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Local Institutional Development and Organizational Change for Advancing Sustainable Urban Water Futures

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Abstract This paper presents the local institutional and organizational development insights from a five-year ongoing interdisciplinary research project focused on advancing the implementation of sustainable urban water management. While it is broadly acknowledged that the inertia associated with administrative systems is possibly the most significant obstacle to advancing sustainable urban water management, contemporary research still largely prioritizes investigations at the technological level. This research is explicitly concerned with critically informing the design of methodologies for mobilizing and overcoming the administrative inertia of traditional urban water management practice. The results of fourteen in-depth case studies of local government organizations across Metropolitan Sydney primarily reveal that (i) the political institutionalization of environmental concern and (ii) the commitment to local leadership and organizational learning are key corporate attributes for enabling sustainable management. A typology of five organizational development phases has been proposed as both a heuristic and capacity benchmarking tool for urban water strategists, policy makers, and decision makers that are focused on improving the level of local implementation of sustainable urban water management activity. While this investigation has focused on local government, these findings do provide guideposts for assessing the development needs of future capacity building programs across a range of different institutional contexts.

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Introduction

It is widely accepted that for the urban water sector to transition to sustainable urban water management (SUWM), shifts from the traditional, linear, "technocratic" approach to an adaptive, participatory, and integrated approach is required. SUWM can be considered both a philosophical and technical approach that can be incorporated in all forms of urban re/development. The idea of managing urban water as a "total water cycle" is brazen for it challenges traditional and technical management practices. Mitchell (2006) suggests that "new" forms of management emphasize "demand management and supply, using nontraditional water resources and the concept of fit-for-purpose and decentralization." Despite the significant shifts in community, environmental and waterway values over the last 30 years, along with concurrent, and sometimes ground-breaking, advances in SUWM technologies, this has not been enough to shift the inertia of traditional forms of urban water management within current institutional regimes and stakeholder organizations (Brown 2005).

Today, urban water policies are beginning to reflect the SUWM philosophy, yet the rhetoric is often not translated into practice with consistent failure to go beyond ad hoc demonstration projects (Brown and others 2006). Implementation impediments typically highlighted include institutional fragmentation, undefined organizational responsibilities, limited political incentives and disincentives, poor organizational commitment, technological path

dependency, poor community capacity to meaningfully participate, and an overall lack of experiential knowledge with facilitating more sustainable urban water management approaches (e.g., Brown 2005, Marsalek and others 2001, Mouritz 1997 and 2000, Newman and Kenworthy 1999, Vlachos and Braga 2001). The outcome of these interrelated impediments is that approaches to urban water management typically remain technocratic, and that unsustainable water management practices and outcomes continue to be resourced and reinforced by current administrative systems.

This context has stirred industry interest and debate around how to improve the governance of the urban water environment. For example, several commentators within the Australian context have proposed solutions including improving policy and regulatory coordination mechanisms, restructuring the administrative arrangements, and providing new institutional mechanisms for the management of risk transfers between stakeholder organizations (Hatton MacDonald and Dyack 2004, Wong 2006, The Barton Group 2005). As highlighted by Mitchell (2005), these types of proposals relate to addressing issues that result from the "silo effect," which describes the separation of responsibilities among organizations, and their inability or unwillingness to consider their mandate relative to those of other organizations (Serageldin 1995). This is often expressed as "vertical fragmentation" between levels of government and "horizontal fragmentation" across levels of government.

In Mitchell's (2005) review of the results of "integrated water resource management" efforts over the last 30 years, he suggests that aspiring to remove these boundary effects through structural reorganization often proves "futile" and that focusing on enabling institutional learning and improving coordination between stakeholders is likely to provide more promising results. The sustainable cities commentary acknowledges that it is a long-term prospect to change this traditional institutional context, which is sometimes also a daunting prospect that should be tackled in prioritized stages (Wakely 1997). Local Government is often highlighted as the first priority for change by the sustainable cities community because it is typically considered as having the overall weakest institutional capacity, yet is the most important sector for significantly enabling on-ground change towards sustainability (Peltenburg and others 2000, Wakely 1997, UNDP 1998). Local government practices are critical to enabling the widespread practice of SUWM, and in urban Australia, particularly, the environmental protection of local waterways through improved urban stormwater and land-use management.

Therefore, this research focuses on understanding how to improve the capacity of local government for the practice of SUWM. The purpose is to contribute empirical knowledge on the change process that is beyond the identification of institutional impediments, to this under-researched area of how to enable the local practice of SUWM. The intention is to provide a basis of knowledge to critically inform the design of change management strategies for overcoming local administrative inertia. This is not to suggest that such institutional and organizational change has not been attempted in practice, but rather it has not been the subject of empirical research with the explicit agenda of advancing knowledge on how to institutionalize SUWM (Marsalek and others 2001, Brown and others 2006).

Institutional Capacity Building as an Analytical Framework

Institutional capacity building is a concept advocated in both the practitioner and academic literature for mobilizing institutional change. It spans a range of fields in different guises including public management (Grindle 1997), collaborative planning (Healey 1997), urban sustainability (Wakely 1997) and development studies (Kaplan 2000). While some commentators argue that the intangibility of the concept may make it "stuff of myth or magic" (Harrow 2001), others argue that it critically exposes development needs not immediately apparent (Grindle 1997 and Kaplan 2000). While there is debate whether the object of capacity building should be to fill a "deficit" or to "empower" in some way, there does appear to be agreement that the design of capacity building interventions in practice are often too limited in their approach.

