

Social Justice Aspects of Water Allocation Mechanisms

Principal Investigator – Dr. Henning Bjornlund, Department of Economics, University of Lethbridge, 2012-2015

Challenge

Water is scarce in southern Alberta, and climate change predictions suggest that water might be even scarcer. There is increasing pressure to leave more water in rivers for environmental purposes, which will further increase water scarcity for extractive users. There is also an urgent need to find mechanisms to allocate and reallocate water among competing uses, such as water for the environment and for extractive uses. Achieving these objectives within current water dependent communities will involve different socioeconomic impacts. The level of impact will depend on the policy choices made, the acceptability of such policies among stakeholders, water users reactions to such policies, and the ability of current water users to cope with less water. These issues are examined in this project.

Project

The objectives of this research are to:

- i) Develop potential policies which can be used to allocate available water and to reallocate it between existing uses and new uses to better reflect society's changing water values;
- ii) Estimate the impact of alternative allocation policies on current water users' supply reliability;
- iii) Evaluate the acceptability of such policies among the general population and key stakeholders;
- iv) Evaluate existing water users' likely management responses to such policies;
- v) Assess the potential socioeconomic impact of these responses.

This research will provide important insights into the interaction between water, society and the Canadian economy.

Outputs

This research has resulted in scholarly journal publications and end-user reports (selected publications):

Books and edited volumes

- Bjornlund, Zuo, Wheeler and Xu (2014) Exploring the Reluctance to Embrace Water Markets in Alberta, Canada In Easter and Qiuqiong (eds) Water Markets for the 21st Century: What we have learned, Springer, 215-237.
- Bjornlund, H. and Wheeler, S. (2014): Exploring some of the socio-economic realities of sustainable water management in irrigation. Special Issue of Agricultural Water management, Vol. 145

- Brebbia, C. and Bjornlund, H. Eds. (2014): Sustainable Irrigation and Drainage V. WITPress, Southampton, UK

Book chapters

- Bjornlund, H. and Bjornlund, V. (2014) Changing societal values: Implications for water management and social opportunities. In Linton, J. and Davidson, S. Eds. Water as a social opportunity. Queen's Policy Studies Series by McGill-Queen's University Press.
- Bjornlund, H. and Klein, K.K. (2014): Water Conservation and trading – policy challenges in Alberta Canada. Paper submitted for inclusion Burnett, K.; Howitt, R. and Roumasset, J. Eds. Handbook of Water Economics and Institutions. Routledge, 379-94
- Bjornlund, H.; Zuo, A., Wheeler, S. and Xu, W. (2014): Exploring the Reluctance to Embrace Water Markets in Alberta, Canada. In Easter, B and Huang, Q. Eds. Water Markets for the 21st Century: What we have learned. Springer, 215-237.
- Bjornlund, H. (2014): Water Governance for Sustainable Irrigation: The role of Civil Society. In Brebbia, C and Bjornlund, H. Eds. Sustainable Irrigation, WITPress, Southampton, UK
- Bjornlund, H. (2014): Water Governance for Sustainable Irrigation: The role of Civil Society. In Brebbia, C and Bjornlund, H. Eds. Sustainable Irrigation, WITPress, Southampton, UK. This chapter builds on the water governance work done in Alberta and Australia
- Bjornlund, H.; Zhao, X.; and Xu, W. (2013): Generational differences in policy preferences for water sharing – implications for the future. In Brebbia, C. Water and Society II, WITPress, Southampton, UK, 307-320. This chapter builds on extensive surveys carried out both under this and a previous project and look at how policy preferences for water sharing are likely to change in the future.

