

Article

Sustainability Assessment in Development Planning in Sub-National Territories: Regional Development Strategies in Chile

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Abstract: In Chile, the increasing occurrence of socio-environmental conflicts demonstrates that Regional Development Strategies—*Estrategia Regional de Desarrollo* (ERD)—as the main development policy of subnational territories (Regions), must consider sustainability as a central objective. The Taxonomy of Sustainability constitutes an assessment method that allows us to determine the correlation between the definitions of these public policies and the strategies for transition to sustainable development. The ERD of the Antofagasta and Aysén regions are the ones presenting the highest Taxonomic Index; this indicates a higher strategic content for the promotion of sustainability. It is also noted that the political will that conditions the principles and values on which the ERD are based is strongly determined by investment projects and socio-environmental conflicts, which represent the tension between environmental protection and the capacity and interests of regional society in the development project.

Keywords: Chile; sustainability; regional development; policies; socio-environmental conflicts

1. Introduction

1.1. Precedents

In Chile the definition of sustainable development is established in the Law on *Bases Generales del Medio Ambiente*—general bases of the environment (Law 19,300)—as “a process of sustained and equitable improvement of people’s quality of life, based upon appropriate measures of conservation and protection of the environment, in such a way as not to compromise the expectations of future generations” [1]. This generic definition has no correlation in the regional development planning instruments and has not prevented socio-environmental conflicts in the regions, thus questioning the sustainable development in their public policies.

Consequently, inclusion of sustainability in the development policies of the subnational territories, known as Regions in Chile, has ceased to constitute an alternative option for the State institutions, and has become an imperative due to the challenges imposed by global-scale change [2]. Nonetheless, there is no unequivocal consensus in the national public policies themselves, or in the international literature regarding the definition of the concept of development [3–6] or of sustainable development. The latter can be interpreted as a socio-political process, the objective of which is to meet human needs

and aspirations, and in which the impacts of human activities do not exceed biophysical limits, thus achieving intra- and inter-generational equity, with restrictions of an ethical and moral nature.

The absence of regional planning instruments based upon values, principles, and objectives for the transition to sustainable development facilitates the appearance of socio-environmental conflicts, understood as disputes between different stakeholders—individuals, organizations, private enterprises, and/or the State—expressing differences in opinions, stances, interests, and in demands made resulting from the effects (or potential effects) upon human rights deriving from the use of natural resources, or as a result of the environmental impacts of economic activities [7]. In Chile conflicts of this nature have been increasing in quantity and magnitude; in 2015, a total of 110 socio-environmental conflicts were recorded, 15 more than in 2012 [7,8]. The tension generated thereby can be addressed by the regional administration, where the conflict can be managed or avoided through regional planning based upon a vision of sustainability [9,10].

Some examples of socio-environmental conflicts are: the Freirina conflict (Atacama region), caused by the emission of bothersome smells from a pig farm, which was eventually closed down as a result of a strike by the local residents; the Barrancones project (Coquimbo region), which proposed a thermoelectric plant in the *Reserva Nacional Pingüinos de Humboldt*—Humboldt penguins national reserve—and which gave rise to national mobilizations, obliging the President of the Republic to demand that the company in question pull out of the plan; or the Hidroaysén project (Aysén region), which involved the construction of large dams in Southern Chile, intended to supply the capital Santiago with electricity through a 2000-km power line; this caused mass mobilizations at the national level and the initiative did not acquire the appropriate authorizations (Figure 1).

Within this scenario, there is a fundamental need to evaluate the values, principles, and objectives of the development policies of the subnational territories and their consistency with sustainable development [11,12]. Due to the fact that the Regional Development Strategy (*Estrategia Regional de Desarrollo* (ERD)) constitutes the most strategic instrument for Chile's regional development planning, it is relevant to evaluate its formal performance from the perspective of sustainability, especially in a country where the neo-liberal model and market criteria are hegemonic and at loggerheads with the goals of sustainable development [5].

1.2. Regional Development Policies in Chile

Chile's sub-national territories, known as regions, are of great significance in sustainable development planning and it is, therefore, vital to understand what administrative and institutional practices exist in Chile for planning regional development. Administrative management is the responsibility of the Regional Governments (GORE). Until 2016 the GORE were managed by the *Intendente*, a figure representing the President of the Republic in his jurisdictional territory. Due to modifications made to Chile's Political Constitution, the *Intendentes* will no longer exist in the future; they will be replaced by Regional Governors, who will be elected by popular vote. This is expected to take place from 2018.

Among the general functions of the GORE are the harmonious and equitable development of their territories in terms of economic, social, and cultural development, and in relation to the preservation and improvement of the environment. This, in turn, presents a specific and functional link which establishes that the functions of this regional executive organ will involve the design of regional development policies, plans, and programs, deciding the destination of resources for sectorial investment schemes and assessing municipalities in the formulation of their development plans and schemes, among others. All these elements give rise to a process of regional development planning, the principal instrument of which is the ERD, which must orient sub-national development through instruments, such as the Land Planning Regional Plans (*Planes Regionales de Ordenamiento Territorial* (PROT)) and their respective Strategic Environmental Assessment, and the activities and projects evaluated in the Environmental Impact Assessment System (*Sistema de Evaluación de Impacto Ambiental* (SEIA)).

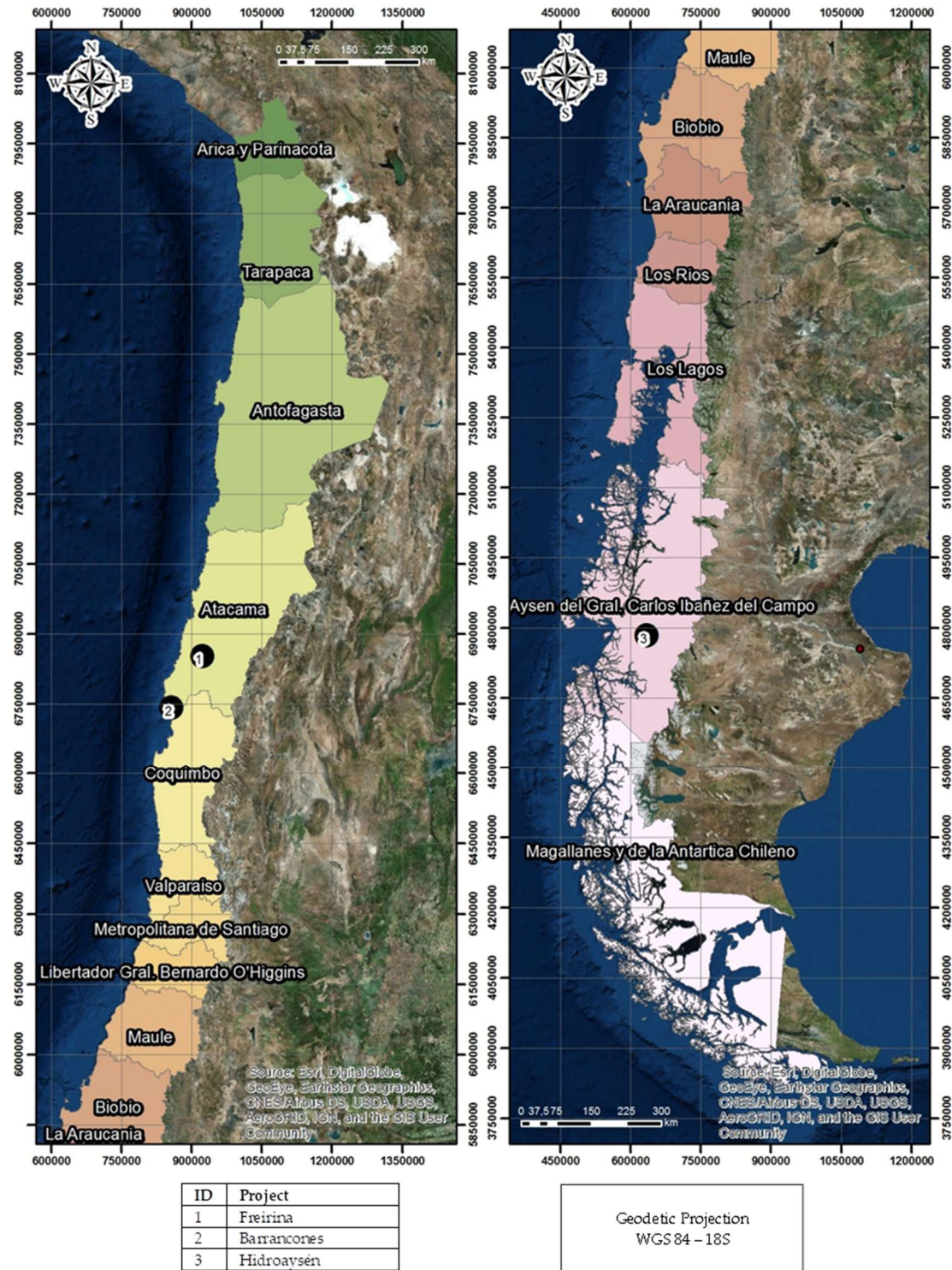


Figure 1. Chile’s subnational territories and localization of three socio-environmental conflicts.

The ERD is a flexible, dynamic indicative and strategic instrument with which each administration formulates, in the broad sense, how to achieve its objectives of regional development. These objectives are designed to guide the actions of the different stakeholders within the regional scope. Likewise, this instrument for regional development planning, despite the existence of definitions at the national level, constitutes the basis of the guidelines and objectives of development at the subnational scale; it is, therefore, the instrument with the capacity to establish sustainability as an objective and constitutes

the means to establish a consensus on actions for promoting sustainable development, minimizing the appearance or existence of socio-environmental conflicts. As Sergio Boisier points out, “a sustainable region would be comparable to any region whose development adjusts to patterns of sustainability; it is not the region as such that is sustainable, but rather the form of intervention therein” [13] (p. 61).

For this reason, the need arises to specify the way in which the ERD include sustainable development in their definitions; to this end, a comparative analysis was conducted among the different regional strategic contents, in order to identify the characteristics of the instrument and to establish a relationship with the institutional practices from which they arose. Table 1 shows the objects of the study corresponding to the 15 Regional Development Strategies (full text in Supplementary Materials link); the valid information relating thereto was provided directly by each GORE. These instruments were provided by the regional administrations themselves, having been requested through the information system *Gobierno Transparente* (Transparent Government) established by Law No. 20,285, referring to Access to public information of the *Ministerio Secretaría General* (General Secretariat Ministry) of Chile’s *Presidencia del Gobierno* (Presidency of the Government).

Table 1. Validity and temporal horizon of the Regional Development Strategies.