In the urban water area, drawing from the literatures in public administration and urban development, Brown and others (2006) have proposed a simple nested model of institutional capacity building. The model maps three interdependent areas of capacity building, and links each sphere to a list of recommended capacity building interventions to advance SUWM. As shown in Table 1, the three spheres of institutional capacity building include: human resource development, intra and inter-organizational strengthening, and institutional reform. Human resource development typically involves capacity building activities targeted at improving the knowledge, skills, and motivation of individuals. Intra and inter- organizational strengthening interventions involve improving organizational cultures, management practices, procedures, inter-organizational relationships and information sharing. Institutional reform processes involve changing the external rules and incentives through actions, such as developing new legal, regulatory, and policy instruments.

It is important to emphasize the nested nature of these areas of capacity building, as people work in organizations,

Table 1 Dimensions of capacity building (adapted from Grindle in Harrow 1997, Wakely 1997)

Capacity building	Description	Interventions
Human resource development	Equipping individuals with the understanding, skills, and access to information, knowledge, and training that enables them to perform effectively	e.g., recruitment and training
Intra and Inter-organizational strengthening	Elaboration of management structures, processes, and procedures, not only within organizations, but also the management of relationships between the different organizations and sectors (public, private, and community)	e.g., incentive systems, leadership, communications
Institutional reform	Making legal and regulatory changes to enable organizations, institutions, and agencies at all levels and in all sectors to enhance their capacities	e.g., policy and legal change, constitutional reform

and collections of stakeholder organizations form the broader institutional practice of urban water management.

So far, a majority of capacity building efforts have been typically focused at human resource development and implemented as training and education programs. They can often be based on the idea that equipping individuals with new knowledge, skills, and professional competencies will enable them to successfully operationalize sustainable practices (Wakely 1997, Harrow 2001). However, as observed by Wakely (1997) and Brown (2003), the organizational and broader institutional capacity contexts present as great an impediment to the sustainable management of urban places as the inability of professionals, technicians, and ordinary people (i.e., the human resource capacity) to operationalize sustainable development. This is because the relationships within and across the three areas of capacity building is a key determinant of the resulting patterns of institutional practice. Change interventions focused on any single capacity area in isolation of the others and are likely to be insufficient for enabling widespread change.

Therefore, the achievement of effective human resource development through training and education initiatives is mutually dependant on the enabling context of the organizational and institutional environments for the effective practice of newly developed understandings and skills (UNDP 1998, Peltenburg and others 2000). Strengthening the organizational context through interventions, such as catchment management arrangements, are typically beyond the capacity of any single organization or network of organizations to continuously enact and therefore often depends upon institutional reforms and incentives from state and/or national governments. However, effective institutional reform needs to be critically informed by new organizational practices and advocacy for change from both individuals and organizations.

The capacity building concept provides an analytical framework for investigating and assessing the capacity of local government organizations pursuing SUWM practices. It is clear that local government capacity for SUWM (involving effective, efficient, and responsive environmental governance) is dependant on not only having sufficiently developed human resource capacity, but also sufficient capacity within the intra- and inter-organizational and institutional reform contexts (Grindle in Harrow 1997, Wakely 1997, UNDP 1998, Peltenburg and others 2000). This perspective is used for framing the research by specifically exploring the human resource, organizational, and institutional reform capacities associated with local government organizations and their potential for SUWM implementation.

The Research Design: Two-Stage Research Investigation

Reported here is a synthesis of a two-stage research project that investigated the capacity of local government for the practice of SUWM across metropolitan Sydney, Australia between 1999 and 2004. Both stages of the research design were based on the qualitative multiple-case study method (Yin 1994) involving in-depth organizational analyses against the institutional capacity building concept. Stage 1 involved eight organizational case studies as part of a doctoral research project between 1999 and 2002, and Stage 2 involved six organizational case studies as part of post-doctoral research between 2003 and 2004. Upon completion of these 14 organizational case studies, over 25% of the local government organizations located within metropolitan Sydney ($n = 45$) were subject to detailed investigation. Preliminary research in 1999 provided a strong indication that there was likely to be a wide disparity in the quality and implementation rates of SUWM practices across local government in metropolitan Sydney, and that this may be a potentially valuable context for investigating the organizational dynamics that lead to different levels of organizational commitment to SUWM practices (Brown and Ball 1999).

Overall it was anticipated that the two-step research design would reveal key organizational capacity characteristics across varying levels of SUWM performance. It was anticipated that this knowledge could be used to more reliably inform the advancement of institutional development and change management strategies that could critically contribute to enabling the wide-spread practice of SUWM. It was also expected that the resulting typology of the varying local administrative capacities would provide a useful heuristic tool for individual professionals and local and state government capacity builders to enable strategic links between organizational change and advancing SUWM practices.

Case Study Selection

Selection of cases for both Stage 1 and Stage 2 of the research was based on the outcome of a simple evaluation process involving each of the forty-five organizations being assessed for their SUWM performance into the categories of either "low," "average," or "high." The evaluation was based on giving a rating to all organisations based on the criteria of (i) the quality of locally relevant SUWM management strategies stated in the organization's stormwater management plan in 1999 and (ii) the degree of successful implementation of the first year strategies as specified in the management plan in 2000. Four independent evaluators (two state government officers and two local university academics) allocated ratings, in addition to a representative from each organization providing an organizational self-assessment rating (Brown 2003).

