



“How Cities Learn in the Sustainable Cities: PLUS Network”

Nola-Kate Seymoar, Zoe Mullard, Marena Winstanley

Reviewed by: Ann Dale- Canadian Chair in Sustainable Communities, Royal Roads University

July 2009

"Production of this report, **“How Cities Learn in the Sustainable Cities: PLUS Network”**, has been made possible through a financial contribution from Infrastructure Canada. The views expressed herein do not necessarily represent the views of the Government of Canada."



**Infrastructure
Canada**

Table of Contents

Executive Summary	3
Introduction	6
Overview of Institutional Learning.....	9
Summary of Organizational Learning Theory.....	9
Types of Organizational Learning.....	11
Network-Driven Learning	13
From Organizational Learning to Learning Cities	16
General Highlights of Research and Principles	16
Barriers to Learning	17
Summary and Analysis: “How Cities Learn” Survey	18
Limitations of the Survey	18
Summary and Analysis - Contribution of the PLUS Network.....	24
Conclusions.....	27
Bibliography	32

... striving to create

“...organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together.”¹

¹ Senge, Peter. The Fifth Discipline. The Art and Practice of the Learning Organization. Doubleday Business, 1990. pg. 3

Executive Summary

This paper provides an overview of how the cities engaged in the Sustainable Cities: PLUS Network (PLUS Network) learn. It has been compiled through participant observation and a survey of members of the PLUS Network. The report starts with a literature review of organizational learning, outlines some of the key characteristics of learning organizations, and focuses in particular on the role of networks in helping to generate, disseminate and store knowledge. Barriers to learning are also explored. The survey results are presented and analyzed and further observations made based on the experience of the International Centre for Sustainable Cities and PLUS Network members. The implications for the Network are identified as is the need for further research.

The Sustainable Cities: PLUS Network

The Sustainable Cities: PLUS Network is a network of 40 cities and regions from around the world which share their learning and best practices about integrated long-term planning and sustainability demonstration projects. PLUS is an acronym for Partners for Long-term Urban Sustainability. The Network was founded by the International Centre for Sustainable Cities (ICSC) in 2004. The goal of the PLUS Network is to accelerate the transfer of learning, knowledge and research from city to city so as to catalyze action on urban sustainability in cities around the world. Of the 40 cities and regions, eighteen are Canadian members representing a total of 50 local authorities and a combined urban Canadian population of 15,702,575.

Description of Survey Methodology

In May 2009, the PLUS Network sent out a survey to 29 of its 40 member cities. The survey focused on “How cities learn about urban sustainability and how the PLUS Network is contributing to the learning process”. 17 of 18 Canadian cities² and 12 of 22 international cities³ were surveyed. A total of 65 people were sent questionnaires, including 53 city staff, two mayors, and 12 academics or consultants to the network who have experience in this field and are familiar with the Networks activities. 25 responses were received (38% response rate).

18 of the respondents identified their location. The following 10 Canadian cities were represented: Iqaluit, Ottawa, National Capital Commission, Vernon, Whistler, Calgary, Cochrane, Regina, Niagara Region, and Canmore. This represents 59% of the Canadian members surveyed and 56% of the Canadian PLUS Network members. Responses included large, medium, and small, remote and aboriginal communities. Thus it can be viewed as a representative sample of the Canadian members of the Network. Of 12 international cities surveyed, responses were received from seven cities: Chihuahua and Colima (2 cities from Mexico), Adelaide (Australia), Durban (South Africa), Montpellier and Olympia (2 cities from the USA) and Curitiba (Brazil). This represents 58% of the international cities surveyed and 32% of the total number of international cities in the Network and is also representative of all sizes of cities.

² Toronto was not surveyed as there was no current contact for the network,

³ The survey was conducted in English and language barriers made it difficult to expect a response from the Sri Lankan, Mongolian, Romanian, Costa Rican and Brazilian cities.

Conclusions

This research project was extremely useful in providing the PLUS Network members an important moment to reflect on the learning process as it applies to their city and to the PLUS Network itself. In light of the relative absence of research about how public institutions learn, it suggests that this is a rich area for future research and one that the PLUS Network could continue to facilitate.

The general conclusions about how cities learn that can be drawn from this sample and questionnaire include:

- When faced with problems, 80% of the respondent turn to their peer group - colleagues they know in other cities
- Conferences and learning events are identified by 90% of respondents as the best source of new ideas
- The Internet is a common source of information, (75%) particularly about case studies and best practices.
- The least likely sources of information or guidance to be used are academics, professional organizations, journals or mentors.
- Most cities do not have conscious learning processes established or institutionalized.
- Learning does not occur evenly throughout the organization – those people who participate in conferences or peer exchanges get greater exposure to innovative ideas but they are not usually able to ensure a systematic transfer of that knowledge. Often these people are leaders and are motivated to attend conferences in order to keep furthering their personal and professional learning.
- Knowledge storage or corporate memory is not formally organized or captured by the vast majority of the cities in the survey
- Some of the best ways to learn are: by experimentation (by doing), by attending conferences and events that provide opportunities for direct face-to-face sharing, by presenting at conferences, by attending City Council meetings, by presenting at team/department meetings.
- Learning from other cities, particularly those of similar size, is important and through networks or professional colleagues many cities reach out to other cities for information.
- Although there is competition between cities to achieve social, economic and environmental prosperity, sharing is done extensively in informal and formal channels (often by request) and through networks, people become exposed to new ideas and become more collaborative with peers from other cities.
- Barriers to learning are largely related to time, funding, lack of human resources, being overworked and daily pressures.
- While sustainability may be common parlance, there is significant complacency within and across departments. It requires dedicated staff and self motivation to keep the vision clear and tangible.
- Leadership on sustainability is a large motivator for learning and doing. Being guided by a vision and strong leadership makes the processes smoother.

The survey was particularly relevant to the PLUS Network in order to keep the organization going on its' own continual learning path. The survey demonstrated that:

- Funding of participation (travel) is a crucial issue for cities in Canada, the USA, Australia, not just cities in low income countries.
- There is a need for the PLUS Network to continue facilitating the exchange of information between cities, and different programs and activities are highly valued by its members.
- Staff at the PLUS Network need to maintain regular contact with cities in order to ensure that cities feel engaged and also to be able to document and transfer learning on a regular basis.
- The members appreciate the tools and resources that are available, but in order to make the sharing and learning more accessible, translation into other languages is necessary.
- Peer exchanges and biennial conferences are the most useful learning opportunities within the PLUS Network, however other activities, such as web dialogues, newsletters and the website are also helpful.
- The open, flexible, positive attitude of staff members is important in creating a safe space for sharing and learning.

The survey results demonstrate that adults learn mainly from their peer group and secondarily from professional venues. Networks emerge as a key strategy for speeding the exploitation of knowledge and learning, both formally and informally, through institutions and between institutions and their clients. They can bridge issues of scale and implementation gaps, as well as critical divides between sectors, levels of governments, professionals and even between nations, as the PLUS Network demonstrates. The type of network, however, is central to the adoption of novel ideas and more sustainable practices, and more research remains to be done on the nature, density and centrality of networks to sharing information, knowledge diffusion and their capacity for bridging between researchers, practitioners and local decision-makers to become “knowledge collaboratives” central to decision-makers and policy development.

Introduction

Over 50% of the world's population lives in cities, and although covering only 3% of the world's land mass, they consume 75% of the world's resources and emit a corresponding proportion of greenhouse gas emissions.

This research, "How Cities Learn in the Sustainable Cities: PLUS Network" was undertaken to explore the question of how cities learn about urban sustainability in order to identify ways to accelerate the transfer of that learning. The research focused on cities within the Sustainable Cities: PLUS Network and was supported by Infrastructure Canada and The Canadian Chair in Sustainable Communities at Royal Roads University.

The Sustainable Cities: PLUS Network

The Sustainable Cities: PLUS Network is a network of over 40 cities and regions from around the world which share their learning and best practices about integrated long-term planning and sustainability demonstration projects. PLUS is an acronym for Partners for Long-term Urban Sustainability. The Network was founded by the International Centre for Sustainable Cities in 2004. The goal of the PLUS Network is to accelerate the transfer of learning, knowledge and research from city to city so as to catalyze action on urban sustainability in cities around the world. There are eighteen Canadian members of the Network representing a total of 50 local authorities and a combined urban population of 15,702,575. (Figure 1)

18 of the respondents identified their location. The following 10 Canadian cities were represented: Iqaluit, Ottawa, National Capital Commission, Vernon, Whistler, Calgary, Cochrane, Regina, Niagara Region, and Canmore. This represents 59% of the Canadian members surveyed and 56% of the Canadian PLUS Network members. Responses included large, medium, and small, remote and aboriginal communities. Thus it can be viewed as a representative sample of the Canadian members of the Network. Of 12 international cities surveyed, responses were received from seven cities: Chihuahua and Colima (2 cities from Mexico), Adelaide (Australia), Durban (South Africa), Montpellier and Olympia (2 cities from the USA) and Curitiba (Brazil). This represents 58% of the international cities surveyed and 32% of the total number of international cities in the Network and is also representative of all sizes of cities.

