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Drought in an unfair world

Through destroying yields and capital and by causing drinking water shortages, droughts have a strong impact on the livelihoods and food security of hundreds of millions of people worldwide. As a result, food shortages and reductions of household incomes arise (Winsemius et al., 2015 & WFP, 2015). Due to the ongoing climate change, the risk of drought events is strongly enhanced. It is expected that by 2080, most parts of the world can experience an increase of twenty percent in the number of drought days. Also, the number of people exposed to these drought events is likely to increase with 9 to 17 percent by the year 2030 and even with 50 until 90 percent by the year 2080 (Hallegatte et al., 2016).

The poor suffer most

What might be the most disconcerting part of the problem is that in nearly all cases, poor people are most vulnerable to these drought events. This is partly because, on average, poor people live in areas that are more prone to droughts. Even though both non-poor and poor people live in risky areas, the poor people settle in the most risky places, since land and house prices are more affordable there (Hallegatte et al., 2016). Over-exposure of the poor to disasters is present worldwide, but especially in countries in Africa and South-East Asia (Winsemius et al., 2015).

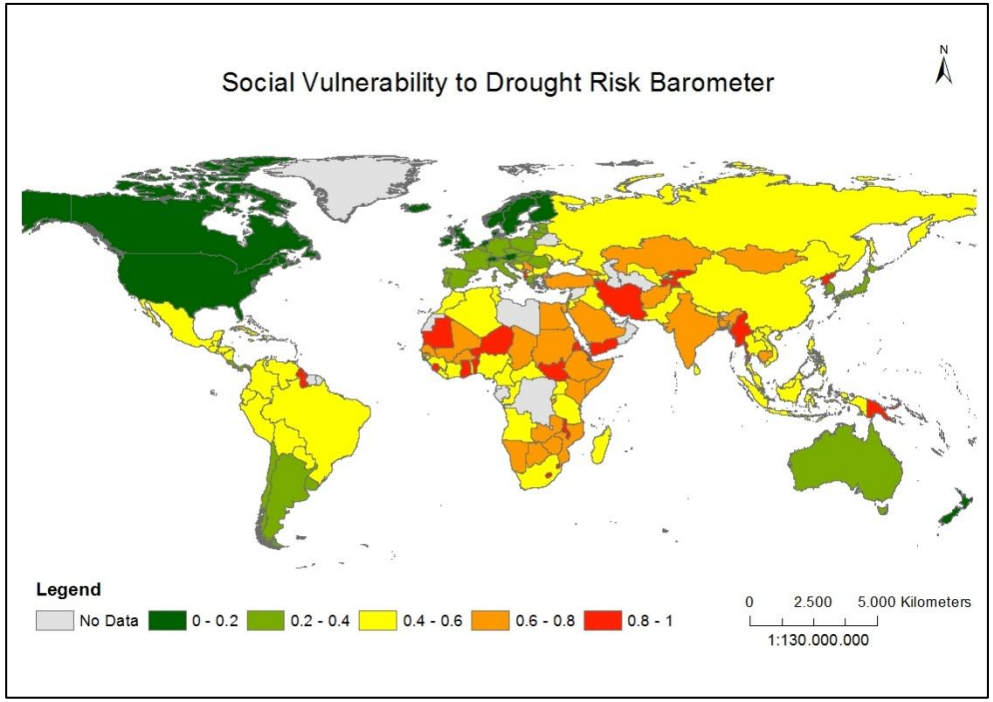
However, higher exposure is not the only point of concern. The poor are also more socially vulnerable, meaning that their ability to anticipate, to cope with and to recover from drought events is much lower than the ability of their wealthier fellow citizens (Cutter, Emrich, Webb & Morath, 2009). Social vulnerability focuses on who is at risk, and to what degree these people are harmed (Tierney et al., 2001 & Heinz Center, 2002). One of the reasons the poor are more socially vulnerable is that even though wealthier people lose a larger absolute amount of their assets and annual income through disasters, poor people lose more in relative terms. It is these relative losses that have the highest impact on the livelihoods and welfare of people (Hallegatte et al., 2016). A reason for the larger relative losses of poor people is that in many cases they do not save their money at institutions, such as banks. As a result, most of the little wealth they have is present in vulnerable forms, such as livestock (Hallegatte et al., 2016). Poor people may also have insufficient access to financial tools, such as insurances, and social safety nets, such as work programs (Allen, Demirgüc-Kunt, Klapper & Martinez Peria, 2012).

