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# Policy statement coherence: A methodological proposal to assess environmental public policies applied to water in Chile

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## ABSTRACT

Research on analytical and assessment methods regarding environmental policies are scarce, despite the growing concern on environmental topics within governments and civil society. This proposal addresses such gap by offering a methodological tool used to elaborate, monitor and reformulate environmental policies. By using the theory of policy domains, we developed an analytical framework consisting of topics and objectives that build the environmental public policy domain, from which we assess its degree of coherence with the environmental regulatory response. This methodology, called policy statement coherence, will contribute towards the understanding of public policy formulation and implementation processes, an important methodological contribution in this field of research. This proposal revolves around the analysis of water policies in Chile.

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## 1. Introduction: the importance of public policy quality

Public policies are an essential element of governance since they condition social and individual wellbeing by solving specific problems through the regulation of activities and interactions within diverse actors. Due to its importance in daily lives, evaluating the quality of public policies is most definitely a relevant topic to any government, as it is the concern to create laws and regulations that provide suitable

solutions to environmental problems. This is a challenging task, even in contexts of governmental stability: countries belonging to the Organization for Economic Co-operation and Development (OECD) have attempted to better their legislative and regulatory management, yet none are completely satisfied with their performance (OECD, 1994, 2012).

To speak of public policies, firstly it is useful to define what is meant by it. In general terms, public policies are determined by what the government does or does not do (Dye, 2005; Birkland, 2005). To be more specific, public policies are used as a course of action; determined by one or many governing

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actors; aiming to put an end to a social problem or a public concern (Anderson, 2003). Secondly, considering that this study aims to assess the quality of public policies, we define a public policy of quality, a policy which “is both effective in addressing an identified problem and efficient in terms of minimizing unnecessary compliance costs and other costs imposed on the community” (Argy and Johnson, 2003: 5).

With this definition in mind, one needs to consider that the formation process of public policies consists of different stages, which can be organized linearly as: agenda setting, policy formulation, policy implementation, policy evaluation and policy termination (Simon, 2009). The second stage; policy formulation; defines goals, explores alternatives, decides on the actions required to solve specific social problems and exposes discussed proposals provided by interest groups, political parties and the government. At this stage, the course of public policy action is formalized through the creation of policy statements; being laws, decrees and executive orders, administrative regulations and judicial verdicts (Anderson, 2003); which aim to solve the identified social problem. Among them, the law is considered as the essential policy statement, taking into account both its degree of mandatoriness, as well as the participation of several interest groups in its formation through the legislative process.

The fourth stage; policy evaluation; is also relevant since it determines the impact and result of a new policy; whether or not these results correspond to those expected in the objectives; and allows an in-depth analysis on which steps should be taken to improve such policy. Governmental departments usually have their own evaluation systems, but also private and civil society organizations carry out their own evaluations.

This study concentrates on these two stages: policy formulation and policy evaluation; focusing on the early evaluation of the policy statement law, which according to Mickwitz (2003) is the public policy tool with the highest compulsory level. This proposal is closely related to the recently introduced policy evaluation instruments (RPI *sensu* Mickwitz, 2003) and differs from the impact evaluation which requires regulations to have been applied for a period of time as to observe whether or not results are tuned with the stated objectives. Likewise, this proposal seeks to contribute to the necessary process of evaluating public policies and, to be a useful tool to elaborate environmental policy statements of quality. In order to do so, we propose a methodology of policy statement coherence, which allows generating relevant information for the whole process of public policy evaluation, from integrative analysis at the policy formulation stage to impact evaluation.<sup>1</sup>

In order to present the analytical framework proposed in this paper, we first developed; based on the theory of policy domains; a framework of topics and public policy objectives that gives shape to the environmental policy domain in order to identify and, then, evaluate the state of laws related to the topic being dealt with; in this case, water policies. Second, we proposed using the concept of policy statement coherence as a tool to evaluate the progress, delay or setback in the

development of public policies. Finally, we applied this analytical framework to the case of water policies in Chile during 1990–2012.

## 2. Analytical framework: the environment as a policy domain, characteristics and analytical importance

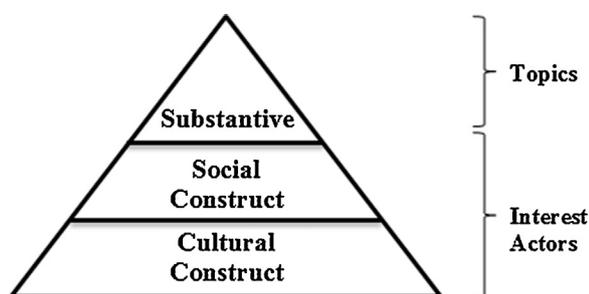
The concept of policy domain has been studied within the areas of sociology and political science. Also known as policy areas (Freeman, 1985; Heinz et al., 1990) or policy subsystems (Baumgartner and Jones, 1991; Jenkins-Smith et al., 1991; Howlett and Ramesh, 1998); a policy domain can be defined as “a subsystem identified by specifying a substantively defined criterion of mutual relevance or common orientation among a set of consequential actors concerned with formulating, advocating, and selecting courses of action that are intended to resolve the delimited substantive problems in question” (Knoke and Laumann, 1982: 256). In a similar sense, Burstein (1991) defined policy domains as “a component of the political system that is organized around substantive issues” (p. 328).<sup>2</sup>

