Building more effective partnerships for innovation in urban water management[1]

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Abstract
This paper discusses experiences within the Sustainable Water Improves Tomorrow's Cities' Health (SWITCH) consortium - a research partnership focused on long-term improvements in urban water management in developed and developing countries - to apply innovative research methodologies that may lead to more effective urban water science and wider and more integrated use of research findings. It introduces learning alliances as an attempt to build multi-stakeholder partnerships for demand-led research and the scaling-up of research impacts, and several related tools used to date to underpin an action research process: visioning and scenario-based planning with stakeholders, scoring ladders to monitor outcomes, process documentation to record change and matrix management to guide a diverse consortium. Examples drawn from the SWITCH project illustrate successes and failures from which the project aims to learn and improve its own effectiveness.

Keywords
cities; demand-led research; innovation systems; learning alliances; SWITCH; urban water management

INTRODUCTION: THE CHALLENGE

The Sustainable Water Management Improves Tomorrows Cities Health (SWITCH) project[1] is a major research partnership funded by the EC with a budget exceeding €20 million. SWITCH is undertaking innovation in the area of integrated urban water management *(IUWM)*. The project aims to carry out action-orientated research in cities[2] that is more demand-led and achieves greater lasting impact. Rather than solely focusing on new research, the project is encouraging multi-stakeholder 'learning alliances' to help set the research agenda, to put research across different aspects of the urban water cycle into use in cities, and to help improve integration and scaling-up impacts. This paper reviews the experiences gained by the SWITCH consortium (of 33 partners) in grappling with stakeholder engagement in this complex research area and the achievements to date. Following a consideration of the rationale and basis for adopting a learning alliance approach, the paper is structured around a number of key methodologies these platforms have utilised. The paper aims to provide examples of outcomes and lessons learnt that may be relevant for other similar initiatives.

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LEARNING ALLIANCES

An increasingly common requirement of agencies funding water management innovation is for researchers to ensure that their work is demand-led and communicated effectively. The rationale is to improve the impact of research on policy and outcomes. Individuals and projects are as a result under pressure to do much more than what was traditionally understood as 'good science'. They are required not only to understand the priorities of potential users, but also to take account of the prevailing institutional context, to undertake research in partnership with implementers and other key stakeholders (e.g. regulatory authorities, civil society agencies, financial institutions, and the private sector) and to communicate results and emerging innovations effectively. However, with little training or experience in these areas, and usually with limited budgets or support, attempts to assess demand and establish and develop alliances with other key stakeholders, are rarely thorough, and even less commonly, well documented. Communication strategies are generally weak, most often focusing on traditional methods to disseminate results towards the end of a project. These limitations, when taken together with the narrow focus of much technical research and the neglect of political context or developmental processes, are increasingly linked to the failure of many water-related research projects to have relevant impact (Gyawali *et al*., 2006).

Summary of 'learning alliance' methodology

A learning alliance is a grouping of constituent organisations from a given system that seeks to effect widespread impact through the adaptation and up-scaling of an innovatory approach (Butterworth & Morris, 2007; Smits *et al*., 2007). The more representative the alliance is, the better it will capture the institutional complexities that constitute the realities of the innovation system. Through working on the agreed underlying problems, and contesting and evolving potential solutions together (i.e. working in an action research mode), it is anticipated that mechanisms for addressing institutional constraints and encouraging institutional learning will be generated. The approach is based on the idea that the key challenge to achieving impact on 'wicked' problems like IUWM is not in devising new technologies but in bringing about appropriate institutional change within the relevant innovation system. A key hypothesis underpinning the learning alliance approach within SWITCH is that switching emphasis from researchers devising new technologies (doing different things) to improving how the multiple stakeholders in the innovation system work (doing things differently) will lead to interventions having greater impact.

