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THE ROLE OF INTERNATIONAL POLICY TRANSFER WITHIN THE MULTIPLE STREAMS APPROACH: THE CASE OF SMART ELECTRICITY METERING IN AUSTRALIA

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This article draws on Kingdon's Multiple Streams Approach (MSA) to consider international, not just domestic, flows of policy. It is argued that using the MSA in conjunction with international policy transfer and mobility theories allows for a fuller explanation of the development of smart electricity metering policy in Australia. The MSA is based originally on empirical research within a single country – the USA – in the late 1970s, and all three of the 'streams' identified as important to policy change – problems, politics and policy – are conceptualized as domestic. While recent scholarship has broadened the application of the MSA beyond nation state boundaries, it is argued that there is scope to further develop such ideas. In particular, the notion of policy mobility is introduced to capture issues about the globalization of policy, the role of non-state actors and the material substance of policy.

INTRODUCTION

In the decades since the late 1970s and 1980s when the Multiple Streams Approach (MSA) was first developed by Kingdon (1984), a trend of increased international transfer of policy has been observed (Marsh and Sharman 2009; Peck and Theodore 2010; Benson and Jordan 2011; Stone 2012). The overall objective of the article is to consider the value of further integrating ideas from scholarship on the international movement of policy with the MSA, building on the work of Bache (2013; Bache and Reardon 2013) and Cairney (2009, 2012) among others. The MSA was originally developed in order to explain domestic policy agenda-setting in conditions of high ambiguity (Kingdon 1984; Zahariadis 2014; Jones *et al.* 2015; Cairney and Jones 2016). With a now well-documented trend towards the more rapid global circulation of policy ideas and best practice programmes (Marsh and Sharman 2009; Peck and Theodore 2010; Benson and Jordan 2011; Stone 2012), alongside greater consideration of multi-level governance (see for example Hooghe and Marks 2003; Betsill and Bulkeley 2006), there has been a shift in MSA scholarship to consider other spatial scales of policy making (Jones *et al.* 2015). Bache and Reardon, for instance, have focused on the international sphere, and have considered the value of marrying concepts from international policy transfer and diffusion with the MSA, acknowledging how:

> Kingdon's analysis does not discuss the importance of transnational policy communities through which ideas are floated around and developed. This may be a consequence of time (1980s) and space (US) in relation to Kingdon's initial study or perhaps to his case studies (health and transportation), all of which would point to largely domestic policy communities. *But since his initial study, policy communities in many policy areas have become more transnational.* (Bache and Reardon 2013, p. 907, emphasis added)

The article builds on these existing contributions in a number of ways. First, the core aim is to further develop the MSA so that it better encapsulates the international dimensions of policy, by drawing not only on policy transfer theory but also a set of related ideas

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from geography and urban studies termed 'policy mobility'. Policy mobility scholars are interested in questions of how and why policies are made outside the formal spaces and organizations of government, and the increased pace of international circulation of policies (termed 'fast policy') (Peck and Theodore 2010; McCann and Ward 2012). A core notion underpinning policy mobility is that of assemblage – the idea that policy networks are socio-technical in character, i.e. the material substance of policies (technologies, buildings, and other physical infrastructure) are seen as integral elements of the policy process. Thus, three more specific aims of the article are: first, to build on the MSA notion of the technical feasibility of policies to consider issues of materiality and the substance of policy using the notion of assemblage; second, to evaluate the effect of continual ongoing circulations of international policy programmes and ideas on domestic decision making; and, third, to explore the role of international non-state actors within the policy stream.

These issues are examined using the empirical case of the development of smart electricity metering policy in Australia. The aim of the case study is hypothesis genera- tion (see Lijphart 1971), i.e. using this relatively new sphere of policy activity as a case to develop theoretical extensions to the MSA. Smart meters are a new type of digital communications-enabled electricity meter that produce detailed, fine-grained data on energy use. Data can be transmitted to electronic devices within the home or business that display consumption in real-time. Smart electricity meters are a relatively new technology that is still in the process of being refined and further developed. In Australia smart metering policy first emerged in the mid-2000s: a policy from the Council of Australian Governments (COAG) Energy Council requested the mandatory installation of smart meters to all businesses and homes in Australia's National Electricity Market (COAG 2007). But over time a less stringent and more open-ended policy of voluntary, competitive 'market-led' installation has instead emerged (AEMC 2012, 2015). The analysis in this article demonstrates how Australia's initial adoption of a smart metering policy and its subsequent changes can best be understood with reference to not only the domestic but also the international policy arena.

