CONSEJO NACIONAL DE INNOVACION

GENERATION AND SYSTEMATIZATION OF SUPPORT FOR EVALUATING THE NATIONAL INNOVATION STRATEGY IN THE AREA OF BUSINESS INNOVATIO
(Background Report)

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I. NATIONAL INNOVATION AND COMPETITION COUNCIL AND THE STRATEGY

1. Brief Chronological Synopsis.

Origin of the Innovation and Competition Council and Fund

During the 15 years between 1990 and 2005, Chile's GDP per capita (at purchasing power parity) doubled. However, the country's growth rate had been falling since 1997. This phenomenon, which broke with a trend, has been attributed mainly to lower total-factor productivity and specifically because technological change, innovation and human capital have not contributed much toward growth.

As a result, there was a move in late 2005 to implement innovation as the central theme of a policy that will help sustain competitiveness in Chile in the future, establishing a public-private alliance that is upheld by an active participation of the public sector in fostering innovation.

The idea hinged on two fundamental actions. First, the creation of an Innovation and Competition Fund (FIC), funded by revenues from a special mining canon, that would finance activities aimed at promoting innovation and competitiveness in the country. This fund was designed as the principal source of financing for promoting science and technology, forming human resources and strengthening regional capabilities, with a specific percentage of the funds (25%) to be used at the discretion of the country's regions.

Second, a presidential decree allowed for the creation of the National Innovation and Competition Council (NICC), conceived as a high-level advisory board to the President of the Republic, with the principal tasks of:

1. Proposing parameters in a national innovation strategy for long-term competitiveness.

2. Proposing measures for strengthening the National Innovation System and improving the effectiveness of public policies and instruments, particularly in regards to an institutional reorganization.

3. Proposing criteria for assigning, prioritizing, implementing and evaluating the public resources tagged for innovation, particularly those included in the budget for the "Innovation Fund for Competition" in the 2006 budget law.

The first phase of the Strategy.

After a brief period of operation under the administration of President Lagos, NICC issued the document "Guidelines for a National Innovation Strategy for Competition" in 2006 which was assumed by the incoming administration.

The document provided a diagnosis of the innovation scenario in Chile and defined proposals for the institutional operation required, strategic criteria for public policies and the necessary actions for coordinating and strengthening activities by players in the system that contribute to developing and installing a National Innovation System.

Regarding the institutional framework, the document proposed the creation of a system that allows for the provision of strategic direction, and ensures the coordination and evaluation of the actions undertaken to promote innovation.

At the head of this institutional setting is the National Innovation and Competition Council which is a multi-disciplinary board that spans several sectors with the responsibility of drawing up a proposal containing the measures necessary for promoting, articulating and connecting actions by different public and private agents related to the installation, operation, implementation and dissemination of new products and technological processes.

CORFO is considered to be the institution fundamentally responsible for providing public support for innovation processes at companies and CONICYT for education and basic research.

The proposal also suggested that the Council include state ministers from the ministries that are instrumental in fostering innovation and high-profile players from the business, academic, scientific and technological sectors.

The current Council and the FIC

In May 2006, the President of the Republic established the current National Innovation and Competition Council and entrusted it with the tasks taken on by the first Council, while Congress continued discussing the bill that will regulate the permanent institutional setting to promote innovation in Chile[1].

The same year, the Public Budget assigned resources for the Innovation and Competition Fund (FIC). The FIC is a financing instrument for applying national and regional innovation policies, aimed at strengthening the national and regional innovation system, and that seeks to lend transparency, flexibility and strategic sense to public action. In this way, the fund represents the main instrument for issuing new and increased resources toward different efforts that the state is making in the arena of innovation.

As of 2008, some 25% of the FIC was tagged for a financial provision - Regional FIC - that is assigned by each regional government (GORE) in association with the specialized agencies in charge of applying the strategy (CORFO, INNOVA Chile committee, CONICYT, state universities or colleges recognized by the state, and R&D centers). FIC provide resources for financing initiatives in the areas of science, applied research, innovative ventures, technological dissemination and transference, and also for strengthening regional innovation networks, for forming and attracting specialized

[1] The latest decree establishing NICC's responsibilities was issued in December 2008.

human resources, for infrastructure and equipment and for promoting a culture favorable to innovation and business ventures.

2. National Strategy for Innovation and Competition.

The first volume of the strategy

In January 2007, NICC presented the first volume of the document, "Working toward a National Innovation and Competition Strategy," which provides the conceptual framework of the strategy to be implemented, and the proposals suggested for institutional operation of the National Innovation System in response to the challenges identified.

The document provided a detailed analysis of the conditions that make state interventional viable and efficient with the goal of minimizing market and state Failures to guarantee the success and viability of the public-private alliance that stands as the basis for the strategy. The analysis concluded that the state should manage and coordinate coherence at 3 different levels: horizontal, vertical and temporary, in a move to avoid or minimize state's Failures.

i) horizontal: aims to integrate several areas of politics, which calls for different players to "speak the same language" and implement social control (tackle the problems of capture from groups of interest);

ii) vertical: ensures that the design and execution of policies is consistent (coherent) with the goals of the global innovation strategy (tackles "agency" problems by establishing a clear and responsible "principal" for implementation); and

iii) temporary: to confront dynamic inconsistency (tendency of some administrations to take short-term measures), but also to ensure that the policies drawn up today are instituted effectively in the future, a goal that calls for mechanisms that can reveal potential incoherencies and provide a fresher look to the actions proposed.

Consequently, an efficient institutional solution required that a clear division between the responsibility of designing and tracking policies, and the task of implementing and executing said policies.

This inspired the proposal to create a device for conducting and coordinating public policies that would make clear where the political responsibilities in this field reside. This happened in May 2007 with the formation of a ministerial innovation council, overseen by the Economy Minister, which responded to the need for the government to make a commitment on the highest political level.

The second volume of the strategy

In January 2008, the second volume of the ICS was issued. The document addressed previous NICC proposals in greater detail and defined certain conditions that must be present in the law under discussion in Congress and that are aimed at consolidating

and strengthening the council's actions as a permanent state organization that serves as an advisory board to the President of the Republic.

This volume defined more clearly the council's role and area of action, outlined its responsibilities and established minimal conditions and powers that will allow it to perform its mission effectively and efficiently.

In summary, NICC's role is currently:

- Propose a 12-year National Innovation and Competition Strategy (for review every 4 years);
- Define criteria for strategic priorities;
- Generate dialogue and agreements relating to strategy;
- Assess the continued improvement of institutional operations;
- Ensure that strategic policies are consistent;
- Monitor the designation of resources based on strategic priorities;
- Evaluate the impact of the system's policies and institutions.

These objectives require:

- A long-term vision that goes beyond individual administrations;
- A concept of the Innovation System;
- Independence from corporate interests;
- Majority participation by experts (similar to the Central Bank) and minority participation by representatives from universities, businesses and workforce.

NICC is currently made up of:

- The ministers of Finance, Economy and Education;
- 2 additional ministers assigned at the discretion of the President of the Republic for predetermined periods (currently the ministers of Agriculture and Public Works);
- 3 business experts;
- 3 scientists;
- 2 experts in human capital;
- 2 experts in public policy, one of which serves as Council president;
- 2 specialists in training, productivity and quality.

In addition, CORFO'S executive VP and CONICYT's president are permanent members with speaking rights.

According to a study drawn up by the World Bank in 2007 which collected various models of institutional operation that have been implemented in different countries with the aim of addressing innovation, NICC decided that the Division of Labors model composed of two parallel and interdependent sub-systems (one system of promoting human capital and scientific research and one system of innovation and business ventures) is the model that best suits our political, social and cultural characteristics

and will best contribute to consolidating and perfecting the chilean National Innovation System.

First, this focus helps safeguard the specific needs of different sectors through the knowledge that systematically tackling a problem like innovation requires that institutions must be coordinated and fixed in a way that overcomes fragmentation and a lack of focus. What's more, the issue has been culturally and historically addressed in our country in the same manner that solidifies the decision.

Institutional Aspects

The ICS proposes a handful of recommendations for improving operations at public institutions that support innovation. In particular, it recommends:

1) Consolidating and strengthening NICC as a state advisor, with its main objective being to contribute with central definitions of a long-term national innovation strategy that serves as a framework for public policies related to business innovation, for forming human capital, and for promoting scientific research and technological dissemination and transference.

The council must be able to rely on the autonomy, power and resources that are necessary for fulfilling its mission, separate from specific interests, pressure groups, political assessment groups or the organizations in charge of implementation.

2) Consolidating and strengthening the conduction of the National Innovation and Competitiveness System (NICS) in the executive branch at a higher level by raising the status of the current ministerial committee for innovation to that of a commission.

Currently, the committee is defined as a primary link for instituting the strategy which serves to make the proposal easier to govern and systematize, helping reduce the risks involved, coordinating the actions of public institutions and administering the general budget for innovation, which is identified as one of the primary difficulties in this field.

Among other tasks, it would also fall to the council to define and guide the national innovation strategy to full realization, designing the appropriate public policies, ensuring high-level coordination, assigning specific tasks and evaluating performance.

In addition, it should be expected to lead presentations and discussions of the budget proposal for the entire National Innovation System and control all of the resources tagged for innovation. In order for the committee to fulfill its tasks efficiently, it has been recommended that it be assigned a strong executive secretary.

3) Integrating regions into the definition of innovation policies, considering that productive processes and the majority of innovation take place in the regions themselves. As such, incorporating a regional perspective is fundamental for analyzing and implementing innovation strategy because it can have an important effect on the availability of some public goods that are essential to business development such as human capital and research and development, among others.

In order to do this, regional innovation strategies must be drawn up in the framework of a national innovation strategy, agreements must be established between the central government and the regions that address performance and establish a balance between all interests, and there must be a support network for development and specialization of regional institutions that safeguards the individuality and definition of responsibilities between organizations that write proposals, make decisions and execute policy.

4) Strengthening the Deputy Economy Ministry, which has the responsibility of guiding public support for business innovation in the country.

This implies that in addition to exercising control over the main innovation support agency, which is CORFO, the ministry will also place its deputy ministry in charge of the new National System for Technological Institutes that has been suggested for creation and it will also help install the new institute for the use and protection of intellectual property (INAPI).

5) Adjusting institutional operations at CORFO, which is the platform for the ICS's operation and implementation in the area of business innovation. It operates on an intermediate level and its principal activity is to manage the instruments of the innovation policy, working for a broad group of beneficiaries.

Once the ministerial committee designs the policy, the corresponding agencies must implement it. The agencies' main task is to provide the technical tools and aid potential innovators in accomplishing their goals. In order to do so, they must identify the specific problems that innovators face, particularly their difficulties to get financing.

This proposal stresses that agencies should need to introduce selectivity in their activities and ensure that they are creating value added with their interventions.

In terms of strengthening the agencies, the ICS recommends a clearer definition of their role and objectives, the formation of high-level boards, the installation of public and private committees from all sectors that can provide managerial consultation and evaluate agencies' programs and instruments and promote transparency, among other recommendations.

3. Principal agencies responsible for instituting strategy for business innovation.

The INNOVA committee, part of CORFO, is the main entity in charge of implementing programs and instruments that support business innovation in Chile. Other groups that participate, although to a much lesser degree in terms of scope and resources, include the Foundation for Agrarian Innovation (FIA) from the Agriculture Ministry, and FONDEF that is part of CONICYT. In addition, CORFO'S Divisions of SMEs Promotion, Financial Intermediation and of Investment and Development also play an important role in disseminating technology, providing financing for innovative ventures and attracting high-value foreign investment, respectively.

INNOVA is the result of merging two innovative support funds that previously existed at CORFO: the Innovation Development Fund (FDI) and the Technological Development Fund (FONTEC). The first channeled support to pre-competitive research projects with application in productive development or public interest, while the second focused on co-financing innovative projects presented by companies. INNOVA has an advisory board with six representatives from the private sector, six CORFO representatives, in addition to the deputy ministers of Economy and Finance. INNOVA is organized into four sub-committees: Pre-competitive Innovation and Public Interest; Technological Dissemination and Transference; Business Innovation; and Innovative Ventures. Each sub-committee has a board made up of members from INNOVA's general board and at least one representative from the private sector.

FONDEF was created in 1991 as a dependent fund of CONICYT with the aim of strengthening and making use of the scientific and technological capacities of universities, technological institutes and other institutes to boost competition among companies and contribute to improving the quality of life in the population. Its efforts revolved around three fundamental areas: (i) R&D programs for transferring the results of research; (ii) sector-specific programs, of which there are currently seven underway[2]; and (iii) the health research fund. FONDEF is made up of an advisory council comprised of five representatives from various public divisions, two academic representatives and one representative from the business world. This council has the final word over approving projects, although projects are previously analyzed and recommended by area committees which are made up of representatives from academia and the business world with knowledge of the sector in question.

The Foundation for Agrarian Innovation (FIA) is a foundation created by the Agriculture Ministry and overseen by the head the of that ministry, where the goal is to focus on innovation in the country's agricultural sector by financing initiatives, generating strategies and transferring data and the results of projects and innovative programs. In each of its programs, parties are invited to sign up through special bids and concourses based on the program established for each year. Via these mechanisms, FIA issues grants that can often represent up to 70% of the total cost of the initiative where the remaining percentage must be provided by the agencies implementing the strategy.

4. Diagnosis of the challenges facing business innovation.

Although Chile has managed high levels of growth over the last two decades, there are reasons to doubt the capacity of Chile's economic apparatus for sustaining that dynamic. In fact, there are already visible signs that the benefits of reforms instituted in the late 1980's and during the 1990's are slowing down. From 1998-2006, the growth rate declined 3.5 points compared to the 1984-1997 period. In this decline, at

[2] The sector-specific programs in progress are: Genome Program in Renewable Natural Resources; TIC Program for Education - TIC EDU Program; Red Tide Program; Program For a Global Aquaculture - HUAM Program; SEPARI (Advanced TIC Center - Valparaíso); Program for Aquaculture Diversification in Chile; Biotechnological Tools for Improved Genetics in Fruit Growing for Export.

least 2 points can be attributed to lower total-factor productivity (TFP)[3], a scenario directly linked to the fact that knowledge and innovation were not sufficiently incorporated into the productive process.

Given the macroeconomic solidity, economic globalization, the low risk associated with the country, and the stability of its politics and institutions, among other factors, it is difficult to understand the low degree of innovation in Chile. A variety of expert studies have reached the conclusion that the low level of business innovation is the country's Achilles' tendon. This appears to be linked to a shortage of applied research and technological product development, a limited market of knowledge, a weak infrastructure for technological dissemination, fragmented and recently-launched institutions for supporting innovation, and very little financing available for new businesses. When also considering that the profits from processing natural resources are far higher than the profits expected from innovation, the resulting scenario is a climate and culture that is averse to risk and FIAlure.

One reflection of the size of the challenge is that although Chile maintains a high position in the competitiveness ranking drawn up by the World Economic Forum, its ability to compete is grounded in the positive results of institutional factors, while the weakest factors are tied to its capacity to create added value by implanting technology, innovation and education.

Although each one of the three strategy documents has its own specific purpose, there is continuity in the diagnosis about the challenges the country faces in terms of business competitiveness. Undoubtedly, the strategy's point of departure is the affirmation that- being a country with a market of reduced dimensions - Chile must remain permanently concerned about the way it participates in the international markets. Given the size of the Chilean economy, domestic companies have no other option but to compete globally and if there is one clear trend, it's that the globalization phenomenon will continue to grow.

This point of departure has several implications from a strategic point of view. Without a doubt, the most important is that it places the challenge of domestic companies on a par with their competitors worldwide. Considering that innovation and, in general, the application of knowledge to the commercial and productive process is a growing trend around the world, the competitiveness of Chilean firms must be based to a growing degree on those factors, in instead of low-cost labor or privileged access to natural resources [4]. In fact, new competitors are appearing even in consolidated export sectors, including those where the advantages of the country lie in its privileged access to natural resources[5]. On the other hand, technological advances themselves pose a threat to exports based in natural resources. Thus, any

[3] See Fuentes, R. and others (2008): "The Product Gap in Chile: measurement and evaluation." In *Economía Chilena*, Volume 11 - nº2 / August 2008

[4] With regards to the economy as a whole, this is equivalent to suggesting that growth be based more heavily on expanding total-factor productivity.

[5] ICS Vol. I, p25.

advances in biotechnology, for example, translate into the development of higher-yield varieties or into more attractive characteristics for consumers.

According to the strategy, the fact that the country is home to an abundance of natural resources is not a problem in itself. Making knowledge become the basis of competition is not seen as a goal that's incompatible with development based on natural resources. For the strategy, the challenge is how to make use of that wealth to switch to a more sophisticated sort of production. To this end, the strategy says: "All of the data indicates that the most important issue is not what to produce but how to produce, and in that question of 'how', the key lies in knowledge. The lesson to be learned from small countries that are wealthy in natural resources and have managed to achieve sustainable growth is that in order to follow this path, it is necessary to generate and make productive use of knowledge. It is necessary to innovate" (ICS, Vol. I, p. 34).

As a result, the strategy then suggests that Chile must begin to follow the path to innovation by starting with the development of new economic activities based in natural resources. However, such a goal involves mounting a huge effort to increase levels of innovation; it does not suffice to create a general framework conducive to innovation but instead requires direct public support that complements efforts by the private sector.

Without ignoring those sectors with comparative advantages, efforts by the public sector cannot be limited to supporting developed industries or sectors. For a small economy that is integrated into international commerce, the stability of growth is directly related to diversification of the products it sells. However, 25 products made up 81,5% of the country's exports in 2005. Achieving more variety in the export basket requires a diversification of the productive structure that goes beyond traditional advantages.

To achieve this goal, it is necessary to combat a certain "institutional inertia" where state action tends to favor sectors that are already developed to the detriment of emerging activities. In view of that, the question posed is: "where could spaces exist for incubating sectors with high potential, what flaws could be preventing these advantages from appearing and what can the state do - in terms of providing public goods, for example - and the private sector do so that these new trees can grow and develop[6]" (ICS, Vol. I, p.54).

Although placing knowledge as the axis of competition is a challenge of the system, the strategy highlights the undeniable fact that the entities competing on the market are companies. Chile's level of R&D is lower than expected from its GDP per capita, but in addition the portion of this expense provided by private sources is significantly lower than in more advanced nations. Likewise, the private sector demonstrates a low degree of innovativeness and inputs of innovation in its activities.

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[6] The reference to trees comes from an analogy used by Haussman, R. and Klinger, B. (2007) Structural Transformation in Chile. Quantum Advisory Group. June 2007.

The strategy proposes that Chilean companies begin to use knowledge more diligently, while also recognizing the different scenarios that they face and the opportunities for incorporating and adapting existing technologies which are available because of the fact that Chile is an emerging country. Thus, for companies situated in consolidated export sectors, for example, the challenge is to develop differentiating factors based in research and development from their current competitive positions. On the other hand, there are a handful of companies where the challenge lies in bridging gaps in productivity that exist not only internationally but also as compared to best domestic practices. Although these scenarios are distinct, both types of challenges are fully compatible with the larger challenge of expanding total-factor productivity on the Chilean economy.

However, from the point of view of generating winning sectors on the global stage - ones that increase the country's share of international trade, Chile's options are not infinite. Quite the contrary, as the council suggests the need for considering limited availability of resources to such a degree that the public sector should choose "those sectors where we have the best possibility of winning space on the international market, assuming risks and betting on the future via a more decisive support of the most promising sectors in the economy, because not acting on time could mean losing the race even before it has begun" (ICS, Vol. II, p. 93). This sector-specific action should aim at promoting a “cluster type of logic of action” in the prioritized sectors in such a way that companies can make use of opportunities of improved competition and innovation that will be available as a result of cooperative relations and the use of common resources.

The act of generating and disseminating innovation faces a series of problems in the field of business. The strategy identifies four types of market flaws that affect the availability and capacity for innovation at companies, and identifies possibilities for disseminating knowledge and for taking collaborative action:

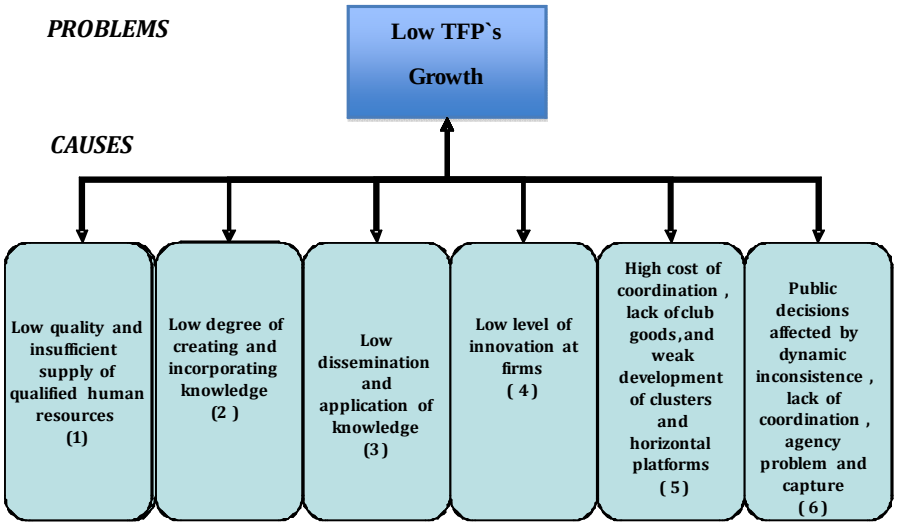
(i) Difficulty gathering results, which provides less incentive for companies to invest in innovation.
(ii) Lack of information, which causes asymmetries of data and discourages the use of technological solutions or collaboration, for example.
(iii) Intangible assets. Many of the assets related to innovative activity are intangible, making it difficult to use as collateral for acquiring financing or for placing a proper value on the business.
(iv) Networking Failures. Networks help innovation and increase its yield to the degree that new players continue adding value, but this is not normally recognized by existing participants which increases the cost of its formation.

The public sector must work to decrease these failures or reduce their effects, while preventing the risk of any failure by the state in its performance.

5. Implications for action.

The previous diagnosis can be seen in the following "tree of problems" which shows the issues that the strategy aims to tackle, wherein the specific areas related to business innovation are linked to numbers 3, 4 and 5.

Figure No. 1
Tree of problem for National Innovation and Competition Strategy



The strategy identifies a collection of elements that explain the causes of slow growing total-factor productivity on Chile's economy.

In the case of low dissemination and application of knowledge (point 3), and the shortage of business innovation (point 4), some explanatory factors stand out: good practices and technologies are not being developed or disseminated at companies; a stagnant business community, which is manifest in the fact that not many low-production companies are leaving the scene and not many high-profit companies are entering; and there is very little ability to manage innovation or carry out R&D within companies.

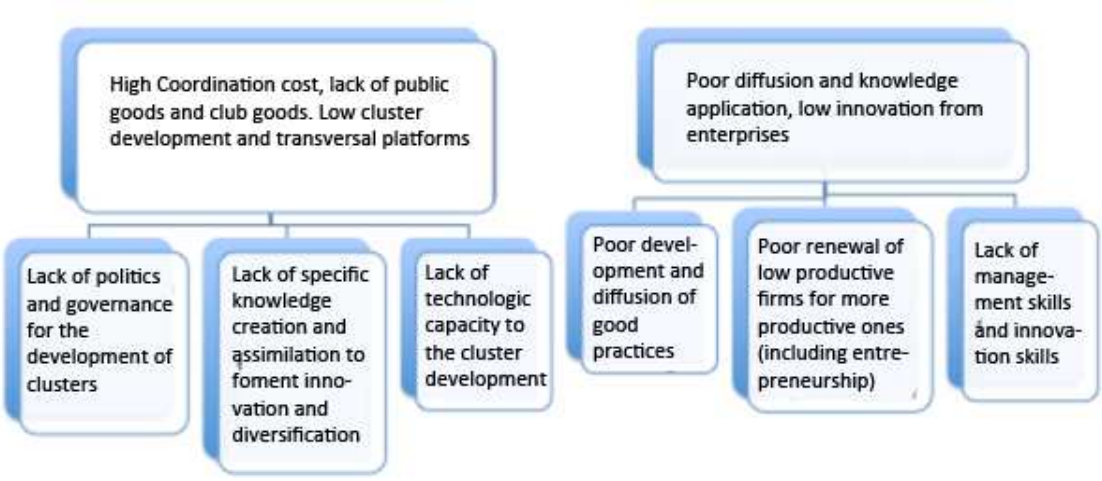
At the same time, scarce cluster development is associated with limitations for developing technological ability and attracting the specific knowledge that would enhance innovation in the various sectors. This shortage is reinforced by an inability

to govern clusters and the absence of a policy intended to stimulate cluster development.

These elements, which explain the causes of the problem that have been identified, can be seen in the following Table.

