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POLICY REPORT

Regulatory Foresight and Change Drivers

Andrew MacDonald, Paul De Civita, André Downs[1]
Policy Horizons Canada

Introduction

Governments are tasked with many responsibilities that are fundamental to ensuring social and economic well-being. One key mechanism to exercise these responsibilities is an effective regulatory function. Regulation is an instrument that, at its best, can be finely tuned to respond to changing and dynamic needs in complex societies.

While some regulatory interventions are unanticipated and required on an urgent basis, developing a practice of regulatory foresight could assist government by providing a general sense of how its regulatory functions must be prepared to meet future needs.

The purpose of regulatory foresight is to develop a better understanding of emerging issues, the implications for existing regulations, and the requirements for new regulations. Regulatory foresight is not an approach for governments to anticipate specific forthcoming issues in order to prepare regulations in advance. While governments are largely reactive to the specific dimensions of a problem, regulatory foresight may help anticipate general categories of problems or needs that are likely to require regulatory intervention.

Foresight uses a set of tools that assist in systematically considering and exploring credible futures (Padbury and Christensen, 2009). Foresight does not attempt to predict the future, but is instead a way of thinking that can help anticipate change and serves to identify plausible events or outcomes. As an introduction to the concept of regulatory foresight, this brief begins with a discussion of some potential benefits or reasons to engage in foresight exercises, followed by a brief overview of horizon scanning, the practice of looking at the surrounding world for drivers of change in the future, in a public sector environment. The brief then presents a discussion of potential factors that can drive regulatory change and proposes one identified technique for engaging in regulatory foresight, that of scanning current scientific indicators. The brief concludes with some suggested next steps.

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Why Engage in Regulatory Foresight

Regulation necessarily involves an intrusion into the normal functioning of a market or system, and instructs players to conduct an activity differently than they may otherwise. As such, regulatory decisions must be taken carefully and responsively. Slater (2009) stated, "It is … a common problem in regulation to decide which of a myriad of new candidate risks should be acknowledged … and to design appropriate responses in an efficient and defensible manner." Furthermore, he later suggests that "it is important for regulatory authorities to be fully aware that a *late* decision will often magnify into *very, very late* implementation (emphasis in original)." As such, early awareness and preparation for future regulatory needs would help avoid costly delays at a later time.

Understanding and observing the factors that drive regulatory change would allow for better monitoring and preparation for potential government intervention with the following benefits:

- Reduced frequency of crisis-mode reactions to situations;
- Faster reaction to changing situations, which would reduce the cost of change to Canadian society;
- Priorities would be set earlier and government resources used more effectively;
- Government would be prepared for change and resistance would be reduced when change is needed;
- More time allowed for discussion and debate of key issues; and
- Regulatory failures would be reduced by adjusting regulations more quickly to new situations.[2]

Industry and other stakeholders could also benefit from an effective government regulatory foresight program. Partners could be given advance notice of the types of regulatory initiatives that may be on the horizon, allowing them to be better prepared and plan for their own adaptations. This would be an important dimension of a transparent and cooperative regulatory environment.

Existing Regulatory Scanning in the Literature

In general, public sector regulatory foresight exercises are not different from other public policy scans. Public policy does not normally restrict itself to a single instrument. Regulatory agencies have mostly limited their future scans to portfolio-specific applications, while those performed in the private sector have greater focus on adapting business methods to prepare for potential future regulatory change (defensive actions).

Health Canada's Health Products and Food Branch (HPFB) *Blueprint for Renewal II* (2007), for instance, established a regulatory foresight program to outline regulatory requirements for new technologies and processes. Through this initiative, Health Canada committed to "strengthen regulatory foresight and scientific advice" and a "productive and enabling regulatory environment" as it relates to its mandate. Similarly, the European Commission's

Standing Committee on Agricultural Research (SCAR) launched a foresight exercise in 2005: "To enable agriculture to cope with a range of complex and interlinked challenges, such as rapidly increasing globalization, climate change and unsustainable consumption of natural resources, the development of clear future scenarios is important in ensuring that the right questions are asked" (Foresight Expert Group, 2007).

McElveny (2005) provides an example of a private sector scan, specifically for the radiology industry in the United States. The author describes an initiative by the American Society of Radiologic Technologists (ASRT) called Future Scan, which tries to "provide the 'big picture' so that individuals and organizations can make the 'big decisions' " (ASRT, 2006).

Evidence of regulatory foresight conducted by a central agency of government to apply across departments is limited, probably because of the challenge in determining broad trends with enough accuracy to prepare for specific regulatory interventions. One notable example is foresight research conducted at the Foresight Horizon Scanning Centre of the U.K. government. The Centre's aims are threefold: to inform departmental and cross-departmental decision-making; to support horizon scanning carried out by others inside government; and to spot the implications of emerging science and technology, and enable others to act on them.