The article is based on primary empirical analysis of Australian smart electricity meter- ing policy including: 25 expert interviews across Australian government (state and fed- eral), utility and metering companies, industry bodies, nongovernmental and standards organizations; attendance at several specialist meetings and workshops; and an extensive policy literature review of over 50 documents and websites – undertaken during 2015. The article proceeds as follows. First, MSA and international policy transfer and mobility schol- arship are reviewed and their complementarities explored. Second, in the main empirical section an assessment of the development of smart metering policy in Australia is pro- vided, and the influence of international policy on the domestic policy making process is outlined. Third, in the conclusion and discussion, the implications of the case study findings for conceptualization of the policy stream within the MSA are evaluated, and a number of theoretical extensions to the MSA are proposed.

CONSIDERING THE MSA ALONGSIDE THEORIES ABOUT THE INTERNATIONAL MOVEMENT OF POLICY

Key elements of the MSA

Much has been written on the MSA, and it is not the intention of this article to provide a full review here (instead see Jones *et al.* 2015; Cairney and Jones 2016), but rather to pro- vide an overview, and to highlight some aspects of the MSA where theories about the

international movement of policy can potentially add value. Kingdon (2003, p. 19, emphasis added), the original proponent of the MSA, identified three separate streams of politics, policies and problems that continuously circulate and at certain key moments come into alignment – described as follows:

> We conceive of three process streams flowing through the system – streams of problems, policies and politics. They are largely independent of one another, and each develops according to its own dynamics and rules. *But at some critical junctures the three streams are joined, and the greatest policy changes grow out of that coupling … .*

A central feature of the MSA is the distinctiveness and independence of each of the three streams (Zahariadis 2014). The idea of free-flowing streams enables the MSA to capture what Kingdon and other MSA scholars observe in policy making, especially at the early agenda-setting stage, namely the degree of ambiguity and flux that prevails, and thus the importance of timing. For, as the quote above explains, it is at particular moments in time – termed 'policy windows' – that policy change takes place. The MSA is distinctive among public policy theories for embracing the role of chance and contingency in this way (Howlett *et al.* 2014). Indeed, it has been suggested that its close attention to issues of timing has come at the expense of spatial considerations, such as the interplay of international, national and local scales of policy making (Bache 2013).

The politics stream in the MSA is 'composed of such things as public mood, pressure group campaigns, election results, partisan or ideological distributions in Congress, and changes of administration' (Kingdon 2003, p. 19), and thus includes regular opportunities for change, such as a new government, but is also sensitive to more unpredictable shifts, e.g. changes in public mood in response to a crisis. The problem stream comprises issues that might need action taken by government; identified by indicators, as well as crises or 'focusing events'. It is the problem and politics streams that can cause a policy window to open, whereas the policy stream is conceptualized somewhat differently in that it is not seen as capable of doing so (Kingdon 2003, p. 145).

Analysis in this article focuses primarily on the policy stream, showing how for smart metering it has been constituted internationally as well as domestically. In the policy stream a continually present 'policy primeval soup' (Kingdon 2003, p. 168) circulates from which policy solutions can be drawn when required, according to changes within the politics and problem streams. The criteria for survival for policies within this policy soup include: technical feasibility, value acceptability, and resource adequacy (Kingdon 2003, p. 116). Technical feasibility is about 'fleshing out' the detail of a new policy, with Kingdon (2003, p. 131) explaining it as follows:

> … advocates of a proposal must delve deeply into details and technicalities, gradually eliminating inconsistencies, attending to the feasibility of implementation, and specifying the actual mechanisms by which an idea would be brought into practical use.

In Kingdon's description, technical feasibility is mostly about human and organizational resources – making sure that an idea is 'staffed out'. Thus, despite the term 'technical feasibility', the technologies and material things that comprise policies are not typically given a great deal of attention by MSA scholars, such as, for example, the way that technology function (or failure) might influence the policy process.

The MSA sees the detail of policies as developed by a committed, longstanding community of policy specialists 'scattered both through and outside of government' (Ackrill *et al.* 2013, p. 873) who are experts on the issue in hand, with policies defined as 'ideas or solutions that specialists develop to address pressing problems' (Kingdon 2003, p. 117). But it is particular organizations or individuals – policy entrepreneurs – who are identified as

active in bringing the three MSA streams together – during the policy window – to deliver policy change. Within the MSA the policy community, in contrast, performs more hidden and gradual work in the background, steadily developing policy ideas to constitute the policy stream (Kingdon 2003, pp. 117–21).

