

SOCIO-ECONOMY OF THE AYSÉN AREA

L.E. DELGADO AND P. BACHMANN

1 GENERAL CHARACTERIZATION OF AYSÉN SOCIO-ECONOMY

Human settlements in the Aysén region are known since the XVI and XVII centuries, when the area was discovered by Hernando de Magallanes on 1520, who called this area the "Tra-pananda province" (CONAF-SERNATUR 2005). The area was then inhabited by two aboriginal groups: Tehuelches (or Patagones) and Alacalufes (or Kawéshkar). The former located in the "pampas" and the later in coastal zones. Contemporaneously, those two groups left no descendents in the Aysén population.

The current Chilean political-administrative division of the territory was generated in the year 1979. The Aysén region was divided in four provinces, with Coyhaique and Aysén being the most developed among the four. The late immigration processes can be divided in two periods: (1) *the colonization from the end of the 19th century through the first half of the 20th century*. During this period there were two waves of immigration. The first, spontaneous in nature, included settlers from Argentina and the archipelago of Chiloé; the second had its origin in land concessions given to commercial enterprises and private citizens by the Chilean government with the objective of incorporating these far-flung regions into the national economy. (2) *Growth of commercial activity in the second half of the 20th century*. The commercial activities of this period have been primarily based on the exploitation of the region's natural resources and include: fishing and aquaculture, mining, livestock production and ranching, sawmills and agriculture.

Aysén is the third political region in terms of surface area and at the same time the less populated. Its population was of only 197 inhabitants in 1907 and of 91,492 in 2002 (INE 2002). Its average density today reaches only 0.8 inhabitants km⁻². Eighty percent of that population lives in urban areas, mostly in Puerto Aysén and Coyhaique counties, located within the Aysén river watershed (Fig. 1 in Yarrow and Torres, this volume). Both counties show important differences in terms of demographic and socio-economic variables. Consequently, each county has been analyzed separately. The capital city, Coyhaique, was founded in 1929 to provide support to the settlers who had been arriving since the end of the 19th century to raise livestock. Puerto Aysén was established in 1914 as a small port and as regional capital. However, at that time the habilitation of new territory for colonization was driven by a "fire strategy" resulting in more than 3 x 10⁶ hectares of native *Nothofagus* forest completely burned (Fig. 3 in Yarrow and Torres, this volume). Between the multiple environmental impacts caused by the fires, erosion and run-off of huge amounts of soil through the Aysén watershed provoked the embankment of the main river, making necessary the relocation of the main port and regional capital, from Puerto Aysén to Puerto Chacabuco, and from Puerto Aysén to Coyhaique (1976) respectively. At the front of these administrative changes, caused by the ecological

disaster occurring hundreds of kilometers away in the upper region of the watershed, Puerto Aysén started a socio-economic deterioration process that is perceived until today (Ortega and Brunning 2000). Puerto Chacabuco, 14 km from Puerto Aysén, is now the major port in the fjord for tourist routes, and sustaining the major concentration of salmon and seafood processing factories. The majority of the salmon concessions are located along the fjord.

2 DEMOGRAPHY

2.1 Aysén County

The population of Aysén County in 1992 was of 19,090 habitants with 53% of males. In the decade between 1992 and 2002, total Aysén population increased by about 3000 people, reaching 11,853 residents (Fig. 1A). Figure 1B shows the percentages of male and females in rural and urban areas in Aysén County. The percentage of male residents is greater than the percentage of female residents in both areas, but more notably in the rural areas. This tendency is mainly due to the type of economic activity carried out in Aysén (e.g. small-scale, artisan, fishing and aquaculture), that require physical labor customarily done by men. Camps on islands and remote coastal areas, which are frequently visited by fishermen, have been dubbed by the local residents as 'islands of men'. Age class distribution in Aysén County shows the following patterns: (A) The age group between 15 and 19 years in rural areas is significantly reduced compared to neighboring age classes. This pattern is not seen the urban areas and it is likely to represent the emigration of young people to find work in other areas; (B) Contrary to what is observed in the rural areas, the urban area presents a sex ratio close to 1:1, with some age classes having more women than men.

2.2 Coyhaique County

The county of Coyhaique has a larger population than Aysén. In 1992, the total population was 43,209 inhabitants, this figure grew by about 7,000 people to a total population of just over 50,000 in 2002 (Fig. 1C). In contrast to Aysén County, the sex ratio is closer to a 1:1. Urban population is divided equally between sexes; however, in rural areas the male population is greater than the female population (Fig. 1D). The rural population in Coyhaique County shows the following patterns with respect to age and sex: (A) The age group between 15 and 19 years is primarily composed by men; (B) Male: female ratio is similar to rural areas of Aysén, but distinct from the urban zone, where the female and male populations are similar in size.