Region	Horizon	Duration
Arica y Parinacota	2009–2020	11
Tarapacá	2011–2020	9
Antofagasta	2009–2020	11
Atacama	2007–2017	10
Coquimbo	2009–2020	11
Valparaíso	2012–2020	8
Metropolitana	2012–2021	9
O’Higgins	2011–2020	9
Maule	2008–2020	12
Biobío	2015–2030	15
La Araucanía	2010–2022	12
Los Ríos	2009–2019	10
Los Lagos	2009–2020	11
Aysén	2009–2030	21
Magallanes	2012–2020	8

As can be seen, there is a time difference in the different regional policies, whether this refers to the moment each one is enacted, the annual interval for which it was created, or for the yearly validity. This diversity is greater with regard to the typology of content and structure, type of discourse, methodology and planning, and strategic impact of the definitions. Table 2 shows the documentary sections presenting strategic content, precisely the basis of the present paper; this specification is provided whenever the variability in content and structure is a determining factor with regard to understanding the approach of each Regional Government in the application of the development strategies of their respective regional territories.

1.3. Sustainability Assessment

Since the idea of sustainable development emerged, the first theoretical and methodological approaches arose, aimed at providing operability to the concept; the same occurred with the assessment tools. Clearly, due to the existence of different conceptual and theoretical interpretations, the operational and practical elements will also be different and, consequently, in the absence of conceptual definitions, an additional complexity is generated in order to make the operative-type definitions comparable [14,15]. One of the basic questions associated with the assessment is: what is the conceptual basis determining the approach of sustainable development? Finding answers to this question and applying these in an instrument or project requires a fundamental definition of values. On putting sustainable development into practice, values constitute the first definition. Values are

declarations of beliefs that are ingrained and accepted as premises [16]; they are directly associated with the way of defining and quantifying what is to be developed and sustained, and with how much longer it is possible to determine principals and guidelines.

Table 2. Strategic content of the Regional Development Strategies.

Item	Arica y Parinacota	Tarapacá	Antofagasta	Atacama	Coquimbo	Valparaíso	Metropolitana	O'Higgins	Maule	Biobío	La Araucanía	Los Ríos	Los Lagos	Aysén	Magallanes
Orienting Principles						x									
Vision and Mission	x	x	x	x	x		x	x		x					x
Driving force									x						
Image Objective						x	x		x					x	x
Objectives	x	x	x	x	x	x	x		x	x	x		x	x	x
Guidelines	x		x	x	x		x	x	x	x	x	x	x	x	x
Lines of Action										x	x	x			x
Axes						x			x				x		
Directives		x													
Policies		x										x			

Sustainability assessment is specifically oriented towards the management cycle of public policies, planning, and decision-making in relation to sustainable development [15,17]. In this sense, there are different stages in public policy in which a procedure for the assessment of sustainability can be applied: *ex ante*, aimed at promoting decision-making within a framework of sustainability [18,19]; or *ex-post*, intended to determine whether decisions taken are within the sustainability framework, or what type of sustainability has been employed in the decision-making process [20–22].

In particular, sustainable development in Chile has generally represented an element of permanent interest for the institutional sector and in academic terms. Publication of Law 19,300 in 1994 and the appearance of a definition of sustainable development both constituted the first milestone [1]. Nonetheless, one can find critical viewpoints regarding the discourse constructed in relation to sustainability and, therefore, to the assessment of sustainability as a practice, in two texts from half-way through the nineties: “*Sustentabilidad ambiental del crecimiento económico chileno*” (Environmental sustainability of Chile’s economic growth) by Osvaldo Sunkel [23] and “*Una vez más la miseria ¿es Chile un país sostenible?*” (Misery once again. Is Chile a sustainable country?) by Marcel Claude [24].

With regard to sustainability at the sub-national scale, in 1997 the erstwhile *Comisión Nacional de Medio Ambiente* (National Commission for the Environment (CONAMA)) began the development of a system of national indicators for evaluating sustainable development, including the creation of Regional Indicators of Sustainable Development (IRDS). Hernán Blanco highlights the design of the regional indicators of sustainable development in Chile (IRDS) as a process of creation of indicators involving the participation of the regional stakeholders [25]. However, despite the fact that the three dimensions of sustainability—the economic, social, and environmental ones—are included, and a fourth one referring to institutional aspects, it is the environment that is predominant in the selection of indicators, a fact that is accounted for by the recent incorporation of this sector in the discussion on national development. Even the literature indicates that decisions regarding the selection of the IRDS depend on the availability of information, which restricts the application and pertinence thereof [26]. Nevertheless, to date there is no evidence of the application of the IRDS in regional decision-making or public administration.

The bibliography contains varied methodological approaches for evaluating sustainability, as well as varied analytical frameworks for classifying assessment practices. Selection of the assessment method in the present research is determined by the need to establish whether the ERD possess strategic definitions promoting sustainable development; it is, therefore, an *ex-post* assessment focused upon the discourse of sustainability. With regard to *ex-post* assessment, the analytical framework

presented by Barry Ness [27] recognizes the use of certain indicators, such as the ecological footprint, the genuine progress index, the environmental performance index, or the sustainable economic welfare index, to which can be added the STAMP (Sustainability Assessment and Measurement Principles) [28] and ASSIPAC (Assessing the Sustainability of Societal Initiatives and Proposing Agendas for Change) [29] methods.

Use of these indicators and methods is based upon the supposition that the object evaluated has considered sustainable development as a transversal concept in the design of the instrument, a question that is unknown in the case of the ERD of Chile's 15 subnational territories. Something similar occurs with the proposal for analysis of the discourse developed by Jean Hugé, who seeks to identify the typology of the discourse on sustainability on which the instrument evaluated was based, taking for granted the existence of sustainable development as a metaobjective [20].

On the other hand, there is a Taxonomy of Sustainability, an approach for evaluating the sustainability discourse, upon which it is possible to establish how the values and principles present in a considered instrument can approach the concept of sustainable development, answering two main questions: "what is to be developed?" and "what is to be sustained?" [30].

The authors of Taxonomy of Sustainability [30] begin by establishing that there is a risk that the concept of sustainable development represents an oxymoron; thus, it is considered that the definition can vary from total conceptual inclusion to conflicts that exclude, both between economy and environment and between present and future. Thus, there will always exist a combination of development, environment, and equity, or economy, society, and environment. However, there is no consensus regarding the emphasis to be placed on what is to be sustained and what is to be developed, or in relation to how long. In the search for a methodology enabling us to differentiate the efforts to measure and characterize sustainable development, the taxonomy of the values and principles sought after by sustainability is considered. Taxonomy of Sustainability is an analysis proposal divided into two sections which, in turn, generically present three categories (Table 3).

Table 3. Taxonomy of Sustainability [30].

What Is to Be Developed		What Is to Be Sustained	
Economy	Wealth, production sectors and/or consumption	Nature	Earth, biodiversity and/or ecosystems
People	Child survival life expectancy, education, equity and/or equal opportunities	Life support	Ecosystemic services, resources and/or environment
Society	States, institutions, social capital and/or regions	Community	Cultures, groups and/or places

In the first column of Table 3, in relation to "what is to be developed", the authors propose three categories: economy, people, and society; each of these categories represents different conceptual approaches that have been applied historically to development. In the second column, "what is to be sustained", another three main categories are proposed: nature, life support system, and community. To synthesize, values and principles are evaluated according to what is to be developed or what is to be sustained, or a combination of the two, including integration of the categories listed in Table 3 [30].

2. Materials and Methods

Application of the Taxonomy of Sustainability requires establishing an analysis of each study object in which, unlike what has been put forward by the authors of [30] and the analysis of the discourse on assessment of sustainability by other authors [20–22,31,32], it has been established that a systematic and replicable process will be more coherent than a mere instrumental appraisal. In this sense, it is considered that the assessment requires a critical analysis of the discourse, particularly of the political discourse [32–34], the study objects being the documentary bases provided, in this case,

by the ERD of the respective regional governments. The analysis focuses upon the formal character of the symbolic object representing and reflecting the political discourse, and it is, therefore, based on understanding, reconstruction, interpretation, and inference of the text as a reflection of the information flow between the emitter and the receiver, in which the characteristics of reality and the interpretations existing therein come into play [32,34,35] (Figure 2).

However, from the methodological perspective, there is a need to consider the recognition of the two main types of analysis units [34,36,37]: the sampling units, which correspond to the portions of the instrument presenting strategic characteristics to which the analysis is applied; the definition of this analysis depends upon the methodological objective and the structure of each instrument; on the other hand, we have the strategic units, or register units, which are the parts of the sampling units that must be isolated from the context in order to analyze them. For example, a chapter or sub-chapter of an ERD can consider a sampling unit, which will possess multiple strategic units which, in accordance with the structure of the instrument, can be complete paragraphs and/or lists of guidelines or objectives. It is by means of these strategic units that the analysis is developed because it is through them that the message of the symbolic object is interpreted. In the same analysis process it often becomes necessary to establish, as a support factor, contextual units, which will facilitate comprehension, interpretation, or inference associated with each strategic or register unit.

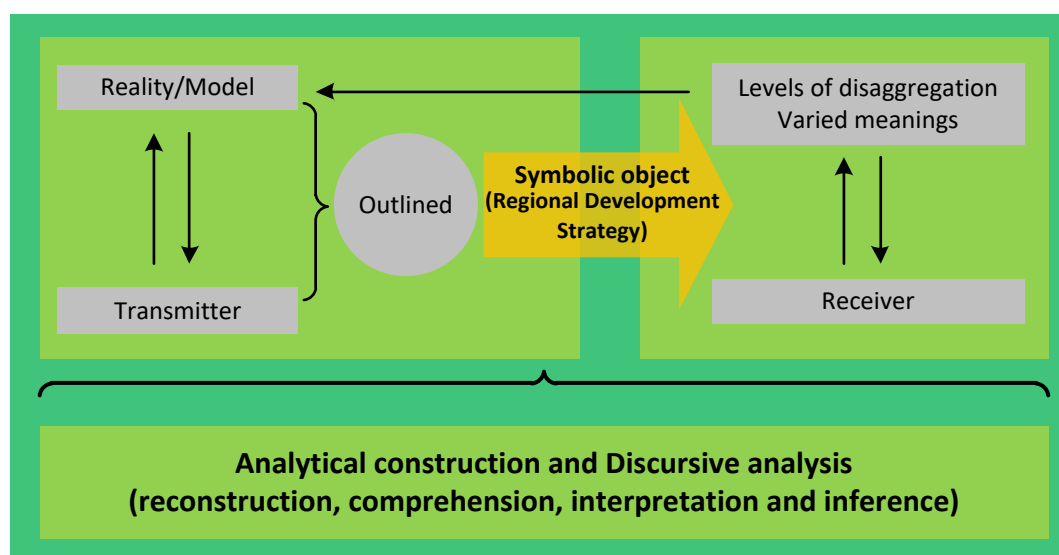


Figure 2. Information flow for the discourse analysis [34,37].