Domestic or international policy streams?

The MSA was originally developed on the basis of extensive empirical analysis in one country – the USA – with nearly 250 interviews taking place during a four-year period (1976–79) and was first published as a book, *Agendas, Alternatives, and Public Policies*, in 1984. Kingdon characterizes the streams of politics, problems and policies as specific to the USA: the streams have their origins, and circulate, within this country. The 'policy primeval soup' is hence domestic, with, for example, members of policy communities described as: 'on committee staffs in Congress, or in such congressional staff agencies … Others work downtown, in places like planning and evaluation offices and budget offices. Still others are academics, consultants, or analysts for interest groups' (Kingdon 2003, p. 232). Kingdon does in fact briefly touch on the issue of policy development in other countries and 'cross-national aspect[s]' (Kingdon 2003, p. 117) of policy, quoting one of his interviewees comparing policy in the USA to Sweden. But in general terms it is clear that there was not a great openness within the original development of the MSA to considering international flows of policies.

However, there are a number of scholars who have subsequently examined the application of the MSA beyond a single country, for example through studies of policy change within Europe (Jordan *et al.* 2003; Ackrill and Kay 2011; Copeland and James 2014), and – of most relevance to this analysis – detailed empirical cases of new areas of policy development where the international arena has been important (Cairney 2009; Bache 2013; Bache and Reardon 2013). For example, Cairney (2009) uses the MSA and international policy transfer theories in his analysis of the adoption of smoking bans in the devolved administrations of the UK, showing how a new policy instrument was implemented in different ways depending on domestic circumstances. Bache (2013) similarly identifies the transnational nature of the policy stream in his case of quality of life indicators in the EU, noting that new ideas about quality of life came from within the EU but also internationally. Bache raises important questions about whether certain MSA streams might operate nationally (most notably the politics stream), contrasting this with others – such as the policy stream – where there is evidence of transnational operation, noting how:

> … the [MSA] model … does not acknowledge the complexity of multi-level governance in which processes (policy, politics and problem streams) and participants operate at different territorial levels simultaneously … *the match between policy, politics and problem has to be not only temporal, but ultimately also spatial.* (Bache 2013, p. 34, emphasis added)

The empirical findings discussed below similarly question whether the MSA policy stream can still be adequately conceptualized as neatly contained within a single country. In the case of Australia, the smart metering policy stream has been constituted both internationally and domestically, in contrast to the streams or flows of smart meter policy problems and politics, which have remained domestic.

Theories about the international movement of policy

Policy transfer is an area of scholarship spanning political science and international relations that seeks to document and explain the movement of policies internationally

between nation states. Policy transfer is defined as 'a process in which knowledge about policies, administrative arrangements, institutions and ideas in one political setting (past or present) is used in the development of policies, administrative arrangements, institutions and ideas in another political setting' (Dolowitz and Marsh 2000, p. 5). The majority of early policy transfer scholarship concentrated on government-to-government transfer and the movement of policy between a small number of countries, most typically through instances of bilateral transfer (Walker 1969; Bennett and Howlett 1992; Dolowitz and Marsh 2000; Mossberger and Wolman 2003; Duncan 2009).

Over time, however, the scope of policy transfer research has broadened. This stems from a recognition that with increased globalization the amount of international policy transfer taking place has grown (Mossberger and Wolman 2003), and has thus evolved to be a more significant empirical area of research (Stone 2012). It is also a trend that has been driven by, and reflects, the involvement of a greater number of disciplines in international policy transfer research, in particular urban studies and human geography. The concept of policy mobility has been introduced by scholars from these non-political science disciplines in an effort to capture empirical observations about contemporary international movement of policy (Ward 2006; McCann 2011a; Peck 2011).

A number of ideas proposed by policy mobility scholars are considered in more detail here because they are judged to have particular complementarity with the MSA. First, that policy ideas and programmes appear to be circulating with greater ease and increasing in scope and scale – a phenomenon linked to wider processes of globalization – and termed 'fast policy'. The notion of 'fast policy' conveys, amongst other things, the increasing time pressure under which policy decisions are having to be made (Peck 2011). Such issues of timing – and time pressures – are similarly a core component of the MSA.