3 REGIONAL MIGRATION

The Aysén region-like other outlying regions of Chile-has among the highest rates of immigration and emigration. The rate of regional annual immigration is 2.3%. Available date shows that those females ages 15 to 19 from both Coyhaique and Aysén emigrate from the region looking for better educational and employment opportunities. According to the 1992 Census,

a total of 9,067 people in region declared themselves to be immigrants from other regions of Chile or other countries. A total of 2,782 people had emigrated from the X Region (bordering the region of Aysén to the North) with 2,220 people originating in the Metropolitan Region (Santiago) and 1,425 from other countries.

4 EDUCATION

The education levels measured by the Census in the Aysén region are as follows: kindergarten and preschool, elementary and middle school (primary school), high school, humanities (referred as high school level before ~1965), vocational high school, technical school (1-3 years post-high school), professional school (2-4 years post high-school), university (> 5 years), and the special category "never attended an educational establishment". Kindergarten and preschool level corresponds to ages 0-6; primary or elementary and middle level to ages 6-13; normal high school and vocational high school to ages 14-18.

4.1 Aysén County

According to the 2002 Census, fifty-one percent of the total population of Aysén had achieved primary or elementary/middle school level, 27% had finished high school (31% if humanities and vocational high school are included). In 2002 only 9% of the population had a higher education (technical, professional, or university). This might be partly due to the lack of universities or professional institutes in the region as well as the income distribution of the county of Aysén.

4.2 Coyhaique County

According to the 2002 Census, 46% percent of the total population of Coyhaique had achieved primary or elementary/middle school level, 29% had finished high school (34% if humanities and vocational high school are included). Thirteen percent of the population of Coyhaique has a higher education degree (technical, professional, or university). In the last three years, there has been an increase in the number of private and state-funded establishments of high education in the region. This is likely to reduce the emigration of certain age groups and an overall improvement in quality of life indicators.

5 ECONOMY

5.1 Employment

According to the results of the 1992 census, the economically active population of the XI region of Chile was of 27,839 people. The sectors that employed most people were agriculture (4,185 people) and commerce (3,377 people), concentrating between them 27% of the region's workforce.

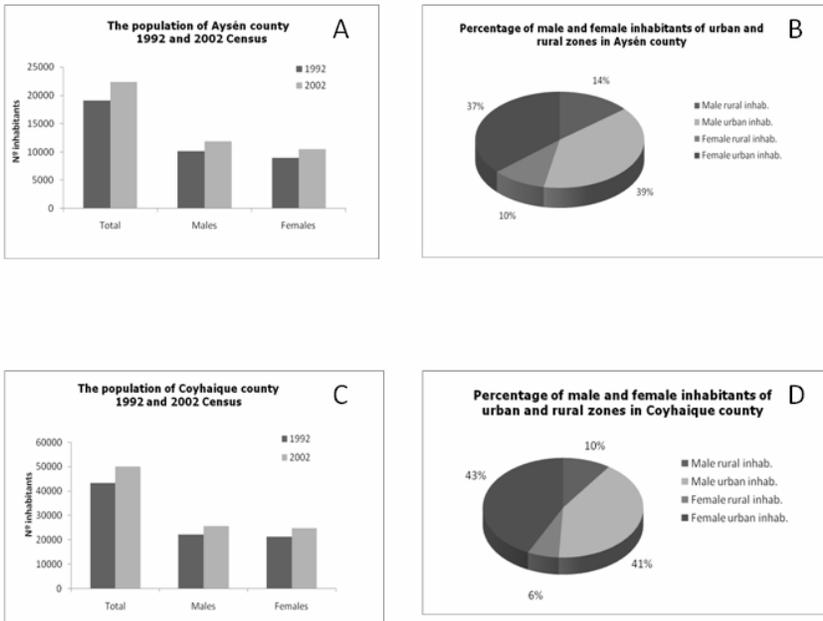


FIGURE 1: *Main demographic characteristics of the Aysén fjord population. 1A: The population of Aysén county in 1992 and 2002, total population and by sex. 1B: Percentage of male and female inhabitants of urban and rural zones in Aysén county (2002 Census). 1C: The population of Coyhaique county in 1992 and 2002, total population and by sex. 1D: Percentage of male and female inhabitants of urban and rural zones in Coyhaique county (2002 Census).*

5.1.1 Aysén County

Of the 8,733 people of working age (<15 years) in Aysén County (2002 Census), 75% are salaried employees, 17% unskilled workers, 13% are workers involved in agriculture, fishing, livestock raising, and 11 % skilled labor (machine and plant operators). However, only 3% of the workforce is classified as employer or manager. This fits with the relatively low educational levels and the income distribution in the county.

