

Correspondence

Don't let climate crush coral efforts

June's International Coral Reef Symposium brought together more than 2,500 influential people who work on coral reefs, yet discussion centred on solving the global-scale issue of climate change, following a worldwide coral-bleaching event (*Nature* <http://doi.org/bdmn>; 2015). In our view, the symposium missed an important opportunity to develop real conservation outcomes for coral reefs at a local scale (see J. E. Cinner *et al.* *Nature* **535**, 416–419; 2016).

Discussions on climate change seem unproductive for environmental managers and scientists on the ground. Few individuals have a platform for engaging with global political leaders to drive the conservation agenda and influence policies that affect climate trajectories. Instead, we should be working together to develop strategies for local action that are robust to the uncertainty surrounding future climate scenarios.

We shall have to differentiate between those uncertainties that we can resolve at a local scale, such as the benefits of reducing overfishing or inputs of sediment and nutrients, and those that we cannot. To conserve coral reefs, we need objectives that can be turned into cost-efficient actions to deliver measurable, uncertainty-proof, local benefits.

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Social changes affect water quality too

Researchers need a better understanding of the effects of social shifts on river basins and water catchments, in addition to the impacts of climate change (A. Michalak *Nature* **535**,

349–350; 2016). To help safeguard water-catchment services against these social changes, communities should become more involved in water-management issues.

Urbanization and industrial and agricultural developments all generate changes in legislation, policy and demographics. These can adversely affect water-catchment services, which provide social, cultural and environmental benefits such as flood defence, recreational space, geodiversity and increased biodiversity.

Catchment-management initiatives, such as improving drinking-water quality and offsetting flood risk, are estimated to cost more than £100 billion (US\$130 billion) over the next 15 years in England alone. By engaging with these initiatives, local communities can contribute to their implementation and ensure that they are cost-effective.

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Stop marginalizing rare syndromes

Rare medical disorders are extremely challenging for patients and their families, and for researchers trying to study them. As a scientist and father of a 41-year-old son with CHARGE syndrome, which affects the heart, ears, eyes and other organs, I believe that we need stronger commitment, a more consistent approach and different types of knowledge and skills to move these investigations forward.

Promising initiatives include the International Rare Diseases Research Consortium and European Union projects on rare disorders under Horizon 2020. We still urgently need to improve and speed up genetic diagnosis, and to understand and mitigate the effects of these disorders on people's health.

This calls for an interdisciplinary strategy, but it

faces significant methodological challenges. In a small study of 81 participants, for example, we found that those with Down's, Williams or Prader–Willi syndromes all had health problems related to diet and inactivity; also, there were important differences between disease groups and between women and men (M. Nordstrøm *et al.* *Food Nutr. Res.* **59**, 25487; 2015). Although such differences need to be underpinned by a wider evidence base from international collaborations, they indicate that a more sophisticated and personalized approach to care is paramount.

People with rare syndromes lack the political power of larger patient groups, so advances depend on holistic scientific insights and on funders overcoming their reluctance to support marginalized research.

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Venezuela's brain drain is accelerating

Your interview with the president of the Latin American Academy of Sciences, Claudio Bifano, barely reflects the scale of the scientific crisis in Venezuela (*Nature* **535**, 336–337; 2016). Its academic brain drain, for instance, is worse than indicated.

The figures you quote for scientists leaving Venezuela are from a preprint we released at the end of last year. Since then, the number has swollen rapidly from 1,504 to 1,820 — up from 1,783 in July, when the full paper was published (J. Requena and C. Caputo *Interciencia* **41**, 444–453; 2016). The latest tally represents almost 15% of Venezuela's scientists, who account for some 33% of its research publications. This rapid loss is coupled with the stalled recruitment of new talent.

This is in lamentable contrast to the end of the last century, when the research community grew by

200 or so Venezuelan scientists a year. Hugo Chávez took over as president in 1999 and, in my view, 16 years of disastrous science policies followed.

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Strengthen China's flood control

Heavy rainfall in China's Yangtze River basin as a result of the longest and strongest El Niño event for 65 years has led to severe flooding and economic losses of almost US\$10 billion. Massive investments in flood defences after the 1998 deluge, which killed more than 4,000 people, proved inadequate. New tactics could help boost China's flood control.

Alongside better levees, enlarged reservoirs and improved early-warning systems, disaster-risk analysis can guide strategies for managing disasters (see S. L. Cutter *et al.* *Nature* **522**, 277–279; 2015). Disaster risk depends on the degree of hazard, exposure and vulnerability (Y. Zhou *et al.* *Risk Anal.* **34**, 614–639; 2014).

Accurate hazard assessment calls for a better understanding of extreme weather events and their rising frequency and intensity. Exposure calculations should factor in different population densities across the region. And vulnerability estimates should note the efficacy of early-warning systems and the resilience of local infrastructure (J. Birkmann *et al.* *Nat. Hazards* **67**, 193–211; 2013).

Speedy access to and effective dispersal of reliable disaster-risk information and of disaster-relief professionals will help to prevent and mitigate catastrophic outcomes, including secondary disasters such as landslides.

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