



Chapter 8

Conserving Land Privately: Spontaneous Markets for Land Conservation in Chile

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

The creation and administration of national parks has traditionally been the sole responsibility of the government. It entails substantial costs and is seldom fully manageable. However, the free market may provide unexpected help. In Chile, for example, private landowners are buying land for conservation purposes, at their own cost. This article explores this spontaneous market phenomenon, its roots, characteristics, benefits, and shortcomings.

Privately protected areas (PPAs) could fulfill an important complementary role in public land conservation. Understanding who is investing money in land conservation, and why, is the basis for proposing mechanisms to adequately tap into the existing land conservation market, promoting further investment, enhancing its benefits while minimizing its shortcomings and ensuring that social benefit is maximized at a minimum cost.

ENVIRONMENTAL THREATS WITHIN THE CURRENT MACROECONOMIC STAGE

Chile's hardline free market economic policies are frequently cited as an example of efficiency and stability in Latin America. Over the last decade, Chile's gross domestic product has increased from approximately US\$30.3 to \$70.5 billion – more than doubling – and exports reached US\$31.8 billion in 2000 (World Bank, 2001; CAPP, 2000).

However, not all statistics and realities are as encouraging. In 1998, according to Chilean Central Bank's statistics, less than 15 per cent of total exports were manufactured products, the rest being primary natural resources with little or



no added value such as minerals, wood chips, cellulose, and salmon (CAPP, 2000). Environmental impact mitigation measures for these growing industries don't always exist, and when they do they are often not up to international standards. While economic growth is no doubt positive, we cannot ignore the fact that environmental threats have flourished alongside macroeconomic indicators.

Chile encompasses equatorial to Antarctic regions, providing an extraordinary diversity of ecosystems and habitats. Environmental impacts in the deserts of the north originate mostly from mining. The central Mediterranean regions suffer from urban expansion, overpopulation, and agrochemical and industrial pollution. All Chilean marine and terrestrial aquatic ecosystems are considered to be overexploited and most of their native species are endangered.

Central and southern Chile is considered a conservation hot spot on a global scale. It has gained this dubious honor due to its unusually high levels of endemism and threat (Dinerstein and others, 1995). The Valdivian forest eco-region (from 37°S to 42°S), classified as a temperate rainforest, is included among the 25 highest priorities in the Worldwide Fund For Nature (WWF)'s 'Global 200' conservation strategy (Olson and Dinerstein, 1998) because of its high levels of endemism and threat, and the window of opportunity to protect extensive forest remnants. The Valdivian rainforest is one of only five temperate rainforest ecosystems worldwide. It is highly threatened, but is still classified as a 'frontier forest' by Bryant and others (1997) due to the persistence of large non-intervened expanses. Large-scale logging, small-scale firewood extraction, forest fires, clearing, salmon production, and penetration highways threaten the sparsely populated temperate rainforests of the south.

PUBLIC APPROACH TO FOREST CONSERVATION

Due to the evident pressure the temperate rainforest is under, the environmental non-governmental organization (NGO) community, and even some large forestry companies, have started to demand a government policy with respect to native forests. However, government reaction has been slow. A native forest law has been trapped in Congress for nine years.

Slow advances in the legal arena are a reflection of government policies that consider environmental concerns to be impediments to economic growth. The government is only interested in protecting the environment as long as it does not affect Chile's perceived macroeconomic potential. Dissenting voices have not been able to publicize environmentally-based development, or the negative externalities of natural resource exploitation, on the national stage (CIPMA, 2002).

In this context, public and private land conservation have been assigned low priorities. The budget for the national park system's administering agency has not grown for years, even in the face of increasing demands and needs. Regarding private lands conservation, Chile's first General Environmental Law, enacted in 1994, included a promising article (No 35) which recognized the potential importance of PPAs, and mandated the government to create an administration

and tax deduction system for them. In spite of three attempts by government agencies to implement Article 35, it has not prospered due to its low political priority (CONAF, 1994; CONAF, 1996; Tacón and others, 2001). New impetus for legislation may come from the Environmental Agenda issued by the government in March 2002, which includes the preservation of natural heritage as one of its four priorities, and stresses the role of private protected areas. A commission to implement article 35 has been formed, but it remains to be seen if this new impulse will prosper.

CIVIL SOCIETY'S RESPONSE: A SPONTANEOUS MARKET FOR LAND CONSERVATION

For decades, Chilean travelers have chosen the southern lakes region, with its scenic volcanoes, rainforests, waterfalls, glaciers, and fiords as a summer holiday destination (Tacón and others, 2001). To many middle and upper class Chileans, the rainforests of the south are a connection to sweet childhood memories of relaxing moments, and a symbol of escape from stressful city lives. While the Chilean government inches toward the creation of environmental policies, the decline of native forests and the spread of pine and eucalyptus plantations and clearcut forests have become evident eyesores for travelers.

During the 1990s, a trend began to emerge. Perhaps worried by the rapid decrease in forest coverage, and convinced that the government was not likely to do anything significant soon, people started to buy land with the objective of protecting its natural and scenic resources. Acquisitions seem to have been independently initiated by different groups. While only two or three private parks are known to have existed during the late 1980s, an increasing number of conservation purchases occurred between 1990 and 1995, attracting the attention of research institutions and the environmental community (Sepúlveda and others, 1998).

