

A KNOWLEDGE-BASED APPROACH TO EVIDENCE-BASED PUBLIC POLICY WORK: THE CASE OF SUSTAINABLE DEVELOPMENT AND CLIMATE CHANGE POLICY IN ASIA

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Abstract

Governments tackle ‘wicked problems’ through the development and implementation of policy. Such policy work is challenging as it is conducted in a complex environment of diverse stakeholders who have competing and often contradictory agendas. Such work can be described as “evidence based” when the best available political, scientific and practical knowledge is used in support of policy. A further challenge for policy work is the volume of information and data generated by research and project activity coupled with new, emerging and advanced technologies. The complexity of policy work is compounded in developing countries in terms of their limited resources, capabilities and infrastructure.

There is a growing interest in the IS community in environmental sustainability and development, but there are significant gaps in the literature. The current IS literature on sustainable practices is focussed on the business and corporate context. Taking this further, IS does not engage extensively with evidence-based policy that integrates multiple organisations, institutions, agencies and projects and incorporates both scientific and indigenous and local knowledge. This raises the important question as to whether the ‘fragmented adhocracy’ of IS includes relevant theoretical principles and apparatus to address the ‘wicked problems’ posed by both sustainable development and evidence-based policy work.

To address this challenge we develop and explore an action-oriented knowledge management framework to build the relational and informational capability for evidence-based policy work for sustainable development in developing countries. Our research is based on the principles of engaged scholarship. Our interventions are geared at building robust collaborative processes that involve local agency staff, field workers and university-based researchers who are conducting projects and research that address key concerns of policy makers in the area of sustainable development and natural resource management. These interventions involve training and mentoring that is designed to build capability to engage and support policy work.

The task-based knowledge management framework, as an instantiation of IS, addresses the practical role of IS to support effective collaborations within an environment of diverse stakeholders with conflicting interests, agendas and motivations. Our knowledge based approach also provides an opportunity to establish the theoretical principles supporting such collaborations and to extend current IS theory to support IS-solutions that require the integration of societal level information and knowledge flows with project level information resources.

Keywords: Task-based knowledge management, knowledge-based approach, evidence-based policy work, collaboration, sustainable development

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1 INTRODUCTION

[Identify the research gap and your research purposes. Justify why they are important to our community.]

This paper takes a knowledge-based perspective on the information challenges of evidence-based public policy work in developing countries. This context provides a rich environment to explore the challenges for information systems (IS) design in support of multi-agency operations in developing and implementing complex public policy. We adopt Burstein and Linger's (2003, 2011) task-based knowledge management (TbKM) approach to the domain of sustainable development (Jones et al 2012). By doing this, the study presents an innovative perspective on IS development and design to address the complexity of environmental sustainability resource management and policy making.

The approach developed and explored in this paper is an action-oriented framework aimed specifically at building capability for evidence-based public policy work in order to address the challenges of a complex policy environment. By 'public policy work' (or simply 'policy work') we mean the development and implementation of government policy. By describing such work as "evidence-based" we refer to the process of utilising the best available political, scientific and practical knowledge as an evidential base to support policy work (Head 2008).

We explore the applicability of our framework in specific cases of policy work for sustainable economic development, natural resource management and the response to climate change in developing countries in south-east Asia. We draw our data from a series of capability building programs in which our multi-disciplinary research team is engaged with research and public sector organisations in Indonesia and Vietnam.

In these contexts authorities and agencies are grappling with a growing volume of information and data. This is driven by new, emerging and advanced technologies as well as investment in research activities, including the government's own initiatives, international collaborations, foreign aid programs and NGO activities. These activities contribute significant new information and knowledge in the form of published reports, workshop proceedings, new data sets and considerable expert knowledge. They also acknowledge and reveal locally-based research outputs focusing on indigenous ecological knowledge and traditional wisdom as a means to identifying sustainable pathways to economic development.

However, in these cases it seems apparent that the local IS infrastructure has not reached sufficient maturity (in the sense of Schwartz & Tauber (2009)) to mobilise the available information resources for implementing an effective, evidence-based national policy for sustainable development for local communities. In addition, significant impediments to exploiting these resources are the multiple parties with actual and potentially conflicting interests, agendas and motivations and their proprietary control over their own information resources.