Figure No. 2

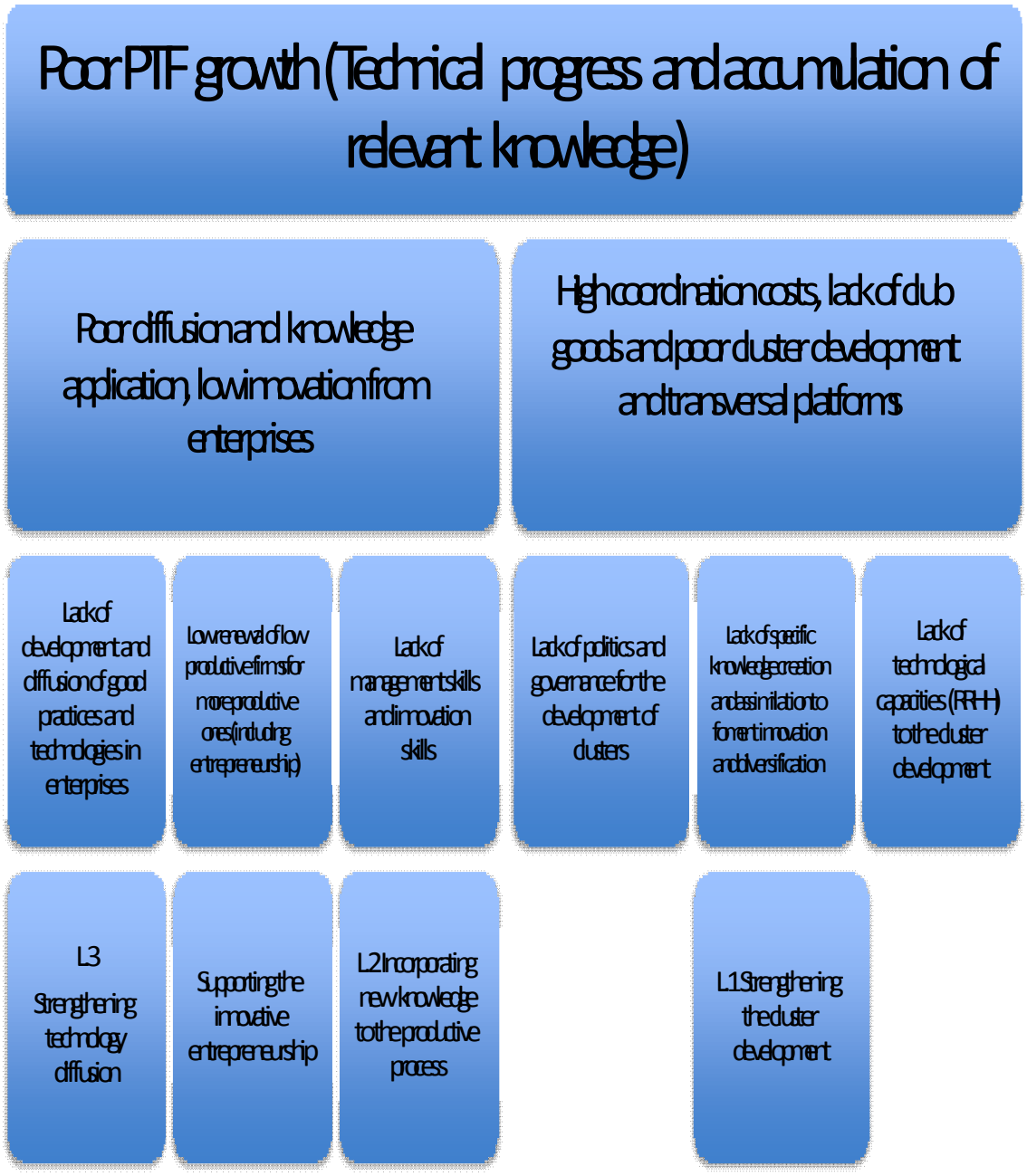
Explanation of the causes of the problems



Based on this diagnosis, volume 2 of the strategy suggests four basic pillars for promoting business innovation:

(i) Strengthen cluster development
(ii) Incorporate new knowledge to the productive process
(iii) Strengthen technological dissemination
(iv) Support innovative ventures

These four pillars formed the basis of the NICC's specific recommendations for stimulating business innovation in Chile. The following Table demonstrates how the various components of the business innovation agenda aim to respond to the central problem identified in the strategy (low growth of total-factor productivity) and the associated causes.


Poor PTF growth (Technical progress and accumulation of relevant knowledge)
Poor diffusion and knowledge application, low innovation from enterprises
High coordination costs, lack of club goods and poor cluster development and transversal platforms
Lack of development and diffusion of good practices and technologies in enterprises
Low renewal of low productive firms for more productive ones (including entrepreneurship)
Lack of management skills and innovation skills
Lack of politics and governance for the development of clusters
Lack of specific knowledge creation and assimilation to foment innovation and diversification
Lack of technological capacities (R+I+) to the cluster development
L3 Strengthening technology diffusion
Supporting the innovative entrepreneurship
L2 Incorporating new knowledge to the productive process
L1 Strengthening the cluster development

6. A critical look at the strategy.

Through various publications, particularly the volumes of the National Innovation and Competition Strategy, NICC has proffered a vision of the problems affecting the development of business innovation in Chile, it has sought to identify the causes and then it formulated a path for moving ahead and generating solutions. How valid is its diagnosis?

The goal of this section is not exactly to try to provide a direct response to that question. Rather, the aim is to investigate the level of agreement or disagreement that exists regarding the ICS suggestions within the interested community. In order to do so, we analyzed documents and studies and interviewed key players. Instead of listing the agreements in place for each of the major issues suggested by the ICS, the emphasis has been to highlight any possible elements of difference.

In general, both during interviews and review of the secondary material, there was a broad consensus about the relevance of these pillars for guiding public action toward a higher degree of business innovation. However, it is possible to identify some evidence to the contrary that is worth discussion. One point concerns an issue that was not developed well enough by the strategy and the others address the feasibility of implementing public intervention to increase the level of business innovation in the country and the way of implementing said intervention.

It is worth noting in advance, and before presenting the commentaries that are more critical of the ICS and its diagnosis of the situation, that there is an overall lack of knowledge about the ICS outside of the circles most closely related to the NICC. This is apparent even among people in the private sector who actively participate in decision-making at some of the agencies in the system.

In that sense, it is important to stress that one criticism expressed repeatedly by representatives from the public and private sectors is that one pending task of the NICC is to make a larger effort to disseminate the strategy and to ensure that its process of elaboration be more participatory in the future. That would help cement a consensus about the actions it proposes and it would help develop a culture of innovation in the country.

Weaknesses of the strategy.

As mentioned, there is general consensus about the issues proposed by the strategy in terms of business innovation. However, there are complaints about the fact that one area does not receive a relevant treatment: Information and Communication Technologies, namely their role in developing the ability to compete in a business.

ICTs are a tool that can play an important role in improving firm`s competitiveness, while also providing support for better interaction between companies and clients, suppliers or the state. However, there isn't much awareness of the potential benefits of the use of ICTs in business (including the productive aspects), there is a shortage of

know-how and technical support, and there are problems with access and quality (broadband).

This last item is particularly troublesome and the NICC has begun to gather information for bringing attention to the issue. One study drawn up for the NICC by the Boston Consulting Group revealed that the costs of broadband that low-income families and small-sized companies must pay are significantly higher than those in countries that are members of the OECD. This sort of situation prompted the NICC to request that authorities study a comprehensive strategy for developing broadband as a platform for competition and growth, and it accompanied its concern with a concrete proposal to improve access to the service.[7]

Doubts about the selection of sectors.

The strategy suggests the need for making a major leap in business innovation, particularly in the area of R&D. However, the country's current productive structure is not characterized by the significant presence of sectors that invest very large amounts of money in R&D activities. As a result, this goal can be seen as doubtful from two different perspectives.[8]

Some feel that the suggestion of substantially increasing the percentage of the GDP tagged for R&D is impossible to accomplish without altering the current productive structure which is biased toward sectors based in natural resources.[9] In this sense, the strategy would suffer from not suggesting a more decisive course of action for promoting development in sectors that are more technology-intensive, particularly regarding exports. It is interesting to note that Haussman and Klinger (2007) suggested that the pattern of specialization in exports that are not technology-intensive does not necessarily reflect the high availability of natural resources, as the cases of Australia and New Zealand could demonstrate, but rather a lack of policy directed at producing public goods that enables the emergence of new successful sectors. In this sense, focusing the strategy on strengthening the development of clusters based on natural resources would not be adequate since there is not much possibility of "leaping" from these industries to more sophisticated activities. In fact, it seems contradictory to suggest - on one hand - the need for increasing export diversification and then - on the other hand - concentrating efforts on traditional export sectors based in natural resources. A successful cluster policy should translate into increased exports for the cluster, which should be reflected in a higher index of export concentration.

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[7] The proposal document was published in October 2008. See http://bligoo.com/media/users/3/182374/files/18813/bandaancha290908.pdf and http://bligoo.com/media/users/3/182374/files/18813/recomendacionesBA.pdf

[8] Although the authors cited have not necessarily expressed direct criticism or doubt about the ICS, their arguments have been used or could be used to criticize it.

[9] The general argument about the need for modifying sector composition of the product is backed most forcefully by ECLAC (2008). Haussman and Klinger (2007) develop the argument for the Chilean case.

Also looking at the current scenario of productive specialization, Maloney, W. (2004) suggests that substantially increasing the level of R&D could turn out to be an inappropriate goal for Chile. His argument is that several "Latino" countries, like Spain and Italy, have been very successful in increasing income per capita without spending the same amount on R&D as other countries like Finland or South Korea, for example. In this sense, placing the focus on reaching higher levels of R&D could confuse the means with the goal. [10]

As regards the last argument, it's worth mentioning that the ICS does highlight the importance of expanding the traditional concept of innovation in public policy in such a way that includes - among the actions that are eligible to be used as support lines - not only those designed for innovating product and process but also actions in marketing and management. All in all, it can be argued that the main direction of ICS's argument is in favor of using the level of R&D as the main criteria for evaluating progress.

Doubts about the feasibility of public intervention

In a register that can be dabbed as more ideological and which represents a minority opinion among the people interviewed, there is a hint of more radical doubt that public intervention will have the ability to stimulate innovation. The issue is questioned by a few representatives from the business and academic sectors whose doubts are rooted in the fear that it will be impossible to overcome state flaws. Yet others take the position that the state simply should not intervene in these matters. [11]

Doubts about selectivity

In some business sectors, representatives also question the option of prioritizing certain sectors to the detriment of others. It has been suggested that state leadership is a flawed strategy since the public sector has no advantages over the private sector in terms of indentifying winning sectors. As proof that the strategy is flawed, evidence shows that the cluster program would not end with positive results and would not be capable of attracting private investment.

Over to the world of university researchers, many feel that the ICS is fundamentally perceived as an exercise in favoritism that works to create an advantage where resources for financing research can be directed toward a few sectors of knowledge, while overlooking other areas.

Some of these opinions might reflect a lack of knowledge about the ICS, particularly its practice for selecting which sectors are prioritized and how to determine progress that is made. However, it is noteworthy that at least one of the opinions criticizing the

[10] Note that Maloney, W. and Ródriguez-Clare, A. (2005) feel that the existence of policies and institutions that do not favor innovation would reduce R&D from 1.9% of the GDP to 0.8%. "Innovation Shortfalls" Working Paper No. 543. IDB.

[11] The skepticism expressed by some groups can also be noted by the OECD in its report about the National Innovation Council.

selection process and its results comes directly from a representative in the private sector that works very closely with the process.

In response to the argument that important business leaders are in regular attendance at the board meetings of all clusters, it has been suggested that attendance isn't surprising considering that clusters are overseen by the corresponding ministers and it behooves companies in the sector to be closely connected with authorities. In fact, it has been argued that this is further proof that just a few players can use this sort of selective process to attract attention from the public sector.

II. THE STRATEGY IN PRACTICE: DEFINING THE POLICY.

1. Background

The Ministerial Innovation Committee (MIC) was formed in 2007 with the goal of creating a high-level political body capable of processing and translating ICS recommendations into the actions of a government policy. However, shortly after its creation, the committee's makeup was changed with the arrival of a new Economy minister, who presides over the committee. The situation postponed the launch date of the entity, which began functioning effectively in 2008.

In addition to presiding over the MIC, the Economy Ministry also holds the position of executive secretary through the deputy ministry of economy, which is home to an innovation division that employs 20 professionals and has resources available for carrying out studies. The assessment of the situation according to those who work closely with the process is that the MIC has operated irregularly without fulfilling the active role envisioned for the committee in the original design. Evidence of this is the fact that the MIC held a mere 8 meetings during 2008 and only met once in 2009, in August.

It's not uncommon to hear that the inability of the MIC - specifically of the Economy Ministry - to assume leadership for directing innovation issues has caused the NICC to play a much more active role in debates and contingent proposals than what was originally envisioned. Its increased participation in contingency issues is seen with some concern by some NICC advisors and some government authorities. In the first case, the concern is that by entering too often into the discussion of current issues, the NICC loses its quality as a non-associated entity as regards policy disputes. In the second case, certain government authorities fear that the NICC displace the ministries in the role of defining policy.

It is worth mentioning that, formally speaking, the MIC only has the ability to decide where FIC resources are channeled while the budget discussion regarding the destination of remaining public resources tagged for the System of Science, Technology and Innovation are discussed on a sector basis. At any rate, there is general agreement that the current process of drawing up and discussing budgets is much more orderly and coherent than in the past. To a large extent this has been achieved as a result of the fact that the Economy Ministry has used its control over FIC resources as leverage for directing the use of remaining resources. It does this by establishing agreements with the agencies in charge of implementation in such a way that the resources that originate in the FIC go hand-in-hand with resources that they make available based on the goals proposed by the innovation policy.

The progressive improvement of the Economy Ministry's innovation division (which acts as MIC's executive secretary, as previously mentioned) is considered an important step forward toward strengthening the ministerial role regarding the implementation of the ICS. There is a general consensus that the innovation division

has improved in its abilities, allowing for better dialogue - at least on a technical level - between NICC and political authorities and between the Economy Ministry in its capacity as NICC president, and the agencies responsible for implementing NICC's plans.

As further proof of this, the Economy Ministry published a document in early 2009 called the National Innovation Policy for Competitiveness, Plan of Action for 2009-2010, which formally established the government's priorities in the matter.

To an extent, the document did nothing more than establish a course of action that had been underway since the beginning of the new administration, that was FIArly similar to the NICC agenda. However, it marked a considerable step ahead since it formalized a policy and established a framework for relations with the NICC itself.

Despite the progress represented by the existence of an official innovation policy, it is clear that the Economy Ministry has looked increasingly to the ICS as a guide, which is clear in the budget priorities established for the FIC, although the same cannot be said for the Agriculture Ministry in the area of business innovation. The latter ministry has followed its own path in terms of forming clusters (more detail to follow) and also in terms of the role it advances for the Foundation for Agrarian Innovation, which copies several INNOVA instruments, although with an exclusively agricultural focus.

2. The Policy of Innovation and Competitiveness.

The Policy of Innovation is a response from political authorities to the ICS recommendations. The policy looks at a 5-year period while the Plan of Action provides a more concrete agenda for 2009-2010, since the current administration will wrap up in March, 2010.

Considering the basic steps promoted by the ICS plan, the vision expressed by the innovation policy recognizes the importance "of systematically tackling all of the factors and variables that explain the emergence of innovation processes. The conclusion has been to focus state action on venture-business activities since innovation occurs within the company; and on reducing a historic gap between this system and scientific-research activities traditionally taken on by universities." [12] The policy also addresses the need for concentrating resources in sectors with growth potential, by integrating the selection process suggested by the ICS.

2.1. Objectives of the Innovation Policy

The general goal of the innovation policy is to increase the number of innovative companies capable of competing on international markets within the next five years. The three specific objectives of the policy are:

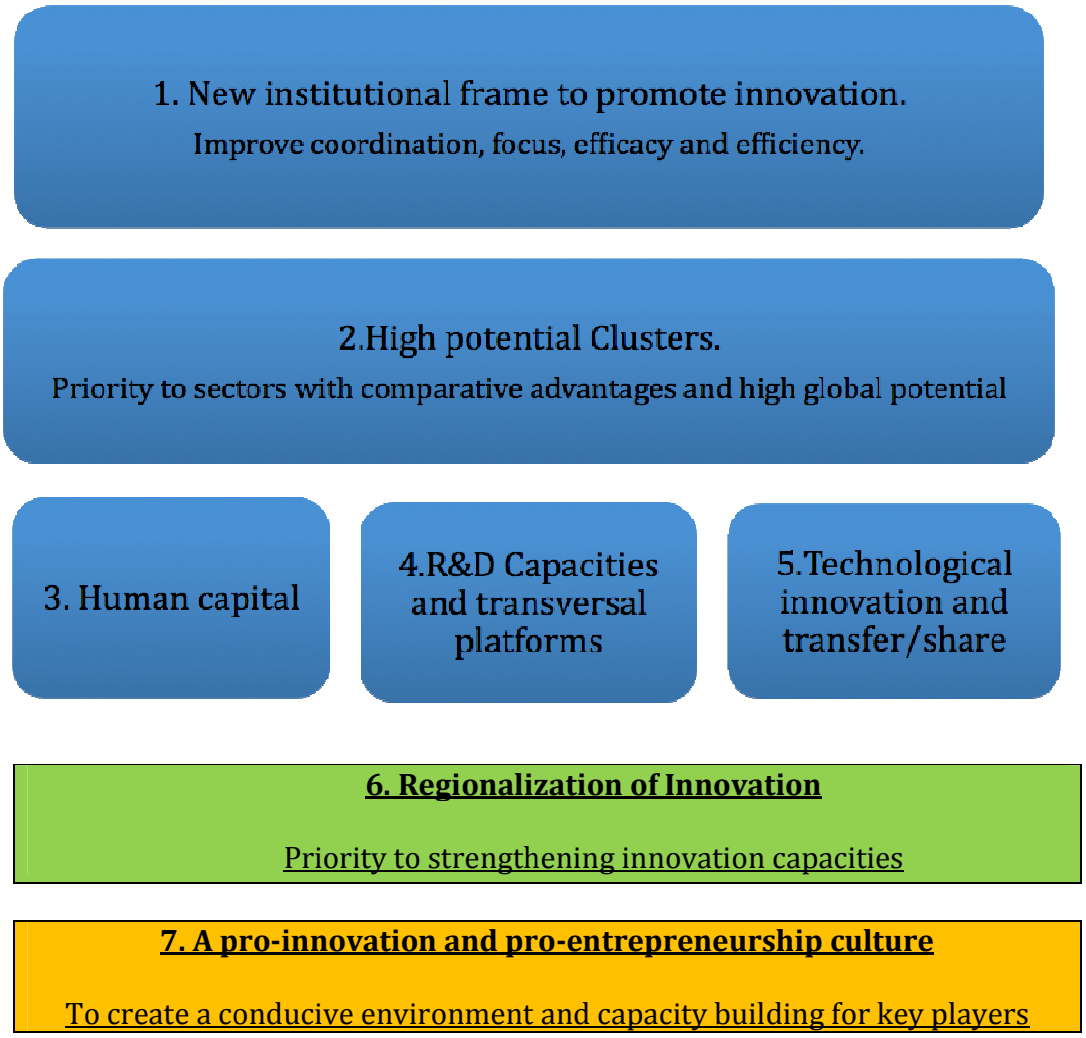
1. Provide better factors and conditions for innovation, including human capital, R&D abilities and technological transference.

[12] Economy Ministry (2009): *National Innovation Policy for Competition, Plan of Action for 2009-2010*. p 15.

2. Strengthen operations of public institutions, improve ties between the recently mentioned players and provide public goods.
3. Promote an innovative culture inside the government, at companies and within society, especially in the educational system.

Figure No. 4

Scheme for the National Innovation Policy



2.2. Support for the Selected Clusters

The ministerial council considered ICS's recommendations to prioritize its actions in sectors that demonstrate high growth potential and the ability to sustain and promote competition through knowledge. Notwithstanding the identification of new clusters in

the future, for now the policy chose to support five main sectors: Mining, Aquaculture, Special Interest Tourism, Foods and Global Services.

It's important to take a look at the food processing sector since its makeup is a big detour from ICS recommendations. In fact, the ICS proposal - according to the BCG study - was to work with three clusters with high potential linked to the food industry: processed foods, fruit growing and pig and poultry farming. However the Agriculture Ministry chose to address sector challenges from a more global perspective, grouping the industries into a single "cluster of clusters". The argument put forth by authorities was that - given the common themes in the three sectors and the repetition of public representatives that should be involved in the strategic boards and implementing the agendas - it was more convenient to work with the three industries underneath a single institutional scheme.

Later, the arrival of a new Agriculture Minister in early 2008 led to an expansion of the industries originally proposed by the ICS, when the red meats and wine sectors were added to the food cluster.

2.3. R&D Capacities and Transversal Platforms

Complementing the selection of prioritized clusters, the policy identifies four transversal areas that must be considered as conditions that help promote innovation, particularly in the aforementioned clusters. They are the areas of (i) biotechnology, (ii) water resources and environment, (iii) information and communication technologies, and (iv) non-conventional renewable energies, biofuels and energy efficiency.

As regards the entire strategic line, the Plan of Action proposes two specific objectives in the area of business innovation:

a. Generate a network of centers of excellence and develop high level capacities for addressing the challenges of competitiveness in clusters and the selected transversal areas
b. Stimulate collaborative programs between research centers and the productive sector

Human Capital for Innovation

In the area of human capital, along with all of the goals relative to forming high-level human resources, one of the primary objectives is to shrink gaps of labor competencies that limit competitiveness within the prioritized clusters. To do this, the Economy Ministry took on the task of carrying out studies to determine the existing human capacity and the principal needs of each sector.

Innovative Ventures and Technological Transference

The policy defines the principal role of CORFO's INNOVA in this arena, identifying two important goals of the Plan of Action for 2009-2010:

a. Consolidate a continuous support system and perfecting the financing of world-class innovation ventures.
b. Consolidate a network for transferring last generation technologies.

Regionalizing Innovation

The policy lends much higher importance to the issue of regions than the ICS does. [13] To a great extent, it responds to a government need for supporting regional legislators in order to gain approval for the bill establishing the institutional operation of innovation and competition (including the NICC itself) and the way the FIC will be operated. [14] On the other hand, it also addresses the government's need to oversee balanced development in the country, which leads to a natural preoccupation with integrating this dimension when deciding which actions to take.

The Plan of Action defines three goals for the area:

a. Close the gap in specialized human capital and infrastructure for research, development and innovation (R&D+i) in the country's regions.
b. Greatly increase participation by regions in the issue of innovation, based on their strategic priorities.
c. Strengthen the ability to draw up and implement regional innovation strategies.

Pro-Innovation and Pro-Venture Culture

Finally, the policy poses that stimulating innovation requires developing a culture that promotes innovation, and as such it calls for the action of promoting creativity and a willingness to innovate from childhood.

The Plan of Action proposes as its unique goal: Support and promote massive-scale programs that encourage an innovative an entrepreneurial culture.

3. Goals for the Plan of Action 2009-2010

The following table details the goals suggested by the Plan of Action 2009-2010 for each of the objectives identified for the prioritized areas. Only the goals related to business innovation have been included.

[13] The ICS has recently lent more attention to the regional dimensions of the challenges facing innovation.

[14] If regional legislators cannot reach an agreement, particularly in areas related to mining territory which are expected to be the largest beneficiaries of the resources gathered through a royalty applied to copper mining, it will be impossible to approve the law, as demonstrated over the last 4 years. An agreement was recently reached that allows for general approval of a bill overseen by the Finance Ministry.

Table No. 1: Parallels between the Plan of Action and the Strategy

Line	Objectives	Goals 2010	Parallels to the ICS
High-potential clusters	Implement strategic programs for improving competition through public-private agreements	1. A minimal 20% increase of NICS resources, focusing on priority clusters	Maximum coincidence - The work performed with clusters is one of the ICS's four components in terms of business innovation - The ICS proposes selectivity to asign resources, along with forming public-private agendas and strengthening research capacities and human resources in clusters
		2. At least 2 emblematic / strategic projects per cluster	
	Focus FIC resources on selected clusters	1. Increase the total of resources to the priority clusters	
		2. 50% of the new centers of excellence focused on priority clusters	
		3. 80% of the new consortiums (technological) focused on clusters	
R&D capacity and Transversal platforms	Generates a network of centers and capacities for excellence in order to tackle the challenges of competitiveness generated by clusters and their strategic transversal areas	1. 12 new centers of excellence oriented by mission, 5 of them with international presence. Also 3 centers with major equipment and 4 domestic R&D centers.	Partial coincidence - The ICS proposes reinforcing the technological consortiums and perfecting the law of tax incentives for R&D - The centers for excellence are a priority established by the ministerial committee
	Stimulate collaborative programs between research centers and productive sectors	1. Consolidate a model of consortiums, creating new ones and supporting the continuous growth of existing ones	
		2. Fully functional law for R&D (tax stimulus)	

Line	Objectives	Goals 2010	Parallels to the ICS
Human Capital for Innovation	Reduce the gaps of labor competences in priority clusters	1. 3500 technicians and professionals in the areas of ICT and special interest tourism, accredited and with international bilingual certification	Minimal coincidence - The goals of the plan address clusters - The ICS proposes the need to make the management of innovation more professional at companies, something that isn't considered by the policy
		2. Programs to bridge the gaps in 5 clusters that are underway	
Business ventures and Technological Transference	Consolidate a continuous support system and perfect financing for ventures	1. Create 6-8 investment funds worth US$125mn, where US$50mn are public	High coincidence - The majority of recommendations in the area of strengthening actions to support ventures are included. - However, the proposal to reform the bankruptcy law was not included.
		2. Adjust the model of enterprise incubators. Incentives depend on results – Broken down by capacities	
		3. 6 new angel investment funds worth US$27mn	
		4. 4 corporate spin-off projects underway worth US$8mn	
	Consolidate a last generation network for technology transfer	1. Strategy to modernize technological institutes already in operation	High coincidence - The majority of ICS's recommendations are included
		2. Create 5 centers of dissemination and technological extension	
		3. Network of technological brokers in operation	

Line	Objectives	Goals 2010	Parallels to the ICS
Regionalization for innovation	Greatly increase regional participation in innovation, based on the strategic priorities	1. 2/3 FIC resources tagged for regions. 25% of FIC's resources used at regional discretion	Minimal coincidence - The ICS does not lend the same degree of importance to the regional issue as legislators do - However the ICS is increasingly concerned about the issue
		2. Move ahead with at least 5 emblematic innovative initiatives with high regional impact	
	Strengthen abilities to draw up and implement regional strategies for innovation	1. Increase regional participation in the process of evaluating bids from CORFO and CONICYT	
		2. Transfer competencies to regional governments in terms of innovation policies	

As evidenced by the comparison, legislators and the plan of action do not tackle the entirety of ICS's recommendations in its strategy documents. Aside from the absences noted in the table, there are several others related to ICS's goals in component 2, "Incorporating new knowledge to the productive process", specifically:

- Expand the coverage and scope of funds that support business innovation
- Develop systems of state guarantees for investment in equipment loans
- Strengthen protection and use of intellectual property

A main additional element incorporated by the Policy and suggested as a specific goal in the plan of action deals with installing centers of excellence, an issue that represented a major concern at MIC sessions.

