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An Analysis of Public Participation in the Lake Ontario—St. Lawrence River Study

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Introduction

The Great Lakes (Fig. 4.1) are the largest freshwater bodies in North America. They are located on the boundary between Canada and the United States. Managing the water levels and flows associated with the five Great Lakes and connecting rivers, including the St. Lawrence River that flows from the most downstream lake to the Atlantic Ocean, is the responsibility of a bi-national organization established to manage all border waters between Canada and the United States. This organization, called the International Joint Commission (IJC) operates under a Boundary Waters Treaty established in 1909. The IJC serves at the pleasure of the governments of the two countries, and its effectiveness depends in part on what the governments want with respect to the management of the transboundary

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waters. When requested to do so by the two federal governments, the IJC has the authority to resolve disputes over the use of water resources that cross the international boundary. Most of its efforts for the Great Lakes have been devoted to carrying out studies requested by the governments and advising the governments about problems.

Both countries are stakeholders in the Great Lakes Basin. Especially the Canadian provinces and the US states bordering the lakes have an interest in their levels, flows, and water quality. The economy of that region depends in part on the freighters that transport products into and out from the region to other parts of the world. The flows between some of the Great Lakes and to the St. Lawrence River provide hydropower benefits to both countries (Eberhardt et al. 1996). In addition there are benefits derived from water supply, recreational facilities and ecosystem services. Those living on the shores of the Lakes and River benefit from their waterfronts, but also must weather the waves, wind and erosion that characterize shorelines during storms.

Hence in a narrow sense the Great Lakes system is co-managed. Co-management—a situation in which two or more distinct social entities share management functions, entitlements and responsibilities—takes place



Figure 4.1 The Great Lakes Basin and St. Lawrence River (from GLIN 2011).

through the IJC. It serves as a means whereby both countries can negotiate differences of management goals as they arise. But in a broader sense co-management means managing water together as stakeholders who have an interest and legal right to manage as well as those who are interested but may not have any legal rights. Co-management can be a highly dynamic, evolving, adaptive and forward looking process.

Background to the Lake Ontario—St. Lawrence River Study

The International Joint Commission

The IJC has six members, called commissioners, three appointed from each country by the heads of the federal governments. They are political appointees. They are served by a small staff of experts. The authors of the 1909 Boundary Waters Treaty saw the Commission not as separate national delegations, but as a single body seeking common solutions in the joint interests of the two countries. All members are expected to act independently of national concerns, and few IJC decisions have split along national lines.

The IJC has three responsibilities for the Great Lakes under the original treaty (IJC 1998). The first is the limited authority to approve applications for the use, obstruction or diversion of boundary waters on either side of the border that would affect the natural level or flow on either side. Under this authority, it is the IJC that determines how the control works on the St. Lawrence River will be operated to control releases of water from Lake Ontario. Ten individuals (five each from the US and Canada) form the IJC International St. Lawrence River Board of Control. Their task is to ensure that the quantity of water released from Lake Ontario on a weekly basis conforms to the current regulation plan (Clinton Edmonds and Associates 2002).

The current operating policy or plan, 1958-D, has been in effect since October 1963. It was designed for the hydrologic conditions experienced from 1860 to 1954. It has not performed well under the extreme high and low water supply conditions experienced since that time (Werick 2011). As a result, the Board of Control has on occasion deviated from the Plan, as authorized under the existing Orders of Approval. However, over time the Board of Control has increasingly deviated from the Plan to better meet changing needs and interests not considered when the plan was created.

The second responsibility of the IJC is to conduct studies of specific problems as requested by the governments. Funding comes from the two governments. The implementation of the recommendations resulting from IJC studies is at the discretion of the two governments. A number of such studies have been undertaken in the history of the IJC. This chapter is about

one of them, the Lake Ontario St. Lawrence River Study (LOSL) which ran from 2000 to 2005.

The third responsibility of the IJC is to arbitrate specific disputes that may arise between the two governments in relation to boundary waters. The governments may refer any matters of difference to the Commission for a final decision. This procedure requires the approval of both governments and has never been invoked.

The LOSL Study

In April 1999, the International Joint Commission informed the governments that it was becoming increasingly urgent to review the regulation of Lake Ontario levels and outflows in view of dissatisfaction on the part of some interests, in light of environmental concerns and in response to potential climate change conditions. Thus on December 11, 2000, the Commission issued a directive to the International Lake Ontario—St. Lawrence River Study Board, which it had appointed, to:

- i) review the current regulation of levels and flows in the Lake Ontario—St. Lawrence River system, taking into account the impact of regulation on affected interests;
- ii) develop an improved understanding of the system among all concerned; and
- iii) provide all the relevant technical and other information needed for the review.

The Study was to assess the current operating policy of the LOSL system (Fig. 4.2) and to suggest improved policies especially taking into account new goals or objectives not considered when the current policy was defined. Yet the Study Board recognized from the beginning, that it would be unlikely that a policy could be identified which would satisfy all interests.

The subsequent five-year, US \$ 20 million Study was conducted with funding provided equally by the U.S. and Canadian governments and through participation of government agencies, individuals and non-governmental organizations in both countries. The tangible outcome was the creation of three potential operating plans (A+, B+ and D+) which were presented to the IJC. The IJC retains decision-making authority over the selection of the final plan to be presented to the national governments for approval. In 2006 (after the Study had ended), the IJC asked several of the Study experts to further develop Plan D+ in an attempt to get it to more closely align with the recalibrated needs of the stakeholders. The result was Plan 2007. The IJC announced that it aimed to implement the new plan by the end of 2008, but would carefully consider public opinion in its decision (IJC 2008). Plan 2007 went out for public consultation and comment in the

