

# Ground control: linking top-down and bottom-up approaches for international nanotechnology governance

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Work in nanoscale science and engineering cuts across academic disciplines and industrial sectors, presenting government regulators, insurers, corporate risk managers, legal scholars, and scientists with unique challenges. Foremost among these challenges are uncertainty, risk, complexity, and regulatory gaps. To tackle these challenges, calls have been made for an international nanotechnology oversight board comprised of leading scientists, engineers, legal scholars, industry experts and liaisons to national and international regulatory agencies. International collaboration among these entities, including transparent data and information sharing is a critical aspect for creating risk governance solutions for emerging technologies. This paper argues that such an international, techno-scientific enterprise, however, must not be the sole arbiter of risk governance in nanoscale science and engineering. To cede regulatory and governance control to such an enterprise would throw out the lessons we can learn from cautionary tales of similar international governance efforts, such as the International Panel on Climate Change (IPCC). The goal of this paper is to position calls for an international nanotechnology oversight board within a framework that bridges expert-oriented (top down) and stakeholder-oriented (bottom up) approaches to risk governance. We argue that a bridge between these two approaches requires a framework of polycentric governance that links 'on the ground' knowledge of practitioners to an international governance body, which can in-turn synthesize and share such knowledge with other stakeholders. Our argument for a polycentric approach is based on a review of the literature proposing an international nanotechnology oversight board (e.g., as proffered by Marchant and White, among others). Next, we review the IPCC with an eye toward 'learnable lessons' vis-à-vis an international nanotechnology oversight board. We analyze the IPCC in light of the calls for 'Retiring the Social Contract for Science.' Ultimately, our aim is not to tear down the proposed international nanotechnology governance body, but rather to anchor 'top down' conceptualizations of governance to 'on the ground' decision-makers, stakeholders, and users in pursuit of a more robust approach to nanotechnology risk governance that generates greater trust, transparency, and collaboration in pursuit of safely employing nanotechnology for the benefit of society.

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