Chile: Research provides data on the role of native forests in the production of water

An article published in the newspaper “La Tercera”(1) and taken up on the Mapuche IMC blog (2) reveals the results of research carried out by scientists from Valdivia’s Austral University that link the presence of native forests with greater water production.

According to this study, a major part of South American temperate forests are found within the Valdivian Rainforest Ecoregion (35–488S) in Chile and adjacent areas of Argentina, which has been classified among those with the highest conservation priority worldwide.

The study points out that most of the native forests in Chile are privately owned (71% of the total). The remaining is in national parks and reserves. Privately owned forests have been generally valued and used for firewood and timber production (mainly within unsustainable logging schemes) or as land for the expansion of other productive activities: agriculture, pastureland and fast-growing commercial tree plantations of exotic species (Pinus radiata and Eucalyptus spp). Rapid conversion to forest [sic] plantations between 1975 and 2000 resulted in deforestation rates of 4.5% per year within an area.

The research states that the poor conservation status of native forests may be explained by the forest policy followed since 1974 in Chile. This policy has not provided economic incentives for the sustainable management and conservation of native forests, in contrast to the use of public funds to support the establishment of plantations. This, along with the liberalization of exports and privatization of state-owned plantations and pulp mills, explain the fast growth of the forestry industry based on plantations, often regarded as an economically successful model in other Latin American countries and elsewhere (Lara and Veblen, 1993; Sedjo et al., 1999; Lara et al., 2006).

While tree plantations increase, native forests are degraded or destroyed. According to information provided in the article in ‘La Tercera’: “in the Araucanía region, an average of 2,845 hectares per year is lost through forest fires, flooding from dams, illegal logging and forest degradation. The scenario has improved, as according to FAO, before 2000 the average annual loss was 20 thousand hectares. Other estimates: between the V and XII regions the loss has amounted to 100,000 hectares since 1995. And a study by the universities of Concepción, Austral (Chile) and Alcalá, (Spain) states that 82,131 hectares of native vegetation was lost in the V, Metropolitan and VI regions between 1975 and 2008 – the equivalent of 42.5% of the original total.”

Academics have responded to the loss of native forest by trying to show its importance as an ecosystem, together with the benefits it provides, either directly or indirectly, to society. Among these benefits, is the provision of water, both in quantity and in quality.

The research carried out by the Austral University “took daily measurements, during four years in six basins ranging from 140 to 1,462 hectares in the Coastal Cordillera, in the Valdivia area. The percentage of native forest cover was considered for each basin as well as the runoff rate – that is the relationship between stream-flow and annual precipitation. And the conclusion was that stream-

flow and production of water are correlated with the percentage of native forests covering the basins. In figures: an increase of 10% in the native forest cover in the basins would produce an increase of 14.1% in the summer stream-flow."

"The native forest reduces the speed of runoff, enabling the water table to recharge and the water to flow slowly towards rivers and streams maintaining summer stream-flows, as compared to farm land and tree plantations," explained Antonio Lara, Dean of the Austral University and member of the research team. The forest regulates water flow and provides a balance.

Furthermore, the study refers to research showing that the conversion of native forests to fast-growing plantations decreases streamflow especially in summer. In addition, studies of the water balance of young plantations of E. globulus and P. radiata in south-central Chile have revealed an increased depletion of the soil moisture reserves with stand ageing, as well as an increase in the canopy interception and evapotranspiration. Furthermore, conversion to plantations has led to a decrease in water quality due to increased sediment loads associated to clearcuts in plantations managed under 12-year rotations for Eucalyptus spp. and 20 years for Pinus radiata.

As pointed out in the article in 'La Tercera' academic results confirm what the Mapuche movement and socio-environmental organizations have been stating for a long time: monoculture tree plantations impact on soils and water reserves.

Today more than ever forests must be cared for. They are the basis of biodiversity and life support, not only for the communities who directly depend on them for sustenance but, in the long run, for humanity as a whole.

(1) "Estudio relaciona presencia de bosque nativo con mayor producción de agua",http://www.mapuexpress.net/images/publications/18_12_2009_23_3_41_1.jpg
(2) http://aureliennewenmapuche.blogspot.com/2009/12/estudios-relacionan-presencia-de-bosque.html