Learning alliances are ideally formed from connected stakeholder platforms at the different levels of administration (e.g. national, city, neighbourhood). Their structure and activities should build on existing formal and informal networks and be designed to optimize relationships, breaking down barriers to both horizontal (i.e. across platforms), and vertical (i.e. between platforms) learning[3]. Alliance members should share (or come to share) a common desire to address an underlying problem, for example, to improve urban water management. They will also be willing to share or develop common approaches – visions, strategies and tools – on how this can be achieved. Each platform groups together a range of stakeholders who capture diversity and bring together complementary skills and experiences. A common problem in following a learning alliance approach is that in the early stages of a project or programme the activities are seen as too vague, and it is not sufficiently clear what they will do and why they need funding (this was certainly the case within SWITCH). This is a familiar characteristic of demand-led processes which seek to include and involve representatives from such diverse stakeholder groups. The agenda cannot be set from the beginning and funds cannot (or should not) be committed to a set of tasks that the alliance did not formulate or at least adapt. However, it is vital that learning alliances identify objectives, quickly start some joint activities, and monitor their progress against set objectives. For example, it was suggested in the SWITCH project (Butterworth & Morris, 2007) that:

- After 6 months some city learning alliances will have a core management team headed up by a locally endorsed coordinator, and will enjoy reasonably effective and networked communications, one or two may even have created their own website. Inception meetings will have been held, and funding for a number of action research projects identified. Some of these activities will have been commissioned, and newly formed partnerships between members will be initiating this research. In-house expertise, capacities and skills of the membership will have been mapped, and made available. Initial plans will have been developed by the management team identifying key urban water management stakeholders (non-members) that the alliance seeks to influence.
- After 5 years it is envisioned that there will be an active series of city learning alliances in all 12 SWITCH cities having successfully completed a series of action research activities based upon the needs of participants. Effectively communicated results will have led to wide-scale uptake of research results both within the focus cities and elsewhere linked to learning through national platforms and a global learning alliance.

It is intended that through this approach:
- Researchers understand the priorities of local users and take account of the prevailing institutional and political context in their design of activities,
- Researchers undertake research in partnership with implementers and other key stakeholders,
- Research results are communicated appropriately and on time,
- Learning alliances become networked learning organisations,
- Research is used by local actors to improve water management in cities,
- Results are scaled up and have impact beyond the focus cities.

Example: a learning alliance to put water at the centre of redevelopment in Wilhelmsburg island, Hamburg

The municipality of Hamburg is one of the fastest growing cities in Germany. At its heart, the river island of Wilhelmsburg is a major focus for future urban development. The island will host the International Building Exhibition and the International Horticultural Exhibition in 2013. The island faces a combination of 'technical' water management problems like flooding risks and pollution of surface water, and 'urban planning' demands like the development of more attractive locations for residents, business and visitors. These needs require interdisciplinary cooperation in water management, urban planning and landscape design. The SWITCH project initially developed collaboration with the city-wide administration in Hamburg but as activities began to focus on the island of Wilhelmsburg, a learning alliance was developed to include several core members representing key local stakeholders from the island. Potential members of the learning alliance were identified through a stakeholder analysis and interviews. Non-governmental organisations engaged in the social, cultural and ecological improvement of the island played a particularly active role and the learning alliance could build upon existing structures for citizen and stakeholder engagement on the river island.

To discuss possible objectives with new members, numerous meetings were held and the ideas behind the SWITCH project were made widely known. Strengths and weaknesses of existing approaches, as well as new opportunities and risks in urban planning and water management on the island were debated. Discussions identified the importance of water management measures in contributing to the development of attractive locations and improving the image of the island, and stakeholders emphasised the need for an overall concept bringing together the different water demands on the island. As well as welcoming visionary concepts and projects, these meetings clearly articulated that there are several current problems that have to be solved and that it was important that projects correspond to the local requirements. Through such conversations, trust was

developed and a sense of ownership in the Learning Alliance and its objectives was built up. It now forms a basis for joint research, planning and action between four key groups that have not been well connected in the past: the city administration, local citizens, stakeholders with a role in urban water management and planning on the island, and researchers.

This example illustrates a learning alliance approach in the context of an urban planning process. Innovations include: widening stakeholder engagement and participation in the urban planning process using new tools, including promoting social inclusion; and incorporating or mainstreaming water into urban development planning. Within SWITCH a wide range of tools are being used to underpin the learning alliance process and the next sections illustrate three key methodologies: visioning to identify agreed long-term objectives with stakeholders, monitoring methods that focus on outcomes, and process documentation to encourage learning within project implementation.