According to Burstein (1991), policy domains possess three characteristics which are relevant towards public policy analysis. The first characteristic is that policy domains are substantive: topics and public policy objectives, which define a policy domain, possess common and inherent characteristics that determine how they are portrayed and faced (Burstein, 1991: 329). When consulting different policy domain participants in the areas of agriculture, work, energy and health, Salisbury et al. (1987: 1221) state that topics composing the policy domains tend to be stable in time without much variation. This indicates that the topic is an essential component of the policy domain, therefore influential towards the framing process.

The second characteristic of policy domains is that they are social constructions “made up of those institutions and actors that are directly involved in the policymaking process in a specialized policy area” (Jenkins-Smith et al., 1991: 852). This point had already been emphasized by Laumann and Knoke (1987), who signaled that a policy domain “is socially constructed by political actors who mutually recognize that their preferences on policy events must be taken into consideration by other domain participants” (p. 10). These actors refer to all those who are looking to influence the course of public policies, including but not limited to companies, interest groups, associations, legislators and academics. Salisbury et al. (1987: 1228) use a charted example indicating actors within the working policy domain, including syndicates, commercial associations, businesses and citizen

<sup>1</sup> Nilsson et al. (2012) state “Integration analysis, coherence analysis and impact analysis can be seen as part of a wider comprehensive coherence analysis” (p. 397).

<sup>2</sup> The concepts of policy domain and policy area are used indistinctively in other publications, where cross references are often found (such as, Heinz et al., 1990; May et al., 2006). Both concepts refer to topics of national interest: agriculture, energy, health, work and environment. The concept of policy subsystem, on the contrary, is linked to sub areas of the policy domain: Baumgartner and Jones (1991: 1045) identify topics as tobacco, water pollution, pesticides, among others, as policy subsystems which are part of policy areas (domains) at a bigger scope, such as health and environment.



**Fig. 1 – Characterization of a policy domain.**  
**Source: Personal compilation based on Burstein (1991).**

groups, which can engage in relationships as allies or opponents.

The third characteristic of policy domains, highlighted by Burstein, is that they are cultural constructions towards which the interest groups guide their actions (Burstein, 1991: 328). According to Gamson and Modigliani (1987), each issue has its own culture: language, symbols, particular features which define it, and that are used by the actors in order to support and position their ideas, define problems, influence opinions and create alliances.

Based on Burstein's characterization of policy domains, Fig. 1 shows that both, actors and topics, make up the policy domains and set its unique characteristics; being both fundamental parts in the process of public policy formation in each policy domain.

When discussing the characteristics of the environmental policy domain, authors such as Tatenhove and Leroy (2003), emphasize that the institutionalization of environmental policies as a policy domain took place, hand in hand, with the process of civil demand movements; during the 1960s and 1970s in the US and Europe; requesting more political participation. These movements clearly expressed their disapproval towards political and economic decisions without considering potential damage upon the environment and citizens' wellbeing. The institutionalization of the environment took place due to this civil demand, with its corresponding legal initiatives, responsible agencies and procedures, as well as a starting point for evaluation mechanisms on environmental impact.

One main characteristic of the environmental policy domain is that it is built upon scientific knowledge. As Keeley and Scoones (1999: 7) state "scientists establish the facts about environmental realities, and policy-makers come up with policy options in the light of the facts". This vision is problematic as the excessive specialization upon scientific knowledge could potentially become misleading by making environmental issues to be mere 'facts' which require simple and specific political solutions; while in fact, environmental problems are complex and interrelated "climatologists tell us what is happening to the green house; soil scientists offer assessments of changes in the soil fertility status of soils [...] With 'truth speaking to power', bodies of scientific expertise then inform policy in an unproblematic manner" (Keeley and Scoones, 1999). The idea of complex environmental problems is reinforced by Mickwitz (2003), who states that these

issues extend over large periods of time, involve diverse geographical areas and, present causes and effects unevenly distributed.

Likewise, the environmental policy domain is transversally related to other domains. Nilsson et al. (2012), for example, value the relationship between the energy and the environmental policy domains present in the European Union, aiding in the achievement of objectives stated in the Water Framework Directive. In a similar way, the environmental policy domain can be related to other policy domains such as mining, health, economy, and territorial planning.

