BRIEFING PAPER

Global Climate Risk Index 2014

Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2012 and 1993 to 2012

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GERMANWATCH

Summary

The Global Climate Risk Index 2014 analyses to what extent countries have been affected by the impacts of weather-related loss events (storms, floods, heat waves etc.). The most recent data available—from 2012 and 1993–2012—were taken into account.

The countries affected most in 2012 were Haiti, the Philippines and Pakistan. For the period from 1993 to 2012 Honduras, Myanmar and Haiti rank highest.

This year's 9th edition of the analysis reconfirms that according to the Climate Risk Index less developed countries are generally more affected than industrialised countries. Regarding future climate change, the Climate Risk Index may serve as a red flag for already existing vulnerability that may further increase in regions, where extreme events will become more frequent or more severe due to climate change. While some vulnerable developing countries are frequently hit by extreme events, there are also some others where such disasters are a rare occurence.

The climate summit 2013 held in Warsaw, Poland, is a defining moment and should mark a turning point for the international community by starting immediately to scale-up its response in addressing climate change and the increasing loss and damage. The window of time to put the world on track to stay below the 2°C guardrail is closing rapidly, and Warsaw must trigger new dynamics.

Imprint

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Editing: Birgit Kolboske, Daniela Baum and Gerold Kier

Germanwatch thanks Munich RE (in particular Petra Löw and Jakob Alfredo) for their support (especially the provision of the core data which are the basis for the Global Climate Risk Index).

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November 2013

Purchase order number: 14-2-01e

ISBN 978-3-943704-14-3

This publication can be downloaded at: **www.germanwatch.org/en/cri**

Prepared with financial support from the German Federal Ministry for Economic Cooperation and Development (BMZ).

BMZ Federal Ministry for Economic Cooperation and Development

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Content

How to read the Global Climate Risk Index

The Germanwatch Global Climate Risk Index is an analysis based on one of the most reliable data sets available on the impacts of extreme weather events and associated socio-economic data. The Germanwatch Climate Risk Index 2014 is the 9th edition of the annual analysis. It represents one important piece in the overall, more comprehensive puzzle of climate-related impacts and associated vulnerabilities, but for example does not take into account other important aspects such as sea-level rise, glacier melting or more acid and warmer seas. It is based on past data and should not be used for a linear projection of future climate impacts. Also, it is important to note that—due to methodological reasons—a single extreme event cannot be solely attributed to anthropogenic climate change. Nevertheless, climate change is an increasingly important factor for changing the odds of occurrence and intensity of these events. There is an increasing number of particularly extreme weather events (such as the 2010 Russian heat wave and 2010 Pakistan flood) that scientists too have at least partially attributed to the influence of climate change.

The Climate Risk Index thus indicates a level of exposure and vulnerability to extreme events that countries should understand as warning to be prepared for more frequent and/or more severe events in the future. Due to the limitations of available data, particularly long-term comparative including socio-economic data, some very small countries, such as certain small island states, are not included in this analysis. Moreover the data only reflects the *direct* impacts (direct losses and fatalities) of extreme weather events, whereas for example heat waves—which are a frequent occurrence in African countries—often lead to much stronger *indirec*t impacts (e.g. as a result of droughts and food scarcity). Finally, it does not include the total number of affected people (in addition to the fatal casualties), since the comparability of such data is very limited.

Key messages

- According to the Germanwatch Global Climate Risk Index Honduras, Myanmar and Haiti were the countries affected most by extreme weather events between 1993 and 2012.
- From the ten most affected countries (1993–2012) eight were developing countries in the low-income or lower-middle income country group, while two belong to the upper-middle income countries.
- Altogether more than 530,000 people died as a direct result of approx. 15,000 extreme weather events, and losses between 1993 and 2012 amounted to more than 2.5 trillion USD (in PPP;[1] USD 1.75 trillion overall losses in original values).
- In 2012, Haiti, the Philippines and Pakistan led the list of the most affected countries.
- The 2012 droughts and floods in large areas of the Balkan, eastern Europe and southern Russia in the aftermath of the unparalleled 2010 wildfires have proven the climate vulnerability of the region that hosts the 2013 Climate Change Conference (COP 19 in Warsaw). This should serve as a wake-up call for the region to ramp up its domestic and international climate policy positions.
- The Warsaw Summit provides the opportunity to further detail the adaptation implementation by determining the role of adaptation in the 2015 agreement and by renewing the international adaptation knowledge management.
- In Warsaw the Parties will discuss how to institutionalise the loss and damage agenda. COP 19 must make commitments towards establishing a consolidated international response for instance in the form of a mechanism.
- Many developing countries are already taking measures in preparation for climate-related disasters, promoting as well as implementing adaptation. Yet the industrialised countries must provide adequate financial and institutional support to further advance disaster preparedness and resilience of the poor countries. A substantial outcome of Warsaw would be a clear commitment to climate funding towards 2020 in general, and specific funding pledges to the Least Developed Country Fund and the Adaptation Fund.

[1] PPP = Purchasing Power Parities

1 Key results of the Global Climate Risk Index 2014

People all over the world have to face the reality of climate variability, in many parts of the world an increasing variability. More than 530,000 people died as a direct result of almost 15,000 extreme weather events, and losses of more than USD 2.5 trillion (in PPP) occurred from 1993 to 2012 globally. A 2012 study published by the World Bank highlights the existential threats the world, and in particular the vulnerable people in developing countries would face in a 4°C warmer world, a temperature increase that the international community still can and must avoid. However, if mitigation action is not stepped up drastically the world is on the road towards dangerous climate change.[2]

The **Global Climate Risk Index (CRI) developed by Germanwatch** analyses the quantified impacts of extreme weather events[3]—both in terms of fatalities as well as economic losses that occurred—based on data from the *Munich Re* NatCatSERVICE, which is worldwide one of the most reliable and complete data bases on this matter. The CRI looks both at absolute and relative impacts, and results in an average ranking of countries in four indicators, with a stronger emphasis on the relative indicators (see chapter "Methodological Remarks" for further details on the calculation). The countries ranking highest are the ones most impacted and should see the CRI as a warning sign that they are at risk either from frequent events or rare, but extraordinary catastrophes.

The Climate Risk Index does not provide an all-encompassing analysis of the risks from anthropogenic climate change, but should be seen as one analysis informing countries' exposure and vulnerability to climate-related risks along with other analyses,[4] based on the most reliable quantified data. It is based on the current and past climate variability and—to the extent that climate change has already left its footprint in the climate variability of the last 20 years—also on climate change.

Countries affected most in the period 1993–2012

Honduras, Myanmar and Haiti have been identified as the most affected countries in this 20-year period.[5] They are followed by **Nicaragua, Bangladesh and Vietnam**. Table 1 shows the ten most affected countries (Down 10) of the last two decades with their average, weighted ranking (CRI score) and the specific results in the four indicators analysed.

[2] See World Bank, 2012: Turn Down the Heat: Why a 4°C Warmer World Must be Avoided. http://climatechange.worldbank.org/content/climate-change-report-warns-dramatically-warmer-world-century

[3] Meteorological events such as tropical storms, winter storms, severe weather, hail, tornado, local storms; hydrological events such as storm surges, river floods, flash floods, mass movement (landslide); climatological events such as freeze, wildland fires, droughts.

[4] See e.g. analyses of Columbia University: http://ciesin.columbia.edu/data/climate/, Maplecroft's Climate Change Vulnerability Index: http://www.maplecroft.com/about/news/ccvi.html

[5] The full rankings can be found in the Annexes.

Table 1: The Long-Term Climate Risk Index (CRI): Results (annual averages) in specific indicators in the 10 countries most affected from 1993 to 2012.

CRI 1993–2012 (1992–2011)	**Country**	**CRI score**	Death toll	Deaths per 100,000 inhabitants	Total losses in million US$ PPP	Losses per unit GDP in %	Number of Events (total 1993–2012)
1 (1)	Honduras	10.17	329.80	4.86	667.26	2.62	65
2 (2)	Myanmar	11.83	7135.90	13.51	617.79	1.20	38
3 (5)	Haiti	16.83	307.50	3.45	212.01	1.73	60
4 (3)	Nicaragua	17.17	160.45	2.81	224.61	1.74	44
5 (4)	Bangladesh	19.67	816.35	0.56	1832.70	1.16	242
6 (6)	Vietnam	24.00	419.70	0.52	1637.50	0.91	213
7 (14)	Philippines	31.17	643.35	0.79	736.31	0.29	311
8 (10)	Dominican Republic	31.33	212.00	2.43	182.01	0.32	54
8 (12)	Mongolia	31.33	12.85	0.52	327.38	3.68	25
10 (9)	Thailand	31.50	160.35	0.26	5410.06	1.29	193
10 (11)	Guatemala	31.50	82.35	0.69	312.23	0.58	72

There are merely slight changes compared to the analyses presented in the CRI 2013, which considered the period from 1992 to 2011.[6] Eight out of ten countries that made the Down 10 list last year appear in this year's edition again. Haiti, the poorest country of the Western Hemisphere, rises into the top three of the most affected countries over the past two decades due to the serious impact that Hurricane Sandy had on the Caribbean island. Still coping with the aftermath of the heavy earthquake of 2010, the country suffered losses amounting to USD 750 million, which is equivalent to approximately 10% of its total GDP.