VISIONING

Visioning, as used in SWITCH, is a methodology designed to aid a group of stakeholders to reach consensus on a shared and agreed vision of the status of a certain issue, in this case urban water management (Moriarty *et al*., 2005). Such a vision can, it is hoped, provide a common focus and target for strategies and plans aimed at managing and improving urban water management in a more integrated manner. In SWITCH, a visioning process has been initiated in several cities to try and develop a precise and shared description of how a group of stakeholders (the learning alliance) would like water resources and water services to be in their area of interest at some future time. The visioning methodology used is based on the EMPOWERS approach to strategic water management[4]. In this approach, water stakeholders are facilitated in working through a programme cycle that starts with the development of a shared vision, before giving rise to strategic plans, the implementation of activities and subsequent adaptation based on lessons learned.

Summary of 'visioning' methodology

A vision represents a desired situation at some agreed time in the future (e.g. in 10, 20 or 30 years) The gap between the current situation and the vision defines what stakeholders would like to achieve. It is important that a vision is not an unattainable wish list so targets and indicators are important. Planning should take account of trends in issues like water supply and demand, and of how potential risks and constraints might affect achievement of the vision. This trend analysis is undertaken through a scenario building exercise, where scenarios are understood as different possible future operating environments based on different possible outcomes of current trends (for example relating to climate change or energy costs and their impact on urban water management). Both visions and scenarios should be described using a mixture of narrative and numerical targets in a way that is unambiguous and not open to misinterpretation, as this may give rise to conflicts at some future date. In the context of integrated water resources management, it is important that the visioning process produces an output that is shared and owned, as far as possible, by all stakeholders (including the more marginalised). Successful integrated strategising (a strategy is a combination of activities aimed at achieving a vision) and planning is extremely difficult and often impossible if stakeholders have different visions of what they would like to achieve. Similarly it is important that there is consistency across visions created at different spatial scales. For example, a city level vision will be different to a vision that has been developed for a neighbourhood within that city. However, there has to be a mutual consistency and compatibility between the visions if conflicts are to be avoided.

Steps used in the adapted SWITCH visioning methodology include: 1) Reaching agreement on the boundaries to the area of interest and the timeframe; 2) Ensuring that all stakeholders are adequately

represented in the process. 3) Identifying the main issues that are to be included in the vision using a combination of techniques that include: problem tree analysis, brainstorming using cards or a check list provided by the facilitators; 4) Developing an outline vision for the area of interest over the agreed timeframe using a concise mixture of descriptive narrative and numerical targets. Stakeholders should be asked to use the acronym SMART (Specific, Measurable, Achievable, Realistic, Timebound) as a checklist of attributes of well-written visions; 5) Checking that the draft vision is consistent with visions at higher or lower spatial or administrative scales and government policy; and 6) Disseminating the vision widely to elicit comments and feedback. The vision can then be finalised by taking account of constructive comments. Within SWITCH it is intended that the initial visioning process leads into longer term strategic planning process involving more advanced scenario-building and strategising. After this stage it may well be necessary to re-visit the original visions to see whether or not they remain realistic within the agreed time horizon, and to revise them where necessary.

Visioning to create a positive process in Lodz, Poland

The Lodz SWITCH Learning Alliance has been in the process of establishment since March 2006, engaging initially the stakeholders with the most critical perceived roles in water management. Over time, additional important actors have been identified and involved. Stakeholders have started to trust the learning alliance and it has become seen as a safe, non-competitive, constructive environment providing both local and international opportunities for learning and sharing. In January 2008, the initial phases of learning alliance development (that included developing and training a facilitation team, developing a website and communication mechanisms and at least 3 major workshops on different urban water management research areas) culminated in a visioning workshop that was considered an important test for the learning alliance. The visioning workshop brought together over 50 participants representing about 25 organizations and institutions, including both decision-makers and their 'right hands'. Before the workshop, the higher decision-makers and executive levels in these organizations had not yet actively participated in the learning alliance. Realizing the seriousness of the workshop goals they seemed not to want to miss a chance to express their views and emphasize their commitment and involvement in the water management issues. A key success was constructive discussions and group activities, and there was evidence of a common willingness to contribute and seek specific changes, rather than to criticize and dwell in the past. This is a positive attitude shift that the SWITCH learning alliance has sought to encourage. The workshop methodology was considered interesting by the participants, who evaluated it as being innovative and helpful. The participants expressed pride Lodz that has a vision for better urban water management and that they contributed to establishing it. That vision is that by 2038 'Lodz Uses Its Water Wisely' and