Convinced that PPAs could be a valuable complement to the public parks and reserve system, the Center for Environmental Research and Planning (Centro de Investigación y Planificación del Medio Ambiente, CIPMA), an independent non-profit research institution, compiled the first PPA cadastre in 1996. CIPMA's first cadastre identified 39 PPAs of 40ha or more, covering almost 363,000ha. Pumalín Park, located in Region X, was by far the largest, covering about 250,000ha. Of the other PPAs, 14 (44 per cent) were also located in Region X, accounting for about 40,000ha (36 per cent of the non-Pumalín PPA area). CIPMA's cadastre also proposed a categorization of PPAs, generating the first analysis of the type of actors involved and their motivations (Sepúlveda and others, 1998).

In parallel, the National Committee for the Defense of Flora and Fauna (Comité Pro Defensa de la Flora y Fauna, CODEFF), an environmental non-profit organization, initiated a PPA network called the Privately Protected Areas

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Network (Red de Areas Protegidas Privadas, RAPP). RAPP's main activity is the maintenance of a relatively up-to-date database of affiliated PPAs, which include areas that vary from 1ha to 300,000ha (although not all PPAs belong to RAPP). RAPP membership has grown from 63 areas covering almost 300,000ha in 1998 to 118 areas covering 386,570ha in 2001. Although RAPP data show that PPAs continue to be concentrated in Region X, growth in PPAs has been faster in other areas. In 2000, Region X PPAs accounted for 21 per cent of all PPAs and 80 per cent of the entire area (17 per cent, if Pumalín is omitted).

Since October 2000, CIPMA has been implementing a Valdivian eco-region project financed by the Global Environment Facility (GEF). One of the components of this project is a promotion program to support private conservation areas in Region X. As part of this work, a detailed database of privately protected areas in Region X is being developed (CIPMA, 2000a; CIPMA, 2000b).

Table 8.1 *Public and private protected areas in Chile*

Region	Area (ha)	Public protected areas		RAPP-affiliated privately protected areas (1999)		Area in PPAs as % of total protected area
		Number	Area (ha)	Number	Area (ha)	
I Tarapacá	5,878,560	5	633,706	0	0	0
II Antofagasta	12,525,330	4	345,272	0	0	0
III Atacama	7,470,470	3	148,544	0	0	0
IV Coquimbo	4,065,630	4	15,175	0	0	0
V Valparaíso	1,639,613	7	44,494	8	2,690	9
Metropolitana	1,554,940	2	13,194	5	9,654	34
VI O'Higgins	1,645,630	3	46,460	8	23,698	36
VII Maule	3,066,150	7	18,669	17	7,258	28
VIII Bio bio	3,693,930	5	84,359	5	11,141	12
IX Araucanía	3,194,640	13	296,732	12	1,227	0
X Los Lagos	6,824,670	13	606,557	21	264,243	31
XI Aisén	10,899,717	17	4,288,656	16	5,149	0
XII Magallanes	13,203,350	11	7,581,753	1	120	0
Chile	71,972,394	94	14,123,571	93	325,180	2

Source: Elaborated from data in Moreira and others, 1998; and CODEFF, 1999

These sources provide a picture of the importance of Chile's budding private conservation movement (Table 8.1). Initiatives are of a varied nature, but they show that the private sector is devoting considerable amounts of money to purchasing and managing private lands for conservation purposes. Without any government action or incentive, a market for land protection has emerged. However, there are two caveats: first, the available information only covers some of the existing initiatives, because their voluntary nature means that less visible PPAs are not included in case-by-case cadastres or voluntary membership networks. Second, there is no accepted definition of 'protected'. PPA status in Chile

is a verbal statement of good intentions by the landowners involved, and therefore conservation practices vary greatly in efficiency and results. PPAs include strict conservation projects, but also plots of lands with productive uses such as logging or ranching, and a wide range of environmental practices. In addition, with a few exceptions, PPAs lack baseline studies, management plans, and dedicated personnel.

CLASSIFICATION AND DESCRIPTION OF CURRENT PRIVATE LAND CONSERVATION INITIATIVES

CIPMA's 1996 research and cadastre proposed a categorization for Chilean PPAs containing five main types of projects, each of which is described in further detail below (Sepúlveda and others, 1998). These are:

- 1 private parks (38 per cent of initiatives);
- 2 land donations to the national park system (7.5 per cent of initiatives);
- 3 conservation communities (CCs) (25 per cent of initiatives);
- 4 eco-real estate and ecotourism projects (22 per cent of initiatives).

In addition, a public-private form of lands protection was included:

- 5 private administration of government conservation lands (7.5 per cent of initiatives).

Private parks

Private parks and reserves are the most common type of private conservation initiative, but they vary greatly in their characteristics. Their sizes range between 45ha and 300,000ha. Although many are open to the public, in some access is restricted to authorized researchers. There are exceptions, but many PPAs seek some degree of formal recognition by becoming nature sanctuaries or hunting-free zones.

The biggest and best-known private park is Pumalín, which covers approximately 300,000ha in Patagonia. Pumalín was purchased by US millionaire Douglas Tompkins specifically as a conservation reserve. Tompkins has invested over US\$5 million in land purchases alone. As a person with connections to the deep ecology movement, his main motivation is assumed to be conservation per se. Established in 1991, and still in its consolidation stages, Pumalín received 12,700 visitors in 2000. Of these, 1000 stayed in cabins, 3200 camped, and 8500 were day visitors. Its tourism and management infrastructure clearly surpasses those of most national parks.

Another interesting case is that of Oncol Park, owned and managed by the Valdivia Lumber Company. Oncol is located 29km from the city of Valdivia, and

covers 754ha in the heart of the Valdivian eco-region. Of extraordinary ecological and scenic value, this park was a pioneer of the private conservation movement, as it was created in 1989. In spite of being managed with little publicity, its numbers of annual visitors have ballooned from less than 200 in 1990 to almost 12,000 during the 2000–2001 summer season (Ibáñez, personal communication). Oncol has first-class recreational and interpretive trails, camping areas, guest houses, lookouts, and other forms of infrastructure. The Valdivia Lumber company has invested a total of around US\$190,000 in the park (Muñoz, 2001). Unlike many other PPAs, Oncol has a management plan. Although it needs to be updated, this plan allows for adequate land stewardship policies.