This classification of environmental topics is one possible way to organize the environmental policy domain. As observed in this section, policy domains are made up of substantive and stable topics; however, stable does not mean static. The topics within the policy domain are not static, they can change throughout time and new categories may arise, such as topics on radiation, noise and light pollution which had not been thought of decades ago. This is due to the fact that policy domains are social and cultural constructions, sensitive to changes of ideas, where objectives and information available to the actors who participate in such constructions; such as scientific and technological discoveries; aid in the incorporation of new knowledge and modify the understanding of topics which are of public interest.

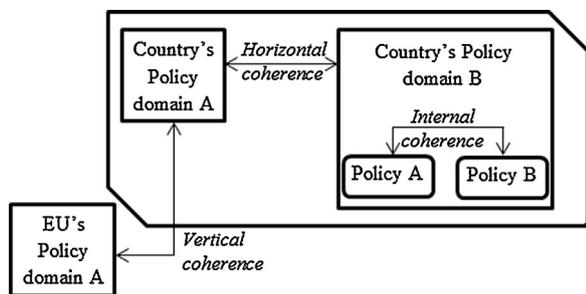
### 3. Policy statement coherence: a proposal for quality assessment

Policy coherence has been defined as "an attribute of policy that systematically reduces conflicts and promotes synergies between and within different policy areas to achieve the outcomes associated with jointly agreed policy objectives" (Nilsson et al., 2012: 396). Similarly, May et al. (2005) indicate that "policy coherence is a relative term that relates to the degree of integration of relevant components [of a policy]" (p. 37). In short, policy coherence corresponds to the interaction between policies set within the same field, or different fields, in order to better achieve the accomplishments of set goals.

The study of policy coherence has been mainly described in North American and European literature, identifying essentially three types of coherence: horizontal, vertical and internal.<sup>3</sup> The first type, horizontal coherence, consists of two or more policy areas that reduces possible conflicts among them. For example, Nilsson et al. (2012) analyze the horizontal coherence between environmental policies and energy policies in the European Union.

The second type, vertical coherence, refers to the relation between national and supranational policies, as in the case of the European Union. In this case, it is highly important that coherence exists between each member state of the European Union. For example, the development policy pertaining to the European Union must be consistent between the member

<sup>3</sup> Carbone (2008) includes donor–recipient coherence and multilateral coherence.



**Fig. 2 – Relationship among horizontal, vertical and internal coherence.**

**Source:** Personal compilation.

countries, especially after the institutionalization of Policy Coherence for Development<sup>4</sup> through the Treaty of Maastricht<sup>5</sup> (Carbone, 2008). In the case of federal run governments, this concept is applied to the analysis of coherence between state and federal policies.

The third type corresponds to internal coherence, which is seen within one sole policy area, for example: environment, work, health, etc. Peter May and his colleagues have analyzed the policy coherence within North American politics regarding the Arctic (May et al., 2005) and the effects of institutional arrangements in North American politics coherence, revealing the importance of parliamentary committees and governmental departments in the creation of an axis which unifies diverse components in one policy area (May et al., 2006). Fig. 2 illustrates how these three types of coherence are interrelated.

This paper proposes the existence of another type of coherence, related to the analysis of the existing synchrony between policy statements developed in each policy domain, and the defined, explicit topics and public policies objectives stated by authorities. In this manner, not only should policy domain areas be integrated and coherent with others, but the regulations which rule each area should be coherent to the objectives stated within each policy domain. This fourth type of coherence will be named policy statement coherence, which implies the elaboration of policy statements that aim to fulfill public policies' objectives set by interest actors.

By considering policy statement coherence as a framework to analyze the evolution of policy statements, two important benefits are encountered. Firstly, one is able to register and systemize all information regarding progress, setbacks and delays which are generally experienced during the elaboration of legal documents that govern a policy belonging to a specific area. For example, if in the environmental policy pertaining to water, the general objective is to improve the resources' availability, and the specific objective is to control the contaminant discharge to the affluent; by considering the proposed policy statement coherence analysis, it is possible to revise the existence – or nonexistence – of policy statements that seek to fulfill these objectives.

Secondly, due to the systemization of the database, accountability mechanisms and report rendition will be favored. These are powerful tools for interest groups and citizens in general, which allow them to assess the authority's

activities and attitudes towards problems identified in the previously stated objectives.

Hence, how can we assess policy statement coherence in the environmental policy domain?

This proposal provides analytical elements that allow determining whether the policy statements emitted by legislative and executive branches meet the declared environmental policy objectives. Such objectives should guide the formation of regulations, so we could also assess the aspects that show higher levels of progress or setbacks. This evaluation can be developed at any time after law promulgation. In this aspect, this proposal differs from impact evaluation, which can only be assessed after law promulgation has taken place for a period of time.