> 'The city's resources management is based on an efficient and integrated system ensuring access to information for all. Investors and authorities respect ecological properties of land and water. Infrastructure serves the functions and requirements of an environmentally secure city, is reliable, meets the needs of all the city's population and assures good status of aquatic ecosystems. Green areas - river valleys along open corridors – provide space for recreation and are the 'green lungs' of Lodz. The population's common and in-depth ecological awareness contribute to exceptional quality of life. Our city is a leading centre for innovation, education and implementation in Poland.'

MONITORING MULTI-STAKEHOLDER PROCESSES

While any research project requires monitoring and evaluation (M&E) as part of its process - for reasons of accountability in the use of resources - projects undertaken within a framework of a multi-stakeholder process require multiple layers and types of M&E. Multi-stakeholder processes, such as Learning Alliances, have been promoted as means to achieve an improved research process. So it is necessary to have a way to track and judge whether the approach is fulfilling the goals and

activities intended. Since research embedded in multi-stakeholder processes is meant to increase and improve learning, M&E activities should also help to promote greater learning at all levels. M&E needs to be seen and carried out as a regular activity that allows learning to take place and enables lessons learnt to influence the direction of a program.

However, the types of M&E that are usually applied within research projects to assess activities, outputs, and outcomes are not always appropriate to such wider objectives. A broader focus than M&E of specific technologies developed by the research process, that also looks into the way in which the process (or learning alliance) facilitates demand-driven research, the flow of knowledge, linkages and coordination between stakeholders and their sectors, and opportunity and capacity for knowledge to be adopted and used, needs to deploy additional methods. The required behavioural changes within such processes necessitate different approaches than the traditional indicator-style method and since M&E in a multi-stakeholder process should also be a learning mechanism for all stakeholders, traditional M&E approaches that are not normally used in a participatory manner are not sufficient. Novel approaches or uses, as described below, do offer better opportunities for working with and understanding the dynamics of multiple actors and their behaviours but they often require more time, resources and varied skill sets to effectively carry them out. These are frequented underestimated.

Some possible 'M&E' methodologies for multi-stakeholder processes

Traditional M&E approaches, for example logframes commonly used in the urban water, water and sanitation, and water in agriculture sectors, are good at describing causal chains but usually strongly focus on technologies and outputs and lack an actor and outcomes focus. What the new paradigm in research recognizes is the central role of people and their attitudes and behaviours to the achievement of and success of programs. Against this background, some methodologies that SWITCH learning alliances have started to experiment with, adapt and apply include: *RAAKS* for analysing complex multi-stakeholder situations (Engel and Saolomon, 1997); Outcome mapping, to assess changes in the behaviours, relationships, actions or activities of the people, groups, and organisations with whom a programme works directly[5]; RAPID expert methodologies for ensuring the policy impact of research[6]; Impact Pathways analysis to describe how a project's outputs are developed with, and used by, others to achieve chains of outcomes that contribute to eventual impact on social, environmental or economic conditions[7]; and Most Significant Change to capture change stories (Davies and Dart, 2005). Scoring ladders or micro-scenarios are a flexible technique used to identify different levels of achievement of a mainly qualitative change that can be objectively assessed in a participatory way (Sijbesma and Postma, 2008; Butterworth and Da Silva, 2008). Key elements of this approach are that stakeholders choose the micro-scenario that most adequately reflects the situation, ordinal scoring options are benchmarked and peer-reviewed, and the reason for a specific score is recorded and analysed.

Progress in stakeholder engagement in research: assessment of papers from SWITCH scientific conferences

To assess the progress of SWITCH consortium partners in applying a new approach in their scientific method (learning alliances) scoring ladders were used to analyse papers and posters presented at the yearly SWITCH scientific meetings[8]. In the first two years of the project the main part of these meetings has involved presentation in a standard conference format of 17-25 papers[9]. Scientific papers and posters were assessed using a rating methodology (scoring ladders) described by Butterworth & Da Silva (2008) focusing on the way that the authors reported on stakeholder engagement. Papers were assessed against the following intended outcome: *Scientific papers presented at annual conferences deal explicitly with processes of stakeholder engagement in order to deliver research that meets stakeholder needs, innovations that are tested, and impacts that can*

be scaled up.