Consequently, the first action involves exhaustive revision of each ERD, in order to subsequently establish the sampling units, defined as the content that establishes project elements in relation to regional development. Therefore, the introductory content, diagnoses, methodological and procedural definition, or the instrument monitoring actions are not considered. Within the sampling units, different register units or strategic units are detected which vary for each instrument, but which are also inside them. The analysis starts with a sequential coding, based on a double process; first a coding of the bottom-up type and then another one of the top-down type [38–40].

To the strategic units the first, open-type coding phase is applied. In this phase, a discourse coding of the strategic definitions of each of the 15 ERD is performed without a conceptual preconception, and the suggestion of codes, therefore, depends on the documentary definitions themselves and on the interpretation thereof. This first coding system is known as first-level codes. Once the first-level coding has been performed for all of the ERD, a second review of the process is conducted to address possible omissions or differences in criteria in the first coding; this is repeated until conceptual saturation is achieved (Figure 3).

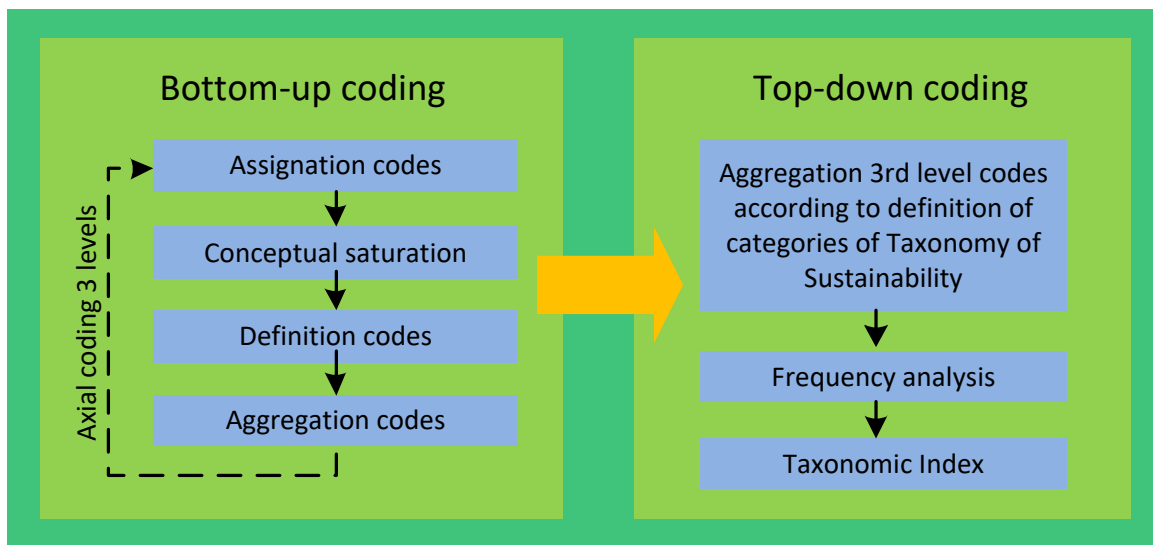


Figure 3. Process and axial coding stages for applying the Taxonomy of Sustainability to the ERD.

When the first-level coding is finalized, the axial coding is initiated; it is intended to reduce the amount of codes through conceptual aggregation. To this end each code is analyzed and examples of different ERD are taken in order to establish a definition associated with the code. We then proceed to relate the codes, a process that provides second-level codes (an example can be seen in Figure 4). In order to eliminate coding redundancy, the process is repeated, establishing a third level of coding. With this triple coding, the bottom-up axial coding process is finalized. Given that the Taxonomy of Sustainability establishes categories upon which the analysis is to be executed, the second phase corresponds to an inverse top-down analysis. For this reason, herein, the third-level coding performed in the previous phase is associated with each one of these categories, enabling a double task to be performed: first, a frequency of categories analysis and, second, an appraisal of the correspondence and integration of the categories. Figure 4 presents an example of coding and association with taxonomic categories, employing one of the abovementioned strategic units.

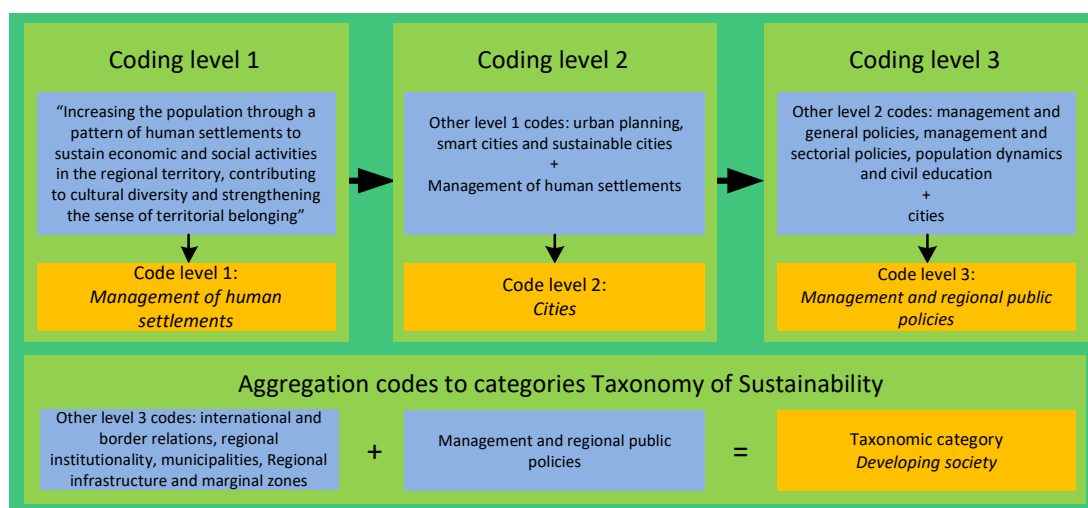


Figure 4. Example of coding from a strategic unit to a taxonomic category.

The frequency analysis was performed by associating with each Taxonomy of Sustainability category (a total of six) with a percentage ratio in relation to the total coded strategic units of each

ERD. The global value for each category will, therefore, range from 0 to 1, being closer to one or another value depending on its distribution. The value 0 represents the absence of strategic units for the category, and the value 1 represents the total concentration of all the strategic units in one given category. Another value that enables this assessment to be characterized is the standard deviation of the appraisal of the six categories; the lower the deviation, the greater the intention to promote sustainability, because this accounts for the equidistribution of strategic units. Considering that one same magnitude of standard deviation could be obtained for a greater total concentration of strategic units in the categories of the dimension associated with development or, with the categories of the sustainability dimension, it becomes necessary to establish a difference between them. To this end the standard deviation will be multiplied by -1 if there is a greater concentration of strategic units in the “development” dimension, and by 1 when there is greater concentration of strategic units in the “sustaining” dimension, which will thus provide what is known as the Taxonomic Index.

The results obtained are subsequently related to the sub-national territories, as are the levels of the urban population, the economic and industrial dependence, the area of protected spaces, the volume of public investment, the existence of socio-environmental conflicts, and environmentally-assessed projects presenting a potential impact.

3. Results

3.1. Taxonomic Index Assessment

Taking into consideration the sampling units and the respective strategic units for evaluating the 15 Regional Development Strategies, the results of the first level coding enable a frequency analysis to be conducted for each sub-national territory. The first coding enables the ERD to be represented in 272 conceptual codes, which are obtained after achieving a state of conceptual saturation, i.e., all the instruments have been revised by iteration in order to reduce the codes to the minimum, preventing conceptual superposition from existing between them.

Each of these codes represents positive concepts, that is, therein are condensed ideas, actions, strategies, guidelines, goals, or objectives (in each ERD the strategic definition possesses a different nomination) that attempt to develop or achieve a new state of some of the aspects of regional development. Having established the first level coding, axial coding is employed to achieve the conceptual association by means of two additional levels of conceptual codes. In the first axial coding, from the first to the second level, a representation is achieved of the 15 ERD in 88 codes, with a 68% reduction in the first-level codes. As in the first series of codes, the second level codes must be understood in a positive sense, to which can be added that the new conceptual aggregation employs thematic elements of a general nature.

In the second axial coding, from the second to the third levels, a conceptual representation is achieved of the 15 ERD in 40 codes, with a 55% reduction in relation to the second-level coding and an 85% reduction in relation to the first level coding. Consequently, what is produced are synthetic conceptual elements that enable us to describe, in a suitable and simplified manner, the definitions presented in each of ERD. There are 21 second level codes possessing a high degree of conceptual representation and they enable them to be transformed, without being grouped, into third-level codes.

Consequently, having obtained the strategic representation of the 15 ERD by means of three-level axial coding (Tables A1 and A2), the final coding (top-down) is performed with the categories of Taxonomy of Sustainability (Table 4). To this end we used the definitions given by the authors who conducted this classification [30], which refer to the different types of development and sustainability. Thus, grouped in the category “developing people” are the codes describing elements associated with the development of people, or human development, such as education, health, housing, minimum services (drinking water and electricity), and safety, including the definitions associated with personal development and equality and inclusion strategies.

Associated with the category “developing economy”, and in accordance with the authors of [30], the codes appear which describe strategies for promoting the economy and its production sectors, competitiveness, large and small enterprises, strengthening of markets, and investment. In the case of the category “developing society” the codes are considered that include institutional and social elements as a basis for the collective development of human groups; among these are regional public policies, regional infrastructure and institutionality, municipal administrations, cross-border relations, and public administration focusing upon marginalized territories.

Additionally, with regard to the category “sustaining nature”, which groups together the definitions referring to different natural elements, valuing protection thereof due to their intrinsic value in relation to their utilitarian value, the conceptual codes “natural heritage”, “ecosystems”, and “biodiversity” are included. As for the category “sustaining life support” two types of codes are grouped together; the first of these are elements that the ERD, recognized as requiring protection for their development, as is the case of water, air, climate (specified by means of reference to climate change), territory, and environment and, secondly, other elements the management of which focuses upon their impact on the environment, such as solid waste, mobility, green spaces, and abandoned animals. All these strategic elements are grouped under one general concept, which is the value of the environment as a source of essential support for regional development.

Finally, in the last category “sustaining the community”, which groups together the definitions associated with the recognition of the value of the community, regional culture, and community relations as a pillar of development, appear the codes culture and traditions, regional history, regional and local identity, regional heritage, indigenous peoples, and civil society. All this can be employed to establish an analysis of frequencies of the strategic definitions that ERD possesses according to the characterization of the Taxonomy of Sustainability.

The number of strategic units for each regional development strategy varies according to its own structure (Table 4); whereas the ERD for the Los Lagos region has been characterized by means of 67 units of strategic definition, while the ERD for the O’Higgins region reaches 236. Some authors ignore this [41], basing the analysis solely upon the frequencies of the instruments analyzed; nonetheless, a better result is considered to be obtained when the analysis considers the proportions of strategic units for each instrument analyzed.