Particularly in relative terms, poorer developing countries are hit much harder. These results emphasise the particular vulnerability of poor countries to climatic risks, despite the fact that the absolute monetary damages are much higher in richer countries. Loss of life and personal hardship is also much more widespread especially in the low-income countries.

[6] See Harmeling, S. and Eckstein, D., 2012: Global Climate Risk Index 2013. http://germanwatch.org/de/download/7170.pdf

Countries affected most in 2012: Haiti, the Philippines and Pakistan have been identified as the most affected countries last year, followed by **Madagascar, Fiji and Serbia**.[7] Table 2 shows the ten most affected countries (Down 10), with their average, weighted ranking (CRI score) and the specific results in the four indicators analysed.

Table 2: The Climate Risk Index for 2012: the 10 most affected countries

Ranking 2012 (2011)	Country	CRI score	Death toll	Deaths per 100,000 inhabitants	Absolute losses (in million US$ PPP)	Losses per unit GDP in %	Human Development Index[8]
1 (37)	Haiti	6.83	128	1.23	1220.66	9.53	161
2 (4)	Philippines	10.33	1408	1.47	1205.48	0.29	114
3 (3)	Pakistan	12.67	662	0.37	6087.82	1.11	146
4 (22)	Madagascar	15.67	113	0.50	356.98	1.69	151
5 (131)	Fiji	17.00	17	1.89	135.55	3.18	96
6 (36[9])	Serbia	17.67	28	0.39	1325.06	1.70	64
7 (131)	Samoa	18.33	6	3.28	220.91	19.57	96
8 (49)	Bosnia and Herzegovina	21.67	13	0.33	920.21	2.92	81
9 (95)	Russia	22.17	716	0.50	1365.20	0.05	55
10 (29)	Nigeria	22.33	405	0.25	837.45	0.19	153

In terms of extreme weather events, the year 2012 will most likely be remembered for the occurrence of Hurricane Sandy in October 2012, which made headlines for several days on end in the media around the world, amounting to damages of over USD 68 billions.[10] However, what the media often failed to mention was the impact the "Frankenstorm" had on countries outside the United States.

The hurricane wreaked havoc in the Caribbean with **Haiti** being hit hardest, thus accounting for the country's rise to the top of this year's Climate Risk Index. In the Caribbean country that is still recovering from the devastating earthquake in 2010, the heavy rainfalls fuelled by Sandy not only left 200,000 people homeless, but also destroyed much of the country's crops, which had already been affected by Hurricane Isaac in late August 2012.

[7] The full rankings can be found in the Annexes.
[8] UNDP, 2013: Human Development Report, http://hdr.undp.org/en/media/HDR2013_EN_Statistics.pdf
[9] For 2011, the data of Serbia, Kosovo and Montenegro were aggregated.
[10] Making it the second costliest climate-related disaster after Hurricane Katrina.

Over the past years the Philippines, Pakistan and Russia have appeared several times in the Down 10 list. In December 2012, **the Philippines** were hit by Typhoon Bopha, the landfall of which claimed over 1,400 victims, topping the list for most human casualties of the year for the second year in a row. **Pakistan**, which had already suffered severe floodings in 2010 and 2011, was struck again by a rough monsoon season killing over 650 people. The year 2012 was also an extreme year for **Russia**, where the worst floods in recent decades hit the region of Krasnodar, causing USD 400 millions in total damages.

For the first time since 2008, **Madagascar** features in this year's Down 10 list. Its reappearance this year must be attributed to the 2011–12 South-West Indian Ocean cyclone season, which featured two severe storms—Severe Tropical Storm Irina and Intense Tropical Cyclone Giovanna—that hit Madagascar, killing over 100 people and causing damages amounting to USD 350 millions.

Fiji and **Samoa** are often affected by extreme weather events due to their high exposure to the South Pacific tropical cyclone season. In 2012, both islands were damaged considerably by Cyclone Evan, which first hit Samoa in early December before continuing its trajectory towards Fiji. In Samoa, the storm was considered the worst tropical cyclone since 20 years and caused damages of almost 20% of the country's GDP.

More surprising than the appearance of the previously mentioned countries is the fact that **Bosnia and Herzegovina**, **Serbia** and **Nigeria** are this year included in the Down 10 list. After facing the hottest summer in 40 years, the Balkan countries suffered from extensive droughts that destroyed most of the crops, amounting to agricultural losses of more than USD 2.5 billion in total (in PPP)[11]. In Nigeria, heavy rainfalls in July 2012 triggered the worst floods in five decades claiming over 400 victims and displacing 2 million people[12].

Progress in science in attributing extreme events to climate change

In recent years thousands of people across the globe had to face severe extreme events, exceptional both regarding the lives lost and economic damages as well as their meteorological magnitude. While a couple of years ago there was hardly any extreme weather event that science experts clearly linked to climate change, the scientific community has now advanced. Table 3 provides an overview of record-breaking meteorological events since 2000, and the corresponding confidence level regarding its attribution to climate change.

[11] http://www.businessweek.com/ap/2012-08-23/balkans-region-hit-by-worst-drought-in-decades
[12] http://www.bbc.co.uk/news/world-africa-20221451

Table 3: Selection of record-breaking meteorological events since 2000, their societal impacts and confidence level that it can be attributed to climate change

Region (Year)	Meteorological Record-breaking Event	Confidence in attribution to climate change	Impact, costs
England and Wales (2000)	Wettest autumn on record since 1766. Several short-term rainfall records	Medium	~£1.3 billion
Europe (2003)	Hottest summer in at least 500 years	High	Death toll exceeding 70,000
England and Wales (2007)	Wettest ever May to July since records began in 1766	Medium	Major flooding causing ~£3 billion damage
Southern Europe (2007)	Hottest summer on record in Greece since 1891	Medium	Devastating wildfires
Eastern Mediterranean, Middle East (2008)	Driest winter since 1902	High	Substantial damage to cereal production
Victoria, Australia (2009)	Heat wave breaking many station temperature records (32-154 years of data)	Medium	Worst bushfires on record, 173 deaths, 3500 houses destroyed
Western Russia (2010)	Hottest summer since 1500	Medium	500 wildfires around Moscow, crop failure of ~25 %, death toll ~55,000, ~US$ 15B economic losses
Pakistan (2010)	Rainfall records	Low to Medium	Worst flooding in its history, nearly 3000 deaths, affected 20 million people.
Eastern Australia (2010)	Highest December rainfall ever recorded since 1900	Low to Medium	Brisbane flooding in Jan 2011, costing 23 lives and estimated US$ 2.55 billion
Colombia (2010)	Heaviest rains since records started in 1969	Low to Medium	47 deaths, 80 missing
Western Amazon (2010)	Drought, record low water level in Rio Negro	Low	Area with significantly increased tree mortality spanning 3.2 million km
Western Europe (2011)	Hottest and driest spring on record in France since 1880	Medium	French grain harvest down by 12 %
Texas, Oklahoma, New Mexico and Louisiana (US) (2011)	Record-breaking summer heat and drought since 1880	High	Wildfires burning 3 million acres (preliminary impact of US$ 6 to 8 billion)
Continental U.S. (2012)	July warmest month on record since 1895 associated with severe drought conditions	Medium	Abrupt global food price increase due to crop losses

Source: Coumou and Schaeffer, 2012[13] (see also for more detailed references), adapted from Coumou and Rahmstorf, 2012

[13] See Coumou, D. and M. Schaeffer, 2012: Update of climate science relevant for Loss and Damage debate. www.lossanddamage.net; table based on Coumou, D. & Rahmstorf, S. A decade of weather extremes. Nature Climate Change 2, 491-496 (2012).

Exceptional catastrophes or continuous threats?

The Global Climate Risk Index 1993–2012 is based on the average values of twenty years. However the list of countries featuring on the Down 10 can be divided into two groups: those that are continuously affected by extreme events, and the ones that only rank high due to exceptional catastrophes. Examples for the latter case are Myanmar, where Cyclone Nargis caused more than 95% of the damages and fatalities that occurred in 2008, and Honduras, where more than 80% of the damages in both categories were caused by Hurricane Mitch in 1998. The latest addition to this group is Thailand, where the floods of 2011 accounted for 87 % of total damage.

Similarly, the appearance of some European countries among the top 30 countries must be almost exclusively attributed to the extraordinary number of fatalities due to the 2003 heat wave, in which more than 70,000 people died across Europe. Although some of them are often hit by extreme events, usually the losses and fatalities are relatively minor compared to the countries' population and economic power. The most recent example is Russia in 2010 and 2012.