As depicted in Fig. 1, the evaluation results revealed that 5 (11%) of the organizations attracted a consistently "high" performance rating, 21 (47%) of the organizations consistently attracted a "low" performance rating, and 19 (42%) of the remaining organizations were somewhere in between the low and high performance ratings and allocated an "average" rating.

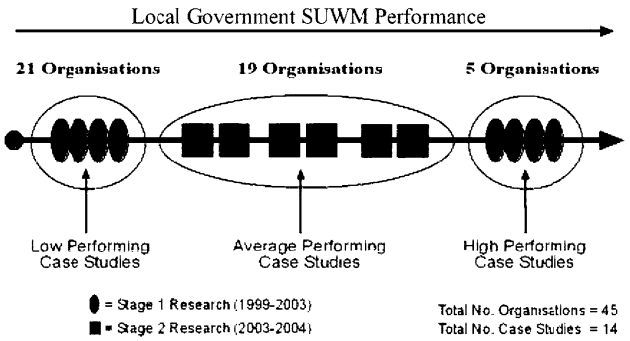

Fig. 1 Location of Stage 1 and Stage 2 organizational case studies

The evaluators felt the average performing organizations represented a broader spread of performance than either of the low and high groups, and that perhaps the remaining average rating of SUWM performance was not sufficient to capture this spread. This average rating was further qualified through the evaluation process, with the evaluators agreeing that the average performing group of organizations was more closely skewed towards the low performing.

While Stage 1 involved selecting a representative sample of four organizations from each of the high and low performing groups, Stage 2 involved the selection of six local government organizations that represented the widest diversity in performance within the group of nineteen average performing organizations. The purpose of this post-doctoral research was to address the limitations of the Stage 1 research and attempt to determine the organizational development characteristics for improving local government SUWM practice.

However, the selection of these 6 average performing out of 19 cases did prove more difficult than expected because the external distinctions between their relative SUWM performances were less pronounced and the independent evaluators felt that they could not reliably make a comparative assessment within this group based on the external indicators of content in planning documents and information about matching implemented projects. Consequently, to determine the six cases for analysis, field research was undertaken involving numerous interviews with industry leaders, members of local professional associations, state government regulators, and managers from each of the 19 organizations over a four month period. This allowed for improved qualitative understanding of the operational variability between the 19 local government organizations which were subsequently allocated into three smaller subgroups representing different levels of SUWM performance. The levels of SUWM performance related to a composite of internal corporate commitment to SUWM practices, including the total staff time allocated to SUWM, percentage of the core organization's budget allocated to SUWM practices, and disciplinary breadth of the latest projects implemented.

Data Collection and Analysis

The design and implementation of the data collection protocol was the same for both research stages and focused on understanding the (i) human resource capacity: the individual staff responsible for administering the organization's urban water management, (ii) intra-organizational capacity: the internal processes and systems that enable and constrain the practice of SUWM, and (iii) inter-organizational capacities: the external processes involving

interactions with key stakeholders' organizations across government, the market, and the community.

As shown in Table 2, the research drew from multiple sources of evidence for each of the three capacity areas as listed above. Primary data was systematically collected from key informants associated with each case study organization. The informants internal to the organization included: organizational staff directly involved with SUWM; organizational staff involved in other sectoral issues, such as transport and waste that interact with staff involved with urban water management practices; and local elected officials. Informants external to the organization included: representatives from consulting firms that interact with the organization on urban water management issues; a range of state government staff representatives from Sydney Water, Environment Protection Authority, the Roads and Transport Authority (and others including state planning representatives); and representatives of the local catchment management organizations and community environmental groups.

As also listed in Table 2, data was collected through a range of techniques including written questionnaires, in-depth interviews, semi-structured interviews, group interviews, and document content analysis. This composition of techniques was based on the outcomes of the findings of the pilot case study providing feedback on respondent selection, most suitable interview processes, and data that could be collected easily through written surveys. Each case study commenced with the local government officers participating in a written survey focused on: (i) the demography and experience of the water officer, (ii) current policies and initiatives within the organization, including relevant roles and responsibilities, and (iii) identification of all the relevant stakeholder organizations, and an assessment of how they are engaged and/or directly interact with the organization in relation to urban water management practices.

As also shown in Table 2, the local water officers, due to their significant role in the issue, participated in a series of in-depth interviews that were conducted at least twice during the case study. The results of the pilot case study revealed that the local elected representatives had a strong preference for a more free-flowing open-ended discussion style where they could have the opportunity to express their vision for their area; therefore, they participated in open interviews. All other informants were subject to the same semi-structured interviews involving principally exploratory questions related to their perception of the quality of human resource, intra-organizational, and inter-organizational capacities for SUWM.

The collection of secondary data involved a process of searching and reviewing available organizational documentation including policy materials, organizational management plans, local environmental and development control plans, and additional materials where available from the organization's website. This data was cross-referenced with data from the primary sources and other forms of relevant industry literature and existing scientific literature.