Land donations to the national park system

Land donations to the national park system are a modest emerging phenomenon. During the 1990s four relatively small plots of land, varying from 147 to 417ha, were donated to Chile's National Forestry Agency (Corporación Nacional Forestal, CONAF) with the objective of expanding current protected areas or creating new ones (Sepúlveda and others, 1998). In Region XI, CODEFF purchased two plots of land totaling 400ha with funds from the Frankfurt Zoological Society, and ceded them to CONAF under the legal instrument of the *comodato*, through which the landowner reserves the right to revoke the donation if CONAF ever uses the land for purposes other than conservation. In addition, a private landowner donated 417ha in Region VII to create the Bellotos del Mellado National Reserve (Sepúlveda and others, 1998).

Finally, a donation was made in 1995 by the Millalemu Logging Company, a subsidiary of Shell. It is located in a transitional area between temperate rainforests and Mediterranean vegetation, and is rich in rare species such as the Pitao, Red Micha, Roble maulino, Huillipatagua, and Queule. On these 147ha, CONAF created the Los Queules National Reserve (Sepúlveda and others, 1998).² It is common for portions of landholdings purchased by forestry companies to have legal restrictions on logging due to slope or soil characteristics, or because they contain endangered species. Although legal restrictions are seldom enforced, a certain degree of protection remains. Land with restricted characteristics can be a burden to lumber companies that are respectful of the law. Donating them for conservation not only contributes to a better public image; it can also have a financial benefit, relieving them of the cost of maintaining and guarding 'unproductive' areas.

Conservation communities

CIPMA's 1997 cadastre showed that nearly 25 per cent of all land conservation initiatives at that time took the form of conservation communities (CCs). This type of PPA produces a considerable degree of internal homogeneity, hinting at the great potential for replicable institutional formulas. Although they sometimes differ in their details and legal structure, the core concept of a CC is the purchase

of a plot of land in equal shares by a group of people, mainly for conservation and recreational purposes. Most CCs give their members the right to build a cabin or home within a reduced area earmarked for development, while the rest of the land is viewed as a communal park. The areas of CCs vary from 90ha to 35,000ha, and their number of members or shareholders range from 4 to 62 (Sepúlveda and others, 1998). Several CCs have hired temporary consultants, both scientists and administrators, to assist them in managing their properties with conservation criteria. However, because of their recent creation, most communities' medium- and long-term plans are not consolidated. It is possible to differentiate between those that have a clear public use vocation – these could eventually become private parks – and those that are oriented primarily toward recreational uses for their members. It is especially interesting to note that none of these initiatives have for-profit objectives, and that only a couple have decided to undertake income-generating schemes (such as ecotourism) as a way to relieve the burden of management costs.

CCs are usually initiated by groups of friends or acquaintances. One example is Ahuenco, created by a group of scientists who bought a 290ha plot of land on Chiloé island. While doing research into the establishment of a marine park, they saw an evident need to protect the area's safest bay, its sole penguin nesting and breeding area, remnants of old-growth forests, and spectacular scenery. The potential sale of the area to a resort developer made protection urgent. Although no single researcher was able to meet the seller's price by him- or herself, an expanded group closed the deal and set itself the mid-term objective of purchasing two more plots and thus connecting Ahuenco to a nearby national park (total purchase objective: 1210ha). As of 2002, one plot remains unprotected.

Eco-real estate projects and ecotourism-based land protection projects

Eco-real estate projects are similar to CCs in that they divide a large piece of land into a reduced development area and a broader communal park, but they differ in that they are usually initiated by real estate firms and have profit rather than conservation as their main purpose. Current projects vary from 2500 to 20,000ha. Advertisements for eco-real estate projects have appeared with increasing frequency in national newspapers during the last decade, confirming the importance of this type of project in the local market. Most have been developed in the southern part of the country. There is also a significant market for second homes in rural areas around Santiago. Both schemes are aimed at middle to upper class people, who are offered an exclusive holiday or weekend spot with access to a private park of relatively significant extent and ecological value. Apparently, the demand for conservation, as expressed in the creation of private parks and conservation communities, has triggered a market response: developers are supplying conservation parcels in communal parks and ready-made protection projects, saving buyers the inconvenience of organizing their own individual or group grassroots project.

One of the first, largest, and most publicized eco-real estate projects has been the 20,000ha Tepuhueico Lake Development and Park on Chiloé Island (Region X). During its initial stages, the project successfully sold 100 plots and used the rest as a communal park. The original project included internal bylaws and design standards that regulated the size of constructions, types of materials, and boat motor capacity, and excluded domestic animals (among other restrictions). Encouraged by people's obvious willingness to pay for plots of land in a beautiful setting, with their 'own' vast forest and unpolluted lake, the Tepuhueico Lake real estate company decided to develop a second phase, thus violating the spirit of the original agreement. Unfortunately, the limits of the communal park were not clearly established in the first phase buyers' contract, making legal action difficult. To date, 1000 parcels have been sold, reducing the original conservation park to 15,000ha. The company plans to sell another 4000 parcels. More critically, large areas that were meant to form a park, and which could originally be accessed only by water, have now been divided up by 40km of roads. However, protection areas within other eco-developments can be better safeguarded. For example, the Oasis La Campana development in Chile's Mediterranean eco-region transferred the title of its 1000ha communal park to a foundation created specifically for that purpose (Moreno, 2001).

