

This paper has been written by Debbie Hillier as a background document for the Expert Meeting on disasters targets and indicators for the post-2015 development framework, 25 March 2014.

It does not represent Oxfam policy; it is merely a contribution to assist participants in their preparation.

Background Paper – Disasters targets in the post-2015 development framework

1. Introduction

This paper starts from the premise that the post-2015 development framework should be constructed in such a way to reduce disaster impacts, and discusses what that might look like. It is difficult to define specific targets when so much else about the framework is not yet clear, even the fundamental basis or the framing of the development model, and the process is moving quickly. Yet that is the task required of us.

There is a clear urgency to develop a consensus on the formulation of disaster targets as the process moves into negotiations. And to paraphrase Einstein we need to make sure [we count what counts, not just what is easily counted](#).

What was said at OWG7 on disasters targets and indicators

There was significant support for DRR and resilience from **states** at the 7th Open Working Group on Sustainable Development Goals (OWG7) in January 2014. Particularly strong statements were delivered by the G77, LDCs, EU, Norway/Denmark/Ireland, Peru/Mexico, US/Canada/Israel, CARICOM, NL/Australia/UK, Japan, Bangladesh, Thailand/Bhutan/Viet Nam, New Zealand and Ethiopia. Yet few concrete suggestions were made by states on what targets might look like.

Every government statement that referred to disasters in the future framework (including G77, Pacific SIDS, CARICOM, Netherlands/UK/Australia, New Zealand, Ethiopia) referred to a need for a crosscutting, multi-sector approach. More detailed input came from:

- EU which called for a multi-risk approach, to address the underlying risk drivers, involve the public sector, and governance;
- Peru/Mexico which suggested we should start from the experience gained in the implementation of the 22 indicators from the HFA, as well as build on its limitations and gaps observed in practice, and include new cross-sectoral targets (poverty reduction, gender equality, education, health, food security, governance) and stressed the need for national loss databases;
- Japan stressed that DRR and resilience should be embedded in poverty eradication, gender, governance, water, cities and peace and security;
- Bangladesh referred to the need to address disasters under agriculture, water and sanitation, health, energy and technology transfer.

Norway/Denmark/Ireland gave a statement which was specific around DRR targets – ‘Targets aimed at building resilience could be linked to reducing economic losses, preventing impoverishment, reducing mortality, morbidity and disability, early warning information and services, and improving food and nutrition security, ecosystems and health systems.’ They also referred to the need to reduce longer-term vulnerabilities through strengthened preparedness, including warning, response strategies and local knowledge, and underlying risk factors such as poverty and urbanization.

In addition to states, the discussion was informed by a range of proposals from **civil society, the research community and elsewhere**. These include [How disasters disrupt development](#), [Issue Brief:](#)

[Disaster Risk Reduction and Sustainable Development, Options for including community resilience in the post-2015 development goals](#), [Resilience in the post 2015 development framework UN TST Issues Brief: climate change and disaster risk reduction](#), and [ODI's Disaster risk management in post-2015 development goals](#).

The **Co-Chairs** also made strongly supportive statements at the Major Groups meeting¹ and the [Co-Chairs concluding remarks](#) produced a strong and positive outcome for DRR – referring to increasing losses, differential vulnerabilities, recognition of link between climate change and DRR, the need for a strong HFA2 and policy coherence, and targets to reduce by a significant degree the severity of impacts as measured for example by loss of lives and economic losses.

Recent reports from the OWG Co-Chairs

The Open Working Group is now moving from a technical discussion, the input or stocktaking phase, to a second phase of meetings from March to July 2014, which will develop a set of goals and targets for the SDGs. The process is therefore moving quickly from a general discussion to concrete targets and indicators for DRR.

In February, the Co-Chairs produced a [Progress report of the Open Working Group of the General Assembly on Sustainable Development Goals](#) that summarises the discussions to date. For DRR, the detail in this Progress Report is very similar to the Co-Chair's concluding remarks from OWG7, but there are some small differences. For example, in relation to disasters targets, both documents referred to proposals to reduce by a significant degree the severity of impacts, but the Concluding Remarks referred to these 'measured for example by loss of lives and economic losses', whereas the Progress Report refers to targets 'measured by economic losses as well as loss of lives and livelihoods.' A small but important difference, highlighting the importance of livelihoods.