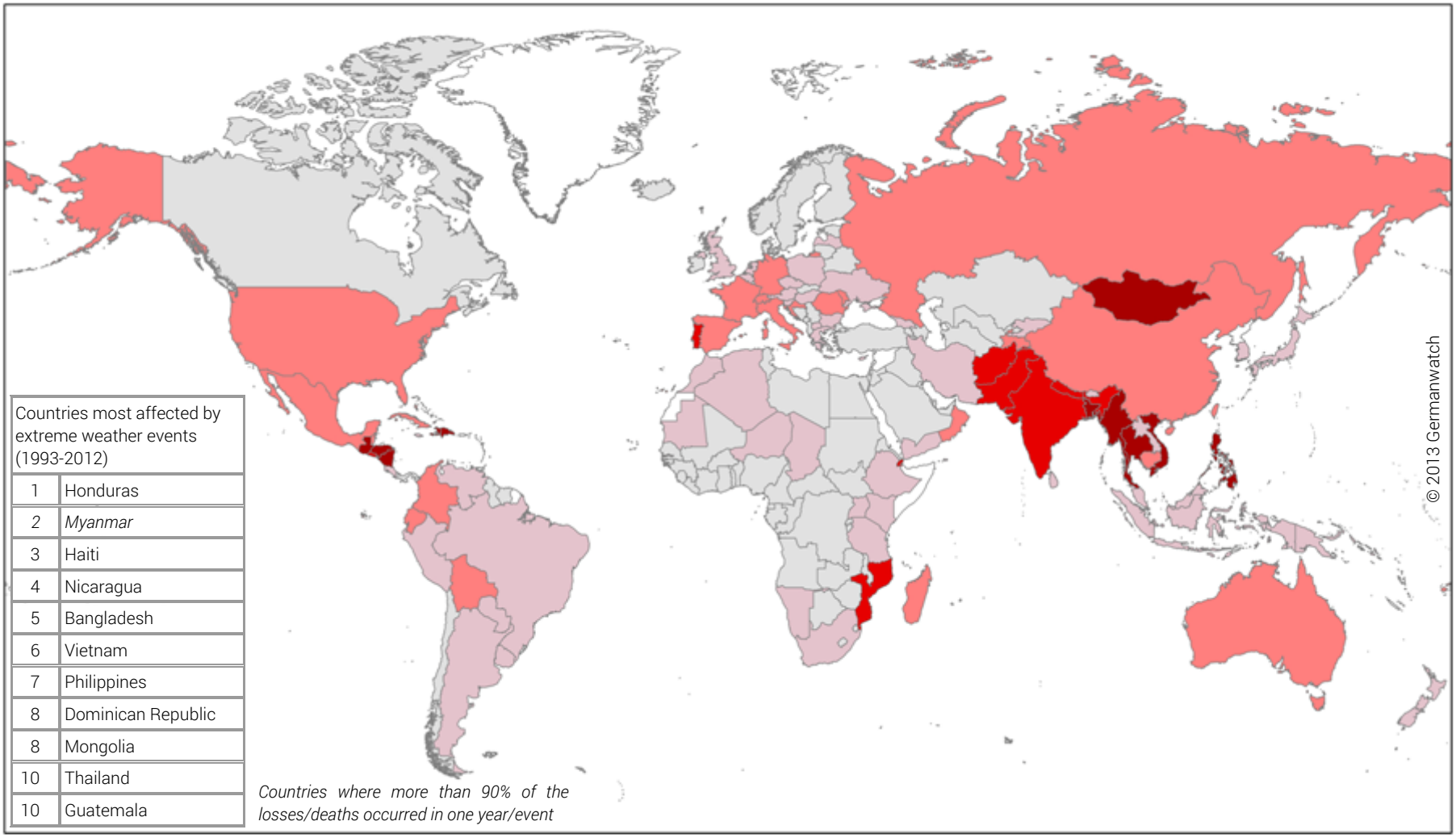

Figure 2: World Map of the Global Climate Risk Index 1993-2012

Source: Germanwatch and Munich Re NatCatSERVICE

2 Hosting Region of the Climate Summit: Eastern European Group—Ignoring Climatic Impacts?

This year's climate summit rotates to the Eastern European Group of the UN,[14] with Poland hosting the conference in Warsaw (11th to 22nd of November, 2012). Poland's role in facilitating the COP process has been received with irritation and sarcasm by green groups.[15] Poland has vetoed after all climate legislation within the European Community on several occasions, and unilaterally prevented the EU from pursuing more ambitious international targets. This obvious double standard concerning climate policy will be a heavy burden for the COP presidency.

Lagging behind in climate policy is, however, not a Polish idiosyncrasy. Several members of the Eastern European Group have proven a track record in blocking climate policies of the international community. This most notably includes Russia, which in June 2013 did not allow the climate talk session on implementing decisions to start. Russia has a history of being particular difficult in the international climate negotiations, for instance, by undermining the environmental integrity by bringing forest-related loopholes into the Kyoto process. Together with other countries from the Eastern European Group, namely Belarus and Ukraine, Russia fought hard against provisions limiting excess carbon credits. While most countries of the Eastern European Group have established climate targets, these even fell short of a business-as-usual-scenario.[16]

The region's cautious stand against proactive climate policy is rooted in the Eastern European Group's perception of its own climatic risks. Russia's leader Putin once famously quipped that climate change was beneficial for Russia, as Russians would need to spend less on fur coats. In terms of their own adaptation policies, EU based countries from this group lag behind the rest of the EU (see Figure 3). This shows that climatic impacts do not trigger the required policy change in these countries.

The question is, whether the lack of climate policy—both in mitigation as well as in adaptation—in these countries is due to a lack of climate-change induced impacts—or must it be attributed to a misjudgement of their own vulnerabilities? Table 3 shows the results for 2012, where a few countries from the group rank high in the CRI, especially in comparison to other developed countries. Following the region's unparalleled 2011 wildfires, the 2012 drought and flooding in large areas of the Balkan, eastern Europe and southern Russia should serve as a wake-up call for the region to ramp up its domestic and international climate policy positions.

[14] Albania, Armenia, Azerbaijan, Belarus, Bosnia Herzegovina Bulgaria, Croatia, Czech Republic Estonia, Georgia, Hungary, Latvia, Lithuania Montenegro, Poland, Russian Federation, Republic of Moldova Romania, Serbia, Slovakia, Slovenia, The Former Yugoslav Republic of Macedonia, Ukraine

[15] See international press release by Greenpeace: http://www.greenpeace.org/international/en/press/releases/Poland-must-prove-trustworthiness-as-host-of-2013-climate-talks/

[16] See Climate Action Tracker for Russia and Ukraine, http://climateactiontracker.org/countries.html

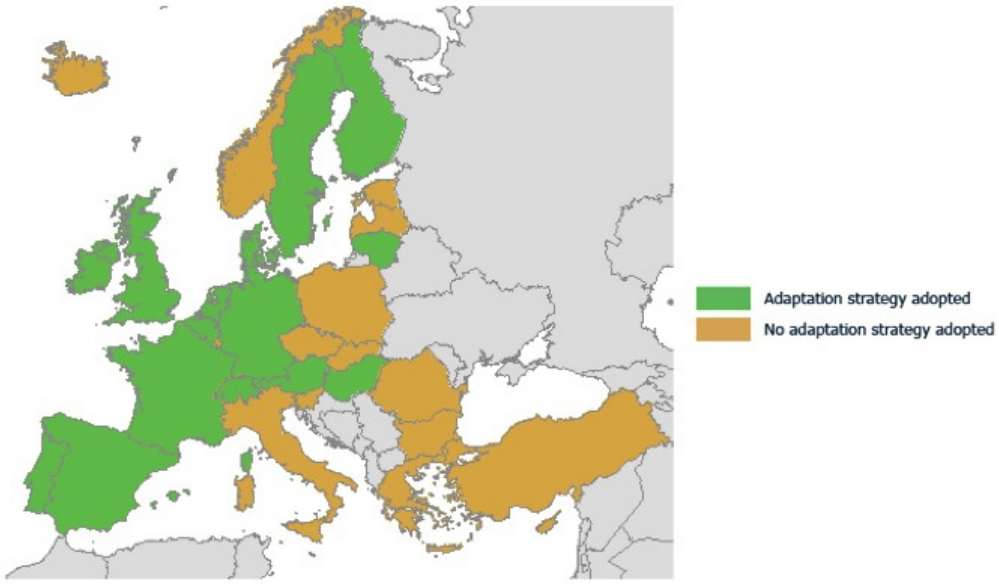

Figure 3: Eastern European Group—less proactive in their own adaptation strategies. Adopted from European Climate Adaptation Platform http://climate-adapt.eea.europa.eu/countries

Table 4: The 15 Eastern European countries most affected in 2012

Ranking CRI	Country	CRI score	Death toll	Deaths per 100,000 inhabitants	Absolute losses (in US$ PPP)	Losses per unit GDP
6	Serbia	17.67	28	0.3857	1 325.06	1.703
8	Bosnia and Herzegovina	21.67	13	0.3347	920.21	2.915
9	Russia	22.17	716	0.5045	1 365.20	0.055
20	Romania	29.67	86	0.4031	177.42	0.065
23	Ukraine	33.17	217	0.4774	123.75	0.037
24	Croatia	35.33	8	0.1817	251.41	0.324
26	Kosovo[17]	36.00	10	0.5411	14.72	0.109
31	Bulgaria	39.00	44	0.6042	29.23	0.028
34	Slovak Republic	43.00	8	0.1480	142.02	0.109
35	Georgia	43.17	7	0.1556	57.35	0.218
42	Hungary	47.67	16	0.1611	77.13	0.040
50	Montenegro	55.83	5	0.8039	1.71	0.024
53	Moldova	59.33	1	0.0281	116.24	0.967
54	Poland	62.17	143	0.3711	9.17	0.001
60	Slovenia	66.17	0	0.0000	229.24	0.401