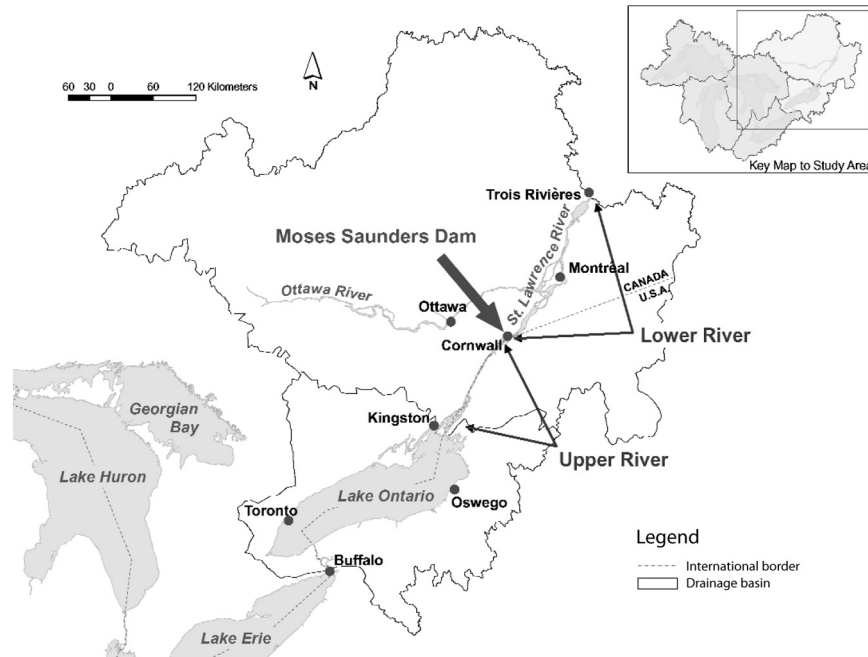


Figure 4.2 The Lake Ontario—St. Lawrence River System of interest in this study (from LOSL 2006). Lake Ontario water levels and St. Lawrence River flows are controlled by the releases from the Moses Saunders Dam.

summer of 2008 and was later dropped from consideration due to broad stakeholder objections. The IJC continues to move forwards towards refining and implementing an updated plan.

The Study Board created to oversee and carry out the five-year study consisted of seven representatives from each country, chosen for their expertise in some aspect of the study, or as representatives of key institutions, such as New York State and the province of Quebec. From their first meeting the Study Board recognized the importance of public or stakeholder buy in to any operating policy they might recommend to the IJC. The Commission required the Study Board to form a public interest advisory board. Hence it was important to devise ways of involving the public. To aid in that effort a Public Interest Advisory Group (PIAG) of influential citizens from the communities bordering Lake Ontario and the St. Lawrence River was formed. They had their own budget, which amounted to approximately US\$ 2 million (10 percent of the study budget) (LOSL semi-annual progress reports 2000–2005) and reported to the Study Board as well as to the IJC. The co-chairs of the PIAG served on the Study Board. Their job was to keep both the Board and the public informed as to what planning or technical studies were taking place and any public issues

or concerns that needed attention or that might impact the policies being developed. Except for the Study Board Co-chairs, the members of the Study Board and PIAG served without compensation. For day-to-day operational requirements and decisions, a public interest “Outreach Committee” was formed. This committee developed public involvement strategies, which were then approved by the PIAG, and ensured that Study Board information reached the PIAG in a timely manner. The sub-committee was led by the two Study co-chairs; and comprised of the PIAG co-chairs; the two study managers and the public information specialists hired to provide assistance to the PIAG. This group provided most of the intellectual input into the development and execution of the public involvement program, because it coordinated the needs of open public engagement with the requirements of the formal “shared vision planning process”. Figure 4.3 illustrates the organizational structure of the LOSL Study.

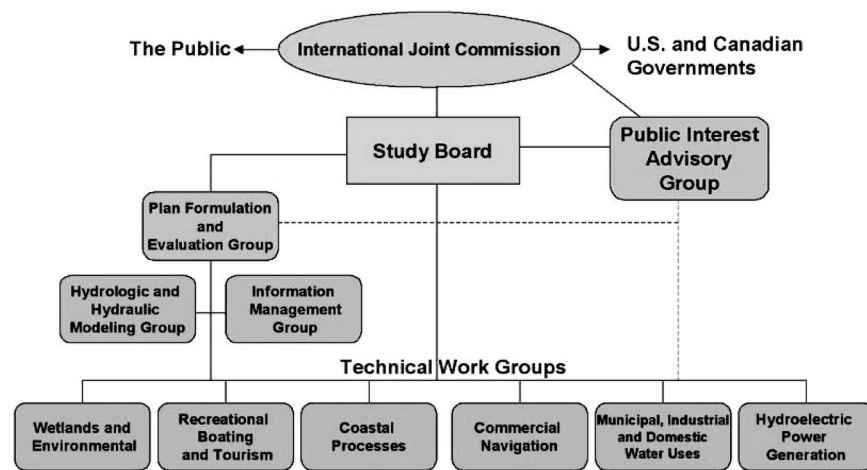


Figure 4.3 Organizational structure of the LOSL Study (from LOSL 2006).

Basin Interest Groups

In an attempt to better structure the planning process, multiple interests were lumped together into interest groups, defined by the uses to which they put the Lake and River. These primary stakeholder groups included:

- Power producers, NY Power Authority, Ontario Hydro, industrial, residential and commercial energy users who benefit from electrical power generation.
- Commercial shippers, Seaway Authority, various Port Authorities, seamen’s unions, producers and consumers of bulk goods who benefit from commercial shipping (Fig. 4.4).



Figure 4.4 Freight being transported on the Great Lakes and St. Lawrence River (from <http://www.boatnerd.com>).

- Shoreline property owners, local communities who are concerned about shoreline maintenance and development.
- Boaters, marinas, local communities who benefit from recreational boating activities.
- Municipal Water Suppliers, populations in communities who get their public water supplies from the Lake or River.
- Environmentalists, anglers, trappers, hunters, hikers, bird watchers, tourists who enjoy and benefit from a diverse healthy natural environment.

The Role of Public Involvement

The Study was initiated in part because the current Plan was not satisfying some of the various interest groups—especially those that were not formally acknowledged in the Treaty of 1909, particularly the environment and the recreational boating industry. A further impetus for the study was dissatisfaction of property owners on the south shore of Lake Ontario. They had suffered in recent years from floods and erosion due to high water levels combined with storms on the lake, and thought the Board of Control should have been able to regulate the system to mitigate or prevent those damages. The study was also initiated because it was not obvious from the beginning just what policy of lake level and river flow regulation would best, or even better, satisfy every stakeholder interest group. The Study Board as well as the IJC knew that there would be conflicts among various

interest groups in the basin. Hence stakeholder participation was viewed as being absolutely essential to guide the work toward defining preferred policies and hence for the successful conclusion of the Study.

Stakeholder and public involvement, or participation, has gained increasing momentum as a component of environmental management over recent decades. Strategies have shifted from informing and educating people on the “right” strategy, often determined by experts, towards co-production of management strategies and systems through collaborative work between “experts” and resource users. Co-produced strategies are considered to better reflect the realities of resource use and be more suitable and acceptable to resource users (Pahl-Wostl et al. 2007). The LOSL Study used a model of co-production to shape the public involvement process.