Second, policy mobility scholarship is attentive to the materiality of policy, that is the objects and things that constitute policies, exploring how they are an integral part of the policy making process (Peck and Theodore 2015). The heterogeneous networks of people and technologies that comprise policy are termed 'assemblages' – a term developed within science and technology studies – and defined by policy mobility scholars as 'a purposive gathering of people, institutional capacities, expertise, models, techniques and technologies, political sustenance, etc. from local sources and, crucially, from elsewhere' (McCann 2011b, p. 144). The case of smart metering, turned to below, illustrates the value of being attentive to the technical as well as social (human, organizational) elements of the policy process. For instance, a central reason why Australia looked internationally for smart metering policies is because smart meters were a relatively new and untested technology, and policy makers in Australia wished to reduce the risk of them not functioning well.

Third, policy mobility scholars have documented the ways in which policy is increasingly being made beyond the formal, official government venues identified by early policy transfer scholarship – as well as Kingdon in his empirical analysis – with non-state actors such as multinational companies and consultants identified as important (McCann 2011a; McCann and Ward 2012; Prince 2012), particularly in highly technical areas of new policy development (Larner and Laurie 2010). Again, this is an issue that resonates with the empirical case of smart metering policy in Australia, to which attention now turns.

UNDERSTANDING THE DEVELOPMENT OF SMART METERING POLICY IN AUSTRALIA

Australian smart metering policy phase one: mandatory implementation

At first glance the development of smart metering policy in Australia seems to be a domestic process: smart metering policy has largely been developed at a national, federal level, working in conjunction with the Australian States and Territories – through the Australian Ministerial Council on Energy (MCE) (later renamed the Council of Australian Governments (COAG) Energy Council) and the organizations governing the National Electricity Market (NEM). The initiation of smart metering policy can be traced back to 2002 when there was an Energy Market Review which identified 'interval meters' (a forerunner of smart meters with similar functionality but lacking two-way communications) as a means of improving demand-side (customer) participation in the NEM, and therefore recommending to 'mandate [a] roll-out of interval meters for all NEM households as soon as possible' (Commonwealth of Australia 2002, p. 33).

In 2004 the MCE established a User Participation Working Group to examine a number of issues, including innovation in metering. In early 2006, a meeting of the MCE (by then renamed the COAG Energy Council) agreed on 'committing to the progressive national roll out of "smart" electricity meters from 2007 to allow the introduction of time of day pricing and to allow users to better manage their demand for peak power' (COAG 2006, p. 5). The intention was that the costs of installing smart meters would be borne by the utilities, but in practice – for instance in the State of Victoria (see below) – customer bills did increase, with the average household in Victoria billed $760 for metering in the period 2010–15 (VAGO 2015). By April 2007 there was formal agreement by the COAG Energy Council to a national mandated roll-out of electricity smart meters to begin by the end of 2008, in situations where an economic case could be made (COAG 2007, p. 1).

An explanation why policy change took place at this particular time – a policy window – can be provided through reference to the MSA, for the three streams of smart metering policies, problems and politics can indeed be identified as coming into alignment, with the COAG Energy Council operating as the coordinating policy entrepreneur. The COAG Energy Council has formal responsibility for providing electricity policy leadership in Australia, with the principles guiding its work including 'promoting the interests of consumers' and 'industry and other stakeholders participating in policy development' (COAG 2015, pp. 2–3). The politics stream was supportive of change because of the political momentum in Australia to achieve greater customer participation in the NEM from the early 2000s onwards. For example, the 2008 MCE Regulatory Impact Statement on the national smart meter policy identified several wider customer benefits, including: '3.Promoting the long term interests of electricity consumers with regard to the price, quality, security and reliability of electricity; … 5.Enabling consumers … to make informed choices and better manage their energy use and greenhouse gas emissions' (cited in Johnston 2009, p. 5).

The problem stream was growing overall electricity demand in Australia, as well as increasing peak demand (AER 2008). High peak demand requires expensive extra generation capacity to be installed to ensure that power is not lost during just a few periods each year. In Australia, peak demand is mostly caused by air conditioning use on hot summer days, and prior to 2007 it grew considerably (AER 2008; MCE 2008). Smart metering was the main solution that emerged from the 'policy primeval soup' in response to these shifts in the politics and problem streams. Smart meters provide a potential solution to

peak demand because they allow for more sophisticated pricing tariffs (called 'time of use tariffs') that better reflect the actual costs of providing the electricity at any one time, and have been shown to divert consumption away from peaks (AEFI 2014). Time of use tariffs are difficult to implement with traditional electricity meters, because older meters only provide very coarse data on what energy is used when, and have to be manually read. Thus smart meters are a key 'enabling technology' for tariff reform (AEMC 2012).