The analysis process began with the continuous thematic and theoretical assessment of the data throughout the data collection process. This process involved developing

Table 2 Data collection protocol for each organizational case study

Sources of evidence	Water officer(s)	Intra-organizational	Inter-organizational
Water officer(s)	written surveys, in-depth interviews	written surveys, in-depth interviews	written surveys in-depth interviews
Other officers	semi-structured group interviews	written surveys, semi-structured group interviews	written surveys, semi-structured group interviews
Elected officials	open interviews	open interviews	open interviews
Council organizational information	Documentation	Documentation	Documentation
	-organizational management plans	-organizational management plans	-organizational management plans
	-IUSM plan(s)	-drainage policies	-environmental management policies
		-environmental management policies	-IUSM plan(s)
		-IUSM plan(s)	-Catchment Management plan
		-LEPs and DCPs	-Council's website
		-Council's website	
External consultant(s)	semi-structured interviews	semi-structured interviews	semi-structured interviews
EPA, Sydney Water, RTA & other state officers	semi-structured interviews	semi-structured interviews	semi-structured interviews
Catchment management & community representative(s)	semi-structured interviews	semi-structured interviews	semi-structured interviews

multiple and ongoing accounts of the possible capacity qualities with the objective of actively seeking contradictory evidence and alternative meanings to emerging explanations and findings. All of the written survey and interview results were contrasted and compared in terms of key themes that arose regarding the levels of influence attributed to key capacity factors and events. This process allowed for disparities in the accounts to be further investigated and clarified.

Recognizing that the data generated from this type of research will always be subject to a number of limitations, a series of external verification processes were also employed during the research. The first involved having the draft case study reports reviewed by the case study participants to ensure reliability of the organizational data analyzed. This was followed by presenting the draft findings to two practitioner workshops involving principally local government representatives, which in total included over eighty participants. The workshops were designed for small group reflection and discussion sessions and participants were encouraged to critique and identify gaps in the analysis and findings. The final results were later presented at the conclusion of both research stages to senior stakeholder representatives, including regional local government committees, key community and environmental groups, and a number of state government agency officers.

Organizational Capacities and Development Phases

Upon completion of the 14 organizational case studies, it was possible to infer transitional phases in the development of organizational dynamics with respect to SUWM implementation. While transitions between phases within an individual organization was not empirically observed, because the research was not longitudinal by design, an organizational development model has been developed to reflect the varying levels of relative organizational capacity for SUWM, as shown in Fig. 2.

As also reported in Brown (2003), there were consistent and distinguishing variables of local government capacity for SUWM identified among the low and high performing cases. This provided evidence of the potential organizational adaptation pathway between different levels of practice from traditional urban water management towards SUWM at the local government level. When critically comparing the results of Stage 1 and Stage 2 case studies, five distinct organizational development phases emerged. The Stage 1 research findings revealed that the low performing organizations were operating in what has been named a *project* phase, whereas the high performing organizations were operating in an *integrated* phase. The outcomes of Stage 2 revealed three further development phases starting with the *outsider*, followed by a *growth* phase, and then *insider* developmental phase.

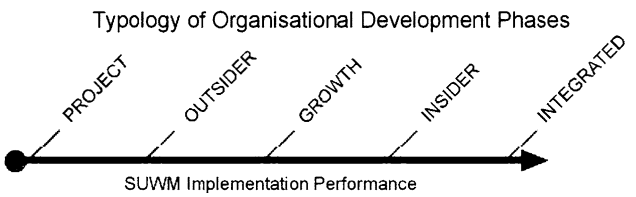

Fig. 2 Continuum of organizational development phases

Each of these five organizational phases was clearly distinguishable according to the following five variables:

1. Organizational commitment and action: the level of implementation of nonconventional, SUWM practices;
2. Political capital: external, socio-economic, and civic community contexts;
3. Internal organizational SUWM expertise: technical and human resource capabilities;
4. Organizational structure: intra- and inter-organizational architectures; and
5. Organizational culture: the relationships between government actors and the broader institution of SUWM.

The Stage 1 research findings set the boundary context for this typology development. As highlighted in the next section, the low performing cases had common characteristics relating to low organizational SUWM priorities and an overall disposition toward achieving minimal compliance with any state government driven directives for change. On the contrary, the high performing cases had developed a whole-of-organization commitment to SUWM that was supported by the elected officials and the local community, and generally they operated autonomously from higher tiers of government.

It is important to note that while the results of the different phases observed in organizational capacity has been simply represented as a model of linear progression, there is no evidence to suggest that organizations could not move both up and down the continuum as well as jumping and/or straddling different phases with changing circumstances. It is also possible that these phases are more discontinuous than represented. In the absence of comparative detailed research from alternative institutional contexts for verification or otherwise, this organizational development relationship remains a tentative hypothesis. Nonetheless, this does not detract from its intent of enabling critical reflection, discussion and the design of organizational development and change management strategies given the limited available evidence in this field.

The following sub-sections provide a qualitative description of the typical organizational capacities and

dynamics in relation to each of the five organizational development phases as shown in Fig. 2. This typology is proposed as a possible heuristic model and/or capacity benchmarking tool for individual practitioners and local and state government program designers for improving the level of local government implementation of SUWM practices.