#### 4. The proposal: policy domain model for evaluation

The first step to determine policy coherence is the construction of the environmental policy domain model, which includes the identification of its topics and policy objectives. In this diagram, environmental topics are the most stable components, while the specific objectives are more dynamic and would require regular updates.

The analysis of the environmental policies in Chile, provided in Chart 1, identifies ten topics which make up the environmental policy domain, and depicts general and specific objectives. What makes this proposal unique is that it allows combining long lasting environmental topics and more flexible objectives; recognizing the need to count with analytical definitions and tools that allow a long term analysis, keeping in mind that we are unaware of the environmental topics' pace of change that would reflect in changes of the general and specific objectives. In order to elaborate this chart, we revised national and international reports that identified main environmental problems and policy goals, which should be implemented by the Chilean State.<sup>6</sup>

As Chart 2 shows, the combination of dynamicity and stability allows new objectives to be incorporated in the proposed framework with no need to create new assessment tool. Moreover, this framework can be modified and applied to different political-administrative levels depending on the needs and issues of a specific territory.

<sup>4</sup> "Policy coherence for development means taking account of the needs and interests of developing countries in the evolution of the global economy. It involves the systematic promotion of mutually reinforcing policy actions across government departments and agencies creating synergies towards achieving the agreed objectives, such as promoting knowledge-based economies in poor countries through the appropriate use of information and communication technology" (OECD, 2003: 2).

<sup>5</sup> The Treaty of Maastricht established that "The Union shall in particular ensure the consistency of its external activities as a whole in the context of its external relations, security, economic, and development policies" (Carbone, 2008: 324).

<sup>6</sup> Universidad de Chile (2000, 2010), Universidad de Chile-PNUMA (2002, 2006); Ministry of the Environment (2012), OCDE-CEPAL (2005), and OECD (2011).

**Chart 1 – Environmental topics and objectives: Chile 1990–2012.**

Environmental topics									
Water	Air	Land	Climate change	Biodiversity	Landscape and territory	Waste	Natural resource management	Energy	Radiation, noise and light pollution
General objectives									
Improve resource quality	Improve resource availability	Improve resource availability	Create/modify institutional character	Improve information	Encourage environmental education	Encourage environmental education	Protect and preserve	Protect and preserve	Decrease the impact of human activities
Specific objectives (N = 101)									
Source: Personal compilation based on <a href="#">Universidad de Chile (2000, 2010)</a> , <a href="#">Universidad de Chile-PNUMA (2002, 2006)</a> , <a href="#">Ministry of the Environment (2012)</a> , <a href="#">OCDE-CEPAL (2005)</a> , and <a href="#">OECD (2011)</a> .									

**Chart 2 – Environmental policy domain in Chile.**

Environmental topic	General objective
Water	<ul style="list-style-type: none"> <li>Improve quality of inland and oceanic waters</li> <li>Manage water availability</li> <li>Increase water protection</li> <li>Improve availability and quality of information related to water resource</li> <li>Create or modify the institutional character for water resource management</li> </ul>
Air	<ul style="list-style-type: none"> <li>Improve air quality</li> <li>Avoid more air pollution</li> <li>Create or modify institutional character for air resource management</li> <li>Improve availability and quality of information related to air resource</li> <li>Control the decrease in ozone layer</li> <li>Improve quality and availability of information related to the ozone layer</li> <li>Create or modify the institutional character for the ozone layer depletion</li> </ul>
Land	<ul style="list-style-type: none"> <li>Avoid deterioration and loss of lands</li> <li>Improve quality of lands</li> <li>Improve availability of information related to the state of lands</li> <li>Increase land protection</li> </ul>
Climate change	<ul style="list-style-type: none"> <li>Take mitigation and adaptation measures towards climate change effects</li> <li>Improve the quality and availability of information regarding climate change</li> <li>Promote education regarding climate change</li> <li>Create or modify the institutional character for climate change</li> </ul>
Biodiversity	<ul style="list-style-type: none"> <li>Protect biodiversity</li> <li>Create or modify the institutional character for biodiversity protection</li> <li>Improve the quality and availability of information regarding biodiversity</li> </ul>
Landscape and territory	<ul style="list-style-type: none"> <li>Improve territorial planning</li> <li>Improve the quality and availability of information related to green areas</li> </ul>
Wastes and dangerous substances	<ul style="list-style-type: none"> <li>Create or modify the institutional character related to the management of wastes and dangerous substances</li> <li>Decrease the pollution produced by wastes or dangerous substances</li> <li>Improve the availability of information related to wastes and dangerous substances</li> </ul>
Management of renewable and non renewable natural resources	<ul style="list-style-type: none"> <li>Improve the sustainability of productive activities</li> <li>Reduce environmental impact due to productive activities</li> <li>Strengthen the institutional character for natural resources management</li> </ul>
Energy	<ul style="list-style-type: none"> <li>Develop a framework seeking a balance among energy safety and environmental care</li> <li>Create or modify the energy institutional character</li> </ul>
Electromagnetic radiation, noise and light pollution	<ul style="list-style-type: none"> <li>Control pollution caused by electromagnetic radiation</li> <li>Improve the quality and availability of information regarding noise pollution</li> <li>Prevent and decrease noise pollution.</li> <li>Improve quality and availability of information regarding light pollution</li> <li>Reduce levels of light pollution</li> </ul>
Source: Personal compilation based on <a href="#">Universidad de Chile (2000, 2010)</a> , <a href="#">Universidad de Chile-PNUMA (2002, 2006)</a> , <a href="#">Ministry of the Environment (2012)</a> , <a href="#">OCDE-CEPAL (2005)</a> , and <a href="#">OECD (2011)</a> .	