PLUS Network members commit to building on their existing planning process through the use of a long-term lens. While each city's approach is different, the process typically includes developing 50 to 100 year visions, with 30 year strategies, and 5 year implementation plans. The city or region also identifies an immediate demonstration project that shows how they are progressing toward their long-term goals. Members participate in regular peer exchanges, biennial conferences, training events and facilitated web dialogues, which give them opportunities to share their work and learn from one another's experiences. It is expected that over a number of years the collaborative experience will result in more resilient cities better able to respond in the face of economic, ecological and social shocks and stresses.

Since the launch of the network in 2004, ICSC has served as the secretariat, and Dr. Nola-Kate Seymoar, its President and CEO, has served as the principle participatory action researcher, reflecting back to the network the emerging lessons observed by herself, ICSC staff and PLUS Network members. As her observations have been articulated, they have

been shared with network participants, discussed at peer workshops, training events and conferences and modified, refuted or accepted. The PLUS Network's generic planning cycle resulted from this process and is an example of the Network's participatory action research⁴.

In the fall of 2008, a questionnaire was used at the Durban 2008 biennial conference to obtain initial information about how cities learn. The results were so interesting that ICSC engaged graduate students to conduct a literature review and undertake further research to gain a broader perspective on the issue. A second and more focused survey was issued in May 2009. This paper provides an overview of the literature and the results of the survey. It focuses first on cities as learning organizations and then on networks as vehicles of transferring knowledge. The results are consistent with those from the pilot survey. This paper is just one step towards understanding how cities learn, in general, and how to facilitate their learning and stimulate further research about urban sustainability, in particular.

⁴ The Sustainable Cities Planning Cycle. This can be downloaded from the Sustainable Cities: PLUS Network website at http://sustainablecities.net/docman-resources/cat_view/110-resources/98-urban-sustainability-planning-a-implementation

Figure 1

Sustainable Cities: PLUS Network Member Cities



City / Town / Region

Population

Adelaide, Australia	1,158,259
Badulla, Sri Lanka	780,000
Bucharest, Romania	1,945,000
Calgary, Canada	1,043,000
Canmore, Canada	12,040
Chattanooga, USA	496,700
Chihuahua, Mexico	3,241,444
Cochrane, Canada	13,760
Colima, Mexico	568,000
Curitiba, Brazil	1,828,092
Dakar, Senegal	2,564,900
Dar es Salaam, Tanzania	2,809,000
Durban, South Africa	3,470,000
Edmonton, Canada	1,040,000
Gatineau, Canada	242,125
Halifax, Canada	372,680
Iqaluit, Canada	6,200
Matale, Sri Lanka	37,000
Matamoros, Mexico	422,750
Matara, Sri Lanka	761,400
Metro Vancouver, Canada	2,250,000
Montpelier, USA	8,100

City / Town / Region

Population

*Montreal, Canada	3,635,570
Moratuwa, Sri Lanka	177,190
National Capital Commission, Canada	N/A
Niagara Region, Canada	430,000
Nuwara Eliya, Sri Lanka	703,610
Okanagan Indian Band, Canada	1,800
Olympia, USA	42,520
Ottawa, Canada	812,000
Port Alberni, Canada	17,550
Porto Alegre, Brazil	1,430,220
Portland, USA	2,159,720
Regina, Canada	205,000
Saint John, Canada	75,000
San Fernando, Philippines	114,850
San Jose, Costa Rica	1,611,700
Salvador, Brazil	2,948,800
Suncheon, South Korea	270,270
Toronto, Canada	5,500,000
Ulaanbaatar, Mongolia	1,067,475
Vernon, Canada	35,950
Whistler, Canada	9,900

Overview of institutional learning⁵

As most of the literature about institutional learning is drawn from private corporations, not local authorities which have different leadership and financial structures and policies, it was necessary to draw on the experience of ICSC and its PLUS Network members to relate the general theory of organizational learning to public institutions and local government. It is based on the observation that successful cities are continuously learning in order to adapt to external and internal demands, stressors, and daily challenges, to capitalize on opportunities, enhance trade and local economies, increase technical know-how, identify and adopt best practices et cetera. When cities join the PLUS Network they are joining a “peer learning network”, thus it has been assumed that they themselves are interested in becoming a learning organization and also that the Network will operate as a learning organization. This paper is the first attempt to connect the literature on learning organizations with research on the nature of learning within the PLUS Network member cities.

Summary of Organizational Learning Theory

Organization learning is when “the organization itself both learns and facilitates learning”.⁶ While it might be suggested that the public sector does not face the same survival pressures of private corporations, the experience of ICSC as well as recent research by Richard Florida⁷, Tim Campbell,⁸ and Neil Bradford⁹, argue that cities do face similar financial and political pressures and direct competition by other cities and would conclude that the general theories of organizational learning are applicable to cities.

There are four basic theories around organizational learning: (1) knowledge acquisition, (2) information dissemination, (3) information interpretation, and (4) organizational memory.¹⁰

Organizational learning theory includes the key concept of single and double loop learning: Single-loop learning (Peter Senge’s adaptive learning¹¹) “is the detection and correction of errors that does not require changing values that govern the existing theory-in-use and organizational defensive routines.”¹² Single-loop learning is product-driven learning whose only aim is to produce the desired outcome and does not address the underlying causes

⁵ The overview of the literature was compiled by Marena Winstanley, a Master’s Student of Public Policy and Administration, from Carleton University in Ottawa.

⁶ Wallace, Liz. Learning at the Whole Organizational Level. The Learning Organization in the Public Service. Eds. Janice A. Cook, Derek Staniforth, and Jack Stewart. England: Gower Publishing, 1997.

⁷ Florida, Richard. The Flight of the Creative Class: The New Global Competition for Talent, 2005. HarperBusiness, HarperCollins. And

Florida, Richard. Cities and the Creative Class, 2005. Routledge.

⁸ Campbell, Tim. Learning Cities: Converting Discovery to Knowledge in Complex Systems. Urban Age Institute. Mar 2008. Accessed online: http://208.113.197.138/images/articles/learning_cities.final.18mar08.pdf

⁹ Bradford, Neil. Cities and Communities that Work: Innovative Practices, Enabling Policies. Canadian Policy Research Networks. June 2003. Accessed online at http://www.cprn.com/documents/20506_en.pdf.

¹⁰ Kloot, Louise. Organizational Learning and Management Control Systems: Responding to Environmental Change

¹¹ Senge, Peter. The Fifth Discipline. The Art and Practice of the Learning Organization. London: Random House, 1990.

¹² Argyris, Chris. Reasons and Rationalizations: The Limits to Organizational Knowledge. New York: Oxford University Press, 2004.

that created the initial problem.¹³ Typical technical training programs would be examples of single-loop learning. Double-loop learning (Senge's generative learning¹⁴) is learning that treats both the symptom(s) and the underlying cause(s), by evaluating the outcome of the solution by way of a feedback loop.¹⁵ Double-loop learning is essentially the flexibility to unlearn unsuitable reactions, routines, and solutions based on new information.¹⁶ In the PLUS Network for example, double-loop learning is considered necessary for approaching complex problems such as climate change that requires adaptive management,

Senge's Learning Organization has 5 component technologies or disciplines: "(1) systems thinking, (2) personal mastery, (3) mental models, (4) building shared vision, and (5) team learning."¹⁷ To these five, David Garvin adds, a) skill at systemic problem solving, b) experimentation, c) learning from past experience, and d) the transfer of knowledge.¹⁸ McGill and Slocum promote active organizational 'unlearning', which requires: a) openness to new experiences, b) responsible risk-taking, and c) willingness to take ownership of mistakes and learn from them.¹⁹ Various theorists identify the use of past experience as a guiding principle for making decisions,²⁰ and Burstrom von Malmberg and Levinthal²¹ state that creativity is a necessary prerequisite for true learning. All of this learning theory can be organized into three categories: normative learning theory, developmental learning theory and capability learning theory.²² For more detailed information on these learning theories, please see references.

The following chart²³ visually compares the three branches of organizational learning theory in terms of their main characteristics. The general approach of the PLUS Network is perhaps most closely aligned with developmental learning theory, although specific activities fall into the other two categories.

Figure 2 – Branches of Organizational Learning

Features	Normative Learning Theory	Developmental Learning Theory	Capability Learning Theory
Time/	Future	Longitudinal	Present

¹³ Ibid.

¹⁴ Senge, Peter. The Fifth Discipline. The Art and Practice of the Learning Organization. London: Random House, 1990.

¹⁵ Argyris, Chris. Reasons and Rationalizations: The Limits to Organizational Knowledge.

¹⁶ Burstrom von Malmberg, Fredrik. Environmental Management Systems, Communicative Action and Organizational Learning. Business, Strategy and the Environment, 11 (2002) pp. 312-323.

¹⁷ Senge, Peter. The Fifth Discipline. The Art and Practice of the Learning Organization.

¹⁸ Garvin, D.A. Building an Learning Organization. Harvard Business Review. (July-Aug. 1993) pp.78-91.

¹⁹ McGill ME, Slocum JW. Unlearning the Organisation. Organizational Dynamics 22 (1993) pp. 70–89.