Project Phase

The results of the low performing case studies, termed here the *project* organizational development type, clearly revealed that SUWM was not a priority for the organization and that any activity undertaken by the organization was only driven by a need to achieve a minimal level of regulatory compliance with State Government obligations. In this instance, as depicted in Fig. 3, the regulatory direction from the State, as administered through the NSW Environment Protection Authority (EPA) between 1999 and 2003, for the preparation and implementation of stormwater management plans was responded to with minimum attention. Internally, the work was allocated typically to a junior engineer and then contracted to an external consultant to meet the organization's regulatory obligations. There was no effective engagement of other stakeholders or the community. Since preparation of the plans, those organizations have not met their stated implementation intentions. Overall the SUWM was treated as an unnecessary project that was not considered to be central to the business of the organization.

There were a number of common operational qualities across the local government organizations in the project phase that could characterize the organizational dynamic in relation to SUWM. These organizations had limited organizational attention and resources allocated to SUWM, and they treated the practice of SUWM as a one-off project through allocating a junior technical officer to solely undertake the work. The overall focus was on achieving a minimal level of compliance with the external authority. They displayed a shallow level of community engagement and relations activity in the broader area of environment related issues. Overall, SUWM was not perceived as being related to the core business of these organizations.

Outsider Phase

The *outsider* organizational development phase can be described as an individual or small group of local government officers having some form of "environmental" label (either a very small new department or team within an established department) that are struggling to attract limited organizational resources for SUWM activities. As shown in Fig. 4, 5 there was evidence of conflict around perceived roles and responsibilities with other sections of the organization, in particular with the sections responsible for public infrastructure and development approvals. This outsider organizational type focused on writing innovative grant applications and finding means to work with state agencies and other funding bodies for meeting broader obligations and principles for more sustainable urban water management activities. As part of this advocacy, of particular note, is this group's dedication to building external stakeholder relationships through outreach strategies with regulatory authorities and community groups. The implicit objective of this work is to build external political capital in an attempt to realize internal organizational legitimacy and influence to advocate for more resources to support sustainable management practices.

There were a number of common operational qualities across the local government organizations in the outsider phase that could characterize the organizational dynamic in relation to SUWM. In these organizations environment related work was carried out in a separate section of the organization, where this section experienced very tough

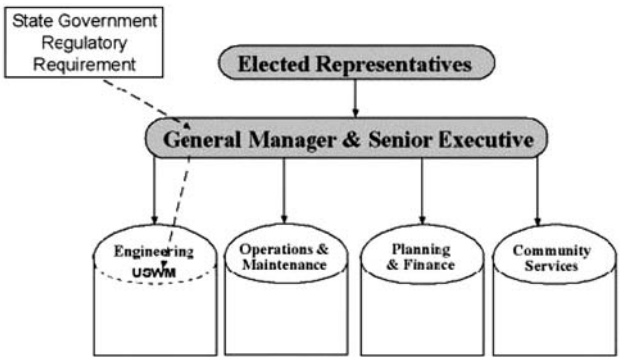

Fig. 3 Low performing organizations: the project phase

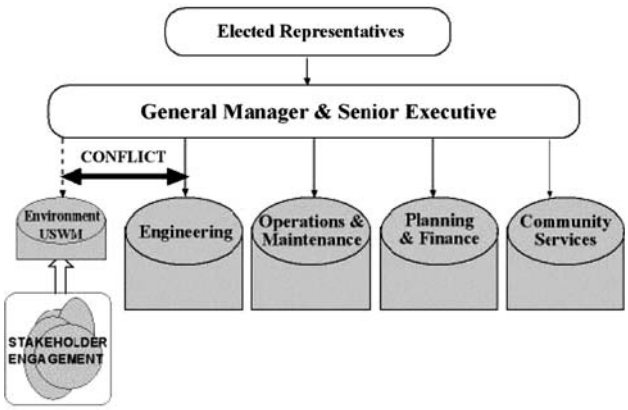

Fig. 4 Variable performing organizations: the outsider phase

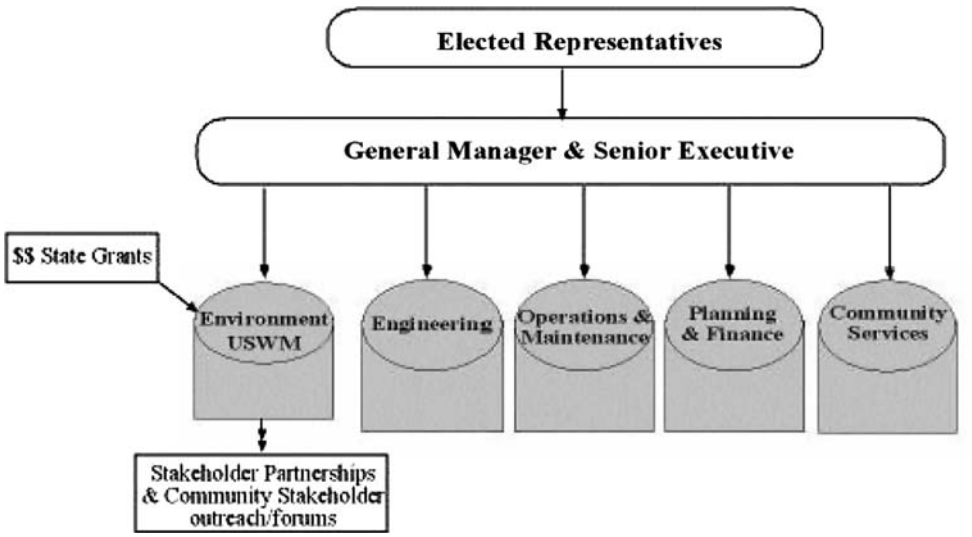

Fig. 5 Variable performing organizations: the growth phase

competition for attracting internal organizational resources and attention. Overall there were poor relationships with other areas of the organization, particularly with engineering departments, as this section of activity is not considered by other departments and sections as a legitimate area of organizational activity. A majority of the SUWM activities focuses on attracting external resources and building strong relationships in the community and external regulatory authorities.