**Fig. 3 – Process to determine coherence among policy statements and policy objectives.**

Source: Personal compilation.

The second step to determine policy statement coherence is to match the existing regulation with the topics and policy objectives identified in accordance to the process of policy statement coherence (illustrated in Fig. 3).

In the process to determine coherence among policy statements and political objectives, the main input corresponds to the text of the law, considering its title and articles. If the text is not clear enough and only when it comes to laws, other inputs of the legislative process can be considered. In the case of Chile; in addition to the text of the law; the presidential messages accompanying the presentation of law initiatives, as well as legislative discussions have been looked for. Similar documents can be found in presidential regimes as in the US, as well as in European parliamentary systems such as France and Germany, and those which enable law initiatives from citizenship as in the cases of Italy and Spain (González Chávez, 2000). Based on this information, environmental regulations must be placed within the chart of topics and policy objectives previously identified. This analysis can be done by using the complete chart of topics and objectives, or can be used to analyze one specific topic. Using this procedure, the case of water policies in Chile will be analyzed in Section 4.1.

#### 4.1. The case of water policies in Chile

Within the topics that make up the environmental policy domain, water deems to be interesting to analyze in depth since its good governance, through appropriate regulations, makes it a fundamental piece to decrease poverty and inequalities, and to boost development (Akhmouch, 2012).

Moreover, water policies in Chile are an interesting case to study due to their particular allocation of rights regime,<sup>7</sup> and the evolution and amplitude of its challenges. This evolution can be seen by the modification of objectives; from the ones

engaged in increasing drinkable water coverage and treating contaminated waters; by the early 1990s; up to treating mining and industrial effluents, being concerned with widespread contamination, and searching for a solution towards the growing scarcity of water in various parts of the country<sup>8</sup> (Valenzuela et al., 2013).

Indeed, the environmental situation in Chile should be understood in the context of a fast paced economic growth based on the exploitation of its natural resources; including water; causing problems related to the quality and availability of such resource; particularly in the northern, arid areas of the country where the few water sources are to be distributed among the mining industry, agricultural and industrial activities and human consumption. Even in areas where there is abundant precipitation, there is no appropriate infrastructure when it comes to making good use of rain water (OCDE-CEPAL, 2005). Thus, water policies in Chile provide a wide range of challenges, making it an interesting case study to apply our methodological proposal.

Chart 3 provides the general and specific objectives of water policies, which will be the basis for evaluating the policy statement coherence. Based on the objectives stated by the Chilean State in official documents<sup>9</sup>; previously stated in Chart 1; one can observe persistency in certain topics during the last two decades, for example: the objectives of improving the quality of inland and oceanic waters, as well as ensuring water availability for agricultural activities and small rural landowners. The time lapse regarding both topics indicates insufficient or lack of effective measures towards aiding these problems, since both topics are still present, two decades later, in documents and governmental discussions. In contrast, the policy coherence framework also pictures how public policies' objectives vary or even disappear, as the case of the policy objective "increasing coverage of hygienic services" which was highly present during the 1990s and is no longer a priority. Even more, the policy objective "increasing treatment for urban contaminated water" that has been pretty much fulfilled as official data shows in 2012

<sup>7</sup> The Water Code of 1981 and its modifications, create a free water market with no state mediation, by assigning free rights of water partnership, with no obligation of making use of the assigned flow. This situation promotes a higher number of flow requests than needed, concentration of rights belonging to big land owners, the generation of juridical or formal dearth of the resource in catchment areas, and the generation of barriers for companies that require water to operate (Bauer, 2005; Valenzuela et al., 2013). The underuse and impossibility of reassigning the flows, correspond to issues present with aboriginal people, small agricultural land owners and conservation of nature, who are those mainly affected by the lack of sufficient water rights for their own development (Prieto, 2007).