Table 5: The 15 Eastern European countries most affected in 1993-2012

Ranking CRI	**Country**	**CRI score**	Death toll	Deaths per 100,000 inhabitants	Absolute losses (in US$ PPP)	Losses per unit GDP
27	Russia	43.50	2962.40	2.04	1727.28	0.080
35	Romania	49.00	57.10	0.26	850.20	0.343
44	Moldova	56.17	5.90	0.16	183.99	1.855
49	Croatia	59.17	35.15	0.79	86.52	0.131
54	Slovenia	61.17	11.95	0.60	76.69	0.177
63	Poland	66.50	52.20	0.14	859.00	0.162
64	Hungary	68.00	34.75	0.34	173.94	0.109
67	Czech Republic	71.17	9.80	0.09	586.41	0.258
77	Latvia	80.50	4.50	0.19	59.53	0.190
78	Ukraine	81.00	65.45	0.14	251.90	0.086
89	Bulgaria	87.00	7.30	0.09	142.40	0.156
94	Georgia	88.83	4.20	0.09	43.11	0.231
98	Former Yugoslav Republic of Macedonia	92.33	1.10	0.05	72.89	0.457
107	Bosnia and Herzegovina	98.17	1.00	0.03	143.13	0.550
108	Serbia, Montenegro, Kosovo	99.17	2.80	0.03	193.56	0.228

3 Advancing the International Response to Climate Risks at COP 19

The Warsaw Climate Summit is the next milestone for the international community in helping the developing countries to better adapt to the impacts of climate change. For the international community the Climate Conference in Warsaw represents the midway point en route to agreeing upon a new universal climate regime (that is to be adopted in 2015 and to come into effect in 2020). Part of these talks that were established in 2011 focus on creating a legally binding accord or protocol, that will comprehensively address emissions from industrialised and developing countries. The Warsaw Summit is expected to provide the basis for that by setting up a detailed roadmap for the negotiation process in 2014 and 2015.

Advancing the adaptation agenda

In recent years the international community has made substantial progress in advancing the climate change adaptation agenda. Many developing countries have initiated national projects and programmes to cope with climate impacts. Starting from an initial approach of focusing on short-term adaptation needs, as outlined in the UNFCCC National Adaptation Programmes of Actions, the debate is now moving towards strategic long-term adaptation approaches. The Cancun Adaptation Framework adopted in 2010 lays out the national and international narrative for supporting developing countries in their adaptation implementation. Countries are encouraged to implement National Adaptation Plans. Internationally, the Adaptation Committee raises the profile of the adaptation agenda and promotes the implementation of enhanced action on adaptation in a coherent manner. COP 19 is an opportunity to provide further implementation momentum for the Cancun Agreements, for instance, by discussing the next steps on the National Adaptation Plans, by providing guidance for the next steps of the Adaptation Committee, and by renewing the UNFCCC knowledge management system on adaptation, that is, the Nairobi Work Programme. In addition, the Warsaw conference will also further identify how adaptation should be featured in the new agreement. Some countries are demanding to elevate the adaptation agenda internationally by formulating an international adaptation goal.

Financing adaptation

In order to deploy the necessary adaptation measures and cover the costs of further adaptation needs, developing countries depend heavily on the provision of public financial support from developed countries. However, during the recent fast-start finance period, funding for adaptation has not only remained behind the amount provided for mitigation, but is also far off the amount required to cover the costs of the adaptation needed in developing countries. Hence, the Warsaw Climate Summit provides the opportunity for developed countries to renew their commitment to provide the financial support at the required scale. In this light, additional pledges at COP 19 to the Least Developed Countries Fund to enable the implementation of all submitted National Adaptation Programmes of Action as well as considerable contributions to both, the Adaptation Fund and the Special Climate Change Fund would be a clear political signal and advance the confidence building process between developed and developing countries and also stimulate the negotiations as a whole.

Institutionalising the “loss and damage” agenda

The negotiation strand of loss and damage refers to approaches in supporting developing countries to address the adverse impacts of climate change. After a foundational decision in Doha (2012), where the international community defined first the role of the UNFCCC, second areas to support developing countries, and third future loss and damage work in the UNFCCC process, the Warsaw COP is expected to decide on the institutional set-up of the negotiation strand in the UNFCCC process. Warsaw can create approaches to address loss and damage in the context of disaster risk management and humanitarian intervention, further detail the international responsibilities and schedule next activities in the work programme. Signalling high institutional ambition, this could take place in form of an international mechanism. While still much needs to be done at the technical level; part of the loss and damage negotiations is also the matter of including the work area in the discussions leading to the 2015 agreement. This is essential for the affected countries, as they are concerned about them having exceeded national capacities from climate impacts, even if national adaptation strategies are fully implemented. And in particular if climate change remains unchecked and the 2°C limit cannot be achieved.

4 Methodological Remarks

The presented analyses are based on the worldwide renowned data collection and analysis, provided by Munich Re NatCatSERVICE. They comprise "all elementary loss events which have caused substantial damage to property or persons". For the countries of the world, Munich Re collects the number of total losses caused by weather events, the number of deaths, the insured damages and total economic damages. The last two indicators are stated in million US$ (original values, inflation adjusted).

In the present analysis, only weather related events—storms, floods, as well as temperature extremes and mass movements (heat and cold waves etc.)—are incorporated. Geological factors like earthquakes, volcanic eruptions or tsunamis, for which data is also available, do not play a role in this context because they do not depend on the weather and therefore are not related to climate change. To enhance the manageability of the large amount of data, the different categories within the weather related events were combined. For single case studies on particularly devastating events it is stated whether they concern floods, storms, or another type of event.

It is important to note that this event-related examination does not allow for an assessment of continuous changes of important climate parameters. A long-term decline in precipitation that was shown for some African countries as a consequence of climate change cannot be displayed by the CRI. Such parameters nevertheless often substantially influence important development factors like agricultural outputs and the availability of drinking water.

Although certainly an interesting area for analysis, the present data does also not allow for conclusions about the distribution of damages below the national level. Respective data quality would only be sufficient for a limited number of countries.

Analysed indicators

For this examination the following indicators were analysed in this paper:

1. Number of deaths,
2. Number of deaths per 100,000 inhabitants,
3. Sum of losses in US$ in purchasing power parity (PPP) as well as
4. Losses per unit of Gross Domestic Product (GDP).

For the indicators 2–4, economic and population data primarily provided by the International Monetary Fund were taken into account. It must be added, however, that especially for small (e.g. Pacific Small Island Developing States) or politically extremely unstable countries (e.g. Somalia), the required data is not always available in sufficient quality for the whole observed time period. Those countries have to be left out of the analyses.

The Climate Risk Index 2014 is based on the loss-figures from 2012 and 1993–2012. This ranking represents the most affected countries. Each country's index score has been derived from a country's average ranking in all four analyses, according to the following weighting: death toll 1/6, deaths per 100,000 inhabitants 1/3, absolute losses in PPP 1/6, losses per GDP unit 1/3.

Therefore, an analysis of the already observable changes in climate conditions in different regions sends a sign of warning to those most affected countries to better prepare for the future. Although looking at socio-economic variables in comparison to damages and deaths caused by weather extremes – as was done in the present analysis – does not

allow for an exact measurement of the vulnerability, it can be seen as at least an indication or pattern of vulnerability. In most cases, already afflicted countries will probably also be especially endangered by possible future changes in climate conditions. Despite the historic analysis, a deterministic projecting of the past to the future is not appropriate. For one thing, the likelihood for past trends in extreme weather events to continue unchanged is very low especially in a world of global climate change.

For another, new phenomena can occur in states or regions. In the 2004, for example, a hurricane was registered in the South Atlantic, off the Brazilian coast, for the first time ever. The cyclone that hit Oman in 2007 or the one that hit Saudi Arabia in 2009 are of similar significance. So the appearance in the Climate Risk Index is an alarm bell for these countries. But the analyses of the Climate Risk Index should not be regarded as the only evidence for which countries are already afflicted or will be affected by global climate change. After all, people can in principle fall back on different adaptation measures. However, to which extent these can be implemented effectively depends on several factors, which altogether determine the degree of vulnerability.

The relative consequences also depend on economic and population growth

Identifying relative values in this index represents an important complement to the otherwise often dominating absolute values because it allows for analysing country specific data on damages in relation to real conditions in those countries. It is obvious, for example, that for a rich country like the USA one billion US$ causes much less economic consequences than for one of the world's poorest countries. This is being backed up by the relative analysis.

It should be noted that values, and hence the rankings of countries regarding the respective indicators do not only change due to the absolute impacts of extreme weather events, but also due to economic and population growth. If, for example, population increases, which is the case in most of the countries, the same absolute number of deaths leads to a relatively lower assessment in the following year. The same applies to economic growth. However, this does not affect the significance of the relative approach. Society's ability of coping with damages through precaution, mitigation and disaster preparedness, insurances or the improved availability of means for emergency aid, generally grows along with increasing economic strength. Nevertheless, an improved ability does not necessarily imply enhanced implementation of effective preparation and response measures. While absolute numbers tend to overestimate populous or economically capable countries, relative values give more prominence to smaller and poorer countries. So as to take both effects into consideration, the analysis of the Climate Risk Index is based on absolute as well as on relative scores, with an emphasis giving higher importance to relative losses than to absolute losses.