4. Degree of implementation of the political recommendations of the strategy.

The ICS recommendations can be roughly divided between those that must be implemented by agencies (designing new instruments, for instance) and those that must be deployed with initiatives of a more political nature. The latter often involve laws or agreements between several institutions in order to advance. In this section, we will take a look at how these types of recommendations are progressing.

Table No.2

Progress of ICS's political recommendations

ICS Recommendation	Progress	Comments
Generate advisory boards in the selected clusters	All of the clusters have boards overseen regularly by a minister or by a chosen authority	In order for this line of action to take shape, it requires effective collaboration by ministerial authorities. Clusters related to agriculture have been consolidated into a single cluster which has expanded its scope.
Develop state guarantee systems	No progress	This initiative requires active collaboration by the Finance Ministry.
Perfect tax incentives for R&D	No changes in scheme	This initiative requires active collaboration by the Finance Ministry.
Strengthen the protection and use of intellectual property	A new institute has been formed (the national institute for intellectual property)	In order for this action to take shape, it required a law, which had been in the works for some time.
Create a network or system of technological institutes	This has not been achieved	The Economy Ministry and CORFO headed up a proposal, but no agreement was reached within the MIC.
Facilitate the bankruptcy system	This has not been achieved	Requires collaboration by the ministries of Finance and Justice.

As can be seen, aside from the creation of a new institute for intellectual property, which had been underway for some time, and the formation of advisory boards within clusters with participation by sector ministries (and CORFO'S EVP in the case of global services), none of the other proposals were able to make significant progress. This seems to indicate some difficulty in mobilizing ministers to move forward political initiatives when they are suggested by the NICC.

5. Evolution of the NISC Budget and the items related to business innovation

5.1. General Framework

The public budget tagged for financing activities by the National System for Innovation and Competition (NISC) [15] as a whole has grown considerably in recent years, or some 98% in the 2005-2009 period. Not counting resources tagged for loans, guarantees and capital contributions, the expenditure in the sector have increased

[15] This is considering the ICS's three pillars: Human Capital, Infrastructure and Business Innovation.

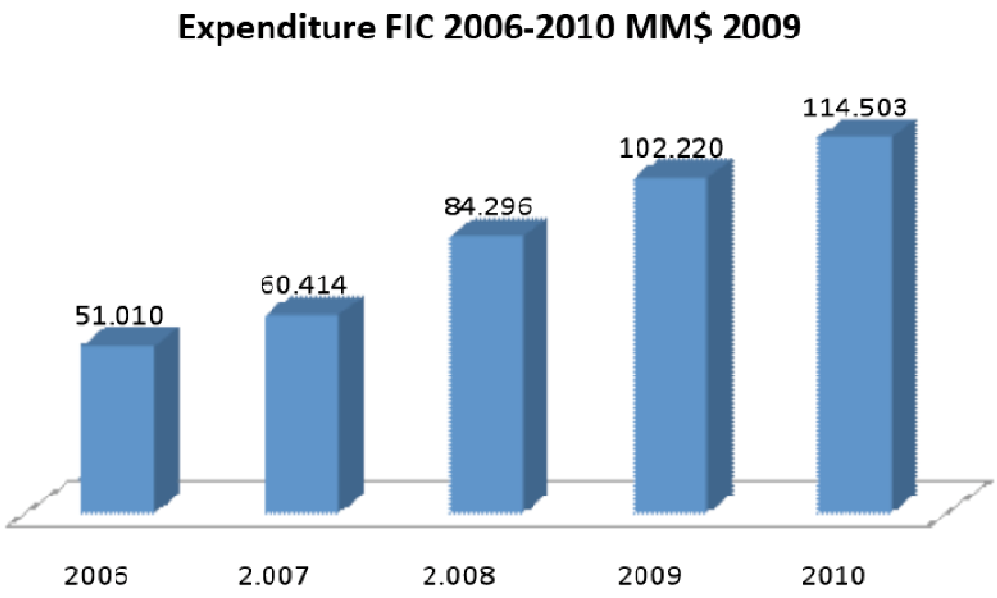
73%. Considering this progression, the public expense tagged for the NISC as a percentage of the GDP has moved from 0.51% to 0.79% (Table No. 3).

This speaks of a fiscal effort to support innovation and competition that has been growing 14% annually, in line with the NICC proposals that pose a sustained annual growth of 12% for public expenses in this area. During this process, FIC resources have resulted in a large contribution since 2006. In fact, nearly 50% of the resources managed by INNOVA come from the FIC. [16]

To date, the FIC has increased public investment in innovation considerably, with an 18% improvement in 2006; 39% in 2007; 21% in 2008; and another 12% by the end of 2009.

Figure No. 5

Level of FIC execution, 2006-2010



Source: Economy Ministry

Table No. 3

[16] FIC Annual Report 2006-2007. Economy Ministry.

Evolution of the public budget for the Innovation and Competition System

	Total Expenditure $ MM (2009)	NICS over GDP	Rate of change
NICS 2005	423.282	0.51%	
NICS 2006	508.053	0.54%	20.03%
NICS 2007	563.362	0.57%	10.89%
NICS 2008	609.676	0.65%	8.22%
NICS 2009	731.149	0.79%	19.92%
		Average annual rate of growth	14.64%

Source: NICC data base

Normally the initial budgets undergo changes during the course of the year and they are not necessarily executed in their entirety. In this case, there have been very small changes and the degree of execution was very close to 100%, as demonstrated in Table No.4.

Table No. 4
Evolution of the current NISC budget and degree of execution
MM $ 2009

	Intial budget	Effective budget	Executed
NICS 2005	423.282	445.611	429.982
NICS 2006	508.053	520.176	482.618
NICS 2007	563.362	590.418	540.046
NICS 2008	609.676	664.872	622.655
NICS 2009	731.149	748.707	

Source: NICC data base

5.2. Evolution of the budget and expenses in business innovation per area of support.

In order to calculate the evolution of expenses in business innovation, following the criteria established by NICC, the involved parties have been listed in Table No. 5 The groups are essentially associated with direct support for business innovation, with the addition of some lines that are associated more closely with pre-competitive research, but whose results will be applied by companies, as well as CORFO's and INNOVA's lines of support for innovative ventures.

Table No. 5

List of programs included in the business innovation budget

Programs included for calculating the budget in the area of business innovation	
Company Innovation	
Program	Institution
Promoting Technological Investments	CORFO
National Clusters Program	CORFO
Bío-Bío Innovation Fund	CORFO
Business Innovation	INNOVA
Technological Dissemination and Transference	INNOVA
Foundation for Agrarian Innovation	FIA
Program to support agro-food clusters	Deputy ministry of Agriculture
Pre-competitive Innovation Programs	
Clean Production Committee	CORFO
Pre-Competitive and Public Interest Innovation	INNOVA
FONDEF	CONICYT
Supporting the development of non-conventional renewable energies	National Energy Commission
Programs for Innovative Ventures (CORFO-INNOVA)	

Source: NICC

Table No. 6 shows the evolution of the three components of the area budget. The largest increase was in the case of support for business innovation, followed by innovative ventures. In the case of the latter, however, the increase of resources was concentrated in the two first years with a sharp decline afterward. It's also noteworthy that the resources tagged for directly supporting business innovation slowed their rapid growth in 2009 when they were overtaken by resources tagged for pre-competitive research.

This sort of progress is worrying because it affects instruments that are aimed at providing direct support to introducing innovations to the market through new or existing companies. Keep in mind that resources are always executed more quickly through projects at technological entities or universities since these sorts of institutions have the ability to generate proposals, which is not the case at most companies. As a result, unless some special effort is made, it will always be more complicated to send resources directly to companies. As we will see further on, recent years have shown that the number of innovative projects financed by INNOVA has slowed considerably which explains the drop-off in resource`s growth. In the case of resources tagged for innovative ventures, the decreased flow is directly linked to the fact that a smaller contribution was tagged for enterprise incubators which - as we will see - appears to be a reasonable decision considering that many of the existing incubators were not generating value.

Table No. 6

Evolution of the business innovation budget per area of application
MM $ 2009

	Business Innovation	Innovative Entrepeneurship	Pre-competitive research
2005	21.758	2.759	29.579
2006	29.165	5.350	29.302
2007	33.499	6.749	36.437
2008	45.509	5.534	41.334
2009	46.178	5.256	50.081
Total change	112.13%	90.53%	69.31%

Source: NICC data base

Within NISC's total expenses, business innovation represents some 6.32%; innovative ventures, 0.72%; and pre-competitive research, 6.85%.

5.3. Evolution of the budget and expenses in business innovation by the main executing agencies.

Among the four entities that distribute resources for promoting innovation (counting INNOVA and CORFO separately), the largest concentration of resources is held by INNOVA; followed by FONDEF with less than half of the budget; and then CORFO which has grown fast since 2008. CORFO - with a budget increase of 570% - and INNOVA - with 223% - make up the bulk of increased resources tagged for business innovation, which is consistent with the NICC guidelines as regards focusing support for business innovation activities in these institutions.

Table No. 7

NICS Effective budget by institution
MM $ 2009

Institution	NICS 2005	NICS 2006	NICS 2007	NICS 2008	NICS 2009
CORFO	2.996	4.238	4.444	12.975	17.136
CORFO-INNOVA	25.282	34.275	42.571	51.830	56.393
FONDEF	14.380	14.828	14.172	12.759	13.519
FIA	7.158	7.746	9.121	8.491	7.206
TOTAL	49.815	61.086	70.308	86.055	94.254

Source: NICC database

The growth of CORFO's budget can be fundamentally explained by expansion in the area of Regional Promotion for Technological Investments. [17] In INNOVA's case, the increase was tagged for the areas of technological dissemination and transference and pre-competitive innovation. Table No. 8 shows this evolution in the resources managed in these areas including the current budget and the expenses. It also includes the current budget and the resources managed in the area of support for business innovation, and one can observe how the resources fall abruptly in 2008 which is indicative of the possibility that it may have reached a roof in terms of placement capacity at least in the way its instrument is currently managed - a topic that we will also discuss briefly.

Table No. 8

Evolution of the current budget and resources by selected items

MM $ 2009

	Precompetitive and Public Interest Innovation		Technological Dissemination and Transference		Promoting Regional Investments in Technology (CORFO)		Business Innovation	
Year	Current	Executed	Current	Executed	Current	Executed	Current	Executed
2005	10,258	10,258	2,935	2,478	761	429	9,329	9,329
2006	10,973	12,048	6,374	5,772	1,298	1,065	11,578	11,243
2007	14,662	14,624	9,269	9,230	1,419	1,325	11,891	11,865
2008	20,365	19,516	10,621	10,226	7,925	6,666	15,310	12,960
2009	27,321		7,511		11,783		16,304	

Source: INNOVA and CORFO

[17] In the case of the latter, the issue deals with financing programs aimed at attracting technology-intensive investments tagged for the regions, including the program for mining and aquaculture. Later on we discuss the issue of cluster support programs.

6. Level of Implementation: incorporation of ICS guidelines by agencies in the system.

6.1. Getting agencies in line with the strategy.

One of the goals being sought with the creation of the NICC and the new institutional setting that resulted was to overcome the "agency" problem in the system. This basically pointed to prevent entities responsible for implementation from acting autonomously at the time of establishing goals and priorities. Instead the idea is to encourage them to work with the long-term guidelines established by the NICC and the definitions of policy as established by ministry authorities. It also aimed to create more order in the system, reducing overlapping tasks among agencies.

Following, we will take a look at how much of the proposal has been achieved in the area of business innovation, while looking at three aspects: fixing the boundaries of agency action, adjusting programs and instruments, and orientating resources.

6.2. Creating order for action

NICC clearly proposes that CORFO (including INNOVA) must be the institution that is responsible for promoting business innovation, reserving for CONICYT the task of promoting scientific research and forming advanced human resources. Along these lines, a long-running concern among the institutions responsible for political innovation in Chile has been the possible overlapping of goals at FONDEF and INNOVA. [18] In fact, both entities finance pre-competitive research projects where the final goal is to generate valuable results for companies. At the beginning, the distinction was based on the type of clients served since the FONSIP (created in 1996) later its successor, the FDI, were designed for technological institutes while FONDEF focused on working with universities. With the passage of time however, these activities began to overlap at an increasing rate and the division of territory became less clear. Since 2000, most of the activities that resulted from the FIA added yet another possibility of overlapping, especially considering that its instrument coincides with several of INNOVA's lines of interest.

The issue of avoiding potential problems of redundancy while supporting projects was solved with the establishment of interrelated boards. In this way, entity directors have been able to coordinate on a regular basis and be assured that financing will not overlap for similar initiatives. In addition, there are also permanent consultation procedures between the entities.

Regardless of the provisions adopted, the fact that three institutions exist with the possibility of overlapping their activities is not an ideal situation. First, because it causes redundancy in fixed costs. Second, because it forces potential clients to juggle different criteria and procedures, making it more difficult to participate for new potential users. Third, because notwithstanding communications between board`s members, the scenario inevitably creates differences of opinion and criteria between

[18] The OECD and the World Bank in their reports also addressed this issue.

the funds which can either benefit suboptimal agreements or lead to costly negotiations. [19]

As regards FONDEF and INNOVA, one possible solution that has been posed is for the first entity to be transferred to INNOVA. This proposal did not receive support from CONICYT or the Education Ministry and it does not appear that the conditions exist for making it happen. According to CONICYT and FONDEF, there would be no risk of overlapping with INNOVA since FONDEF never works in the area of supporting business innovation and the activities that it finances would rarely end up in innovations ready to enter the market.

Notwithstanding the institutional status quo, there has been an effort to fix the boundaries more clearly between FONDEF and INNOVA. In particular, FONDEF has moved toward favoring the scientific-technological content in projects that it supports, reducing its demand for results to translate into applications that are directly adoptable by companies. This tendency is reflected in two concrete actions in particular. On one hand, it has decreased the request for business co-financing for projects, dropping from 25% to 15%. Also, in the evaluation process it has increased the weight granted to the scientific-technological nature of projects, as compared to criteria for transference and team members' skills.

As regards the FIA, the situation is more complicated. Authorities in the agricultural sector feel that the proposals that NICC has been promoting do not take the uniqueness of each sector into account, nor do they believe that the NICC assigns its institutions an important role in the design and execution of actions to promote innovation. This discrepancy started form the very foundation of the NICC since the Agriculture Ministry was not counted among its members at the time; the problem is demonstrated by the initial absence of the FIA as a preferred organization for channeling FIC resources. [20] The agricultural sector does not feel that its needs will be entirely met by INNOVA or FONDEF, which has led it to disregard recommendations that diminish FIA's role. One case in particular is a recommendation by NICC suggesting that the Technological Business Consortiums be operated exclusively within INNOVA, a suggestion that the FIA didn't followed. On the contrary - it financed three new initiatives in the field in 2007.

According to information gathered during interviews, the main factor differentiating FIA and INNOVA might be that the former is more focused on smaller agricultural businesses. Evidence of this lies in the nature of the consortiums that it supports. Thus, while INNOVA works with consortiums in the wine and fruit sectors, the FIA does the same with milk, beekeeping, potatoes and sheep farming. However, observers have expressed doubts about the ability for companies in those sectors to act as effective leaders in research by the consortiums. If companies do not have this ability, the exercise becomes irrelevant and ends up dominated by supply, which is

[19] One example is Technological Consortiums, where it was necessary to generate agreements between the three institutions in order to operate.

[20] CORFO's EVP and CONICYT's president both hold a permanent seat in NICC deliberations.

the opinion that several players hold of what tends to happen in the traditional agricultural sector.

6.3. Institutional Reform: recommendations for CORFO

The Strategy proposes a number of changes regarding the CORFO's governance and institutional setting. The most salient proposals are:

(i) Increase the participation of private sector representatives in CORFO's governing council.
(ii) Designation of the Executive Vice President of CORFO (its top authority) through a public contest.
(iii) Reinforce the participation of private sector representatives in INNOVA ensuring that they have the necessary competences for performing their duties (deciding on INNOVA orientation and taking decisions on projects)
(iv) CORFOI should sign formal agreements with the Ministry of Economy establishing clear and measurable goals for all its divisions.

These recommendations, particularly (i) and (ii), weren't advanced either by CORFO's authority or by the Ministry of Economy. The main reason behind the refusal to act following CNIC advice is that CORFO plays a role much broader than to promote innovation. Given its ample mandate and its flexibility, CORFO is usually call for tackling problems or challenges that goes well beyond its role as a development agency. To just mention a relatively recent example, CORFO had to back up the loan that the chilean government took from IADB to finance Transantiago's operation. Thus CORFO frequently has to act in delicate political situations and an increased participation of the private sector in its governance could hamper this capacity. The same argument has been advanced in favor of the current procedure for appointing its EVP.

With respect to the recommendation regarding an enhanced private sector participation in INNOVA, the argument is that its presence is already important, and that at least one private representative is always participating in INNOVA's Sub-Committees were decision on projects are taken.

Finally, CORFO and the Ministry of Economy establish every year a formal agreement concerning the use and objectives of the FIC. The agreement does not include the activities that are financed through the regular budget, which is monitored by the budget office.

6.4. Adjusting programs and instruments

In volume two of the strategy, there are very clear indications as to the emphasis and focus that the supply instrument for supporting business innovation needs to have. Considering that the Chilean state's primary tool of intervention in this field is INNOVA, the majority of the recommendations concern this entity.

The first major recommendation by the NICC is to improve the focus of resources in selected clusters, a point that was supported by the innovation policy and reiterated in a recent document elaborated by the NICC to guide budget elaboration. [21]

As regards the design or re-design of instruments, NICC's recommendations are focused on INNOVA's routine. The following Table presents a summary of the way in which INNOVA does or does not integrate the support recommendations posed in the ICS.

In general, it is clear that INNOVA's response has been satisfactory since it has integrated and launched implementation of several of the recommendations posed in the ICS. Although not all of the suggestions have made a lot of progress, one must consider the fact that the development of a new line of action has been underway for at least two years - since it was first implemented through the date of launch - and the long process includes creating a design, reaching agreements with ministerial counterparts, drawing up guidelines, and defining channels for distribution, etc.

Table No. 9

Design and re-design of INNOVA instruments: ICS recommendations and actions

ICS Recommendation	INNOVA Action
Provide larger coverage and scope to funds that support business innovation	- Opened a line of support for business innovation with quick delivery, designed for more affordable and less demanding innovations
Support professionalism in company management	-Created an instrument to help incorporate professionals with innovation knowledge into companies - Financed a program for training in innovation management
Generate/strengthen a network of intermediaries to aid in technological dissemination and transference	- Designed a program to support extension with financing from the World Bank, and is currently calling for bids - The “technology nodes” program has been given a new direction, with a preference for working with those who've shown the best performance in the previous stage
Strengthen enterprise incubators	- Incubators evaluated and agreed on way to strengthen them, with assistance from IC2 of Austin, Texas
Support spin-off developments	- Created a line of support to promote corporate spin-offs
Expand and develop venture capital funds	-A new line for emerging business was created (side-

[21] See: “Orientaciones para el presupuesto públicodel Sistema Nacional de Innovación.”. Document by National Innovation and Competition Council, July 2009.

	car fund)
Strengthen support for Angel Investors	No significant changes
Broaden coverage of Seed Capital Funds	No significant changes

6.5. Focusing resources[22]

The ICS proposes that resources for supporting innovation be focused in a way that favors the selected clusters. As of 2008, the Economy Ministry has systematically focused FIC resources to the benefit of those sectors, using the fund as a tool for leveraging or mobilizing the funds at agencies in the department. Cluster development - along with bolstering regions - is one of the focuses defined as a priority by the FIC.

Regarding the course of action in the field of business innovation, one area stands out in particular: developing activities at INNOVA to disseminate technology. These activities were non-existent until 2006 and have grown considerably since then when it appeared as one of the ICS recommendations that warned of the need to generate action to shrink existing gaps between domestic companies in terms of information and access to technological knowledge. Resources for promoting innovative ventures have also increased significantly.

Of greater concern is the low growth in channeling resources toward support for innovation projects at companies, an area which has grown more slowly than the others. The situation is troublesome because while all of the other lines of support provide resources to intermediaries, these are the only lines that offer financing directly to companies for their projects. As we shall see, the root of the problem does not appear to lie in the availability of resources for fueling this area, but in the mechanisms for placing resources and the demand for doing so.

[22] In the case of resources tagged for clusters, see details later on. In the case of the lines of support, refer to the analysis on pages 31 and 32.

III. RESULTS ANALYSIS

1. Introduction

In this section, we present an analysis of the results for the Business Innovation Line of action, including progress in its components and sub-components. To do so, we utilized a logical framework that was developed to measure the degree to which objectives from each ICS recommendation have been achieved

The analysis incorporates the dimensions of process, activities and results - whether expected or not expected. Given the short period of time that has passed since the strategy was launched and a lack of data for measuring progress among the various recommendations on a sub-component level, special care has been taken to gather background data that might help illustrate the direction of the movement. This data has been collected for the "process indicators" field.

It is especially problematic that there are no figures for monitoring progress at the agencies level. In general, agencies do not have any information beyond what is needed for verifying levels of activity, such as allocations or number of users and even in that scenario, the information that is available does not help reach conclusions about important focuses of the strategy, such as sector focus, for example, since the classification that is used doesn't always provide enough data.

This situation merits some consideration. It is clear that the fact that the ICS has been published relatively recently has not allowed agencies to update data collection systems to a degree that they meet the needs of the ICS. As such, the question becomes whether it is possible to observe any movement on behalf of these entities in the direction required by the NICC. The response to that question calls for a distinction between the willingness to act and the feasibility of generating the information that is required.

As regards the first issue, CORFO (including INNOVA) has shown more willingness than other entities to improve and update data systems so they are in line with the priorities established by the NICC. However, all agencies demonstrate a degree of exhaustion with the enormous number of petitions for information, which all have different requirements and originate from several different entities including the NICC itself, the Economy Ministry and the Budget Department. On the other hand, agencies have suggested that the indicators being monitored are not the precise indicators expressed in the ICS, but instead others that were listed in the national innovation policy and, more specifically, in the Plan of Action 2009-2010. The different guiding entities are not seen as fully aligned, to the point that some employees at these agencies feel that they are required to respond to two different bodies (NICC and the Economy Ministry). This imply that lacking of a clear and responsible "principal" is still a problem.

It is important to note that in some cases, the type of information that would be required for measuring results is not easy or obvious to gather, for example when referring to entities that are no longer receiving resources from an agency. Similarly, one must consider the fact that users often see the delivery of information as an additional cost or they are simply not willing to provide it. [23] In this sense, it would be helpful for NICC to reach an agreement with the agencies about which information can be generated and agree upon a way of following up on the results.

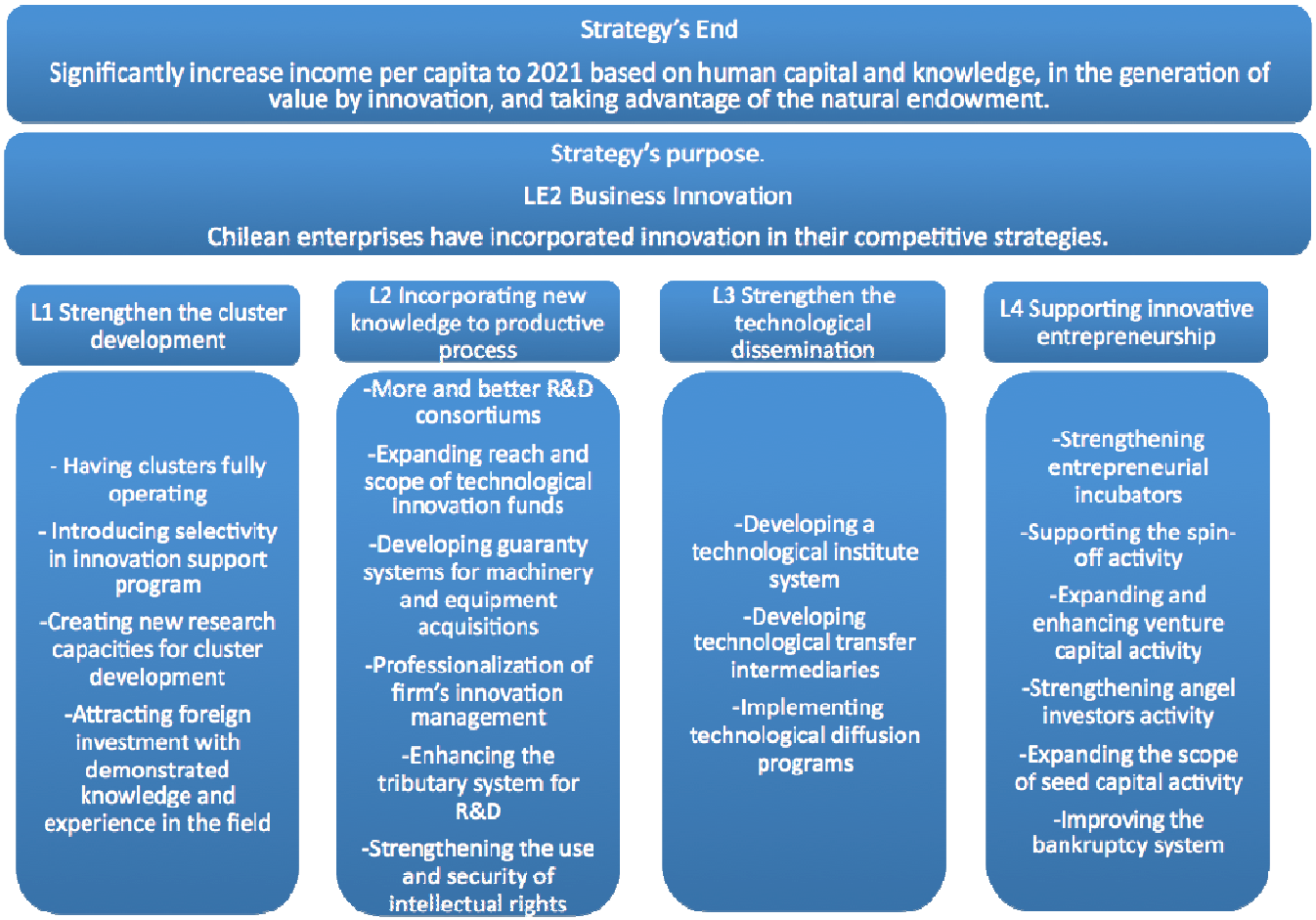
2. Structure of the logical framework for the Business Innovation Strategy.