The analysis looked for indicators that included the mentioning of stakeholder priorities, discussing strategies and plans to engage stakeholders, analysing the role of the researcher in order to have impact, and presentation of other strategies for scaling up. Based upon a guiding scale, each paper was scored on a scale between 0 and 100. For example, 'The paper makes no explicit mention of stakeholder needs, links to learning alliance process or a strategy for scaling up uptake of the findings' results in a score of 0 and 'The paper presents a clear strategy for scaling up research findings, recognises the role of the researcher as a agent for change within that process, and acknowledges the need/ or does document this process' merits a perfect score of 100. The benchmark (scored 50) was that 'The paper is clearly based on a research theme that has been identified as a priority within learning alliance plans (and these are cited) and refers to activities to engage stakeholders at different stages in the research'.

At the first annual meeting in Birmingham, a low average score (12 out of 100) reflects the fact that the consortium had just commenced SWITCH research and in some cases researchers were presenting earlier research or mainly conceptual ideas. Funding for city learning alliances was actually only allocated by the project in early 2007 and these platforms only began to become established during that year as facilitators were recruited and trained. Hence, city learning alliances could not be expected to have had a major impact. Although only one indicator of 'integration' and new ways of working – some possible alternative or additional indicators might include non-researchers being included as co-authors or cited as contributors in papers - the low awareness (or rather limited documentation within these papers) of what research within a learning alliance might involve, except for one paper that stood out, was disappointing. Da Silva (2007) documented the attitudes of the consortium to working within a learning alliance approach through interviews at the meeting.

In Tel Aviv at the second meeting, the average score was 17 (out of 100). The majority of papers and posters (22 out of 35) still were rated with a zero score against the above objective. A total of 27 (out of 35) papers still did not meet the benchmark level, and only two exceeded that level. Most papers remained purely technical and did not yet take account of the SWITCH programme approach, stakeholder involvement, learning alliance principles or scaling up. However the limited improvement from the first meeting was encouraging. Partly this was no doubt encouraged by calling the meeting 'a scientific and integration meeting' and the fact that the conference announcement flagged issues relating to the learning alliances. During 2007, city learning alliances also started to function (including active involvement of researchers) and other activities to support the development of learning alliances received significant investment (training workshops, development of a series of guidelines based on briefing notes, and some limited coaching of facilitators). However, the later events generally involved only 'facilitators' and there was low involvement of consortium members that would identify themselves as 'scientists'. While overall it is closing, a gap between researchers and learning alliances persisted during 2007 (see Sutherland and Darteh, 2008 for a wider analysis and discussion based on interviews at this meeting) with some scientists viewing learning alliances as merely platforms to disseminate results rather than as an institution to be engaged at all stages in the research cycle.

PROCESS DOCUMENTATION

"Success is wonderful, but we learn the most from adversity and failure. That which makes us uncomfortable or is controversial gives us clues about how to be successful in a much deeper way. (Annie E. Casey Foundation, 2003)"

Process documentation is a tool that helps project staff and stakeholders to carefully track

meaningful events in their project, 'in order to discern more accurately what is happening, how it is happening and why it may be happening.' (Annie E. Casey Foundation, 2003). Process documentation is a systematic way to reflect, analyse and discover patterns that help or hinder change.