Journal articles

- Bjornlund, H.; Zhao, X.; and Xu, W. (2014): Variation in the perspective on sharing water - irrigators, their communities and the wider society. International Journal of Water Governance 2(1) DOI: 10.7564/13-IJWG29
- Bjornlund, H.; Xu, W. and Wheeler, S (2014): An overview of water sharing and participation issues for irrigators and their communities in Alberta: Implications for water policy. In Bjornlund, H. and Wheeler, W. Eds. Exploring some of the socio-economic realities of sustainable water management in irrigation, Special issue of Agricultural Water Management 145(November), 171-80(ERA A)
- Bjornlund, V. and Bjornlund, H. (2013): Economic Incentives: Successful in expansion, will it also be successful in contraction. International Journal of Sustainable Development and Planning 8(3), 422-439.
- Bjornlund, H., Zuo, A., Wheeler, S., Xu, W. and Edwards, J. (2013): Policy preferences for water sharing in Alberta, Canada. Water Resources and Economics, 1(10), 93-110
- Bjornlund, H., Zhao, X., and Xu, W. (2014). Variation in the perspective on sharing water - irrigators, their communities and the wider society. International Journal of Water Governance 2:19-42. This paper discusses variations in people's perspective on water sharing and indicates the policy implications for Alberta water reallocation

- Bjornlund, Xu and Wheeler (2014). An overview of water sharing and participation issues for irrigators and their communities in Alberta: Implications for water policy. *Agricultural Water Management*, 145 (2014) 171–180. This paper provides important research context within which the project is situated
- Bjornlund, H. Zuo, A. Wheeler, S. Xu, Wei and Edwards, J. (2013) Policy preferences for water sharing in Alberta, Canada. *Water Resources and Economics* 1:93 – 110. This paper focuses on public's view towards water sharing and policy options in Alberta.

Other invited papers

- Bjornlund, H. (2014): Policy options and preferences for water sharing. Invited paper presented at the 2014 Sustainable Irrigation Conference, Poznan, Poland

Other papers

- Zhang, Wencui, K. K. Klein and Henning Bjornlund (2014): Importance of including values and attitudes in analyses of water policy reforms. Presented at San Francisco International Business and Education Conference, San Francisco, August
- Xu, W.; Khoshroo, N. and Bjornlund, H. (2014): Evaluating alternative water allocation policies among competing users in the Bow River Basin, Alberta, Canada. Paper presented at the 11th International Conference on Hydroinformatics, New York, September
- Emami, P., Xu, W. and Bjornlund, H. (2014): Evaluating procedural justice in Alberta regional plan: with focus on the Lower Athabasca Regional Plan and the South Saskatchewan Regional Plan. Paper presented at the annual conference of the Canadian Water Resources Association, Ontario, June
- Xu, W., Montgomery, J. and Bjornlund, H. (2014): Alberta's water resource governance: an evaluation. Paper presented at the annual conference of the Canadian Water Resources Association, Ontario, June
- Emami, P., Xu, W., and Bjornlund, H. (2014): Procedural Justice in the Alberta Regional Plan. Paper presented at the annual conference of the Canadian Association of Geography, May
- Xu, W. and Bjornlund, H. (2014): Water resource governance: theory and practice. Paper presented at the annual conference of the American Geographers Association, Florida, April
- Bjornlund, H., Xu, Wei; Zhao, X. (2013): Same Region, different Policy Preferences, CWRA annual conference in Saskatoon, may
- Montgomery, Xu, and Bjornlund (2013) A tale of good governance: using stakeholder perceptions to evaluate water governance in the South Saskatchewan River Basin, Alberta. Presented 2013 CMOS-CGU-CWRA Annual Meeting, Saskatoon, Saskatchewan, May 26-29, 2013

Master Thesis

- Irrigators' Perception and Intention towards Water Re-allocation Policies in Southern Alberta MA Thesis: 'Irrigators' Perception and Intention towards Water Re-allocation Policies in Southern Alberta'. This thesis explores farmers' perceptions and intention toward water re-allocation. It provides important new insight into

- how irrigators perceive water trading and what determines their actual and intended trading behaviour. One journal article is in preparation.
- This MA thesis explores stakeholders perspective on procedural justice in the regional planning processes in Alberta with the two first regions to engage in the process

Additionally, this research has been disseminated through several presentations, keynote and plenary addresses (selected presentations):

