordan	4.88 %	10.53 %	46.33 %	24.05 %	67.95 %	47.00 %
115.	Italy	4.88 %	13.85 %	35.22 %	16.11 %	56.07 %	33.49 %
116.	Iraq	4.83 %	8.08 %	59.79 %	34.31 %	88.92 %	56.14 %
117.	Ireland	4.69 %	14.74 %	31.85 %	15.19 %	46.26 %	34.10 %

Rank	Country	WorldRiskIndex	Exposure	Vulnerability	Susceptibility	Lack of coping capacities	Lack of adaptive capacities
118.	New Zealand	4.69 %	15.44 %	30.38 %	16.13 %	44.57 %	30.46 %
119.	Australia	4.51 %	15.05 %	29.99 %	14.36 %	40.84 %	34.76 %
120.	Samoa	4.51 %	9.10 %	49.58 %	27.77 %	73.12 %	47.84 %
121.	Equatorial Guinea	4.49 %	8.22 %	54.62 %	29.25 %	84.89 %	49.72 %
122.	Bulgaria	4.43 %	11.66 %	38.03 %	16.85 %	56.81 %	40.42 %
123.	Brazil	4.26 %	9.53 %	44.73 %	25.45 %	67.04 %	41.71 %
124.	Croatia	4.24 %	11.53 %	36.81 %	17.27 %	57.36 %	35.79 %
125.	Uruguay	4.09 %	11.10 %	36.84 %	20.57 %	50.87 %	39.09 %
126.	Bahamas	3.99 %	10.71 %	37.26 %	16.79 %	53.28 %	41.73 %
127.	United States	3.99 %	12.25 %	32.57 %	16.76 %	48.78 %	32.17 %
128.	Libyan Arab Jamahiriya	3.93 %	7.80 %	50.39 %	24.48 %	75.26 %	51.42 %
129.	Paraguay	3.85 %	7.03 %	54.71 %	35.02 %	78.72 %	50.40 %
130.	Kazakhstan	3.84 %	9.11 %	42.20 %	18.50 %	62.30 %	45.81 %
131.	Portugal	3.80 %	10.93 %	34.77 %	17.27 %	48.51 %	38.52 %
132.	Austria	3.80 %	13.60 %	27.93 %	13.57 %	37.63 %	32.61 %
133.	Russia	3.78 %	9.38 %	40.34 %	21.12 %	58.80 %	41.09 %
134.	Argentina	3.76 %	9.55 %	39.38 %	22.70 %	59.81 %	35.65 %
135.	United Kingdom	3.71 %	11.60 %	32.00 %	15.71 %	47.88 %	32.40 %
136.	Kuwait	3.70 %	9.04 %	40.90 %	12.48 %	66.10 %	44.13 %
137.	Slovenia	3.69 %	11.59 %	31.80 %	14.41 %	50.51 %	30.48 %
138.	Slovakia	3.63 %	10.21 %	35.59 %	13.85 %	55.81 %	37.09 %
139.	Czech Republic	3.61 %	10.82 %	33.40 %	14.46 %	50.15 %	35.61 %
140.	Latvia	3.48 %	9.26 %	37.57 %	20.68 %	57.44 %	34.59 %
141.	Poland	3.46 %	9.79 %	35.35 %	17.19 %	54.43 %	34.44 %
142.	Belgium	3.42 %	11.66 %	29.35 %	14.98 %	41.05 %	32.01 %
143.	Spain	3.38 %	10.23 %	33.00 %	15.25 %	49.68 %	34.08 %
144.	Sao Tome and Principe	3.35 %	5.81 %	57.71 %	46.09 %	75.04 %	51.99 %
145.	Belarus	3.31 %	8.46 %	39.17 %	16.76 %	61.40 %	39.34 %
146.	Germany	3.24 %	11.41 %	28.39 %	14.56 %	38.09 %	32.52 %
147.	Canada	3.18 %	10.25 %	31.02 %	14.34 %	45.37 %	33.35 %
148.	Lithuania	3.18 %	8.88 %	35.78 %	19.98 %	51.66 %	35.72 %
149.	Ukraine	3.14 %	7.50 %	41.92 %	19.21 %	61.55 %	45.00 %
150.	Mongolia	3.10 %	6.52 %	47.60 %	33.62 %	65.35 %	43.82 %
151.	Denmark	3.10 %	10.87 %	28.54 %	14.37 %	39.91 %	31.34 %
152.	France	2.79 %	9.25 %	30.11 %	15.45 %	42.74 %	32.13 %
153.	Cyprus	2.77 %	7.44 %	37.25 %	13.95 %	56.27 %	41.54 %
154.	Oman	2.74 %	6.41 %	42.68 %	17.52 %	63.74 %	46.78 %
155.	Luxembourg	2.68 %	9.12 %	29.33 %	11.58 %	41.98 %	34.44 %
156.	Switzerland	2.61 %	9.56 %	27.30 %	13.86 %	37.75 %	30.29 %
157.	Seychelles	2.58 %	5.99 %	43.14 %	20.74 %	63.06 %	45.62 %
158.	Estonia	2.52 %	7.23 %	34.81 %	17.84 %	52.24 %	34.35 %
159.	Singapore	2.49 %	7.82 %	31.84 %	14.01 %	48.47 %	33.04 %
160.	Israel	2.49 %	6.41 %	38.89 %	18.61 %	59.87 %	38.19 %
161.	Norway	2.35 %	8.58 %	27.38 %	13.74 %	39.78 %	28.62 %
162.	Egypt	2.34 %	4.72 %	49.51 %	21.99 %	76.47 %	50.07 %
163.	Finland	2.28 %	8.19 %	27.80 %	14.82 %	39.13 %	29.44 %
164.	Sweden	2.26 %	7.97 %	28.40 %	14.39 %	41.38 %	29.44 %
165.	United Arab Emirates	2.10 %	5.93 %	35.47 %	10.54 %	56.14 %	39.74 %
166.	Bahrain	1.81 %	4.27 %	42.37 %	13.91 %	64.81 %	48.39 %
167.	Kiribati	1.78 %	3.05 %	58.48 %	42.90 %	82.49 %	50.06 %
168.	Iceland	1.55 %	5.67 %	27.35 %	14.34 %	40.19 %	27.52 %
169.	Grenada	1.44 %	3.13 %	46.18 %	24.76 %	69.12 %	44.65 %
170.	Saudi Arabia	1.32 %	2.93 %	44.83 %	17.73 %	70.53 %	46.24 %
171.	Barbados	1.16 %	3.46 %	33.40 %	15.20 %	49.91 %	35.10 %
172.	Malta	0.61 %	1.65 %	37.01 %	14.36 %	53.13 %	43.55 %
173.	Qatar	0.10 %	0.28 %	36.46 %	9.50 %	56.15 %	43.73 %



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