5.1.2 Coyhaique County

In Coyhaique County, there are 18,970 people of working age, of whom 73% are salaried workers. As in Aysén only about 3% of the workforce are bosses/managers or employers. The category with the largest percentage of the workforce is 'unskilled worker', followed by technicians and mid-level professional (representing 13% of the population). The next group is made up of officials, machine operators, craftsmen, and workers in other trades. Service workers and salespeople make up 10% of the workforce, while office employees correspond to 9%.

5.2 Distribution of the workforce among economic activities

The counties of Aysén and Coyhaique have very different local economies and provide different job opportunities to their residents. Aysén County's economy is mainly based on aquaculture and fishing and the services related to these activities. However, 19% of Aysén County's rural population works in land-based productive activities (agriculture, cattle ranching, and forestry). Coyhaique County's economy, on the other hand, is essentially service-oriented, especially public administration and services related to the city's status as regional capital. In the rural areas of Coyhaique County, 57% of the populace works in farming, ranching, and mining.

5.3 Recent evolution of the economy

From a long-term perspective, the most notable change in the economy of the Aysén region has been a shift from forestry, agriculture, and cattle grazing to fishing and aquaculture. Figure 2 shows that in 2002 fishing generated close to 25% of the GDP. Another remarkable aspect is that transportation and communication have risen in the past decade—a trend that is likely related to the growth and requirements of the aquaculture industry. Although services currently contribute less percentage-wise to the GDP than in the early 1990s, they continue to be a fundamental sector in the regional economy. In fact, the economy of the regional capital of Coyhaique is fundamentally based on the service sector. The category that includes commerce, restaurants and hotels is also important at the regional level and is directly related to tourism.

5.4 Economic projections by sectors

5.4.1 Aquaculture

Industrial salmon farming in Chile has grown spectacularly over the last 15 years. Indeed, between 1990 and 2005 the value of exports grew by almost 1,000%. Fishing and aquaculture represent more than 13% of the gross regional product and provide employment to more than 18% of Aysén labour force. Indicators of this are the statistics on the number of investment initiatives registered with the SEIA (the Environmental Impact Evaluation System administrated by the National Environmental Commission or CONAMA). In 2002, the registered initiatives in aquaculture and fishing represented a potential investment of 466 million dollars; in 2003 the registered initiatives represented 153 million dollars.

The majority of these initiatives correspond to the final 'fattening' phase of salmon production that would occur in the saline waters of Aysén Fjord. These initiatives indicate that aquaculture production in the XI region is in a process of expansion: by 2010 it is projected that the XI region (and Aysén County in particular) will produce 42% of the national salmon production (from a 20% today). This growth would be the result of an expected investment of 1400 million dollars in the region.

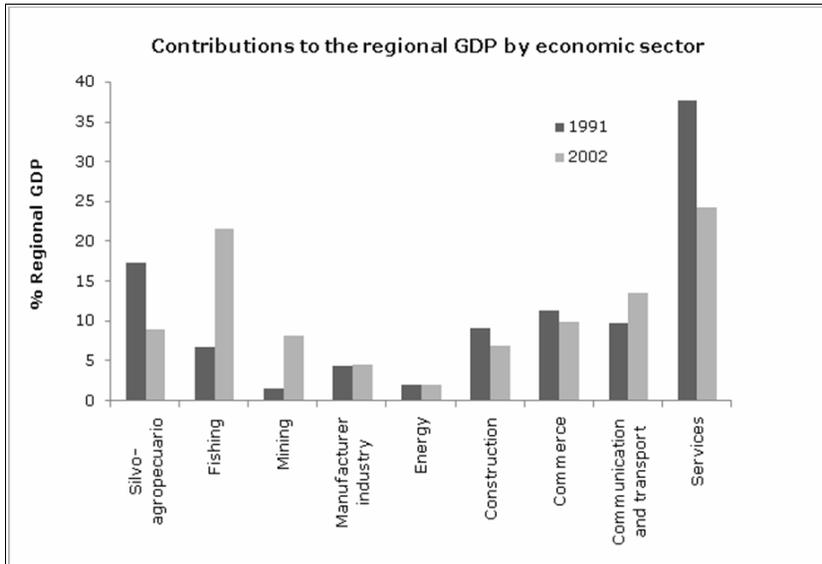


FIGURE 2: Contributions to the regional GDP by economic sector (*Silvoagropecuario* = agriculture, forestry, cattle ranching).

