

Science Culture: Where Canada Stands, Ottawa (ON), Expert Panel on the State of Canada's Science Culture, p. 222, Council of Canadian Academies 2014

This publication is a valuable treatise on the subject of science culture and related aspects of citizen engagement with science.

It contains several insights about the forms and functional dynamics of science culture and its impacts across individuals, democracy/public policy and economy firmly embedded in a well-defined logical framework. Inferences drawn are communicated in a simple straight forward manner. Although Canada and its citizens provide the setting, this creates a learning context for countries engaged in similar investigations to draw useful leads about related approaches, tools/techniques and indicators.

The framework of analysis takes many comparable investigations from across the world into account, even as it indicates its own limitations. Besides, assumptions that guided investigations and correlations that are not direct due to paucity of empirical evidences are also clearly stated.

Three stakeholder groups will derive useful lessons from the publication. Researchers investigating theoretical constructs of science culture and related implications of preparedness of citizens to align themselves with plans and policies of countries they focus on, can suitably adapt the thrust areas, indicators and related main/sub questions for their contexts. Importantly this reflects a much needed acknowledgement of factors that could determine preparedness of respondents to comprehend and relate to the investigations. Financial and civil society institutions and governments interested in systems of governance that mainstream science and technology for development can consider the scope for individual and synergistic impacts of determinants of preparedness. This could help define robust and

mutually reinforcing institutional mechanisms to fulfil goals of development guided by science culture. Formal and non-formal education and related engagement initiatives too can derive useful learning.

The inventory of science communication initiatives in Canada, some milestones in the development of science culture in Canada, indices of promise/reservations of science and civic science literacy stimulate integrated thinking.

Comparable with circumstances in India: Mainstreaming science/science & technology to bridge gaps

The definition of science culture is a typical case in point. The felt need to bridge science and society duly recognizing the mutually reinforcing impacts they have on each other appears to be central to the investigations. This resonates with comparable initiatives through the Department of Science & Technology, Government of India and other institutions aligned with India's development aspirations guided by science, technology and innovation. Cultural values, cognition, related biases and heuristics that appear to define decision making, networks and other institutional mechanisms that enlarge the interface between citizens, decision makers and related enablers of development find their rightful place in the framework. The special focus on gender balancing in development guided by science and technology is equally important.

Some important insights about the dynamics of science culture

The authors define the manifestation of science culture in the country as its preparedness to 'embrace discovery' and 'support the use of scientific knowledge and methodology'. These are arguably determined by attitudes and engagement to optimize on the potential inherent in all related stakeholders. Basic levels of scientific literacy, links across all levels of education and training that foster and sustain interests in science and technology, an enabling policy milieu and finances that support relevant transitions appear to influence transitions. Policies that allow scientists employed in government institutions

communicate about science and technology developments and the spread and depth of engagement with marginalized communities and national and regional leadership are equally important.

Five revealing insights to minimize speculations/broad brushing correlations about impacts of science culture:

1. Evidences at hand (in Canada) limit the degree of positive correlations between personal and social benefits with science culture. This further emphasizes that 'science culture is not itself sufficient to help realize benefits'.
2. Informed individual decisions in daily life do not confer equal value to the knowledge of scientific processes and scientific facts.
3. High levels of knowledge do not guarantee proportionate levels of public participation/policy making.
4. An increase in the number of skilled citizens does not necessarily increase economic output in all contexts.
5. Levels of awareness about concepts in science may not be adequate enough to help engage in debates.

Interestingly the domains of science culture (probably in the specific context of Canada!!) are presented as 'a fuller experience of science, discovery, exploration to appreciate/understand the world and celebrate experience of science' etc. I take the liberty of indicating these as subtle manifestations of science culture at the upper end of the continuum of impacts. Some of the lower-end entry points/manifestations could be concerted and well-informed actions that improve quality of life and with implications for sustainable development. These could however be guided by a clear acceptance of the limits and limitations of prevailing understanding of consequences of adopting a science and technology based growth trajectory.

Readers are invited to take note of the specifics of the qualitative and quantitative attributes of the inferences about science culture in Canada and the backdrop/context that defined them in the study cited in the publication. Any attempt

to re-articulate them will dilute the vehemence or the clarity evident therein. On the other hand, the central purpose of this review was to highlight some critical cross-cutting and unique aspects of science culture defined by the authors of the publication.

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