Some ecotourism developers have also discovered the financial benefits of being able to offer clients their own PPA as an attraction. The purchase of areas to serve as centerpoints or base camps for nature/adventure experiences has become increasingly common. Such is the case with CampoAventura, an 80ha protected parcel in Cochamó at the northern limit of Patagonia with charming and intentionally rustic dwellings. It serves as the headquarters for three-to-ten-day horseback riding treks into the exuberant surroundings of adjacent valleys (which are under no protection status other than that offered by their inaccessibility).

The largest ecotourism-based land protection project is Alerce Mountain Lodge, set in a 2000ha PPA adjoining a national park in Region X. Purchased in 1995 with the original intention of harvesting valuable old-growth Alerce wood, timber activity has now been reduced to a minimum, and activities have centered around its exclusive lodge. Clients pay hefty sums to enjoy its luxurious accommodation and natural surroundings. Once again, due to the lack of research, it is not clear how important profit or conservation motives were in the decision to change the project's focus.

Private administration of public conservation areas

Although not a completely private form of land conservation, the administration of public lands by non-profit private foundations in Chile was a temporary phenomenon which is interesting to explore. During the 1990s the Chilean government, lacking the resources to protect and administer its vast network of conservation areas, decided to experiment with the administration of national lands by private foundations. The first experiences involved concession contracts for a set number of years. These were awarded by the Ministry of Public Property

(Ministerio de Bienes Nacionales) to environmental organizations, which were to administer the areas according to clear conservation purposes. Three foundations – Melimoyu, Lahuén, and EDUCEC – received administrative rights for government ‘paper parks’ (public lands on which protection went no further than a printed decree) or unoccupied public lands that ranged in size from 17,000ha to 35,000ha. Unfortunately, these early experiences met with limited success, and contracts were not renewed when they expired in 1997, apparently by mutual consent. The reasons for this have not been properly explored, but are related to the private foundations’ inability to generate sufficient resources to finance maintenance costs, as well as the absence of a clear public–private cooperation policy (Sepúlveda and others, 1998).

In 2001, the Ministry of Public Property had initiated a second round of concession contracts for the private administration of public lands. This time, concessions tend to be focused on ecotourism business ventures, especially through the Austral Plan, a project that provides significant tax incentives for this type of private investment in the portion of Patagonia contained within Region XI.

MOTIVATION OF MARKET PARTICIPANTS

Whether for idealistic reasons, recreational purposes, profit, or a mixture of these, people are demonstrating their willingness to pay to own private parks and/or spend considerable sums to enjoy a holiday in such areas. This willingness to pay for land conservation competes with extremely strong lumber interests (as already described) and traditional uses of the land: rural landholders are used to extensive, unproductive cattle operations, the use of forest fires to clear pastures, and firewood extraction. The power of land conservation market forces and the characteristics and motivations of the actors involved have not been quantified or scientifically described, but even anecdotal references can be quite enlightening.

For example, in addition to the approximate figure of US\$5 million that has been invested in direct land purchase, Pumalín Park faces annual expenses estimated at US\$700,000, while annual earnings are estimated at only US\$50,000 (*Qué Pasa*, February 3 2001). Although the park has received over 12,000 visitors in one season, many of these are tourists who travel the Austral Highway through Pumalín Park, stopping just for the day and thus paying no entrance fee or lodging costs. The Conservation Land Trust, created by owner Douglas Tompkins specifically for this purpose, provides 98 per cent of maintenance funds. This foundation has also financed most of the infrastructure projects, which include a cafeteria, trails, camping areas, a schoolhouse for local inhabitants, and demonstrative productive units. These have cost approximately US\$20 million (*Qué Pasa*, 3 February 2001). The park provides approximately 250 permanent jobs.

Although an extremely interesting case study, Pumalín Park lies in a category of its own and does not reflect the characteristics of the national market. It is

Table 8.2 *Examples of the conservation community market*

<i>Conservation community</i>	<i>Area protected (ha)</i>	<i>Number of shares</i>	<i>Cost per share (US\$)</i>	<i>Monthly per-share maintenance fee (US\$)</i>
Altos del Huemul	35,000	90	n/a	none
Ahuenco A	290	25	5,500	25
Ahuenco B	450	34	5,500	25
Factoria	2,000	43	10,000	25
Namuncay	400	20	27,000	50
Quirra-Quirra	207	25	7,250	25
Lago las Rocas	600	3	n/a	none

Note: n/a: information not available.

Source: Author's calculations based on information provided by Corcuera, 2001; Calcagni, 2001; Durston, 2001; Gómez, 2001.

interesting to examine data on conservation communities and eco-development projects, which are more representative in their origin and nature (see Tables 8.2 and 8.3).

Tables 8.2 and 8.3 show that there are Chileans willing to spend substantial sums on land conservation, without necessarily expecting a financial return. In fact, people are willing to make regular payments in order to cover the costs of stewardship. This is surprising in the local context, because philanthropy toward environmental non-profit organizations for land conservation is practically non-existent. In Chilean society as a whole there is little tradition of donation to non-profit organizations others than those that are church-related or aimed at poverty reduction, which are viewed by many as more urgent concerns. Nevertheless, large sums are made available when conservation is linked to personal enjoyment and ownership. The spread of CCs and eco-real estate projects is a sign of market success and indicates the potential for initiatives that combine conservation objectives with individual enjoyment and ownership. In a country with strong constitutional protection and deep respect for private property rights, it is noteworthy that CCs and eco-real estate projects are institutionalizing formulas that confirm the pre-eminence of private property, while making it compatible with conservation objectives.