Construction of the logical framework for the business innovation agenda followed an "imbedded" logical framework. In this way, it uses the *proposal* of the logical framework generated for the ICS as an *objective*. Then, it operates downward, incorporating each one of the components define in the agenda and their respective sub-components. Figure No. 6 shows the logical framework used for this analysis.

[23] This means that if the agency establishes in its bidding rules that the user must provide the requested information, the willingness to use the instruments will decrease.

Figure No. 6

Logical framework scheme for business innovation


Strategy's End
Significantly increase income per capita to 2021 based on human capital and knowledge, in the generation of value by innovation, and taking advantage of the natural endowment.
Strategy's purpose.
LE2 Business Innovation
Chilean enterprises have incorporated innovation in their competitive strategies.
L1 Strengthen the cluster development
- Having clusters fully operating
- Introducing selectivity in innovation support program
-Creating new research capacities for cluster development
-Attracting foreign investment with demonstrated knowledge and experience in the field
L2 Incorporating new knowledge to productive process
-More and better R&D consortiums
-Expanding reach and scope of technological innovation funds
-Developing guaranty systems for machinery and equipment acquisitions
-Professionalization of firm's innovation management
-Enhancing the tributary system for R&D
-Strengthening the use and security of intellectual rights
L3 Strengthen the technological dissemination
-Developing a technological institute system
-Developing technological transfer intermediaries
-Implementing technological diffusion programs
L4 Supporting innovative entrepreneurship
-Strengthening entrepreneurial incubators
-Supporting the spin-off activity
-Expanding and enhancing venture capital activity
-Strengthening angel investors activity
-Expanding the scope of seed capital activity
-Improving the bankruptcy system

3. Analysis of objectives of the business innovation agenda.

The ICS's proposal in terms of business innovation is assumed in this logical framework to be the objective of the strategic line for business innovation.

Table No. 10 shows a summary of the follow-up indicators for this objective.

As it can be seen, the absence of updated data poses a problem to drawing up a comprehensive evaluation of any progress toward the objective. Of particular note is the 5-year lag in data regarding R&D expenses, which is a standard indicator for international comparisons. Chile's entry into the OECD should alter that situation since the organization has already performed a study that highlights a variety of weaknesses in the data collection system for science, technology and innovation in Chile. In fact, CONICYT is currently calling for bids to improve and expand data collection in the field.

In the case of indicators where information does exist for comparing 2005 - the year that NICC was launched - with the current setting (2009 or 2008), figures show a decline in the country. This is particularly evident in the case of Chile's placement on the World Economic Forum's ranking of innovation factors among countries, wherein Chile takes a solid step backward. Of further concern is the fact that it has also fallen in the ratings on that list, which demonstrates that - not only is it advancing more slowly than its competitors - but it has backtracked in absolute terms.

A more detailed analysis of 2010 shows that, among the WEF's 12 indicators, the topic of innovation is actually where Chile receives its lowest score with a 3.4 compared to an average score of 4.7 among the other areas. Within the field of innovation, the factor that received the lowest ranking was "capacity to innovate" (spot 60), followed by "quality of institutions for scientific research" (spot 57) and "business expenses in R&D".

Another indicator for which there are enough data is the one regarding the extent of exports concentration. As it can be seen the top 25 products exported represent a substantial share of the total: more than 80%. One of the objectives established by the ICS is to reduce that figure. Nevertheless, during the period the degree of concentrations actually increased from 81,5% to 82,2%. This movement is basically explained by an increase in the participation of copper sales: the two principal items in chilean exports, refined and concentrated copper, jump from 42,5% of the total in 2005 to 50,5% due to the increase in the mineral`s price[24].

[24] See “Análisis de las exportaciones chilenas.” Report prepared by ASERTA. January 2010

Table No. 10 Objective for the Course of Action in Business Innovation					
Objective	Activity Indicators	Results Indicators	Source	Baseline 2005	2009
For Chilean companies to incorporate innovation into their competitive strategies	N/A	Position on WEF rankings measuring sophistication and innovation	World Economic Forum	33	43
		Placement on index of innovation factors		4.22	4.0
		Percentage of R&D on GDP	CONICYT-RICYT	N/A	N/A
		Patents presented by domestic companies	Department of Intellectual Property	46	
		Percentage of exports among the 25 principal products	NICC based on foreign trade statistics	81,5%	82,2%
		Percentage of companies that innovate on a national level	Innovation Surveys (2005/2006)	32.73%	N/A

4. Analysis of Component 1 of the agenda for business innovation: Strengthen cluster development

One of the most original aspects of the ICS as regards the practice of promoting innovation in Chile is the introduction of selectivity criteria for guiding public policy. The ICS proposes placing a focus on public support in certain sectors with high development potential for the country, which already hold a solid position but require tremendous effort in generating and incorporating knowledge so that domestic producers can maintain and hopefully improve leadership positions worldwide.

4.1. Background on the process of identifying and selecting clusters.

In 2006, NICC launched an international bidding process for the Study of Competition among Clusters on the Chilean Economy, and contracted the Boston Consulting Group (BCG). Through a process of consulting with key players and a strategic analysis, it drew up a map of opportunities which were based partially on the potential that sectors hold for global trade and partially on the level of "domestic effort" required for developing them. The study was aimed at identifying the dynamics of the global economy in the decades to come, and the decisions that should be made today in order for the country become a part of that future. It also worked to provide information to the public sector regarding how to organize its supply of public goods, and to the private sector in terms of where to direct their decisions.

This study identified nearly 100 sectors with high potential for worldwide growth. Then it defined the sectors with the highest potential and discovered the indispensible transversal platforms for their development, based on an analysis of the current conditions of the national economy, which was then contrasted with the effort that would be required for drawing that potential. The initial list was reduced to 33 candidate sectors.

Next, each one of the sectors was contrasted against its current participation in the GDP, its potential for growth, and its future contribution to growth. In order to identify the effort needed for being able to make a larger contribution to the GDP, the study took the following factors into account: the sector's geographical location in regards to the consumer market; the existence of natural resources; gaps in human capital; the existence of mechanisms for attracting investment; its access to technology; the conditions of infrastructure and logistics; the degree of connectivity and association of the industry; environmental sustainability; and the existing regulatory framework for performing activities, along with the degree of participation necessary from the state for its development. Based on this exercise, 11 specific sectors were defined that present the highest potential for growth and contribution to the GDP, as well as those with potential for creating chains that demand medium or minimal effort for their development and where public policies play an important role.

The resulting sectors were copper mining, pig and poultry farming, fruit growing, processed foods, global services, special interest tourism, aquaculture, financial

services, communications, logistics and transport, and construction. Of those 11, the council selected the first seven for in-depth studies in 2007. Through this study, the council identified existing gaps between the current situation and the future vision and it defined a course of action that is necessary for closing those gaps.

Each line of action is associated with a handful of initiatives which served as a roadmap for each sector that contained the following three criteria: window of opportunity, expected impact, and difficulty of implementation, and provided a clear definition of the role of public policies in fostering its development. The required investments were also identified, and were based on the experiences of market leaders in each sector. The roadmap for developing the selected clusters covered a broad territory including regulations, the institutional aspect, sector-specific innovative activities, and actions for developing their transversal platforms.

4.2. Establishing a national cluster program.

In January 2008, the innovation and competition council released the second volume of the strategic proposal which contained recommendations for strengthening development of a cluster policy, in addition to the cluster study. NICC's recommendations for strengthening clusters tie together the goals that are associated with the sub-components of the agenda which are shown in Table No. 11.

Table No 11 **Course of Action Component 1: Strengthen Cluster Development**					
Objective	Activity Indicators	Results Indicators	Source	2009/2005	
Convert selected sectors into clusters that generate competitive advantages based in knowledge generated in their field	- There are 5 sectors operating with public-private boards.	Rate of growth in innovative companies in selected sectors as compared to national average	Innovation Surveys	n.i	n.i
		Rate of growth of exports in selected sectors	Central Bank	n.i	n.i
		Rate of growth of exports in selected sectors as compared to national average	Central Bank	n.i	n.i

Sub-components of the course of action					
Objective	Activity Indicators	Results Indicators	Source	Baseline 2005	2009
1.1. Have an operating cluster	N/A	Number of clusters that have formed boards	CORFO: Assistant Management at clusters	0	5
		Number of clusters implementing their roadmaps	CORFO: Assistant Management at clusters	0	5
1.2. Instruments for promoting business innovation incorporate selection criteria	N/A	Growth of resources placed in prioritized sectors versus total growth of placements	INNOVA, FIA and FONDEF	100	n.i
		Progress at assigned projects in prioritized sectors	INNOVA, FIA and FONDEF	100	n.i
		Percentage of resources in prioritized sectors	INNOVA, FIA and FONDEF	100	n.i

Objective	Activity Indicators	Results Indicators	Source	Baseline 2005	2009
1.3. Generate research capacities that support cluster development		% public funds that go to R&D in prioritized areas	INNOVA CORFO and CONICYT	n.i.	n.i.
1.4. Contact and attract foreign capital with demonstrated experience and knowledge		Number of companies and amount of foreign investment in prioritized sectors	Management of Investment and Development - CORFO	n.i.	n.i.
		Direct foreign investment in Chile as % of the GDP	Central Bank	5.9 %*	9.7%*
*Includes investments through chapter XIV, chapter XIX and the statute of foreign investment (DL600)					

4.3. Policy for Developing and Strengthening Clusters: progress in the general implementation.

Unfortunately, the results of the innovation survey for 2008-2009 are still not available, which makes it difficult to gauge the effect that the implementation of this strategic line might have had on the innovative efforts of companies in the selected sectors.

In terms of export indicators, two sectors have posed serious difficulties for acquiring data. One is global services, where no information is available that provides any idea about its growth on the economy. The only data available was gathered by CORFO and concerns beneficiaries of its program to attract investments in the field. [25] The other sector is special interest tourism, where no data exists to distinguish it from traditional tourist activities.

Keep in mind that during the implementation phase of the cluster program, two significant and related phenomena occurred. First, the international price of raw materials increased considerably, including the price of mining products. This had a direct effect on the growth of the volume of ore extracted and exported, causing an effect that was very difficult to isolate. In addition, a health crisis emerged just as the program was being launched that affected salmon farming, the country's principal aquaculture field, which drastically reduced sector activity. [26]

4.4. Progress of the sub-components.

Following, we analyze the progress that has been made in the implementation of each sub-component.

a) Clusters operating.

Once the working agendas and roadmaps were defined for the clusters, they were validated by the MIC (meeting held 11/22/07), providing a formal start for execution of the National Cluster Program, which works with the Economy Ministry, SUBDERE[27] and CORFO.

Following NICC's recommendation, it was established that each cluster would form a public-private board. Given the importance of giving the initiative a high-level political push, it was suggested that each board be presided over by the minister of the specific sector to which it belonged. The exception was the global services cluster, which was overseen by CORFO's executive VP.

The function of these boards includes:

[25] Progress made in the global services cluster is addressed later in the report.

[26] This was caused by the appearance of the ISAV virus which spread to nearly every salmon farm in the country despite the fact that it was absent to that point.

[27] Undersecretary for Regional Development (depending of the Ministry of Internal Affairs)

- Support actions to articulate, coordinate and strengthen the contextual conditions and the public and private institutional setting affecting the cluster.
- Serve as a permanent channel for communication with the sector involved in the cluster's activities.
- Validate the lines of actions proposed in the strategic agenda for the cluster program.
- The cluster's executive secretary will be responsible for implementing a strategic agenda and follow-up for the program.

In addition, it was established that each cluster would include a professional who acts as executive secretary and has the following functions:

- Provide support in administration, management and logistics for the cluster's board.
- Promote the contextual conditions and integration for public-private action for the cluster, especially regarding its relationship with regional agencies for productive development and programs for improving competition.
- Coordinate and execute the actions necessary for developing and implementing the cluster's strategic agenda.
- Design and coordinate execution of specific projects.
- Act as a representative during evaluations and studies of the cluster program.
- Report on the progress of the cluster program.

In addition, with the goal of backing those who perform executive secretarial tasks and in order to assist in instances of monitoring the cluster's progress, CORFO created the National Cluster Program in 2008. Based on a recommendation by the ICS, this program includes an instrument that provides financial support for generating "club goods" and in general supports all actions that create social capital within clusters in a way that facilitates development of the work agendas.

CORFO also created a cluster unit which reports to the corporate management, whose responsibility is to implement the national cluster program, supporting the formation of strategic public-private boards, and providing methodological and technical support to the executive secretaries for drawing up agendas and easing coordination between the secretaries and other institutions.

In particular, this unit should link clusters to territorial programs, especially those for improving competitiveness that are promoted by the regional agencies for productive development (ARDP), which were formed in 2007. Clusters that need to carry out activities in the regions must be able to work efficiently and closely with regional institutions that support innovation.

There are eight main sectors that have been prioritized by the ARDP in the 15 regions[28]. These sectors are the following:

Agri-food: all regions, but Antofagasta, have selected it.

Tourism: all regions have prioritized it, although with some variants. In some regions it turns around culture, in others it turns around special interest, in others turns around cruise ship, etc.

Four regions have selected forestry: O'Higgis, Maule, Los Ríos and Magallanes.

Mining and related services has been chosen by Tarapacá, Antofagasta, Atacama, Coquimbo, Valparaíso, O'Higgins, Metropolitana and Magallanes (in this last case together with Energy).

Tarapacá, Antofagasta, Atacama, Coquimbo, Los Ríos, Aysén and Magallanes have selected Fishery, Aquiculture and Seafood.

Activities related to consolidating their position as a platform in services and trade (including logistic and transport), have been selected by Arica, Tarapacá, Valparaiso, Metropolitana, O'Higgins, Bío-Bío and Magallanes.

Valparaíso and Bío-Bío have also opted for developing services related to the Tertiary Education sector, given the fact that they have an important number of goods Universities.

Finally, Arica and O'Higgins selected the construction sector.

According to recent studies conducted on the subject[29], in general the business community has a quite positive opinion of the CEPs implemented in every region. The fact that ARDPs work with the local entrepreneurs and try to coordinate the solution of tangible problems at the regional and local levels, makes them to be seen as a real partner by the community. Nevertheless, their main weakness is their lack of a real authority to orientate the activity of the different agencies that are present at the regional level and then to provide orientation to the use of their resources. Besides some formal meetings, there is no real coordination between the ARDPs and the national cluster program. Moreover, mutual jealousy and animosity are predominant feelings among the professionals working in the different programs.

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[28] Estudio sobre "SISTEMATIZACION DE AGENDAS Y CONVENIOS REGIONALES DE DESARROLLO PRODUCTIVO", RED SUR CONSULTORES, SANTIAGO DE CHILE, 2009

[29] Insights come from interviews with the author of a work in progress on the subject commissioned by IADB. Findings are preliminary.

It can be deduced from the analysis of the budgets available for 2008 through 2010 that the amount that CORFO has set aside for the cluster program's administration has been very low ($120mn in 2009), which has forced executive secretaries to finance activities using funds from the sector ministries and services programs.

This is mainly because financing for the program has not been defined by the budgeting law and it has operated to this point with contributions by CORFO in infrastructure, human resources and alterations in CORFO'S budget, along with contributions by the ministries involved, especially in the area of drawing up studies and generating club goods.

According to the latest quarter report (September 2009) from the unit in charge of the national cluster program, six projects for "club goods" have been approved for a total of $242mn that was contributed entirely by CORFO. These resources have mainly been used to hire personnel (through consultancy firms) to assist the coordinators in their regular work. Therefore the program as a whole stands in a very fragile situation: Clusters don't appropriate resources from a specific budget item, and their coordinators have to hire personnel to assist them using resources that CORFO transfer them on a voluntary basis. The only exception to this general situation is the Cluster on Global Services because it has the advantage of being located in CORFO itself counting with a whole Department (Investment and Development) to back its activities.

To date, all five of the clusters analyzed - which are the same clusters that the MIC prioritized for implementation in 2008 - have public-private boards. [30]

The sector ministers, along with CORFO's executive VP and the minister of economy mainly decided the formation of these boards. In each one, the presidency was awarded to the highest-ranking political figures in the sector as suggested in the proposal since the idea is for the initial step to represent a positive measure that demonstrates political backing at the highest level.

These positions are intended to last a limited amount of time in order to avoid major inconsistencies and to prevent the cluster agendas from becoming entwined with the political agendas of the ministers. It also cannot be ignored that the heads of these boards report to the MIC, which is made up of the very same people, which could result in less efficiency and objectivity when monitoring, following-up, and evaluating cluster activity.

In terms of the make-up of the cluster boards, there are a broad variety of representatives from the recommended sectors: academia, the business sector, the government, and the regions. However, in the make-up of these boards, there are sectors that are over-represented and, as a result, others that are under-represented. This increases the probability that the agreements required will not be reached because of an absence or under-representation of some of the relevant players. It is

[30] Strictly speaking, only 7 of the sectors initially proposed have been implemented since the agricultural sector chose to organize 3 of them into a single cluster.

fundamental to evaluate this situation to guarantee an equilibrium that allows for transparency in the system and ease of management.

In general, the proposals suggested by NICC regarding a course of action and the roadmap do not entirely correspond to the agendas validated by the strategic councils. The norm is that the BCG proposal is submitted to new analyses and studies by consultants and then discussed in the technical committees that exist in each cluster. This new study was aimed at deepening and updating proposals for practical uses, transforming them into short and long-term agendas and defining concrete actions for reaching the ultimate objectives.

It generally happens that there are no baselines either for defining how to measure the impact of actions developed over the long term, or for defining how to manage agendas and meet commitments. There are also doubts about whether there is enough social capital for common projects.

On this topic, it's important to point out that so far there is no method recognized by the executive secretaries of the strategic councils or by the professionals in the CORFO's assistant cluster management, for controlling the results of implementation or agenda management.

The work and performance of each board when managing their clusters is disparate and explained in detail in the private report drawn up by each cluster, which will be presented later.

b) Introducing selectivity in the instruments for promoting innovation.

The indicators of results for this sub-component have shown very satisfactory evolution. In fact, they demonstrate that the option of allowing sectors to select where they will focus their resources for public support has been followed by the agencies.

In terms of process, it is possible to stress cohesion among initiatives developed by agents of the public system, which, by using traditional instruments and programs, have made efforts to direct and focus sectors and related issues according to their cluster agendas.

b.1. Orientation of the public agents

(i) CORFO's program INNOVA Chile: INNOVA is organized around 5 sector-based areas, mainly coinciding to clusters, with specialized teams for clients assistance, that have helped promote and coordinate players with broad-scope initiatives and projects.

Between 2008 and 2009, ten sector projects were opened for bids. During the bidding processes, the executive secretaries of the clusters were proactive in their efforts to support implementation of the projects, for the purposes of ensuring that the needs of each sector would be met consistently.

Call for bids for sector programs through Innova Chile 2008:

- Mining Innovation Program (Innova). 29 projects approved. Total contribution approved $4.41mn. Installment 2008 $2.20mn;

- Contest, Innovation Program for Special Interest Tourism (Innova). 20 projects approved in Public Goods for Innovation and 17 projects approved from Innovation Agendas. Total contribution approved $3.29mn. Installment 2008 $880mn;

- Contest, Innova Food Industry, 3 projects financed. Total contribution Innova $1.15mn. Installment 2008 $382mn;

- Fruit Growers Innovation Program, 26 projects approved for a total of $4.53mn. Installment 2008 $1.79mn;

- Contest, Food Industry, 16 projects financed. Total contribution Innova $4.10mn. Installment 2008 $1.38mn.

Call for bids for sector programs through Innova Chile 2009:

- Program for Genetic Improvement of Horticulture and Fruit Culture with a total investment of $3.00mn in 3 years;

- Program for Agroindustry, Fish Farms and Wine Developers: Budget to be announced;

- Program for Aquaculture Diversification and Program for Health Conditions for the Salmon Industry (Budget 2009 $3.34mn. Total contribution $7.90mn in 3 years);

- Program for ICTs and Rural Connectivity (tourism, agriculture, aquaculture): Budget to be announced.

National contest for projects in prioritized clusters with a total investment of $4.24mn in 3 years.

(ii) CORFO's division for financial intermediation has designed two new instruments and updated a third which are focused on the national cluster program:

- Update of the rules governing the support line for venture capital which allows for CORFO direct participation in Investment Funds, authorizing the investment funds to make contributions at companies governed by the mining code.

- CORFO loan for students of careers in information technology and electronics related to the area of global services.

- CORFO coverage for long-term loans financing investments for improving conditions for the sanitary and environmental management of salmon farms in

the country. Specifically directed at companies in the Aquaculture (salmon) cluster or their suppliers.

(iii) The Division of Investment and Development, aimed at promoting investment in Chile, has defined as one of the main focus the attraction of high-tech companies. Most of its instruments and the use of its resources have been designed around carrying out projects in the global services cluster.

(iv) The Ministry of Economy, through the innovation division, has turned to financing studies for data collection and qualifying labor profiles in the cluster sectors. These studies were crucial to applying the "Technicians for Chile" program to the clusters.

(v) Last, other institutions such as Fundación Imagen País, the Chile Califica Program, Chile Emprende, and Prochile, among others have used their instruments and programs to finance projects within the clusters. However, it is not clear whether this has occurred as a direct result of the strategy or as happenstance.

b. 2. Focusing budget resources on business innovation

In its proposal for 2007, the Council suggested to continue increasing the resources that are tagged for innovation and its principal inputs. Also, with the goal of moving toward a more clearly defined selection process and application of public policies that allow development of the sectors with the greatest potential and that ensure provision of the specific public goods associated with them, the Council proposed that the FIC only be responsible for demands resulting from the in-depth study of the clusters that were selected. This proposal also aimed to consolidate the FIC as a key instrument in implementing the national innovation strategy.

According to the data in the Economy Ministry's Plan of Action 2009-2010, some 50% of the FIC's resources in 2007-2008 were tagged for clusters and 45% of the projects that FONDEF placed for bid were linked to clusters.

According to the Economy Ministry's Plan of Action, the goal for 2010 is that 20% of the yearly expansion of resources in the NISC (according to Minecon's definition) be focused on the clusters and that 50% of FIC's resources be tagged for the same purpose.

In INNOVA's case, Table No. 12 (as follows) shows the evolution of resources tagged for 4 of the prioritized sectors as compared to the evolution of all resources that the entity contributes to projects annually. Because of a shortage of available information, it was not possible to determine the amount of resources assigned to projects related to the global services cluster. Regardless, it's noteworthy that R&D activities are not one of that cluster's priorities.

In the case of the 4 clusters where information is available, the resources got from projects resources has increased at a pace twice faster than in other sectors. Growth in the areas of mining and tourism stand out most, although both sectors began from a

very lose baseline. It is worth noting, however, that the food and aquaculture industries demonstrated sharp growth during certain years in terms of resources received, which can be classified as a trend. In fact the food sector attracted the most resources when considering the entire period.

Comparing the initial and final years, the sectors that were prioritized for receiving INNOVA resources demonstrated an increased participation, moving from 30% to 50%.

Table No. 12

EVOLUTION OF AMOUNTS FOR APPROVED PROJECTS PER SECTOR

($ October 2009)

	2005	2006	2007	2008	Variation (2005-2008)
AQUACULTURE	$4,056,900,463	$11,124,159,573	$5,146,524,191	$4,000,536,618	98.61%
FOOD	$8,030,103,016	$8,969,282,900	$8,362,545,271	$14,857,072,854	185.02%
MINING	$1,379,309,893	$1,600,412,312	$3,279,828,245	$6,699,461,638	485.71%
TOURISM	$1,280,712,884	$1,544,559,881	$1,898,492,224	$7,173,706,302	560.13%
TOTAL CLUSTER	$14,747,026,256	$23,238,414,665	$18,687,389,932	$32,730,777,413	221.95%
REMAINING SECTORS	$33,872,735,166	$25,484,557,981	$31,411,871,967	$32,363,641,284	95.54%
TOTAL	$48,619,761,422	$48,722,972,646	$50,099,261,898	$65,094,418,696	133.88%

Source: INNOVA

As it can be seen in Table No. 13, foods led the number of projects although considering the amounts involved, they were smaller initiatives.

Table No. 13

NUMBER OF PROJECTS APPROVED

	2005	2006	2007	2008	Total
AQUACULTURE	25	78	46	42	191
FOOD	83	233	194	208	718
MINING	18	40	39	67	164
TOURISM	16	40	52	99	207
TOTAL CLUSTER	142	391	331	416	1280
REMAINING SECTORS	241	414	357	399	1411
TOTAL	383	805	688	815	2691

c) Generating research capacities for developing high-potential clusters.