²⁰ Argyris, Chris. Reasons and Rationalizations: The Limits to Organizational Knowledge.

Argote, Linda. Organizational Learning: Creating, Retaining and Transferring Knowledge. USA: Springer, 2005.

²¹ Burstrom von Malmberg, Fredrik. Environmental Management Systems, Communicative Action and Organizational Learning.

Levinthal DA, March JG. The myopia of learning. Strategic Management Journal 14 (1993) 95–112.

²² DiBella, Anthony and Edwin Nevis. How Organizations Learn. USA: Jossey-Bass Inc., 1998.

²³ Ibid. pg. 15.

Orientation			
Source of Learning	Strategic Action	Evolution, Adaptation	Existence
Learning Style	Unique, Prescribed	Adapted to Stage of Organizational Development	Multiple, Relative
Relationship between Learning & Corporate Culture	Dependence	Parallel in Evolution	Embedded
Management Focal Point	Learning Disabilities	Organizational History	Current Capabilities

Organizations continuously go through lifecycles of learning that build upon each other to strength the viability and resilience of the organization.²⁴ This process is an organic one, but it is the responsibility of leaders, managers and administrators to ensure that each cycle results in lessons learned in order to drive the future of the organization. Thus, management is a key player in ensuring there is maximum utilization of knowledge.

Types of Organizational Learning

There are three major types of organizational learning: (1) Technical, (2) Corporate/ Formal, and (3) Informal²⁵. Technical or ‘know-how’ learning allows organizations to learn how to utilize current technologies and best-practices instead of relying on outdated technology. Workshops and short management training seminars focused on specific issues such as district energy, sustainable tourism or land-use and transportation, are examples of technical learning that is a component of the activities of the PLUS Network.

Corporate/Formal learning is the purview of normative learning theory and often relies on management systems for enabling and enhancing organizational learning. Management systems may provide a practical way for continuous learning to be built into the very structure of an organization, as envisioned by the normative organizational learning theorists. Management systems have the additional positive attribute of having already been widely accepted and exist in many municipalities in a variety of forms. See Figure 3 for a chart of Management Systems Characteristics.

Figure 3 - Management System Characteristics

Features of Learning Organizations	<i>Internal information</i>	<i>External information</i>	<i>Performance measurement</i>	<i>Participation in decisions</i>	<i>Personnel controls</i>
<i>Appropriate structures</i>	Reflects organizational	Competitors Customers	Financial and non-financial	Collect and use information from	

²⁴ Ibid.

²⁵ Campbell, Tim. *Learning Cities: Knowledge, Capacity and Competitiveness*. [Habitat International](#).

	structure Future focus	Future focus		employees operating internally and externally	
<i>Corporate learning culture</i>			Encourage risk-taking and creativity		Broad based training and development to enhance creativity.
<i>Empowerment</i>	Reduced standardization – fit employees needs			Active real power sharing Strengthen accountability	Training and development for clarity of purpose, values and direction
<i>External scanning</i>	Financial Budgetary	Competitors Customers Governments		Gain information Multiple interpretations	
<i>Knowledge creation and transfer</i>	Bureaucratic rules can impede knowledge transfer		Responsibility systems can inhibit transfer of knowledge		
<i>Learning technology (information gathering systems)</i>	Collection of data, analysis and distribution	Collection of data, analysis and distribution	Financial and non-financial	Gather information from employees	
<i>Quality and continuous improvement</i>	Measure and record costs of quality improvement	Possibilities for innovation	Balanced score-card approach includes continuous improvement		Training in (i) quality and (ii) encouraging innovation
<i>Strategy</i>		Uncertainty requires contingency planning to respond flexibly to sudden changes		Organization should not be locked into a future based on assumptions held by a few managers	Train managers to take a strategic focus in all decision-making
<i>Supportive culture</i>			Traditional responsibility systems can deskill and alienate employees		Emphasis on broad training and development supports employees
<i>Teamwork and networking</i>	Horizontals information linkages more important than vertical linkages		Mutual accountability within teams		
<i>Vision</i>	Horizontal contacts to forge a common vision			Participation encourages a shared vision	Training to increase understanding of the organization and its environment

*Kloot, Louise. *Organizational Learning and Management Control Systems: Responding to Environmental Change*.

Cities in the Network are using a variety of management systems and decision making support tools. For example, Saint John, New Brunswick has been using a system based on the Governments of Canada Strategic Reference Model (GSRM)²⁶, several cities are using a

²⁶ Governments of Canada Strategic Reference Model - <http://www.tbs-sct.gc.ca/btepto/documents/2004/overview-sommaire/overview-sommaire08-eng.asp>

decision making system based on The Natural Step and Olympia, Washington (USA) developed a Sustainable Action Map (SAM)²⁷ that others have adopted.

Informal learning at the municipal level is exemplified by cities in the PLUS Network engaging in one-time study tours of 'mentor cities'²⁸ or participating in conferences of organizations, such as the Federation of Canadian Municipalities or ICLEI-Local Governments for Sustainability.

Network-Driven Learning

“[Networks represent] a web of connection among equals, not held together by force, obligation, material incentive, or social contracts, but by shared values and the understanding that some tasks can be accomplished together that can never be accomplished separately.”²⁹

In order to better understand the role of the Sustainable Cities: PLUS Network, this report focuses on network-driven learning. There is ample evidence to show that networks do indeed facilitate learning and that they can be invaluable tools for the creation and dissemination of knowledge.³⁰ How do city-to-city networks facilitate learning and can they be of particular use in enabling learning around sustainability?

There are two models of networks: expert and distributed networks (see Figure 4)

Specialized or expert networks concentrate knowledge in a way that would not be possible otherwise and contribute to the refinement of best practices and innovations in particular fields or on specific topics. For example, the Natural Step Canada (TNS) has launched an expert network of municipalities and organizations using TNS. Distributed networks share learning from a variety of approaches and frameworks contributing to a different kind of integration and experimentation that crosses disciplines, sectors and stakeholders. The Sustainable Cities: PLUS Network is an example of a distributed network. One of its earliest activities was to research and publish information about the different tools and frameworks for long-term integrated planning being used by member cities³¹. Both kinds of networks are designed to accelerate the generation and transfer of knowledge. ICSC, in a novel approach, has signed affiliation agreements with several networks to disseminate knowledge more widely³², thereby enhancing its outreach and depth of knowledge and research dissemination for learning.

²⁷ Sustainable Action Map - http://www.ci.olympia.wa.us/?sc_itemid={E4972563-C03D-4172-83D4-CB284A32E96F}

²⁸ Blanco, Hilda and Tim Campbell. *Social Capital of Cities: Emerging Networks of Horizontal Assistance*.

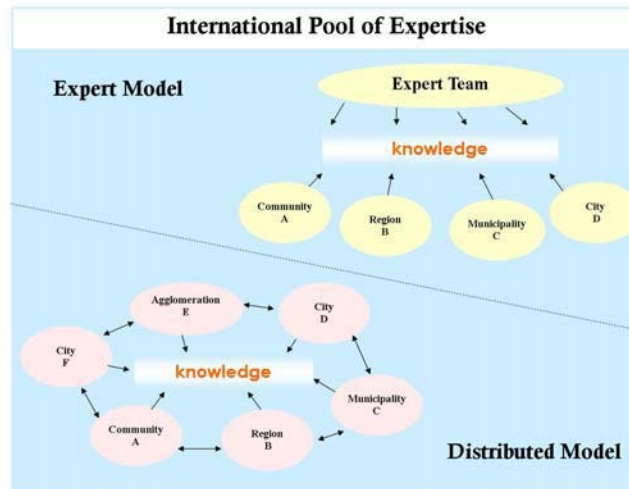
²⁹ Meadows, D.H., J. Randers & D.L. Meadows. *Limits to Growth – The 30-Year Update*. USA: Chelsea Green Publishing, 2004.

³⁰ Campbell, Tim. *Learning Cities: Knowledge, Capacity and Competitiveness*.

³¹ Seymoar, Nola-Kate et al. *Planning for Long-term Urban Sustainability: A Guide to Tools and Frameworks*. 2004. Accessible for download at http://sustainablecities.net/docman-resources/cat_view/110-resources/98-urban-sustainability-planning-a-implementation

³² TNS, International mayors Communication Centre (China), ICLEI and CUI.

Figure 4 – Types of Networks



Networks can enable learning and specifically learning around sustainability in five ways: (1) by lowering the costs associated with knowledge acquisition, (2) by acting as an organization’s memory, (3) by nurturing organizational flexibility, (3) by bridging solitudes, silos and stovepipes and (5) by making knowledge communal instead of a tool of control.

Networks greatly lower the costs associated with the acquisition of knowledge by acting as a reservoir of information, general expertise, technical know-how, and potential contacts of experts or colleagues who are facing the same challenges. A sustainability network, for example, can fulfill the role of a specialized ‘Sustainability Team’ that a small municipality may not normally be able to afford. The City of Cochrane, for example, recently hosted a Long-term Integrated Planning Bootcamp that brought together participants³³ from various cities and towns in Alberta as well as representatives from several consulting agencies, who spent three days addressing the city’s draft Integrated Community Sustainability Plan (ICSP). At the end of the Bootcamp, the Mayor Truper McBride remarked that they had received “the best advice possible from a group of experts from across the country and who paid to attend the Bootcamp!”