Growth Phase

The *growth* organizational development type reflects the environmental (and sometimes sustainability) agenda growing in prominence as reflected in the increased staff size, internal budget and corporate reporting within the organization, in contrast to the *project* and *outsider* phases. Like the outsider phase, this could be a separate environmental department or a larger group within an established department; however this team of people has been successful in winning project-based external grants and support. The team has also been successful in gaining organizational attention through highlighting future economic and reputational risks to the organization for inaction around environmental issues and perceived concerns. There is now an established extended stakeholder network with increasing expectations of their potential to influence and/or inform environmental decision making. While there appears to have been significant growth in the environment agenda, particularly for urban water management, there is still significant tension and confusion over roles and responsibilities between departments and groups within the organization, resulting in inconsistent and ad-hoc projects.

There were a number of common operational qualities across the local government organizations in the growth phase that could characterize the organizational dynamic in relation to SUWM. In these organizations the broader operational area of environmental management is gaining in internal organizational profile and significance, and there has been a high level of success with winning substantial external grants for projects through competitive higher tier of government funding sources. These organizations have sophisticated external consultation techniques and processes and manage a growing and established extended stakeholder network within the community. Internally there is strong advocacy and communication from the environment team of the "risk" to the organization's reputation if the organization does not address environmental issues and with this there are increasing internal resources and funds allocated to SUWM, yet there are still unclear division of roles and responsibilities across the organization in relation to which should take the lead on SUWM.

Insider Phase

The *insider* organizational development type represents yet another significant shift in organizational dynamics. These organizations appeared to have good knowledge of their water systems and water environment, and demonstrated increasing competency with implementing end-of-pipe pollution control techniques and education initiatives. Of particular note is the observation of a high profile organizational champion(s) for SUWM who typically played a networking and knowledge brokering role across and within organizational departments. This results in a number of project collaborations between the engineering, planning, and environment departments — yet limited

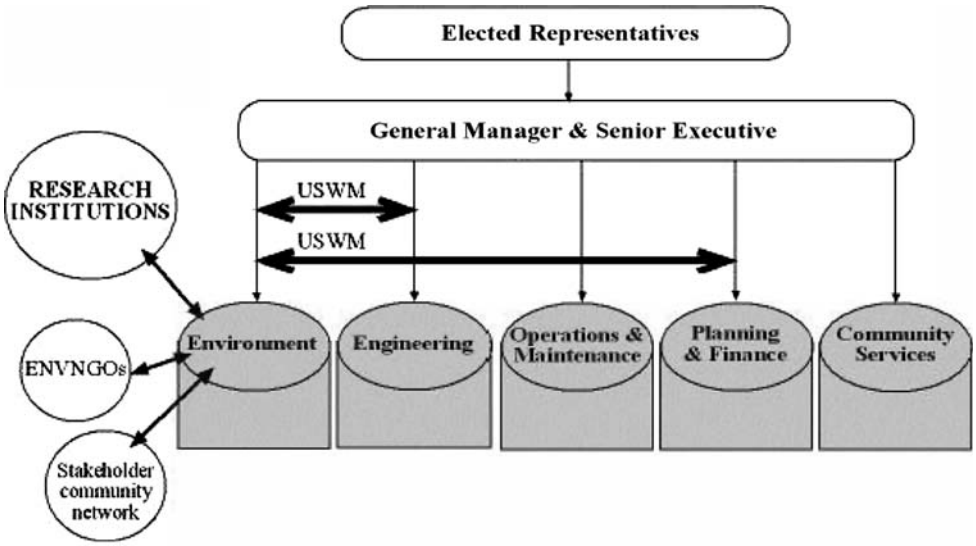

Fig. 6 Variable performing organizations: the insider phase

collaboration in other areas, as shown in Fig. 6. Part of the catalyst for these new projects is related to the external relationships that the champion(s) develops with key research institutions and larger scale environmental non-government organizations (ENVNGOs). The attention and interest of other departmental managers are captured through the perception of conducting innovative, "cutting edge" projects. This, therefore, attracts management and senior executive attention and soon becomes part of the organizational leadership strategy and consequently increases external and internal resources to this area. Of particular distinction is that other departmental areas are starting to perceive a legitimate organizational role for the expertise of the environment area — and, therefore, becoming an *insider*.