SOCIAL BENEFITS OF PRIVATELY PROTECTED AREAS

The most notable characteristics of the private lands conservation movement in Chile are its complete spontaneity and positive social effects. Non-systematic qualitative interviews with PPA project originators (Villarroel and others, 1998; Villarroel, 2001; Sepúlveda, 2001) show that PPAs have been created by individuals whose motives include pure conservation and profit in differing combinations.

Table 8.3 Examples of the eco-real estate market

Real estate project	Area protected (ha)	Total project		Number of lots	Cost per lot (US\$)	Monthly costs (US\$)
		area (ha)	area (ha)			
Oasis La Campana	1,000	2,500	2,500	484	20,000	25
Lago Tepuhueico	15,000	20,000	20,000	5,000 ^a	6,500–14,000	none
San Francisco de Los Andes	1,800	8,100	8,100	400	11,500–30,000	60
Parque Los Volcanes	1,150	1,600	1,600	330	14,000	22
Parque Kawelluco	800	1,200	1,200	400 ^b	n/a	25
La Invernada	660	530	530	94	11,500	25

Note: a 1,000 sold to date.
b 60 sold to date.

Source: Elaborated from information provided by Moreno, 2001; Sepúlveda and others, 1998; Tapia, 2001; Larraín, 2001; De Pablo, 2001; Fierro, 2001; Correa, 2001; Ziller, 2001; Donoso, 2001.

It is possible to hypothesize that the main motivations for purchasers include the desire to protect an untouched scenic and recreational landscape, and the desire for the personal right to enjoy these places and later leave them to their children – what we might call ‘personal-benefit idealism’. Social benefit is probably only a secondary motivation, nothing more than a desirable side-effect. Luckily for the country, the private purchase and conservation of land do have important positive externalities. Perhaps the most important are:

- scenic protection and its resulting benefits for tourism, recreation, and quality of life;
- biodiversity conservation; and
- providing environmental services such as carbon sequestration, water supply protection, flood regulation, and erosion protection, among others.

PPAs are helping to provide these benefits to society at no cost to the government. However, in many ways the benefits provided by PPAs fall significantly short of what they could.

Un-met biodiversity conservation priorities

The National Protected Areas System (Sistema Nacional de Areas Silvestres Protegidas del Estado, SNASPE) covers almost 20 per cent of Chile’s territory (CONAF, 2001), which is a large proportion by international standards. However, 84 per cent of all protected areas are found in the rainforests and icecaps of Patagonia, leaving 19 out of 85 vegetational formations completely unprotected and many more under-represented (Gajardo, 1995; Moreira and others, 1998).

A conservation strategy aimed at optimizing biodiversity protection would privilege the conservation of rare and unprotected ecosystems (Simonnetti, 2000). However, the opposite is true in the case of private land conservation markets. Region X, where the highest density of PPAs is found, already has 9.2 per cent of its area under public protection. Although this might be considered sufficient, there are significant gaps in the representation of several Valdivian forest subtypes: most of the 600,000ha are concentrated in the Andes. In the central valley and coastal range, where diversity is higher and subject to a greater development pressure, protection is almost nonexistent. There are other regions where the situation is much more pressing: in regions IV through VII, for example, SNASPE covers less than 1 per cent of the territory (Calcagni and others, 1999). In spite of the need for PPAs in central Chile, private protection projects tend to concentrate in the south, perhaps because of lower land prices and the fact that the scenery is more universally appealing.

Size and connectivity

Most Chilean public parks are not big enough to sustain long-term, genetically viable populations of most large mammals (Mella, 1994). Furthermore, there is a low level of connectivity between the park system’s units (Tacón and others,

2001). CIPMA's cadastre and RAPP membership show that, with notable exceptions, most PPAs in Chile cover less than 400ha, and few are adjacent or close to national parks (Sepúlveda and others, 1998). 400ha is a much smaller area than most umbrella species require in order to maintain viable populations; adequate ranges have been estimated at between 10,000ha and 25,000ha (WWF, forthcoming).

There is a clear role in stand-alone conservation for those few initiatives that cover thousands of hectares or include site-specific values, such as the previously mentioned penguin nesting/breeding area at Ahuenco. However, due to their small average size, the most useful role for a PPA in biodiversity conservation is probably as a buffer zone around an existing park, or as a connecting biological corridor between other protected areas (Tacón and others, 2001). Although some of the current initiatives have taken on buffer and connectivity roles, this is far from common and follows no plan. Where it occurs, it results from scenic coincidences.

Management standards and quality

Knowledge of ecosystems and species within PPAs is highly variable and informal. Well-meaning landowners sometimes cannot recognize valuable species or systems on their lands, and therefore do not adopt the best conservation measures. Activities such as grazing or logging frequently continue within unilaterally declared 'protected' areas, without any evaluation of the areas best suited to these activities, a zoning proposal, or measures to help mitigate their environmentally harmful effects.

Although some PPAs are well managed, this is unusual. And even though private landowners should not be loaded down with scientific or management requirements, information and incentives should be offered in order to promote their voluntary adoption. Some of the most important indicators of a well-managed park include the existence of a baseline study and scientific inventory, and the creation of a management plan that clearly establishes areas appropriate for different uses. This management plan should then be applied, and the effectiveness of resulting conservation should be monitored on a continuous basis. Constant vigilance is desirable, and landowners must be willing to take legal action to ensure conservation objectives. In Chile, such standards and practices are seldom applied. They require a high degree of professional knowledge, time, and resources, and bring the individual landowner low returns.