Figure 5 shows the value for each category of the Taxonomy of Sustainability for all the sub-national territories; therein it can be seen that the maximum value reached by any category involves “developing economy” in the region of Los Lagos, with a value of 0.4, which can be interpreted in the sense that out of every 10 strategic units of the ERD, four correspond to this category. At the other end of the appraisal (minimum value) is the region of Tarapacá in the category “sustaining nature” with a value of 0.01, which indicates that in 100 strategic units of the corresponding ERD, only one will focus upon this category. This reveals that in all the ERD analyzed there is at least one strategic unit per category, but in no case does this surpass 40% of the strategic units for one given instrument.

As can be seen, there are clear differences among all of the instruments evaluated. The region presenting the highest concentration of strategic units for the category “developing people” is the ERD for the Metropolitana Region, whereas for the category “developing economy” it is the ERD for Los Lagos and for the category “developing society” it is the ERD for La Araucanía. For the other taxonomic dimension, the region presenting the highest concentration of strategic units for the category “sustaining nature” is the ERD for the Aysén region, for the category “sustaining life support” it is the ERD for Atacama and the ERD for Metropolitana, whereas for the category “sustaining the community” it is the ERD for the Maule Region. However, the greatest concentration of strategic units for the dimension “developing” is found in the ERD for Tarapacá, and for the dimension “sustaining” it is the ERD for Aysén. The Aysén region also exhibits the smallest difference between both dimensions, whereas the largest difference is observed in Magallanes.

Table 4. Top-down coding for the 15 Regional Development Strategies according to the Taxonomy of Sustainability.

Taxonomy of Sustainability	Third Level Codes	Arica	Tarapacá	Antofagasta	Atacama	Coquimbo	Valparaíso	Metropolitana	O'Higgins	Maule	Biobío	La Araucanía	Los Ríos	Los Lagos	Aysén	Magallanes
		Developing people	Personal development, education, employment, equality and inclusion, health, safety and public order, minimum services, and housing	25	23	43	17	17	39	60	75	51	22	35	31	15
Developing economy	Economy and competitiveness, entrepreneurship, enterprises, investment, regional market, production, and SMEs	27	11	36	23	25	28	32	32	25	30	25	45	27	27	48
Developing society	Regional administration and public policies, regional infrastructure, regional institutionalities, municipalities, international relations, and marginalized areas	19	23	38	28	24	29	20	51	55	33	57	48	9	29	50
Sustaining nature	Biodiversity, ecosystems, and natural heritage	4	1	14	3	6	4	5	7	5	1	4	7	2	16	6
Sustaining life support	Water, air, abandoned animals, green spaces, climate change, energy, environment, mobility, solid waste, and territory	10	9	31	29	19	22	44	61	15	27	20	18	5	32	10
Sustaining the community	Culture and traditions, regional history, regional and local identity, indigenous peoples, and civil society	16	8	31	17	11	8	18	10	30	20	27	18	9	9	15
Total Strategic Units		101	75	193	117	102	130	179	236	181	133	168	167	67	133	154

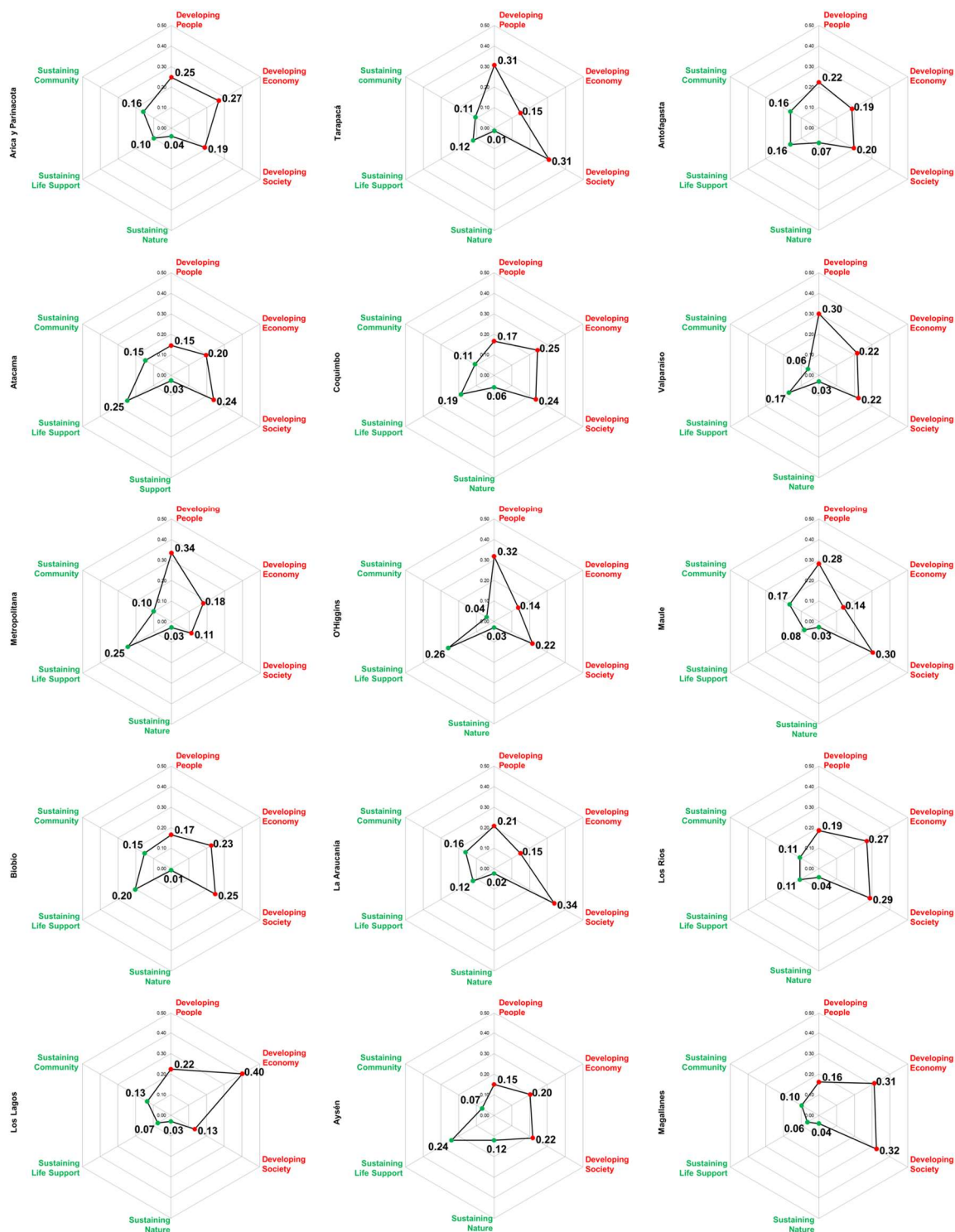


Figure 5. Assessment of sustainability of the ERD for Chile’s 15 regions.

The graphs in Figure 5 possess two sections corresponding to the definition of the Taxonomy of Sustainability, the area “developing”, which includes the three categories (in red): economy, people, and society, and the area “sustaining”, which considers the other three categories (in green): nature, life support, and community. A hexagonal network of equal-level edges indicates the existence of a greater balance among the strategic units of each category which, in turn, indicates that there is an identical proportion of strategic units in each category. Distortion of this ideal representation reflects a

greater concentration of one category in relation to the others; this is better understood by means of an estimation of the Taxonomic Index; the proportion of strategic units is greater in the development dimension in all cases, which is why all the values of the Taxonomic Index correspond to negative values. Figure 6 shows this index for each of the 15 Regional Development Strategies. Therein it can be seen that the regions of Antofagasta, Aysén, and Coquimbo are the ones presenting the best balance in the strategic units for sustainable development; at the other end are the regions of Los Lagos, Magallanes, O'Higgins, and Tarapacá.

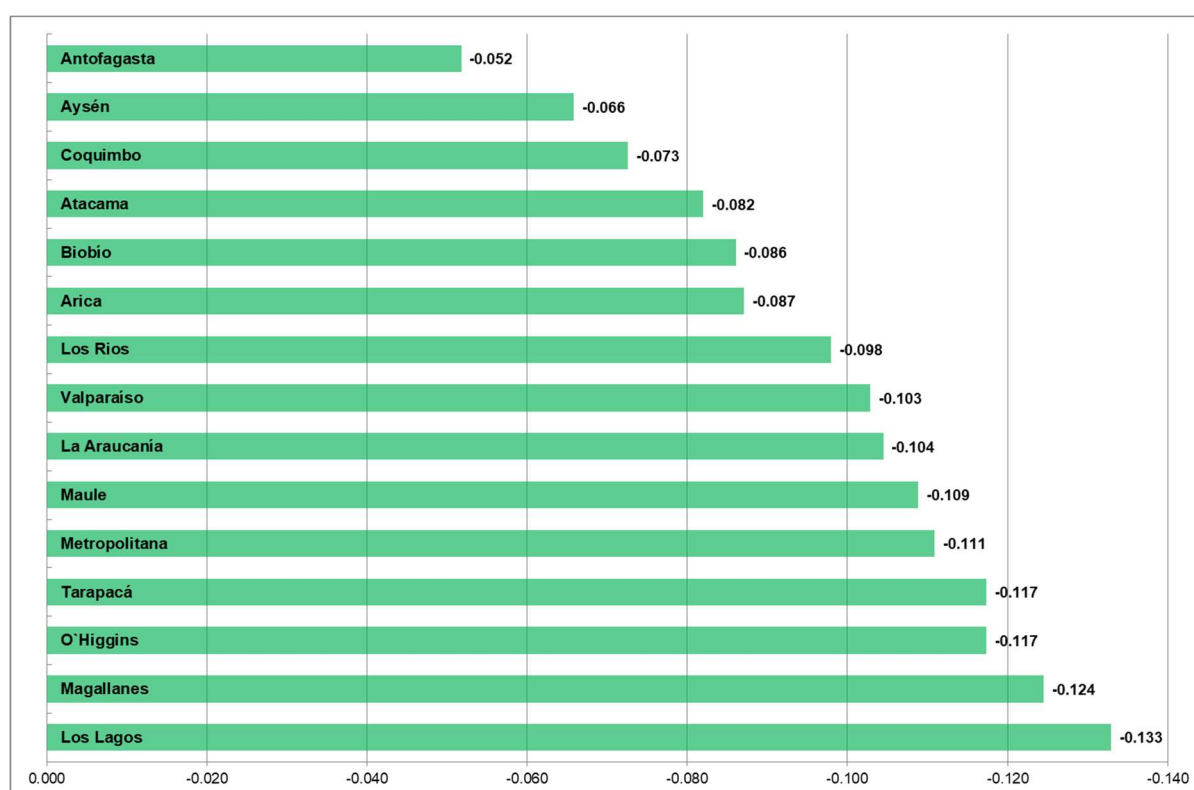


Figure 6. Taxonomic Index for the 15 ERD.