There were a number of common operational qualities across the local government organizations in the insider phase that could characterize the organizational dynamic in relation to SUWM. These organizations are experiencing a significant shift in strategic focus from building the organization's reputation for proactive environmental management to a focus on positioning the organization as an environmental leader with associated leadership strategies. These organizations have internal competencies in relation to professional knowledge and skills with sustainable urban water management, with key champion(s) playing an important networking and knowledge brokering role across departments. These organizations have new external relations with research institutions and larger environmental nongovernment organizations for innovative projects and other initiatives which are underpinning inter-departmental relationships, particularly between engineering, planning, and environment areas in relation to SUWM.

Integrated Phase

The high performing case studies, termed here as the *integrated* organizational development type, demonstrated the highest degree of integrating sustainability principles and practices in various forms across the organization. The high value placed on community governance and participation was observed consistently from the senior to the junior levels of the organization. There are dedicated corporate policies and resources for environmental management and protection (typically an additional environmental levy), as well as an active inter-departmental committee dedicated to administering and planning SUWM activities. The organization values the promotion of staff learning and local research in SUWM as part of reinforcing the internal and external corporate commitment of being a leader in its field. Of particular note is the poor opinion these organizations have of state government agencies and urban water related policies. In particular, as shown in Fig. 7, these organizations feel constrained by contemporary state policies and programs with concerns of having their innovation stifled by programs that are typically tailored to the other local government organizations, which are not as advanced in their SUWM practices. However, the public articulation of this view is highly tempered to ensure ongoing success with attracting additional external resources.

There were a number of common operational qualities across the local government organizations in the integrated phase that could characterize the organizational dynamic in relation to SUWM. From a strategic organizational perspective, these organizations see their role as providing strong community governance and informed local leadership. Sustainability principles are integrated across departmental areas from policy to construction and

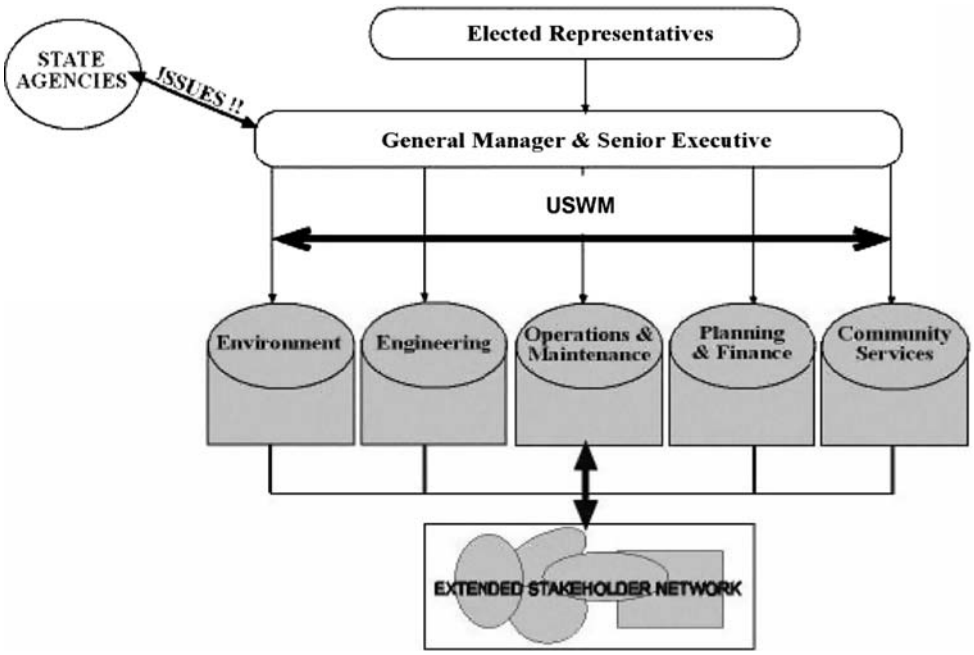

Fig. 7 High performing organizations: the integrated phase

maintenance routines, and this commitment is reflected in staff and departmental performance assessments. These organizations have a dedicated corporate policy to leadership in sustainability with a host of interdepartmental committees and resources to support this work. There are very strong relationships with their extended stakeholder network, which is largely focused on leadership projects. With this, there is also significant organizational concern with higher tiers of government constraining local innovation and leadership through what are perceived to be 'antiquated' state and federal policies and programs, which there is an organizational culture of how to interact with officials in other levels of government.

Human Resource and Organizational Capacities

The case studies of incremented organizational implementation performance as shown in Fig. 2 revealed variable human resource and organizational capacities, with very clear distinctions between the project and integrated phases. More broadly observed across the cases was the increasing internal political priority of the environment where it was almost nonexistent in the project phase, largely driven by a reputation building need in the growth phase and inherent to organizational leadership in the integrated phase. It was also clear that external resource opportunities through state government grants have been used by the more entrepreneurial organizations for attracting internal attention and resources.

With respect to the individual local government officers involved with SUWM, there appeared increasing experience and competence in environmental planning, facilitation, negotiating, networking, and organizational relationship building. However, technical competence with the design and management of urban water management technology did not prove to be an essential ingredient, particularly where this specialized technical skill could be harnessed as an important input from elsewhere within the inter-organizational context. The level of individual professional frustration associated with organizational activities also demonstrably decreased in the higher end of the organizational development typology continuum. Also observed at the higher end of the continuum was the seniority and influence of these officers to attract greater organizational (human, financial, temporal) resources in relation to SUWM activities.