One of the most valuable roles a network can play is serving as both a warehouse and clearinghouse for information. Networks often focus on the collection and dissemination of information, and thus may also be able to mentor new Network members and reinforce the organizational memory of members. In addition, they can serve as a safe learning ground for practitioners and decision-makers to receive peer support and critiques of their work.

The weakest point in the learning process is often the creation of organizational memory. Organizational memory is, “the means by which knowledge from the past is brought to bear on present organizational activities.”³⁴ Without a formal process by which

³³ Calgary, Edmonton, Town of Peace River , Strathcona County , Town of Olds , Town of Sylvan Lake Canmore, (among others), as well as representatives from different consulting agencies 02 Planning & Design, AECOM Canada , Jacques Whitford , Stantec and WorldViews Consulting, among others)

³⁴ Argote, Linda. Organizational Learning: Creating, Retaining and Transferring Knowledge.

employee knowledge becomes institutional knowledge, knowledge is lost when an employee leaves the organization.³⁵ Municipalities, like other knowledge-based service delivery organizations, are especially vulnerable to the loss of knowledge due to electoral and staff turnover. In knowledge based organizations people are warehouses of knowledge and ability and are not interchangeable or easily replaceable. A successful organization seeks to both retain people and institutionalize their knowledge. In Britain and in Canada, the long tradition of a professional public administration that serves regardless of the political party or group in power is an attempt to maintain this organizational memory and learning. In local authorities, mayors and members of council are key actors whose learning also needs to be institutionalized. This leads inevitably to a certain creative tension between the needs and desires of the public sector to remember and retain the old ways and the desire through democratic elections to chart a new political direction.

Foucault stated that “Knowledge is Power”, and this is indeed how knowledge is often used in the workplace. Shauna Sylvester, from Canada’s World, has reported a shift from “knowledge equals power” to “power equals sharing knowledge”.³⁶ If an organization wants to dissuade employees from hoarding information as a way of protecting their influence, the presence of a network can aid in this goal by making knowledge communal property. The existence of a network can encourage the employees of an organization to view information as something to be disseminated. This is especially important for municipalities seeking to overcome traditional management hierarchies (or silos) and achieve greater horizontality and employee empowerment.

Of course, the existence of a network itself will not prevent knowledge from being used as a tool of control within the workplace. The person assigned to maintain contact with the network is an informational gatekeeper and as such has tremendous power directly connected with the information they receive.³⁷ Thus it is important that networks develop multiple points of contact within every member organization in order to minimize the risk or reduce the extent to which power can be used for personal gain within an organization. An effort to maximize accessibility might tap into some of the synergistic benefits created by a horizontal network of a volunteer ‘community of practice’, such as was done with the development of the InfraGuide³⁸ and Water Bucket³⁹ in Canada.

A network can also help prevent management systems from becoming rigid structures of control that stop facilitating learning.⁴⁰ Over-emphasis on protocol results in employees learning how to act in certain situations, as opposed to understanding the reasons behind why that action is meant to achieve.⁴¹ In some circles, the use of Results Based Management, for example is evolving into a rigid management system, preventing innovation and adaptive management. This problem has also been noted in the LEED process for certifying green buildings. By constantly supplying new information through distributed networks, and generating new knowledge collectively, there is a greater

³⁵ Ibid.

³⁶ Sylvester, Shauna. Presentation on Canada’s World project to Women Thought Leaders Forum, June 26 2009, unpublished.

³⁷ Keiner, M. and Kim Arley. *Transnational City Networks for Sustainability*.

³⁸ www.gmf.fcm.ca/infraguide

³⁹ www.waterbucket.ca

⁴⁰ Burstrom von Malmberg, Fredrik. *Environmental Management Systems, Communicative Action and Organizational Learning*.

⁴¹ Ibid

likelihood that processes will develop within a municipality to assimilate new information and utilize it, nurturing and rewarding flexibility. Thus alternative approaches – developmental evaluation and outcome mapping for example may be tested and tried by others.

It is of paramount importance that the information disseminated by networks is in a form that is directly usable by the municipality. Metaphorically, each piece of information must be another piece of the puzzle being built, and not a piece from another puzzle. By designing educational as well as research components within their projects, networks can ensure that learning is part of the service that they provide. Positive experiences can result in network wide adoption of learning processes as was the case in the development of the Sustainable Cities Planning Cycle.

From Organizational Learning to Learning Cities

Based on the summary of the literature the following concepts seem to be particularly relevant to this study.

General highlights of research and principles

- In order to be a learning city, municipalities have to seek out new information, interpret it, and utilize it, and they must also remember it.
- Networks can aid cities in all steps of this process, by providing information in a way that it can easily be utilized by the receiving city and by storing the information themselves.
- The structure of networks, whether open or closed is crucial to their receptivity and seeking out of new information
- All cities learn proactively and reactively.
- Most of the cities that today are models of organizational learning began their journey of self-education when confronted with crisis,⁴² however crisis may not be necessary for learning to occur.
- Management and leadership are key to creating a learning institution, but the focus must encompass the whole organization – from elected officials to front line staff.
- Learning is an ongoing process endemic to all organizations and in order to capitalize on learning, an organization must recognize its existence, without passing judgment on types or topics of learning.⁴³ There are multiple entry-points for learning.
- It is important for an organization to recognize that learning is a process that goes through developmental stages.

⁴² Baldersheim, Harald, Jan Bucek and Pawel Swianiewicz. *Mayors Learning across Borders: The International Networks of Municipalities in East-Central Europe*. Regional and Federal Studies Vol 12. No. 1 (2002), pp.126-137.

Kloot, Louise. *Organizational Learning and Management Control Systems: Responding to Environmental Change*.

Blanco, Hilda and Tim Campbell. *Social Capital of Cities: Emerging Networks of Horizontal Assistance*. Technology in Society 28 (2006) pp. 169-181.

⁴³ Ibid.

- Organizations are not machines that can engineer a solution; while evaluating organizational learning, the human aspect is the essential element.

Barriers to Learning

- Local government bureaucracies may have ‘learning disabilities’⁴⁴ arising from such things as restricted budgets, arbitrary approval processes, the lack of internal formal systems or time allocated for sharing information, no institutionalized manner to store information or to train new employees about historical cases or files, etc.
- Solitudes, silos and stovepipes in government bureaucracies prevent the sharing of information and learning in critical ways.
- A problem that hasn’t reached full crisis proportions may not engender action or learning. In order to be a catalyst for change, a crisis needs to be seen as both manageable and the responsibility of the municipality. Learning theory outlines the importance of taking ownership for problems and the mistakes that may be made trying to correct the course of action. This is particularly important to note in the face of complex, long-term issues such as climate change, which is still being researched and understood by academics, governments, and civil society and is a global problem, the local impact of which may not be self evident.
- Often outcomes of informal methods of learning are not tracked or measured by the cities or organizations involved. Without processes for translating the knowledge gained by the individuals on the journey, there is little possibility for there to be measurable effects upon the municipality in question. Baldersheim et al. explored study tours and explained their importance for initial, exploratory searches for information in regards to a problem(s), identifying “the pull, push, and facilitating factors”.⁴⁵

⁴⁴ Senge, Peter. The Fifth Discipline. The Art and Practice of the Learning Organization.

⁴⁵ Ibid

Summary and Analysis: “How Cities Learn” Survey

Description of Survey Methodology

In order to gain more information about how cities in the Sustainable Cities: PLUS Network learn, in May 2009, the PLUS Network sent out a survey to 29 of its 40 member cities. The survey was based upon the results of a pilot survey conducted at the PLUS Network Biennial Conference in Durban in 2008, and focused on “How cities learn about urban sustainability and how the PLUS Network is contributing to the learning process”⁴⁶. 17 of 18 Canadian cities⁴⁷ and 12 of 22 international cities⁴⁸ were surveyed. A total of 65 people were sent questionnaires, including 53 city staff, two mayors, and 12 academics or consultants to the network who have experience in this field and are familiar with the Networks activities. 25 responses were received (38% response rate).

Limitations of the Survey

In addition to the limitations posed by the sample size and focus on municipal staff, other limitations include:

- The use of Survey Monkey, an on-line survey tool, presented some technical limitations to the design of questions and the collection of responses;
- The technology itself is fairly new and may not have been familiar to people with limited experience using the Internet and on-line technologies;
- Municipal staff without regular access to computers may not have been able to access the survey;
- A few respondents had technical problems while answering the questionnaire. Survey Monkey was questioned but no answers were provided and this frustration meant that some individuals did not complete the questions; and
- The survey was only issued in English.

Characteristics of respondents

Out of 65 questionnaires distributed, there were 25 respondents (38% response rate). Seven of the respondents chose to remain anonymous; except for one mayor and two advisors, the rest of the people who identified themselves (15 people) were city staff.