The indicator "losses in purchasing power parity" allows for a more comprehensive estimation of how different societies are actually affected

The indicator "absolute losses in US$" is identified by purchasing power parity (PPP), because using this figure better expresses how people are actually affected by the loss of one US$ than by using nominal exchange rates. Purchasing power parity is a currency exchange rate, which permits a comparison of, for instance, national GDPs, by incorporating price differences between countries. Basically this means that a farmer in India can buy more crops with US$ 1 than a farmer in the USA with the same amount of money. Thus, the real consequences of the same nominal damage are much higher in India. For most of the countries, US$ values according to exchange rates must therefore be multiplied by a factor bigger than one.

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Annexes

CRI = Climate Risk Index; GDP = gross domestic product; PPP = purchasing power parity

Table 6: Climate Risk Index for 1993–2012

(Avg. = average figure for the 20-year period. E.g., 31 people died in Albania due to extreme weather events between 1993 and 2012, hence the average death toll per year was 1.55.)

Rank CRI	Country	Overall CRI Score	Death Toll		Deaths per 100,000 inhabitants		Losses in million US$ PPP		Losses per GDP in %	
			Avg.	Rank	Avg.	Rank	Avg.	Rank	Avg.	Rank
138	**Albania**	122.67	1.55	130	0.05	129	16.70	126	0.092	111
96	**Algeria**	89.83	74.15	38	0.23	66	61.22	85	0.031	142
120	**Angola**	108.00	26.75	63	0.17	75	16.67	127	0.016	154
43	**Antigua and Barbuda**	54.67	0.40	151	0.54	31	39.49	101	3.198	7
93	**Argentina**	88.50	20.60	66	0.05	123	533.88	31	0.119	94
145	**Armenia**	129.33	0.40	151	0.01	163	18.35	121	0.134	89
38	**Australia**	52.17	46.95	48	0.23	65	1702.40	11	0.242	62
56	**Austria**	61.83	26.90	62	0.33	52	382.94	35	0.145	85
140	**Azerbaijan**	126.33	2.25	123	0.03	153	53.44	89	0.072	120
129	**Bahrain**	117.67	2.90	118	0.38	44	0.76	164	0.004	168
5	**Bangladesh**	19.67	816.35	7	0.56	30	1832.70	9	1.161	21
154	**Barbados**	137.50	0.05	172	0.02	157	5.82	149	0.119	95
149	**Belarus**	130.83	4.45	108	0.05	132	25.46	115	0.023	149
68	**Belgium**	71.50	86.25	31	0.82	18	93.55	76	0.030	143
22	**Belize**	42.33	2.40	121	0.88	17	58.26	87	3.262	6
148	**Benin**	130.17	4.00	112	0.05	127	4.85	151	0.048	132
83	**Bhutan**	83.67	2.30	122	0.38	45	4.77	152	0.204	69
39	**Bolivia**	53.00	33.30	59	0.37	46	122.61	67	0.352	50
107	**Bosnia and Herzegovina**	98.17	1.00	141	0.03	154	143.13	62	0.550	39
133	**Botswana**	120.50	1.50	132	0.09	102	11.09	137	0.059	125
89	**Brazil**	87.00	154.00	22	0.09	104	761.36	24	0.044	134
170	**Brunei Darussalam**	163.67	0.10	167	0.03	151	0.30	171	0.002	171
89	**Bulgaria**	87.00	7.30	91	0.09	101	142.40	63	0.156	83
104	**Burkina Faso**	95.83	6.55	95	0.05	126	36.14	106	0.255	61
123	**Burundi**	110.83	1.70	128	0.02	156	12.30	135	0.439	45
26	**Cambodia**	43.00	45.80	49	0.35	48	153.34	59	0.857	27
143	**Cameroon**	128.17	7.65	88	0.05	131	10.33	139	0.031	140
112	**Canada**	102.17	10.90	78	0.03	141	861.24	19	0.081	117
155	**Cape Verde**	140.17	0.15	162	0.03	143	1.00	163	0.082	115
162	**Central African Republic**	153.83	1.10	138	0.03	152	0.39	169	0.014	156
99	**Chad**	93.67	4.60	104	0.06	121	40.04	100	0.280	58
118	**Chile**	106.50	8.60	86	0.05	122	132.49	65	0.067	122
22	**China**	42.33	1819.85	4	0.14	83	28926.56	2	0.486	41
41	**Chinese Taipei**	53.67	75.05	37	0.34	51	858.89	21	0.162	81
42	**Colombia**	54.17	111.30	26	0.27	59	608.07	29	0.184	76
131	**Comoros**	118.00	0.95	143	0.17	80	0.49	167	0.074	119
66	**Costa Rica**	71.00	9.90	80	0.23	67	78.90	80	0.222	66
160	**Cote d'Ivoire**	145.83	4.40	109	0.02	155	4.91	150	0.016	153

Rank CRI	Country	Overall CRI Score	Death Toll		Deaths per 100,000 inhabitants		Losses in million US$ PPP		Losses per GDP in %	
			Avg.	Rank	Avg.	Rank	Avg.	Rank	Avg.	Rank
49	**Croatia**	59.17	35.15	56	0.79	21	86.52	77	0.131	90
46	**Cuba**	57.00	7.60	90	0.07	113	1966.74	8	2.419	9
95	**Cyprus**	89.67	3.60	115	0.49	35	16.17	129	0.092	112
67	**Czech Republic**	71.17	9.80	81	0.09	98	586.41	30	0.258	60
156	**Democratic Republic of Congo**	142.17	17.35	69	0.03	149	1.60	158	0.009	164
176	**Democratic Republic of Timor-Leste**	170.00	0.10	167	0.01	166	0.07	175	0.001	173
125	**Denmark**	115.33	0.80	146	0.01	158	215.30	46	0.127	92
20	**Djibouti**	40.50	8.75	85	1.25	13	33.16	110	2.211	11
40	**Dominica**	53.50	0.35	153	0.49	36	50.79	90	7.290	3
8	**Dominican Republic**	31.33	212.00	19	2.43	5	182.01	53	0.321	53
29	**Ecuador**	44.33	64.30	42	0.49	37	261.68	40	0.296	55
137	**Egypt**	121.83	41.30	52	0.06	117	28.75	111	0.009	167
13	**El Salvador**	34.17	33.65	58	0.60	26	288.50	39	0.857	28
178	**Equatorial Guinea**	175.50	0.00	173	0.00	173	0.00	178	0.000	178
122	**Eritrea**	110.33	0.15	162	0.00	171	35.68	108	0.938	25
145	**Estonia**	129.33	0.45	150	0.03	145	21.75	118	0.093	109
79	**Ethiopia**	81.33	91.25	28	0.13	89	55.62	88	0.109	97
27	**Fiji**	43.50	6.75	94	0.81	19	48.19	93	1.487	18
163	**Finland**	154.17	0.20	160	0.00	169	22.03	117	0.015	155
98	**Former Yugoslav Republic of Macedonia**	92.33	1.10	138	0.05	124	72.89	82	0.457	43
24	**France**	42.67	959.05	6	1.59	10	1622.59	14	0.093	108
175	**Gabon**	169.33	0.15	162	0.01	164	0.08	174	0.000	176
94	**Georgia**	88.83	4.20	111	0.09	99	43.11	96	0.231	64
32	**Germany**	48.00	476.30	11	0.58	29	2263.60	7	0.095	106
124	**Ghana**	112.17	17.30	70	0.09	103	16.85	125	0.040	136
85	**Greece**	84.33	13.50	72	0.12	91	249.89	42	0.098	105
15	**Grenada**	36.00	2.00	125	1.96	7	97.06	75	9.065	1
10	**Guatemala**	31.50	82.35	33	0.69	23	312.23	38	0.578	36
164	**Guinea**	154.50	1.25	133	0.01	159	1.12	162	0.014	157
153	**Guinea-Bissau**	135.67	0.10	167	0.01	168	2.53	155	0.172	78
102	**Guyana**	94.83	0.30	156	0.04	136	43.33	95	1.075	23
3	**Haiti**	16.83	307.50	15	3.45	3	212.01	48	1.729	16
1	**Honduras**	10.17	329.80	14	4.86	2	667.26	27	2.623	8
178	**Hong Kong SAR**	175.50	0.00	173	0.00	173	0.00	178	0.000	178
64	**Hungary**	68.00	34.75	57	0.34	50	173.94	55	0.109	98
119	**Iceland**	106.67	1.80	127	0.61	25	1.52	159	0.016	152
18	**India**	38.50	3141.65	2	0.30	54	6236.26	3	0.259	59
72	**Indonesia**	74.67	246.15	17	0.11	94	744.63	25	0.093	109
166	**Iraq**	155.83	1.10	138	0.00	170	15.03	133	0.011	162
135	**Ireland**	121.17	2.00	125	0.05	128	67.44	84	0.048	131
17	**Islamic Republic of Afghanistan**	37.50	245.40	18	0.89	16	82.54	79	0.361	48