3.2. Balance between the “Developments” and “Sustainable” Views of the ERD

It is vital to use the results obtained to establish the differences existing among each of the 15 ERD evaluated. According to the values of the Taxonomic Index, the ERD for the regions of Antofagasta (−0.052), Aysén (−0.066), and Coquimbo (−0.073) are the ones presenting a more homogeneous distribution of the different categories of sustainable development, in contrast to the regions of Los Lagos (−0.133), Magallanes (−0.124), O'Higgins (−0.117), and Tarapacá (−0.117), whose ERD present a smaller distribution and a greater concentration in some of the categories considered in the assessment. In other words, the ERD for the regions of Antofagasta, Aysén, and Coquimbo exhibit greater intentionality in relation to sustainable development, whilst the instruments for Los Lagos, Magallanes, O'Higgins, and Tarapacá establish definitions that are further removed from this objective.

Along the same lines and considering the global appraisal, due to the existence of negative values of the Taxonomic Index for all the ERD evaluated, the strategic units are seen to be concentrated in the taxonomic dimension grouping the development viewpoints. Figure 7 shows the relationship between the Taxonomic Index and the absolute difference between the frequencies of strategic units for both dimensions: developing and sustaining; this reveals that, despite the existence of a certain degree of dispersal, there is a relationship between both variables. This implies, with a certain level of confidence, that greater homogeneity in the distribution of the strategic units for the six categories of

the Taxonomy of Sustainability will be obtained with a lower concentration of strategic units for the dimension linked to the development categories.

Consequently, an instrument will have the potential to define actions that enable a sub-national territory to move towards sustainable development when its strategic definitions are evenly distributed in the six categories of the Taxonomy of Sustainability and, furthermore, when this also exhibits a similar distribution between both dimensions of the assessment.

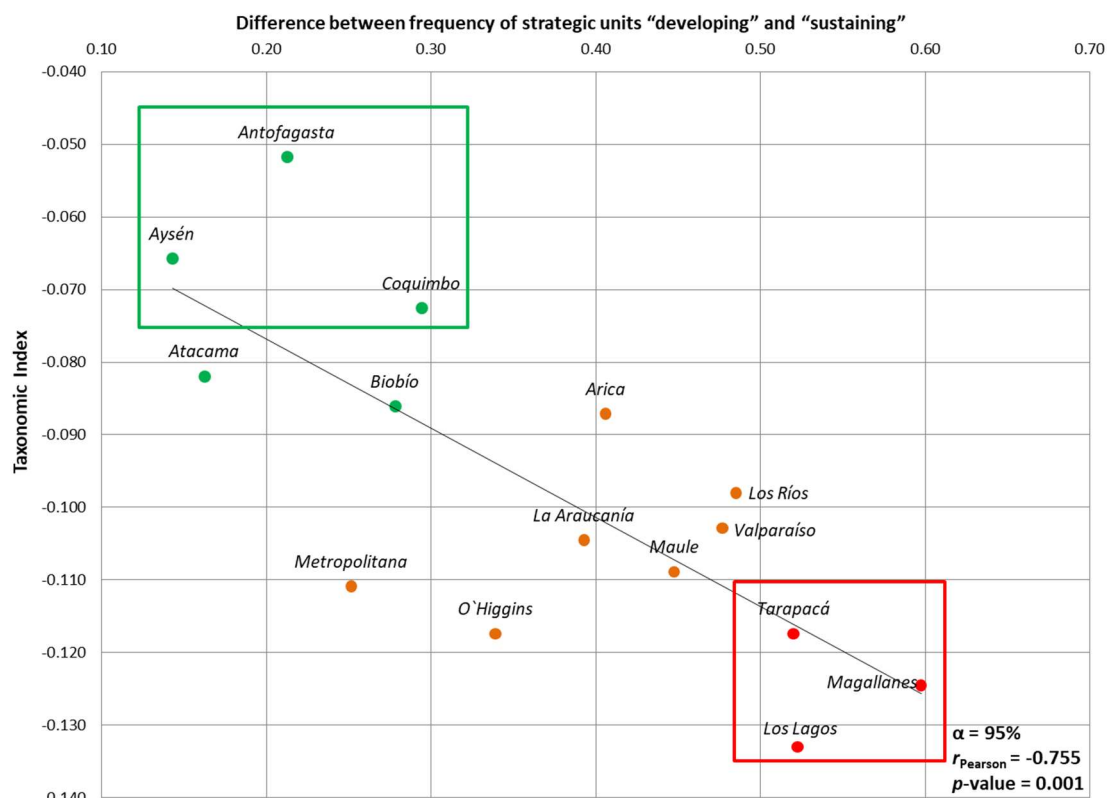


Figure 7. Relationship between Taxonomic Index and the difference between the frequencies of the strategic units “developing” and “sustaining” for the 15 ERD. Green shows the ERD presenting a high Taxonomic Index and a low difference between the frequencies of the strategic units: at the other end, indicated in red, are the ERD showing a low Taxonomic Index and a high degree of difference between the frequencies of the strategic units. Orange indicates the group of ERD in which the relationship possesses greater dispersal.

Moreover, with regard to the individual categories, a common pattern can be highlighted: with the exception of the ERD for the Aysén region, the category “sustaining nature” is the one presenting a lower frequency of strategic units in all the instruments evaluated (Table 5). This is not the case for the five most frequent categories, where no prevailing constant can be observed, because, out of the 15 ERD, six present a greater frequency in the category “developing society”, another five in the category “developing people”, three in the category “developing economy” and two in the category “sustaining life support”. This enables us to infer three central elements:

1. The ERD at the national level will give less priority to their strategic definitions, to the intrinsic value of natural heritage, of ecosystems and biodiversity and. consequently, actions aimed at the protection thereof are minimal in comparison to other strategic categories.
2. Although the ERD are characterized by an emphasis on development, there is no clear evidence that they prioritize any of the three categories associated with this dimension.

3. The ERD for the Aysén and Atacama regions prove to constitute an exception in relation to the definition of strategic units, unlike the 13 other instruments evaluated, whenever they present a higher concentration of strategic units in the category “sustaining life support”, a fact that enables us to infer a high appraisal of the environment as a vital support for regional development. Nonetheless, this is not decisive with regard to presenting a higher frequency of strategic units in the “sustaining” dimension (Figure 7).

Table 5. Identification of the categories of highest and lowest frequency of the Taxonomy of Sustainability for the 15 ERD.

Regions	Taxonomic Index	Higher Category		Lower Category	
Arica y Parinacota	−0.087	Developing Economy	0.27	Sustaining Nature	0.04
Tarapacá	−0.117	Developing Society	0.31	Sustaining Nature	0.01
Antofagasta	−0.052	Developing People	0.22	Sustaining Nature	0.07
Atacama	−0.082	Sustaining Life Support	0.25	Sustaining Nature	0.03
Coquimbo	−0.073	Developing Economy	0.25	Sustaining Nature	0.06
Valparaíso	−0.103	Developing People	0.30	Sustaining Nature	0.06
Metropolitana	−0.111	Developing People	0.34	Sustaining Nature	0.03
O’Higgins	−0.117	Developing People	0.32	Sustaining Nature	0.03
Maule	−0.109	Developing Society	0.30	Sustaining Nature	0.03
Biobío	−0.086	Developing Society	0.25	Sustaining Nature	0.01
La Araucanía	−0.104	Developing Society	0.34	Sustaining Nature	0.02
Los Ríos	−0.098	Developing Society	0.29	Sustaining Nature	0.04
Los Lagos	−0.133	Developing Economy	0.40	Sustaining Nature	0.03
Aysén	−0.066	Sustaining Life Support Vital	0.24	Sustaining Community	0.07
Magallanes	−0.124	Sustaining Society	0.32	Sustaining Nature	0.04

Furthermore, the ERD for the Aysén region is the only instrument whose category referring to a lower proportion of strategic units is not “sustaining nature”; to which we can add that it is also the one that reveals a smaller absolute difference between the strategic units associated with the “development” and “sustaining” dimensions, a fact that indicates the desire of the promoters to establish balanced strategic decisions between both dimensions, thus demonstrating a different behavior pattern to that of the remaining ERD. Within their functions referring to regional policy, the ERD, as a declaration of intentions of a general nature within a specific institutional and administrative context, develop a vision of sustainable development that prioritizes consideration of the dynamics of production and economic growth as a promoter of individual and collective development, accompanied by the presence and development of the public administration, a fact that is corroborated in the narrative of sustainability arising from the conceptual development of international institutions, such as the World Bank [42] and the CEPAL [26].

3.3. Relationship of the Taxonomic Index with Indicators of Regional Development

Heretofore, the intention to promote a transition towards sustainability, expressed by means of the Taxonomic Index, is directly related to the desire to establish goals, targets, and guidelines, or balanced actions, between the “sustaining” and “development” dimensions. To all this we can add the particularity of the ERD for the Aysén region, which, albeit an example of this good relationship, possesses characteristics that are different from the similar instruments of other sub-national territories. In order to establish potential correlations between the Taxonomic Index and economic, production, territorial, social, and administrative characteristics, Table 6 presents Pearson’s correlation coefficients (linear correlation) among some of the descriptive indicators of each regional territory, to which can be added the *p*-value (two-tailed) for a 95% level of statistical significance (Table A3).

The ERD for Antofagasta, presenting the lowest Taxonomic Index, which confirms the existence of strategic instruments tending more towards a transition to regional sustainability, is the one possessing the highest level of economic dependence (63.78% of the GDP corresponds to the mining industry), the one presenting the lowest level of poverty (4.0% in the year 2013), the one with the

largest urban population (97.5% in the year 2010), with the largest number of socio-environmental conflicts (11 conflicts), and the highest level of approval of environmental impact studies (with US\$ 25,313 million, corresponding to the total amount of investment subject to environmental authorization), the latter authorized prior to the publication of the ERD. On the contrary, the ERD for the Magallanes Region, presenting the highest Taxonomic Index, is the one exhibiting the lowest level of economic dependence (15.8% of the GDP corresponds to the public administration), the lowest level of public investment (2.67% of the *Fondo Nacional de Desarrollo Regional*—National Fund for Regional Development (FNDR)) in relation to the national total), the one with the largest area of spaces subjected to official state protection (57.4%) and the lowest number of socio-environmental conflicts (one conflict).

Table 6. Correlation between the Taxonomic Index and the descriptive indicators.