In this paper we focus on the role of IS in supporting collaboration between these diverse parties to develop a shared understanding of the policy issues and to develop appropriate policy responses. Such

collaboration underpins complex social as well as the technical processes to bring the parties together to enable the information resources to be used cooperatively.

In doing so we endeavour to demonstrate that IS, as instantiated in our TbKM approach, can play a key role in unravelling the complexities involved in policy work and addressing the significant and diverse sustainability challenges facing developing nations such as Indonesia and Vietnam. We also present a different perspective on IS to the challenges of environmental sustainability as our work is concerned with a dual agenda (think global act local) and a scale ((inter)national policy) not usually addressed by IS. As such, our research should inform and engage diverse interests as it demonstrates the broader applicability of IS theory in the area of environmental sustainability.

2 LITERATURE REVIEW

[Discuss the extant papers and how your study is different from them. Summarize what has been already established about the core concepts. Explain why research to date cannot fulfill your research goal.]

There is a growing body of IS literature looking at issues of sustainability and sustainable development. This literature is generally focused on single organisational contexts and on “Green-IT” issues such as IT-related environmental impacts and carbon emissions or on business transformation for sustainable practices. For example recent work by Melville (2010), Watson et al (2010), and Watson et al (2012) is very much along these lines, addressing issues mainly of relevance to IT professionals within corporate and institutional settings. Elliot (2011) is broader in scope, addressing the challenge of environmental sustainability at multiple levels (individual, organisational, societal, and governmental) and within business, research and technology settings. However when discussing specific applications of his trans-disciplinary framework Elliot focuses mainly on groups and individuals within a single organisational context and on issues such as corporate sustainability and sustainability-oriented business transformation.

Thus, despite the growing interest in environmental sustainability within IS research, the current range of published work does not tend to extend far beyond the business and corporate context and does not deal in detail with issues that cross beyond single organisational boundaries. In particular the current literature does not engage sufficiently with the information challenges involved in complex tasks such as developing and implementing evidence-based policy in context involving multiple organisations, institutions and agencies.

Similarly, although there is a growing body of research looking at ICT for development (ICT4D) such as Steyn et al (2010) and Steyn et al (2011), and a growing interest in Knowledge Management (KM) for environmental management (Paquette 2011) and international development more broadly (e.g. the KM4Dev community <http://www.km4dev.org/>), there is a gap in the corresponding output from the IS research community on IS perspective on international development, natural resource management and the response to climate change.

Despite this gap in the current IS literature our approach draws on a range of sources from both within the IS and KM fields and from other relevant disciplines. We engage critically with the broad IS discipline as our research is focussed simultaneously on a national/societal level as well as a local/group level that encompasses diverse parties. This is different from the familiar (inter)organisational focus of IS as our work is concerned with a dual agenda (think global act local) and a scale ((inter)national policy) not usually addressed by IS.

We approach sustainable development from a knowledge-based view (Grant 2002) that focuses on relations and information exchanges and is informed by a social action perspective (Hirschheim et al. 1996). We argue that adopting a knowledge-based view, as described by Grant (2002), Spender (1996) and Eisenhardt and Santos (2002), enables a better grounding for appropriate IS design, to deal with the complex information and knowledge requirements of environmental policy makers and IS deployment through a combination of social and technical processes. Our exploration of IS is also contextualised by theoretical apparatus derived from relevant disciplines, particularly international development studies (Jones et al 2012), which explicitly focus on the issues of collaboration within a complex, multi-stakeholder context where competitive advantage is not primarily the main driver.

3 RESEARCH FRAMEWORK

[Present your research framework or model and describe its components or constructs.]

This paper adopts and builds on the knowledge management framework for supporting policy work presented in Linger et al (2013). For this framework we adopt a practice-based approach to KM known as task-based knowledge management (TbKM) (Burstein and Linger 2011). This TbKM approach is founded on a knowledge architecture that maps out the *structural* and *functional* dimensions of complex knowledge work tasks (Figure 1).