Summary of 'process documentation' methodology

Process documentation systematically looks beyond a project: at context, history, and traditions (Schouten, 2007). It does not only look at what is going on during the limited life time of a project and within its spatial and institutional boundaries. It looks beyond to the 'real world' that the project aims to change, into history, culture and patterns of power and decision making. Process documentation also acknowledges the importance of tacit knowledge of project participants and the need to find ways to capture this, that processes are situated in particular organisational contexts, and that documentation can be resource intensive (Ungen, 2006). Process documentation is important for projects with social or political objectives such as empowerment, stakeholder cooperation, and integration since these projects have the ambition to change traditional patterns, attitudes, relationships, approaches and ways of thinking. They should therefore try to understand the context and background of these attitudes, relationships and approaches. As a tool it is used to described the context of a project and explore progress towards project objectives. Process documentation captures the process, and organises, analyses and disseminates the findings. It involves: 1) a structured, focused way of capturing the change process that a project aims to bring about e.g. activities, interactions between stakeholders, issues and contextual factors; 2) organising information in such a way that stakeholders have an opportunity to reflect and learn about the process; 3) analysing information by looking at common themes, trends and patterns and placing the findings in the context of the project and the project's theory of change; and 4) disseminating the information quickly enough to be most useful (Annie E. Casey Foundation, 2003).

Process documentation needs to be based on a theory of change that gives it direction and focus. What is it exactly that you want to observe? What is important, and what is less important? The theory provides the window through which to observe and analyse the process. All projects have a theory of change. In most projects (like SWITCH) they are only implicit, but others, in particular projects related to social change, will have explicit theories. The theory could be that empowerment will improve access of poor people to water or that concerted action of all stakeholders will result in more sustainable and more effective solutions to water problems. Acknowledging the importance of a change theory and making this theory explicit also allows the stakeholders to participate in discussions on the basic assumptions of the project. Process documentation tools may include: semi-structured interviews with individuals, focus group discussions, minutes and observation of meetings (formal and informal), documentation of anecdotes, jokes, stereotypes of attitude (the stories told), analysis of project outputs, journals and diaries (of project team members and/or stakeholders), photography and video, and storytelling such as the Most Significant Change method (Davies and Dart, 2005). The semi-structured interview has to date been most widely used to document changes in how researchers involved in SWITCH perceive their learning alliances.

Looking inside the SWITCH consortium

The attitudes of the SWITCH consortium to the learning alliance way of doing research was investigated through interviews at the annual scientific meetings held in Birmingham in January 2007 and Tel Aviv in November 2007 (Da Silva, 2007; Sutherland and Darteh, 2008). Four questions were asked: 1) how do you see learning alliances operating in the SWITCH project (their objectives, functions, membership, and costs and benefits)? 2) how have you been involved in learning alliances in specific cities? 3) what do you see as the main challenges in developing learning alliances in the cities? and 4) are there other ways of scaling up research and reaching implementers and policy makers? The comments from a cross-section of researchers and other

participants at the second meeting in Tel Aviv clearly indicated that the concept of city learning alliances has not only gained broad acceptance, but also is seen as playing an important strategic role within SWITCH at city level. At the same time, there is clearly room for significant improvements and developments, particularly with respect to communication, sharing of information and resources, capacity strengthening and further serious exploration of collaborative activities that span the traditional gap between research and implementation in the water sector of SWITCH cities. A number of researchers demonstrated a sense of realism about the performance of learning alliances 6-9 months into their initiation, both in relation to the sequencing of SWITCH activities, and the socio-political context for learning and innovation. Many researchers were clear that without a learning alliance it would be very difficult to engage the important players within a city with a view to getting their research into practice. In a few cases it was acknowledged that the design of the project implied learning alliances could not play a strong role in formulating research priorities, because the learning alliance was established after research activities had been defined and initiated. In other cities it was acknowledged that the idea of a learning alliance might be problematic because political and professional cultures might not be congruent with the norms underpinning the learning alliance concept. In such cities it may be unrealistic to expect strong influence through horizontal linkages between agencies, collaborative learning, a strong link between research, learning and policy, and strong city governance of water related issues.

MATRIX MANAGEMENT

Research projects in fields like urban water management are typically (especially those supported by the EC) organised into a series of thematic lines or work packages. In the case of SWITCH these are mainly disciplinary areas or part of the urban water cycle e.g. storm-water, water supply, sanitation etc. Such a structure makes it hard to undertake effective coordination or cross-cutting activity (e.g. research on the whole urban water cycle in Accra for example). In the case of urban water management, the different areas can only logically be integrated within a city context where synergies, conflicts or trade-offs will become apparent in working towards an overall goal of more integrated urban water management (for more efficiency, sustainability, equity across the whole system rather than within individual components). It is here that the real potential learning and opportunities, as well as costs in terms of effort, lie. In demand-led research there is the added complication of a need for some mechanism to balance the needs of the users of that research (in the case of SWITCH these are key members of the learning alliance) and research providers (in this case universities and research institutes within the SWITCH consortium, but who are also members and sometimes key champions of the learning alliances). Matrix management has a mixed history in business, since it is complex, hard to maintain and managers have to serve different objectives making it hard to lead. Here we review its limited application within the SWITCH project to date.