The Progress Report also includes a welcome new paragraph on the impact of disasters on the poorest and particularly on women: 'The poorest are most at risk from climate change and natural disasters of all kinds, including slow-onset events like desertification and drought. Women represent a disproportionate number of the poor and often suffer the consequences of climate change the most. Women in rural areas in developing countries are often highly dependent on local natural resources for their livelihood and therefore more vulnerable to droughts, floods and land degradation.'

Subsequent to this, the Co-Chairs produced a document outlining the [Focus Areas of the SDGs](#). The Co-Chairs were quick to point out that this is not a zero draft, but identifies areas for further consider, to start the process of building consensus. 19 focus areas are developed, which some will equate to goals, but the Co-Chairs also state that these areas are not exhaustive and do not preclude the inclusion of other issues.

The Focus Areas document is not nearly so strong on disasters. The need to reduce disaster impacts is explicitly and clearly recognised in Focus Areas on sustainable cities and water and sanitation, and there are references to strengthening resilience under Focus Areas on climate change and food security and nutrition. Whilst these references are welcome, the policy advantages of only focusing on water or climate-related disasters, or focusing separately on cities and food are not clear. These partial approaches may leave gaps or create overlaps in DRR implementation, either limiting national disaster efforts into particular areas, or leading to significant inefficiencies.

Importantly, the Focus Areas document does not include a reference to an overarching target to reduce disaster impacts that could provide the requisite political focus for clear policy change and a coherent response.

2. Key ongoing work relating to disasters targets and indicators

UNISDR's work on indicators for the post-HFA framework

UNISDR have undertaken a huge piece of work to redefine indicators for the post-HFA framework. Their November 2013 paper - [Towards the Post-2015 Framework for Disaster Risk Reduction: Indicators of success: a new system of indicators to measure progress in disaster risk management](#) – provides full details of this proposal.

In short, UNISDR are proposing an 'indicator dashboard,' compiling a range of indicators to be used to monitor progress on the post-HFA. This proposal comprises three levels of indicators:

At outcome level	1. Direct human, physical and economic losses
At output level	2. Risk – current and future levels
	3. Underlying drivers of risk
	4. 'Resilience' (how to survive loss, rather than suffer loss) – financial and possibly also social (not yet developed)
At input level	5. Public policy specific indicators

This proposal was reviewed by experts at a meeting in Vienna in February, is currently being refined, and the next draft will undergo further expert input in April/May, after which piloting work will take place at national level.

ODI/UNDP work on targets for the post-MDGs framework

ODI and UNDP have a detailed proposal to build up the evidence base for disasters targets and indicators for the post-MDG framework. The work will consider disasters targets based on a) economic losses, b) mortality and c) poverty and the way they interact with issues of data, incentives, indicators and country-ownership.

The work is divided into two parts. The first part is being conducted by ODI, Risk Management Solutions and the Centre for Research on the Epidemiology of Disasters and is concerned with calibrating the targets – in other words, proposing what a reasonable reduction might be – ie if the target is 'reducing economic losses by x%' then what is the x? This will entail various elements including modelling the trends in these metrics to 2030, and considering appropriate qualifiers (eg economic losses relative to GDP, mortality losses relative to population etc). The second phase of the work will be led by UNDP, in collaboration with other UN agencies and organisations and will involve piloting work in several countries assessing appropriate indicators, data availability and ways to promote country-led processes.

A range of other pieces of work and initiatives

In addition to these two key processes, there are various other initiatives and organisations working in the field of disasters indicators. This includes, but is not limited to:

- For each area of the Open Working Group on the SDGs, the UN Statistics Division develops a Statistical Note. The [Statistical Note on DRR and Climate Change](#) is currently in draft form.
- IIASA's (International Institute for Applied Systems Analysis) programme on Risk, Policy and Vulnerability has developed [CATSIM](#), a model for economic resilience to disasters and is developing a new model RES-SIM which will cover social impacts.
- The InterAmerican Development Bank has developed a [comprehensive system of indicators for disaster risk management](#), including the Disaster Deficit Index, The Local Disaster Index, the Prevalent Vulnerability Index and Risk Management Index. Work is currently ongoing to attempt to build an indicator to help formulate or improve public policy of DRM.
- The UN IASC (Interagency Standing Committee) and JRC (the Joint Research Centre of the European Commission) are developing a global humanitarian risk index, [InfoRM](#) that combines around 50 different indicators to measure hazards, vulnerability and capacity. InfoRM covers 191 countries and includes both natural and human hazards.