The 20 member, bi-national PIAG was responsible for providing public involvement guidance, consultation and assistance to the Study Board, and to periodically report to the IJC on its activities, findings and recommendations. They were strongly supported by the Outreach Committee, which provided much of the strategic advice to PIAG for their approval. The PIAG raised public awareness through disseminating Study progress and findings through information meetings, newsletters and other media. They also served as a conduit for public input into the Study through holding public meetings and workshops and conducting surveys. The PIAG, in consultation with the Study Board, also worked with grass-roots organizations and interests throughout the Study area and conducted public participation activities at strategic points in the Study to:

- identify and use local expertise and information;
- consult with the public on critical or potentially controversial Study findings before related Study components were approved by the Study Board;
- disseminate plain language information to enhance public understanding of the causes and problems related to fluctuating water levels and of the consequences of proposed solutions;
- identify and consider priorities and preferences of the public as alternatives were defined; and
- consult with the public on Study findings and recommendations prior to their adoption by the Study Board.

During the Study the PIAG and the Study Board gave several hundred presentations to the public. The aims of the public meetings and information sessions evolved through the duration of the Study. Earlier, public involvement focused on information provision and raising awareness. This shifted to information exchange whereby comments from the public surrounding their concerns over water levels were actively sought through surveys, questionnaires, and finally consultative public meetings. These

meetings were relatively informal in that anyone could ask questions and give their opinions to the Study Board.

The remainder of this chapter explores the role of public involvement within a co-management setting as it took place in the LOSL Study. It attempts to evaluate the processes by which public and stakeholder participation took place, and to identify some of the outcomes and non-tangible achievements to date.

Methods Used to Evaluate Stakeholder and Public Involvement in the LOSL Study

Evaluation is essential to provide insight into how a program or approach is functioning or has functioned, and to identify strengths, weaknesses and potential improvements (Beierle 1998; Chess and Purcell 1999; Muro and Jeffrey 2006). It also forms part of a learning cycle (Blackstock et al. 2007). To evaluate public involvement in the LOSL Study an evaluation framework was devised that focused on the processes by which participation took place and the outcomes that emerged.

Evaluation Framework

Three main types of evaluation can be found in the participation literature (see Carr et al. [in press](#)). (a) Process based evaluation focuses on how participation has taken place (Conley and Moote 2003) or the quality of the process (Beierle and Konisky 2000). (b) Intermediary outcome based evaluation identifies outcomes such as agreements over plans or proposals (Burgess and Chilvers 2006) or non-tangible outputs such as innovation in decision making, relationship building and empathy towards alternative values and ideals (Connick and Innes 2003). Intermediary outcomes do not relate to a direct change in resource management at the point in time at which they are evaluated, but they are likely to be essential to achieve resource management improvements. (c) Resource management outcomes are considered to be longer term responses. They are always evaluated with regards to specific interests such as the implementation of an agreement, or a measurable improvement in ecological health (Beierle and Konisky 2000).

Because an updated operating plan (i.e., a resource management outcome) had not been implemented at the time of our evaluation we chose to evaluate the Study based on processes and intermediary outcomes. A set of criteria for each of these evaluation types was selected from the literature based on suitability to the LOSL Study and the available resources (Table 4.1). Process criteria were derived from studies that have identified desirable characteristics of stakeholder participation through case study

Table 1. Framework and criteria used to evaluate the LOSL Study.

Process based evaluation	Data sets for evaluation (performance indicators)
<p><i>Criteria</i></p> <p><i>Access</i> Information and meetings are accessible to participants (Klinke 2009; Mostert et al. 2007; Walker et al. 2006).</p>	<p>Participant perspectives on their capacity to understand and get hold of information. Participant perspectives on the timing and location of public meetings based on public meeting transcripts and individual interviews with participants.</p>
<p><i>Cost effectiveness</i> The costs of implementing the programme are balanced by the importance of the issue being addressed (Beierle 1998; Rowe and Frewer 2000).</p>	<p>Participant perspectives on cost effectiveness based on public meeting transcripts.</p>
<p><i>Deadlines and milestones</i> There is a detailed agenda with deadlines and promise of investment money once agreements are reached (Jiggins et al. 2007).</p>	<p>Assessment of agenda, deadlines and milestones reported in study documents.</p>
<p><i>Facilitation</i> Facilitation is impartial (Jiggins et al. 2007; Moote et al. 1997; Rowe and Frewer 2000).</p>	<p>Assessment of facilitators' impartiality based on public meeting transcripts.</p>
<p>The process focuses on shared values rather than entrenched interests (Beierle 1998; Jiggins et al. 2007).</p>	<p>Assessment of degree to which process focuses on shared positions and interests based on public meeting transcripts and meeting minutes.</p>
<p><i>Knowledge inclusion</i> A variety of knowledge is included to help make informed decisions (Beierle 2002; Hedelin 2007; Reed 2008).</p>	<p>Assessment of participant input to selection of study performance indicators based on study board meeting minutes and public meeting transcripts.</p>
<p><i>Legitimate decision making</i> Decision making is clearly displayed, based on evidence rather than political motivations and participants inputs have a genuine impact (Rowe and Frewer 2000; Webler et al. 2001).</p>	<p>Assessment of explanation of decision making process and impact of participant inputs based on public meeting transcripts and material distributed to public.</p>

Table 1. cont'd....