Access and recreation opportunities for the urban poor

Access and recreation opportunities for the urban poor are important equity issues that are not addressed by public and private land conservation initiatives. 78 per cent of the country's inhabitants are in Regions IV to VII, but these regions encompass only 1.4 per cent of protected areas. The most extreme case is that of the Metropolitan Region, which has 40 per cent of the country's population but only 0.13 per cent of publicly protected areas (Calcagni and others, 1999). Public and private parks tend to be located in the southern lakes district and

Patagonia, both of which are far from the country's most important cities, partly because of the decrease in land prices as population densities fall. Thus the urban poor, who do not have the money to travel thousands of kilometers, have little access to parks and the recreational opportunities in natural surroundings that they offer.

Links to rural development

As is clearly expressed in speeches by government officials, Chile has unfortunately adopted a government policy of 'development first, conservation later'. Pumalín Park, as the largest project, has suffered considerable criticism in certain quarters. Many politicians have emphatically argued that the park prevents an entire region from implementing much-needed development, and that it marginalizes rural inhabitants. But such statements tend to be based on the erroneous premise that development and conservation are mutually exclusive. Land conservation can encourage rural development by bringing in tourist dollars, and is compatible with the production of non-timber forest products (such as bamboo, mushrooms, seeds, honey, and handicrafts) and with a great variety of services like water production, fisheries, and ecotourism. Land conservation should and can include local communities, and contribute to the improvement of traditional extractive uses such as silviculture, cattle operations, and agriculture. The opportunity cost of conservation has also been greatly exaggerated: Pumalín's lands have very few alternative uses, as most of the area has very steep slopes.

Working with local farmers and communities to develop new models of conservation-based development is a long-term task, however, which requires continuous presence in the field and funds for community projects. Investments must be made in intangible assets such as education and relationship-building, and the benefits take years to become apparent. For private landowners who are generally motivated by recreation and conservation, the complicated politics of community conservation and its high costs prove quite discouraging, and few examples of community-based parks exist. One exception is Mapu Lahual, a network of locally administered community parks being implemented by six Huilliche indigenous groups in Region X's coastal range. With initial encouragement from CONAF, and now backed by the Temperate Rainforest Fund (a fund created with financial contributions from WWF and the Council of the Americas-Chile), these communities consider ecotourism an attractive alternative to current timber extraction activities (Comunidad Indígena Maicolpi, 2000).

Unfortunately, to date few other private conservation initiatives in Chile have incorporated rural and indigenous communities into the management of parks, are producing non-timber forest products, or have significantly been dedicated to 'sustainable productivity'. Farmers and communities rarely have ecological mindsets, while private landowners with better economic situations see that they will get better returns for their investments from simple recreation. If rural development linked to conservation is to become a reality, the effort should be led by the public sector, for private actors will need significant education and/or incentives.

Continuity

One of the greatest drawbacks of PPAs as they are currently structured is that they depend entirely on their owners' goodwill and resources. The Chilean public parks system enjoys a certain degree of security due to their creation through legal decrees that can be burdensome to change. In comparison, PPAs are many times more vulnerable, for they can be dismantled on a landowner's whim. With a few exceptions, there are no assurances that these areas will not be sold to (or inherited by) people with different objectives, or that the current owners themselves will not modify or eliminate their conservation objectives, as has already happened in some areas. Existing legal protection and continuity alternatives for PPAs are inadequate and need to be improved:

- **Purchase by a CC.** 'Communities', as defined by law, are groups of people who freely associate for a purpose. If any member wishes to leave the community and requests individual title to his or her corresponding amount of land, the other community members must allow it. In order to avoid this possibility, existing CCs have adopted complex statutes, and in some cases have even separated the ownership of the land (held by an anonymous society that issues shares) from the community itself. However, as these are recent improvisations it is unclear how well they will work.
- **Purchase by an NGO or foundation.** NGOs, as non-profit institutions, have limitations on changing their objectives, and a social responsibility that is usually taken very seriously. Ownership of PPAs by NGOs would thus provide greater continuity. However, land purchases have a very high capital cost, and then become a perpetual monitoring and stewardship burden. For this reason, most non-profits understand that land acquisitions can only be done with a corresponding endowment fund that ensures continuity. Since most Chilean NGOs are strapped for cash, the total percentage of private initiatives that correspond to direct purchase by foundations is quite small so far. Although it is a valuable alternative for specific and highly fragile environments, purchase by NGOs is probably not the right solution. It is also not an option for landowners who wish to retain ownership of their land.
- **Nature sanctuary.** Private landowners can ask the government to declare their land a nature sanctuary. This status obliges owners to request permission from a special committee before any significant changes are made. In addition, this status mandates an environmental impact assessment for any roads, pipelines, or other large public infrastructure projects, thus offering a limited degree of protection. However, very few sanctuaries exist, mainly because there are no incentives for the landowner, only restrictions. This category could be improved, and standards and incentives for landowners encouraged, thus making it a more effective mechanism (García and others, 1998).
- **Donation and *Comodato*.** The donation of a plot of land to a public or private agency, specifically for environmental protection purposes, offers a certain degree of legal security and continuity. However, it has only been

applied to four plots of land so far. It is a very limited legal mechanism in its ability to attract donors for, as we have seen, private landowners seem to enjoy the ownership of natural surroundings for personal recreation purposes. Giving away land, even with restrictions, is not an attractive option for most (Villarroel and others, 1998; García and Villarroel, 1998; García, 2000b).