- Bjornlund, H. (2014): Water Governance and Civil Society. Paper presented as part of the plenary panel on 'Adaptability of Water Governance at Different Levels and Regional Context' at the third Istanbul Water Forum
- Bjornlund, H. (2014): Water Governance for Sustainable Irrigation: The role of Civil Society. Opening key note address at the 2014 Sustainable Irrigation Conference, Poznan, Poland
- Bjornlund, H. (2013): Policy options and preferences for water sharing – challenges and opportunities. Invited plenary address to the International Symposium of Ecology and Water Security, Wuhan and Yichan, October.
- Wang, J., Bjornlund, H., Klein, K.K., Zhang, L. and Zhang, W. (2014): New Irrigation Technologies – The process of adoption and what influences it in Alberta, Canada. Paper Presented at the joint conference of IWREC and the World Bank, Washington DC, September
- Bjornlund, H., Zuo, A., Wheeler, S. and de Loë, R. (2013): Water Reallocation Policies – The Importance of Rural and Urban Differences in Alberta, Canada. World Academy of Science, Engineering and Technology. Issue 76, 871-880.
- Bjornlund, H., Xu, Wei; Zhao, X. (2013): Same Region, different Policy Preferences, CWRA annual conference in Saskatoon, may
- Bjornlund, H. (2014): Water Governance and Civil Society. Paper presented as part of the plenary panel on 'Adaptability of Water Governance at Different Levels and Regional Context' at the third Istanbul Water Forum
- Emami, Xu, and Bjornlund (2014): Procedural Justice in the Alberta Regional Plan. Paper presented at the annual conference of the Canadian Association of Geography, May
- Montgomery, Xu, and Bjornlund (2013) A tale of good governance: using stakeholder perceptions to evaluate water governance in the South Saskatchewan River Basin, Alberta. Presented 2013 CMOS-CGU-CWRA Annual Meeting, Saskatoon, Saskatchewan, May 26-29, 2013.
- Parastoo, Xu and Bjornlund (2014) Evaluating Procedural Justice in Alberta Regional Plan: With Focus on the Lower Athabasca Regional Plan and the South Saskatchewan Regional Plan. CWRA 2014 Canada Water Resources Congress. Hamilton, Ontario, June 2-4.
- Xu, Khoshroo, and Bjornlund (2014) Evaluating alternative water allocation policies among competing users in Bow River Basin, Alberta, Canada. HIC 2014 – 11th International Conference on Hydroinformatics, New York, August 17 – 21, 2014.
- Xu, Montgomery and Bjornlund (2014) Alberta's water resource governance: an evaluation. CWRA 2014 Canada Water Resources Congress. Hamilton, Ontario, June 2-4.
- Zhang, W., Bjornlund, H. and Klein, K. (2013): Values and Attitudes of the farm family in the context of water policy reform: An empirical study in Alberta, Canada.

Poster presentation at the Conference of Natural Resources and Development held in Vina del Mar, Chile, November

Outcomes

Outcomes include:

- Strengthened relationships with researchers. Researchers and graduate students participated in many professional and academic conferences, meetings and workshops through which relationships with other researchers were enhanced.
- Strengthened relationships with partners. One graduate student is working for Alberta Environment and one PhD student is working with the Bow River Consortium.
- Strengthened relationships with end-users. Our graduate students have conducted interview and focus groups, participated in industry conferences and workshop during which they have worked closely with end-users and partners.
- Increased knowledge. Publications in high quality academic journals and presentations of a wide range of conference papers at provincial, national and international conferences and meetings.
- Increased opportunities for future research. We have trained three MA students and one PhD student this year. This has created new research capacity and identified several areas of future research that we will be pursuing in future funding rounds.

Research Team and Partners:

Research Team:

Dr. Henning Bjornlund, Professor, University of Lethbridge

Dr. Wei Xu, Professor, University of Lethbridge

Partners:

Alberta Innovates: Energy and Environment Solutions (AIEES)

University of Lethbridge

Highly Qualified Personnel (HQP):

Joseph Zhao

Parastoo Emami

Nader Khoshroo

Matthew Hall