<sup>8</sup> By 2012, 99.9% of urban homes in Chile have drinkable water, 96.3% has sewage system, and 96.1% is connected to a treatment system for contaminated waters (Superintendent of Sanitary Services, n.d.-a, n.d.-b). However, the percentage of treatment in mining and industry effluent is quite lower, which in combination to widespread contamination in the areas of fisheries, agriculture and forestry, turn into high pollution levels in rivers, lakes and coastal waters (OCDE-CEPAL, 2005).

<sup>9</sup> Universidad de Chile (2000, 2010), Universidad de Chile-PNUMA (2002, 2006), Ministry of the Environment, 2012, OCDE-CEPAL (2005), and OECD (2011).

**Chart 3 – General objectives of water policies in Chile, based on official sources 1990–2013.**

General objective	Specific objective	Associated laws	Associated decrees
Improve quality of inland and oceanic waters	1. Control water quality (reduce, control and/or mitigate waste discharges, organic compounds and heavy metals)		<p>DECREE 1 18.11.1992 Regulation of water contamination control</p> <p>DECREE 143 27.03.2009 Establishes primary quality standards for surface inland recreational use of waters</p> <p>DECREE 144 07.04.2009 Establishes primary quality standards of protection for oceanic and estuary recreational use of waters.</p> <p>DECREE 609 20.07.1998 Establishes emission standards related to industrial liquid wastes into sewage system.</p> <p>DECREE 90 07.03.2001 Establishes emission standards related to liquid wastes into surface inland and oceanic waters.</p> <p>DECREE 46 17.01.2003 Establishes emission standards of liquid wastes into underground waters</p>
	2. Increase efficient treatment of industrial effluents.		
	3. Include boron in water quality measurement		
Manage water availability	4. Improve access to drinkable water		
	5. Develop an integrated watershed management approach to improve water and forest management, and to provide more efficient environmental services		
	6. Increase efficient use of water	<p>LAW 20.401 Modifies law No 18.450 regarding the increase of private investments in water supplies and sewerage</p> <p>LAW 20.017 Modifies the Water Code</p> <p>LAW 19.253 Establishes rules of indigenous protection, promotion and development, and creates the National Indigenous Development Corporation</p> <p>LAW 20.099 Extends to one year deadline to legalize underground water usage rights, and modifies law No 20.017, which modifies the Water Code</p> <p>LAW 20.411 Prevents the creation of water usage rights based on transitory article 40 of law No 20.017 in 2005, in specific areas.</p>	<p>Attached regulations</p> <p>Regulation for a Public Water Register</p> <p>Attached regulations</p>
7. Improve resource management (extraction, assignment of rights)			
Increase water protection	8. Incorporate the concept of ecological watershed in rivers to preserve ecosystems	LAW 20.017 Modifies Water Code	Rules for Public Water Register
	9. Increase resource protection	LAW 19.145 Modifies articles 58 and 63 of Water Code	

**Chart 3 (Continued)**

General objective	Specific objective	Associated laws	Associated decrees
Improve quality and availability of information related to water resources	10. Improve information and knowledge base regarding water management (environmental water quality control, water rights registrations, data regarding expenses and funds, among others) 11. Increase scientific knowledge regarding the state of waters		
Create or modify the institutional character for water management	12. Strengthen the properties of inspecting and enhancing standard compliances regarding industrial effluents and their appropriate treatment 13. Establish a coordination body among public and private sectors		

Source: Personal compilation based on the Congress Library of Chile (n.d.), Universidad de Chile (2000, 2010), OCDE-CEPAL (2005), and OECD (2011).

reaching 96% of the urban population (Superintendent of Sanitary Services, n.d.-b).<sup>10</sup>

The proposed analytical framework can also include the appearance of new objectives; as the incorporation, in 2008, of environmental and ecological considerations in water management (Universidad de Chile, 2010); or the development of an integrated inland watershed management approach (Ministry of the Environment and OECD Environmental Performance Assessment Report, 2005). This drill allows identifying interesting policy changes, as the change of status of environmental concerns in water management reflected in Chart 3, which presents a timeline of general objectives of water policies in Chile, since 1990 up to date.

The evaluation of the policy statement coherence analyzes the relationship between each policy statement with one or more objectives, leaving aside the degree of accomplishment of such objectives. Certainly, there are norms which can give a complete answer to an objective, while there are others which only address partially other objectives. These qualitative assessments should be addressed case by case (Chart 4).

