



# Young scientists reflect on how to effect real change for Rio+40

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The Rio+20 Conference on Sustainable Development (20–22 June 2012) forces reflection on progress since the original UN Conference on Environment and Development that was held in Rio de Janeiro in 1992. Scientific knowledge relevant to sustainability has grown exponentially since the first conference, but concrete steps to achieve sustainability have been slow or even non-existent.

For example, leading forest pathologists and entomologists from around the world recently issued the 'Montesclaros Declaration',<sup>1</sup> calling for a phasing out of trade in live plants and plant material given the threats this trade holds for forests globally. The call reflects a measure of desperation from scientists working with many natural ecosystems and witnessing an unprecedented, rapid decline in their sustainability – in this case, caused by the increasingly rapid homogenisation of pest and pathogen communities between forests of the world, with devastating effects.

Why is the call unlikely to be heeded? The plant trade industry is worth billions of dollars annually, and being able to buy an assortment of woody plants from a local nursery is taken for granted by the public. But importantly, the data on damage from pest and pathogens spread via plant trade is hidden from public view in scientific journals. It is hard to imagine how such a well-hidden literature could motivate the public to put pressure on local governments and industries to adopt policies to limit potential damage from the live plant trade.

Attendants at the meeting of the Global Young Academy (GYA) – an organisation representing 173 elected early career researchers from all fields of science and from 54 countries – held in Johannesburg in May 2012 grappled with questions around sustainable development. The 20 years between Rio and Rio+20 cover the period during which many of us were recruited to, trained in, and successfully started careers in science. It has been a period marked by an unprecedented rate of scientific discovery, unimaginable increases in interconnectedness (both in terms of research and how research outputs are shared) and a rapid change in how scientific output and impact are measured.

The consensus that emerged from the GYA meeting is that, while there has been much progress in knowledge and innovations to improve global sustainability, implementation has lagged. These impediments appear often to be political, rather than technical. In Canada, for example, the government has banked its economic recovery on development of the oil sands in northern Alberta, and has made efforts to reduce the environmental regulation required to do so. Such decisions lead one to ask what the value of yet another high-level meeting on sustainability is all about?

No doubt Rio+20 ~~will~~ help raise the profile of the most pressing, cross-cutting issues the world faces in achieving sustainability. Consensus statements on the need for change and the imperative of action ~~will~~ abound. Yet, real progress towards sustainability will come only from constituencies, not consensus statements. In Johannesburg, GYA members decided that what matters much more for achieving progress on sustainability is raising the level of knowledge more broadly in civil society by improving the quality of scientific education. This progress hinges on the ability of scientists to communicate effectively with decision-makers, and the development of a bond of trust between society and scientists.<sup>2</sup>

The scientific community needs to face up to its own shortcomings in this regard. Few of the young scientists attending the GYA meeting could attest to being encouraged or equipped for communication outside the scientific community during their training. There is also little motivation in current evaluation criteria to stimulate a more outward looking and engaging approach from these young scientists. In fact, most evaluation and promotion criteria appear to discourage such activities.



These mistakes cannot be repeated for the next 20 years, when the increases in the pressures on natural ecosystems and society will be even greater. If we are to make progress towards sustainable resource use, then scientists will have to accept the responsibilities that come with the privilege of being knowledge creators. These responsibilities include sharing knowledge more effectively. (For an historical example of knowledge sharing, see Weiss<sup>3</sup> thesis on Louis Pasteur's teaching of the scientific method to a community of peasant women during the silkworm malady in the south of France, 1865–1870.) It is only in this way that we stand any hope of ensuring our communities' sufficient motivation, and

our leaders' sufficient understanding, to make the decisions that seem so obviously necessary and urgent to those who have access to the relevant information.

## References

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