Rank CRI	Country	Overall CRI Score	Death Toll		Deaths per 100,000 inhabitants		Losses in million US$ PPP		Losses per GDP in %	
			Avg.	Rank	Avg.	Rank	Avg.	Rank	Avg.	Rank
55	Islamic Republic of Iran	61.33	81.55	34	0.12	92	1496.67	16	0.216	67
136	Israel	121.67	4.35	110	0.07	113	39.46	102	0.026	146
21	Italy	40.67	1003.00	5	1.73	8	1563.55	15	0.101	104
52	Jamaica	60.50	4.75	103	0.18	73	173.04	56	0.846	29
97	Japan	92.00	76.25	36	0.06	119	1662.58	12	0.046	133
142	Jordan	126.83	1.70	128	0.03	144	21.41	119	0.091	113
134	Kazakhstan	120.83	12.55	74	0.08	110	25.74	113	0.012	159
76	Kenya	80.17	45.05	50	0.14	87	71.89	83	0.143	87
116	Kiribati	104.33	0.00	173	0.00	173	38.75	103	7.923	2
57	Korea, Republic of	62.17	88.40	29	0.19	72	1255.53	18	0.129	91
173	Kuwait	167.50	0.35	153	0.01	161	0.06	176	0.000	177
81	Kyrgyz Republic	83.17	18.75	67	0.37	47	10.58	138	0.106	100
73	Lao People's Democratic Republic	75.00	4.80	100	0.09	106	83.03	78	0.806	30
77	Latvia	80.50	4.50	105	0.19	71	59.53	86	0.190	75
150	Lebanon	131.33	1.15	136	0.03	146	25.55	114	0.065	123
127	Lesotho	117.00	0.25	158	0.01	165	13.79	134	0.549	40
170	Liberia	163.67	0.30	156	0.01	167	0.18	172	0.012	160
172	Libya	165.50	0.00	173	0.00	173	6.38	148	0.010	163
139	Lithuania	123.67	2.90	118	0.09	105	15.49	132	0.031	141
111	Luxembourg	100.33	6.50	96	1.43	11	2.76	154	0.009	165
25	Madagascar	42.83	76.45	35	0.44	40	101.36	72	0.669	35
101	Malawi	94.50	5.05	99	0.04	138	38.22	104	0.441	44
86	Malaysia	85.17	43.70	51	0.18	75	163.79	58	0.057	126
177	Maldives	174.00	0.00	173	0.00	173	0.02	177	0.001	174
128	Mali	117.17	3.35	117	0.03	150	17.97	122	0.158	82
159	Malta	144.83	0.15	162	0.04	139	2.98	153	0.036	138
75	Mauritania	77.50	3.95	113	0.15	82	28.03	112	0.555	38
114	Mauritius	103.17	0.65	148	0.05	125	35.80	107	0.292	57
48	Mexico	57.67	140.80	24	0.14	84	2377.35	6	0.194	74
44	Moldova	56.17	5.90	97	0.16	81	183.99	52	1.855	13
8	Mongolia	31.33	12.85	73	0.52	34	327.38	37	3.678	5
88	Morocco	86.67	31.50	61	0.11	96	111.86	69	0.108	99
19	Mozambique	40.17	88.20	30	0.47	39	102.26	71	0.800	31
2	Myanmar	11.83	7135.90	1	13.51	1	617.79	28	1.199	20
62	Namibia	65.50	11.25	77	0.60	27	21.14	120	0.200	71
14	Nepal	35.00	293.85	16	1.16	14	97.54	74	0.381	46
70	Netherlands	74.33	84.65	32	0.53	32	151.08	60	0.028	145
82	New Zealand	83.33	3.40	116	0.08	107	224.68	44	0.233	63
4	Nicaragua	17.17	160.45	20	2.81	4	224.61	45	1.740	15
74	Niger	76.33	12.05	75	0.10	97	37.50	105	0.484	42
113	Nigeria	102.50	73.95	39	0.06	120	123.77	66	0.042	135
151	Norway	134.17	1.55	130	0.03	142	50.65	91	0.023	150
37	Oman	50.00	7.20	92	0.29	55	445.39	32	0.784	33
12	Pakistan	31.83	469.95	12	0.32	53	2394.93	5	0.743	34
103	Panama	95.33	8.80	84	0.29	56	16.26	128	0.060	124

Rank CRI	Country	Overall CRI Score	Death Toll		Deaths per 100,000 inhabitants		Losses in million US$ PPP		Losses per GDP in %	
			Avg.	Rank	Avg.	Rank	Avg.	Rank	Avg.	Rank
51	**Papua New Guinea**	59.50	26.40	64	0.48	38	35.01	109	0.296	54
53	**Paraguay**	60.67	7.15	93	0.13	90	242.17	43	0.949	24
59	**Peru**	63.67	109.20	27	0.41	42	171.02	57	0.095	107
7	**Philippines**	31.17	643.35	9	0.79	20	736.31	26	0.293	56
63	**Poland**	66.50	52.20	47	0.14	86	859.00	20	0.162	80
16	**Portugal**	37.33	142.55	23	1.38	12	404.91	33	0.197	72
178	**Qatar**	175.50	0.00	173	0.00	173	0.00	178	0.000	178
130	**Republic of Congo**	117.83	8.95	83	0.28	57	0.35	170	0.002	170
58	**Republic of Yemen**	62.67	52.60	46	0.27	60	103.56	70	0.202	70
35	**Romania**	49.00	57.10	44	0.26	62	850.20	22	0.343	52
27	**Russia**	43.50	2962.40	3	2.04	6	1727.28	10	0.080	118
117	**Rwanda**	106.33	7.65	88	0.09	100	7.30	144	0.101	103
71	**Samoa**	74.50	0.35	153	0.20	70	15.99	130	1.905	12
178	**Sao Tome and Principe**	175.50	0.00	173	0.00	173	0.00	178	0.000	178
121	**Saudi Arabia**	109.83	16.10	71	0.07	112	116.77	68	0.023	148
144	**Senegal**	128.50	4.50	105	0.04	134	9.00	140	0.052	129
108	**Serbia, Montenegro, Kosovo**	99.17	2.80	120	0.03	147	193.56	51	0.228	65
168	**Seychelles**	160.83	0.00	173	0.00	173	0.46	168	0.034	139
132	**Sierra Leone**	118.17	8.05	87	0.17	77	0.57	166	0.017	151
174	**Singapore**	168.50	0.10	167	0.00	172	2.48	156	0.001	172
109	**Slovak Republic**	99.67	4.50	105	0.08	108	99.88	73	0.102	102
54	**Slovenia**	61.17	11.95	76	0.60	28	76.69	81	0.177	77
91	**Solomon Islands**	87.67	0.75	147	0.17	79	6.77	147	0.555	37
87	**South Africa**	85.67	62.25	43	0.14	85	212.91	47	0.054	127
33	**Spain**	48.50	704.70	8	1.67	9	783.73	23	0.071	121
61	**Sri Lanka**	64.50	38.45	54	0.20	68	146.61	61	0.207	68
47	**St. Kitts and Nevis**	57.33	0.20	160	0.42	41	43.55	94	6.314	4
45	**St. Lucia**	56.50	1.00	141	0.64	24	22.66	116	1.524	17
80	**St. Vincent and the Grenadines**	82.50	0.25	158	0.23	64	7.24	145	0.797	32
110	**Sudan**	100.00	35.55	55	0.11	95	41.41	99	0.054	128
169	**Suriname**	161.50	0.15	162	0.03	148	0.14	173	0.003	169
105	**Swaziland**	96.50	0.90	144	0.08	109	17.89	123	0.378	47
147	**Sweden**	129.50	1.25	133	0.01	160	138.06	64	0.050	130
33	**Switzerland**	48.50	56.15	45	0.76	22	389.23	34	0.149	84
30	**Tajikistan**	44.50	17.70	68	0.27	61	207.53	49	1.780	14
100	**Tanzania**	94.17	21.95	65	0.06	116	50.47	92	0.137	88
10	**Thailand**	31.50	160.35	21	0.26	63	5410.06	4	1.291	19
36	**The Bahamas**	49.17	1.20	135	0.38	43	181.31	54	2.217	10
69	**The Gambia**	73.00	4.80	100	0.35	49	7.83	142	0.353	49
156	**Togo**	142.17	2.20	124	0.04	137	1.16	161	0.025	147
50	**Tonga**	59.33	1.15	136	1.15	15	6.90	146	1.115	22

Rank CRI	Country	Overall CRI Score	Death Toll		Deaths per 100,000 inhabitants		Losses in million US$ PPP		Losses per GDP in %	
			Avg.	Rank	Avg.	Rank	Avg.	Rank	Avg.	Rank
158	Trinidad and Tobago	142.33	0.85	145	0.07	115	2.10	157	0.011	161
161	Tunisia	151.17	3.65	114	0.04	140	0.70	165	0.001	174
115	Turkey	104.17	40.65	53	0.06	117	202.64	50	0.029	144
165	Turkmenistan	155.67	0.00	173	0.00	173	7.97	141	0.038	137
83	Uganda	83.67	32.45	60	0.12	93	41.42	98	0.166	79
78	Ukraine	81.00	65.45	41	0.14	88	251.90	41	0.086	114
167	United Arab Emirates	156.00	0.50	149	0.01	162	15.62	131	0.009	166
65	United Kingdom	68.67	117.35	25	0.20	69	1414.92	17	0.081	116
31	United States	44.83	486.05	10	0.17	78	38827.02	1	0.347	51
92	Uruguay	88.17	5.85	98	0.18	74	42.97	97	0.125	93
152	Uzbekistan	134.67	10.30	79	0.04	135	7.53	143	0.013	158
141	Vanuatu	126.50	0.10	167	0.05	130	1.22	160	0.144	86
60	Venezuela	64.00	68.90	40	0.27	58	344.15	36	0.111	96
6	Vietnam	24.00	419.70	13	0.52	33	1637.50	13	0.906	26
125	Zambia	115.33	4.80	100	0.04	133	17.07	124	0.104	101
106	Zimbabwe	97.67	9.25	82	0.08	111	11.55	136	0.195	73