So all three streams were aligned in 2007: the politics was supportive, there was a problem and a policy solution – smart metering – already in circulation to solve it. It is an empirical case that aligns well with Kingdon's MSA, and indeed what has been described thus far, as noted, indicates it to be a domestic case of policy change. However, there is evidence that the policy stream – smart metering – was constituted not just domestically but also internationally. During the mid-2000s onwards in Australia there was significant analysis and discussion of international best practices and case studies of smart metering policy programmes. It was the Australian State of Victoria that moved to endorse the use of smart metering technology first, prior to the COAG Energy Council decision, and it did so by carefully evaluating already-existing international smart metering policies and programmes.

For example, a 2004 report summarizing the decision by the Australian State of Victoria to implement a smart metering programme draws heavily on the example of California, USA, to justify its policy choice (ESC 2004, pp. 47–49), with a later report by the Victorian Department of Primary Industries similarly citing international smart metering programmes in the UK, Netherlands, New York and California, with a stated aim of 'learning from these overseas approaches' (DPI 2007, p. 22). Interviews with key policy actors corroborate the international outlook adopted by policy decision makers during the mid-2000s:

> … my boss at the time and [Consultant A] they went off on an international trip and saw lots of the places that we had found out about and talked to people overseas in America and Europe and did have a really good look at some of these overseas [smart metering] examples. (Interview, Civil Servant, May 2015)

More widely across Australia there were similar initiatives to identify and learn about where smart metering had already been implemented internationally. For example, a report commissioned by the Australian Energy Market Commission (AEMC) provided an overview of smart metering policy developments in several jurisdictions including the UK, Italy, the Netherlands, Sweden, California, New York and Ontario (NERA 2008). The UK, South Korea and the USA were also cited as examples by several interviewees as countries they have looked to and learnt from (research interviews, April–July 2015).

The conceptual marriage of MSA and international policy mobility theories helps explain why the Australian smart metering policy community reached out internationally in this way. Smart meters were at the time a relatively new technology, which had been implemented only in a small number of places worldwide. Through use of these international examples smart metering was effectively positioned as a reputable and technically feasible policy solution, 'ready to go' in Australia at a time when policy makers were needing to find a policy solution to rising electricity demand. It was a policy solution that, although new, had already been tested internationally, and thus conveyed legitimacy, thereby reducing policy risks, as an interviewee explained:

> We've certainly learned from overseas. We learned from their technology choices … their structural choices … their political and policy choices. (Interview, Manager, Australian utility advocacy organization, May 2015)

Such a finding indicates that in highly technical, innovative policy sectors, policy processes can be more fully understood by considering the substance of policy – in this case the characteristics of the smart metering technology itself and the influence of its technical functionality on decision making. It is suggested that the MSA policy stream criterion of technical feasibility could usefully be extended in such cases to include evaluation of the technical functionality of the material substance of the new policy under consideration, and not just the detail of how it would be resourced. Timing is also important here, for by looking overseas for tried and tested policies, technical feasibility is able to be demonstrated quickly, in response to sudden shifts in the domestic problem or politics streams.

The policy mobility concept of assemblage is highly complementary to the MSA in this regard, both in positioning policy networks as heterogeneous in origin and relational (i.e. operating in ways that are only partially attentive to domestic and international boundaries), and also in demonstrating how the policy stream is socio-technical – comprising technologies, infrastructure and technical 'kit' as well as people, cultures and organizations (McCann and Ward 2012; Prince 2014). Moreover, the inherent fragility of assemblages – their tendency to unravel and reform in different ways – is helpful in understanding what occurred in Australia after the initial smart metering policy window, examined below.

The empirical case thus challenges the conceptualization of the 'policy primeval soup' and community of policy actors active in the policy stream as domestically constituted, in keeping with the findings of a number of MSA scholars who have also assessed international case studies (Ackrill and Kay 2011; Bache 2013). With smart meters having already been implemented in other countries, cities and regions worldwide, and with a number of large multinational companies actively engaged in innovation in metering (such as Landis + Gyr, Siemens), the case problematizes the application of MSA within a single nation state. The concepts of international policy transfer and mobility help us understand why the attention of policy decision makers in Australia turned internationally, to places where smart meters had already been installed, in order to learn about what worked and thereby reduce policy as well as political risks.

