



At what cost recovery? Estimating the cost of natural disasters

When natural disasters, such as earthquakes, storms and hurricanes, are reported in the media, they are often accompanied by an assessment of the cost of the disaster. While such information can be useful to help governments and international organisations target aid and recovery efforts, the details of what is included in the assessment, and the methods used, are often unclear.

Now, researchers have attempted to provide a robust definition of the total economic cost of a disaster. In particular, the researchers explored the challenges of assessing the loss of economic welfare from a disaster, from the point of view of governments and international organisations seeking to make decisions about future financial aid and prevention measures in the affected region. The analysis focused on costs from an economic perspective and did not consider some of the other major costs of a natural disaster, such as loss of life.

They demonstrate that the definition must include the indirect costs of disasters, such as interruption of economic activity and reduced output from industry, as well as direct costs, such as the damage caused to buildings, goods and services. It should also specify the purpose of the assessment, as this determines which cost elements are included, and include a baseline from which economic losses can be measured.

In particular, the loss of economic activity and output should also include the cost of reconstruction. Even when an economy can rapidly adapt its remaining production capabilities to compensate for lost output in the aftermath of the disaster, some of that effort has to be put in to rebuilding, so 'normal' output still falls. Determining output losses also brings with it a number of other complications: after a disaster, the local economy might not be running as productive as before, meaning some standard economic assumptions may no longer apply.

A disaster can also affect a region's entire economic system, and this in turn can affect output losses. Analyses will need to take account of effects, such as the unpredictable effect of price inflation in the region, the risk of poverty traps for local people, the impact of interrupted services, such as electricity or water on unaffected businesses, and the length of the reconstruction phase. Positive effects may also occur, such as increased demand leading to an economic stimulus, or the opportunity for individuals, businesses and governments to adopt more productive processes during reconstruction; these could even reduce output losses.

The researchers also review the methods that could be used to carry out such assessments. These include survey data from affected households or businesses, although the researchers urge caution when combining data from several sources. Econometrics analyses, which look at average indirect costs across several events, sometimes reach contradictory conclusions, which the researchers ascribe to different impacts from large and small disasters. While large disasters can have a negative impact on growth, sometimes smaller disasters can enhance growth.

Finally, the researchers identified four areas where further research would help reduce the uncertainties in the assessment. These included: how the economic system responds to disasters, and how markets behave outside equilibrium; interactions between economic cycles such as business cycles and financial crises and external events such as disasters; the role of networks, including sectors like water, transport and the electricity system; and how financial factors affect disaster recovery - a particular problem for developing countries.

Source: Hallegatte, S. & Przulski, V. (2010). *The Economics of Natural Disasters: Concepts and Methods*. Policy Research Working Paper 5507. The World Bank, Washington D.C. This report can be downloaded from: <http://go.worldbank.org/ZHXFE0U560>

Contact: hallegatte@centre-cired.fr

Theme(s): Environmental economics, Natural hazards

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To cite this article/service: "[Science for Environment Policy](#)"; European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.