Nevertheless, regulations are a key component of any public policy formulation as laws, decrees and rules are binding policy statements. For this reason, assessing the degree of policy coherence between national environmental legislation and the identified environmental topics and objectives, should be a central part of public management assessment in this area, as it allows two types of public policy analysis, the first one focused on public policy management analysis and the second one on effectiveness analysis.

The first type, allows the systemization of information regarding progress, setbacks and delays of the elaboration of policy statements; identifying which topics and public policy objectives have been attended by policy statements of regulatory nature, and which are still pending. As can be seen in Chart 3, there are three specific objectives associated to the general objective “improve quality of inland and oceanic waters”: (1) control water quality (reduce, control and/or mitigate waste discharges, organic compounds and heavy metals), (2) increase efficient treatment of industrial effluents and (3) include boron in water quality measurement. All of them require some form of policy statements to be addressed, but only two of them: control on water quality and treatment of industrial effluents have corresponding legislation (see Chart 3). However, regulations in relation to the concentration of boron in water causeways (specific objective 3, Chart 3) have not been attended by any policy statement despite it requires a specific rule or modification of an existing regulation regarding quality of water. For this initial analysis, it is important to state that not all environmental objectives need legislation to be addressed. In some cases, the response can come through other type of policies and actions; such as objectives referring to the integral development of watershed use (specific objective 5, Chart 3), improving the availability of information (specific objective 10, Chart 3) and increasing scientific knowledge (specific objective 11, Chart 3) that have not been addressed in any way by the current legislation, even though it is possible they may be taken into account by other public policy tools, such as plans or state action programs. This leads to interesting questions concerning plausible explanations regarding the absence or extreme delay in the creation of regulations that meet specific goals identified by authorities. In the same line, the objective of improving access to drinkable water (specific objective 4 in Chart 3) was attended through diverse public policy actions, such as the direct State investment that created water subsidies for low-income

<sup>10</sup> Regulations on surface water quality and regulations on industrial liquid wastes to the sewage system were accompanied by the design of a ruling institution of public investments and privatization of sanitary companies, which boosted the coverage of sanitary services in the country.

**Chart 4 – Policy statement coherence among objectives on water policies and promulgated regulations.**

Environmental topic	General objectives	Specific objectives	Associated decrees	Associated laws	Associated legal projects	
Natural Resource Management	Improve the sustainability of the activity	1. Face the replacement of native trees in forests		LAW 20.283 related to native forest recovery and forestry development		
		2. Increase reforestation and promote the use of forest grounds for reforestation.	<p>DECREE 701 15.10.1974 Settles the legal regimen of forest territory or soil preferably used for reforestation, and settles rules for forestry development</p> <p>DECREE 945 24.03.1975 Modifies decree no 701, in 1974.</p> <p>DECREE 2565 03.04.1979 Replaces decree 701, in 1974, which subdues forest territory to the usage stated</p>	<p>LAW 18.959 Modifies, interprets and revokes rules stated in LAW 19.356 Budget Law is passed for the public sector in 1995</p> <p>LAW 19.561 Modifies Decree DL 701 regarding forestry development</p> <p>LAW 20.488 Extends due date of decree DL 701, and encourages forestation</p>		
	Reduce productive activity's environmental impacts	3. Control native timber exploitation in wood industries to promote its preservation				
		4. Controls domestic use of wood as fuel			LAW 20.586 Standardizes and certifies devices using wood as fuel and other wooden products	
	Strengthen the institutional character for natural resource management		5. Improve forest fire prevention management		LAW 20.653 increases punishment s to those responsible of forest fires	
			6. Improve national native forest and ecosystem protection policies			Bulletin No 5823-07 Establishes de right of conservation

Chart 4 (Continued)

Environmental topic	General objectives	Specific objectives	Associated decrees	Associated laws	Associated legal projects
		7. Implement policies in native forest management, preservation and conservation 8. Incorporate the topic of climate change in policies of native forest conservation 9. Strengthen the institutional capacity to control forest resources use		LAW 20.283 related to native forest recovery and forestry development	Bulletin No 7487 Creates the Biodiversity and National Protected Areas Services  Bulletin No 7486-01 Creates the National Forest Corporation, CONAF

Source: Personal compilation.

households, programs that increased availability of drinkable water in rural areas and, the incorporation of private capital in water companies. Therefore, the absence of regulations in some objectives is the first, but not the only, indicator to assess whether, or not the objective requires regulations; this is the first step to assess policy coherence.

Interestingly, the proposed framework can also trace the evolution in time of topics and policy objectives within the environmental policy domain. For example, in the case of water management in Chile, it is not until very recently that institutional objectives (objectives 12 and 13 in Chart 3) have been incorporated (OECD, 2011; Chile, 2010, 2011).