Indicator	Description	Pearson's Correlation Coeff.	p-Value ($\alpha = 95\%$)	Source
Economic Dependence	% GDP activity with largest contribution to regional total, average 2008–2014	0.495	0.061	GDP per type of economic activity and per region, current prices in 2008–2014 [43]
Public Investment	% Nation Fund for Regional Development in relation to the national total, average 2006–2016	−0.405	0.134	Total annual expenditure Nation Fund for Regional Development [44]
Poverty	% Regional population in situation of poverty 2013	−0.254	0.362	CASEN Survey 2013 [45]
Conservation Areas	% SNASPE in relation to region's area	−0.144	0.610	Surface area belonging to the <i>Sistema Nacional de Áreas Silvestres Protegidas por el Estado</i> (National System of Protected Wildlands) [46]
Urban Population	% Urban population in regional total	0.305	0.270	Population Projections [47]
Socio-environmental Conflicts	No. of Socio-environmental Conflicts at the time of publication of the ERD	0.590	0.021	Socio-environmental conflicts per region [7,8]
EIS Projects Approved	Amount of investment (US\$ million) in projects with environmental impact studies approved at the time of publication of the ERD	0.577	0.024	Database of Environmental Impact Assessment System [48]

The correlation type enables us to establish a probable relationship and it constitutes a reference of the behavior of the two variables; in no case does it establish a cause-effect association. It can, therefore, be established that regional economic dependence, level of public investment, level of poverty of the regional population, characteristics of land protection, and amounts of population living in the cities, despite presenting a certain degree of correlation, are not statistically significant, and no probable relationship can, therefore, be inferred with the intention to promote sustainable development established in the respective Regional Development Strategies.

On the contrary, there are two variables for which a correlation and a degree of statistical significance can be observed, a fact that helps to infer the existence of a closer relationship. One of them corresponds to the number of socio-environmental conflicts, which represents the existence of activities or projects presenting a conflict of standpoints or ideas in relation to the criteria of regional (and/or local) development and their relationship with the environment; the other one corresponds to the amounts of investments in projects approved by the Environmental Impact Assessment System, which reflect the pressure a given regional territory is subjected to (considering that an environmental impact study is presented when an environmental component is subjected to significant effects and characteristics of circumstances).

For the previous two cases, as can be seen in the representation of Figures 8 and 9, a relationship is observed between the Taxonomic Index and the respective variables; the larger the number of

socio-environmental conflicts or the larger the amount of investment in projects presenting a certain level of environmental impact, the ERD will present a greater intention to establish actions aimed at a transition towards sustainability. However, considering this scenario, as well as the relationship exhibited in both cases by the Aysén ERD and the propensity of this instrument to reveal a different behavior pattern to that of the remaining ERD, a second graphic representation of correlation is presented which excludes the sub-national territory, with the consequent increase in the correlation at levels higher than 0.7. That is to say, the initial asseveration is extended, but this time with a higher degree of certainty.

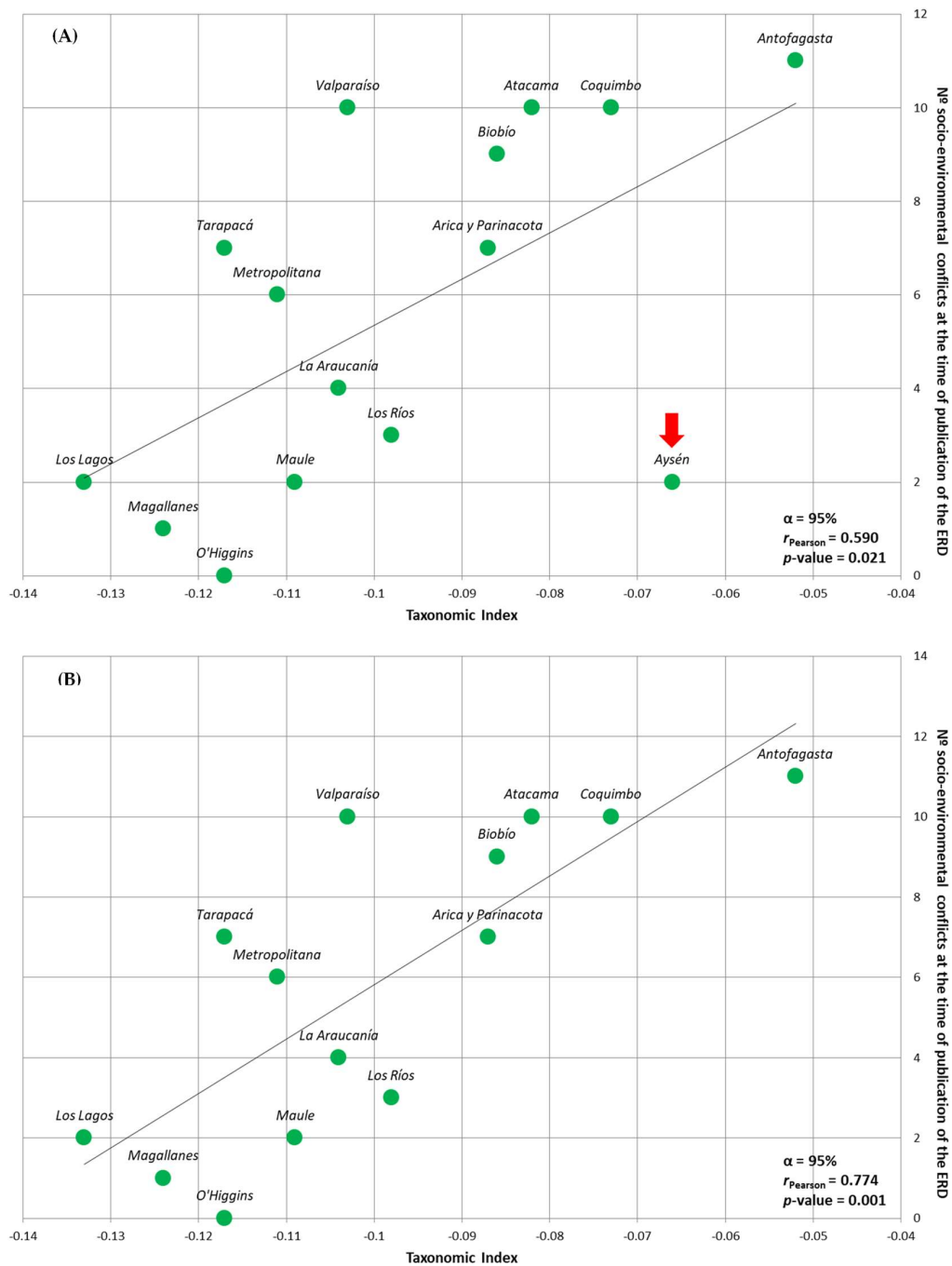


Figure 8. Correlation between the Taxonomic Index of the ERD and the number of socio-environmental conflicts: (A) the correlation for the 15 regions; (B) the: correlation excluding the Aysén region.

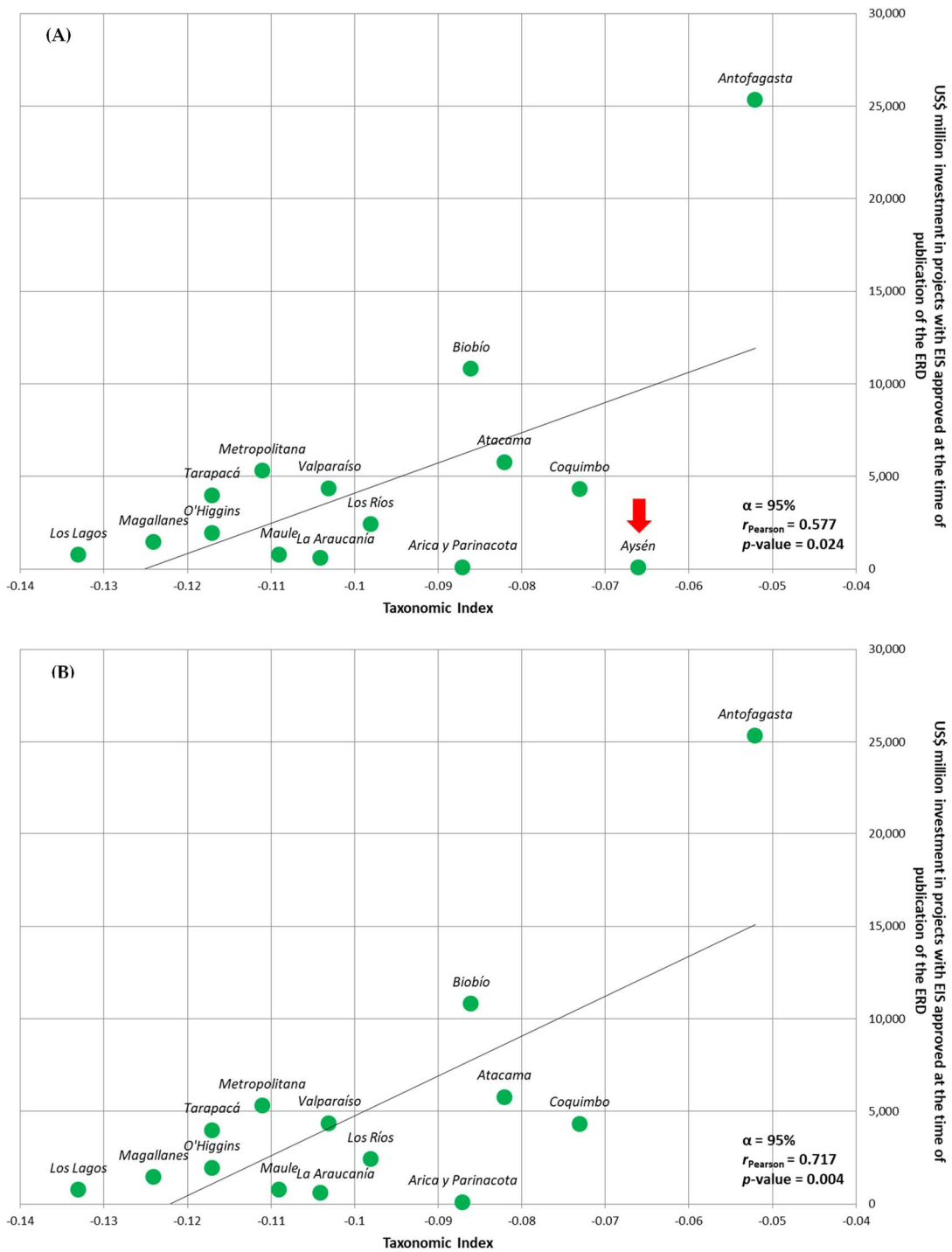


Figure 9. Correlation between the Taxonomic Index of the ERD and the amount of investment approved by means of environmental impact studies: (A) the correlation for the 15 regions; (B) the correlation excluding the Aysén region.

In short, the institutional nature of the vision of sustainability of the ERD appears to result from the ideological and political will of the regional governments, associated with the emergence of social and environmental conflicts contextualizing the strategic definition; this explanatory proposal had been put forward by Joan Martínez-Alier [49]. This can be extended to all the ERD evaluated, including the one for the Aysén region, whose particularities, according to the analysis performed for the tourism industry of this region [50], appear to be related to a narrative of sustainability marked by

social actors associated with alternative economic development; this arises from the appearance of socio-environmental conflicts, particularly the construction of mega-dams, a phenomenon proposed by Hugo Romero-Toledo [51]; within the same argument, one can include the high level of citizen participation in this southern zone of the country in relation to other sub-national territories [52].

