

**Science communication on the Brazilian government web portal:
assessing information on policies through systems thinking**

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Abstract

There has been an ongoing search for answers with regards to the expected contribution of online public communication to support political engagement and citizen participation, particularly in the field of science and technology (S&T) policies, which often have to deal with complex, contentious issues, such as sustainability. We assessed the information on science and technology policies available on the Brazilian government official website (www.brasil.gov.br) by means of a content analysis guided by 14 categories. The analysis of a sample of 71 web pages detected the existence of about 25% of the requisite information for a full characterization of a S&T policy, as established by the theoretical and methodological assumptions of our research. We interpreted this result using systems thinking, an approach which allowed us to consider the Brazilian government as a subsystem within the larger system of Brazilian society, and the government's attempts at S&T communication through its web portals as a way of influencing the larger social system. We sustain that the various social actors' concerns were barely addressed by the official web portal, which leads to the recommendation that portals should disclose information on the whole policy cycle.

Introduction

Policies are developed in order to address specific problems or aspirations. They are aimed at guiding decision-making in order to support one or more stakeholders in constructively progressing with the issues of concern. Policies put forward by democratically elected governments are distinctive from policies set by, for example, corporations, in that the formulation, execution and impact of these policies are accountable to the electorate. Thus, it is imperative that governments are able to effectively communicate policy formulation, execution and impact to this electorate, so that citizens can, in turn, undertake a scrutiny of government policy making and implementation.

In the past, intermediaries, such as the newsprint media, served as the conduit of communication between the government and the public. With the emergence and widespread adoption of online communications, the public is now able to directly access government communication portals in order to scrutinise policies for themselves. Thus, there is increasing pressure for governments to communicate their policy-making and implementation through online facilities. However, limited research has been undertaken in order to evaluate the quality and effectiveness of online policy communications by governments. In particular, there has been an ongoing search for answers with regards to the expected contribution of online public communication to support political engagement and citizen participation, particularly in the field of science and technology (S&T) policies, which often have to deal with complex, contentious issues, such as sustainability.

Information disseminated by government web portals are now playing an increasing role in providing guidance to the various social sectors about their rights and responsibilities with regard to governmental policy making and implementation, comprising aspects such as policy goals and expectations, complementary roles, levels of efficiency and efficacy in public management, and desired outcomes in areas such as environmental impact and social justice.

In order to fulfill all those demands for information, government web portals require conception and design which are not a simple task, as the decisions involved go beyond technical and administrative considerations. Such decisions “are political acts that have important implications for the conduct of public administration and democracy.

These channels of communication can significantly alter democratic processes and outcomes”, as Brewer, Neubauer & Geiselhart (2006: 473) see them.

Although providing information is obviously not enough to explore the full potential of digital democracy (Coleman & Blumler, 2009), it can be taken as the first step of a process which can culminate in a wider use of technologies to mediate between diverse interests, enable citizen participation in policy making and collaboration with the public sector, in an advanced stage which has been called ‘Government 2.0’ (Khan, 2013) and theoretically supported by a deliberative position of digital democracy (Dahlberg, 2011).

Research designed to identify the potential of the information available on a government web portal to serve deliberation usually investigates specific attributes, such as the depth and breadth necessary to sustain informed opinions on what worked or what went wrong in a policy implementation, particularly science and technology policies, which have a direct impact on the environment by determining resource use and pollution control. There is an expectation that citizens should receive the information they need to make objective considerations and arrive at rational judgments in order to contribute towards policy assessment and correction. While for some scholars and politicians this would be an unrealistic expectation and excessive burden for citizens, for deliberative democracy advocates it is nothing more than what democracy needs to finally fulfil its historical premises and would seem absolutely feasible — as long as the whole process of policy making, assisted by information and communication technologies, is prepared to perform tasks including: clarifying what is at stake; encouraging political participation and civic engagement; receiving inputs; using inputs wisely and fairly; providing feedback; and making government accountable for choices made (OECD, 2003; Polat, 2005).

Throughout this paper, we adopt a ‘systems approach’ where we formulate the governmental policy communication enterprise as a ‘system’: a collection of social¹ and information and communication technologies and artefacts, which interact in order to achieve a specific purpose, as determined by the actors involved, chiefly government decision-makers, technicians, communicators and the intended recipients (citizens, parties affected, lobbying groups etc).

¹ by 'social technology' we refer to the procedures and rules designed to standardise behaviour.