The second type of public policy analysis allows in depth questioning regarding, whether or not, certain regulations have contributed to the improvement of the environmental challenge identified in general and specific public policy objectives. In the case of surface waters in Chile, the objective of improving quality of inland and oceanic waters has been addressed in a series of public policy actions, the most important being the promulgation of emission standards for pollutants, the Sanitary System Reform and the Environmental Assessment System. The emission of standard set for pollutants associated to industrial wastewater discharge in sewage systems (Decree 609 20.07.1998) to sea waters and inland surfaces (Decree 90 07.03.2001) and underground waters (Decree 46 17.01.2003) have contributed to a significant reduction of contaminated water bodies which are exposed to industrial and urban activities.<sup>11</sup> Nonetheless, there has also been a reduction of water quality, specifically in coastal and northern areas of the country (World Bank, 2011). This is due to the fact that the emission regulations do not rule all sources and types of contaminants; excluding for example, widespread pollution stemming from agricultural and forestry activities, waste deposits of mining residue and, contamination provided by

artisan mining. In other words, the emission regulations have contributed to achieving the identified objectives, however, regulations need to be modified as to include the activities that have become a main source of pollutants.

All of these analytical results act as input to the public policy formation process, being of fundamental relevance to the stages of policy formulation and policy evaluation. In other words, the application of the policy statement coherence analytical framework produces two types of public policy analysis; both of which, inform the regulatory decision making process so that the country can count on sufficient regulations which address identified objectives within the policy domain environment, and likewise, provide information to the citizens concerning legislative work upon the environment. This methodology also contributes to the understanding of numerous factors that shape the implementation process of public policies, and to the process of creating necessary regulations, in coherence with socially agreed objectives.

## 5. Conclusions and recommendations

The development of the environmental topic as a policy domain is a relatively recent process in comparison to other areas of politics. Even more recent, is the implementation of evaluation processes of policies originated from the environmental policy domain. This slow progress is due to the particular features of environmental problems that make policy formulation and evaluation challenging. As Mickwitz (2003) states, this is because “there are no environmental problems unless they are perceived as problems, and perceptions are driven by knowledge [, but] knowledge is also affected by changes in the environment” (p. 416). Even more, when considering the relationship of the environmental policy domain and other policy domains as health, economy, and work, among others; it turns to be a complex setting to ensure coherence between environmental policies and its objectives.

Based on the theories of policy domain and policy coherence, our proposal offers a framework of topics and

<sup>11</sup> Superintendencia de Servicios Sanitarios (2012), *Informe de Gestión del Sector Sanitario* (2012). SISS: Santiago, Chile. Disponible en [http://www.siss.gob.cl/577/articles-9976\\_recurso\\_1.pdf](http://www.siss.gob.cl/577/articles-9976_recurso_1.pdf) visited May 26th. 2014.

objectives related to environmental policies, which can be used to evaluate the connection of the policy statements to each stated objective. This functions as a starting point in the evaluation process by analyzing the coherence amongst policy statements and public policy objectives, in order to assess the impact of implementing such policy statements.

The proposed methodological tool comes in handy when considering the lack of mechanisms to evaluate the implementation of policy statements; its usefulness for decision makers given the possibility of systematizing information regarding progress, setbacks and delays involved in the elaboration of policy statements; identifying which objectives in public policies have been attended and which are still pending. By referring to the case of water policies in Chile, policy statement coherence analysis shows that relevant objectives related to the management and administration of water resources have yet not been addressed. For instance, a policy objective set corresponds to ‘accomplish an integrated watershed management’; in order to do so, a redefinition is required in terms of the regional agencies’ responsibilities (regional offices of the General Water Department) and, the delimitation of their administrative management, which is currently associated to regional boundaries management rather than the hydrographic watersheds. The improvement of information quality and availability regarding water resources is suggested, however, this task has not been currently assigned to any responsible agency in the area of natural resources, hence minor efforts have been carried out in this area.

In both cases, modifications in the responsibilities and power pertaining public departments are of legislative nature, which have an impact on staff assignment and treasury. Therefore, law formulation is the first step towards the implementation of public policies that involve institutional changes, being a decisive point for the implementation of public policies.

On the other hand, analysis of coherence is also useful to general citizens and interest actors by enhancing their participation in the processes of public policy formation and its evaluation. In fact, the register of regulations – and policies in general – provide evidence of the depth with which a government tackles the objectives and goals set; being the environmental topics those of major conflict in developing countries, where transparency is of vital importance.

The analytical framework proposed and policy coherence analysis can be useful to countries with complex challenges due to the interaction of policy domains, such as fishing that involves artisan-fishing protection in hand with economic and social interest, and resource’s sustainability.

Many concepts in the policy literature have undergone limited empirical analysis. This paper contributes to the advancement of the empirical understanding of the policy statement coherence within the environmental policy domain.

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