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Process based evaluation	Data sets for evaluation (performance indicators)
<p>Criteria</p> <p><i>Representation</i> Participants represent a broad and cross-cutting section of interest groups (Blackstock et al. Chilvers 2009; Hedelin 2007; Mostert et al. 2007; Rowe and Frewer 2000).</p>	<p>Classification of participants at public meetings according to interest group (based on meeting transcripts) and number of interest groups represented at each meeting.</p>
<p>Intermediary outcome based evaluation</p> <p><i>Agreements are reached</i> A final agreement on suitable strategy is identified and broadly supported by all participants (Leach et al. 2002).</p>	<p>Assessment of recommendations made by Study to JJC in 2006.</p>
<p><i>Innovation</i> Strategies are developed which are more creative and context specific (Connick and Innes 201; Newig and Fritsch 2009).</p>	<p>Assessment of impact of participant involvement in contributing management ideas and refining management options.</p>
<p><i>Interaction and network development</i> The process leads to greater interaction between different interest groups and awareness to others activities, needs and values (Leach et al. 2002).</p>	<p>Assessment of participant awareness to needs and values of other interest groups based on public meeting transcripts and individual interviews with participants. Evidence of network development between two or more interest groups based on public meeting transcripts.</p>
<p><i>Institutional change</i> Institutional functions, roles or structures are modified to reflect participant ideas, values or requirements.</p>	<p>Assessment of participants' comments that identify institution change requirements.</p>
<p><i>Shared knowledges and information</i> Data, information and knowledge is generated that is accepted and trusted by all participants (Steyaert et al. 2007; Jiggins et al. 2007).</p>	<p>Participant trust in data and information generated by the Study based on public meeting transcripts.</p>

analysis and empirical research into participant perspectives. Good process characteristics are those which produce a legitimate or fair process, and a process that is effective and well run (Rowe and Frewer 2000; Webler 1995; Webler 1999). Intermediary outcome criteria are based on work which has associated participation with a range of actions or non-tangible outcomes (Connick and Innes 2003). They relate to benefits such as increasing the connectivity between different stakeholders and government networks which may raise trust and the willingness of participants to invest in joint work (social capital) (Pretty 2003). They also relate to achievements, which may perhaps fall outside the original objectives or scope of work. These may include changes to strengthen or modify existing institutions, or the development of new organizations. A decision that is based on shared information created by many stakeholders and is accepted and trusted may reduce dissatisfaction over the final decision (Bentrup 2001). These outcomes might be essential to allow new strategies to be implemented in a quick and efficient manner.

Resources and Data Sets Available for Evaluation

The LOSL Study offers a substantial collection of material documenting the public involvement activities that took place. All resources used to conduct this evaluation (except for material collected by the authors during individual interviews with persons involved) are currently published on the internet (<http://www.losl.org>; <http://www.ijc.org/en/activities/losl/index.php>).

The availability of resources reflects the attention paid to documentation and reporting during the Study. This reflects the recognition by the IJC and the Study Board that transparency and access to information throughout the process are essential for co-management. Reporting, documenting and ensuring public access to all information were of high priority. This leads to a substantial and unique data set with which processes and outcomes can be evaluated. Data sets used in this research are:

- Transcripts from 14 of the 25 public meetings organized by the PIAG and Study Board in 2004 and 2005 (held to gain feedback on ongoing development of operating plans (2004) and to identify public opinion on the three plans put together by the Study (2005)). Incomplete transcripts and those in French have not been included in the analysis.
- Transcripts from 8 of the 10 public hearings organized by the IJC in 2008 (these formal hearings followed information sessions and were held as part of the IJCs consultation process for Plan 2007). Transcripts in French have not been included.
- Minutes from Study Board meetings held between 2000 and 2006.
- Half yearly and annual reports by PIAG and the Study Board.

- Semi-structured interviews with a member of PIAG and a professional member of the Study Board conducted by one of the co-authors (GC) in September 2010.
- First-hand experience from a Study Board member who co-authors this chapter (DPL).

Data Analysis

Data analysis was structured by the evaluation framework (Table 4.1). Standard methods for analyzing interview transcripts were employed and the material was read and phrases, paragraphs or dialogues were grouped according to dominant key themes such as institutional issues, process factors, data and analysis concerns, facilitation (Kitchin and Tate 2000). The material was further subdivided and recombined according to its relevance to each of the evaluation criteria. Similarities and trends in the experiences and opinions reported, as well as diversity and controversy then became apparent, and the achievement status of each of the criteria could be assessed.

Public Involvement in the LOSL Study

Over the five-year study period, hundreds of people and dozens of organizations participated directly in the Study. The volunteers of the Public Interest Advisory Group were central to the success of the undertaking, contributing significantly and uniquely to the work of the Study Board. PIAG members were fully integrated into the Study Team, providing advice, feedback and input during all phases of the Study process. This included representatives from First Nations whose issues are complex and knowledge is great, but not always in written form. The final PIAG report shows that between April 2004 and November 2005, 139 presentations were given to an audience of approximately 5850.

Our evaluation findings have been grouped according to whether they relate to the process by which participation took place, or to the outcomes that emerged from the process.

Process-based Evaluation

Access. A legitimate and effective process should ensure that all interested or affected individuals have access to resources and opportunities to take part. The PIAG used a range of technology to reach interested parties and to attempt to capture their involvement. Group members coordinated the Study's communications process, which included publication of the Ripple

Effects newsletter, creation of the website, stakeholder meetings, workshops, a speaker's bureau, roundtable meetings and public meetings. The Group published a glossary of terms and led the creation of Study banners and brochures. The PIAG were supported by two IJC communications assistants (one from US and one from Canada) for arrangements such as booking venues, newspaper and radio advertising and sending out invitations to mailing lists developed by PIAG and the Study Board throughout the duration of the study.

Regarding access to information, participant feedback suggests that some of the powerpoint presentations and graphs exhibited during the presentation were received very well at the meetings where they were shown and helped people to understand the complexity of the Lake Ontario-St. Lawrence River system in a very direct way. The Study Group (the Study Board and the PIAG) seemed to be receptive to advice and willing to make improvements. Only one comment was made during the 2004 public meetings (Olcott, New York, September 17, 2004) suggesting that the level of detail in the presentations was too great, and that simplification would help the audience to understand the system better. The Study Board and the PIAG adjusted their presentations before the 2005 public meetings and no comments were documented that suggests further confusion.

The PIAG recognized that one of their major challenges was ensuring that potentially affected stakeholders were aware of the Study and received information on meetings and publications (comment by PIAG member during public meeting, Trois-Rivières, Québec, September 17, 2004). During the course of the Study the PIAG compiled a mailing list and encouraged those on their list to sign up friends and colleagues who would be interested. Considering the scale of the Study and the number of people potentially affected by changing lake level regimes, there were very few comments made during the 2005 public meetings from individuals who felt their participation had not been adequately sought by the Study Group earlier in the process.

Regarding access to meetings, the PIAG created a public meeting plan. Their plan ensured that a wide variety of interest groups would have a local meeting. The timings of the meetings were carefully considered, taking place in summer when recreational boaters and seasonal property owners would be using the lake and available to attend.