3. Entry points for disasters in the SDGs

The post-2015 framework could include disaster risk reduction in the following ways:

Narrative

Currently, the OWG is not developing a narrative and vision, only targets and goals, but the eventual narrative will need to clearly outline the risks to development of disasters and other shocks and stresses. This language was not included in the MDGs, but is a strong feature of the Rio20 agreement, as well as the High Level Panel report. Without addressing disaster risk clearly and specifically across the development framework, hard won development gains can be lost. Getting beyond business-as-usual will require a more strategic approach to risk reduction.

According to [UNISDR proposals](#), disasters should be addressed through three aspects:

- a) risk reduction – reducing risk that already exists;
- b) risk prevention - avoidance of creation of unacceptable levels of new risk through development pathways that minimise risk generation
- c) building the resilience of communities and states to shocks and stresses.

Specific targets on disasters

Embedding disaster risk management across the post-2015 framework is necessary to strengthen resilience, but specific targets for a measurable reduction in disaster impacts or losses are required in order to ensure these separate elements coherently reduce the overall impact of disasters. Clear and specific targets are required to provide strong legal and political mandate and strong leadership, adequate resources, clear lines of responsibility, technical expertise and analysis, and accountability.

As described earlier, in the Co-Chairs' Focus Areas paper, the need to reduce the impacts of disasters is split across several areas - water and sanitation, sustainable cities, climate change and food security and nutrition. These partial approaches may leave gaps or create overlaps in DRR implementation, either limiting national disaster efforts into particular areas (such as climate/water-related disasters at the expense of earthquakes and tsunamis), or leading to significant inefficiencies, with separate strategies/plans/budgets.

One proposal is for disasters targets to fit under a **poverty eradication goal**, providing clarity in terms of profile and focus, as well as a broad approach to disasters. It is also certain that there will be a goal to reduce/eradicate poverty; linking disasters to the overarching purpose of the SDGs is clearly strategic; the link between disasters and poverty has been well established; and a precedent has been set for this through the High Level Panel report.

Although not proposed in the Co-Chair's document, several states have proposed a goal to **'Reduce global threats to sustainable development'** or its inverse **'Build resilience of communities and nations,'** which could include targets on climate change, disasters and conflict. This offers real advantages in highlighting risks to the achievement of the SDGs and the need for risk management across the framework which currently is totally absent (goals on, for example, economic growth and industrialisation could be severely constrained by disasters). It also reflects the daily reality of communities who experience multiple risks, and provides a conceptual link between these mutually-reinforcing issues without constraining policy responses.

The other obvious location for disasters target is a **climate change goal**. DRR and Climate change have been clearly and explicitly linked in the OWG to date, and for most states there is an obvious connection. However, there is a logical error in including disasters in a climate change goal, as not all disasters are related to climate/weather, and attributing disasters to climate change per se is not possible at the moment. Further there are political complexities with a goal on climate change.

Targets/indicators across other goals

Mainstreaming DRR across other goals is necessary to ensure that risk reduction is not treated as a standalone issue, which has been proven as ineffective.² Risk analysis and disaster risk reduction needs to be strategically integrated across the spectrum of development policy, planning and practice, to be considered in all policy and spending decisions, in order to reduce rather than exacerbate risks.

This was reflected in government statements at OWG7, which referred to DRR mainstreamed across poverty reduction, gender equality, education, health, food security, governance, cities, peace and security, agriculture, water and sanitation, energy, ecosystems, and technology transfer.