One product from the Centre is the Sigma Scan project,[3] a set of 271 brief papers exploring potential future issues and trends over the next 50 years that may have an impact on U.K. public policy. As described on Sigma Scan's website, the Centre "collected 'evidence of the future' from more than 2,000 document sources and interviews with 300 leading thinkers,"[4] and condensed that into the series of papers designed to challenge assumptions and spark ideas. In the collection of papers that look to future policy issues, potential challenges requiring regulatory intervention may be revealed. Grouped into five main categories (Economics, Environment, Politics, Science and Technology, and Society) and several more detailed sub-categories, the Sigma Scan gives a broad perspective on aspects of society that could be drivers of regulatory change. Furthermore, each issue paper is categorized by potential impact, likelihood, and degree of controversy to provide more colour and perspective to the topic. While they are intended to identify future policy needs for the U.K., the issues raised are often global in scope, and they potentially provide insight for the government of any nation.

Conducting Regulatory Foresight

An essential step in conducting regulatory foresight is to identify factors that may stimulate changes requiring policy intervention on the part of government. These factors are called change drivers, representing measurable increasing or decreasing trends, issues or events, or combinations thereof that are likely to cause a change in the public policy environment for which existing policies give an inadequate response.[5] In the regulatory context, attention would be focussed on those events that would precipitate a regulatory change, or where a regulatory intervention might be required to address a policy shortcoming.

Potential examples of drivers that could stimulate regulatory changes include[6]:

- Globalization or competitiveness
- Economic conditions
- Changes in civil society
- External pressures
- Significant scientific and technological advances and progress (S&T)
- Terrorist activity
- Environmental changes

Table 1 provides additional details on these drivers, including examples and potential implications for regulatory development. While this list does not contain all potential regulatory change drivers, additional drivers may be inspired by the examples.

Table 1: Potential Regulatory Change Drivers

Driver of change	Description or examples	Potential implications for future regulation
Globalization or competitiveness	• Increasing integration with global markets for services • Alternative forms of competition • Integrating North American economy	• Regulatory coordination, recognition and harmonization likely to increase • More transparency and empirical support for regulatory activities • Need for more innovation-friendly, lower-cost regulation in Canada's economy. More emphasis on cost-benefit analysis in Regulatory Impact Analysis.
Economic conditions	• Service-oriented economy • Changing incomes (consumer incomes increase affluence) • Changing consumer preferences (small production, more targeted services and products) • More value-conscious (online price	• Workers exposed to different conditions, smaller and more variable workplaces • More consumer choice needed in regulations, less standardization in regulatory solutions • Online services and goods procurement should be allowed

Driver of change	Description or examples	Potential implications for future regulation
	comparison and shopping)	
Changes in civil society and culture	• Demographic shifts (e.g. more households with single parents and unrelated persons) • Cultural changes • Aging population	• More emphasis on health and risk issues • Personal choice reflected in regulation • Communication and information likely to be more important in regulatory strategies
External pressures	• Global expectations for Canadian participation in security and environmental issues	• Treaty-driven regulation
Significant scientific and technological advances and progress (S&T)	• Different energy sources and small-scale energy production • Bio and cloning advances • Health and personalized medicines, including DNA technologies • IT technologies – smaller and more pervasive information	• Diversifying regulation away from technologies and sectors, toward performance and results • Faster innovation and shorter shelf-time for products. Perhaps more use of liability and sectoral ethics codes than ex ante regulation • Management of emerging technologies through market scanning and licensing rather than strict general controls • Use of information becomes broader. Privacy issues
Terrorist activity	• Threats to critical networks – transport, energy, communications, Internet • Bio-threats • Border issues	• More information and tracking capacity needed in key sectors • Risk assessment for terrorist threats needed in regulatory agencies • More risk communication and more attention to giving people perspective on the actual risks they face
Environmental changes	• Global warming • Pressure on remote or	• New policy instruments needed for large-scale social change

Driver of change	Description or examples	Potential implications for future regulation
	environmentally sensitive areas	• Innovation-friendly regulatory approaches needed • Inclusion of civil society in policy solutions and regulatory enforcement

An Approach to Regulatory Foresight

Identifying regulatory change drivers is an important first step in a foresight exercise; however, to use this knowledge for horizon scanning requires further effort to identify how that driver will affect regulatory practices. This may be outlined using the S&T driver example.

Blind (2006) introduced methodologies for regulatory foresight in a paper presented at the Second International Seville Seminar on Future-Oriented Technology. One of these techniques, which will be addressed in this section, is scanning professional publications and examining patent application data to gain early insight into the emerging technologies and fields that may lead to future demands for regulatory intervention.