Cost-effective. The extent to which participants viewed the process as good value for money may reflect how effective it was. There are several aspects to cost effectiveness. The importance of sound science on which to base decisions was highlighted during the two semi-structured interviews. One comment was also made by a participant in a 2005 public meeting:

“I’m very happy that we’re spending \$ 20 million to come up with data. I think decisions that are of this magnitude ought to be based on data and not on interests, although we all have interests and I certainly as a boater and recreational user have interest in the river. So I’m glad we spent the money.”

(Massena, New York, June 22, 2005)

A second aspect of cost-effectiveness relates to the potential economic benefits that can be gained from implementing a new plan compared to the current plan. These gains effectively offset the costs of running the study. Interest groups who were set to benefit economically from a new plan were more inclined to view cost-effectiveness in these terms.

A third concern tended to be voiced by those interest groups who had more to lose than to gain from any new plan (shoreline property owners whose land could be put at greater risk of erosion from changes leading to higher lake levels). This group was concerned that the cost of the study would influence decision making leading to rejection of the existing plan solely because money had been spent formulating a new plan. A comment made by an IJC commissioner at one of the last Study Board Meetings suggests such a bias could influence decision making:

“What do you think congress will say if we say the best thing to do is nothing after taking five years and spending \$ 20 million?”

(Study Board Meeting, Washington DC, December 5, 2005)

Deadlines and milestones. Clear deadlines and rewards, such as funding to assist with implementation, have been shown to help focus a participation process and encourage cooperation between participants (Jiggins et al. 2007). The mandate of the study was to review the existing criteria for regulation of the LOSL River level and flows, and to provide options and recommendations to the IJC in five years (IJC Plan of Study 1999). The IJC retained decision-making authority on selecting and implementing an option and did not set a deadline by which a decision would be made. The context in which the Study was operating was a significant factor. The existing 1909 Boundary Waters Treaty protects stakeholders’ interests and therefore any decision that may jeopardize interests would need national government support to either accept the risks or agree that mitigation measures are in place or will be implemented that adequately protect interests that may be at increased risk due to changes in regulation. The IJC are therefore challenged in their decision making capacity by the institutional and political systems operating within each country.

Comments from the 2008 IJC public hearings suggest some stakeholders were frustrated with the delay in decision making. The extent to which the slow decision making leads stakeholders to give up on the process

cannot be identified, but over 1000 comments were submitted to the IJCs consultation on Plan 2007 (http://www.ijc.org/en/activities/losl/comments_order_plan.php) which suggests that interest in the issue and willingness to contribute to the process remained, at least until 2008.

Facilitation. Impartial and unbiased facilitation has been identified as essential to encourage discussion and ensure everyone who wants to be heard is given opportunity to speak (Jiggins et al. 2007; Moote et al. 1997; Walker et al. 2006). The range of separate and diverse interests being met in the Study led to particular challenges in unbiased facilitation, especially towards the end of study when the options that would be put forward to the IJC were being debated in Study Board, PIAG and public meetings. Most members of all groups seemed to hold some affiliation or personal interest and identified their own preference towards either the status quo or one of the possible plans. Despite this, personal bias from PIAG or Study Board facilitators could rarely be detected in the meeting transcripts. However, the titles given to the developed plans were perceived by some participants to show bias:

“My concern is, when you have this amount of data floating around, it doesn’t take much for some small group of people to name it. And I think names become labels, which become very dangerous. For someone to claim that Plan D is a blended benefits plan which to a whole bunch of people who hadn’t looked at it would say, blended benefits, sounds pretty good. I think that’s doing a disservice to my \$ 20 million.”

(Massena, New York, June 22, 2005)

Participant: “Everything, every piece of material that I have seen come out from the Study Board including a letter to the editor in the Watertown Times from Mr. Stakhiv [US Study Chair] has been able to point out to you how you have been slanting the material.

Study Board Member: We’re not, we’re not biasing any of the plans. We developed three plans. The mere fact that we developed an environmental plan, that you have available for consideration, and we’re merely, we’re sending three plans forward for the IJC to consider. The Study Board doesn’t have any particular—

Participant: Sir, The simple, the titles, the titles alone show a slant.”

(Alexandria Bay, June 23, 2005)

The second part of the facilitation criteria is concerned with whether the process attempts to build up shared values between the participants, rather than more deeply entrenched personal interests. The meeting minutes,

reports and transcripts all suggest that from the very beginning of the study, the narrative was that compromise was needed as it would not be possible to devise a management plan to satisfy all interest groups at all times. During the 2004 public meetings the PIAG attempted to hold joint question and answer sessions, linking meetings at two different locations by telephone. The aim, as described by a member of PIAG, was to raise awareness to the need for compromise:

“And what we heard last night ... was, the people in Hamilton last night, or near Hamilton, were saying, well, we want the water levels down, and people in Massena were saying, well, if you drop them too much, this is what it’s going to do to us. And so we want the people in the two areas to hear each other, hear the problems, and therefore hopefully understand when it comes to the time of making decisions, that it’s going to be a tricky thing to try to balance and figure out how we can serve everybody around the system without hurting anybody disproportionately sort of thing. But we think, and the PIAG had big discussions about this, and we really think that the different areas have to hear each other to know what they are concerned about, so that you understand when the decisions are to be made, that there’s going to have to be a lot of give and take, and okay—well, that’s the word. Give and take. At certain times of the year, for different people, for different purposes.”

(Alexandria Bay, New York, June 23, 2005)

Knowledge inclusion. The PIAGs principal objective was to ensure that Study results consider the interest and “natural knowledge” of the public (LOSL 2006). Of primary interest to the Study Board was the relationship between what can be controlled or managed, i.e., lake levels and river flows, and indicator values representing the various interests. Technical working groups were established and paid by the Study Board to define these relationships. Individual members of the PIAG acted as liaisons to the various technical working groups of the Study. The PIAG helped to focus discussions in a practical way, giving the Board real world implications for decisions. PIAG members suggested metrics in the Coastal, Environment and Recreational Boating technical work groups and played an integral role in providing input from the public into the Study’s Performance Indicators (quantitative indicators such as amounts of hydropower produced, freight tonnage shipped, days in boating season with levels above a specified threshold level, amount of shoreline erosion, etc.) (see Loucks 2006). Public meetings held during the summer of 2003, the Study newsletter and the website were all used to collect public feedback on performance indicators suggested by the technical work groups. A wide range of comments were made, particularly regarding environmental indicators. The appropriate

technical work group then responded to each suggestion (PIAG Year 2–3 Report, Appendix H).

