

CONFLICTING WATER USAGES IN NORTHERN CHILE

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The paper aims to characterise adverse management and help to identify socio-economic and ecological thresholds in arid and semi-arid areas, whilst examining how populations have historically used the natural resources in Northern Chile. After an introduction to the study area, the methodology and the objectives of the field research are defined to outline environmental conditions and natural resources management in the study area over times in order to set a baseline for discussing social and ecological change. Presentation of results contrast the old water and soil management practises with the new water legislation, in relation to the water monopoly recently granted to private businesses in Chile. Conflict between the old and the new ways, as well as Court jurisprudence over water ownership, support the final case study discussions and the conclusions.

Fieldwork has been performed within a joint Portuguese Chilean team, under The Portuguese Tropical Research Institute leadership, using a University of Chile vehicle and 3,400 metres meteorological station. Community organisation, water and land management philosophies that have been successful for millennia were investigated within the Aymara Indians, cross examining scarce literature available and sample researching pueblos and riverine settlements, in Chile as in neighbour border Peruvian and Bolivian areas, covering an extension of over 6,000 kilometres. A total number of 30 villages and periurban settlements were explored, intended to typify Aymara major ways of life. In-depth interviews aimed five stakeholders groups:

- 1) Regional authorities, planning cabinets' technicians, environment and health authorities;
- 2) Aymara Indian associations and indigenous population commission's representatives;
- 3) Common indigenous settlers, most of them herders or farmers, not to forget artisans and traders;
- 4) Local university colleagues, as well as teachers settled in remote Andean pueblos.
- 5) Water bottling enterprises and mine workers.

Water is a valuable but limited natural resource. The productive usages of water in Northern Chile are mainly four: agriculture, mining, hydroelectric power generation and fresh water supply. As population grew throughout the 20th century, particularly in Northern and Central regions, the gap between demand and provision of water widened, the shortage being most scarce in the First (Tarapacá) and Second Regions (Antofagasta). Accordingly, several water codes were legislated and implemented in the country: in 1951, 1967, and 1981:

- i) The 1951 legislation, Chile's First Water Code, established a balanced combination of private rights and public regulation. It was subsequent to the post-war period population boom, and the regulations clearly distinguished public from private uses and decentralized water management. Water rights granted were registered in local offices as real estate titles. The 1951 Code established a formal legal doctrine and administrative procedure for granting private rights to use waters that were publicly owned but treated as private property. However, concessions of water rights to private sector businesses were regulated and transactions to other beneficiaries were permitted, providing they developed the same economic activity. Last but not least, water rights were legally tied to landownership and could not be transferred separately.
- ii) In 1967, a Second Water Code modified the right to exploit and use water resources stipulating those to be exclusively state affairs. Land titles could give the owners privilege over the precious resource, but that permission wasn't inherited or traded on the open market, the Chilean government having the unchallengeable entitlement to give or to take away water rights at any time, according to central planning parameters and determinations. The 1967 Water Code was the by-product of Agrarian Reform Law approved during Frei Presidency.
- iii) The Third Water Code was enacted in October 1981 and it was a clear victory of neo-liberal economists, using general discontent over confusion and neglect after the 1973 military coup. Because the 1967 water regulations restricted the scope of private property rights, and social function of property was no longer admitted, the military regime reviewed both landownership laws (in 1979), and the 1967 Water Code. Water was henceforth considered a national asset available for private use. As a transacting commodity it became possible to freely trade it on the market, as a separate entity. Water concessions were granted under demand to any individual or to any business and were legislated to be tax free. This way political power gave away a common and previously public commodity without minimum ecological capacity definition for streams and groundwater sources. However, mining legislation was not significantly altered, kept as a public affair under strict governmental control. Furthermore, mining concessions have been given an exception status because they constitute the sole proprietor that does not need to ask for permission to freely use both surface and groundwater comprised within the exploitation areas.

Water was meant to have the same constitutional significance as soil property, which obviously turned land and water into separate entities, disregarding the water cycle and the ecosystem approach. In practical terms, it meant that one might own soil but not water that flowed underneath or over, if by misfortune it had been granted as a permanent concession to any other enterprise or individual, upstream. The emphasis on this issue is of extreme importance to understand the effect the law has in desert and semi-desert areas and to the general public in Chile. Water rights may be given permanently or eventually, continuously or discontinuously, to anyone and also in turns to several actors, being measured in volume per time unit (m^3/second).

Consequences of water legislation were serious limitations imposed to traditional economic sectors, and a clear privilege to the fast return activities and lucrative segments, particularly mineral extraction. In spite that fact, very few scientific discussions have been conducted over the contending issue of water management in Northern Chile. Available case-studies usually target central and southern regions where there is plenty of water, areas inhabited by conflicting Indian contenders (Mapuches), whereas the northern drylands and its residents are despised. Indigenous rights of Aymara and Atacameño Indians have been ignored through times, because they constitute a peaceful minority that rarely appears on the news. A selection of interesting general analysis about water privatisation in Chile reviewed lay emphasis on the conclusion that market is unable to solve the situation by allocating the inestimable resource to its best-valued use, either consumptive or no consumptive.