Science and Technology Indicators

Blind indicates that using S&T indicators for regulatory foresight is very much in its infancy, and suffers from limitations. The main limitation of scanning journal publications is that they typically reflect activity in basic research that does not usually present significant regulatory challenges for governments. However, they do provide indications of fields that are exhibiting interest and activity among the scientific community, and of fundamental knowledge that could yield future value. Similarly, while patents capture dynamic or emerging fields of technology –potentially very useful for regulatory foresight – Blind indicates that in some instances very new technologies, such as biotechnology or software development, can be introduced so quickly that they are developed before a patent application. These very new technologies would consequently be missed in this type of regulatory foresight. However, he indicates that time series of patent data can be used to develop industry activity-intensity indicators, which could generate significant insight into the future.

Preliminary Regulatory Scan

The PRI recently conducted a regulatory horizon scanning exercise to help develop an understanding of the technique and methodology. This scan consisted of Internet searches, reading periodicals and academic publications, and discussions with experts.

The scan presented an interesting approach to identifying possible future regulatory issues and yielded three trends that we foresee as potential future issues for the regulatory world. These are:

- Indications of changes in public sentiment toward a greater role for government regulation;
- Limits imposed on traditional levers of government (such as taxation and spending) could suggest an increased reliance on regulation to achieve objectives; and
- Freer international flow of goods and services may highlight a potential opportunity for the creation of a global regulatory governance structure.

While this is not an exhaustive list, the types of issues that could be identified in a scan are demonstrated.

Discussion

While S&T indicators provide an interesting avenue for obtaining information that could lead to regulatory foresight, they seem to be of limited use on their own. In the same way that economists must work with risk assessors in valuing the benefits of proposed regulations, they must also work together to identify potential regulatory futures or scenarios.

As such, to gain full value of the information provided by S&T indicators, consultation with scientific authorities would help identify the expected effects of the scenario. For example, if a foresight exercise, conducted in 2000, had identified the possibility that airport security would routinely conduct individual traveller full-body scans at some point in the future, the potential health and social effects could have been examined to prevent delays in rolling out beneficial technologies. This would have had the greatest benefit if conducted cooperatively between natural and social scientists, as it is the potentially negative outcome that requires regulation, not the product itself.

The point of forecasting is not to shut down new technologies that carry risks of some kind. All new technologies have risks and yet innovation is in the interest of Canada's future. One risk of this approach is that regulators, often criticized for almost any adverse event, might take action prematurely that would reduce innovation, and trade off larger potential benefits against smaller risks. This kind of "super precautionary principle" might not be in the interest of social welfare, since it is based mostly on forecasting potential negative outcomes, not potential positive outcomes. Foresight should not become an excuse to "freeze" Canadian society into its present form to safeguard against all possible future risks. An example could be a regulation preventing research on a large span of biotechnologies.

Regulatory systems are based, implicitly or explicitly, on managing risks of negative consequences for society. Regulatory failures occur when the initial regulations simply did not understand sufficiently the factors driving a problem or, just as often, when factors change while the regulation does not. In a world of fast changing social, demographic, economic, and technological factors, the risks of regulatory failure increase rapidly. A recent

example is the case where regulatory safeguards for underwater oil drilling became insufficient when drilling was extended into deeper and deeper waters, which changed the risks of drilling. Here is where scanning might be of some value – in determining where drivers are changing the underlying rationale for regulation, and in helping to predict where changes in the style, scope, focus, or design of regulation might be needed to respond to evolving problems.

Next Steps

This Brief serves as a preliminary scoping of the issues that surround the development of a practice of regulatory foresight. A more comprehensive scanning exercise is recommended that would attempt to identify some areas of current regulation that are at increasing risk of failure due to changing social, demographic, economic, and technological factors; and suggest some directions for those regulatory areas to reduce the risks of failure.

At this time, while progressing to this exercise, we propose:

- Ongoing research into the required elements of a regulatory scan;
- Increased exploration of international scanning practices in regard to potential regulatory issues;
- Identification of potential data sources; and
- Broad scanning to find areas of rapid change.

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Notes

[1] With helpful comments from Peter Padbury and Scott Jacobs.
[2] For example, before the US banking crisis of 2008, US regulations that relied on outdated risk models did not change even as new exotic financial instruments changed the real risks of the banking sector.
[3] See the Sigma Scan website
[4] See the Foresight website
[5] Steffen Christensen, Policy Research Initiative, personal communication.
[6] These are adapted from Jacobs, S., et al., 2009. *Lessons for Reformers: How to Launch, Implement and Sustain Regulatory Reform*. International Finance Corporation. The World Bank Group.