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SUBMISSION

To

Inquiry into the impact of the Murray-Darling Basin plan in Regional Australia.

To the Standing Committee on Regional Australia
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Submission.

This submission submits a précis of the paper **"Geo-engineering dams for both cooling and water conservation"**, Edmonds I., recently published in the journal of the Australian Water Association, Water, June 2010 pp. 72-75. Available at http://www.solartran.com.au/Water%200610_Edmonds.pdf

The paper outlines the concept and economics of floating large evaporation covers on water reservoirs to reduce evaporation and conserve water. As the covers are much more reflecting than the water itself a global cooling effect is obtained due to sunlight being reflected rather than absorbed. In effect the reservoir has been "geo-engineered" to reflect sunlight and provide a global cooling. The global cooling has a monetary value via Carbon Credits as any global cooling can be equated to the global cooling obtained by geo-sequestration of CO_2 in, for example, forestation projects.

The surface areas in hectares (1 ha = 10,000 m^2) of the large reservoirs in the Murray Darling Basin are: Lake Hume, 20,000 ha, Dartmouth Dam, 6,400 ha, Lake Eildon 13,800 ha, Lake Victoria, 40,000 ha, Lake Alexandrina, 65,000 ha and Lake Albert, 7,600 ha; a total area of 153,000 ha. The evaporation rate from the reservoir surfaces is, conservatively, about 1 m per year. Therefore the reservoirs mentioned lose, by evaporation, about 1,530 GL per year.

The paper discusses the use of large floating evaporation covers to conserve much of this loss thereby increasing the yield of water in the Basin. The relations derived are:

Water Yield = $A\varepsilon R$ m^3/yr and Equivalent CO_2 Sequestration = 0.146A tonnes, where A is the reservoir area covered in m^2, ε is the efficiency of the cover (typically 0.9) and R is the water evaporation rate in m/yr.

In the case of Lake Hume, A = $202x10^6$ m^2, R = 1m/yr. The additional water yield from an evaporation cover is 182 GL/yr and the equivalent sequestration is 30 million tonnes of CO_2 currently worth about $1.2 B.

In relation to **water efficiency** and **water infrastructure** it is suggested the inquiry consider steps to initiate research and development of large (0.1 ha), reflective, evaporation mitigation covers for implementation on reservoirs.

Dr Ian Edmonds, 1 December 2010.