Applying techniques from Soft Systems Methodology (Checkland, 1990; Checkland, 2000; Checkland & Poulter, 2006) we propose the following purpose for the ‘policy communication system’:

“a system to provide policy relevant information to the public and other stakeholders through the use of online portals so as to enable the public and other stakeholders to understand the purpose of the policy, how it is to be implemented, and how its impacts are to be evaluated, in order to make government decision-makers publicly accountable and thus, improve the effectiveness of subsequent policy-making, implementation and evaluation”.

We can therefore summarise our understanding of the ‘policy communication system’ as follows:

- Intended clients - the wider public; and stakeholders affected, including the lobbying groups with which they are associated.
- Actors involved in delivering and engaging with the system - policymakers; civil servants; technicians; wider public; policy stakeholders.
- Transformation intended: from an uninformed public to a public able to feedback with regards to the policy-making process.
- Worldview underpinning the system: that a democratically elected government is accountable to its citizens through clear and openly accessible information.
- Owners of the system: individual government departments responsible for particular policies.
- Environment within which the system operates: where information and communication technologies, through connected personal computers, smartphones and tablets, are becoming ubiquitous within the wider public and where there is a growing expectation, by citizens, for public disclosure of government operations.

Having established the purpose and characteristics of our system of interest, research questions arise from the gaps in empirical evidence concerning the relevance of

the information available for supporting public engagement within these ‘policy communication systems’. Among those questions, we are concerned with the potential impact of online information found in these systems on the strengthening of citizenship and public participation in decision-making. Questions include: a) whether the public administration has made use of the potential of digital communications tools to increase transparency and accountability; b) whether the available information has enough depth and breadth to help citizens assess the implications of science and technology policies; c) whether science communication has been unequivocal enough to clarify individual and collective responsibilities, or at the very least, the complexities involved. The final question is especially relevant within S&T policy-making, if looked at through a political ecology lens, where the outcomes depend on intense synergies between diverse political, social and economic actors.

As part of these ‘policy communication systems’, governments are required by ‘right to information’ laws to publicise performance indicators and disclose — as wide as possible — information on policy effects and measures from the whole policy cycle, including agenda setting, formulation, budgeting, implementation and evaluation, thus facilitating public policy scrutiny. In the following section, we therefore propose a framework for evaluating these policy communication systems according to a range of criteria in our endeavour to understand whether these systems are achieving the purpose of ‘providing policy relevant information to the public and other stakeholders through the use of online portals so as to enable the public and other stakeholders to understand the purpose of the policy, how it is to be implemented, and how its impacts are to be evaluated, in order to make government decision-makers publicly accountable and thus, improve the effectiveness of subsequent policy-making, implementation and evaluation’.

Policy Communication System Evaluation Methodology

We assessed the information on science and technology policies available on a range of initiatives as displayed within sub-pages of the Brazilian government official website (www.brasil.gov.br) by means of a content analysis guided by these 14 categories: 1) ‘Prior challenges’ (social, economic, political, and environmental conditions leading up to a policy); 2. ‘Diagnostics’ (reasoning behind a policy); 3. ‘Objectives’ (general

terms of commitments, not necessarily characterized in quantitative terms); 4. 'Goals' (numbers, statistics, projections and time schedules); 5. 'Current resources' (material, financial and human); 6. Current actions (activities performed); 7. 'Planned resources' (also material, financial and human); 8. 'Planned actions' (activities to be performed); 9. 'Efficiency' (policy management); 10. 'Efficacy' (actual results); 11. 'Impact/effectiveness' (outcomes in terms of real transformation of previous conditions); 12. 'Cost/effectiveness' (comparison with alternative forms of action); 13. 'Citizen satisfaction' (regarding the quality of public goods or services provided); 14. 'Equality' (fairness in the distribution of benefits).

Data were collected from 01.06.2012 to 31.12.2012 once only for each portal, and the available information was classified into three groups of a points scale, regarding its depth and breadth, for each one of the 14 categories. We used '0' for 'no relevant information displayed'; '1' for 'scarce information, usually less than 200 characters with spaces'; and '2' for 'detailed information'. So a public policy presented with as much information as stipulated by the 14 categories would receive 28 points (14 X 2). The number of points actually obtained when assessing information about each policy, when considered in relation to the maximum of 28 points, rendered a percentage number, corresponding to the degree of breadth and depth of information on S&T policies conveyed by the Brazilian government official website.

Results

The analysis of all 71 web pages available at the time of data collection revealed the existence of about 25% of the requisite information for a full characterization of a S&T policy, as established by the theoretical and methodological assumptions of our research. This result suggests that the information on S&T policies available on the Brazilian government official website would not be enough to provide a full characterization of a policy, and points to the need of improvements in public online communication of science and technology in Brazil.