Table 7: Climate Risk Index 2012

Rank CRI 2012	Country	Overall CRI Score	Death Toll		Deaths per 100,000 inhabitants		Losses in million US$ PPP		Losses per unit GDP in %	
			Total	Rank	Total	Rank	Total	Rank	Total	Rank
117	Albania	101.83	3	92	0.093	66	0.10	131	0.0004	128
38	Algeria	46.67	75	21	0.200	34	53.58	53	0.0197	69
85	Angola	80.00	11	58	0.054	80	8.76	76	0.0071	93
143	Antigua and Barbuda	126.17	0	112	0.000	112	0.00	143	0.0000	139
40	Argentina	47.00	35	33	0.085	70	408.39	23	0.0556	43
143	Armenia	126.17	0	112	0.000	112	0.00	143	0.0000	139
61	Australia	66.33	6	75	0.026	96	370.21	25	0.0385	53
95	Austria	87.17	8	68	0.094	65	4.40	87	0.0012	119
119	Azerbaijan	103.50	6	75	0.065	76	0.14	124	0.0001	135
143	Bahrain	126.17	0	112	0.000	112	0.00	143	0.0000	139
13	Bangladesh	25.33	195	13	0.126	53	2012.00	5	0.6645	14
143	Barbados	126.17	0	112	0.000	112	0.00	143	0.0000	139
123	Belarus	106.67	5	81	0.053	81	0.11	127	0.0001	135
74	Belgium	72.33	5	81	0.045	87	96.84	45	0.0233	67
98	Belize	89.17	0	112	0.000	112	1.50	109	0.0507	45
115	Benin	100.33	4	88	0.040	90	0.41	118	0.0026	108
143	Bhutan	126.17	0	112	0.000	112	0.00	143	0.0000	139
112	Bolivia	97.33	2	99	0.018	100	3.21	93	0.0059	96
8	Bosnia and Herzegovina	21.67	13	54	0.335	27	920.21	12	2.9153	5

Rank CRI 2012	Country	Overall CRI Score	Death Toll		Deaths per 100,000 inhabitants		Losses in million US$ PPP		Losses per unit GDP in %	
			Total	Rank	Total	Rank	Total	Rank	Total	Rank
82	**Botswana**	78.83	0	112	0.000	112	22.37	59	0.0693	39
131	**Brazil**	113.17	1	105	0.001	111	3.72	90	0.0002	131
143	**Brunei Darussalam**	126.17	0	112	0.000	112	0.00	143	0.0000	139
31	**Bulgaria**	39.00	44	29	0.604	12	29.23	55	0.0285	63
100	**Burkina Faso**	90.00	20	45	0.115	58	0.11	127	0.0005	126
89	**Burundi**	81.67	0	112	0.000	112	4.61	86	0.0850	34
65	**Cambodia**	67.17	14	52	0.092	67	8.02	81	0.0220	68
62	**Cameroon**	66.83	31	36	0.144	51	5.15	85	0.0103	89
51	**Canada**	56.00	8	68	0.023	98	1354.14	8	0.0919	32
143	**Cape Verde**	126.17	0	112	0.000	112	0.00	143	0.0000	139
79	**Central African Republic**	77.67	4	88	0.088	69	1.08	112	0.0281	64
18	**Chad**	28.00	34	35	0.317	28	103.01	43	0.3876	17
114	**Chile**	97.83	2	99	0.011	105	10.28	70	0.0032	104
27	**China**	36.50	719	3	0.053	82	24 458.55	2	0.1995	25
64	**Chinese Taipei**	67.00	11	58	0.047	85	167.87	34	0.0188	70
25	**Colombia**	35.50	69	23	0.148	48	411.80	22	0.0828	36
14	**Comoros**	25.67	19	46	2.738	2	7.57	82	0.8725	11
113	**Costa Rica**	97.67	5	81	0.107	59	0.13	125	0.0002	131
142	**Cote d'Ivoire**	125.83	0	112	0.000	112	0.02	141	0.0000	139
24	**Croatia**	35.33	8	68	0.182	39	251.41	28	0.3242	19
21	**Cuba**	30.67	13	54	0.118	57	3366.41	4	2.7815	6
143	**Cyprus**	126.17	0	112	0.000	112	0.00	143	0.0000	139
66	**Czech Republic**	67.33	36	31	0.343	26	3.86	89	0.0014	116
56	**Democratic Republic of Congo**	64.67	44	29	0.059	79	8.23	79	0.0302	61
143	**Democratic Republic of Timor-Leste**	126.17	0	112	0.000	112	0.00	143	0.0000	139
120	**Denmark**	104.50	0	112	0.000	112	6.61	83	0.0032	104
143	**Djibouti**	126.17	0	112	0.000	112	0.00	143	0.0000	139
125	**Dominica**	107.17	0	112	0.000	112	0.10	131	0.0104	88
47	**Dominican Republic**	53.00	8	68	0.078	73	102.16	44	0.1046	30
44	**Ecuador**	51.17	36	31	0.246	30	23.30	58	0.0156	79
143	**Egypt**	126.17	0	112	0.000	112	0.00	143	0.0000	139
141	**El Salvador**	121.50	0	112	0.000	112	0.10	131	0.0002	131
143	**Equatorial Guinea**	126.17	0	112	0.000	112	0.00	143	0.0000	139
143	**Eritrea**	126.17	0	112	0.000	112	0.00	143	0.0000	139
122	**Estonia**	105.67	1	105	0.075	74	0.13	125	0.0004	128
136	**Ethiopia**	117.50	0	112	0.000	112	0.51	117	0.0005	126
5	**Fiji**	17.00	17	50	1.891	3	135.55	38	3.1812	4
143	**Finland**	126.17	0	112	0.000	112	0.00	143	0.0000	139
74	**Former Yugoslav Republic of Macedonia**	72.33	4	88	0.194	38	2.49	98	0.0115	86
83	**France**	79.50	28	37	0.044	88	58.88	48	0.0026	108

Rank CRI 2012	Country	Overall CRI Score	Death Toll		Deaths per 100,000 inhabitants		Losses in million US$ PPP		Losses per unit GDP in %	
			Total	Rank	Total	Rank	Total	Rank	Total	Rank
93	Gabon	84.33	3	92	0.195	36	0.53	116	0.0019	113
35	Georgia	43.17	7	73	0.156	44	57.35	50	0.2183	24
67	Germany	67.50	21	43	0.026	97	556.29	18	0.0176	75
143	Ghana	126.17	0	112	0.000	112	0.00	143	0.0000	139
87	Greece	80.83	9	65	0.080	72	9.51	72	0.0035	102
143	Grenada	126.17	0	112	0.000	112	0.00	143	0.0000	139
76	Guatemala	72.67	5	81	0.033	93	26.28	57	0.0338	56
138	Guinea	118.17	0	112	0.000	112	0.11	127	0.0009	123
143	Guinea-Bissau	126.17	0	112	0.000	112	0.00	143	0.0000	139
102	Guyana	91.67	0	112	0.000	112	2.18	104	0.0354	55
1	Haiti	6.83	128	15	1.229	6	1220.66	10	9.5349	2
43	Honduras	51.00	11	58	0.139	52	21.79	60	0.0579	42
143	Hong Kong SAR	126.17	0	112	0.000	112	0.00	143	0.0000	139
42	Hungary	47.67	16	51	0.161	42	77.13	47	0.0398	52
111	Iceland	97.17	0	112	0.000	112	2.32	101	0.0183	73
46	India	52.17	1.168	2	0.095	64	591.28	15	0.0125	84
72	Indonesia	71.50	104	17	0.043	89	81.82	46	0.0068	94
139	Iraq	118.83	4	88	0.012	104	0.06	139	0.0000	139
109	Ireland	96.33	0	112	0.000	112	17.80	62	0.0095	90
19	Islamic Republic of Afghanistan	28.83	419	6	1.309	5	16.59	63	0.0491	47
135	Islamic Republic of Iran	117.17	7	73	0.009	108	0.09	136	0.0000	139
118	Israel	102.33	0	112	0.000	112	9.12	74	0.0035	102
36	Italy	44.50	72	22	0.118	56	574.73	17	0.0317	58
52	Jamaica	58.00	1	105	0.036	91	166.39	35	0.6740	13
49	Japan	54.67	199	12	0.156	43	223.17	30	0.0049	100
143	Jordan	126.17	0	112	0.000	112	0.00	143	0.0000	139
128	Kazakhstan	109.67	0	112	0.000	112	3.39	92	0.0015	115
29	Kenya	38.50	68	24	0.162	41	55.47	51	0.0740	37
143	Kiribati	126.17	0	112	0.000	112	0.00	143	0.0000	139
45	Korea. Republic of	52.00	25	40	0.050	83	790.65	14	0.0495	46
26	Kosovo	36.00	10	62	0.541	16	14.72	64	0.1086	29
143	Kuwait	126.17	0	112	0.000	112	0.00	143	0.0000	139
94	Kyrgyz Republic	86.33	0	112	0.000	112	5.58	84	0.0425	49
143	Lao People's Democratic Republic	126.17	0	112	0.000	112	0.00	143	0.0000	139
92	Latvia	83.50	10	62	0.490	19	0.06	139	0.0002	131
88	Lebanon	81.17	2	99	0.050	84	10.81	68	0.0173	76
143	Lesotho	126.17	0	112	0.000	112	0.00	143	0.0000	139
140	Liberia	121.17	0	112	0.000	112	0.02	141	0.0006	125
143	Libya	126.17	0	112	0.000	112	0.00	143	0.0000	139
91	Lithuania	82.83	6	75	0.199	35	0.78	114	0.0012	119
143	Luxembourg	126.17	0	112	0.000	112	0.00	143	0.0000	139
4	Madagascar	15.67	113	16	0.504	18	356.98	26	1.6858	8
80	Malawi	78.00	0	112	0.000	112	12.51	66	0.0886	33
116	Malaysia	101.50	3	92	0.010	106	8.56	77	0.0017	114

