



Water scarcity index as a tool to establish zones with high level pressure on Colombian water resources.

E. Domínguez (1), H. Rivera (2), R. Vanegas (2), P. Moreno (2).

(1) Pontificia Universidad Javeriana, Bogotá, Colombia, e.domiguez@javeriana.edu.co / Fax: +57 1-3208320 Ext. 4859 / Phone: +57 1-3208320 Ext. 4821 (2) Instituto de Hidrología Meteorología y Estudios Ambientales, Bogotá, Colombia agua@ideam.gov.co / Fax: +57 1-3527160 Ext. 1628 / Phone: +57 +1-3527160 Ext. 1625.

Monitoring sustainability of water use is key to direct public and private decision making towards sustainable development. To this aim IDEAM has calculated the escasez index (Scarcity Index) since 1998 for all municipalities in Colombia. Recently, the Andean Community (CAN), with the support of the International Hydrological Program of UNESCO, adopted IDEAM's proposal to use this index and its methodological approach to calculate it as a common indicator to direct decision making in the Andean Countries.

This index corresponds to the relation between water Availability and water demand from all socio-economical activities. In the cases where water demand represents more than 20% of water Availability in a region, the index activates alert signals calling for action both to protect the water source and control demand and in extreme cases to integrate new water sources in order to reduce the risk of future unsatisfied demand. This article describes the index and analyzes its utility through its application in Colombia.

Scarcity index introduces a discount rate from total water availability to take in account the constraints induced by hydrological variability and low water flows. This index uses a probability approach to define water availability from hydrological data measured in a hydrological monitoring Network. As an indicator of water availability modal runoff values were used instead of average values. For Colombian case a spatial generalization was made to represent the spatial runoff field. To assess water resources in low flow years, runoff field with 95% probability of exedence. For water withdrawals, water consumption was estimated in a sectorial basis using the informa-

tion from surveys published in official documents. For agricultural sector we apply a GIS approach where water plants requirements, rainfall and evapotranspiration are use to determine the zones where irrigation is potentially applied.

Present paper shows that in Colombia are taking place conflicts in water use because of high requirement levels in zones where water resources are relatively scarce. Some recommendations are given to make a sustainable water use in such regions.