When a country is at a high risk of social vulnerability to drought, this corresponds to a high risk of the poor being disproportionally affected by drought events.

Although predictions of consequences of drought events can be made and the vulnerability to drought events can be assessed, there still is a poor understanding of the specific reasons that ensure a population or group to suffer from drought, the response and the resistance they have to drought events and therefore the ability to cope. As a result, measures taken by governments to mitigate the negative consequences of droughts are in many regions not sufficient (Iglesias, 2012).

The Social Vulnerability to Drought Risk Barometer

I was interested in the differences in social vulnerability to drought events. However, my search on the internet did not provide this information on countries around the world. Therefore, I decided to create my own Social Vulnerability to Drought Risk Barometer (SVDRB) with the goal to provide a simplified overview of the risk on this subject on a national level. This barometer scores countries on a range of 0 (low risk on the poor being disproportionally affected by drought events) to 1 (high risk of the poor being disproportionally affected). These scores were based on four different indicators.



The first indicator is a proxy for the vulnerability of a country to drought events. It is the number of people affected by drought events per 1000 inhabitants and is based on drought event and affected people data of the Emergency Events Database (EM-DAT) and population data of the United Nations (Guha-Sapir, Below & Hoyois, 2016 & United Nations, 2015). The second and the third indicators are the inclusive growth and development score and the Social Progress Index, which cover to which degree the right institutions are in place

which ensure equity in coping capacity among the inhabitants of a county (World Economic Forum, 2015 & Social Progress Imperative, 2016). The last indicator, GDP per capita (in current values), shows how wealthy or poor inhabitants in a country are on average. These indicators together cover the vulnerability of a country to drought events and the socioeconomic and demographic situation of a country.

In the map above the resulting SVDRB scores are visualised. What immediately stands out is that the countries with the highest risk are mostly located in Africa and Asia. The countries with the highest scores are North Korea, Eritrea and South Sudan (all a score of 1). The best performing countries are, not surprisingly, developed countries such as Luxembourg (0.01), Switzerland (0.04) and Norway (0.05). A high SVDRB score implies that in that country the poor are disproportionately affected when drought events occur. A low score implies an equal distribution of social vulnerability among different income groups is expected.

Rank	Country	SVDRB score
1	North Korea	1.00
2	Eritrea	1.00
3	South Sudan	1.00
4	Guyana	0.98
5	Mauritania	0.94
6	Benin	0.93
7	Yemen	0.93
8	Niger	0.92
9	Sierra Leone	0.91
10	Lesotho	0.89
11	Swaziland	0.88
12	Tajikistan	0.88
13	Ghana	0.86
14	Gambia	0.86
15	Kyrgyzstan	0.86

Table 1: The 15 countries with the lowest SVDBP scores and therefore which are expected to be at highest risk of social vulnerability to drought.

The way forward

Of course, this SVDRB is a very simple framework. However, it can be seen as a first step in a field were more research needs to be done. The SVDRB provides a first indication of the situation in the different countries and should be considered as a starting point for further research. The use of four indicators is sufficient to fit the purpose of this research, however to arrive at more reliable results, more indicators should be included. In addition, some influential decisions were made, for instance with standardising the data, which may have influenced the results.

However, despite of these shortcomings, the resulting SVDRB is considered to be informative and a promising framework on which further research can be built. It is recommended that further research extends this framework, in example by including more indicators and less simplified standardization techniques. When this framework is improved, it could be taken into account during decision making on drought policies. Hopefully this will result in world-wide improvement of the resilience of the less privileged when drought events occur.

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