Starting from the Co-Chair's Focus Areas, targets/indicators could include the following:

Food security and nutrition (focus area 2): This includes a welcome range of useful targets to build resilience and prevent the creation of new risk (including land tenure, reversing land degradation). The reference to 'strengthening resilience of farming systems and food supplies to climate change' should be broadened to cover 'climate change and variability' (as attribution of weather-related disasters to climate change is not yet possible, or indeed necessary for the purposes of this goal). Further targets are required on ensuring food security for all during and after disasters as well as stronger natural resource management. Indicators should include

- the percentage of underweight and malnourished children, and those below a minimum dietary consumption levels, following disasters and during periods of drought
- numbers of people with vulnerable livelihoods – people located in highly hazard-prone areas who are reliant on land for their livelihoods, who do not have resilient crops or livestock and are not protected through participatory disaster planning.
- investments on natural resource and agriculture management

Health (focus area 3): Health services are vital for post-disaster recovery and hence additional indicators are required for infrastructure (see below) and: Percentage of population served by healthcare facilities which have undertaken disaster risk assessments, and developed preparedness and response plans in a participatory way with communities to enable delivery of post disaster health services including sexual and reproductive health, psychosocial care and services for people with disabilities.

Education (focus area 4): Additional indicators are required for educational infrastructure (see below) and: Percentage of schools that undertake evacuation exercises, have contingency plans, and integrate DRR into their curriculum.

Gender equality and women's empowerment (focus area 5): A recognition that disasters have a disproportionate impact on women and girls, but also that they have significant capacities which are often not utilised. Additional indicators are required for:

- Percentage of municipalities with genuinely participatory disaster risk reduction ensuring the engagement of women and girls.
- Percentage of municipalities with mechanisms in place to prevent and respond to gender based violence in emergencies.

Water and sanitation (focus area 6): Additional indicators are required for water and sanitation infrastructure (see below) and:

- Percentage of people suffering from water-borne diseases following disasters.
- Percentage of population served by water and sanitation systems which have disaster risk assessments, preparedness and response plans developed in a participatory way with communities.

Infrastructure of all kinds – health, education, energy, communications, urban, transport, housing (focus area 10, but also 3, 4, 7, 8, 9, 13). Additional indicators are required for:

- Percentage of infrastructure (healthcare, educational, water and sanitation, energy, communications, transport, ports, housing) which is built to locally and nationally appropriate hazard-resistant standards.
- Number of days of function lost due to disasters.
- Percentage of at-risk population that have access to adequate emergency shelter during disasters.

Promoting equality (focus area 12): A recognition that the most marginalised are those most impacted by disasters of all kinds, with locally contextualised indicators for the percentage of at-risk communities on targeted programmes of support such as livelihood protection measures for all and other forms of social protection to prevent and respond to disasters (eg cash transfers) for all.

Sustainable cities and human settlements (focus area 13). Additional indicators are required on land use policy, planning and investment to reduce risks such as increasing the number of urban development plans that include elements of disaster risk management as well as on protection of natural resource management and on the effective and voluntary relocation of at risk communities.

Climate change (focus area 15): This includes very useful references to ‘building resilience and adaptive capacity in developing countries’ and ‘developing low-carbon, climate resilience development strategies and plans.’ Additional indicators are required to capture the dissemination of accessible and practical climate change information for farmers, fisherfolk, students, and wider communities at risk.

4. Fundamentals - Purpose of disaster targets and key criteria

Purpose of disasters targets

The precise purpose of disaster targets should be carefully considered, as this will determine the nature of the targets and indicators. Objectives may fit one or more of these:

- High level political: to generate high level political support for DRR in a key international instrument on development. This is partly about reflecting the reality of increasing disaster risk, partly raising the political profile of an issue that has to date been seen as humanitarian, and partly about substantive mainstreaming of risk across other sectors.
- Communication tool: to influence and stimulate public debates on DRR, at international and national levels. These might best be served by ‘totemic’ indicators that resonate with what people say is important to them, on their terms and in their language, but which when unpacked, contain relevant information for policy makers – for example ‘the number of hours of warning people get before disaster strikes’ - or perception data (see below), or league tables which allow countries to compare their results against neighbouring/similar countries.
- Technical quantification: to develop better data that will substantively support national implementation of DRR. This would be technically rigorous, and would be understood and used primarily by DRR specialists. Arguably this may fit better under the post-HFA or at indicator level.