- **Conservation easements.** A recent idea in the context of Latin American legislation, conservation easements have been used for decades in the United States and other common law countries. They consist of partial restrictions on the owners' rights to use their land in order to maintain its conservation values. Restrictions are agreed on a flexible and voluntary basis by negotiations between specialized non-profit organizations called 'land trusts' and the landowner, and then become obligatory (Chacón and Castro, 1998). Although theoretically possible within Latin American civil law, this mechanism has so far scarcely been tested and there are many legal questions as to its recognition and enforceability. Questions arise mainly from the fact that legislation recognizes easements in general and for specific purposes such as transit, but nowhere in Chilean legislation is there a specific reference to conservation easements. Clear and unquestionable legislation recognizing conservation easements, and eliminating certain burdensome requisites such as the existence of dominant and servant parcels, would make this continuity tool available (Corcuera, 2000; Bañados, 2000).

PUBLIC ROLE IN THE OPTIMIZATION OF A LAND CONSERVATION MARKET

So far in Chile, the government has protected public areas, and the private market has protected others. Public-private cooperation has been scarce, and there are no strategic, legal, or economic policies related to private land conservation that motivate and improve the social and biodiversity results of initiatives. The fact that people are moving significant resources into land conservation proves that there is a market force that could be tapped by a proactive government, enhancing the positive externalities of private conservation.

Strategically, it would be useful to have a national-level policy that identifies and maps areas according to their biodiversity conservation priority. It should privilege under-represented ecosystems, connectivity between existing public and private parks, the creation of buffer areas, and social access. Although scientific research that prioritizes areas for conservation has traditionally been considered a governmental responsibility, recent efforts demonstrate that the private and non-profit sectors are starting to assume partial responsibility. For example, the most comprehensive assessment of the Valdivian rainforest eco-region to date was created by WWF (forthcoming). Smaller efforts, such as subregional and watershed conservation priority-setting, have also been conducted by the private sector. This was the case, for example, in the Cochamó watershed in Region X,

studied by Fundación Lahuén (Frank and others, 2001). However, no scientifically credible NGO with plentiful economic resources and a wide public audience has made it a priority to lead a national-level strategic private conservation priority-setting exercise. Few, if any, local private organizations have the power to successfully lead such an effort. Assuming that the government will create incentives for PPAs (monetary or not) in the future, a strategic framework would be a basic tool necessary to prioritize support for private conservation projects according to their social benefit.

Another required strategic measure is to define quality standards for the management of PPAs. These standards would be the yardstick against which private conservation initiatives could be measured, and support could be offered only to those that comply with minimum standards. CIPMA and CONAF have currently agreed a standards proposal that will begin to be tested in the three demonstration units of CIPMA's Valdivian eco-region GEF project, and which would achieve its true potential if adopted on a national scale (Proyecto CIPMA-FMAM, 2001).

Legal alternatives

Currently, the only available legal protection options are the improvable mechanisms of nature sanctuaries, CCs, land donations, and direct purchase, and the relatively untested option of conservation easements. Better and clearer long-term legal conservation options are needed, along with the appropriate incentives for private landowners to adopt them.

The most attractive legal options would provide significant conservation improvement without costing the government anything. Examples include the explicit legislative recognition of conservation easements, or a specific statute for CCs that responds to their environmental and continuity needs but avoids the limitations of the current community regulation framework. The choice of instruments needs to be based on an understanding of landowners' motivations, something that unfortunately has not been present to date. The most significant effect of these clarification and simplification measures would be to provide a legal basis for the permanence of current projects for which conservation is a primary objective. However, if one also wants to encourage and guide the privately-owned land conservation market, no doubt there must be incentives for landowners to adopt legal protection even if their primary objectives are recreation and/or profit.

Incentives

A range of market, tax, and social recognition incentives are needed. In Latin America, the most effective policies have combined the elimination or reduction of property taxes – which are normally too low for this to be an effective incentive in itself – with weightier economic 'carrots' such as direct subsidies or lower income taxes, access to competitive funds, and training and technical assistance for the creation of conservation-associated businesses (Tacón and others, 2001).

Although the cost of a comprehensive package of incentives has not been estimated, interviews with current PPA owners indicate that their preferred methods would be relatively cheap: for example, such measures as technical assistance, training, and formal recognition (Villaruel and others, 1998).

A proactive government policy would both increase the area protected under PPAs and re-direct existing ones toward greater social benefit. However, this requires the determined involvement (which has so far been absent) of the government in improving the market from strategic, legal, and economic points of view. Article 35 of the Environmental Law stated that the government would seek to promote PPAs: there is much to be gained if the government makes that theoretical policy spring to life.

PRIVATE ROLES IN THE OPTIMIZATION OF A LAND CONSERVATION MARKET

In the absence of government action to structure and improve the private conservation market, the local environmental NGO community is leading a series of projects aimed at improving the overall effects of private land conservation. Potentially the most valuable projects, in terms of generating replicable policy mechanisms and market regulations, are as follows.

- 1 **The creation of management standards.** As mentioned above, the creation of a set of common definitions for PPAs and compatible uses is of the utmost importance. CIPMA's Valdivian eco-region project is working on this in partnership with CONAF. It is generating and describing PPA categories and their corresponding management standards, using a protocol that recognizes different degrees of conservation intensity. Proposed PPA categories vary from strict conservation to mixed productive uses. Landowners could voluntarily apply for certification under the appropriate category; if accepted into the scheme, they would gain access to various incentives. This protocol is being applied and tested in three demonstration areas before being adjusted and applied to PPAs at large.
- 2 **Green real-estate brokerage.** A small-scale approach to this issue has been initiated by CODEFF. It intends to implement a green real estate brokerage program that attempts to link conservation buyers and sellers. Unfortunately, to date the program has provoked more interest among sellers than among buyers.
- 3 **Non-monetary incentives.** CIPMA's Valdivian eco-region project is implementing a PPA promotion program in Region X, which includes a set of non-monetary incentives (training, technical assistance, information, and social recognition). The project hopes to gather information about the effectiveness of the different incentives. This experience will contribute to a new set of non-monetary incentives that could be applied in other regions.