Experience with matrix management in SWITCH

The SWITCH project includes three main bodies that aim to provide coordination or management across the largely thematic or disciplinary work packages (the 23 work packages are grouped themselves into 6 themes)[10]. These bodies are: a scientific committee composed of senior scientists responsible for scientific management and to “ensure that the necessary integration of research, interaction and communication between participants in the different themes, sub-themes, demonstration cities and ... are satisfactory for achieving the project objectives”; a demonstration committee with responsibility for demonstrations (pilots) made up of city coordinators who are the most senior representatives of the main research institution in that city (or country); and a Dissemination and Exploitation Committee with responsibility for the management of knowledge. Work package and theme leaders are allocated some paid management time within the project. No management time is allocated for engagement in the other management structures. The main routine

decision-making body (and where effective power lies) is a management team which is composed of the theme leaders (senior researchers) that represent the main research lines. There are representatives of the other parts of the matrix (e.g. the demonstration and dissemination committee chair and scientific committee chair) but these are also senior researchers not located within the cities and they do not represent research users within the consortium or the cities where it focuses (i.e. municipalities or learning alliance representatives).

The resulting outcome of this model is that cities and learning alliances are relatively weakly represented. An attempt to manage the project on the basis of a matrix that engages researchers and cities is heavily tilted in the favour of the former. Cities have no legitimate voice or formal say over research priorities, signing off of work plans, or fund allocation within the project and very little influence. A particular concern is that city coordinators represent a city (although they are not always resident there or working within a city based institution) while at the same time being a member (usually the head) of one of the main research providers in that country. This creates a potential conflict of interest particularly since the city coordinator position is voluntary (in many cases the city coordinator is not even paid for their research time since many partners are so called additional cost partners within the EC rules where permanent staff costs are not remunerated through a project). There are obvious incentives for the city coordinator to represent the otherwise legitimate interests and capabilities of that research provider. This structure puts city coordinators in a very difficult position and is very unlikely to lead to learning alliances effectively securing demand-led research.

Learning alliance facilitators should play a brokering role between various interests in a city including both research users (e.g. municipalities or companies providing water services) and researcher providers but also developers, planners, financiers, policy-makers, citizen's representatives etc. They should be the nodes in a matrix management system balancing researchers and cities as research users and ensuring that service providers, such as researchers, provide the services required by the learning alliance. This role is made more difficult when facilitators are engaged (for practical reasons of expediency) through the main research provider as is the case in SWITCH. Furthermore, these organisations typically have little experience of the partnership building and learning tasks involved and are prone to underestimate the scale of the task and level (in time and seniority) of human resources needed. These organisations themselves were in fact selected in SWITCH on their ability to do research, rather than ability to facilitate multi-stakeholder partnerships. Problems have also been experienced where the municipality tries to take the facilitation role. Ideally there should be a facilitator in a multi-stakeholder research process that is independent e.g. a respected consultant, someone attached to a research organisation that is not a main research provider, or from a credible NGO.

CONCLUSIONS AND RECOMMENDATIONS: CAN SWITCH LEAD TO A LEARNING SECTOR IN ITS CITIES?

SWITCH has piloted application of a number of innovative methodologies to seek integrated and sustainable improvements in urban water management by doing science better. Mid-way into this ambitious project, experiences using the methods presented, lead to some preliminary conclusions and recommendations that can inform the implementation of the remainder of the project and similar initiatives. Arguably, there is not yet sufficient consensus on whether the SWITCH project is about new research or creating a learning sector within these cities through the learning alliance approach (the underlying theory of change for the project is contested). The allocation of resources and decision-making power within the consortium still suggests the former is dominant. It is understandable how the paradox persists of strong spoken and commitment on paper to a learning