18 of the respondents identified their location. The following 10 Canadian cities were represented: Iqaluit, Ottawa, National Capital Commission, Vernon, Whistler, Calgary, Cochrane, Regina, Niagara Region, and Canmore. This represents 59% of the Canadian members surveyed and 56% of the Canadian PLUS Network members. Responses included large, medium, and small, remote and aboriginal communities. Thus it can be viewed as a representative sample of the Canadian members of the Network. Of 12 international cities surveyed, responses were received from seven cities: Chihuahua and Colima (2 cities from Mexico), Adelaide (Australia), Durban (South Africa), Montpellier and Olympia (2 cities from the USA) and Curitiba (Brazil). This represents 58% of the

⁴⁶ When respondents indicated that the survey was too long, an abridged version of the survey was also distributed in the last week of May which focused only on “How Cities Learn”. 2 of the 25 respondents answered the abridged version.

⁴⁷ Toronto was not surveyed as there was no current contact for the network,

⁴⁸ The survey was conducted in English and language barriers made it difficult to expect a response from the Sri Lankan, Mongolian, Romanian, Costa Rican and Brazilian cities.

international cities surveyed and 32% of the total number of international cities in the Network and is also representative of all sizes of cities.

Of those who identified their gender, the respondents were approximately equal - 11 women and 9 men. The median age group for the women was 31 to 40 and for men was 51 to 60. When responses were gender disaggregated there were few significant differences. Where there were differences they have been noted in the analysis that follows.

Issues of interest identified by respondents

The cities that responded identified several topics of learning interest including: long-term sustainability, transportation, climate change adaptation/mitigation, land use planning, solid waste management, water quality, youth engagement, aging cities, food security, and economic development. Secondary issues included: creative cities, air quality issues, energy efficiency and governance.

Motivation to learn

In response to questions about what motivates individuals to embark on learning about urban sustainability, the two most common answers included: being guided by a future vision and the desire to be a leader on urban sustainability issues. The importance of a vision to the potential success of a city has been documented by Canadian researcher Bradford⁴⁹. These responses seem to contradict the organizational literature which suggested that organizations are motivated to learn because of a crisis. It would appear that in the PLUS Network cities are motivated as well by aspirational and competitive goals. Other sources of motivation that might reflect crisis issues included the desire to save money or to access funding, climate change and future uncertainty and the opportunity to continue connecting with like-minded people (a social goal). Responsibility to address the “challenge of the century” and the opportunity to implement different strategies appeared to be strong motivators as well. For example, one respondent said:

“We're trying to change the world, one block at a time, one city at a time. We need to shift to a new paradigm in city planning - people have been talking about the problems for years, but no real action has occurred. Cities evolve gradually over time, they do not suddenly reinvent themselves overnight in the face of real adversity. If not now, when? If not us, who?”

Approach to solving problems

The vast majority of both male and female respondents answered that when faced with a problem, they consulted their peer group: colleagues in another city (80%); colleagues in their department (68%); colleagues in different departments in their own city (68%) and colleagues in other organizations (48%). 72% of respondents consulted “best practices” websites. Women were more likely than men to consult websites of other cities (90% of women versus 33% men), and networks/associations (73% versus 44%), whereas men were more likely to consult journals/magazines (56% versus 18%). 40% consulted professional associations. 36% reported consulting mentors, and similarly, about 30% turned to private sector consultants or government resources. 28% consult academic institutions, 16% friends and family.

⁴⁹ Bradford, Neil. Cities and Communities that Work: Innovative Practices, Enabling Policies. Canadian Policy Research Networks. June 2003. Accessed online at http://www.cprn.com/documents/20506_en.pdf.

Once a problem has been identified respondents indicated their first, second and third step in learning more about it. Speaking with colleagues from outside and inside and independent research were the most frequently listed responses.

Sources of Information or Knowledge

In line with the theory of informal learning, one respondent said:

“I have a good network of friends in the urban planning field, former colleagues and people I've met through work and conferences. Each one has a particular insight, whether from a transportation, housing, social, environmental, etc. perspective, and if they don't know the answer or can't assist, they will usually know someone in their field who they can refer me to. Much of what we're trying to do in this realm is still new - we're making it up as we go along. So sometimes it isn't advice that you turn to people for, but other people who are familiar enough with the specific issue to discuss and explore it with you.”

The majority (52%) of respondents answered that they look at between 4-8 sources of information before making a decision. 40% use fewer and the rest use more sources. Some of the sources of information are explored further below:

The Internet is an important and accessible source of information. As mentioned above, 72% of all respondents answered that they seek information from the Internet. Respondents try to research about cities that are similar in size or addressing similar issues; often this information is relayed through word of mouth or at conferences. Experience with implementation is important to cities, as they are not looking for theory but strategies for taking action. The Internet is particularly important for providing case studies.

Some of the websites that were listed by more than one respondent as a first, second or third source of information include⁵⁰:

- The PLUS Network (www.sustainablecities.net) (31%)
- Smart Growth
- The Natural Step
- Cities PLUS
- Imagine Calgary and Whistler2020 were both listed as important sources of information and examples for implementation

Academic institutions were not listed as a priority source of information for cities, (only 28% of respondents said they consulted with academic institutions). It appears that if a city does look to academic sources, local universities are chosen first. The Canadian universities that were listed include UBC (listed by 6 respondents), SFU, McGill, Ottawa University, University of Alberta, and Queens⁵¹. International schools included the London School of Economics (LSE) and MIT.

Professional associations were not a priority source of information for respondents; (only 40% identified this as a source of information) however support is sometimes sought from: Canadian Institute of Planners (listed by 4 respondents), Architectural Institute of BC (AIBC),

⁵⁰ Unless indicated, they were only listed once in either the category of 1st, 2nd or 3rd. Most of sites listed here were the 1st choice.

⁵¹ Unless indicated, these academic institutions were only listed once as 1st, 2nd or 3rd choice.

Alberta Association Canadian Institute of Planners (AACIP), Planning Institute of British Columbia, ICLEI –Local Governments for Sustainability, and The Natural Step. The Royal Town Planning Institute in the UK was also listed.⁵²

Of the respondents reporting that they consult with a mentor, 66% are in regular contact and the rest consult only on specific questions or crises.

Conferences serve to provide information on different themes, best practices, resources of funding, and implementation challenges. 92% of respondents stated that conferences are a good way to learn about sustainability.

“[Conferences] are a great way to hear who is doing what and meet the people involved. The ability to ask detailed questions is invaluable. It’s always frustrating when too many speakers are booked and they only get a few minutes to present or answer questions. I can get the quick blurb in the trade journals, it’s details that I’m looking for.”

Respondents indicated that conferences are useful when they provide case studies and research on “cutting edge” innovations. Although some cities said that they don’t usually hear about new trends, conferences were seen as good for seeding ideas, providing lessons learned, expanding professional networks and sharing. Face-to-face and personal interaction is cited by several respondents. One respondent pointed out how conferences are also reaffirming for those delegates who get to teach others about their experience. The only concern raised is that conferences are often very expensive (in monetary terms and environmentally in terms of jet fuel).

While many respondents included local and regional conferences, it appears that most municipalities are willing to travel internationally to attend conferences.

Some of the conferences rated highly by more than two respondents include:

- PLUS Network Biennial Conference (10 respondents)
- Canadian Institute of Planners National Conference (3 respondents)
- Federation of Canadian Municipalities (4 respondents)
- Fraser Basin Council (2 respondents)

Sharing learning and disseminating knowledge

In light of the research on organizational memory cited earlier, the survey asked individuals to indicate how they share information throughout their organization. Presumably this is important, since many of them are attending conferences on behalf of their city. 90% of female and 79% of male respondents report sharing information within the organization. In line with several of the information dissemination answers that follow, most information sharing is done informally, primarily through email or word of mouth. Team or department head meetings, council meetings and through the intranet or city websites are other ways used to disseminate information. Reports to council seem to be an important way for people to share information and for others to learn from other departments. However, respondents indicated that they are conscious of information overload and rarely send documents or

⁵² Unless indicated, these professional associations were only listed once as 1st, 2nd or 3rd choice.

website links unless they know somebody is looking for it or needs it. Information sharing may be opportunistic, for example, when working on a project in teams.

Information sharing outside the organization seems to occur regularly. 92% answered that they distribute information to other cities, usually on a “by request” basis. Requests for information about project or program progress are done by email, at workshops or public speaking events. One respondent indicated that they maintain a blog where other people can read about projects or interact directly for more information.

When asked if information sharing is tracked throughout the organization, 68% of respondents answered “No”, however responses do seem to indicate that knowledge is disseminated informally. Size of city seems to be a determining factor on if and how information is shared formally; for example two cities mention that because they are small cities and have small municipal staff, information sharing happens easily as the “links are very short”. Formal or institutional learning is tracked or archived in shared electronic space (PC server) (such as for benchmarking or reference material) or in an organizational library. One city indicated that they have recently started using a Knowledge Management System (with a Documentation Management System) but despite having this system, information sharing continues to be a challenge.