- 4 **Voluntary legal agreements.** Many currently-unsecured initiatives are supported by environmentally conscious landowners who would probably like their land to be protected in perpetuity. Such people tend not to know very much about legal methods to ensure long-term conservation, and of course they also don't want to lose money. The US experience shows that non-profit organizations can play a very important role in reaching agreements with private landowners that legally ensures the permanence of their protected areas. Some NGOs have taken the lead in researching legal options, informing landowners, and negotiating agreements, and have often assumed stewardship and responsibility for monitoring costs in perpetuity. Because of the shortage of knowledge and finance in the Chilean NGO community, there is still a long way to go, but such an approach has great potential.
- 5 **Eco-regional and subregional priority-setting studies.** As previously mentioned, in recent years the non-profit sector has begun to lead strategic ecological planning exercises. However, the frequency and range of assessments must improve enormously if this is to be significant. It is also unclear how far these private products will be accepted and used within the public sector.
- 6 **Information exchange.** The private sector in Chile has started to develop a wealth of practical and theoretical knowledge as to what works and what does not in terms of private conservation. For the most part, this knowledge exists only in each project landowner's head, and within a few non-profit organizations. Independently of the level of governmental involvement over the next few years, it is crucially important for the private sector to create opportunities for mutual learning such as conferences and seminars, field visits, publications, and training materials.

CONCLUSION

As an analysis of the Chilean experience shows, the spontaneous emergence of a land conservation market is a positive phenomenon that helps to achieve desirable social objectives at a minimal public cost. Nevertheless, private action does not by any means ensure that conservation takes place at the desired scale, or in locations where biodiversity threats are most pressing. Nor does it occur with any degree of connectivity, to appropriate standards, close to those who need it most, or in a way that promotes sustainable rural development. Conservation, when left to the free market, tends to occur in limited areas of scenic beauty, under inappropriate management standards, without any legal assurance of long-term continuity, with minimal contributions to local sustainable businesses, and at great distance from urban cores and the people who would most benefit from access to natural recreational opportunities.

Public policy should be encouraged, and market and social incentives could be used to promote and support private conservation initiatives, expand their coverage, and improve their management and effectiveness. In-depth knowledge

of investor behavior and motivations will be critical in the development of appropriate incentives. Available qualitative data allow us to hypothesize that private landowners might not need much incentive to adopt appropriate management practices, or to commit to the long-term continuity of conservation, but that it might be considerably more difficult to attract investors to areas of limited scenic beauty, or persuade landowners to open their parks to the poor. After all, many conservation communities and eco-real estate projects are formed primarily for the enjoyment of their members or shareholders. PPAs are probably better suited to some objectives than others.

In addition, no individual PPA can fulfill all the objectives. Recreational opportunities for the urban poor might not be compatible with the conservation of hot spots, or with landowners' personal recreation and environmental protection objectives. These things vary greatly from project to project, and incentives should reflect the differences that exist between various private conservation initiatives. The formal regulation of PPAs must recognize this heterogeneity and should include different degrees of productive use compatible with conservation, so that incentives can be directed toward a diverse range of objectives. The practical testing of non-monetary incentives, such as those included in CIPMA's Valdivian eco-region project, will generate valuable lessons for the design of replicable appropriate measures.

Even considering the relative importance of Pumalín Park in the universe of Chilean PPAs, and private initiatives' shortcomings overall, it is no less than astounding that, in the absence of public policy and incentives, in little more than ten years the private market has protected an area estimated at well over 450,000ha. We can only guess at what the private land conservation market could achieve with proactive government policies and a mature and specialized non-profit sector. Among the free-market opportunities to promote biodiversity protection and sustainability, few are as ripe and promising as the private land protection market.

NOTES

- 1 The authors would like to thank the many private landowners who contributed valuable information about their conservation projects for their assistance, innovation, and commitment to conservation. CONAF and CODEFF also helpfully provided data on PPAs and RAPP membership, respectively. This Chapter would not have been possible without the support of the GEF and the World Bank, who provide finance and technical support respectively to CIPMA's Valdivian eco-region project. Finally, the authors wish to thank the editors for their helpful comments and suggestions.
- 2 Lumber companies are the biggest landholders throughout most of southern Chile. They bought enormous tracts of land at very low prices a few decades ago, when the government was offering attractive incentives packages to promote the creation of a logging industry. Forest companies have continued to acquire land throughout the 1990s, mostly by purchasing private plots from small farmers in economic trouble, indigenous communities, and absentee landowners.

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PEOPLE INTERVIEWED

(All were interviewed during September–November 2001)

- Calcagni, R. – Founder, Namuncaí Park.
- Correa, F. – Administrator, San Francisco de Los Andes Reserve.
- De Pablo, F.J. – Founder, Alto Huemul Natural Sanctuary.
- Donoso, J.P. – Manager, La Invernada Reserve.
- Durston, J. – Manager, Quirra-Quirra Reserve.
- Fierro, M. – Founder, Lago Las Rocas Private Reserve.
- Gómez, R. – Founder, Lago Las Rocas Private Reserve.
- Ibáñez, E. – Forest Keeper, Oncol Park.
- Larraín, R. – Administrator, Parque Kawelluco.
- Moreno, M. – Manager, Oasis La Campana Ecological Reserve.
- Muñoz, A. – Forest Consultant.
- Tapia, M. – Bookkeeper, Tepuhueico Park.
- Ziller, A. – Inmobiliaria Ayko Ltd., Los Volcanes Park.