The production of salmon species for export occurs in several distinct phases, each requiring specific environmental conditions or ecosystem services. First, fish hatcheries involved in smolt production require contaminant-free fresh water with temperatures below 12 °C. The raising of salmon from smolt to adults require estuarine or protected coastal zones where salmons can adapt to salt water conditions and achieve a size sufficient for harvesting. The conditions exist in the Aysén watershed and Fjord to support the growth of both of these phases. Finally, with an increase in production and a desire within the industry to improve the quality of its products, it will be necessary to increase the concentration and production of processing plants. This trend in salmon production is creating a significant cluster of salmon production and processing enterprises in the area in and around Puerto Aysén and Puerto Chacabuco.

5.4.2 Tourism

The regional tourism industry has shown positive growth recently in terms of both the number of tourists arriving in the region and the number of tourist-related business and available hotel beds. In general terms, Aysén county and Puerto Chacabuco in particular, serve as a port of entry for tourists arriving by boat. Balmaceda, a small village come 60 km east from Coyhaique, has the only airport in the watershed serviced by major carriers. Most of the services and established tourist attractions are located in the Eastern part of the watershed, with Coyhaique as the main tourist hub. Aysén County doesn't lack scenery or attractions for tourists,

but they are less developed than Coyhaique in terms of infrastructure and the access is limited. Regional planners are hoping to change this in the future. In both counties there are numerous lakes and rivers suitable for sport and recreational fishing (trout and salmon are the main target species). Different kinds of boating activities are available, including rafting and kayaking.

5.4.3 Agribusiness and Forestry

This sector has traditionally been small-scale and oriented toward local markets, although this is gradually changing. The cold climate restricts agriculture to certain areas of the watershed. Forestry activities include the production of firewood for home heating during winter. Harvested firewood consists of native southern beech species (*Nothofagus* spp.). The production of lumber is based on the introduction of non-native conifer species. Although this represents only 0.6% of the national lumber and pulp production, the number of hectares planted with pine is increasing. Cattle ranching have only recently been gaining access to markets outside of the region and country. Although about 1 million hectares are currently used for this activity, the production has been limited by soil erosion and nutrient leaching. Several governmental agencies have programs to boost cattle production in the watershed.

6 CONCLUSIONS

Currently, Aysén is confronted with the enormous challenge of improving the quality of life through economic growth and generation of jobs, maintaining the cultural and ecological integrity of the region. Its fast growth and immigration rates and the ubiquity of national news and cultural media have effectively pushed the local cultural patrimony into a secondary role. On the other hand, in 2005 Aysén Regional Government drafted the Regional Land Use Plan (*Plan de Ordenamiento Territorial*; PROT 2005) of Aysén Region in which the future development scenarios for the region were identified. The plan foresees that salmon farming will receive a strong impulse. The coastal area of Aysén region is expected to hold 70% of the future expansion of Chilean salmon aquaculture. Hydropower is the other strategic sector expected to rapidly develop in the next decade. Industry and commerce are classified as activities in expansion, while primary natural resources exploitation activities, like cattle, mining, agriculture and fishing as activities in decline. The main basis (almost 90%) for the development and subsistence of this region is still the utilization of natural resources. Consequently, there is a lot a pressure for the commercial use of the natural elements (e.g. native forest as wood, prairies for grazing) of the Aysen watershed. Indeed, salmon farming both within the watershed (production of juveniles) and within the fjord is the second largest in the country. On top of those activities, eco-tourism and artisan fisheries also contribute to the utilization of natural resources. It is easy to anticipate, given the variety of commercial activities and uses of resources, the emergence of conflicts of interest among social actors. However, although integrated watershed management is urgent, including the effective participation of all social actors involved, it has not yet been implemented.

REFERENCES

- CONAF-SERNATUR (2005). Corporación Nacional Forestal & Servicio Nacional de Turismo, Región de Aysén. Almanaque Patagonia XI, Areas Silvestres Protegidas, Región de Aysén. Chile.
- INE (2002) Instituto Nacional de Estadísticas (INE). Base de datos CENSO 1992-2002, [CD-ROM], Chile.
- Ortega P, Brünning A (2000). Aysén. Panorama histórico y cultural de la XI región. Ediciones LOM.
- PROT (2005) Secretaría Regional Ministerial de Planificación y Coordinación XI Región de Aysén. Plan Regional de Ordenamiento Territorial, Coyhaique, Chile. Available from: <http://serplac11.serplac.cl/link.cgi/Publicaciones/278>.
- Yarrow M M, Torres M A (2008) The ecological and cultural landscape of the Aysén River basin, this volume.