CONICYT's Bicentennial Program via its "Technicians for Chile" program, which offers scholarships for advanced technical specialization, established as one of its primary objectives to increase the sector focus of the supply of scholarships for improvement overseas. Because of that, the first contest was focused on the 5 productive sectors that the innovation policy defined as priorities for development in the country. In order to do so, the agency worked with the national cluster program and the executive secretaries of the five clusters to design the program, which was drawn up into 4 stages:

- Identify the needs for forming technical human capital in the five clusters.

- Provide offers to perfect technical abilities in countries that demonstrate a long tradition of vocational formation.

- Validate these programs with human capital boards from the five previously mentioned sectors.

- Focus on negotiating international agreements.

Although FONDEF has not introduced open criteria to its contests that favor projects from the prioritized sectors, it does offer special lines that coincide with some of the areas of focus, particularly the areas of aquaculture and foods. Examples include the Fruit Genome Program and the Aquaculture Diversification Program. FONDEF's authorities and professionals feel that in the remaining areas of focus, there is not critical mass for generating lines or special contests for the type of projects that it supports. [31]

The MIC and CORFO's council approved the Program for Attracting Centers of International Excellence in R&D that are interested in opening in Chile, in association with domestic R&D entities, with the goal of establishing new scientific and technological capacities and infrastructure in the country, along with developing R&D+i lines in pioneering technologies that would create a high impact for competition in clusters and transversal sectors with potential for dynamic growth. Although the initiative was not developed with the aim of strengthening cluster development, one of its goals is for 50% of the new centers to be related to the clusters.

The results of INNOVA's call for bids for this program are being evaluated.

Improving the adequacy and the quality of human capital has been a significant priority for some of the clusters. This is particularly true in two cases, mining and

[31] Also remember that in order to fix clearer boundaries with INNOVA, FONDEF has opted to move closer to the pre-competitive camp.

global services, where these factors were single out as some of the main challenges they faced to reach a "world class" status.

In the case of the mining sector there is a well-established diagnostic regarding the lack of trained personnel, particularly specialized engineers. As a matter of fact, about a decade ago the career leading to the title of Engineer in Mining was in a brink of being closed in the Universidad de Chile due to a lack of demand from the part of the students. Only help from some mining companies that provided fresh resources for sustaining the career and for funding new research allowed the career to survive. Later on, the mining boom provided new stimulus to the career. Given this situation, one of the main focuses of attention of the agenda drawn-up for the Cluster by Dalberg consulting (which followed the more generic one designed by BCG) was the availability of qualified human resources for the sector. To this end, some of the principal initiatives proposed in the agenda were: (i) establishing an "observatory" to monitor the supply and demand of human resources in the sector; (ii) adjusting the curricula of the careers offered by tertiary educational institutions; (iii) attracting people to technical careers related to the sector, etc. As it can be seen in Annex 1, where the advancement of the agenda is reported, progress has been made in most of the areas concerned. Of particular significance is the agreement reached to open a special call from *Becas Chile* to provide grants to professionals willing to pursue prost-graduate studies in areas related to the mining activities. Although at the moment of doing this report the call was not yet opened, it is noteworthy the effort to asses the quality of the offer of courses all around the world. As a result, 26 places were selected as potential places to conduct the studies with support of the program.

A reflection of the importance given by the Global Services Cluster to the human resources issue is the fact that it is one of the four committees created to organize the work of the cluster. The importance of this factor was recognized since the program to attract investment in this niche started at the beginning of the 2000s. As a result, an initiative to assess the availability of proficient English speaking technicians and engineers was launched in 2003. The result of the study showed that although there was enough supply for the activities that were undergone, a major effort to increase the number of proficient English speakers was needed. Thus, the cluster took over this task and established as one of its goals to provide grants to ensure that at least 2000 people were properly trained in English language. The training programs were provided by certified centers and finished their work in December 2009[32]. Another initiative worth of mentioning is the support with special loans provided with CORFO's resources through private banks to students of IT careers.

In the case of the others Clusters the issue was also identified as a significant one, but in practice has not received the same degree of attention. Though a special mention to establishing the foundations of training and qualification systems based on a "competences" approach should be made in the cases of the clusters of Tourism and Aquiculture.

[32] The Tourism Cluster implemented a similar program. Both initiatives received financing from FIC.

d) Attracting foreign capital with demonstrated knowledge and experience

With the goal of complementing national efforts in prioritized sectors with high potential, CORFO's Investment and Development Division offers support to foreign investment in high-tech projects focused in productive clusters associated with natural resources and the global services cluster.

This line of support was made available in the late 1990's with the aim of attracting foreign investment to the country's regions. Naturally, the biggest achievements were seen in sectors related to agricultural activity (wines, olives, processed foods) or processing natural resources (remanufactured wood). These initiatives were supported in Europe by an agent that was hired by CORFO, which initially supplied markets in Spain and Italy.

Inspired by the experience of countries like Costa Rica and Ireland, the program expanded in the early 2000's to include the area of technology-intensive investments which resulted in the program InvestChile. Initially, actions intended to attract high-tech investments were focused on the United States, with a CORFO representative situated in Silicon Valley. In late 2002, the program already boasted a portfolio of 12 investments that came fundamentally from transnational service centers, including General Electric, Unilever, Delta Airlines and Air France.

The InvestChile program offers a collection of subsidies to attract investments which are concentrated in the fields of physics and human resources training. The "high-technology" quality of a project is defined by a special committee made up of CORFO'S highest authorities, one representative from the Finance Ministry, the VP of the foreign investments committee and two outstanding professionals or business experts from the private sector.

In 2007, the program began to align itself with the NICC guidelines and increased its efforts to attract investments that support development of the clusters and selected transversal platforms, except for the global services cluster which was already its territory. [33] Because of this, there have also been efforts to attract software developers for mining and agrobusiness, or firms that help bridge technological gaps in the prioritized sectors. [34] As a result, CORFO has begun developing special programs with this purpose.

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[33] Strictly speaking, if CORFO's ChileInvest program didn't already exist, the Global Services cluster would most likely not exist today. It was only because the program was demonstrably successful that the sector was chosen for cluster development.

[34] Agosin, M. and Price, J. (2009): "La inversión extranjera: ¿hacia una política vertical? InvestChile el programa de atracción de inversiones de alta tecnología" In *Desarrollo Productivo en Chile. La experiencia de CORFO entre 1990 y 2009*. Oscar Muñoz Editor. Catalonia. Santiago.

Table No. 14 High-technology projects supported in prioritized sectors.

SUPPORTED PROJECTS **(except Global Services)**	**N° OF PROJECTS PER TYPE**	**HUMAN RESOURCES**	**STOCK OF INVESTMENTS PLACED** **US$mn**	**PROJECTED EXPORTS 2009** **US$mn**
ENERGY	1	0	0	0
PHARMACEUTICAL	1	0	0	0
AQUACULTURE CLUSTER	3	72	17.6	60
AGRICULTURE CLUSTER	6	200	37.7	10.7
MINING CLUSTER	1	118	18.7	15.0
TOTALS PER SECTOR				
GLOBALS SERVICES	38	8,683	110.3	179.4
PRODUCTIVE CLUSTERS	10	390	74.0	25.8
ENERGY-PHARMACEUTICAL	2	0	0	0
	50	**9,073**	**184. 3**	**205.2**

Source: Investment and Development Management, CORFO.

As can be seen from Table No. 14, even though most investments are concentrated in the area of global services, high-technology projects aimed at sectors prioritized by ICS have been progressively added to the portfolio.

CORFO`s technology building: Curauma

In 2004 CORFO took a bold step in its effort to promote Chile, and Valparaiso in particular, as a location for high technology venture. This step was the construction and subsequent administration of a public building to offer lease space to firms that wanted to invest in Chile. The reason behind this decision is that most of the firms contacted didn`t want to freeze capital in fixed investments. Instead, they pointed out that in most parts of the world local promoters offered lease contract to provide the necessary space for the firms they wanted to lure.

Since its inauguration in 2005, the building erected by CORFO to locate "technologically based" firms in Curauma (near Valparaíso) has seen the arrival of 8

international firms, two national firms and 6 regional SMEs. The building space has been fully occupied since December 2008.

According to a recent evaluation commanded by CORFO, the initiative has been very successful: 360 highly qualified jobs had been created and US $ 20 million were exported till the end of 2008, with a projection of reaching US $ 50 million by 2010. The result of an impact assessment considering the benefits generated until the end of 2008 indicated that project had created $ 5,8 of net present social value for every peso invested during the period.

Given the results already mentioned, and the fact that at least three new international companies are applying for space, in January 2010 CORFO's council took the decision of launching the construction of a new building in the zone.

e) Efforts to incorporate a national innovation strategy into the regions.

In 2007, the Productive Development Regional Agencies were created, governed by Advisory Boards with public-private participation and with the aim of assisting the Regional Government in addressing the competitive challenges of the regions.

During 2008, the drawing up of productive development regional agendas and Improvement in competitiveness programs began. Moreover, regional governments created the Planning and Land Zoning Departments during this period.

In the 2008-2009 period, 25% of FIC resources were assigned to the regions.

There is currently fierce debate over the existing articulation and coordination between the National Cluster Programs and local initiatives to support innovation such as the Regional Development Agencies (ARDP), the Competitiveness Improvement Programs (PMC) or the Integrated Land Programs (PTI).

In practice, there are still major difficulties in effectively carrying out coordination between regional programs, a topic being addressed by CORFO's Cluster Unit. This may be explained because in practical terms there are two public policy programs conceived from different points of view on productive development.

Providing an adequate institutional setting and a working method to solve disputes is an urgent challenge for the agencies are now established in every region, each with its strategic council, which have developed their working agendas, mobilizing human and intellectual efforts and committing huge resources

According to official agency reports, up to September, 45 Competitiveness Improvement Programs (PMC) are being implemented, in which resources of various origin have been committed (sector, regional and agency) for a sum of $100 billion.

4.5. Progress by specific clusters

There follows a brief summary of the progress made by each cluster in operation.

a) Mining Cluster

The Mining Cluster began operations at the beginning of 2008, consisting of a council presided over by the Mining Ministry and made up of the heads of the Antofagasta and Atacama regions (Intendentes), the Finance Ministry, the CORFO vice-president and CODELCO president on behalf of the public sector. For the private sector, five presidents of trade associations linked to the sector, a representative of a large transnational company in addition to the president of the Mining Engineers Institute and the president of the Federation of Engineering Faculty Deans of Chile take part. The cluster has an executive secretary contracted through public tender.

The council has stated that the cluster's objective would be to "contribute to the area's conditions for promoting innovation in the Chilean mining industry. The strategic council meets every two months and up to last August had held eight sessions.

The work is organized around five technical committees directly related to each of the strategic agenda guidelines, all presided over by the executive secretary. Its makeup is diverse and helps members of the council, corporate and academic world in the themes they deal with in an ad hoc fashion. The executive secretary has the support of two private consultants funded with National Cluster Program resources to help develop his work. One of these assesses strategic technical topics and the other logistical ones.

One of the first actions taken by the cluster was to commission a study that deepened the analysis performed by the Boston Consulting Group (BCG), which was appraised by the Dalberg consultancy. This consultancy recommended 21 initiatives in five lines of action: associativity, suppliers, innovation, human capital and business climate, the latter included at the request of private advisers. The initiatives were mainly in agreement with those set out by the BCG study and became the basis for the cluster's 2008-2009 agenda.

Table No. A1 of Annex A shows a summary of the progress in the main lines of action set out in the Mining Cluster agenda.

b) Aquaculture Cluster

The Aquaculture Cluster began operations at the end of 2008 and its strategic council is made up of 13 public sector representatives, including the Minister of Economy which presides over it, the Undersecretaries of Finance, Navy and Fisheries, five regional leaders and the highest authorities of CONICYT, CORFO, the National Environment Commission and the National Fisheries Service. There are also four businessmen, a trade representative from the salmon sector, four academics and a representative of an environmental NGO. To date, the council has held eight sessions.

The executive secretary has support in his work from an external consultancy financed by the National Cluster Program made up of three professionals and a secretary charged with logistical and administrative matters.

Within the framework of the cluster's operation, five work committees have been set up on the following themes; institutional modernization, infrastructure, human capital, R&D and suppliers. The technical boards are coordinated by professionals from the consultancy with the exception of the institutional modernization board, which is coordinated by a ministry assessor.

There is also the salmon board, presided over by the Minister of Economy and the cluster executive secretary, a body created to coordinate and manage the public sector and deal with the critical situation of the salmon industry in Chile. Given the urgency for action in the face of the sector's hygiene crisis, the Minister of Economy has focused on this problem, playing a more passive role in the cluster council, where an expert assessor represents it.

The president of the strategic council, in this case the Minister of Economy, has a passive management role and is represented in the cluster by a ministerial expert on aquaculture issues. In the functioning of this council, the executive secretary has a role closer to the running and political leadership of the aquaculture sector than the technical and logistical support of the cluster.

From December 1, 2008, the cluster council's strategic agenda was endorsed, setting out eight guidelines for action and 13 strategic projects.

The current agenda the cluster is developing is the result of a strategic planning task, which started with the setting up of the strategic council and, like the mining sector, has the support of a special consultancy. Even though the BCG study was not the main input during the agreement and activities of the agenda, the actions finally adopted are in close concord with the initiatives suggested by the BCG study and adopted by the innovation council in defining national innovation policy.

It should be mentioned that it has been decided to approach the salmon question as a work area because it does not actively draw on the aquaculture agenda and it is the only cluster that explicitly takes into account sector and territorial considerations in its work plan.

Table No. A2 of Annex A summarizes the aquaculture sector's state of progress.

c) Special Interest Tourism Cluster

The cluster began operations in the middle of 2008. However, its strategic council met for the first time at the beginning of 2009. Its strategic council is made up of 11 public sector representatives: Minister of Economy (president of the council); Minister of Public Works; Economy Undersecretary; Minister of National Assets; CONAMA Executive Director; SERNATUR Executive Director; CONAF Executive Director; CORFO Executive vice-president; ProChile Director; and CONICYT President. Also included

are the president of the Association of Municipalities of Chile and six company representatives, two business association representatives and one academic.

The Council has not operated in very fluidly, meeting just three times since its constitution and the last time there was a notable absence of members. The executive secretary was designated, not appointed by vote, and exercises his functions in parallel with acting as head of the Ecomy Minister's cabinet. The executive secretary's support team is made up of professionals from a private consultancy especially contracted with National Cluster Program Funds and deals with strategic technical issues.

The work was organized based on proposals made by a consultancy contracted after the BCG study and has concentrated on an agenda of projects feasible to address in the short term. To support the carrying out of the agenda five commissions were created; Tourism Positioning of Chile and Tourism Promotion; Tourist Targets and Products; Human Capital; Regulatory Institutionalism and Promotion; and Sector Associativity.

Progress in the work program is presented in Table No. A3 of Annex A.

d) Food Cluster

As shown earlier, this cluster ended up grouping together all the sectors related to the Agriculture Ministry, which has used the tool to advance the "Chile Food Super Power" Program. Sectors covered are Processed Foods, Fruticulture, Pork-Poultry Breeding, Wines and Red Meats.

According to accepted information, the inclusion of wines and red meats was decided upon after intense pressure from the corresponding trades and groups of professionals and executives from the Agriculture Ministry. This decision was validated by the Cluster Strategic Council and not addressed in CMI.

The cluster started operations at the beginning of 2008, when its Strategic Council was established. The council is made up of the Minister of Agriculture (who presides over it); the Minister and Undersecretary of Economy; the Undersecretary of Agriculture; CORFO Vice-president; the National Directors of SENCE, INDAP and SAG and the Technical Secretary of the Chile Food Super Power Council as public sector representatives. For the private sector, the presidents of seven business association linked to the activities covered take part. There are no individual businessmen or academics represented on the council.

The work of the cluster was organized through the constitution of five technical committees, one for each cluster, which to date have held 47 sessions with the participation of 60 public and private sector experts. Representatives of institutions belonging to the strategic council sit on the technical committees as well as representatives of the academic sector and other players that are deemed relevant according to the theme being addressed. To date the strategic council has met five times.

For the three sectors examined in the BSG study, the suggested guidelines are considered basic, but it was decided to emphasize the definition of gaps at a sector level and not address all the transversal inter-institutional themes or those of a national character in order to accommodate the multiplicity of sectors included. In any case, some transversal themes are taken into account such as R&D and Innovation, Human Capital, Transference and Outreach Activities, Food Safety and Genetic Enhancement.

From this same viewpoint, the work agendas of the two sectors not considered in the NICC proposal were drawn up. In the wine area, an agenda proposed by FIA forms the basis for work and for meats participative methodology through workshops that include the main players is used.

The work agendas drawn up main goal is to define projects and strategic programs.

This work resulted in the identification of eight lines of actions or communal activities for the agricultural sector and twelve programs or strategic initiatives-

This cluster is by its makeup and scope difficult to manage and administrate. Even though the strategic council has not met very often, this has been offset by the work done with the five technical committees as the former only concerns itself with resolving general questions. The absence of academics and businessmen as figures in its strategic council and the over-representation of the public sector imply a bias towards debating about current sector problems.

The trade associations do not understand the roles of articulation and coordination held by the subcommittees and generally they believe that the mission of the cluster and the National Cluster Program is to finance the agenda's projects. When they finally end up talking to the fund executives, there is the impression that there are many conversations about the same subjects, which they interpret as more bureaucracy and inefficiency even though there are no major differences regarding the core issue.

Table No. A4 of Annex A shows the progress in the Food Cluster's agenda.

e) Global Services Cluster

This is the cluster that started operations earliest as in practice there was already within CORFO a program in charge of advancing the sector with a very fluid relationship with companies.

The strategic council was set up at the end of 2007 and is made up of four public sector representatives: CORFO vice-president, who presides over it, a Economy Ministry representative, an Education Ministry representative and a ProChile representative. The council is completed with four trade representatives, four company representatives and two academics. Thus in this case the public sector finds itself in a minority on the council. Since its constitution, the Global Services Cluster Strategic Council has met 15 times.

CORFO's Investment and Development Manager, who was appointed directly to the post, oversee the executive secretary. The executive secretary support team is made up of Investment and Development Division officials in addition to a coordinator designated by the cluster Unit.

Four work committees presided over by the strategic council members have been set up with a direct relation to fixed strategic guidelines.

- Regulatory Framework (presided over by the advisor representing the Economy Ministry),
- Human Capital (presided over by the Dean of The Engineering Faculty of the Universidad Católica of Chile),
- Promotion (presided over by the President of Pro Innovación Forum),
- Local Industry Development (presided over by the ACTI President),

This cluster in general terms endorses BCG's proposal. It only includes adapting to a line of action, specifically the topic of developing associativity because what the BCG study shows in this respect could be interpreted as support that excludes international companies which set up in Chile and local firms that want to export services. This theme, therefore, has become "local industry development".

To define the short-term (2008-2009) and long-term (2015) agenda, a consultancy company was hired which worked on each topic with the respective technical committee, defining the activities to address, bearing in mind the availability of resources.

The state of progress of the cluster is shown in Table No. A5 of Annex A.

5. Analysis of component 2 of the business innovation agenda: incorporating new knowledge into the productive process.

5.1. Analysis of the component's general level of progress.

The aim of this component is one of ICS's most critical as it is expressly designed to promote business innovation. Table No. 15 shows the result indicators associated with the component's general goal.

Unfortunately, the results of the National Innovation Survey for 2007-2008 are still not available, for which reason it is not possible to know what happened in the period from a first hand and little can be said on the matter. The previous antecedents are certainly not very encouraging as the results of the last available survey show a reduction in companies innovating in the country, a situation which is worrying from the point of view of public policy as even though ICS was not yet operating, there was still an increase in resources allocated for innovation. The challenge is for the new institutional regulation, like the changes introduced in design and basic operation, to show opposite results in the next survey.

However, there are a number of indicators which could be inferred from the analysis of the distinct subcomponents into which this line of action is divided. Essentially, the available signals are mixed and can be summarized in the following points:

(i) Increase in R&D actions

There has clearly been a large increase in R&D projects financed with public resources. There is an increase both in the number of projects started and sums mobilized. In addition, adjustments have been made to instruments to correct some of their historical shortcomings. From this perspective stands out the creation of programs which envisage investigations with execution periods of up to 10 years, following the example of the "three-axis" projects undertaken in Sweden. The introduction of this way of working is particularly important in the case of R&D activity in sectors linked to natural resources in which generating results entails long time periods[32].

(ii) Increase in associative R&D actions

An important ICS recommendation is to increase R&D efforts jointly between universities, technological bodies and companies, ideally including foreign capabilities. The expansion of projects carried out under the consortium model goes exactly in this direction. During this period, the instrument has been perfected, making it more user-friendly in reducing the material demands of the "government model" of the instrument.

(iii) Absence of important movement at patent level

The figures show that the generation of patents on the part of residents has not experienced much variation. This could well be due to a normal lag with respect to the results of a higher level of R&D activity, but is a theme that must be borne in mind.

(iv) Stagnation of company innovation projects

As has been mentioned before, the low dynamism of innovation projects developed directly by companies during most years of the period is probably the most worrying aspect of the tendencies detected. The 5th Innovation Survey already showed a reduction in companies developing innovation with respect to the previous survey. Moreover, the data regarding placements of the INNOVA support instrument to innovation in companies shows a stagnation in the period which only reversed last year thanks to the introduction of a rapid approval mechanism for projects of lesser scope. One factor that increases the need for concern over this matter is that the direct line of support for innovation in companies has shown itself to be a clear additional aid to private innovation and high social profitability in every evaluation of impact that has been made[35]. The low level of use of tax credit for innovation (only seven contracts since its startup) is another signpost in the same direction. The collected antecedents show that much of the problem is rooted in red tape that raises the costs of applying this type of support to companies.

INNOVA has started to introduce changes to its line of co-financing business innovation and has included as elligible the areas of innovation in management and marketing. The changes in the way of operating the standard line are too recent to be able to evaluate their effect on project approval times (the main complaint by entrepreneurs), but the creation of the "rapid implementation line" shows a big increase in projects approved to companies in 2009 This seems to confirm the need to persevere in lessening the procedures INNOVA uses to receive, evaluate and approve projects for business innovation. The universities and technology centers can support long waiting times but firms cannot.

(v) Creating Centers of Excellence

Starting from the premise that Chile needs to strengthen its capabilities to carry out R&D activities oriented to the business world, the government pushed through CMI and with NICC support the creation of a line of support to create Centers of Excellence. Through this line, Centers of International Excellencies in R&D interested in setting up in Chile in association with national R&D bodies are invited with the goal of establishing new capabilities and scientific and

35 A summary of the results of these evaluations can be found in Rivas, G. (2004). See also Benavente, J. M. y Price, J. (2009): "Public support for business innovation: from FONTEC to the present day." In *Productive development in Chile. CORFO's experience between 1990 and 2009.* Oscar Muñoz Editor. Catalonia Publications, Santiago

technological infrastructure in the country in addition to developing cutting-edge R&D and innovation lines with a high impact on the cluster's competitiveness and transversal sectors with dynamic growth potential. Public support could reach US$19.5 million for a period of up to 10 years. The program has two phases: 1. Qualification and 2. Project for Installation of the Center in Chile. Phase 1 has been open since March 2009. Various centers have applied: BTT, Fraunhofer, ABS and CIRON.

Table No. 15

Line of Action component 2: Incorporation of New Knowledge into the Productive Process					
Objective	Activity Indicators	Result Indicators	Source	2005	2009
To increase innovation in private companies, particularly collectively and in association with specialized entities	Placements of public resources to support business innovation.	Percentage of companies with support in universities for their innovation projects.	Innovation Surveys (200/2006).	11%	n.i.
		Percentage of companies that have support in technology institutes for their innovation projects.	Innovation Surveys (200/2006).	9%	n.i.
		Percentage of companies that collaborate with other companies to carry out innovation.	Innovation Surveys (200/2006).	24%	n.i.
		Number of Chileans requesting patents from EPO per million inhabitants	EPO Worldwide Statistical Patent Database	0.24 (2006)	n.i.
		Number of Chileans requesting patents from USPTO per million inhabitants	USPTO	0.98 (2006)	n.i.
		Percentage of companies that innovate with public support	Innovation Surveys (2005/2006).	5.2%	n.i.
		% of companies that innovate in regions.	Innovation Surveys (2005/2006)	18.2%	n.i.

5.2. Analysis by subcomponent.

Component 2, incorporation of new knowledge into the productive process, has six subcomponents or specific areas of ICS recommendation. These are:

a) To promote and improve R&D consortiums. The technological-business consortiums are considered a very powerful tool in promoting high-impact R&D, but ICS together with proposing its expansion also considers the need to improve its way of operating to make the mechanism faster to use, recognizing various means of associating and lowering the time periods to create it and substituting the requirement to include universities in ownership and opening up the possibility of subcontracting its services[36]. At the same time, the possibility has been put forward that some of these consortiums could evolve into real centers that carry out mission-oriented R&D in which companies in the sectors concerned would have a key role in defining that mission.

b) Increasing the coverage and reach of the business support funds. ICS considers it necessary to include areas of innovation in management and marketing in public support for innovation and also points out about the importance of making company access to the instruments easier.

c) To develop a system of state credits to finance the acquisition of equipment and intangible assets, channeling the support to smaller companies and projects with innovative content.

d) To professionalize the management of innovation in companies. It is desired that companies succeed in employing qualified professionals to move innovation in firms forward. This type of action is key to fostering a real culture of innovation in companies, which is one of NICC's main concerns.

e) To improve the tax regime for investment in company R&D, starting from an analysis of how it works, its impact on promoting R&D in companies and the quality of the initiatives developed.

f) To strengthen the backup and use of intellectual property. In this plan, the most relevant proposal is the formation of the Intellectual Property Institute, giving it the capabilities to fulfill its work, including particularly the generation and dissemination of information about the importance of protecting intellectual property and using available knowledge.