4. Discussion

Taxonomy of Sustainability constitutes a very useful tool for evaluating the intentionality of public policies and their instruments for promoting transition towards sustainable development. The use of a systematic procedure, based on critical analysis of the discourse, provides comparable results, enabling us to recognize the sustainability narrative present in each instrument evaluated.

In the “development” dimension one can observe ERD that prioritize economic development, recognizing that it is the dynamism of the production sectors that initially constitutes the driving forces responsible for creating employment, wealth, and consumption in a territory, providing incentives for investment and generating currency for the maintenance and protection of the environment [42,53]. Others, following the tendency of other societies, give more priority to the development of people (human-scale development [54]); in this sense, increased life expectancy, education, health, and equal opportunities are as important as economic development, if not more. Lastly, some ERD also prioritize the development of society and its institutions, the quality of its public policies, links with the community, and social capital [55,56].

Something similar occurs with the “sustaining” dimension, in which the different values of the ERD range from prioritizing nature conservation, recognizing the intrinsic value of the planet, the territory, biodiversity, ecosystems, and landscape [57], to valuing their utilitarian value (associated with maintaining life support) [30], recognizing that the environment constitutes a source of resources enabling people to live in society [58]. To these two concepts can be added the importance of sustaining the community, with cultural diversity and collective lifestyles requiring protection [59,60]. Nonetheless, a key finding indicates that, in most of the ERD, “sustaining nature” is the category showing the least presence, a phenomenon that does not appear to be exclusive to Chile, but rather, is based on the concept of sustainable development incorporated into numerous international public policies and planning instruments [61]; such is the case of the assessment of the Belgian Radioactive Waste Management Policy [20], the Benin Poverty Reduction Strategy [20], the National Strategy for Sustainable Development of Costa Rica [30], the Project of Indicators for Sustainability of Boston [30], and the Iranian Economic, Social, and Cultural Developmental Plans [41].

The abovementioned examples also demonstrate the existence of ambiguity in the sustainable development applied to these instruments, as well as the plurality existing in the measurement and characterization of sustainability, which can also be seen in the ERD in Chile. There is, therefore, no accepted conception at the national level regarding what is, or should be, sustainable development, or the application thereof, in regional development policies; consequently, there is a need to establish a common analysis framework, from the conceptual approach (values, principles, and directives) to the operational planning (goals, objectives, targets, indicators, and thresholds) [15,16].

Another element considered to be relevant by some authors involves the temporal context of the definition of public policies considering sustainable development as an objective [41], that is to say, instruments that have recently come into force tend to prioritize the intention to shift towards sustainable development, a phenomenon that does not appear very evident in the case of Chile. The territorial, social, and political contexts of the region appear to have a greater influence than national or international tendencies.

5. Conclusions

Regional Development Strategies, as policies of regional development, do not exhibit a homogeneous behavior pattern with regard to the values and principles upon which they construct their future projects; this conclusion is supported by the high degree of variability of the strategic

content in relation to sustainable development. Two global patterns determine the way in which regional development strategies are defined: the prevalence of economic and productive development and the lower level of protection of nature and natural heritage. This appears to be paradoxical in that Chile is a country that greatly depends on exploiting its natural resources and landscape values, a fact that is not suitably recognized by the political and economic organisms at the regional scale.

The above mentioned variability cannot be exclusively accounted for by the different territorial, economic, production-related, or social characteristics of each region, but rather by the political will and intentionality of the respective Regional Governments in their functions as promoters. This becomes evident on observing that there are territories that present a higher concentration of strategic units, ranging from 40% for economic development, in the case of the Los Lagos region, and 24% for sustaining life support for the Aysén region. However, it is noted that the regions presenting more socio-environmental conflicts and a larger investment in projects generating environmental impacts have a greater tendency to consider all the categories of sustainable development as strategic definitions. This provides an explanatory hypothesis: that the political will establishing the principles and values sustaining the ERD appear to be strongly determined by the dynamics existing between investment projects and socio-environmental conflicts, which seem to reflect the pressure placed upon the regional environment and the capacity and interest of civil society in the regional development project.

A particular behavior pattern can be seen in the Aysén region, where the intention to operate as a promoter seen in the strategic definitions of its regional development policy appears to be governed by other factors because, unlike the homologous instruments, it possesses a higher concentration of strategic units in the categories relating to the intrinsic value of nature and the functional significance of the resources existing therein, with 36% of the total, compared with 20% of the strategic definitions for economic development. Moreover, this ratification of the aforementioned explanatory proposal provides precedents that verify the approaches existing in the bibliography with regard to the behavior of civil society and government institutions in relation to sustainable development in the Aysén region, which seems to be determined by the political and communicational impact of the Hidroaysén project [50,51].

Having established the characteristics of the Regional Development Strategies, it would be interesting to take a more in-depth look at the analysis of territorialization of the general definitions of sustainability. This should be accompanied by methodologies for regional development planning that are pertinent with regard to the characteristics of the regional administration in Chile, where the configuration of regional governments led by authorities elected by popular vote, and the transfer of new competencies both give rise to a totally new framework.

In addition, another element that proves pertinent with a view to the future involves developing processes applied to the sub-national territories placing greater emphasis on sustainable development, such as the Antofagasta and Aysén regions, two regional spaces exhibiting substantial differences in their models of regional development. These two regional spaces present substantial differences in their regional development models. In the Antofagasta region there is an unequivocal intention—not only institutional, but also social—to promote regional sustainability; this issues from the territorial pressure of industrial activity and the accumulative effects thereof on the environment; moreover, in the Aysén region, regional sustainability appears to arise as a development option resulting from what was one of Chile's largest socio-environmental conflicts (the Hidroaysén hydroelectric project).

Lastly, the results of the present paper demonstrate that the commitment to sustainable development existing in almost all recently-published regional public policies do not always correspond to the content thereof. This indicates that the Taxonomy of Sustainability and critical discourse analysis constitute two outstanding tools for evaluating sustainability and for establishing this correspondence. They can be applied to currently-existing instruments or to ones being designed, helping to suitably reflect the ideas, values, and principles of the decision-makers in the final product. This is not only applicable in Chile, but also anywhere in the world where there is interest in

Table A1. Cont.

	Codes	Arica	Tarapacá	Antofagasta	Atacama	Coquimbo	Valparaíso	Metropolitana	O'Higgins	Maule	Biobío	La Araucanía	Los Ríos	Los Lagos	Aysén	Magallanes
24	Quality of life women					1				2			1			
25	Quality work places			1				1	1							
26	Quality products and services				1								1			
27	Quality public health	3	1				1	1		1		1	3	1	6	1
28	Climate change				1				2							
29	Different capacities			1		1	1	1		2	2	6	1			1
30	Labor training			2	2	1	2		1	2	1	2		1		2
31	Regional human capital		1	3					1	3	1					2
32	Sustainable cities										1					
33	Friendly cities					1										
34	Production clusters	1			1						1			1		
35	Social cohesion	2		2		1								1		
36	Public-private collaboration	1	1	5	2		1	1	2	2		4		1	1	1
37	Regional administrative competencies		2	2			2									2
38	Institutional competencies	1	2	2	2				2			1				
39	Technical competencies				1	1	1	1		2				1		
40	Regional economic competitiveness		1	1	1	1							1			
41	Environmental awareness	2	1	2	4		2	1	1	1	1					1
42	Connectivity			2		1		2								
43	Conservation biodiversity	1		3	1	2	2	1	4			2				1
44	Conservation native forestland											1		1	1	
45	Conservation nature	1	1	1						1			2			
46	Conservation ecosystems			1		1	1	2	1	1			1		2	1
47	Consumption goods and services												1			
48	Water pollution		1	2					4							1
49	Emissions controls								1			1				1
50	Coexistence schoolchildren							2								
51	Interregional cooperation		1			1		3								
52	Cooperativism								1							
53	Social capital				1		3			1	2	1		1		
54	Economic growth				1	1						1	3			2
55	Hydrographic basins				1											
56	Environmental culture			2	2	1				1		2	1		1	
57	Ancestral cultures	1														
58	Sport and recreation	1		3			1	1	4	1			3			
59	Traditional sports								1							
60	Children's rights															
61	Sexual and reproduction rights			1												
62	Economic development		1	2	2	2	4	2				2				
63	Educational development	1		1				2	4	2		2	2	1		
64	Individual development	1		1				2	2					2		
65	Development SMEs	1	2	2	1	1	1	1	1	1			2			
66	Development rural areas			2	1	5					1	1	1	2		1
67	Institutional decentralization				1		4		1	3		1	2			1
68	Interregional decentralization				1	1	1	1	1	1	1				3	3
69	Demographic decentralization							2								
70	Atmospheric decontamination							2	7			1				
71	Dignity elderly adult				1		4				1					
72	Labor dignity				1				1				1			
73	Population dynamics			1		1		1							4	
74	Diversification markets	2	1	4		2	2	7	2	1	1		2	2		
75	Diversification production			1	2	1	1								1	
76	Substance abusers			1				1	2							
77	Competitive economy			1	1			2		1	2	2		2	2	3
78	Urban economy										1	2				
79	River ecosystems												1			
80	Marine ecosystems															1
81	Regional ecosystems														1	
82	Terrestrial ecosystems												1		1	

Table A1. Cont.

Codes	Arica	Tarapacá	Antofagasta	Atacama	Coquimbo	Valparaíso	Metropolitana	O'Higgins	Maule	Biobío	La Araucanía	Los Ríos	Los Lagos	Aysén	Magallanes
83							1								1
84									3						
85	2	2				1	1								
86		1					1	1			1				
87			1						2						
88			3	1					3						
89		1	1			1	2	5							
90	1										1	1			
91	2	1	2					5	6		1	1		2	2
92	1	1	1		1	4		1	4		3			1	1
93						1			2	2	1	1		1	
94					1		3	2	1		2	1			1
95							2		2						
96			2		2	2	1		1	2	1	2			
97					2				1		1	1		1	
98	2	1	1	1	1		2							3	
99	2	2	2			1	1	7		2	3	1		3	1
100	1	1	1			1		3	3	1		1			2
101	1			1		1	1	1							
102			1	1	2	1	2		3						1
103							2								
104	1	1	2		1		1	1	1						1
105			1			1									
106	1														
107	1		2		1			1						1	1
108	2						2			1	2	2		1	
109				1											
110		1	1						1						
111								2	1	1		1	1		
112															3
113						1	1			3	1				
114		1				1	5			5	1			2	
115								1							
116	1	1	1	1	2	1	1	1	1	1		1			
117															1
118		1							3			1			
119									1						
120				1			3		1						
121	1						1	1	1						
122				1			2	1							
123	1			1	1	1	1		1			1			1
124			1	2	2		2		1	1	2				1
125							2								2
126									1	1		1			
127			1					1	2	1		1			
128		1	1		1	1		1			1			1	
129			2	2	1	2	1		1	1					
130								1							
131						1		1	1			2			1
132											1				
133			1		1	2				1	1	2		3	2
134		1	2				1								
135	1	1	2		1		2	4		1	2	1			
136	1		1							3	1				1
137							3			3				1	
138					1	1			1	1	1				
139									1			3		3	
140	1		1				2			1	1				
141	5	1	1	1		3		3		5	2	4			1
142		1	2	1		1			2			1			
143	2	1	2							2	1			2	
144				1			1			2					
145						1			1	1		1		2	
146	1									1					
147				1											
148							1	1	1		1				
149	1								2						
150	2		2	2		3	2	2	1	1			2		

Table A1. Cont.