It was evident from the research that the intra-organizational operating context was the key factor for determining the level of success with implementing SUWM. As reflected in moving towards the right-hand side of the typology continuum, the increasing level of political and organizational commitment to environmental management was more broadly a strong indicator of organizational SUWM performance. This commitment from within the organization was expressed through departmental management systems, a committed interdepartmental policy community, and appropriate dedicated organizational resources. Integral to this commitment is the breadth, quality and priority placed on relationships established for an extended stakeholder network interested in the management of environmental resources. Therefore the maintenance and development of this inter-organizational action appears instrumental for mobilizing attention and political power for facilitating SUWM.

Table 3 Summary of the formative local capacity development methods

Institutional capacity process	Summary of formative capacity development methods
Institutional reform	incentives and disincentives for enabling intra and inter organizational interaction
	regulation of organizational capacity rather than production of plan documents
	mobilization of local political and community support
	information and measurement systems for benchmarking and reporting on organizational capacity
Organizational strengthening	*Intra-Organizational Development*
	corporate policy for sustainability
	inter-departmental policy community
	dedicated waterway management resources
	experience and competence with urban water management
	Inter-organizational development
	active cross-sectoral catchment stakeholder network
	experienced in inter-agency collaboration and negotiation
	valuing community participation and input
Human resource development	*Skill development*
	environmental planning
	group facilitation and negotiation
	relationship building and networking
	facilitating change management
	Basic knowledge development
	environmental resource management
	sustainable development
	urban water environment

Institutional Capacity Building for Advancing Sustainable Urban Water Futures

There is limited evidence on how to realize the operationalization of SUWM because of the lack of detailed specification, methodological clarity, and understanding of its operation in practice (Vlachos and Braga 2001). Therefore, the need to formulate the development of capacity building methodologies for informing SUWM practice and program interventions is clearly evident, although this has been neglected both within Australia and internationally (Bellamy and others 1999).

The organizational development insights from the case studies lead to important considerations, as well as raising further questions, for developing local institutional capacity for SUWM. Given that over twenty local government organizations were rated as operating in the "project" phase and a substantial portion of the average performing organizations operating in the "outsider" and "growth" phases, it seems reasonable to conclude, that dedicated institutional capacity development interventions will be required to improve local government capacity for SUWM. While incremental change appears to be the current pathway, it is likely that institutional inertia will retard timely organizational development for meeting the increasing social, ecological and economic priorities of communities.

The conceptual and practical insights of the capacity building concept highlight that current attempts to address the institutional inertia, such as professional training initiatives and single-focused regulatory interventions, are likely to result in incremental and potentially unstable changes. This is because they involve developing capacity in one sphere (i.e., human resource capacity) without good linkages and mobilization of capacity in the other spheres. They are also more mechanistic by design rather than encompassing the more intangible, yet critically important, issue of sensitizing organizational values towards sustainably managing the urban water environment. Therefore while current policy and program interventions may impact on the organizational systems (i.e., in this case, compliance in preparing planning documents), dedicated institutional capacity building would seek to change both the structural and cultural basis of the administrative system in relation to ongoing and sustainable management of the water environment.

Given human resource, organizational and institutional reform capacities are mutually interdependent. It is advocated here that there needs to be an underpinning philosophy of learning from informed and well-tested

capacity building strategies as a long-term policy concept for enabling the institutionalization of SUWM at the local level. As evidenced by the organizations at the project phase, single regulatory directions that rely on traditional views of the vertical power of the state for mobilizing change are now based on unfounded assumptions of the capacity of state agencies to direct change, and, therefore, unlikely in isolation to enable transformative and sustainable change. Hence, based on the research insights, this philosophy should be based on mobilizing horizontal power that facilitates organizational and cross-sectoral interaction in pursuit of enabling governance of the urban water environment.

While different urban water contexts have variable institutional frameworks, peculiarities, and capacity building needs, it is important that a holistic assessment of the existing capacity for SUWM within the local management dynamic be conducted to systematically inform the design of capacity development programs. To assist with this assessment, the varying local government phases of capacity for SUWM identified in this research provide a useful benchmark for determining to what degree capacities are currently developed and/or underdeveloped. Table 3 provides a formative benchmark for broadly assessing the local management capacity for SUWM irrespective of local context. This table could be used for broad capacity deficit analysis for streamlining and prioritizing, often scarce, resources available to policy activity and specific capacity strategy development and implementation.

When considering institutional reform, it is important that organizational and cross-sectoral interaction underpins all forms of regulatory, economic, and educative policies. It is also important that a local organizational capacity analysis is conducted and targeted at understanding what potential incentives and disincentives would be most effective in enabling SUWM. Where assumptions are made in relation to the operating capacities of the local and regional contexts, these need to be made explicit throughout all policy processes and tested and validated as part of an adaptive policy cycle.

Conclusion

The rate and quality of SUWM practices associated with local government administration has been identified as highly variable across metropolitan Sydney. A typology of five key phases of organizational operational capacity for SUWM, including the project, outsider, growth, insider, and integrated development phases, was revealed throughout the multiple-case study research. This typology is proposed as both a heuristic and capacity benchmarking tool for urban water strategists, policy makers, and decision makers who are focused on improving the level of local implementation of sustainable urban water management activity. While this investigation has focused on local government, these findings do provide guideposts for assessing the development needs of future capacity building programs across a range of different institutional contexts.

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