On balance, disasters targets are probably less about a precise and rigorous calculation of disaster impacts (revealing the absolute truth) and more about promoting an understanding of reality that will lead to greater control of risk.

Criteria for effective disasters targets

Just as the *purpose* of disasters targets should be fully explored, so should the *criteria* for targets. This will be an important discussion at the experts meeting.

Proposals for DRR-specific criteria include the following:

- **Be transformative**, addressing all three aspects of disaster risk reduction:
 - Reduce the underlying risk factors to **avoid unacceptable risk creation** – for example active environmental, ecosystems and land use management
 - reduce **existing levels of risk** – for example through early warning systems and contingency plans
 - strengthen **community/household resilience** - the capacity of people to absorb, adapt and thrive in the face of shocks and stresses – for example through empowerment and social protection.
- **Reduce the impact of extensive disasters** as well as intensive ones, as recurrent small-scale disasters are a key driver of poverty.
- **Ensure that risk is reduced for the most marginalised.** States should
 - report data **disaggregated** by gender, ethnicity, age and other relevant criteria, and ensure that targets must be met for the lowest income quintile.
 - report data disaggregated to sub-national and community levels, to ensure that disparities are not hidden by national averages.
- **be based primarily on outcome** (such as measurable reductions in risk, losses, poverty or vulnerability), rather than only inputs (policy choices and actions, such as existence of legislation). This is because input targets do not guarantee improvements in outcomes, outcome targets have more political traction, and detail on inputs fits better in the post-HFA.

In general terms, criteria for targets [from the recent SDSN report](#) are as follows:

- Should be clear and straightforward to interpret and provide a basis for international comparison;
- Should be broadly consistent with systems-based information, such as systems of national accounts and systems of environmental-economic accounting to ensure coherence of the indicators;
- Should be based to the greatest extent possible on international standards, recommendations, and best practices;
- Should be constructed from well-established data sources drawing on public and private data, be quantifiable, and be consistent to enable measurement over time;
- Should allow, where relevant for disaggregation by (i) characteristics of the individual or household (e.g. gender, age, income, disability, religion, race, or ethnicity); (ii) economic activity; and (iii) spatial disaggregation (e.g. by metropolitan areas, urban and rural, or districts);
- Should have a designated lead international organization or organizations to be responsible for timely, high-quality national reporting of the indicator with due consideration to cost effectiveness and lean reporting processes.

And in terms of being effective at changing political behaviour, experience from the environmental sector³ suggests that publicising the results is important - media outreach and in particular rankings can help.

Note that no perfect targets exist; there will always be trade-offs between technical rigour in trying to capture the full impacts of disasters, and the political necessity of simplicity and clarity.

5. Options for disaster targets and indicators

It is difficult to find a single outcome target that will also provide appropriate information and analysis for effective decision-making across the three aspects of disaster risk reduction - reduction, prevention and resilience. It is therefore likely that several targets will be required and/or targets will need to combine several different aspects.

Further, the choice of indicators is important. If the target level must be relatively simple, for reasons of political acceptability and available of international data, the indicators are key. Indicators do not need to only describe how to measure the target, but can provide incentives for policy choices. Broader indicators of risk, vulnerability, and more qualitative measures may not work at target level, but could provide useful information for policy change at national level.

Also note that whilst not all of data for the following metrics are currently available, the redevelopment of the HFA provides a major opportunity to require countries to provide the data for these indicators.

Disaster losses

The level of disaster loss could perhaps be seen as the ultimate indicator of success - if losses are increasing, clearly disaster risk management is not being effective and vice versa. Disaster losses have clear political traction. Of all possible targets, economic losses and mortality are the easiest to measure, with existing international databases, but it should be noted that there are still significant gaps in coverage, especially at local scale, and data collection is not yet standardised.

Such losses can include:

- human losses – the indicator most often used is mortality, but this could be widened to include people injured, affected or displaced, working days lost (to represent the impact on livelihoods), school days lost (to represent the long term impact);
- physical damage - houses and local infrastructure damaged and destroyed, days of closure of critical infrastructure (such as health, educational and governance facilities),
- economic loss – the replacement costs of damaged and destroyed assets – note that this should apply at household as well as national level, and include the productive assets of those most at risk, often including crops and livestock.