alliance approach that translates into weak actually support and financing for the approach in practice. The nature of the research project development process itself is far from ideal for such multi-stakeholder driven and demand-led research. Unfunded proposal development processes (or more correctly, self-funded proposal development processes where the strongest institutions can invest more) do not lend themselves to a participatory process in project design especially involving multiple types of stakeholders and developing countries. Furthermore, research funding generally targets the outputs (new research) rather than the process and its outcomes (e.g. stronger communication, capacity building and institutional reform through a learning alliance) that is needed to underpin a strong innovation system. Ideally the objective of SWITCH would have been the transformation of cities and the urban water sector to learning and innovating systems, but this might not have been funded? The implications of a learning alliance approach to research do require project design, planning and phasing to be done differently. This needs to address issues such as partner selection and allocation of resources with a process and outcomes in mind and including more encouragement and support for scientists to develop and use new skills. In SWITCH it would arguably also have better to avoid thematic or disciplinary focused work packages and to build a stronger matrix management model.

Unfortunately, multi-stakeholder research processes are also expensive. Costs of change are high and frequently underestimated. While many partners will readily contribute inputs in kind and their own time, the initial facilitation, training and capacity building inputs needed are considerable. SWITCH has illustrated the difficulties of securing additional funding for such 'software elements' in research. For a variety of reasons city learning alliances have been allocated small and uncertain budgets for short periods (e.g. 18 months) and learning alliance platforms at other levels have not attracted any coherent investments. Reasons include the uncertainties of stakeholder-driven approaches for research institutes and the potential squeeze on budgets (for 'traditional' research activities) when funds are put into learning alliance type activities[11], resistance to change and the momentum of business-as-usual in sector organisations, as well as the weak involvement of cities and non-research providers within management. Within SWITCH, one impact of the high costs of learning alliances has been to focus on the city level. While this is a good entry point, the neglect of learning alliance platforms at other levels (e.g. the national level to influence policy) and the global or consortium level is likely to undermine potential wider impact.

Any demand-led research process needs to balance the sometimes conflicting interests of research providers and users. The rules of the game for allocation of project resources need to clear together with the role of individuals or agencies engaged in decision-making. Within SWITCH there has not been a clear process yet where learning alliances could veto or challenge particular pieces of research as not being demand driven or high priority, nor influence allocation of resources towards other more important research activities. Better M&E and process documentation that builds on tested methods for monitoring and demonstrating impact of multi-stakeholder processes are probably two of the most promising approaches towards more constructive dialogue and engagement with learning alliances. However, these components are themselves very difficult to get funded or to convince researchers to focus on. Within SWITCH they have attracted limited funding or effort to date. Innovative uses of M&E and process documentation need to be promoted as important activities for all researchers, and more value attached to the different types of outputs (although research papers like this one should not be excluded) and learning that they will generate.

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NOTES

[1] See project website at www.switchurbanwater.eu for more information about the SWITCH project.
[2] Accra, Alexandria, Beijing, Belo Horizonte, Birmingham, Cali, Chongqing, Hamburg, Lima, Lodz, Tel Aviv and Zaragoza.
[3] See www.switchurbanwater.eu/learningalliances for resources specifically developed to support SWITCH learning alliances. SWITCH learning alliances have to date focused on city level platforms.
[4] For more information about the Empowers project see www.empowers.info.
[5] See the outcome mapping learning community at www.outcomemapping.ca for a range of resources.
[6] For more information on RAPID policy impact tools see www.odi.org.uk/RAPID/
[7] Resources on the impact pathways approach are available at http://boru.pbwiki.com/
[8] The same approach has been used to developed a small set of common indicators across cities in order to help monitor outcomes (Butterworth and Da Silva, 2008).
[9] The first annual meeting in Birmingham was held in January 2007 at the end of the first project year. 17 papers were presented with further presentations. The second meeting in Tel Aviv in November 2007 involved 25 papers and 10 posters.
[10] There is also an overarching General Assembly representing all the consortium members (mainly research providers) and a Central Management Unit.

[11] Within SWITCH, learning alliances have had to compete for funds from a finite budget with thematic workpackages. Due to underfunding of the learning alliances in the original project design (with no funds for city learning alliances to operate e.g. for facilitators) this has been time-consuming and conflictive.