The 2004 public meetings identified many more suggestions and concerns with the performance indicators used. At this stage the technical work groups tended to defend their approaches, probably because they felt few changes could have been made to the analysis at this late stage in the Study. This is illustrated by a comment from a member of the Plan Formulation and Evaluation group:

“The performance indicators are in pretty good shape, and they’re pretty good performance indicators. That’s not to say that we won’t listen, but I think we have a year left on the study, approximately, and really the focus now should be on plan formulation and evaluation. I think if you took a good look at these performance indicators, they’re a very good, robust set.”

(Alexandria Bay, New York, August 19, 2004)

During another meeting in 2004 a shore line property owner tried to suggest that a performance indicator which considers the taxes paid by shoreline dwellers would better address riparian’s concerns (Oswego, New York, September 2, 2004). A member of the Coastal Processes technical work group responded that this was not being considered because the group felt confident that their other performance indicators were accurately capturing the effects of lake levels on riparians. During the 2005 public meetings a couple of participants with shoreline property interests returned to this issue and emphasized that they felt the lack of consideration for issues such as property value and tax revenues had not been adequately addressed and had led to inaccurate evaluation of lake level impacts on riparians. During the 2008 IJC hearings, four elected officials and three individuals from shoreline communities with an interest in keeping Plan 1958-D with deviations, argued that the omission of property values and tax revenues invalidated the economic evaluations performed by the Study.

Legitimate decision-making. The Study documents all show that throughout the process the Study Board and the PIAG clearly explained that the final decision on a plan would be taken by the IJC. No concerns appear to have been voiced by participants regarding the decision making arrangements. However, there was concern among some participants about whether their voices and opinions would truly be considered. At many of the meetings, elected officials spoke to express what many in the audience strongly supported. A number of resolutions were passed by municipalities, mostly in New York State, confirming the views expressed (observations of DPL during the LOSL Study 2000–2005).

Some of the public who lived along the River expressed concerns about the short timeline for making comments on various plans and hence felt that they were not being fairly dealt with and their opinions were not truly valued. Once it was explained that the IJC would hold hearings on the candidate plans recommended by the Study Board, many of those individuals seemed to be satisfied that their voices would be heard.

During one public meeting (Olcott, New York, September 17, 2004), a participant spoke of how 10 yr previously close to 400 participants had taken part in a public meeting. He related the turnout of 42 participants as being due to apathy among property owners resulting from their distrust and concern that nothing will change. Perhaps in an attempt to encourage participation, members of the PIAG regularly spoke at the public meetings about the importance of stakeholders voicing their opinions. They emphasized that the process would ensure that everyone's opinions and views would be documented and therefore heard by the Study group and the IJC.

During the 2008 public hearings held by the IJC, some interest groups made threats of legal action against either the IJC or the national governments if their preferred plan was not selected. The IJC, being an international treaty organization, explained that they are protected from litigation. These comments suggest that participants felt that, at this stage, legal systems were the only way their voices would truly be incorporated. It is important to note that Plan 2007 was a modified version of one of the plans developed by the Study and it was not produced in direct collaboration with the public. Plan 2007 was fairly unanimously rejected by all interest groups when it went to consultation in 2008 (IJC public hearing transcripts, June to Sept 2008). Several comments were made that criticised the lack of public participation in the development of Plan 2007. Some participants also felt their inputs into the Study had been ignored because the IJC had chosen to develop an alternative plan, rather than select one of those developed by the Study. It is perhaps possible that the lack of public involvement in creating Plan 2007 contributed to it being dropped by the IJC.

Representation. Broad representation of all interested and affected parties is considered to be central to a legitimate process as agreements reached by an unrepresentative group of stakeholders can be said to result from an undemocratic process and dismissed by critics of the agreement (Mostert et al. 2007; Rowe and Frewer 2000). Broad representation also ensures that a full understanding of the interactions and perspectives can be achieved (Hedelin 2007).

The Study was set up to ensure that the Study Board and the PIAG included members from all the interest groups operating on the Basin. The PIAG attempted to ensure that a representative group of stakeholders

attended the public meetings though arranging meetings at places where they knew interest would be high. They distributed material, organized presentations and workshops and advertised the Study throughout its duration in an attempt to identify and capture the interest of as many people as possible. Specific meetings were held with First Nations communities throughout the Study.

Table 4.2 shows the number of interests represented by speakers (not including the Study Board or PIAG) at five public meetings held in 2005 for which full transcripts were available. This shows that all meetings heard from speakers from more than one interest group. Although, the meetings at Massena and Alexandria Bay were heavily weighted towards boating and North Rose was very heavily weighted towards riparian interests. No meetings heard from representatives from all interest groups which suggest that full representation within each meeting was rarely achieved.

Table 4.2 Interests represented at some of the 2005 public meetings.

Interest Group	Massena, June 22, 2005	Alexandria Bay, June 23, 2005	Oswego, July 14, 2005	North Rose, July 20, 2005	Greece, July 21, 2005	Total
Recreational boating	7	5		1	1	14
Environment	1	3	2		9	15
Riparian (shoreline property)			3	16	14	33
Commercial boating		2				2
Recreational boating and environment	1					1
Recreational boating and riparian					1	1
Unknown	2	5	1	2	5	15

Intermediary-outcome based Evaluation

Agreements are reached. Co-production of an operating plan should lead to a plan that is both technically feasible and acceptable to all because it has been produced by a combination of technical and stakeholder inputs. Creation of a plan to which all could agree in principle would naturally be an important outcome. The LOSL Study created multiple plans, from which three, based on stakeholder, Study Board and external scientific review, were presented to the IJC as management options. The public meeting comments showed that everyone could align themselves to one of the new plans or the status quo (Plan 1958-D with deviations). This achievement may be overlooked as a success but should perhaps be given considerable credit as it shows the Study outcomes did reflect the interests of the people it involved.

One of the most difficult issues for the Study Board was the environment. Many interests benefit from the environment, and whatever set of indicators used to show changes in the environment resulting from any policy, it was never clear how significant that change was in relation to changes in other interests. Furthermore the complex environmental quality model developed and used to derive values for environmental indices was an exercise in dealing with uncertainty (see Werick 2011). At one point in the study the US IJC Co-chair commissioner asked that the Study Board, with the help of the environmental technical working group, to quantify environmental improvement in terms of dollars, as other interests were. This was resisted by the environmental technical work group and Study Board.