Most information sharing focuses on a project or an issue. This is done informally, usually through email or by circulating printed material. Reports or highlights from conferences are filed and some cities create opportunities for doing Power Point presentations with colleagues. Brown Bag lunches with project managers, lectures from visiting consultants, and team meetings are also points for sharing information but not listed as structured learning environments. City websites are also cited as a place for storing and sharing information, but maintenance is problematic.

100% of the female respondents and 56% of the males believed that learning could be accelerated in their city, but the question of “how” seemed more complicated. Some male respondents said that this was not necessary as they were already comfortably on the learning path or that there did not seem to be enough time to formalize learning. Respondents noted that in the first place, there needs to be a desire for more learning. Strategies for enhancing learning included exposing more staff and councillors to what is possible, presumably by attending conferences and hearing the accomplishments of other cities. Collaboration and interaction across departments is cited, which can be done at interdepartmental meetings and workshops. Crisis is mentioned as an important motivator for faster learning and seems to propel the “learning by doing” strategy. Other strategies included helping employees to develop personal training plans, in agreement with their supervisor and updated yearly during performance evaluation. The Knowledge Management Strategy is an important driver for learning. A respondent stressed the importance of bringing “Thinkers” (as opposed to “content experts”) together to examine issues, emphasizing the need for holistic and integrated thinking on sustainability challenges. Many of the ideas pointed out by survey respondents reflects the theories of organizational learning (i.e.: the need for systematic problem solving, experimentation, learn from past mistakes or past mistakes of others, transfer learning, responsible risk taking and ownership of problems and mistakes).

Barriers to learning and strategies to overcome them

96% of respondents recognized that there were many challenges to learning. The most commonly cited barriers are: time, funding, lack of human resources, being overworked and

daily pressures. Other barriers to organizational learning identified are: resistance from others, lack of commitment from city council, laziness and complacency, helplessness, lack of clarity around purpose or vision and lack of passion among colleagues. In line with research, silos and bureaucracies are stated as inhibitors effective collaboration and action. Since learning is a process, some respondents said that it is hard to motivate people who are “results-oriented” as learning doesn’t fit with their perspective.

Some comments from the respondents about this issue include:

It's a vicious cycle, because more learning would at least potentially reduce the workload, but you need that initial injection of energy, which takes leadership and commitment.

It's hard to get people into the mode of shifting expenditures from the wasteful to the sustainable. They tend to think of adding more money to pay for these new sustainable initiatives.

It seems that unless learning is formally structured, and in the absence of a crisis, the inertia of other priorities leads individuals and organizations on the course of business as usual. Reflecting on the theory of organizational learning, the barriers presented by the respondents have to do with daily pressures or managing personalities within an organization, not the lack of organizational structure for learning.

Most respondents indicated that it was rare for them to not find answers to their questions with all these resources available. When necessary, a member of the executive or city council will be engaged, but usually an individual must persevere independently until they find answers. This raises the specter that these barriers may then reinforce the status quo, inhibit innovation and openness to new ideas, support path dependence and technological lock-in and past unsustainable decisions.

Respondents were also asked about strategies they use to overcome the barriers previously listed. The most popular answer from respondents was recognizing and serving as a leader and continuing to work with persistence, dedication and independent action, often by doing overtime or unpaid work. *“It takes discipline to maintain learning process alive.”* The other popular strategy is to have dedicated staff attend specific issues, and by indentifying people to mobilize and motivate fellow colleagues to do more; engaging the willing and able in collaborative and action orientated projects and programs seems to drive action (force majeure). Ensuring that an organizations mission and vision are clear to the whole organization allows staff to identify with the “brand”. Demonstrating solutions to problems and things that can be done is motivational for people who are feeling helpless or lazy. One respondent said that they use a “Create-a-crisis” strategy. One respondent noted that the economic downturn this year has helped the municipal staff slow the pace slightly. However, some respondents did identify that learning and training needs to be a corporate priority.

The learning theory would also reinforces the inspirational value of informal learning settings, such as conferences and opportunities to exchange face-to-face with peers and colleagues, along with providing many staff with many and diverse contacts and resources as a way to advance learning quickly and efficiently. .

Some final remarks from respondents on how their cities learn about urban sustainability reflected the answers that have been outlined: Collaborative learning is important but

requires effort. Reading, attending conferences and workshops and taking individual actions are the keys for institutional learning.

Creating teams where people can contribute from different perspectives and show that all perspectives are valid in solving problems. Also people meeting across sectors learn more from being in an environment with people from different sectors.

I actually learn more through doing it. I'm one of those people who never thinks - "I can't do this." I'll leap into a complex project without knowing all I need to complete it, and then suffer the bumps and dead ends as I go. This isn't always the best way to do it, but afterward, I do have things to tell other people about how it's done. I've developed an expression to summarize this approach: "Sometimes it hurts to sit on the cutting edge."

It is apparent from the above results that by enhancing friendly exchange between professionals, peer networks can become primary sources for advice related to urban sustainability. It goes beyond just communicating about the sustainability imperative, but rather, having trusting relationships with colleagues allows people to openly discuss and sometime argue over issues in order to gain better understanding. Diverse networks are crucial to novel adaptation and a city's ability to innovate. Further, it is important to identify champions in an organization who will drive a learning organization/city forward due to their own motivations and by taking advantage of structures, networks and resources that are already in place.

Summary and Analysis - contribution of the PLUS Network

The second section of the survey asked respondents about the contribution of the PLUS Network to their learning about urban sustainability. The PLUS Network uses peer exchanges, Bootcamps⁵³, biennial conferences, web dialogues, newsletters, websites and interns to facilitate information exchange. The survey inquired about most of these programs to better understand their contribution to learning cities.

This part of the questionnaire was only answered by 21 respondents (as opposed to 25 from the previous section). It is apparent from the answers (and percentages) that about 43% of the respondents are new to the PLUS Network and unfamiliar with many of the programs and events offered by the Network. The PLUS Network has recently grown from 30 to 40 cities, therefore this is not surprising.

PLUS Network Activities

The respondents were asked to rate the activities and resources of the PLUS Network in terms of their contribution to learning⁵⁴. The highest number of answers (77%) rated peer exchanges as an "excellent source of information sharing/learning opportunity". Ranked second (68%) were Bootcamps (intensive workshops on specific themes) and then the

⁵³ Bootcamps are intensive training events that apply a number of different frameworks and tools to a case example provided by the host community.

⁵⁴ No contribution was interpreted as 'not applicable' and was chosen by those members who had not participated in the events. Thus the totals were adjusted for this question.

Biennial Conferences (61%). Phone consultations (53%) were also mentioned as an excellent source of information. The Newsletter was rated as providing an “average source of information sharing/learning opportunity” by 55%, and web dialogues were also ranked as “average” (50%) but with a further 25% ranking them excellent and 25% ranking them as below average. This may reflect the difference between those participating in the earlier dialogues before they were restructured and facilitated by Royal Roads University. Youth internships were ranked as excellent by 43% of respondents and introductory or exploratory missions as average by 60% of respondents. These last two are also the least frequent activity.

The survey results highlighted the key role of peer exchanges and confirmed the evaluations that are filled out at the end of every event. 100% of the respondents who have attended a peer exchange answered that it had contributed greatly or had reaffirmed their ideas and that they had learned something new at the event. Peer exchanges, are “*By far, the best tool for sharing information and learning.*” Peer exchanges provide a greater pool of ideas for resolving problems and help to build longer term relationships, which work better than conferences where there is often only a “one-off” exchange.

When asked to compare PLUS Network peer exchanges to other workshops or events in terms of their ability to help in the learning process, 73% said that the PLUS Network exchanges “exceeds other workshops”, and 27% said that they were “the same as others”. No respondents said PLUS Network events were “worse”. Of the respondents that had not attended PLUS Network exchanges, several noted that other colleagues had attended and provided positive feedback.

The PLUS Network website has been undergoing many changes to meet the needs of Network members and the public at large. 87% of respondents who had accessed the website said they found the resources on it useful and 13% said they were not useful. Resources that were mentioned included papers by Nola Kate Seymoar, Bliss Brown and frameworks/methodologies (EarthCAT). When asked to rate the website, 44% rated it “excellent, valuable material” and only 18% said it was “low value”. Positive commentary about the website addressed navigation (only one comment on difficult navigation), good design and access to diverse topics and relevant information.

The PLUS Network uses web dialogues to transfer ideas on urban sustainability. This is particularly important to reduce travel time, costs and green house gas emissions. 10 out of 20 people answered this question, representing both panelists and audience members. 11 people (55%) had not participated in a PLUS Network web dialogue (due to not being a member when they were being hosted, lack of time or technical difficulties). The commentary on this type of learning exchange or sharing included: “*The openness of the panelists was really great*”, and they were “*useful in getting perspectives from other cities.*”

Role of PLUS Network

A series of questions asked about the role of the PLUS Network in contributing to learning on specific issues (rating if the Network contribution was strong, medium, small or no role). The Network was viewed as a strong or medium contributor to learning by 67% of those doing long-term integrated planning, 39% of those doing demonstration projects, 27% of those doing sustainability indicators, 31% of those doing youth engagement and 27% of those dealing with equality of women.

