

IPCC neglects practical tools for coping with risk

Jay Gulledge calls for a change in focus

Recent high-level recommendations to the Intergovernmental Panel on Climate Change (IPCC) miss a critical opportunity to call for a greater focus on risk management and the tools decision makers need to cope with an inherently uncertain future.

The IPCC is the most comprehensive and reliable source of scientific information about climate change and its consequences. In August, an international consortium of science academies offered helpful advice to the IPCC for executing its next major climate assessment, due in 2014.

The InterAcademy Council (IAC) review says, 'Any actions based on scientific evidence inevitably involves [sic] an assessment of risk and a process of risk management.' Yet, after thoroughly critiquing how the IPCC characterises scientific uncertainty, an important prerequisite for risk assessment, the IAC review never returns to the subject of how the IPCC assesses risk.

Inevitable uncertainty

In its two decades, the IPCC has developed a strong scientific case that the climate is changing because of human activities and has identified many potential consequences. But it has focused less on practical tools to help decision makers grapple with the most complex and far-reaching public policy issue in history.

The IPCC's first report in 1990 said, 'The unequivocal detection of the enhanced greenhouse effect from observations is not likely for a decade or more.' This statement was scientifically sound, but it invoked the mindset that policy would flow spontaneously once scientific uncertainties were resolved. Twenty years on, we are now quite certain that human activities are indeed warming the planet, yet important uncertainties remain.

Dr. Anthony Janetos, director of the Joint Global Change Research Institute, encapsulates the problem: 'The scientific community has not done the right thing in that we've all been caught up in this mantra that we must reduce uncertainty. [Instead] what we do ... is ask more questions and, in many cases, that increases uncertainty.'

Risk implications neglected

Since uncertainty is endemic to the future, when the second IPCC assessment concluded in 1995 that 'The balance of evidence suggests a discernable human influence on the global climate', the IPCC should have reconvened around the risk implications of this probable human influence. Instead, it redoubled its effort to reduce physical science uncertainties and became further entrenched in a working group structure that separated the physical and social sciences, inhibiting the type of interdisciplinary collaboration needed for effective assessment and communication of risk.

For example, every farmer knows that weather extremes destroy crops and kill livestock. Yet, for decades economists have estimated the costs of climate change using projections of average temperatures because these were available from climate models. While useful for scientists studying the physics of the climate system, climate averages have little utility for quantifying risks. An emphasis on averages instead of extremes is just one example of how the IPCC has missed opportunities to provide practical risk-based tools to decision makers.

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Combine natural and social sciences

In 2007, the fourth IPCC assessment acknowledged the policy implications of a future that could include severe but unpredictable outcomes: 'Responding to climate change involves an iterative risk management process that includes both adaptation and mitigation and takes into account climate change damages, co-benefits, sustainability, equity and attitudes to risk.' This concept-laden statement entails an intensive interdisciplinary research effort that should have begun in earnest fifteen years ago, yet remains disorganized and drastically underfunded.

Just as the IPCC successfully convened the physical sciences community to perform systematic assessments of past and future changes in the climate system, it should now combine the talents of natural scientists and social scientists—with social scientists and ecologists setting the agenda—to develop practical tools decision makers can use to manage a risky future.



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Over-reacting to ash

Europe got it wrong, argues **Giovanni Bisignani**

The reaction of European governments to the Eyjafjallajökull volcanic eruption unnecessarily turned a spectacular natural phenomenon into a US\$5 billion disaster for the European economy and an international embarrassment.

Safety is the aviation industry's number one priority. If it is not safe, nobody would want to fly. Aviation is the safest form of transport because decisions on safety are made on the basis of solid facts. The Eyjafjallajökull fiasco began when Europe's governments took uncoordinated decisions based on a theoretical mathematical model of the volcano's ash dispersion produced by the Volcanic Ash Advisory Centre (VAAC), in this instance, the London VAAC.

Re-inventing the wheel

Volcanic activity was a new challenge for Europe's governments. Instead of looking to global best practice on how to manage such events, they chose to re-invent the wheel. Even though the skies over most of Europe were bright blue, airspace across the continent was shut down for five days – and with it, large chunks of Europe's economy.

Atmospheric ash is a meteorological condition that happens regularly in many parts of the world. There are on average 50 volcanic eruptions each year. International best practice is to treat such situations in line with standard operational procedures for adverse weather conditions.

Global best practice

Throughout the world airlines and their operating crews are charged with making the decisions on when and where to fly. This is done using a sophisticated system of advisory notifications. A zone is identified where ash is detectable in high concentrations and where flying would be dangerous. Airlines are provided with accurate data on ash dispersion to make operational decisions for the rest of the airspace. Using this system, there has not been a single fatal accident related to volcanoes.

Had Europe followed global best practice, limited airspace closures would have been identified and we would not have seen the scale of the disruption experienced in April.

Single European Sky

The first lesson is the need to harmonize and enhance the effectiveness of the operations of VAACs. Both France and the UK have VAACs. The UK had geographic responsibility for April's events. Had it used the French methodology, a much smaller no-fly zone would have been identified.

Eventually, guidance was provided based on varying ash densities, shrinking the no-fly zone. But a fundamental problem remains. Europe is focused on a proscriptive regulated approach based on ash concentration levels rather than the global standard operational approach.

The volcano was also the strongest case ever for the Single European Sky. An initial frenzy of political hyperbole about the appointment of a network manager has not materialized. We are still a long way from achieving the US\$6.5 billion (about £4,000 million) cost reduction that a truly united European sky would bring.

Solutions must be harmonised

How do we move forward? April's crisis highlighted deficiencies. The International Civil Aviation Organization (ICAO) is working to close the gaps in cooperation with IATA and the industry. But this process will take time—a year at least.

In the meantime, Europe is also taking action. There is some progress on revised modeling for producing the VAAC maps which will be tested in the coming months and the terms of reference for a crisis command centre are being

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developed. But without the infrastructure of the Single European Sky there is not much hope that the next crisis will be managed any more effectively. And whatever the final solution, it must be harmonized with global best practices.

There is one undeniable fact. As Europe's air traffic re-started, over 200,000 flights occurred in areas where ash was meant to be present. Engine inspections following those flights revealed absolutely no abnormalities. There can be no clearer indication of the need for all parties to find a better way to deal with the next volcanic ash challenge.



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