There follows an analysis of the behavior of each of the subcomponents of component 2.

[36] ICS, Vol.2 p.111.

a) To promote and improve R&D consortiums

Objective	Result Indicator	Source	2005	2009
a) To promote and improve R&D consortiums	Evolution of exports from consortium companies	INNOVA, FIA, FONDEF	No information Companies do not supply this information	No information
	Patents in application and generated by consortiums.	INNOVA, FIA	Innova: 0 FIA: 0	Innova: 0 FIA: 0
	New products or processes brought to market.	INNOVA, FIA	No information	No information
	Nº of consortiums that include foreign companies.	INNOVA, FIA	No information	No information
	Sales or products integrated into the consortium versus total of its productive sector.	INNOVA, FIA	No information	No information

Objective	Activity Indicators		
		2005	2009
To promote and improve R&D consortiums	Consortiums in operation	Innova: 5 FIA: 0	Innova: 16 FIA 5
	Companies involved	No information	No information

Notes

INNOVA defines consortiums as: "The coming together of business entities themselves or with technological bodies for the joint development of a project in the R&D and innovation environment based on complementary efforts by the units that make them up." Consortiums emerged as an R&D support instrument at the beginning of the millennium as a joint initiative between CORFO and CONICYT. Its commitment was to promote the formation of corporate structures which unified investigative capabilities and leading companies in their field to facilitate the development of new technological businesses through specialized units. The first consortium which operated as a pilot was that formed by CODELCO and Nippon Mining whose goal was to raise the lixiviation yield using bacteria starting with the application of genomics and biotechnological tools. Later tenders were developed open to other bidders, incorporating FIA into the plan. As a result, in 2005 there came about a set of

initiatives, particularly in spheres linked to foodstuffs: fruticulture, wines etc. However, the experience showed that the mechanism designed suffered from certain rigidities and that there were complications in resolving the domino effect of intellectual property.

NICC has recommended that the consortiums instrument be exclusively handled by INNOVA. However, there are some consortiums that are run by FIA and CONICYT, but since 2007 there have been no new calls from these latter two entities.

The goals sought through the consortium instrument are:

- To develop innovation projects with clear market orientation in technological themes of high economic relevance.
- The early inclusion of technological partners and companies into the projects so that both perspectives are incorporated from the time they are formed.
- To create alliances between companies and technological bodies measured in terms of results and businesses to develop, making possible risk-sharing and the leveraging of resources with respect to splitting the potential benefits.

INNOVA

In the 2004 INNOVA tender, four consortiums were appraised, to which five were added in 2005, the result of an open tender (three consortiums) and another focused on ICTs (two consortiums), two more were funded in 2008 to develop biofuels from cellulose and two in 2009 to develop biofuels from algae.

As part of the process of expediting access to the instrument, INNOVA created an open window mechanism to facilitate the use of this instrument, which could only formerly be accessed through special tenders. INNOVA finances up to 50% of the total project cost, requiring that at least half of INNOVA support for the beneficiaries is pecuniary (25% of the total project cost). The maximum sum of INNOVA support is $600 million for a period of up to 48 months. At the same time, under the open window mechanism, there is a line of support for pre-investment, whose goal is to support and strengthen the development of a consortium proposal. In this case, INNOVA support reaches 80% of the cost, requiring 10% of the total cost as pecuniary support from the beneficiaries. Maximum INNOVA support is $30 million.

Between 2005 and 2009, 41 pre-investment projects were approved for a total of $1,519 million with resource leverage on the part of the beneficiaries of 37% of the total[37]. The sectors with the highest presence in terms of initiatives are Information and Communication Technologies (38%) and Aquaculture. It should be noted that 48% of the resources provided by INNOVA were to initiatives of prioritized clusters. Seven projects were appraised in the period for a total of $ 6,559 million and resource

[37] See Management Report. Consortiums. Management and Systems Control Department. INNOVA, July 2009

leverage by beneficiaries of 55% of resources. The projects are developing in the mining, biomedicine (2), agriculture, fruticulture, energy and ICT areas.

FIA

FIA currently has one consortium functioning in the following sectors: fruit, milk, sheep, potatoes and beekeeping. The requirements for support from beneficiaries as well as the completion time are similar to those established for INNOVA. Since 2007, no new meetings have been held.

b) To increase access and scope of support funds to business innovation

Objective	Result Indicator	Source	2005	2009
b) To increase coverage and reach of support funds to business innovation	Proportion of companies that innovate that receive financing to innovate	Innovation surveys	5.2%	No information
	Companies that innovate in products as % of the total of companies that innovate	Innovation surveys	16.6%	No information
	Companies that innovate in processes as % of the total of companies that innovate	Innovation surveys	19.91%	No information
	Companies that innovate in management as % of the total of companies that innovate	Innovation surveys	26.11%	No information
	Companies that innovate in marketing as % of the total of companies that innovate	Innovation surveys	10.89%	No information
	% of companies that innovate that know of some instrument of public support	Innovation surveys	38.3%	No information

Objective	Activity Indicators		
		2005	**2009**
To increase coverage and reach of support funds to business innovation	Placement of public funds in business innovation in regions	4,640,959,609	10,090,710,289 (2008)
	Evolution of placements ($) in new instruments created (only rapid implementation)	0	no information
	Evolution of placements in instruments of business innovation (Innova, Fondef, FIA)	$14,305,540,551	$19,505,421,609 (2008)

Notes

This subcomponent is one of the key elements of the line of action in the area of business innovation as it corresponds to the support directly afforded to companies so that develop innovations. Even though in the activity indicators are included FONDEF and FIA support, it is certain that the main actor in this field is INNOVA, particularly through its line of support to innovation to companies

As shown before, in this last line there is confirmation of worrying stagnation in projects approvals, which only turned round last year. The figures with respect to projects approved to companies shown in the following table are very telling in this respect. Note that during this same period, following a NICC suggestion, INNOVA broadened the concept of innovation, including as eligible innovation projects in the management and marketing areas, although no increase in the number of projects approved had been observed as had been hoped.

Table No. 16

Innovation projects approved to companies, INNOVA.				
2005	2006	2007	2008	2009
161	124	158	129	335

Source: INNOVA

According to the antecedents collected both from within INNOVA as from users, a major problem is the long time it takes to process requests for support. As far as can be seen, business innovation projects can take eight months to be approved. A recent study commissioned by INNOVA reports that there is a high degree of satisfaction

from users of this line as well as positive results from projects carried out[38]. However, it should be pointed out that this concerns interviews with users that (i) carry out projects with support from the entity, which tends to create a positive bias in responses; (ii) there is an important proportion of old users and the increase in response times is a phenomenon of the last few years and; (iii) in spite of their positive appraisal, their main gripe is with the bothersomeness of the proceedings and the long time periods (13% of interviewees).

It should be noted that a client satisfaction study already developed in 2006 had indicated that response times were the item worst viewed by clients and the attribute they required most[39].

Some examples of the problems that arise in the process and which in some cases are associated with the new management process of projects carried out are (i) not accepting that a project is approved with suggestions, only that it is approved or rejected; (ii) payments can only be made on the first or 30th of the month, which means if a project is approved on 6th, one has to wait until the end of the month to start operations and; (iii) projects must try not to be too specific in the detail because if they change, they must return to committee to seek authorization for the change.

The authorities are aware of the existence of this problem and are seeking ways to resolve it. One of the initiatives implemented this year, which was presented as part of the government response to the economic crisis, was the creation of the support mechanism for projects of "rapid implementation or "Express Window" as it is informally known. This method approves lesser scale innovation projects in a maximum period of 60 days. For projects of less than $90 million, INNOVA subsidizes up to 70% of the project cost, which is an added incentive as the norm is for INNOVA to provide up to 50% for projects of this type. If the project exceeds $90 million to a maximum total cost of $340 million, INNOVA can finance up to 50% of the project.

This method of support has been very successful according to INNOVA authorities and goes some way to explaining at least half of the projects approved in 2009. In other words, had it not been for this, the number of projects approved would have remained relatively stagnant. More recently, it has been established that instead of requesting all the legal antecedents from firms before applying, now only a validation certificate is needed and the rest of the necessary documents only need to be delivered if the project is approved. However, it is very early to evaluate the effect of this measure, but it is clearly a step in the right direction.

[38] "INNOVA Chile Projects de. Results Reports." INNOVA, August 2009.

[39] Evaluation of service quality. Committee INNOVA Chile. May 2007.

c) To develop system of state guarantees for loans to finance innovation

Objective	Result Indicator	Source	2005	2009
c) To develop system of state guarantees for credits to finance innovation	Nº of SMEs that use guarantees.	**CORFO**	**n.i.**	**n.i.**
	Nº de companies that use guarantees for acquisition of intangible assets	**CORFO**	**n.i.**	**n.i.**

Notes

In Chile, three public support planes have been developed to generate credit guarantees: FOGAPE, FOGAIN and the recent law allowing the creation of mutual guarantee associations.

FOGAPE is a Guarantee Fund that was created in the 90's to facilitate access to credit to small and microenterprise. Although FOGAPE includes in its objectives supporting fixed assets investments, the overwhelming majority of the operations backed by the fund are short-term loans (less than 24 months) providing working capital to firms. The major benefit generated by FOGAPE resides in the "bankarization" of very small firms that were excluded of the system.

FOGAIN is a guarantee scheme created by CORFO to reach bigger firms and loan operations than FOGAPE and it is linked to preferential funds that CORFO provides to Banks to finance loans to SMEs. Through this scheme CORFO guarantees up to 50% of the potential loss of a loan granted to a SME by the Banks that operate under the system. To get access to FOGAIN and to the funds provided by CORFO, Banks should bid for its support committing to lend a given amount of resources to SMEs[40]. They should pay a 2% fee over the non-disbursed part of the amount committed. The minimum length of the loans that can access to FOGAIN is 3 years and they can include up to 30% of working capital. If after a given period of time the banks don't use the FOGAIN they have gained access to, they lose the option to it and a new bidding process is organized.

Though originally established with a capital of US $ 30 in 2007, in 2008 it was decided to increase FOGAIN to reach US $ 100 million. Given the fact that the fund operates with a leverage of 1 to 10, it is estimated that it can support up to US $ 2000 million in loans.

Notwithstanding their importance, none of these funds leads towards the objective established by NICC of helping to obtain finance for innovation activities based on the

[40] Banks have committed themselves to lend US $ 450 million with CORFO's resources.

acquisition of intangible assets, or for investment pretending to use this kind of assets as collateral. This topic has neither been prioritized nor discussed by CMI. However, in interviews with INNOVA staff and the Ministry of Economy innovation department, this subject emerged as one of growing importance in the face of the problems being met in applying direct support to companies that wish to innovate.

d) To professionalize firm`s innovation activities

Objective	Result Indicator	Source	2005	2009
d) To professionalize management of innovation in companies	Number of companies that employ specialized staff in managing innovation paid for with public funds	**INNOVA**	**0**	**Pending (INNOVA to report)**
	Number of trained staff	**INNOVA**	**0**	**No information**

Objective	Activity Indicators		
		2005	**2009**
To professionalize management of innovation in companies	Allocation ($) in lines of support for professionalization	0	Pending (INNOVA to report)
	Allocation ($) in lines of support for professionalization	0	Pending (INNOVA to report)

Notes

In April 2009, bidding rules were approved for a support line to attract professionals for R&D and innovation projects, an instrument that works through an open window mechanism and whose objective is to support the development of business innovation capabilities through co-financing the employment of qualified professionals or technicians to help in with an R&D or I project. To obtain this benefit, the companies must present a proposal explaining the project and identifying the professionals or technicians they wish to employ. INNOVA support in contracting staff is up to 70% of gross salary in the first year and up to 50% in the second. The resources are available depending on the caliber of the contracted professionals and technicians and do not exceed $1 million for professionals and $500,000 for technicians. It should be noted that this financing comes with development support for the R&D and innovation project itself, which has an INNOVA support cap of $120 million up to two years in total.

e) To improve the tax incentive program for R&D

Objective	Result Indicator	Source	2005	2009
e) To improve tax management of R&D investment	Research centers registered with CORFO to operate within the plan	**CORFO**	**0**	**52**
	Increase in the number of research centers registered with CORFO with the new plan	**CORFO**	**n.i.**	**n.i.**
	Companies that use tax franchising for R&D projects contracting services with research centers registered with CORFO	**CORFO**	**0**	**7**
	Increase in companies that use tax franchising for R&D projects contracting services with research centers registered with CORFO	**CORFO**	**n.i.**	**n.i.**
	Private resources mobilized thanks to tax franchising	**CORFO**	**0**	**161,000,000**
	Increase in private resources mobilized thanks to tax franchising	**CORFO**	**n.i**	**n.i.**

Notes

The Tax Credit Program began operations in April 2008 and is part of the Company Innovation Sub-department of INNOVA Chile. Law 20.241 came into force from May 15, 2008 (with the acknowledgement that the R&D Center Registry Regulation is constitutional). In accordance with the same law N° 20.241, the procedures for

implementing the tax incentive must be in place within the framework of the Administrative Procedure Law, which obliges compliance of the stages of the process and existing timescales.

In simple terms, the process of obtaining tax credit entails a company presenting an R&D project in association with an accredited Technology Center. If the project is approved, part of the costs can be deducted from the company's tax declaration.

In accordance with that laid out in Law N° 20.241, the research centers must fulfill the following requirements to sign up with the with the Center Registry.

- To have as main objective the realization of R&D activities.
- To have in the country an organization and means, both personal and material, sufficient to undertake R&D activities.
- To be functioning, carrying out activities of basic research, applied research or technological development in science or engineering for at least twenty-four months prior to the request for enrollment in the registry.
- To have systems of financial-accounting systems adequate to allow them to follow up R&D contracts included in current law.
- To present a sworn statement, signed by the representative, which states the antecedents presented to CORFO in order to obtain enrollment in the Research Center Registry are authentic, trustworthy and true and are fully in effect on their delivery date.

The process of enrolling with the Center Registry is fairly fast and can be done online. Once the verification is completed, which only involves the fulfillment of the legal requirements for enrollment with the registry, the Tax Credit Program prepares a report which considers the analysis of technical and legal aspects for approval or rejection of the recommendation for presentation to the Collegiate Body. To date, there are 52 centers registered all over the country, apart from in the extreme south: Aysén and Magallanes.

R&D contracts must be certified by CORFO, entity which carries out a technical evaluation of the contracts which only seeks to verify that they effectively have as their objective the realization or execution of research or development works as they are defined by law without considering the relevance or worth of the initiative and

maintaining due secrecy. At the same time, CORFO verifies that the center with which the contract is carried out is duly accredited. With these antecedents, a report is prepared which is presented to a CORFO Evaluation Panel. CORFO is at the same time charged with overseeing the execution and fulfillment of the contracts. The taxpayer can make payments by debit to the tax benefit from the date of the R&D contract certification resolution (however, activities can begin before).

One of the most complex actions to be taken in this process is that the price agreed in the contracts must properly reflect the costs of carrying out the R&D activities and that the said price corresponds to market values. In all cases, on the basis of certified R&D contracts, the Tax Credit Program is drawing up a reference chart regarding the price of the most recurrent activities in the R&D area for an industry.

To date, there is no initiative to improve the system.

f) To strengthen the use and protection of intellectual property

Objective	Result Indicator	Source	2005	2009
f) **To strengthen the safekeeping and use of intellectual property**	Number of patent requests	**INAPI**	**3,499**	**3,952**
	Number of patents requested by Chilean companies	**INAPI**	**572**	**538**
	% of patent requests by Chilean companies of total requests	**INAPI**	**16%**	**13.6%**
	Number of patents granted	**INAPI**	**638**	**1399**
	Response time in processing patents granted	**INAPI**	**No information**	**No information**
	Percentage of companies with patent ownership	**INAPI**	**7.2%**	**9.3%**
	* Includes patents for inventions, utility models and industrial design			

Objective	Activity Indicators		
		2005	2009
To strengthen the safekeeping and use of intellectual property	Number of companies that have used public support for use and protection of intellectual property (CORFO, FONDEF)	N.A	N.A
	Evolution in patents requested under FONDEF project framework	29	N.A
	Evolution in patents granted under FONDEF project framework (After 2005)	N.A	N.A

Notes

Without a doubt, the greatest advance in this field is the creation and startup of the National Institute of Intellectual Property (INAPI) from January 1, 2009. However, those who work for the body do not feel fully incorporated into the innovation policy. They feel that they are not consulted enough in spite of the role they perform and the potential for support they provide.

Among the actions they are pursuing is the creation of a tool to transfer know-how to make knowledge of patents available to clusters which is currently being worked on with CORFO, although the conceptual design was carried out with the Ministry of Economy Innovation Department. At the same time, work is being done with CORFO on the financing of industrial property with the goal of incorporating the results of this work into the base of future proceedings.

It was hoped too that the creation of INAPI would result in a lowering of the time involved in granting brands (from 8.7 months on average to 6.5 months) and patents (from 90 to 40 months on average)[41]. Unfortunately there are no measurements currently available of the response times that allow us to verify whether this plan has advanced.

The incorporation into PCT has had no major effect so far, although there has been a lowering in national requests, of which only 12 have been booked since June 2009.

Within INAPI there is the Dissemination and Intellectual Property Information Unit, which is an agreement with universities that timetables and carries out information activities in line with those laid down by ICS.

[41] Presentation by the Director of the then Industrial Property Department, October 2006

6. Analysis of component 3 of the strategic line of business innovation: strengthening technology dissemination.

In Chile, there are great inequalities in productivity amongst companies according to the size of their operations. According to Infante, R. and Sunkel, O. (2009)[42], the productivity differentials by worker reach 24 times between large and small companies in the manufacturing sector, 9 times in commerce and 4 times in agriculture. These differentials are slightly less when the comparison is made between small and medium-sized companies. Thus in Chile, there seems to be a small group of large companies that have higher productivity standards and a large group of SMEs, not counting micro businesses, with a very low level of incorporation of technology and up-to-date procedures. Twenty-four per cent of the occupied personnel correspond to workers in large companies.

It is this type of antecedents that have led NICC to recommend the need to implement an aggressive policy of spreading technology to improve smaller companies' levels of access to better levels of information, knowledge and proficiency of existing technology options.

As the results of the 6th Innovation Survey are not yet available, little can be said about the general results obtained on actions taken in this area. However, even though the results of the survey were available, it is debatable whether too much could be inferred about the initiatives that have been developed as this is the newest area of public action promoting innovation. As we shall see from analyzing the situation by subcomponent, the best part of larger scale initiatives have begun to be implemented recently, notwithstanding positive support, but have been limited in their coverage of previous initiatives, particularly regarding CORFO's SME development programs.

6.1 Analysis of the general progress of the component.

The Annual Manufacturing National Survey is the only source of data that can be used on a regular basis to evaluate the evolution of the productivity gap among firms of different sizes. Its major limitation is precisely that it can only offer a panorama of what is happening in the manufacturing sector, therefore accounting for less than 20% of the GDP. Moreover the available data has two years lag.

As it can be seen in Table No. 17, between 2005 and 2007 there was an expansion in the productivity gap between big and small size firms. If the comparison is made between big and medium size firms the result is quite the same as data shows an increase in the gap which is explained by a stagnation of

[42] Infante, R. y Sunkel, O. (2009): "Chile: hacia un desarrollo inclusivo" ECLAC Review 97, april. Results are obtained using data from the input-output matrix of 2003 and from the National Tax System.

the Value Added per worker in the medium size segment vis a vis a sharp rise in the value added generated by bigger firms without a similar movement in employment[43].

[43] See the report "Resumen y brechas detallado" prepared by ASERTA consulting. January 2010.

Table No. 17

Line of action component 3: strengthening technology dissemination							
Objective	**Activity Indicators**			**Result Indicators**	**Source**	**2005**	**2009**
		2005	**2009**				
To increase national company productivity (particularly SMEs) , lessening the their gap in technology with better international practices	% of small companies that have innovated in products	15.5%	**N.I.**	Evolution of manufacturing productivity small v/s large company	ENIA	2.50	3.24 (2007)
						It corresponds to the division between the Value Added per worker of firms with more than 1000 employees and those with 10 to 49	
	% of small companies that have innovated in processes	19.5%	**N.I.**	Evolution of manufacturing productivity medium v/s large company	ENIA	1.17	1.84 (2007)
						It corresponds to the division between the Value Added per worker of firms with more than 1000 employees and those with 50 to 999	
	% of small companies that have innovated in management	27%	**N.I.**				
	% of small companies that have innovated in marketing	11.5%	**N.I.**				
	% of medium companies that have innovated in products	23.7%	**N.I.**				
	% of medium companies that have innovated in processes	31.5%	**N.I.**				

	% of medium companies that have innovated in management	36.5%	**N.I.**				
	% of medium companies that have innovated in marketing	13.6%	**N.I.**				

6.2. Analysis by subcomponent

ICS recommends strengthening the dissemination of technology through three main strategies.

a) To establish a National System of Technology Institutes (SINTEC). Like the body that administrates public companies, SINTEC would seek to be a professional body capable of providing strategic orientation to public and semi-public technology institutes, define their investment needs, carry out management control works and develop certification works for transfer and dissemination. The bodies that qualify under this criterion and that would participate in this system total 14 in number[44].

b) To create a network of intermediary technology transfer and R&D bodies. Capabilities in this field are scant and badly articulated in Chile and there is no system of guaranteeing the quality and reliability of services provided by existing offerers.

c) To develop a network of centers and implement a program of technology dissemination in smaller companies. At the same time, measures such as disseminating international standards and requirements, evaluating the creation of a policy of public technology purchases, encouraging the development of contracts between private companies that incorporate improvements in individual and joint innovation processes and increasing company access to digitalization are proposed.

There follows an analysis of the progress made in each subcomponent of this area.

a) Creating a network or National System of Technology Institutes

Objective	Result Indicator	Source	2005	2009
a) To create a network or national system of technology institutes	Number of entities that take part in the network	**Ministry of Economy**	**N/A**	**N/A**
	Increase in services provided by institutes to companies	**Ministry of Economy**	**N/A.**	**N/A**

[44] These are the National Institute of Farming Research (INIA); Chile Foundation; Institute of Fisheries Development (IFOP); Chilean Commission of Nuclear Energy (CCHEN); National Service for Geology and Mining (SERNAGEOMIN); Military Institute for GeoTabley (IGM); Natural Resources Information Center (CIREN); Forestry Institute (INFOR); Navy HydroTableic and OceanoTableic Service (SHOA); Antarctic Institute of Chile (INACH); National Standards Institute (INN); Mining and Metallurgy Investigation Center (CIMM); Air Survey Service (SAF): and National Hydraulic Institute (INH).

Notes

The Ministry of Economy commissioned a study to analyze the value, opportunity and feasibility of creating a system like the one proposed by NICC[45]. This study showed a series of weaknesses in existing institutions and recommended a case-by-case treatment program to define clearly the type of contribution each institute does, the capabilities required to strengthen this contribution, the type of adjustments necessary in its governing structure and proposals for a financing model. With these antecedents, the Ministry of Economy presented a proposal for a set of concrete initiatives to carry out in select institutes during 2009 similar to the development studies for the design of SINTEC.

b) To generate brokers of technology transference and R&D

Objective	Result Indicator	Source	2005	2009
b) To generate brokers of technology transference and R&D	Technology Intermediaries operating	**INNOVA**	**N/A**	**0**
	Firms served by intermediaries	**INNOVA**	**N/A**	**0**
	Accredited intermediaries	**INNOVA**	**N/A**	**0**

Objective	Activity Indicators		
		2005	2009
To generate offers by transference and dissemination intermediaries	Number of placements of pertinent lines	0	739,633,740
	Number of placements	0	14

Within the framework of a program with the World Bank, INNOVA designed and is implementing a new instrument that seeks to support the creation of Centers of Technological Extension to operate as brokers as ICS is proposing. It is hoped that these centers will operate in a similar way to schemes such as the Manufacturing Extension Partnership (MEP) in the US. For the design phase, specialists from Georgia Tech with wide experience of the subject collaborated. The support program to shape the extension centers consists of two phases. In the first, there is support for the drawing up of proposals with a pre-investment-type plan. In this phase, 57 projects from universities, technology centers, trade associations and companies were presented, of which 14 projects were approved in the pre-project phase (the figures reported in the table of activities of this subcomponent refer to this phases). After receipt of final proposals, five centers will be funded, preferably in sectors linked to

[45] "The Public Technology Institutes study; main intervention alternatives" was drawn up by SEMINIA consultants and delivered at the end of 2008.

prioritized clusters.

Another initiative underway is one to support the creation of world-class technology commercialization centers under the CITES banner. The goal is to create the ability to generate technology business in universities and other research centers from the results of their research. This has to do with maximizing the social benefits generated by the research that uses public funds, which at present are low in Chile in terms of patents or the rise in new ventures.

This is an old concern for the players in the system. Already in 2003, FONDEF and CORFO's FDI together commissioned a study from Foudación Chile on the matter. Recently NICC itself commissioned a new study, which had a counterpart made up of INNOVA professionals. From these antecedents, a proposal was developed which has been taken up as part of their objectives by the Ministry of Economy.

A challenge for the program will be to achieve the formation of alliances between different players as it is felt that given the size of the country, there is no critical mass to have more than two or three centers. CITES must function as non-profit organizations in close concert with the units of results transfer that have been created in the majority of universities as well as technology institutes.