Innovation. More creative and advanced management plans emerged as a result of public input. The plans put together by the Study during the final year were refined according to public input during the 2005 public meetings. The plans A, B, and D were enhanced and relabelled A+, B+ and D+ (Study Board Meeting Minutes, Aug 24 and 25, 2005).

A strong wish was expressed by the public in several locations that the performance of the plans be monitored, with a review, for example, every five years, to assess the results. This supported the Study Board's intention that adaptive management, by which adjustments are made to the plan to reflect changing environmental and socio-economic circumstances, would be included in any new plan.

Interaction and network development. Raised awareness to both the interests of other stakeholders and environmental concerns does seem to have been achieved by the Study. This is shown by comparing comments made in 2008 to those made in 2005. Twenty-eight participants representing either themselves or specific groups or industries made statements that specifically acknowledged the need to consider other interest groups during the 2008 public hearings. During the 2005 public meetings only one comment was made that showed awareness and consideration of other interests. Similarly, during the 2008 public hearings, 23 participants emphasized that their own interests should be given priority, but also stressed an interest and commitment to environmental improvements. This can be compared to only three comments from the 2005 public meetings that acknowledged environmental concerns, while arguing that their interests were of greater importance.

At the end of the study it became clear that there was broad public support for the plan that best improved the environment, yet depending on where the public lived, there were misgivings about variable flows that favoured the environment but detracted from boating and shore line stability. What some of the public learned was that tradeoffs were sometimes necessary. It became obvious that no single plan of all those considered

resulted in satisfying all public interests. In meetings on the south shore of Lake Ontario (see Fig. 4.2), there was large support for the status quo, that is Plan 1958-D with deviations, because all of the candidate plans appeared to raise Lake Ontario levels. Concerns regarding shoreline erosion and flooding were noted at meetings in towns and cities where people lived near the shore. Even those who wanted much lower highs or higher lows also said that they wanted a more natural lake/river regime. When the debate was framed in terms of a natural or environmental plan versus any other kind of plan, residents from the River favoured environmental plans.

A valuable outcome emerged from the relationship between the PIAG and the International St. Lawrence River Board of Control. Public comments made throughout the Study highlighted frustration and sometimes anger with the Board of Control. The PIAG addressed this by formulating a sub-committee to advise the Board of Control on their communications strategy (LOSL Semi-annual Report 8, March–Sept 2004). Several joint meetings between the Study Board, the PIAG and the Board of Control took place over the course of the Study that are likely to have improved the Board's communication approach.

The PIAG itself could be considered to be a valuable human resource to the IJC. The members have strong networks throughout the basin and developed extensive knowledge and understanding of the system and its complexities. However, at the closure of the Study there was, according to one member of the PIAG, no follow up communications from the IJC which may jeopardize the value of this network:

“That’s one of my big complaints about the process. Is that they should have, for the study board members and the PIAG, they should have, even just twice a year, sent us an email saying this is the status, this is what we’re doing. ... Because I think that, if the IJC approached me again to be on something, I’m not sure that I would.”

(Semi-structured interview with member of PIAG,
September, 2010)

Little evidence is available in the research resources to identify whether network development between two or more interest groups took place during or as a result of the Study. The data set is unable to capture the informal discussions and networking held at the start and end of the meetings that are likely to be an important area for interaction.

Institutional change. Prior to the Study, some members of the PIAG were tough and active critics of the Board of Control's operations. Some urged that the Board of Control be restructured to better represent the full range of interests in the system. During the Study an institutional report was

commissioned which made numerous recommendations for institutional improvements (Clinton Edmonds and Associates 2002). Institutional issues were fairly regularly raised at public meetings, particularly concerning the Board of Control and the procedure for obtaining permits for installing shore line protection from the US Department for Environmental Conservation (DEC). During one of the 2004 public meetings an active participant spoke about the importance of institutional review and reform:

“For instance, when there were the TWGs, the technical working groups, put together, and they were put together with some excellent people, and they did excellent work. And they’ve come up with some recommendations they’re giving to the [Study] Board to be evaluated and incorporated into a plan. But there should have been at the same time another group that was looking at the management structure and the overall procedures in how decision processes were going to take—how long they would take. Everyone knows that’s been a common criticism. It takes too long to get a decision made. But that should have been going on parallel and feeding in at the same time, so that when we got to the end of the study we would have these independent recommendations coming in as well.”

(Alexandria Bay, New York, August 19, 2004)

Towards the end of the Study, an institutional workshop was held and recommendations were derived which were integrated into the final report (Report on the Institutional Issues Workshop, November 30–December 1, 2004). The Study board recommended that the IJC act on the findings and emphasized that their implementation would be independent of any new plan and could be acted on immediately. Changes to the structure and number of interest groups represented in the Board of Control are said to continue to be in progress (interview with member of the Study Board, Sept. 2010).

Shared knowledge and information. The strategy of co-production and natural knowledge inclusion used by the Study should create data and information which has been generated by all, and is therefore accepted and trusted. Participant trust in data can be evaluated by examining the comments made during the 2005 public meetings and the IJC 2008 hearings.

During the 2005 public meetings, the recreational boating sector and some of the shoreline property owners expressed concerns regarding potential flaws in the performance indicators, data collection and data analysis. Many of the concerns had been voiced during the study process but some are likely to have emerged as participants gained more understanding of the approaches used.

One of the reasons for exploring options for a revised management strategy was to reduce the need for deviations from the operating plan determined by the Board of Control. The role of deviations was brought up by several people on the South Shore of Lake Ontario during the 2005 meetings. There was concern that a fully automated (i.e., no human decision making) management system would be “irresponsible”, as some circumstances such as flooding risks may require deviations to reduce the impacts. A couple of comments were made that questioned the models used to produce the plans, and voiced concerns that the plans would not perform as intended, therefore requiring human intervention. The Study Board generally agreed with the need for deviations, through some members argued that allowing deviations from a prescribed plan would inhibit the plan from achieving what it is designed to achieve, such as wetland restoration and boating economic gains (Study Board Meeting Minutes, Dec 5, 2005). Deviations would also make any assessment of the effectiveness of any plan on achieving its stated objectives much more difficult.

During the IJC 2008 hearings, at least eight individuals or group representatives who favoured keeping Plan 1958-DD used the critical peer review of the Study (completed in 2006) to support their arguments that a change in management plan would be based on scientifically flawed data and analysis.