These metrics could be expressed in both absolute and relative (to population, GDP etc) terms.

Such losses would need to be measured through national databases which are able to record the loss and damage associated with small, recurrent extensive disasters as well as large, infrequent intensive disasters. As of November 2013, 71 countries had such databases, and the number is increasing all the time (UNISDR have a target of 90 countries by 2015). Nevertheless, it is clear that there is still a significant gap in coverage, particularly in Europe and Africa, and in some cases quality. This could be solved if the post-HFA included a requirement for all countries to establish a loss and damage database which met international minimum standards, thereby providing information for national level, as well as global level aggregation.

However, there are problems with using a loss-based target. There is a high variability in hazards - the losses during a year may be substantial, despite major risk reduction efforts (consider the case of Typhoon Haiyan in the Philippines), or conversely losses may be minimal in one year due to an absence of major disasters, but the vulnerability is being stored for the future. Loss targets are inherently a retrospective approach, providing little information on future risk. This means that monitoring progress on disaster risk reduction cannot rely solely on direct disaster loss information, and that a variety of indicators are necessary to track exposure, vulnerability, risk and risk reduction actions.

Box: Some thoughts on economic and mortality targets

Targets based on economic impacts and mortality have received the most interest to date, but there are shortcomings with such targets that are worth exploring.

Target based on economic impacts

This is one of the simplest targets to measure - it will clearly require standardised and effective loss and damage databases, which do not yet exist universally, but which are evidently needed. Having this as a target would provide an impetus to achieve this, and the redevelopment of the HFA provides an opportunity to commit governments to collecting this data. In addition, it has obvious political appeal. It is likely to get greater engagement from the national ministries of finance and private sector, which is important. And it could stimulate greater focus on the prevention of new risk – it may provide opportunities to push for new development pathways to avoid the creation of unacceptable levels of risk.

However, is this target appropriate for an instrument whose overarching objective is to reduce poverty and leave no one behind?

- It will continue the current emphasis on major disasters – as opposed to extensive ones which have a key role in undermining development for the poorest.
- It will entrench inequality. It will focus national efforts in areas of high economic productivity such as industrial and metro areas and is likely to leave behind those in poor rural communities, such as those impacted by Typhoon Haiyan, for example. Are DRR efforts successful if, for example, 90 per cent of national assets were protected from disasters but these assets were owned by the elite minority – leaving the majority of the population vulnerable?
- It inherently focuses on assets rather than people and a key policy response is likely to be insurance, which again is often not appropriate for the poorest segments of the population.

How can this target be made more useful?

- Year on year losses are obviously highly dependent on a country's hazard profile – is it possible to make actual losses relative to modelled losses?
- How can household economic losses be sufficiently captured?
- Losses are also dependent on the level of development/amount of assets – making Japan's losses higher than Haiti's for example. This problem can be solved at country level by looking at losses relative to GDP, which is a better reflection of the economic burden – is it possible to do this at sub-national level?
- Measures for economic impacts should be defined unambiguously. A proposal of a [technical working group on loss data standards](#) proposes that countries report on direct tangible losses for the whole country by peril type and per year aggregated over all sectors and all loss owner categories by providing the official maximum absolute values along with a qualification of the uncertainty of those estimates.

Target based on disaster mortality

This is also target that is easy to measure - although the same caveats about databases apply. It is simple and clear, and it has obvious political appeal.

Will this have policy relevant outcomes?

- It neglects the many physical, social, economic and psychological impacts that disasters have on survivors – many of which are long term impacts. Impacts on livelihoods are particularly acute and key to addressing poverty; retaining and protecting productive assets is key.
- It is likely to focus government policy on risk reduction, rather than the creation of new risk.
- As above, it is likely to continue the focus on major intensive disasters which cause deaths, rather than extensive disasters

- Global death rates for weather-related disasters (around 80 per cent of reported disasters) are already decreasing⁴ - the burden of achieving this target will be on countries with earthquakes and tsunamis – perhaps this is no bad thing.
- There are already political incentives to reduce disaster deaths (disaster deaths create significant media attention, and no government wants to be accused of doing too little on this) so it is questionable whether an international target on deaths will be a stimulus to greater action.