It is hoped to put out to bid the creation of at least two CITES in March 2010 with a budget estimate per CITE of around US$700,000. Public support would be provided for a period of 10 years with sums decreasing over time.

c) To generate network of technology dissemination centers and implement dissemination program (with focus on SMEs)

Objective	Result Indicator	Source	2005	2009
c) To generate network of technology dissemination centers and implement dissemination program (with focus on SMEs)	Companies served by entities	**INNOVA**	**N.I.**	**9,680 (2008)[(1)]**
	Number of companies that have launched technological missions	**INNOVA, FIA**	**N.I.**	**N.I.**
	Number of companies that have participated in technology dissemination programs	**INNOVA, FIA**	**N.I.**	**N.I.**

Source: INNOVA. (1) Estimate of node users carried out by the Dissemination and Technology Transfer Sub-department

Objective	Activity Indicators		
		2005	2009
To generate network of technology dissemination centers and implement dissemination program (with focus on SMEs)	Dissemination and transfer bodies operating	0	106 (1)
	Placements ($) in Technology Missions	$701,492mn (2)	$2,493mn (3)
	Number de Technology Missions	48	194 (3)
	Placements ($) in contracting experts	$158,895mn (2)	$274mn (3)
	Placements ($) in contracting experts	16 (2)	55 (3)
	Placements ($) in technology dissemination programs	$181,258mn (3)	$1,496mn (4)
	Operations in technology dissemination programs	3	26 (4)
	Placements ($) in technology nodes	0	$4,134mn (4)

Source: INNOVA and FIA. Figures in $ from October 2009 (1) Technology nodes: 52 in phase 1 and 54 in expansion and strengthening phase 2. (2) INNOVA data (3) INNOVA and FIA data (4) INNOVA data from 2008.

Notes

Actions to disseminate technology by CORFO and FIA

CORFO like FIA have a tradition of action in the field of disseminating technology. However, a marked difference in the period under review is the explicit acknowledgment of the importance of acting more decisively in this field and with this of a large increase in activity in the matter, particularly by INNOVA.

Historically, CORFO developed a number of initiatives to modernize SMEs which incorporated some degree of technology dissemination. In this respect, Supplier Development Programs (PDP) and the instrument known as the Technical Assistance Fund (FAT) stand out, both managed by the Division of SMEs Promotion. In the case of PDPs, it supports a program of technical transfer from a large company to its SME suppliers, which is structured from an initial analysis establishing annual targets to hit in support projects which typically last three or four years. Another instrument which generates transfer effects, although to a lesser degree as it is not the principal

purpose, is PROFO, which consists of co-financing associative common projects developed by at least five companies[46].

PROFO has been decreasing its coverage as since 2005 the conditions to form them have increased, incorporating the requirement that companies must develop associative businesses to receive support. This change noticeably reduced the number of PROFOs and companies participating (which hit a peak of 4,200 in 2004). There are no studies that allow the evaluation of the impact of this change in terms of the efficiency of the use of public resources, which is why it not possible to comment in this respect.

Regarding support through FAT, the instrument was tuned so as to cover more clearly defined needs on the part of companies. In this way, FOCAL was established in 2004 which is technical assistance designed so that companies are certified under a Chilean quality norm.

Table No. 18

DEVELOPMENT IN NUMBER OF OPERATIONS AND BENEFICIARIES OF CORFO DEVELOPMENT INSTRUMENTS

CORFO 2005-2008

	2005		2006		2007		2008	
	Oper	Benef	Oper	Benef	Oper	Benef	Oper	Benef
FAT			1,005	1,444	781	995	656	681
FOCAL			2,062	2,292	2,062	2,808	1605	1,721
PDP		4,410	214	5,083	274	6,233	301	6,808
PROFO		3,089	255	1,724	221	1,303	209	1,233

Source: CORFO

The FIA has various mechanisms designed to spread technology to agricultural producers. In fact, a good part of the justification for the existence of FIA is rooted precisely in the opinion of sector professionals that a body with special capability to transfer knowledge and research results to small and medium-sized agricultural producers is needed. However, the figures on the operations of dissemination instruments are quite low as can be seen in the following table. This could be explained because there has not been an important increase in the FIA budget in the period and the body has allocated important resources to higher cost activities such as consortiums.

[46] For the PROFO and PDP instruments, see Dini, M. (2009): "Equity capital and associated programs: thoughts on CORFO instruments and development strategies." In *Productive Development in Chile. The CORFO Experience from 1990-2009*. Editor Oscar Muñoz. Catalonia Publications, Santiago

Table No. 19

Number of technology dissemination instruments FIA			
	2007	2008	2009
Technology tours	14	6	12
Consultants	25	31	33
Dissemination events	13	16	5

Source: FIA

INNOVA Technology Dissemination Actions

This entity has taken up the challenge of widening its dissemination actions both through adapting existing programs and above all incorporating new lines of action.

As part of the predecessors of INNOVA, FONTEC had two mechanisms available to carry out technology dissemination: technology missions to foreign countries and supporting the contracting of international expert consultants. Both mechanisms were collective in nature, which never supposed a problem about the missions but did greatly limit the contracting of foreign experts. From 2006, the restriction on acting collectively to gain access to support to bring in experts was abolished, although a level of higher incentive for collective actions is maintained.

The new instruments created include:

- Technology Dissemination Programs (PDT). This consists of supporting the lessening of technology of a significant group of sector companies regarding better practice. This instrument operates through the open window mechanism in two manners. If the applicant can provide precise antecedents about the gap it wishes to close and about with who it worked, there is immediate access to the benefit. If not, the applicant can opt for a first phase of identification and quantification of the gaps, for which it must attach the interest of the possible beneficiaries. After this phase, the implementation of the program starts.

- Technology internships. This is a subsidy that supports the training of professionals or technicians in Chilean firms in technology centers or foreign companies to gain and subsequently transfer knowledge, practices and techniques that allow the development of innovation in Chile. It is a subsidy that supports the training of professionals or technicians from Chilean companies in technology centers or foreign firms so that they gain and later transfer knowledge, practices and techniques to allow the development of innovation in Chile. Placements are up to three months.

Table No. 20

Number of operations approved of INNOVA technology dissemination instruments				
	2005	2006	2007	2008
Technology Missions	48	134	173	163
Experts	17	46	58	43
PDT	3	11	12	24
Internships		27	24	15

Source: INNOVA

However, the most significant action developed by INNOVA in the period, at least in terms of coverage, is the generation of a network of Technology Nodes. The nodes are made up from INNOVA support to entities which present a program to develop dissemination of information and knowledge activities in some economic activity category or sector including information about public instruments to support innovation. The instrument was created in 2006, launching a bid in which 99 nodes were awarded which began operations in 2007. It is interesting to note that 35 of these nodes were created by universities.

Originally the idea was that the financing granted by INNOVA would operate as "seed capital" to permit the entities to start up and then operate autonomously. An analysis of the process carried out at the end of 2008 suggested the idea of generating a second phase of the program in which the existing nodes could start to strengthen and deepen the capacity for action by the best entities. At the same time, it was decided to open a new tender for the installation of nodes. In this way, at present there are 52 nodes operating with INNOVA support for its installation and 54 nodes that have passed to the second phase mentioned. There is no information about the permanence or not of the nodes which do not have INNOVA support.

7. Analysis of component 4 of the strategic line of business innovation: supporting entrepreneurial activities

7.1. Analysis of the general level of progress.

Innovation happens as much through efforts deployed by existing companies as by the incorporation of new market players. Developing the entrepreneurial spirit and facilitating the development of new businesses must be part of any strategy that seeks to promote innovation. However, specific measures are also required to empower the launch of entrepreneurial activities which, with or without technical content, have high growth potential because their development is severely limited by market shortfalls related to the very intangibility of their assets and imbalances of information which limit their access to traditional sources of finance.

In developed countries, but particularly in the US and Israel, a real venture capital industry emerged which sustains itself through a dense web of initiatives such as angel networks, incubators of technological ventures, funds for early support to businesses etc. But they maintain themselves too in a culture that nourishes entrepreneurship and views failure as part of the learning process.

In Chile, efforts to develop venture capital and its supports hearken back to the initiatives rolled out by CORFO from 1995 onwards. However, progress has been slow, in part due to the small size of the market which makes it difficult for new businesses to mature inside the national borders demanding a very rapid internationalization and causing also problems regarding the exit strategy of the investors; in part is also due to a low flow of active projects and in part due to the very lack of willingness by entrepreneurs to use this mechanism to expand their businesses.

But the slowness in progress is also related to the need to have available the combination of elements that furthers the change of entrepreneurial activities from ideas to the formation of companies eligible for venture capital funds. The elements of this real chain of entrepreneurship, which includes incubators, seed capital funds, soft financing lines for venture capital funds and angel networks, were set up during these almost 15 years as were the changes required in the legal and regulatory framework[47].

These advances are in good measure maturing at present. In this respect, the increase in public resources mobilized in direct support of the new ventures through the support of angel investors, seed capital and the routing of resources to venture capital funds (see Table No. 20) is interesting.

[47] For advances in this industry to measures taken in the current decade see Rivas, G. (2005): "Venture Capital and its development potential in Chile, Antecedents and proposals" Chile Foundation 21, Ideas Collection Year 6, N° 55, June, Santiago. For recent analysis see: "Strategic orientations to strengthen public support for entrepreneurial activity". National Council for Innovation in Competitiveness, May 2009.

There are other encouraging signs. One of the most interesting is the participation of large companies in the project designed to nurture the development of spin-offs or corporate ventures. Firms such as Forestal Arauco, Televisión Nacional de Chile and Virutex-Ilko are normally far from the circuit of public programs supporting innovation and the sole fact that today they are participating in this program represents great progress as it integrates them into this national "dialogue" on innovation that Chile needs to develop.

Another new instrument is one which relates to the Technological Packaging Line. This has to do with a subsidy which supports the process of packaging of sophisticated businesses from the technological point of view with high growth potential. Packaging means the process of developing products that have demonstrable commercial opportunities. The support is divided into two stages. In the first, the design of the business is financed and in the second the development of the business proper. This is a new line whose performance it is not yet possible to evaluate.

An initiative that should be highlighted is the development of a new instrument to support early venture capital by CORFO. Even though CORFO has had various lines of support for venture capital funds, the orientation of general investors has favored investments in expanding companies' more than high-risk ones. The new instrument, which will be added to the two existing lines of support for capital funds, focuses on supporting the funneling of resources exclusively to emerging companies which show they are developing projects that are innovative and /or of high growth potential. CORFO provides the financing in the form of a long-term credit to investment funds that invest in those companies. One fund is already operating in this line.

Recognition of the importance of creating a favorable atmosphere for entrepreneurial activities has led CORFO to organize a tender for projects to improve the direct environment where these businesses operate. In this way, it is looking to support initiatives of cooperative action on the part of incubators, angel investors or the same entrepreneurs. Fifty projects have been presented which are in the process of evaluation.

Line of action component 4: support for entrepreneurial activities				
Objective	Result Indicators	Source	2005	2009
To increase new entrepreneurial activities	Total venture capital in companies % of GIP		**N.I.**	0.23 % [(1)] (2007)
	Venture capital in early stages US$ millions	NICC	**N.I.**	0.06% (2007) [(1)]

(1): "Financing entrepreneurial activity in Chile: Scale and scope of public support programs" J. E. Amorósa, M. Atienzab and G. Romaníc, http://o.b5z.net/i/u/10062015/i/Financing_Entrepreneurial_Activity.pdf

In spite of the advances mentioned, the development of the venture capital industry is still in its infancy in Chile. According to the NICC study already cited, the participation of venture capital in GDP in Chile is lower than expected for its level of development and even more so in the case of venture capital for early stages. From this, NICC published at the beginning of 2009 a document that reinforces the orientations already mentioned for the strategy in this field. These will be taken up again in the analysis of each subcomponent.

Table No. 20

Evolution of funds directed to entrepreneurs by CORFO

(Thousands $, 2008)

	2005	2006	2007	2008
Seed capital *				
L1	**n/a**	1,960,763	749,337	539,350
L2	**n/a**	1,519,744	2,650,206	3,370,669
		3,480,506	3,399,544	3,910,019
Funding angel networks*				
		204,315	389,322	160,800
Venture capital funds**				
F1	1,768,935	442,682	-	-
F2	956,725	8,319,395	12,309,020	11,535,824
F3		208,268	6,209,530	4,432,050
Total	2,725,660	8,970,344	18,518,550	15,967,874
Total entrepreneurship support	**2,725,660**	**12,655,165**	**22,307,415**	**20,038,693**

Source: "Strategic orientations to strengthen public support for entrepreneurial activity", NICC, 2009.

7.2. Analysis by subcomponent.

ICS is focusing on six points to promote entrepreneurial activity in the country.

a) Strengthening enterprise incubators. The Incubator Program began in 2001 with a pilot scheme for three incubators in the Bío Bío region. Later this was extended to the whole of Chile and initiatives were developed in almost all regions, mainly through universities. However, in many cases things did not work out as hoped, which is why NICC is proposing a number of measures to strengthen and orientate them more towards achieving results. In this sense, ICS proposes revising its incentives plan, associating them with the successful exit of companies and promoting the entry of new agents (profit-making) to fulfill the incubation role.

b) To support the development of spin-offs. The creation of an instrument to support the generation of new ventures from existing companies is proposed.

c) To increase and develop venture capital funds. As mentioned previously, venture capital is still in its infancy in Chile, particularly for the early entrepreneurship phases. ICS propose focusing efforts in this stage.

d) To strengthen networks of angel investors. ICS proposes increasing incentives to this type of early investor and improving the system of incentives established in the support plan for the makeup and operation of angel investor networks.

e) To increase the number of brokers and access to venture capital funds. INNOVA directly handles a subsidy that supports the launch and startup of innovation business projects with high growth expectations. The subsidy is provided to projects that come with the support of bodies registered with CORFO as sponsors**,** which provide support to entrepreneurs in place of CORFO. This system imposes severe limitations on growth as it depends on CORFO's internal capabilities. Moreover, the sponsors are not necessarily properly qualified to develop this work efficiently. For this reason, ICS proposes outsourcing the program and increasing sponsors, particularly to include incubators.

f) To streamline the bankruptcy system. The new bankruptcy law of 2005 (Law No. 20.073) permits the streamlining procedures through agreements between creditors and debtors. However, it is necessary to define faster procedures for reorganization, for company bankruptcy and above all to establish clear responsibility of carrying out supervision of the receivers. There follows an analysis of the progress of each subcomponent.

a) To strengthen enterprises incubators

Objective	Result Indicator	Source	2005	2009
a) Strengthening enterprises incubators	Number of companies in incubation	Evaluation by Incubators-Innova Chile, GERENS, 2006	**150**	**no information**
	Number of companies exiting	Evaluation by Incubators-Innova Chile, GERENS, 2006	**20**	**no information**
	Evolution of entrepreneurs supported by incubator seed capital	**CORFO**	**17**	**no information**
	Number of new agents in company incubation	**CORFO**	**0**	**no information**
	Number of incubators administrating seed capital	**CORFO**	**0**	**18**

Objective	Activity Indicators		
		2005	**2009**
Strengthening company incubators	Number of incubators strengthened	**0**	**12**
	Number of incubators working with Institute IC2 (Austin, Texas)	**0**	**12**

Notes

Unfortunately, the information available on incubator activity is very scant, which makes it difficult to comment on the quality and impact of the bodies' or program's operation.

To December 2005, CORFO had supported 17 incubators, of which 15 are functioning. The two that ceased operations are ACCES NOVA of the Industrial Engineering Department of the University of Chile (currently operating as NOVOS without CORFO financing) and Incubadora de Empresas y Emprendedores of U. Católica de la Santísima Concepción. Corporación Santiago Innova was functioning without public financing and is now under the auspices of Santiago Municipality.

To 2009, 14 new incubators have been incorporated into the incubator program. According to a study carried out by the GERENS consultancy, in 2006 there were two

other incubators that are not currently operating. These are Rancagua Impulsa and Centro de Innovación y Emprendimiento, U of Talca.

From this we can see that INNOVA has left by the wayside some incubators which have not achieved their objectives.

CORFO is currently running the Business Incubator Operation line, oriented to strengthening functioning incubators.

To improve incubator staff, in 2008 the Chilean technology and incubation marketing program was taught by Institute IC2 of the Universidad of Texas in Austin in collaboration with the Innova Chile Committee, where a group of 12 institutions linked to national entrepreneurship were trained in the US and got to know the IC2 model and experience. In addition, a special program was established with two incubators that are being given support in speeding up technological business.

INNOVA has been advised to be more selective when lending support to incubators that have not met their goals, which in practice has happened in some cases as it continues to finance incubators with very little entrepreneurship. There are incubators that would receive the INNOVA subsidy for a third time. To rectify this situation, CORFO redesigned the incubator incentive system following NICC recommendations.

The new plan establishes an evaluation system for the management of incubators to accompany the distinct stages of support that CORFO provides to these bodies. The system is based on international benchmarking adapted to the level of development reached or to be reached by Chilean incubators and envisages revising a set of indicators.

Incubators will be evaluated annually with respect to the achievements proposed by INNOVA with criteria established when initial financing is provided. Moreover, the incubator companies will analyze the results obtained.

In this context, in 2009 INNOVA put out to tender an evaluation of incubators, establishing in the bidding requirements the need to include international experts in order to get an outside look of the system in operation and of the functioning of incubators according to international criteria. This consultancy process is currently ongoing.

The inclusion of new types of players in incubation activity has not yet materialized.

b) To support the development of spin-offs.

Objective	Result Indicator	Source	2005	2009
b) To support the development of spin-offs	Number of companies participating in the identification of spin-offs.	**CORFO-INNOVA**	**0**	**60**
	Number of institutes and technology centers participating in the process of identifying spin-offs	**CORFO-INNOVA**	**0**	**5 (4 formalized)**

Notes

The program finished this year having succeeded in bringing together 60 important companies. INNOVA already tendered an evaluation study and is going to evaluate the five platforms in operation. The Universidad of Santa María, the Adolfo Ibañez Universidad, the Universidad of Concepción, the Chile Foundation and the DICTUC of the Universidad Católica of Chile run these. The five are high prestige entities and some are associated with international bodies with recognized experience (Stanford's SRI, for example).

c) To develop and increase Venture Capital Funds

Objective	Result Indicators	Source	2005	2009
c) To develop and increase Venture Capital Funds	Number of innovation companies supported by venture capital funds.		11	29 (2007) [1]
	Venture capital provided by the state and used by companies as % of GDP		0	No Information

(1): "Financing entrepreneurial activity in Chile: Scale and scope of public support programs" J. E. Amorósa, M. Atienzab and G. Romaníc, http://o.b5z.net/i/u/10062015/i/Financing_Entrepreneurial_Activity.pdf

Activity Indicators			
Objective		2005	2009
To develop and increase Venture Capital Funds	Amount of Venture Capital Funds for entrepreneurial activity in operation	11	29
	Resources available from Venture Capital Funds for emerging entrepreneurial activity (millions $)	0	2,723.3

Notes

During this year there have been noticeable changes in the behavior of investment policies carried out or to be carried out in investment funds supported by CORFO. In some cases, a high degree of innovation associated with a higher level of risk stands out. This change in behavior is associated with the new line of finance of Venture Capital Funds created by CORFO which requires investment in innovating companies (F3). CORFO participates as fund creditor, providing funds up to 3 times those of private support. In contrast to funds F1 and F2, in which CORFO was providing support in the form of a low-cost credit, CORFO is now leaning towards an approach which shares investment venture with the fund's private contributors. The goal of creating the new F3 line was precisely to have an instrument available with greater incentives for investors to take on risk in enterprises with greater innovation content and not in more mature companies as happened with the funds created under the former regulations.

As can be seen from Table No. 21, the behavior of investments of funds created under the F3 method has not been that different to that of the funds created before despite the fact that the requirement regarding the character of innovation of enterprises in which they have to invest is greater. However, the number of operations by the funds continues to be low.

On the other hand, a type of fund that seeks partners abroad with knowledge of world markets and state-of-the-art technologies, improving the exit of investments has started to make its presence felt. These funds generally seek alliances with experts at a world level in certain areas such as biotechnology or information technology with which they are assured of better investment management. Recently the norm for the F3 program has been modified with the goal of funds being able to invest in this kind of investment through the acquisition of shares in overseas companies.

In order for CORFO to be able to make better decisions on the investments to which it orientates its resources, the institution created the Venture Capital Committee, which looks more closely at the financing of innovation projects.

Another important factor to point out is that from the Reform of Capital Markets II, CORFO has the opportunity to invest directly in companies. For this, it participates with its funds in funds run by third parties. The CORFO Program for Direct Investment in Investment Funds K1 came into force at the end of last year and during this year CORFO has become a contributor.

Finally, the most recent creation of a line especially dedicated to supporting Venture Capital Funds for emerging companies known colloquially as a sidecar fund (line EEM en Table No. 22) should be mentioned. This support works as a loan under a quasi-capital model in which CORFO can provide up to 75% of the capital. Interest to be paid to CORFO is contingent on fund profits with a maximum of 5% annually and a limit of 25% of profits. This line is thought to be used fundamentally for networks of angel investors approved by Innova Chile. With this line, relatively small funds will be created with a maximum of US$6 million in committed assets and the total of eligible firms must have INNOVA approval.

To date, one fund of this nature has been created.

Table No. 21

Number of firms receiving resources from Investment Funds

Program	2005	2006	2007	2008	2009
F1	28	31	33	35	35
F2	2	10	17	24	27
F3	0	1	8	12	22
	30	42	58	71	84
Program K1	No investment				
Program EEM	No investment				

Source: CORFO

Table No. 22 Investment Funds approved CORFO lines (UF)									
		Approved CORFO	Private support	Total Fund	Placed	Disbursed CORFO	Balance	Investments	State
F1	Columba	208,000	226,000	434,000	434,000	208,000	0	9	Closed
F1	Chiletech	200,900	221,823	422,723	422,723	200,900	0	9	Current
F1	Regional Businesses	240,000	540,358	780,358	780,358	240,000	0	11	Current
F1	Halcon (*)	286,000	286,000	503,236	503,236	217,236	0	4	Closed
F1	Mifactory (*)	81,621	76,662	112,781	112,781	36,119	0	3	Closed
F2	Precursor	420,000	140,000	560,000	560,000	420,000	0	7	Current
F2	Crecimiento Agrícola (**)	217,494	72,498	289,992	289,992	217,494	0	6	Current
F2	Expertus	500,000	170,000	670,000	670,000	500,000	0	8	Current
F2	Halcón II (*)	500,000	139,600	462,200	462,200	322,600	0	2	Current
F2	Mifactory II	450,000	150,000	600,000	0	0	0	0	Closed
F2	AXA Capital Chile	630,000	210,000	840,000	605,010	451,817	234,990	4	Current
F3	PI Capital	255,000	85,000	340,000	202,707	127,717	137,293	2	Current
F3	Inv Empresas Innovadoras	65,702	32,851	98,553	74,205	41,353	24,348	4	Current
F3	Emprendedor I	300,000	150,000	409,000	230,714	139,514	178,286	4	Current
F3	A5 Capital	250,000	125,000	375,000	301,256	193,210	73,744	2	Current
F3	Patagonia	273,200	136,600	387,743	91,503	59,903	296,240	1	Current
F3	Austral	400,000	238,500	638,500	293,664	195,773	344,836	6	Current
F3	Copec-UC	200,000	100,000	300,000	15,467	6,607	284,533	1	Current
F3	Tridente	380,710	190,355	571,065	211,136	133,335	359,929	2	Current
F3	Medio Ambiente I	400,000	200,000	600,000	60,000	40,000	540,000	1	Current
F3	IG Capital	400,000	200,000	600,000	0	0	600,000	0	Current
F3	Precursor II	400,000	200,000	600,000	0	0	600,000	0	Current
F3	Chile Innovation Fund I	400,000	200,000	600,000	0	0	600,000	0	Vigente
F3	Agrodesarrollo (**)	338,325	169,162	507,487	0	0	507,487	0	Current
F3	IM Trust	400,000	200,000	600,000	0	0	600,000	0	Current
F3	Aurus Bios FIP (**)	265,826	132,913	398,740	0	0	398,740	0	Current
F3	Aurus Tecnología FIP (**)	265,826	132,913	398,740	0	0	398,740	0	Current
EEM	Incured I	60,000	20,000	80,000	0	0	80,000	0	Current
K1	Fondo Mater	380,000	570,000	950,000	0	0	950,000	0	Current
	Totals in UF	9,168,605	5,316,236	14,130,118	6,320,952	3,751,578	7,209,166	86	
	Totals in US$	379,400,434	219,987,911	584,709,786	261,563,452	155,241,779	298,318,087		

Notes on Table 23:

	Values to December 29, 2009
US$	506.27
UF	20,949.65

(*) Not all approved funds used
(**) Fund approved in dollars

d) To strengthen angel investors

Objective	Result Indicators	Source	2005	2009
d) To strengthen angel investors	Nº of angel investors operating .	CORFO	0	5 to Aug 2009
	Evolution of ventures supported by angel investors	CORFO	0	20 to Aug 2009
	Amount of private resources mobilized	CORFO	**N.I.**	**N.I.**

Objective	Activity Indicators		
		2005	2009
To strengthen angel investors	Amount of placements in support of angel investment program	$206.5mn (2006)	$159.8mn (2008)

Source: INNOVA

INNOVA has available a line of support for the building of angel investment networks. This involves a subsidy which supports the organization, formalization and operation of angel investment networks to finance innovation projects. The subsidized activities are:

- Methodology of seeking entrepreneurs.
- Entrepreneur support.
- Training programs for entrepreneurs and investors.
- Business tours.
- Project follow-up.

These activities must be classified in accordance with the following items: human resources, subcontracting, training, missions, operating expenses, investment expenses, and dissemination expenses. For every peso CORFO finances, the angel investor must invest the same.