Codes	Arica	Tarapacá	Antofagasta	Atacama	Coquimbo	Valparaíso	Metropolitana	O'Higgins	Maule	Biobío	La Araucanía	Los Ríos	Los Lagos	Aysén	Magallanes
151			1	2		1	1								
152			1		1	1				1		1			
153											3			1	2
154						1									
155									1						
156						1		1		1					
157							1								
158					1										1
159							1								
160							1	1							
161	2	1	2	2	1	2	1	2	7	1	7	4		1	3
162	3		1		1	1		1	1			1			
163							7							1	1
164			1	1	2						1		1		
165							1								
166	1	1	4				1	1	1		2	1			
167	1		1			1		1						1	
168				1		1	4								
169	2	1	2		1		1	4	3	4	1	1	1	2	1
170	1						1								
171	3	2	1	5	1	2	1	1	3	1	4	1	1	1	1
172	1		11	4	5	4	2	1	6	2	5	5	1	1	2
173									1						
174										1	1	2			1
175			1	2	2	1	1			1	1	1		7	2
176							2		1	1	1	1			
177			1		1			2				2			
178	4	1	3	4	3	2	2	9	5	1	5	4	2	2	3
179			2				2	1							1
180															1
181				1			1	1				2		3	
182								4		4		2		1	
183	1	1		1	1		1		1	3	1		1		1
184		1			1	2	1	2	1		1				
185			1	2								1		1	
186	1							1				1			
187								1	3	1		1			2
188								3	2	1		3			
189	2	2	2	2	2		1		3	1	4	3		1	8
190										5	1				2
191								1	1		1	1		1	
192								1	2		1	1			
193				1			2			1	1				
194												1			
195				1	1		4	1	1		1	1		1	4
196	1							2				1			
197				3			1	4	1		3				
198	1	1	1	1	2	1	1	5	4	3	11	2		1	3
199												1			
200			2					1	1						
201			1	1											
202											1			1	2
203			1		1				1						
204				1					3	1	1	3	1		1
205				1							1	1			
206			2		2	1			1						
207			1												
208		1								1					
209	1		4	4		1	1	1	1	1	1	1		3	
210							1								1
211			2	1		1	1			2	5	2			4
212					1	2				1				1	4
213								1							
214			1	1			2	2	1						
215			1							1	1	1		1	2
216	1		3							1					
217												1			

Table A1. Cont.

Codes	Arica	Tarapacá	Antofagasta	Atacama	Coquimbo	Valparaíso	Metropolitana	O'Higgins	Maule	Biobío	La Araucanía	Los Ríos	Los Lagos	Aysén	Magallanes
218			2		1	1						1		1	4
219		1		1	1	2	1	3	4	1	4	4	2	5	2
220		1	1	2										1	
221						2		1				2		1	
222			2												
223	1	1													
224	4			1	2		1		1	1			1		
225															
226			2		4	2		2	1		1	7		2	
227				1		1		5							
228			1	1				3	1						
229								5					1		
230			1												
231			1	1						1	1		1	1	1
232					1		1		1		2			1	
233															2
234		1	3					5	1			1			1
235	1			1	1		1						3	2	3
236			1	1		1		4	1	1		3	2	1	2
237									1	2		3			2
238								1	1						2
239													2		5
240	1	1	6	1		1		3							5
241	2										1	3	4	1	4
242	4	1	1	1	2	2	2	6	1		1	4	6	3	10
243					3			1	3		1	1		2	2
244												4			
245							1								
246		1	2	1		1		3	2						
247							6			1		2	1		2
248					1	1	2	4	1	1	2			1	
249	2	1	3				1	5	3			2		1	2
250				1				1	1						
251										1					
252					1	1		1	3	2	1	1		2	2
253													1	1	1
254	1	1	1	1	1	4	1	3	1	2	1	2	4	3	4
255		1	1				1		1						
256				1					1						
257							2								1
258		1					1			1	2	1	1		
259						1			1	1		2			
260	1		2			1				1		1		2	2
261							1								
262	1		1					1							
263					1			2							
264	1		1	2	4	2		1		3	3	2		4	
265			1	2	4	3	5	4	1	5	1	1			
266								1		1			1		
267							1								1
268		1	1				1						1		
269			1		1		1	2				1			
270								2							
271		1	1												
272						1									

Table A2. Three-level axial coding for the 15 Regional Development Strategies.

Third Level Codes	Second Level Codes	First Level Codes
Water	Water quality	48 and 263
	Water management	151, 209, 220 and 265
Air	Air	19, 49 and 70
Abandoned animals	Abandoned animals	8
Green spaces	Green spaces	10 and 168

Table A2. Cont.

Third Level Codes	Second Level Codes	First Level Codes
Biodiversity	Priority conservation areas Flora and fauna	43, 44, 207 and 249 107
Climate change	Climate change	1, 18, 28 and 160
Culture and traditions	Regional culture Regional and local traditions	102, 140, 171, 183 and 204 2, 59 and 155
Personal development	Personal development	14, 17, 22, 53, 64, 205
Economy and competitiveness	Macro-economy	54, 62 and 105
	International markets	74, 106, 157 and 262
	Competitiveness	40, 77 and 144
	Regional economy	199, 206 and 270
	Urban economy	78
Ecosystems	Ecosystems	46, 79, 80, 81 and 82
Education	Education service	9, 20, 84, 85, 89, 90, 91 and 92
	Educational practices	63, 86 and 135
	Quality of teaching	110 and 177
Employment	Work and employment	25, 72, 111 and 245
	Work competencies	30, 39 and 120
	Salaries/Income	231
Entrepreneurship Enterprises Energy	Entrepreneurship	96
	Enterprises	119, 136 and 255
	Energy	94, 99, 148 and 181
Regional public administration and policies	General management and policies	178 and 198
	Sectorial management and policies	185 to 197
	Cities	32, 112, 182 and 250
	Population dynamics Civic education	59 109
Regional history	Regional history	87 and 159
Regional and local identity	Local identity	123 and 230
	Regional identity	88, 149 and 172
Equality and inclusion	Social integration and inclusion	141
	Equal access to opportunities	124
	Women and gender	24, 61, 100 and 269
	Elderly adults	23 and 71
	Boys and girls	60, 201 and 208
	Young people and teenagers	152
	Marginalized groups	29, 76, 125 and 134
	Social investment	147
	Poverty and destitution	184
Regional infrastructure	Public infrastructure	126 to 133
	Transport and connectivity	215, 216, 217, 218 and 219
Regional institutional ity	Quality government services	7, 36, 38, 67, 142, 161 and 259
	Decentralization	31, 37, 68, 153 and 202
	Interregional cooperation	51
Investment	Investment	12, 145 and 146

Table A2. Cont.

Third Level Codes	Second Level Codes	First Level Codes
Environment	Environmental institutionality and legislation	139
	Environmental education	41, 56 and 83
	Environmental assessment	103 and 104
	Repair of environmental damage	227
	Prevention of pollution	200
	Clean production	203
	Ecological planning	180
	Sustainability	254
Regional market	Regional market	26 and 47
Mobility	Bicycle	13
	Public transport	261
Municipalities	Municipalities	11, 118 and 138
Natural heritage	Natural heritage	45, 117, 173 175, 229 and 253
Regional heritage	Regional heritage	170, 174 and 176
Production	Production development	234 to 243
	Support for production	3, 93, 98, 115, 212, 228, 256 and 260
	Production strategies	34, 75, 97, 108, 158 and 162
	Research, development and innovation	137, 150, 164 and 258
Indigenous peoples SMEs	Indigenous peoples	57, 211 and 257
	SMEs	65 and 252
International and border relations	International and border relations	221, 222, 223 and 225
Solid wastes	Solid waste	115, 116, 179 and 214
Health	Healthy practices	6 and 58
	Health service	27, 232, 233 and 248
Safety and public order Minimum services	Safety and public order	165, 246, 267 and 268
	Minimum services	4, 5, 42, 95, 163 and 247
Civil society	Civil society	52, 166, 169 and 251
	Regional society	35 and 143
Territory	Risk management	113 and 114
	Hydrographic basins	55
	Land	210, 226 and 266
	Coastline	15
	Natural resources	264
	Forests and protected areas	16
	Friendly cities	33
	Demographic deconcentration	47
Housing	Housing and habitability	21, 121 and 213
	Neighborhoods	101, 122 and 244
Marginal areas	Marginal areas	66, 154, 271 and 272

Appendix B

The values of the regional development indicators employed in Section 3.3 (Table 6) are shown in Table A3.

Table A3. Magnitudes of regional development indicators.

Regions	Economic Dependence	Public Investment	Poverty	Conservation Areas	Urban Population	Socio-Environmental Conflicts	EIA Projects Approved
Arica y Parinacota	19.1%	3.9%	14.6%	21.9%	90%	7	61.5
Tarapacá	48.8%	7.5%	8.2%	9.1%	93%	7	3951.8
Antofagasta	63.8%	4.7%	4.0%	2.8%	97%	11	25313.3
Atacama	50.6%	6.7%	7.3%	2.0%	91%	10	5747.6
Coquimbo	39.3%	7.1%	16.2%	0.4%	80%	10	4301.0
Valparaíso	17.7%	6.1%	15.6%	2.7%	92%	10	4335.0
Metropolitana	35.0%	6.9%	9.2%	0.9%	97%	6	5269.2
O'Higgins	26.7%	11.4%	16.0%	2.8%	71%	0	1919.7
Maule	15.8%	8.6%	22.3%	0.6%	67%	2	724.2
Biobío	23.4%	9.4%	22.3%	2.9%	83%	9	10786.9
La Araucanía	20.7%	4.2%	27.9%	9.6%	68%	4	556.9
Los Ríos	22.8%	4.3%	23.1%	7.0%	69%	3	2378.5
Los Lagos	18.1%	12.5%	17.6%	15.9%	70%	2	735.9
Aysén	21.6%	4.2%	6.8%	39.4%	84%	2	53.8
Magallanes	16.0%	2.7%	5.6%	57.4%	93%	1	1425.7

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