Discussion of the Processes and Outcomes and Lessons Learnt

One of the most exciting aspects of the LOSL Study is its attempt to co-produce a management plan for a highly complex system at a large scale with many different interest groups. Scientific and lay experts interacted throughout the process in the development of performance indicators and refinement of management plans that seems to have led to more creativity and innovation in the plans submitted to the IJC. It also seems to have led to plans being developed which are recognized to be more legitimate. Plan 2007 was not viewed positively, perhaps because it had been created without direct public input and was viewed as less legitimate. Our evaluation suggests that legitimate plans emerge from legitimate processes that need to be constantly maintained through access, transparency and impartial facilitation.

Co-production, as a model for developing resource management plans has been used on smaller scales, for example for designing urban river restoration (Petts 2006). The challenges described by Petts (2006) included getting people to trust in the system. An important lesson seems to emerge that stakeholder opinions on performance indicators need to be satisfactorily addressed. The coastal processes technical work group appears to have neither included the suggestion that property taxes form part of the performance indicators nor explained, to the satisfaction of some of the

public, the performance indicators they did chose to work with. This seems to have led some of the riparians to mistrust the Study's findings.

Sound science is important for making unbiased decisions but the scientific review of the Study found weaknesses in the science that damaged trust in the Study's outputs, and may have left people questioning the cost-effectiveness of the Study. This provided ammunition for interest groups who felt they would not benefit from a change in the operating plan and wanted the IJC to reject the options put together by the Study. Trust in the models and systems developed by the Study is also vital if the plan is to operate without deviations. These observations suggest that finding ways to develop and maintain trust in scientific work is essential to reduce the potential for decision making based on personal agendas rather than facts.

The Study adopted a narrative that everyone would have to compromise. It is unknown whether a greater focus on identifying and building shared values among the interest groups would have led to a different outcome. Many property owners concerned about erosion also described having an interest in the environment, as did recreational and commercial boaters. Treating the environment as another interest group placed the burden on those representing it to stake a claim on water resources, rather than forcing other users to accommodate the requirements of environmental protection and conservation. An alternative approach would be to view the desired environmental state as a constraint on all other interest groups, not as another interest group participant. Developing a shared value of environmental quality would provide a constraint and tradeoffs could still be made among all remaining interests.

Public meetings and hearings have received a fair amount of criticism in the literature. Chess and Purcell (1999) talk about public meetings as being used for a "decide, announce, defend," strategy. This can happen when organizations make decisions prior to the meeting and use it solely as a forum to announce and defend their decisions. Public meetings are also associated with divisiveness, rather than consensus building (Chess and Purcell 1999; Collins et al. 2007; Duram and Brown 1999) and have also been called non-deliberative (Beierle 1998; Innes and Booher 2004). The Study documents clearly show that no plan was agreed prior to the public meetings. The evidence compiled in this evaluation also suggests that the process was deliberative. Members of the Study Board and the Technical Work Groups recognized that public participants had a great deal to offer and seemed to embrace the opportunity to discuss their work with lay experts. Perhaps the Study Board recognized that the production of a management plan may be only one of their achievements. The development of valuable institutional recommendations emerged from a willingness to discuss the broad variety of issues affecting interest groups.

In contrast to the deliberative style of the LOSL public meetings, the IJC hearings gave participants the opportunity to voice their opinions and to argue their cases, they did not give space for mutual exchange, understanding and learning (Klinke 2009). The findings from our evaluation suggest that the processes (i.e., fair access, representation, unbiased facilitation etc.) by which participation takes place are of much greater importance than the mechanism used to conduct participation (i.e., public meetings, small group workshops etc.). This finding supports that from other studies (Chess and Purcell 1999; Webler 1999).

The PIAG contributed hundreds of hours of volunteer time and were a significant, unique and invaluable part of the Study. PIAG members were appointed on the basis of their expertise and ability to reach out to local interest groups and this appears to have worked well. Based on our evaluation, the Study achieved good access and broad representation overall, though the space for learning about other interests may have been limited because most public meetings tended to be dominated by only a few interest groups. The PIAG attempted to address this through the telephone link up among different groups at different locations during some of the public meetings.

The time dedicated by the PIAG was much more than initially expected. The organizers of future studies should encourage prospective members to be prepared to devote time when joining an advisory group. Adequate administrative support to these key volunteers appears to be essential. Work also suggests that individuals have different expectations from participation processes (Webler et al. 2001). These may be the expectation that their input will directly feed into decision making, that the process will lead to better decision making or that a fairer and more equitable process will emerge (Webler 2001). Identifying and addressing the values and expectations of the PIAG group should perhaps form an important initial stage to reduce dissatisfaction or “burn out” later in the process. Simple follow up emails to inform PIAG members of developments and progress was noted to be lacking. To the volunteers, this suggests to them that their input has not been valued. It may reduce their willingness to take part in future volunteer advisory work, effectively leading to the loss of valuable human resources who are highly educated and experienced in resource management. This suggests that follow-up communications should form part of any program.

Conclusions

This work has benefited from an excellent publicly available data set and offers one interpretation and evaluation of the LOSL Study. The evaluation has shown some considerable strengths to the process which should be

adopted by other participation programs. These included good access to information and meetings, commitment to involving all potentially affected communities and interest groups resulting in broad representation, impartial facilitation and inclusion of a wide variety of knowledge. These aspects emerged from strong institutional commitment to public involvement from the IJC which was heavily backed by the Study Board, but perhaps most importantly, through the inclusion of a dynamic, dedicated and well supported Public Interest Advisory Group. The difficulty will be to extrapolate these lessons learnt to other studies and public involvement programs where financial resources may not be so readily available and commitment to co-production of a resource management solution may not be so strong.

The evaluation has shown that co-production of a management strategy could be considered to be a long process and sufficient time, human capital, (and financial resources) need to be allocated. Our work suggests that good processes are essential to develop stakeholder trust, which is crucial for co-production. Inadequate processes, such as narrow representation or exclusion of participant knowledge, seem to lead to indicators of stakeholder dissatisfaction, such as distrust in information and threats of legal action.

The Study produced three management plans, but was unable to identify a consensus option within the time available. However, the Study produced many other outputs that extended beyond its original objectives. These non-tangible outcomes that are produced by stakeholder involvement programs should be given greater recognition when planning and evaluating participation. For the LOSL Study, some intermediary outcomes are achievements within themselves, such as institutional changes that benefit the current operating system. Others help to create an environment where an updated management plan may be implemented more willingly, such as an increased understanding of others views and positions.

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