The joint Portuguese Chilean team has sample researched three paradigmatic conflicting situations:

- 1) Azapa valley that has been water supplied from the 1960's with resources from the high plateau, because the stream was too meagre to serve both the large irrigation project intended for periurban farming and urban demands. Lauca River spring located above 4,000 metres high has been selected to feed the dam for being affluent enough and its water has been channelled to Chapiquiña, over the Andean slopes. Location choice had not only to do with geological reasons but to the least expensive transportation costs because the site serves as hydropower generator and fresh water deposit. Till our days Bolivia claims the dam to have harmed national interests, because the river flows into their territory virtually without water.
- 2) Another example of old Indian ways opposition to modern businesses was recorded at Chusmiza, a remote Andean pueblo, very rich in sulphur springs of water, quite warm and recommended for bone therapy. The small village is located on the high plateau at Iquique province, whereas the former belongs to northern Parinacota province. Interviews to local Aymara cacique and a couple other Indian farmers resulted into a long complaining index (February 2004). The Aymaras had been in judicial dispute against the owners of a bottling mineral water enterprise for 7 years, claiming the land and mineral water sources had been illegally taken from them, a litigation based in consuetudinary rights. The Indians had recently won the right to suspend the bottling business but so far not gained the water concession itself.

By contrast, enterprise representatives have argued the production to have been suspended because of water scarcity, and not as a result of Indian efforts.

- 3) Last but not least, Loa River conflicting water management example has granted us the unique possibility of testing all 1981 Water Code dramatic flaws, resulting from a near desert location. The basin, the widest in Chile, is situated in border areas of Aymara and Atacameño territories, affecting both indigenous peoples as well as migrant residents. Demographic occupation of Loa's riverine areas date from the year 900 of our era, dispersed above 3,000 meters where Summer rains fed cactus (*Heliantocereus atacamensis*) and small bushes (*tolar*), typical vegetation from Andean slopes. Fodder, horticulture farming have also been practised there, using ancestral *canchones* techniques. Carlos Aldunate studied Turi moors, located at Salado River, one of Loa's tributaries, in the year 1985. The spring had just been given to the public copper mine group – Codelco Chile – that owns all the sites in the northern regions, causing direct damage to an irrigated alfalfa area of 1,500 hectares, used to feed about 2,000 animals, namely llamas and sheep. Local indigenous population further tended about 10 hectares of highly productive maize, wheat, potatoes and horticulture produce. As researched, Turi moors are nearly depopulated in our times, as is Upper Loa Basin where 800 people lived 20 years ago and now accounts about 300 residents. It has provoked abandonment at Lower Loa provinces too, such as Maria Elena that has halved its residents between 1992 and 2002. Most of former Aymara and Atacameño farmers migrated to Calama (136,739 inhabitants), a city located at middle Loa course, in the Second Region, 15 Km distant from the copper mine of Chuquicamata the largest open pit in the world. The influx has been augmented recently for encroachment by the growing pit and increased enforcement of pollution regulations forced the dismantling of the old mining camp.

Forced accumulation of people in the least humid environments, exactly were desert is a natural feature, as is the case with Pacific Ocean cities, pampas and oases, whenever associated with legal appropriation of springs, rivers and groundwater accumulated high above the mountains, easily drives to depopulation and aridity enhancement. The issue here is water concession to given economic groups in Chile versus deficient supply and shortage affecting both minority indigenous populations and the fragile local ecosystems. It was a politically driven choice. It has been part of a cultural disintegration process aiming abandonment of rich mineral deposit sites.

Chilean government argues that management in waterless areas is obviously difficult, gold and copper mines are more viable than subsistence farming. That's not arguable for us either using economic reasoning. However the *bofedales* are drying above the Andes, sloped terraces are being abandoned and rural exodus is widespread. Indigenous populations and their livestock are being evicted from the Andean pueblos for water scarcity reasons. Extractive industries, bottled water enterprises and medium sized cities such as Arica, Iquique and Calama need considerable amounts of water and energy to survive. Water is no longer a common good available for public usufruct and used in shifts

as in Tiwanakotas and Aymara ancient times. It is no longer a public good connected to landownership and evenly distributed as in the 1951 or 1967 water codes. The 1981 Water Code privatisation prioritised fast return businesses and favoured urban realms in detriment of the rural realm, of isolated and scattered populations but also to the disadvantage of all other living creatures, disregarding Nature that granted us humans the privilege to use water in the first place.