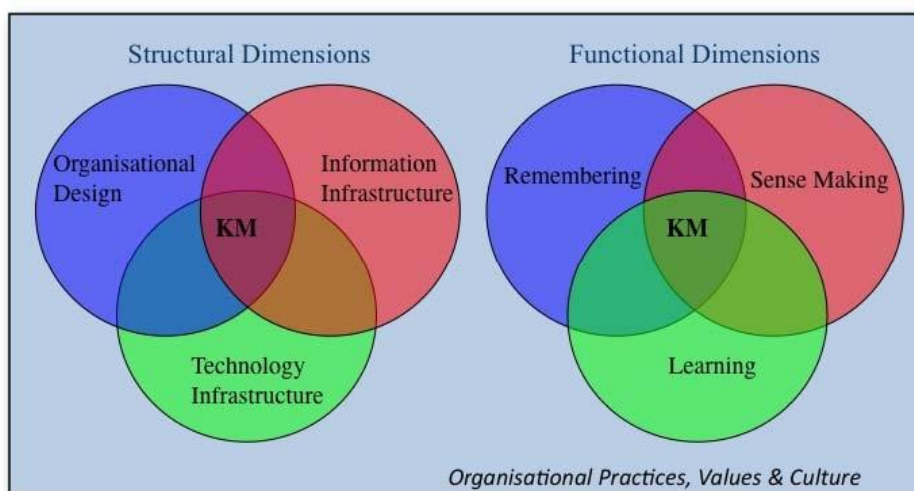


Figure 1. Architecture for Implementing Task-based Knowledge Management

The TbKM approach is designed to support policy work by addressing both the *structural* and *functional* dimensions of policy-making tasks and by integrating different forms of knowledge, including traditional wisdom, across multiple levels of activity and decision making. It also operates across multiple levels of activity, linking capability at the executive level with collaboration at the group level, which is translated into action at the individual level (Figure 2). As such this approach is well suited to addressing the challenges facing developing countries, in particular, in implementing an effective sustainable development agenda.

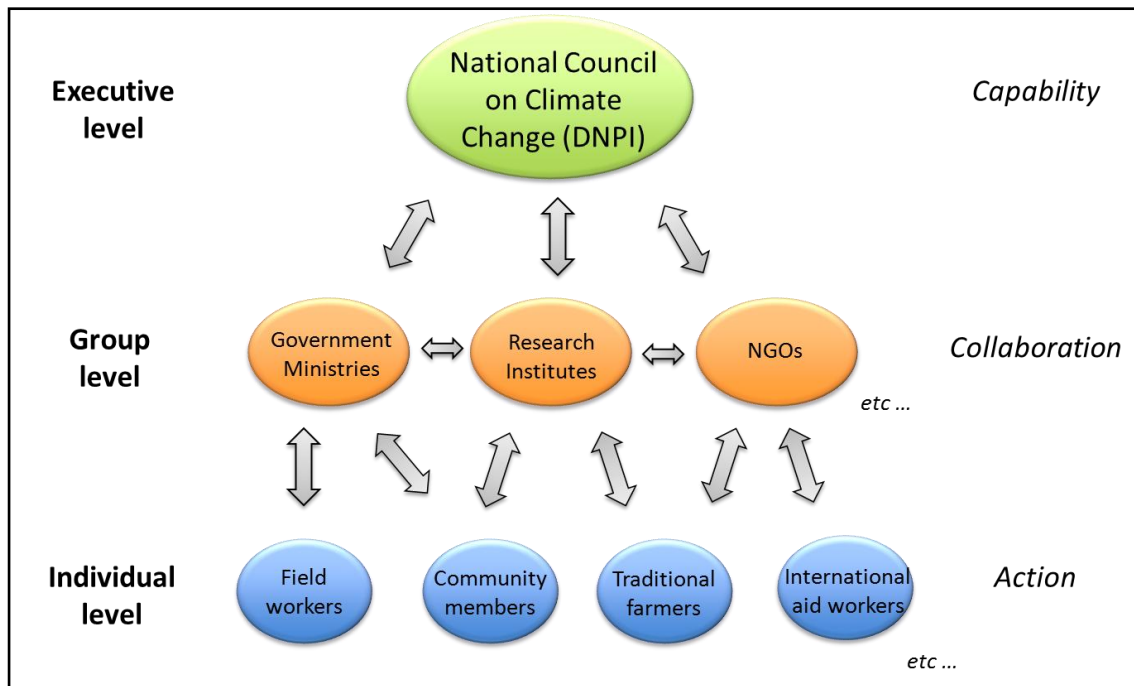


Figure 2. Application of knowledge management across three levels of activity

Our research is contextualised in our involvement in capacity building programs in Indonesia (AusAID 2011) and Vietnam. These programs involve the extended engagement of a multi-disciplinary team from the Monash Sustainability Institute (MSI) with partner organisations in these countries. They include direct interventions to facilitate the development of policy-oriented capability of local agency staff, field workers and university researchers (as discussed in section 4 below). Hence this paper is an example of multi-disciplinary study of the real-world project leading to testing and developing extant theory and proposal of “theory-in-use”.