Respondents were asked about the major strengths of the PLUS Network. The majority (65%) said that it helped to enhance their professional network (increase the number of people they can turn to for advice); the second strengths included: exposing members to emerging issues and possible solutions (60%) and accessing diverse experiences (60%). One respondent noted the importance of having long distance assistance available. Technical information/solutions (40%) and long-term planning strategy development and implementation (40%) were also mentioned as strengths of the Network.

The survey also asked for major weaknesses of the PLUS Network. 50% of respondents noted insufficient funding as a major weakness. Other concerns included: not enough expertise about specific issues, lack of translated resources (Spanish language resources in particular), indecisiveness around operational or administrative issues related events (this is tied to funding), and not enough “on the ground support” (more of a think tank). One respondent noted the difficulty of comparative information between cities, for example, between Canadian cities on the path to community sustainability" and other cities. Some respondents noted that either they did not see any weaknesses or the problems lay with their own organization’s lack of funding, ability to participate, or not asking enough of the organization to truly benefit.

Respondents were asked to discuss the style of interactions with staff from the PLUS Network, as it is assumed that often people listen to advice when it comes in a style that you can relate to. 45% of the respondents said that yes, the PLUS Network had its’ own identifiable style, 35% were uncertain, and the remaining 20% said “no”. Note, that due to the large number of respondents who are new to the Network, it may have been hard for them to identify particular styles.

The survey asked those respondents who had identified a “style” in the previous section to provide some adjectives to qualify the PLUS Network. The following table is not a complete list of the characteristics, but shows the range of responses:

Kind	Enthusiastic	Interested	Available	Engaging
Flexible	Global Perspective/Worldly	Project Expertise	Challenge the status quo	Professional
Informal	Positive	Relaxed	Open	Passionate
Taking initiative	Caring/supportive	Committed	Sharing	Collegial
Friendly	Facilitative	Collaborative	Inspiring	Innovative

The survey asked respondents to independently outline how the PLUS Network was helping their city with its learning process on urban sustainability issues. The answers included:

- By bringing experts like Larry Beasley (Vancouver) and Ken Cameron (Vancouver) in 2006, to fortify concepts like mobility and densification with local authorities and stakeholders. Hosting Brian Riera (Langara College) in 2007, as professional consultant in urban planning to contribute in the elaboration of the Urban Development Plan: Vision 2040, for approximately six weeks.
- Through visits by PLUS Network staff to speak at local Urban Forum and participating in meetings with local authorities and social leaders, where they promote the benefits and challenges of long-term vision planning and urban sustainability

- Through direct conversations with PLUS Network staff
- Facilitated some thought provoking discussions via engagement of experts, facilitated opportunities to explore different ways to develop long term plans. Funding has allowed the flexibility to learn from demonstration projects
- By getting leadership together – particularly mayors and city councilors. Assisted with providing sustainability info to leaders in our community to help generate the interest needed.
- Fostered opportunities to work in conjunction with adjacent First Nations. Secured funding and managed a youth community asset mapping project.
- Connecting to international cities
- By placing urban sustainability at the centre of the governance agenda.

Concluding remarks from the respondents addressed the need to obtain funding to support all members of the PLUS Network, including members in Canada, the USA and Australia (high income countries), particularly to participate in peer exchanges, along with the need for more constant communication to ensure that cities don't feel dislocated and the importance of continuing to share information.

We learn more from cities that share similar context. In that way, most advanced cities in sustainable matters even if they become a milestone, its difficult to get motivated by the experiences because they already have a lot of resources, in terms of financing, local economy, social perspective and urban/sustainability culture. We get inspired by cities and teams that have overcome lots of difficulties, dealing with that if what we need to learn from other cities.

Conclusions

This research project was extremely useful in providing the PLUS Network members an important moment to reflect on the learning process as it applies to their city and to the PLUS Network itself. In light of the relative absence of research about how public institutions learn, it suggests that this is a rich area for future research and one that the PLUS Network could continue to facilitate.

The general conclusions about how cities learn that can be drawn from this sample and questionnaire include:

- When faced with problems, 80% of the respondent turn to their peer group - colleagues they know in other cities
- Conferences and learning events are identified by 90% of respondents as the best source of new ideas
- The Internet is a common source of information, (75%) particularly about case studies and best practices.

- The least likely sources of information or guidance to be used are academics, professional organizations, journals or mentors.
- Most cities do not have conscious learning processes established or institutionalized.
- Learning does not occur evenly throughout the organization – those people who participate in conferences or peer exchanges get greater exposure to innovative ideas but they are not usually able to ensure a systematic transfer of that knowledge. Often these people are leaders and are motivated to attend conferences in order to keep furthering their personal and professional learning.
- Knowledge storage or corporate memory is not formally organized or captured by the vast majority of the cities in the survey
- Some of the best ways to learn are: by experimentation (by doing), by attending conferences and events that provide opportunities for direct face-to-face sharing, by presenting at conferences, by attending City Council meetings, by presenting at team/department meetings.
- Learning from other cities, particularly those of similar size, is important and through networks or professional colleagues many cities reach out to other cities for information.
- Although there is competition between cities to achieve social, economic and environmental prosperity, sharing is done extensively in informal and formal channels (often by request) and through networks, people become exposed to new ideas and become more collaborative with peers from other cities.
- Barriers to learning are largely related to time, funding, lack of human resources, being overworked and daily pressures.
- While sustainability may be common parlance, there is significant complacency within and across departments. It requires dedicated staff and self motivation to keep the vision clear and tangible.
- Leadership on sustainability is a large motivator for learning and doing. Being guided by a vision and strong leadership makes the processes smoother.

The survey was particularly relevant to the PLUS Network in order to keep the organization going on its' own continual learning path. The survey demonstrated that:

- Funding of participation (travel) is a crucial issue for cities in Canada, the USA, Australia, not just cities in low income countries.
- There is a need for the PLUS Network to continue facilitating the exchange of information between cities, and different programs and activities are highly valued by its members.
- Staff at the PLUS Network need to maintain regular contact with cities in order to ensure that cities feel engaged and also to be able to document and transfer learning on a regular basis. Although it might be useful for the PLUS Network staff to gain more content expertise in areas where cities are struggling, so long as there are other experts within the Network, most respondents felt comfortable that this is not a problem.

- The members appreciate the tools and resources that are available, but in order to make the sharing and learning more accessible, translation into other languages is necessary.
- Peer exchanges and biennial conferences are the most useful learning opportunities within the PLUS Network, however other activities, such as web dialogues, newsletters and the website are also helpful.
- The open, flexible, positive attitude of staff members is important in creating a safe space for sharing and learning.

Other Observations from the PLUS Network about How Cities Learn

PLUS Network members are gradually implementing long-term planning processes in order to enhance the sustainability of their operations and the city as a whole. The PLUS Network staff and other PLUS Network members use participatory observation methodology when they visit these cities to get updates on the progress of their projects and programs. This peer reflection methodology allows for greater sharing about processes that are underway and facilitates open lines of communication (observation, commentary/analysis) and trouble shooting. In addition, often 'thicker', that is richer data is obtained, particularly on novel process implementation. By having members from all over the world—representing cities of different sizes and at different stages in their process—participants in the Network are able to recognize and learn from one another's common issues.

Over the course of fifteen years of serving cities, and five years of PLUS Network operations, ICSC has made many observations about how cities learn and transfer knowledge from city to city. The ideas that have been formulating within ICSC are in line with the literature and responses from the survey reported above.

Below are some of the highlights about how cities learn, based on the observations of ICSC, and the implications of those observations for the PLUS Network:

- Learning is an interactive process. As a city tackles a sustainability problem it typically learns by hearing about another city's solution, then discussing or seeing it (on a study tour or the internet) and then tries out its own version of the solution. If it is a learning organization it will document its lessons and share those with others. The PLUS Network can facilitate this process of reciprocal learning.
- Cities learn by doing. Policy and planning initiatives are relevant in so much as they impact the lives or physical environment of residents. They must be seen to be believed relevant. The implication of this for the PLUS Network is that even though the network is focused on long-term integrated planning it encourages members to undertake short term practical demonstration projects that show how they are moving towards long-term sustainability.
- The exploitation of knowledge and learning by adults is accomplished through peer networks and implementation of novel practices is enhanced. The PLUS Network strives to be a community of practice encouraging innovation.