Rank CRI 2012	Country	Overall CRI Score	Death Toll		Deaths per 100,000 inhabitants		Losses in million US$ PPP		Losses per unit GDP in %	
			Total	Rank	Total	Rank	Total	Rank	Total	Rank
132	Maldives	115.67	0	112	0.000	112	0.07	138	0.0024	110
96	Mali	87.33	5	81	0.031	94	2.76	95	0.0155	80
56	Malta	64.67	3	92	0.719	10	1.41	110	0.0126	83
134	Mauritania	116.83	0	112	0.000	112	0.10	131	0.0013	117
84	Mauritius	79.67	2	99	0.154	45	1.80	105	0.0090	92
58	Mexico	65.17	19	46	0.016	101	520.00	19	0.0289	62
53	Moldova	59.33	1	105	0.028	95	116.24	41	0.9666	10
143	Mongolia	126.17	0	112	0.000	112	0.00	143	0.0000	139
50	Montenegro	55.83	5	81	0.804	8	1.71	106	0.0237	66
136	Morocco	117.50	3	92	0.009	108	0.11	127	0.0001	135
16	Mozambique	27.17	48	27	0.214	32	114.77	42	0.4423	15
127	Myanmar	109.33	0	112	0.000	112	2.41	100	0.0024	110
107	Namibia	95.67	0	112	0.000	112	3.15	94	0.0187	72
28	Nepal	38.17	220	10	0.801	9	10.13	71	0.0253	65
121	Netherlands	105.50	1	105	0.006	110	9.12	74	0.0013	117
86	New Zealand	80.17	3	92	0.068	75	14.45	65	0.0110	87
76	Nicaragua	72.67	9	65	0.148	47	2.51	97	0.0095	90
11	Niger	23.33	91	18	0.565	14	39.51	54	0.3042	20
10	Nigeria	22.33	405	7	0.246	31	837.45	13	0.1885	26
143	Norway	126.17	0	112	0.000	112	0.00	143	0.0000	139
102	Oman	91.67	6	75	0.194	37	0.10	131	0.0001	135
3	Pakistan	12.67	662	5	0.370	25	6087.82	3	1.1136	9
59	Panama	65.83	6	75	0.164	40	8.49	78	0.0150	81
39	Papua New Guinea	46.83	45	28	0.659	11	3.52	91	0.0188	70
22	Paraguay	31.83	14	52	0.210	33	140.33	37	0.3471	18
17	Peru	27.33	307	9	1.007	7	132.12	39	0.0409	51
2	Philippines	10.33	1.408	1	1.470	4	1205.48	11	0.2873	21
54	Poland	62.17	143	14	0.371	24	9.17	73	0.0012	119
55	Portugal	63.17	1	105	0.009	107	577.61	16	0.2364	22
143	Qatar	126.17	0	112	0.000	112	0.00	143	0.0000	139
68	Republic of Congo	67.67	18	49	0.440	21	0.83	113	0.0044	101
143	Republic of Yemen	126.17	0	112	0.000	112	0.00	143	0.0000	139
20	Romania	29.67	86	19	0.403	22	177.42	33	0.0654	41
9	Russia	22.17	716	4	0.504	17	1365.20	7	0.0549	44
73	Rwanda	71.83	11	58	0.106	60	2.43	99	0.0162	77
7	Samoa	18.33	6	75	3.279	1	220.91	31	19.5667	1
143	Sao Tome and Principe	126.17	0	112	0.000	112	0.00	143	0.0000	139
110	Saudi Arabia	96.83	24	41	0.083	71	0.20	120	0.0000	139
41	Senegal	47.17	19	46	0.145	50	18.67	61	0.0710	38
6	Serbia	17.67	28	37	0.386	23	1325.06	9	1.7026	7
143	Seychelles	126.17	0	112	0.000	112	0.00	143	0.0000	139
143	Sierra Leone	126.17	0	112	0.000	112	0.00	143	0.0000	139
143	Singapore	126.17	0	112	0.000	112	0.00	143	0.0000	139
34	Slovak Republic	43.00	8	68	0.148	49	142.02	36	0.1089	28

Rank CRI 2012	Country	Overall CRI Score	Death Toll		Deaths per 100,000 inhabitants		Losses in million US$ PPP		Losses per unit GDP in %	
			Total	Rank	Total	Rank	Total	Rank	Total	Rank
60	**Slovenia**	66.17	0	112	0.000	112	229.24	29	0.4006	16
81	**Solomon Islands**	78.33	0	112	0.000	112	4.10	88	0.2207	23
33	**South Africa**	40.00	49	26	0.096	62	482.49	20	0.0837	35
37	**Spain**	45.83	21	43	0.045	86	1745.74	6	0.1258	27
29	**Sri Lanka**	38.50	61	25	0.295	29	54.56	52	0.0437	48
97	**St. Kitts and Nevis**	88.50	0	112	0.000	112	0.63	115	0.0681	40
143	**St. Lucia**	126.17	0	112	0.000	112	0.00	143	0.0000	139
143	**St. Vincent and the Grenadines**	126.17	0	112	0.000	112	0.00	143	0.0000	139
48	**Sudan**	54.17	35	33	0.104	61	28.23	56	0.0331	57
143	**Suriname**	126.17	0	112	0.000	112	0.00	143	0.0000	139
130	**Swaziland**	112.17	0	112	0.000	112	0.16	123	0.0027	107
123	**Sweden**	106.67	0	112	0.000	112	8.16	80	0.0021	112
78	**Switzerland**	73.33	5	81	0.062	77	57.70	49	0.0161	78
108	**Tajikistan**	96.17	1	105	0.013	103	2.31	102	0.0132	82
143	**Tanzania**	126.17	0	112	0.000	112	0.00	143	0.0000	139
70	**Thailand**	70.17	9	65	0.013	102	197.01	32	0.0305	60
15	**The Bahamas**	25.83	2	99	0.568	13	406.25	24	3.6814	3
69	**The Gambia**	67.83	10	62	0.548	15	0.19	121	0.0055	97
143	**Togo**	126.17	0	112	0.000	112	0.00	143	0.0000	139
104	**Tonga**	92.17	0	112	0.000	112	0.35	119	0.0425	49
106	**Trinidad and Tobago**	93.50	2	99	0.150	46	0.17	122	0.0007	124
62	**Tunisia**	66.83	13	54	0.121	55	12.03	67	0.0116	85
99	**Turkey**	89.33	26	39	0.035	92	10.76	69	0.0010	122
143	**Turkmenistan**	126.17	0	112	0.000	112	0.00	143	0.0000	139
89	**Uganda**	81.67	22	42	0.062	78	2.68	96	0.0053	98
23	**Ukraine**	33.17	217	11	0.477	20	123.75	40	0.0373	54
143	**United Arab Emirates**	126.17	0	112	0.000	112	0.00	143	0.0000	139
71	**United Kingdom**	70.67	12	57	0.019	99	416.83	21	0.0180	74
12	**United States**	23.50	390	8	0.124	54	115 603.00	1	0.7116	12
101	**Uruguay**	91.17	3	92	0.089	68	1.62	107	0.0030	106
143	**Uzbekistan**	126.17	0	112	0.000	112	0.00	143	0.0000	139
129	**Vanuatu**	110.50	0	112	0.000	112	0.08	137	0.0064	95
133	**Venezuela**	116.50	0	112	0.000	112	1.62	107	0.0004	128
32	**Vietnam**	39.17	85	20	0.096	63	310.14	27	0.0922	31
126	**Zambia**	107.50	0	112	0.000	112	1.21	111	0.0051	99
105	**Zimbabwe**	92.83	0	112	0.000	112	2.27	103	0.0316	59

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GERMANWATCH

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