How can this target be made more useful?

It is clearly important to focus on the social impacts of disasters – but instead of looking simply at mortality, this needs to be widened out to include other impacts. At the simplest level, this could be widened to include indicators such as the numbers of people harmed/affected/displaced, working days lost (to represent the impact on livelihoods), and school days lost (to represent the longer-term impact on poverty). A more comprehensive approach would be to include longer term impacts, on physical and mental health and wellbeing.

Preventing impoverishment due to disasters

From the perspective of the post-MDGs framework, which aims to reduce/eradicate extreme poverty, it could be argued that this is a better ultimate indicator of success. Three targets have been proposed [by the World Bank](#):

- no increase in proportion of population in poverty;
- no additional people enter poverty, measured using longitudinal panel data; and
- less than a 1-in-50-year chance a disaster will return proportion of population in poverty to 2015 levels, based on modelled variables.

These pose interesting targets, but may only be applicable in the case of intensive disasters – they may not be able to capture extensive risk.

Risk

Could this be, in fact, the ultimate indicator of successful DRR as it integrates the core features of disaster risk: hazard, exposure, vulnerability and capacity. A risk target could either be by way of an index or modelling.

The [World Risk Index](#) defines risk as the interaction between a natural hazard and the vulnerability of a particular community. It takes into account social, political, economic and ecological factors to determine the capacity of an affected community to respond. It looks at four main components – exposure, susceptibility, the capacity to cope and adaptation strategies - which take into account at least 28 indicators, with specific weightings.

Probabilistic risk assessment is the result of the evolution from early days of insurance to computer-based catastrophe modelling using advanced information technology and geographic information systems (GIS) for mapping. It involves modelling:

- Hazard: Comprehensive global hazard modelling is relatively well developed although the spatial scale rarely reaches down to community level, and models for earthquakes (e.g. [GEM](#)) and cyclones are more advanced than other hazards.
- Exposure: Modelling data is improving – JRC is developing a new model, the Global Human Settlement Layer, which will map building infrastructure, down to a 1:10K-1:50K scale. <http://ghslsys.jrc.ec.europa.eu/>. Most available models only consider population and key infrastructure/asset data (including the fragility of building materials and value of installed infrastructure and production) – they do not include crops and livestock on which many at-risk people depend.
- Vulnerability and capacity: Clearly these are complex multidimensional issues that are difficult to model. They should include information on social, economic and political variables,

information on attitudes, beliefs and perceptions; information on preparedness, human resources and capacities and capabilities to anticipate, cope and recover. However, such models use much simpler proxies.

This modelling can produce useful metrics such as Probable Maximum Loss (PML) for different return periods and the Average Annual Loss (AAL) or technical risk premium (this is equivalent to the annual average investment or saving that a country would have to make in order to approximately cover losses associated with future major events.)

Vulnerability and resilience

These issues are absolutely core to reducing disaster risk, but difficult to measure. They should include indicators which capture both an individual's/family's capacities and resources (assets, access to financial services, education, health, empowerment), as well as that of the state, community and others (encompassing social cohesion, trust, social protection, emergency services and preparedness). The weighting and importance of these various indicators are likely to vary depending on the context, so it is unclear whether such indices could be universal. Several indices are currently available, these include:

- [IDB's Prevalent Vulnerability Index](#): This is comprised of 24 indicators across three key categories – exposure and susceptibility, socio-economic fragility, and lack of resilience. The indicators – derived from reliable existing databases - express situations, causes, susceptibilities, weaknesses or relative absences affecting the country, region or locality under study, and which would benefit from risk reduction action.
- [World Bank's proposed Index of preparation for risk](#) comprises measures of assets and services across four key categories - human capital, physical and financial assets, social support, and state support - that influence preparation for risk. In contrast to the more comprehensive approach taken by the PVI above, this index uses representative indicators – choosing two indicators per category. For example, human capital is assessed with indicators of average years of schooling, and the immunization rate for measles; and assets is assessed by indicators for the proportion of households with less than \$1,000 in net assets, and access to finance index.