These case studies of sustainable development policy work provide an opportunity to explore IS in a ‘vertical’ space across different levels of activity, bridging from policy development down through program design all the way down to on-ground implementation. They also allow us to explore the application of IS extending outward beyond and across organisational boundaries.

4 RESEARCH METHOD

[Discuss how you will collect the data and verify the framework/model.]

We apply a method of engaged scholarship (Van de Ven, 2007) involving direct interventions with local agency staff, field workers and university-based researchers designed to build capability to support evidence-based policy work for sustainable development.

Our interventions include participation in workshops, training and capacity building exercises, as well as participation in collaborative research projects with locally-based researchers. These interventions are designed with two main outcomes in mind. Firstly they are designed to provide a means of exploring and testing the TbKM knowledge architecture across each level of activity by utilising the expertise of participants working within those contexts, both to draw out the specific elements of the knowledge architecture in each instance and to serve as a test of the applicability of the TbKM framework itself. Secondly, the interventions are designed to facilitate the development of local capability in three interrelated ways:

- introduction of the knowledge-based view, and operationalizing it as knowledge management principles and processes, to provide a grounded approach to building the capability required for implementation of evidence-based national sustainable development policy.
- facilitating the development of a collective understanding of existing but diverse activities and resources (informational and technical) relevant to the national policy of sustainable development.
- mentoring, individually and collectively, relevant parties in their efforts to develop and implement programs that address the national policy of sustainable development.

Our interventions are geared at building robust collaborative processes within and between the relevant parties. For example, the training and mentoring is designed to build capability within the research community to engage in effective policy-relevant research that addresses the key concerns of policy makers. The capability building exercises are also designed, for example, to facilitate the incorporation of local ecological knowledge and traditional wisdom as a means to identifying sustainable pathways to local economic development.

Our research is evaluated in terms of both its theoretical and practical significance. We demonstrate the value of the proposed theoretical approach, which asserts the importance of adopting a knowledge-based view, by showing how our TbKM framework has been applied to ground the design of our interventions. We evaluate the practical outcomes of our approach in terms of the effectiveness of our interventions in facilitating collaboration leading to improvements in the way the policy work is conducted. This includes the development of more effective communication and cooperation between parties, the development of a shared understanding of the issues, and progress towards the identification of integrated solutions to policy challenges in specific locations. Our interventions are evaluated in qualitative terms, by documenting perceived progress by the parties towards improved

collaborative (e.g. agreements for data sharing and integration). They are also evaluated quantitatively, where relevant data is available, by measuring the increase in policy-relevant collaborative research and in terms of successful implementation of on-ground projects.

5 EXPECTED CONTRIBUTION

[Describe your expected contributions to theory and practice.]

In this paper we focus on the role of IS in supporting the forms of collaboration required for the development of evidence-based policy to address the challenges of environmental sustainability, natural resource management and climate change in the context of developing countries. We demonstrate the effectiveness of adopting a knowledge-based view that accounts for the information resources and their deployment through a combination of social and technical processes. We propose a knowledge management framework which addresses the complex social processes required to bring the parties together as well as the technical processes to enable the information resources to be used cooperatively.

The expected contributions of this study to the IS discipline concern both practice and theory.

Our contribution to practice is in demonstrating that the application of the proposed knowledge management framework can lead to robust and effective collaboration amongst multiple parties with actual and potentially conflicting interests, agendas and motivations. Our research engages directly with issues concerning drivers of IS-enabled change and the applicability of IS solutions in the context of sustainable development in major developing countries. We demonstrate that the key drivers of change require an effective approach to collaboration, and that the knowledge-based view provides a sound basis for developing such an approach. In doing so we show how our approach can address the technical challenges posed by policy development and implementation for sustainable development, particularly regarding data and information sharing and the development of a shared understanding of the issues in order to identify integrated solutions.