According to INNOVA's plan, it is hoped that financing for angel networks will fall with time and that it will be better linked to the new line of support for Venture Capital Funds for the emerging ventures mentioned above. In 2008, support was provided to one network, in 2009 to five and hopefully will be to two more in 2010.

e) To increase seed capital funds

Objective	Result Indicators	Source	2005	2009
e) To increase the coverage of seed capital funds	Number of ventures supported with seed capital per year	CORFO	71	141 (2008)
	Number of ventures supported with seed capital by new placers	CORFO	0	0

Source: Management balances sheets, INNOVA, 2005 and 2008

Objective	Activity Indicators		
		2005	2009
To increase the coverage of seed capital funds	Number of seed capital placers operating	0	37

The seed capital line began to operate in 2002. Its purpose is to support with subsidies emerging innovation companies. It operates through sponsors which detect new entrepreneurs, support them in defining their business strategy and present them to INNOVA to obtain financial support. For each case approved, they receive compensation.

The problem is that the process is very complicated because the entrepreneurs have to wait for the decision by INNOVA, which moreover has to endorse the changes needed to introduce the approved project.

At present, a process is underway to modify this form of operation based on the following strategic lines:

- Greater flexibility
- Second-floor financing through an incubator. Changing sponsors for incubators.
- Mediating performance of incubators to keep them operational.
- The new method is by result and by operation. Three result metrics will govern rewards.

There are currently 18 incubators and it is hoped to create 14 new ones that will be act as sponsors in the seed capital program. A tender is open where it is hoped to appraise 14 projects. After a process of revision and performance evaluation of six months, the ones that will to continue to operate will be selected. It is believed 10 at most will remain. Operational costs of between 100 and 200 million per year will be financed for a period of six years.

The basics of this line are:

1. Those with a demonstrated capacity for funding management will be able to finance ventures directly.

2. Everything is pre-consulted
3. Performance and results are measured annually to see which can continue. Financing years are guaranteed but depend on results. When the return is not good, it does not mean closure but remaining with minimum finance.

The following step is to shut off sponsors who do not wish to become incubators after being offered the opportunity to change back into something that has value. There are currently 19 institutions distinct from incubators that are operating with this instrument.

The greatest challenge this change faces is that there would be many incubators operating as seed capital agents and as they are spread all over the country, it will be difficult to afford them continuous follow-up.

f) To streamline the bankruptcy system.

Objective	Result Indicator	Source	2005	2009
f) To streamline the bankruptcy system	Modified bankruptcy proceedings	Finance Ministry	**N/A**	**Law approved in 2007. Procedures not to change, according to ICS proposal.**

One important difficulty which entrepreneurs have in Chile is the high price paid for failure at financial system, social and cultural levels. Thus one of the greatest limitations that entrepreneurs face is the stigma that their new business initiatives failed. If in the US, successful entrepreneurs fail on average 2.9 times before succeeding, in Latin America and the Caribbean this fear of failure stops many entrepreneurs from trying again. From 2008, a project has been underway in Chile with MIF (an IADB branch) support to try to change this mentality and promote a better entrepreneurial culture in the country. The project developed a free online self-assessment tool to help entrepreneurs detect problems in their businesses through evaluating the likelihood of a crisis.

ANNEX A

LEVEL OF PROGRESS OF THE CLUSTER AGENDAS

Table No. A1

The state of the Mining Cluster agenda (at September 2009)

PROJECTS	PROGRESS THIRD QUARTER 2009	OBSERVATIONS	TOTAL VALUE	SOURCE
1.The Antofagasta scientific technology park	• GORE approved $2bn for the technology park in Antofagasta • An important feature is the incorporation of the University of Antofagasta as part of the park, initially led by UCN	Support provided by MINECON to be determined in the budget discussions of 2010	$2bn (GORE)	GORE
2.Attract centers of applied research	• The following international centers passed the pre-qualification phase: VTT-Finland and CSIRO-Australia, SMI University of Queensland – Australia	The program is in the stage of evaluating the proposals	To be defined	Innova
3.Strenghten CIMM or another mining-metallurgic R&D center	• A project is expected to be presented to the investment program for major equipment (Conicyt) • An agreement between CIMM and the Engineering Institute was established for their representation in the Cluster • Actions are taken to incorporate it within the policy of institutes lead by Minecon • Conicyt financed program, Basal mining technology center for University of Chile	Conicyt tender to open in August	$5.5bn	Conicyt (Basal University of Chile)

4. Innova calls for expansion of technology centers	• CE tour to Europe to know about successful experiences of technological expansion to be replicated in the Mining Cluster	Tender open until 5/10/09	To be defined	To be defined
5.Financing mechanisms for the exploration and development of mining projects	• Adjustment of the intermediation financing line of venture capital in order for companies governed by the mining law to apply.		$25mn (study)	Mining Ministry
6.Support program for the implementation of the assets and reserves qualifying commission	No information		$53.865bn (CORFO) $23.085bn (Commission)	
7. Innovation platform projects for mining suppliers (Canada and Brazil)	• Both projects were presented to the technical board of suppliers at the CE	Canadian project in process of re-evaluation	$429.679bn	Innova Chile company innovation
8.Promotion and internationalization of suppliers	• Imagen País approved project for promotion in Peru • Development of internationalization program for Aquilles, administrator of the supplier registry		$278mn (CIP) $153mn (Private sector)	Imagen País
9.Creation of support instruments for the development of mining suppliers	• Coordination by CORFO's development management for the adjustment of the development instruments for suppliers in line with the requirements of the mining cluster	Adjustment is in the process of creation as it awaits the results of the character studies	To be defined	To be defined
10.Strengthening of Sernageomin	No information		To be defined	To be defined

11.Suppliers under observation	• Building the base, consulting firm IRH (delivers April report) • Character study of suppliers (Innova – primary information), in execution • Character study of suppliers (secondary information), using data bases from Sicep (AIA) an Aquilles, consulting firm IRH (delivers April report) • There is a proposal under observation to be developed by Fundación Chile.	Base information to focus the Cluster environment measures on the suppliers' axis.	Cluster + Innova	No information
12.Program to attract mining suppliers	• Coordination with Invest Chile to develop activities within the program to attract investments from mining suppliers	The third investment forum to be held October 2009	No information	No information
13.i. Becas Chile	• Selection among the offering of mining courses through the mining cluster's technical board of human capital. A total of 26 courses were selected in Australia, Germany, Canada and France	Launch of tender is pending	To be defined	
13.ii. Development of qualification framework for the mining sector	• Chilecalifica awarded a study to UTFSM to define a classification framework for the mining sector • The study seeks to establish levels and their respective descriptors (knowledge, skills, and competencies, among others) for technical education, to establish recommendations for a national qualification framework in Chile.	In execution	$60mn	$60mn (Chilecalifica)
13.iii. Program to foster the registration of technical studies in mining	• Project rejected two times by CORFO		$120mn	

13.iv. Proposal to adjust the CFT and IP curriculum and implementation	• Input: Study to create critical labor profiles and formative reports (Ministry of Economy)	In process	To be defined	To be defined
13.v. Observation of supply and demand for mining labor	• The results from the study by KH have provided information about: The characteristics of the technical labor market; Determination of critical technical profiles; The drawing up of 15 formative reports**.**	The studies undertaken allow for access to information about the technical requirements of the industry		
14. Coordination of the Water Board	• Creation of an intra-ministerial board that addresses these issues (MOP, MINECON, Ministry of Agriculture, Ministry of Mining, Ministry of Energy, Ministry of Public Property) • There is also a signed agreement for hydro efficiency between Sonami, the Mining Council, MOP y and the Mining Ministry.	It is expected that the problems related to mining will be addressed by the board	No information	
15.Security standards	• Agreement was signed within the cluster framework for the homologation of security standards between suppliers and mining companies		No information	
16. Innova Chile programs, Mining Cluster: 2008/2009/2010	• Call for tender 2008**:** Implementation of 34 projects that help to solve specific and critical problems, taking advantage of opportunities in the high impact innovation environment in sectors and/or key technologies for the development and competitivness of the mining industry. • Coordination with Innova for the strategic evaluation of 13 projects that entered into the national mining tender in 2009 • Call for tender 2010:	In execution 2008 The new call for tender in water and energy is expected for March 2010	$12.6bn (Total) $4.5bn (Innova) $1.1bn (FIC Region)	Tender 2008

	Tender being drawn up by the mining sub-department of Innova. This will focus on issues related to energy, water and human capital. • Innovation program for suppliers at the draft stage, and to be implemented 2010			
17.Technical skills development program from Innova Chile	• Three training programs related to the mining cluster were supported		$365mn	Innova + counterpart

Table No. A2

The level of progress of the Aquaculture Cluster agenda

PROJECTS	PROGRESS THIRD QUARTER 2009	OBSERVATIONS	TOTAL VALUE	SOURCE
1.Program for aquaculture diversification	• Consultation with experts, done (Minecon) • Study of short list, in execution (Minecon) • Call for tenders **(**1) Innova for the species dorado, bass and profiles and Fondef of the priority species cod and hake) • Legal modification for the introduction of exotic species: the proposal has been drawn up and should be presented in the next meeting of the Strategic Council.	Tender calls by Innova and Fondef, this last to begin shortly The legal modification should incorporate the observations made by CE.		Innova Conicyt
2.Strengthening of the aquaculture institutional framework	• Creation of a workshop to detect bottlenecks and possible solutions • Setting up a board for institutional modernization • Project approval through Cluster program instrument to elaborate proposal for institutional modernization, project that supports the board's objective.	A proposal for modernization is expected by March 2010	$80mn	Cluster Program

3.Sanitation and Environmental regulation (Measures by the Salmon Board)	• Plan for the administration and use of antibiotics • Financial measures: Guarantees from CORFO available • Institutional strengthening (studies in execution) • Group of investigations in execution. • Bill to modify the fishing and agriculture law in the legislative process • Elaboration of cluster program "Review of the current state of the national policy for imports of salmon roe"	Bill of law is being processed in the Senate		Does not require financing 2009
4.Salmon R&D program to improve sanitary conditions	• Special tender call by Innova Chile in the stage of evaluating the projects • 54 projects came in (32 IP; 21 IE y 1 PDT)		$4.65bn	FIC Region 2009 (Sub. IP) (IE) (TT)
5.Action plan for R&D and innovation	• Integration of information from R&D projects for aquaculture • Coordination with other tenders from Innova Chile: 1. National Tender 2009: 26 aquaculture projects came in and the strategic relevance was evaluated together with the agriculture area of Innova 2. Rural Connectivity: 6 aquaculture projects came in (3 PDT and 3 IP), the cluster will in October participate in the strategic evaluation 3. Expansion: tender focused on cluster for those where the respective coordination have been made			To be defined once finalized
6.Action plan for enabling infrastructure	The plan for 2009 includes: • Define an investment plan in productive infrastructure for the northern and southern areas, in process • Define an investment plan to improve the infrastructure linked to the development of salmon farming, in process • As support for the definition of the productive infrastructure and social environment plan for salmon farming, a project addressing those issues was tendered through the cluster program instrument.	Project in elaboration, through Cluster Program instrument Progress according to plan	$30mn	Cluster Program

7.Action plan for human capital	The plan for 2009 includes: • Proposal for new labor code for the aquaculture workers, in process • Proposal for training plan for the aquaculture sector, in process • Application of the new law for labor competencies in the aquaculture environment, in process • Coordination with the national scholarship system, in process.	The project of critical profiles by MINECON is in execution Progress according to plan		Does not require financing 2009
8.Suppliers (food and drugs)	A plan was presented in May, which for 2009 includes: • Proposal to give priority to projects through special tenders, in process • Workshop held through video conference about the state of food and drugs.	Progress according to plan		Does not require financing 2009
9.Social responsibility in the salmon Industry	• Contracting specialized services to draw up a proposal for corporate responsibility in the salmon industry	The plan will begin in October	No information	No information
10.1. Setting up a mussel board in the 10th region, to address the sector's sanitary and environmental issues	• Coordination in execution, with regular meetings to review the progress of the established agreements. • The subjects are: Red tide and bi-valve mollusc sanitary program PSMB, Research (cargo capacity), Protection of nursery areas, sewage discharge	Progress according to plan	To be defined	Does not require financing 2009
10.2. Articulating aquaculture of the North (PTI Coquimbo and PMC Aquatacama) to address the requirements of the abalone, scallops and sea weed sectors.	• PMC Aquatacama approved its action plan and PTI was approved in the CAF in August. Hiring of the managers is expected for October • A second session was held in Copiapo on 28/08/09 agreeing to work on legal issues, for which meetings will be held in October in each region.	Progress according to plan	To be defined	Does not require financing 2009

10.3. Articulating the Aysén region, focused on the salmon industry	• Two work meetings have been held. Agreement was reached to work together and to be coordinated in the issues of regulating the Aysén fjord, Training, Progress and implications of the law bill, Infrastructure	Progress according to plan	To be defined	Does not require financing 2009
10.4. Articulating Magallanes Region	• Participation in the regulation process of the costal boarder in region XII.		To be defined	Does not require financing 2009
10.5. Aquaculture in the management and re-stocking area	• Coordination with Subpesca to develop actions that promote aquaculture in the managed area and restocking and that addresses possible Failures or bottlenecks, which are making its development difficult.		To be defined	Does not require financing 2009
11.Tender Imagen País	• One of the strategic concerns of the Cluster is the Country Brand. Project for salmon and oysters was presented, and the first was approved.		Salmon: $1.053bn (Imagen País)	Imagen País committee
12. Innova Tender (2008) for the development of technical skills – Aquaculture	• 4 projects approved for agriculture.		$297.129bn (Innova) $383.844bn (Total)	According to the budgetary plan for the approved projects (Innova Chile)
13.Program for an aquaculture at a worldwide level (HUAM)	• Focused on developing breeding of native species in managed areas and aquaculture concessions.		$3.2bn for 3 years	According to budgetary plan (Conicyt)

Table No. A3

Level of progress in the Tourism Cluster agenda for special interests

PROJECTS	PROGRESS AT SEPTEMBER 2009	OBSERVATIONS	TOTAL VALUE	SOURCE

1.Digital connectivity program	Tender held in 2009. Eight PDT projects were presented, 1 for individual company innovation and 15 for public property innovation.		$3bn In 3 years $1.8bn from Innova and $1.2 FIC Regional.	INNOVA
2.English program	There were 10,440 candidates in response to the invitation, of which 2,154 met the requirements and took the exam; of the candidates 1,693 were selected. 52% are from the country's regions and the course is given at 17 locations nationwide.	Up to 2,000 scholarships for basic and mid-level English will be granted	$1.5bn	(Agreement FIC/ GID)
3.Sustainable management program	"Development of a sustainable management model in SNASPE for the strengthening of the TIE offering". Two projects were presented in the Public Property tender that cover some long-term components of the initiative. The initiative is re-directed from being covered originally with resources from the Ministry of Economy to the Cluster Program instrument. The project is prepared for this.	The expected financing from the economy ministry is no longer available due to budget cuts.	$400mn	Innova Chile
4.International promotion program	The following project was prepared "Information gathering of TIE for the tourism portal" 5 Studies assigned by the tender of the CORFO committee of Imagen País	Was presented in earlier report as complementary project. Participating in this project are: Fundación Imagen País, Turismo Chile, Sernatur, Innova Chile.	N/A	Tender Imagen País. Committee CORFO

4. National tourism program	The program aims at strengthening local demand and includes 3 lines of work: tourist analysis; development of commercial platform and communication campaign. Under implementation by SERNATUR. Level of progress: 80% Executed tasks: 1. Signature agreement ACHET - SERNATUR 2. Behavioral study of internal tourism summer 2009. 3. Communication campaign first semester. 4. Exploratory study on segments, tourism operators and travel agencies. 5. Development and implementation of platform www.mueveteporchile.cl http://www.mueveteporchile.cl/ Tasks in execution: 1. Behavioral study of internal tourism September 2009. 2.Communication campaign second semester. 3. Program evaluation.	Company participation: • 15 tourism operators • 22 travel agencies • 143 travel packages • Nationwide cover Task pending: Participation in the VYVA FIAr	$490mn	(SERNA-TUR)
6.Service quality program	Working group held meeting.	Working with a group of initiatives to propose to CE of the Cluster. Delivery of progress report on the behalf of SERNATUR is pending.	N/A	N/A
7.Line Products-Destination	Information from regions has been systemized (gaps and initiatives) from PMC, PTI, Chile Emprende, FNDR.	Confirmation from territorial board is pending with Fomento de CORFO, Chile Emprende, UTC, MOP, SERNATUR which will serve as input of the strategic agenda of the	N/A	N/A

		Cluster.		
8.Constructing critical occupational profiles	Study seeks to establish the character of the labor market in the areas with the largest demand; construct and validate 15 critical occupational profiles and their corresponding standards of competencies and draw up formative reports of the selected profiles.	Two validation workshops have been held with public entities, companies, universities and institutes with an average assistance of 50 people. A seminar will be held to present the final results of the consultancy on November 9, 2009.	$65mn	FIC-Ministry of Economy
9.Plan for generation of strategic products Implementation The Cluster Agenda	Launching support consultancy for the Clusters, third report presented.	Adjustment is made to the technical offering in accordance with the real needs of the cluster.	$66mn	Instrument PNC
10.Support for the legislative process of the tourism law	Is presented as a priority for the Clusters. The executive secretary is assisting the sessions of the Senate's economy commission for the debate of the bill in the legislative process.	Informing the Strategic Council about the legislative progress is pending.		
11.Operations and communication support plan for Cluster TIE	One has access to the base TDR to hold articulation sessions for the macro zones.			
12.Promotional and sensibility activities about the Clusters in the community	Assisting the events of the executive secretary			
13.Impact on the cruise ship industry	One has access to the base TDR, provided by the Ministry of Transport and Telecommunications and several meetings are held to estimate the impact of the study on the Clusters.	Both initiatives are postponed due to the change in priorities of the Cluster, re-orienting the resources currently available through the Clusters instrument to apply for projects, Content gathering for the tourism portal and development of the sustainable management model in		

		protected wildlife areas protected to strengthen the promotion and tourism offering respectively.		

Table No. A4

Level of progress of the Food Cluster agenda

PROJECTS	PROGRESS THIRD QUARTER 2009	OBSERVATIONS	TOTAL VALUE	SOURCE
1.Digital connectivity program	The INNOVA tender was closed in August and 45 agro-food projects were presented (PDT=19;IEI=6;BPI=20).	At evaluation stage, with the executive secretary participating in the strategic evaluation.	$3bn	Innova Chile FIC
2.Competitive intelligence system	Agreement ODEPA-AGCI was signed. Presentations were made before trade groups linked to the Cluster.	In fourth quarter: Manager is hired and 2 professionals; the first elements of the system are purchased; first panel discussion with the 5 sectors to gather information.	$1.18bn	UE fund and MINAGRI
3.Genetic improvement of fruits, processed food and wine.	INNOVA tender open until November 30.. Working group for genetic improvement of horticulture with action plan to validate. Genetic improvement program for cattle and sheep.(M$850.000 MINAGRI, INDAP, University of Chile and University Austral).	INNOVA tender is estimated to be awarded first quarter, 2010.	$3bn	Innova Chile

4.Food safety program – livestock and fruits	Project FIA in dioxin with APA/ASPROCER, with suppliers' registry; duration until 2012. Diagnostic study of the capacities of the food safety area approved in CORFO.	Bidding rules in preparation for the diagnosis of the capacities of the food safety area.	$ 600mn + Tender INNOVA	FIA INNOVA
	INNOVA food tender open until October for fruit projects.	Tender is expected to be awarded in December 2009.		
	Project to strengthen analytical skills for fresh fruit exports (M$150.000, MINAGRI, SAG, ASOEX, Dutch Ministry of Agriculture, University of Wageningen).			Ministry of Agriculture
	Project formalized with a meteorological assurance system as back-up for the evaluation of the conformity of the food production area – National meteorological network as enabling infrastructure.		$845mn	FIA
5.Fruit hygiene program	Development of an alert system for the main existing diseases of economic importance for the horticulture exporting sector.	Project according to planning	$1.989bn	SAG
6.Program KH – Fruits and Poutrys-Pigs	Consultancies MINECON finalized; holding promotional workshop	On course to exchange information with universities	$130mn	MINECON
	Working together with Becas Chile for technicians, waiting for launch of tender: 14 training offers validated for technicians abroad.	The competition for scholarships was opened in October		
	8 projects awarded by tender for development of technical skills relevant to the food and forestry industry, INNOVA 2008/9.	Projects in execution		
	Certification pilot program UCLs for 3.435 people (SENCE, ChileCalifica, MINAGRI, F.Chile)	Elaborated food 400 Prunes, stoned**.** 150 -Fruits 1.600 -Vegetables 100 -Milk and meat 1.185		Becas Chile
7.Technology transfer program for the food Cluster	Executive Secretaries have helped promote expansion centers.		To be defined	INNOVA

8.Sustainable environment agenda and of RSE, Wine Cluster	Projects under evaluation in the INNOVA National Tender.	Tenders are expected to be awarded in fourth quarter 2009.	What is leveraged in the INNOVA tender with focus on the food Cluster, with a total of $4bn, for 3 years.	
9.R&D and Innovation program for poultry and pigs Cluster	Projects (center for applied poultry and pigs research, of PUC) under evaluation in the INNOVA National Tender "Strengthening of Competencies"	Tender is expected to be awarded in fourth quarter 2009.	To be defined	
	Centers of Excellency: Fraunhofer-2009 and University of Wageningen + Nestlé Research International-2010 (Minagri, Minecon, INIA, FIA, Conicyt, PUC, University of Chile, University of Santiago, University of Talca, University Austral, Dutch Ministry of Agriculture).	First phase of centers application process closed on October 26.		
10.a) Program for the development of Terroirs, Wine Cluster	INNOVA food tender call open until October. Working group from the Cluster presented progress proposal to the committee.	Tender is expected to be awarded in December 2009.	What is leveraged in the INNOVA tender with focus on the food Cluster, with a total of $4bn, for 3 years.	
10. b)Program for fields, Red meat Cluster	Call for INNOVA food tender.	Tender is expected to be awarded in December 2009.	What is leveraged in the INNOVA tender with focus on the food Cluster, with a total of $4bn, for 3 years.	
11.a) Production improvement, Red meat Cluster	Project under evaluation in the INNOVA National Tender.	Tenders are expected to be awarded in fourth quarter of 2009.	What is leveraged in the INNOVA tender with focus on the food Cluster, with a total of $4bn, for 3 years.	
11. b) Technology platform, Red meat Cluster	A digital platform is being constructed by the Associative Program for the technological development of the national meat industry (FAENACAR with UFRO, FIA and BTA).	Progress according to plan	$600mn	FIA
12.Assessment of biosolids in agro-industry	Project under evaluation in the INNOVA National Tender.	Tenders are expected to be awarded in fourth quarter of 2009.	What is leveraged in the INNOVA tender	

			with focus on the food Cluster, with a total of $4bn, for 3 years.	

Table No. A5

Level of progress of the Global Services Cluster agenda

PROJECTS	PROGRESS AT SEPTEMBER 2009	OBSERVATIONS	TOTAL VALUE	SOURCE
1. 2.000 Scholarships English	18 centers selected to train the 2.002 who received scholarships and that have enrolled. Classes have started.	Classes end December 15. Labor FIAr December 3.	$2.8bn	FIC Regular
2. Technology Portal Curauma II (Valparaíso Region)	Financing available (CORE Valpo and Dipres approved resources CORFO for building). -The bidding rules for "Design and Construction" are done. -CORFO is finishing the expedient to manage the merger of batches 7 and 8 with the Municipality of Valparaiso and the technology portal project	To be awarded October, 2010.	$8.8bn	CORFO and GORE Valparaíso
	Study in development to conceptualize the portal and the suitability of the scientific park, ends in November.	Financing is the crucial point to create the technology portal.	10,3 Investment 1,4 Annual operation	CORFO

3.	Law to protect information	The bill (in the second stage of the legislative process in the commission of constitution, legislation and justice of the Chamber of Deputies), has been given high priority status. Approval is expected for the first half of 2010.	-A seminar with 80 people will be held in November called “Protection of Information: Prospects of a new institutional framework”	**5** There will be an annual operational cost that DIPRES should provide to the Transparency Commission	(CORFO-GID)
4.	Promotional campaign "Country Image"	-Press releases. Meetings for Chilean spokespeople with analysts, consultants and the media. -Articles about Chile in the magazine BusinessWeek. - Organize visits of consultants, analysts and press to Chile.	-Finish study-survey to be promoted in specialized media. -Produce video.	US$570.000	Imagen País committee
5.	Detection of labor competencies	Critical profile project undertaken by Fundación Chile, finished in May.	CORFO is undertaking a study of salaries with Fundación Chile.	$65mn	MINECON
6.	Business technology platform, US	-Between June-December: Coaching for companies of SSGG (formulate export services). –Platform installed in New York. Web site operative. PA Consulting preparing offering of adhered Chilean companies.	-Evaluating new office in Atlanta. -Technology trip to the USA in October.	$150mn	InnovaChile
7.	National promotion plan	-Agreement CORFO/U.Desarrollo for the study of successful cases.-Agreement CORFO/MINECON/ FPD for the book “Made in Chile”. -Seminar “Global services in a new export industry in Chile”, with 300 people invited. (28/8/9)	Agreement with U. Desarrollo until December. Agreement with FPD, in evaluation of cases.	$98mn	CORFO-GID MINECON UDD (Universidad del Desarrollo) FPD (The Digital Country Foundation)

8. Credit for undergraduate IT courses	Credit line for undergraduate IT courses operating with the banks.	CORFO does not have information about the amounts issued. Communication campaign is in progress.	$5bn	CORFO
	Promotion: Speeches in schools concluded in the third quarter. Web site operative. Promotion campaign in radio and the internet and visits to industry.	Campaign according to plan. Web site www.separtedelfuturo.cl	$150mn	CORFO