Bottom up approaches – balancing statistical data with perceptions

A further approach is to consider subjective indicators. Perceptions of what constitutes being or feeling vulnerable can vary enormously depending on an individual's characteristics, relationships, networks and status. Asking people whether they feel vulnerable or safe compels us to question the assumptions that go into both vulnerability and resilience assessments and gives voice to those at risk. It could provide an important method of ground-truthing top-down data.

Perceptions are particularly important when dealing with risk and uncertainty. Decisions have to be made but there is often a lack of information on the risks and future scenarios are not clear. People have to prioritise and make trade-offs and this is rarely done purely on an objective basis.

Perceptions matter because they can have significant consequences for people's behaviour and activities; similarly, people's actual experiences of and exposure to disasters shape their future perceptions and responses. People may accept levels of risk or may perceive them as unacceptable and take action so people's perceptions of risk and disaster trends are fundamental to determining their ability to build resilience.

[Views from the Frontline](#) has surveyed thousands of people on their perceptions of risk, amongst other things – in 2013, the survey comprised 21,455 surveys across 57 countries. There are a range of global polls which also collect useful information: in 2010/11, the [Gallup World Poll](#) asked whether people in Latin America felt ready if they were hit by a natural disaster;⁵ the [World Values Survey](#) and the [Global Barometer](#) collect data on a range of things, including empowerment and trust which are key for building resilience.

Underlying risk drivers and national economic resilience

UNISDR has proposed two sets of existing global statistics to represent how countries are dealing with their underlying risk drivers, and how economically resilient they are. This is comprised of:

- A composite indicator to explore underlying risk drivers, made up of economic and fiscal structure; poverty and social vulnerability; environmental degradation and climate change; urbanization; coping capacity; and overall governance
- An indicator to compare risk to the size of a country's economy, its capital stock, investment and savings levels, trade flows, insurance penetration, the fiscal health of government, the degree of social protection and other metrics. The current scheme is based primarily on national economic resilience, which has similarities with the IDB's Disaster Deficit Index, but this may be broadened out to disaster resilience, using the five capitals (physical, social, human,).

This is currently being reconsidered, as feedback suggested that the delineation was not clear and the long list of indicators may introduce errors in autocorrelation and difficulty in weighting.

Disaster risk reduction actions and policies

These are input/process indicators and include measures of public commitment, such as availability and application of legislation, the level or proportion of annual government spending allocated to disaster risk reduction, and the integration of disaster risk assessment into private sector development projects. However, input indicators do not guarantee a reduction in risks (for example, whilst disaster legislation may exist, it may not be either effective or enforced) and outcome targets generally have more political traction.

The IDB has a Risk Management Index that reflects the organisational, development, capacity and institutional actions taken to reduce vulnerability and losses, to prepare for crises and to recover efficiently from disasters. Indicators cover categories of risk identification, risk reduction, disaster management and governance and financial protection. UNISDR is developing an index for policy change for the post HFA which will look at government policy in two categories – those specifically for the public sector and those to influence action in other sectors.

¹ The Kenyan co-chair said: We have to get better at responding, preparing, and responding to the challenge. This is just going to get worse. ...We have to come up with targets to signal the scale of the challenge. ... Superstorm Sandy showed vulnerability to disasters is approaching a huge scale. I don't think we are quite equipped to deal with this, and understand it. We need to dig a lot deeper if we are to address the challenges in the future.

² See [World Development Report 2014, Risk and Opportunity](#)

³ From a talk given by Alex de Sherbinin from Colombia University at a disasters targets meeting in New York, July 2013, based on '[Indicators in Practice](#).'

⁴ For example, in East Asia and the Pacific, mortality risks for floods and cyclones are now about one third of what they were in 1980, relative to the size of the region's population. See Global Assessment Report, 2011, page 22, <http://www.preventionweb.net/english/hyogo/gar/2011/>

⁵ In 2010/11, the Gallup World Poll asked 18 countries in Latin America several questions, including: Do you think you and your family are ready to deal with a natural disaster if one should happen in the city or area where you live? The answers were 28% yes ready and 69% no, not ready. They also asked if the following groups were ready: police, fire department, local hospitals, national government, military, Red Cross, charities.