- Cities copy other cities. There is widespread evidence in the Network of ideas and whole programs being transferred from one city to another. Imagine Calgary for example led to Imagine Durbin and many other participatory visioning processes in Saint John, Iqaluit, Regina and soon Olympia, Ottawa/Gatineau and the National Capital Region. Peer exchanges allow cities to show their planning and demonstration projects so others can copy the strategies and ideas. Copying ideas is a celebration of a success and cities are proud to share their accomplishments and guide others through the processes.
- Bigger cities adapt innovations from medium sized and medium from smaller ones. The Vice Mayor of London, England, for example reported that “they had learned everything from Portland Oregon”. When Calgary was looking at how to integrate its systems it looked to Okotoks, Alberta – an innovative and smaller community where it was possible to see the interconnections more readily. The implication for the PLUS Network is to foster a wide range of participants in the Network – from small, remote and aboriginal communities and towns, to metropolitan areas and regions of up to 6 million people
- There is value in diversity that encourages multi-dimensional and international learning. Low income (developing country) cities, medium income (newly industrializing or transition economies) cities and high income (developed country) cities learn different things from different examples. Dar es Salaam reported that it was able to learn more from Durban than from Canadian cities, because Durban had recently been dealing with similar problems. Thus it is important to have a diverse network including cities from all three income groups.
- Successful cities follow a number of paths, suggesting that there are many ways to move toward sustainability – thus the network uses a distributed network rather than expert network model.
- The federal government has embedded long-term integrated planning into the gas tax agreements with the provinces and this has stimulated an active integrated planning industry and a desire on the part of cities to share their experiences with consultants and frameworks. Bringing this expertise into the international PLUS Network is a strong and unique Canadian contribution.
- Canada had a distinct advantage in the international cities market. Canadian cities are livable, successfully incorporating immigrants and migrants, and not facing the same overwhelming stresses of those cities in the world that are experiencing very rapid growth; and internationally Canadians are welcomed as having a relatively benign style – thus the Network is envisioned to ultimately include a third of the city members from Canada, a third from low income countries and a third from middle and other high income countries.
- Dissemination of learning from city to city occurs through personal contacts, often made at conferences or on study tours. The depth of learning on well conducted study tours is enhanced by the depth of personal relationships that develop allowing for broader initiatives upon returning home.⁵⁵ The Network’s biennial conferences and peer exchanges are the essence of its success.

⁵⁵ Campbell, Tim. *Learning Cities: Converting Discovery to Knowledge in Complex Systems* Urban Age Institute, Draft, Mar 2008. Accessed on line: http://208.113.197.138/images/articles/learning_cities.final.18mar08.pdf

- Learning is often lost – sometimes elections or other interventions lead to experienced and committed champions being defeated at the polls or officials being transferred or replaced. The necessity to maintain learning and advance rather than retreat means two things – multi-sectoral teams at the local level must be built to transcend electoral and other changes, and the Network must be a repository of learning, with concepts able to be understood by those outside of the initiated.
- Best practices and technological advances are not disseminated widely or quickly enough although they are being accessed by researchers (largely students and “policy wonks”) through the internet. Despite having won international recognition for ICSC’s demonstration projects and being listed on innumerable best practices lists and websites, the advances being made by ICSC and its partners and many other international organizations are not finding their way to the decision making tables quickly enough to have an impact on climate change, poverty reduction and the quality of life on earth. Networks may accelerate the transfer of ideas, knowledge, research and technologies. Further research is needed to identify how that process can be improved.

Clearly, the survey results demonstrate that adults learn mainly from their peer group and secondarily from professional venues. Networks emerge as a key strategy for speeding the exploitation of knowledge and learning, both formally and informally, through institutions and between institutions and their clients. They can bridge issues of scale and implementation gaps, as well as critical divides between sectors, levels of governments, professionals and even between nations, as the PLUS Network demonstrates. The type of network, however, is central to the adoption of novel ideas and more sustainable practices, and more research remains to be done on the nature, density and centrality of networks to sharing information, knowledge diffusion and their capacity for bridging between researchers, practitioners and local decision-makers to become “knowledge collaboratives” central to decision-makers and policy development.

The International Centre for Sustainable Cities and PLUS Network would like to thank all the respondents for their time and effort in completing this survey. The results are important to advancing learning about urban sustainability and to continuously improving the PLUS Network. This paper will be circulated within the Network and posted on the website for further comments and feedback.

This report has been made possible with the financial support from Infrastructure Canada’s Knowledge, Outreach and Awareness program, and academic support from Dr Ann Dale of Royal Roads University. We extend our appreciation to both.

Bibliography

- 1) Argote, Linda. Organizational Learning: Creating, Retaining and Transferring Knowledge. USA: Springer, 2005.
- 2) Argyris, Chris. Reasons and Rationalizations: The Limits to Organizational Knowledge. New York: Oxford University Press, 2004.
- 3) Baldersheim, Harald, Jan Bucek and Pawel Swianiewicz. *Mayors Learning across Borders: The International Networks of Municipalities in East-Central Europe*. Regional and Federal Studies Vol 12. No. 1 (2002), pp.126-137.
- 4) Blanco, Hilda and Tim Campbell. *Social Capital of Cities: Emerging Networks of Horizontal Assistance*. Technology in Society 28 (2006) pp. 169-181.
- 5) Jones, Lawrence R and Fred Thompson. From Bureaucracy to Hyperarchy in Netcentric and Quick Learning Organizations. USA: Information Age Publishing Inc., 2007.
- 6) Burstrom von Malmborg, Fredrik. *Environmental Management Systems, Communicative Action and Organizational Learning*. Business, Strategy and the Environment. 11 (2002) pp. 312-323.
- 7) Bradford, Neil. *Cities and Communities that Work: Innovative Practices, Enabling Policies*. Canadian Policy Research Networks. June 2003. Accessed online at http://www.cprn.com/documents/20506_en.pdf.
- 8) Callahan, Jamie L. *Organizational Learning: A Reflective and Representative Critical Issue for HRD*. Critical Issues in HRD. Eds. Ann Maycunich Gilley, Jamie L. Callahan and Laura L. Bierema. USA: Perseus Publishing, 2003. Pgs. 161-175.
- 9) Campbell, Tim. *Learning Cities: Knowledge, Capacity and Competitiveness*. Habitat International 33 (2009) pp.195-201.
- 10) Campbell, Tim. *Learning Cities: Converting Discovery to Knowledge in Complex Systems*. Urban Age Institute, Draft, Mar 2008. Accessed on line: http://208.113.197.138/images/articles/learning_cities.final.18mar08.pdf
- 11) *Cities and climate change*. Cities 40: The Clinton Foundation. Retrieved April 17, 2009, from <http://www.c40cities.org/climatechange.jsp>.
- 12) Cook, Janice A. *Why Look at the Learning Organization in the Public Service? The Learning Organization in the Public Service*. Eds. Janice A. Cook, Derek Staniforth, and Jack Stewart. England: Gower Publishing, 1997.
- 13) DiBella, Anthony and Edwin Nevis. How Organizations Learn. USA: Jossey-Bass Inc., 1998.
- 14) *Environmental Management Systems*. Government of Canada. Retrieved April 17, 2009, from <http://www.greeninggovernment.gc.ca/Default.asp?lang=En&n=A4FA4E9C-1>.

- 15) Garvin, D.A. *Building an Learning Organization*. Harvard Business Review. (July-Aug. 1993) pp.78-91.
- 16) Hilton, Robert. *The Path to Local Sustainable Development: Two Approaches*. Innovation, Science, Environment: Canadian Policies and Performance. Eds. Bruce Doern. Kingston-Montreal: McGill-Queens University Press, 2007.
- 17) *InfraGuide: The National Guide to Sustainable Infrastructure*. Federation Canadian Municipalities. Retrieved April 17, 2009, from <http://sustainablecommunities.fcm.ca/infraguide/>.
- 18) Katz, Daniel and Robert L. Kahn. The Social Psychology of Organizations. John Wiley and Sons Inc., 1966.
- 19) Keiner, M. and Kim Arley. *Transnational City Networks for Sustainability*. European Planning Studies. Vol 15, No.10. (2007).
- 20) Kimberly, J. and R. Miles. *The Organizational Life-Cycle Issues in the Creation, Transformation, and Decline of Organizations*. USA: JOssey-Bass, 1980.
- 21) Kloot, Louise. *Organizational Learning and Management Control Systems: Responding to Environmental Change*. Management Accounting Research. 8 (1997) pp. 47-73.
- 22) Meadows, D.H., J. Randers & D.L. Meadows. Limits to Growth – The 30-Year Update. USA: Chelsea Green Publishing, 2004.
- 23) Scott, William G. *Organizational Theory: An Overview and an Appraisal*. Academy of Management Journal, 4. (April 1961): pp. 7-26.
- 24) Senge, Peter. The Dance of Change. USA: Doubleday, 1999.
- 25) Senge, Peter. The Fifth Discipline. The Art and Practice of the Learning Organization. London: Random House, 1990.
- 26) Sonnichsen, Richard C. *Organizational Learning and the Environment of Evaluation. How Public Organizations Work*. Eds. Christopher Bellavita. New York: Praeger Publishers, 1990. Pgs. 69-80.
- 27) United Nations, Populations Division, The. (2008). *World Population to Exceed 9 Billion by 2050: Developing Countries to Add 2.3 Billion Inhabitants with 1.1 Billion Aged Over 60 and 1.2 Billion of Working Age*. Retrieved April 11, 2009, from <http://www.un.org/esa/population/publications/wpp2008/pressrelease.pdf>
- 28) United Nations Human Settlements Programme, The. (2007). *Urbanization: A turning point in history*. Retrieved November 29, 2007, from http://www.unhabitat.org/downloads/docs/Press_SG_visit_Kibera07/SG%205.pdf
- 29) Wallace, Liz. *Learning at the Whole Organizational Level. The Learning Organization in the Public Service*. Eds. Janice A. Cook, Derek Staniforth, and Jack Stewart. England: Gower Publishing, 1997.