Our contribution to theory centres on the significance of adopting a knowledge-based view for integrating national/societal level of information and knowledge flows with local/project level information resources in working towards policies for sustainable development. The significance of our contributions lies in establishing theoretical principals for supporting collaboration between diverse parties, required to address the challenges posed by policy work for sustainable development, by combining social and informational relationship within a knowledge management framework. Our research addresses the extent to which current IS theory is able support IS-solutions for sustainable practices and how gaps between current IS-theory and IS-solutions can be addressed.

We explore the IS implication of our research, by addressing three aspects:

- *Theory in practice* – operationalize the knowledge-based view by interpreting the task-based knowledge management approach (Burstein & Linger 2011) to appropriately address policy

work for sustainable development and the global response to climate change

- *Theory for practice* – exploring the relevance of knowledge-based view to the challenges posed by sustainable development and the extension to the theory so as to be applicable beyond the organisational boundary.
- *Theory about practice* – using Hirschheim *et al* (1996) social action theoretical framework to examining the “fragmented adhocracy” of IS and its utility for understanding the contribution of IS for the implementation of national policy of sustainable development.

We argue that IS theory is generally well equipped methodologically to deal with the challenges of policy work for sustainable development, particularly when one adopts a knowledge-based view. However we also show how IS can benefit from incorporating insights from relevant disciplines such as development studies, which have not previously been integrated into IS approaches. Additionally, we provide a sound case for the benefits of IS researchers having the capacity to work in a multi-disciplinary team, particularly when engaged to tackle ‘wicked problems’ such as the challenges posed by sustainable development. The success of our engagement with partner organisations in Indonesia and Vietnam can be attributed to the multiple interventions of our multi-disciplinary team, which operationalize the knowledge-based view.

Finally, our research looks at the extent to which current IS research methods can be utilized to encourage more environmentally responsible behaviours. Our work provides a clear exemplar of the application of engaged scholarship to build shared understanding, facilitate collaboration and identify integrated solutions to the major environmental challenges. It makes an impact by reflecting on the limitations of existing practices in setting up sustainable environmental solutions and suggests an innovative perspective by revealing the emergent role of information and knowledge management in overcoming these limitations.

6 CURRENT PROGRESS

[Describe the current state of the research project.]

We (the authors) are currently engaged in running a series of ongoing capability building programs with partner organisations in south-east Asia as part of a multi-disciplinary team based out of the Monash Sustainability Institute at Monash University. Although our involvement in these programs more generally will continue for the foreseeable future, our research for the purposes of this paper is nearing completion with our current knowledge sector development programs with research and public sector organisations in Indonesia and Vietnam due to wrap up by the end of 2013. For these programs we have conducted two capability building programs over 8-10 weeks in Australia with prominent research fellows from Indonesia and Vietnam respectively. We have also conducted a series of shorter training programs and workshops with public sector personnel and field staff from both those countries, both in Australia and in their home countries. Through all these programs we

have applied and tested our research framework, compiling relevant data and information on each program as we go. Initial analysis suggests that our study is supported by a sound theoretical framework and that the effectiveness of our approach has strong empirical support.

However we are still in the process of bringing all of this information together for an overall cross-program analysis of work completed to date, and still have a number of important workshops to complete before we can conclude this research. In particular, we are currently working with public sector personnel from key Ministries in Vietnam on the development of a Knowledge Management framework for climate change action. This is a clear example of the type of evidence based policy-work our TbKM approach is designed to support. We are basing our interactions and design explicitly on insights derived from our TbKM approach, to be tested when we convene with the relevant parties later in 2013.

Finally, we acknowledge that our study suffers from a few limitations. In particular, the scope of our current engagement with partner organisations in Indonesia and Vietnam limits the length of this study to a relatively short term (no more than 3 years). However further engagement is required to determine longer term effectiveness of our approach, particularly in terms of how it leads to successful policy development and on-ground outcomes. Our study has also been challenged at times by social, cultural and political issues, which have in some cases restricted our ability to engage openly with partner organisations. This, however, has not been a major impediment to our study – indeed, these social and cultural barriers raise precisely the sorts of issues our approach is designed to explore and address.

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