According to the Figure 1, the most frequent categories were 'Objectives' (58 web pages contained related information), 'Current actions' (48), 'Current resources' (43) and 'Prior challenges' (35). The prevalence of these can be explained as they are basic infor-

mation about a policy and are probably easier to be organized and exposed. The categories ‘Impact/ effectiveness’ (25), ‘Diagnostics’ (24) and ‘Efficiency’ (20) showed an intermediary amount of information, which suggests that officials would be less concerned about the dissemination of data to clarify whether policies were properly formulated and executed and generated a true impact on their target segments. The categories ‘Goals’ (12), ‘Efficacy’ (11) and ‘Planned actions’ (9) showed an even lower presence, which can be interpreted as a possible consequence of relative lack of transparency and accountability in S&T policy management, noted by the scarcity of information on policies’ aims, outcomes and future actions. Finally, the categories ‘Equality’(4), ‘Cost/effectiveness’ (3), ‘Planned resources’ (2) and ‘Citizen satisfaction’ (0) showed little or no information at all, which suggests that officials do not seem to be worried about the impact of S&T policies on social justice, were not confronted by alternative lines of action (and did not have to make choices), do not want to disclose information on future resources (and do not want to make public commitments about future investments) and do not think of S&T policies as a way to satisfy citizens’ needs.

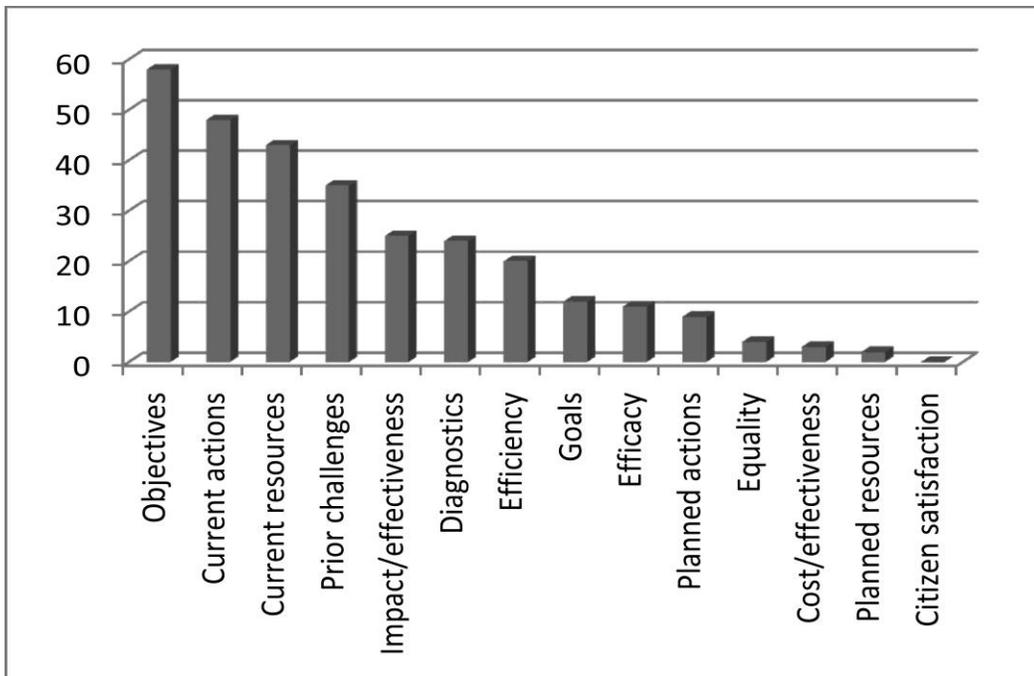


Figure 1: Categories of information most frequent on web pages of the Brazilian government official website (www.brasil.gov.br) on science and technology policies

Discussion and Conclusion

According to our results, we can suggest that Brazilian government science and technology departments are failing to achieve the purpose which we have attributed to their 'policy communication systems'. Only two online portals, out of the 71 surveyed, come close to achieving a full score within our evaluation framework. More than half of the portals are unable to even meet half of the criteria.

Research findings overwhelmingly suggest that the public has limited knowledge of current and emerging policies which will have a direct impact on their day-to-day lives. This is especially the case with science and technology policies which confront grave sustainability issues, such as climate change and genetically modified organisms (Jasanoff, 2005; Dietz et al. 2007). Government online portals have the potential to provide cost-effective and highly accessible means of communication in order to maximise public engagement.

We would like to suggest that our evaluation framework, proposing a checklist of 14 criteria for straightforward policy communication, should form the baseline for science and technology government departments throughout Brazil and beyond to effectively organise their online public engagement.

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