

# **Towards the Water Soft Paths Approach for Manitoba**

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Water management in Manitoba has historically been geared towards mitigating flooding and drought. This strategy has functioned effectively since Europeans settled Manitoba over 100 years ago, but new and emerging challenges are leading us to re-think this focus. Eutrophication of Lake Winnipeg is causing us to examine decisions made on watersheds thousands of kilometres upstream from the great lake. Also, while climate is perpetually in flux, recent trends illustrate the need to prepare for future water scarcity on the Prairies. Temperature has been gradually increasing since European settlement. If this trend continues as predicted it will lead to earlier spring freshet and drier summers.

### **Soft Paths**

The situation with water has parallels with the circumstances of energy in the 1970s when supplies were constrained but demand continued to increase. It was in 1976 that Amory Lovins, founder of the Rocky Mountain Institute decided that it was time to take a 'soft path' to energy conservation. Lovins's soft path viewed energy as a means to an end, and not an end in itself. It relied on renewable energy, decentralised infrastructure, simple technology, and matching scale and quality to end-use needs (Lovins 1976, 1977). Much of the conservation that was to be achieved with a soft path was through increased efficiency in the production, distribution and use of energy. Lovins recognised that soft paths could apply to other commodities as well.

A soft paths strategy for water involves shifting from a paradigm of supply management, where the focus is on increasing supplies when water is scarce; to targeting existing water use and increasing efficiency. Once a strategy of demand management has been established, it is then possible to shift to a soft paths strategy - where a future state of water sustainability is

envisioned, and a 'soft path' is taken to achieve that state. Soft paths study involves defining that future state of water sustainability and charting the course to achieve it. Essentially a water soft path is a vision, an analytical method, and a planning tool.

One of the keys to defining the future state of water sustainability is getting an accurate picture of how water is presently being used. Ideally this should be done on a watershed basis to conform with the hydrological system. Water uses would be assessed to identify how much water is being used for certain tasks.

It was at the Pacific Institute in Oakland, California in the 1990s that the soft paths approach was first applied to water. Peter Gleick critically examined water use in California, primarily pertaining to municipal and irrigation uses (Gleick et al 1995, Gleick et al 2003). Water soft paths study in Canada has its roots with David Brooks of Friends of the Earth and his study on water conservation in Canada going back to the 1980s. Recently he has been exploring the feasibility of water soft paths for Ontario. The POLIS Project on ecological governance at the University of Victoria has been examining municipal water use across the country and identified opportunities for water conservation through increased efficiency (Brandes et al 2005).

### **The Manitoba Context**

Most of the work done on water soft paths in Canada has been focused on regions with high urban populations, as was Gleick's work in California, where irrigation water use was also examined. In our preliminary work at IISD, we have determined that a soft paths strategy for Manitoba will have to be carried out differently because of our seasonal water regime, our heavy

focus on agriculture, and our low population density, and negative rural population growth. In Manitoba precipitation peaks in late spring, and afterwards the landscape begins to dry out in the summer months. It is in these hot and dry summer months that droughts can strike and threaten the livelihoods of those who live off the land.

As a first step to developing a water soft path strategy for Manitoba, IISD has developed an annual water budget for an 8000 km<sup>2</sup> area encompassing Manitoba's Whitemud River watershed. It was determined that approximately 4200 m<sup>3</sup> of precipitation falls on the watershed annually. Our estimates of water use are that 56% of precipitation is transpired by vegetation, 28% infiltrates to the water table, 8% leaves the watershed as surface water, 7% evaporates directly, 0.56% is used for irrigation, 0.19% is used for livestock, and 0.04% is used for municipal purposes. The sum of all direct human withdrawals (irrigation, livestock and municipal) is therefore less than 1% of the precipitation.

Our results for the Whitemud River illustrate that a soft paths strategy for Manitoba will have to focus primarily on the human interactions with the landscape that have an impact on water regimes, since this is how most water is depleted. This contrasts with the earlier soft paths studies where household and irrigation water showed the most promise for water conservation. Strategies to address water depletion in Manitoba will have to look at landscape management decisions such as crop type, cropping practices, storage of spring runoff for summer use, and enhancement of natural capital such as wetlands and grasslands.

We are continuing to work towards finding a soft path for Manitoba. With the help of an engineering co-op student we are calculating monthly water budgets for all Manitoba watersheds. These water budgets will give an understanding of current water use and will suggest the possible composition of a state of future water sustainability. We will then determine what actions can be taken to achieve that state.

### **References**

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