It is possible therefore to see here a blurring of the policy and politics streams. Further, identifying a coherent policy community and single policy entrepreneur becomes more difficult with this expanded geographical reach, as a broader spatial framing reveals how in reality a number of organizations and smart metering programmes, operating at multiple levels of governance, have played a role in developing Australia's smart metering policy; a point returned to below.

Australian smart metering policy phase two: voluntary implementation

By the year 2012 there had been an alteration in Australia's smart metering policy, away from the mandatory installation of smart meters and instead advocating a more ad hoc form of competitive, voluntary or 'market-led' implementation (AEMC 2012). The significance of these changes was underlined in 2013 when a previous (2009) rule change in the National Electricity Law to allow for the mandatory installation of smart meters was formally revoked in order to 'provide certainty to the market to proceed with commercial investment' (Statutes Amendment (Smart Meters) Bill 2013). Under the revised Australian policy there is now no longer any obligation for smart meters to be installed (except in situations where faulty old meters are being replaced, or new meters installed at new properties; AEMC 2015). The intention is that consumers will not pay for the new meters, with costs borne instead by utilities.

The change can in part be explained with reference to domestic factors changing within the problem and politics streams of the MSA, but again international dimensions have also been important. First, in relation to dynamics in the Australian domestic policy situation, there have been shifts in the problem stream: the overall level of electricity consumption in Australia unexpectedly fell post-2007, as did peak demand (AEMC 2012, p. ii). Several reasons have been given for this (including increasing electricity generation from household-installed solar PV, see CSIRO 2013; AER 2014), but the net effect is that there is much less pressure on the capacity of electricity networks, and overall less of a pressing policy problem.

Second, the degree of political support for smart metering plummeted. This is largely due to negative outcomes of the Australian State of Victoria's Advanced Metering Infrastructure (AMI) programme: a mandatory programme that was given approval in 2006 and commenced in 2009, in anticipation at the time of the rest of the NEM following suit. Despite initial optimism and excitement about Victoria 'leading the way', the Victorian AMI has not been judged to be a success, with problems of rapid electricity bill increases for consumers, leading to numerous reviews, customer protests, and enquiries (see VAGO 2015). It meant that proceeding with a similar mandatory smart metering programme in other Australian states became politically untenable, as an interviewee explained:

> … in Victoria they had the mandatory roll-out of electricity smart meters, but I doubt that's going to be repeated in any other states. (Interview, Manager, Australian government institute, April 2015)

These sentiments have also translated into a number of policy documents and media releases, which relate the shift in policy away from mandatory smart metering to events in Victoria (Queensland Department of Energy and Water Supply 2013; NSW Minister for Resources and Energy 2014; Department of State Growth 2015). Again here we see the blurring of policy and political streams, albeit this time on a domestic scale, as well as evidence of multi-level governance – with a regional state in Australia clearly having an influence on the policy process (an interesting issue, but one which is outside of the international focus of this article (see Lovell 2015 for further analysis)).

In a situation where the problem and politics streams changed quite dramatically in Australia – with mandatory implementation of smart meters no longer looking like a suitable policy solution – and a decision needing to be taken quickly, the 'fast policy' circulation of international smart policies again took on a new resonance. Two types of international policy activity have been important during this second phase of smart metering policy development: first, evidence stemming from particular locations where smart metering policies and programmes have been implemented; and, second, international organizations active in promoting smart meters, including industry groups, standards organizations and multinational companies.

There is evidence that Australia's decision to retain a smart metering policy – albeit in a modified form – has been strongly influenced by positive international examples of smart metering programmes, and in particular the mode of implementation for smart meters used in New Zealand. New Zealand is widely judged to be a successful case, with over half of households having a smart meter installed, and with few overt customer protests and no extra costs passed on to customers (NZ Electricity Authority 2013). It is perhaps not surprising, therefore, that Australia has looked towards New Zealand as an example of how to proceed. For instance, the Australian Energy Market Commission (AEMC) – one of the key organizations governing the NEM – commissioned a consultancy study specifically on the New Zealand Smart Metering Programme (Murray and Black 2008), and has kept

an ongoing interest in developments in New Zealand, for example through input at AEMC Public Forums (see for example Strata Energy Consulting 2012). Individual state governments within Australia have also researched New Zealand, as one interviewee described:

> We went to New Zealand and had a look over there to see how they've done it there. That's been quite influential on the thinking here. (Interview, Manager, State government, April 2015)

Attention has focused especially on the mode of introduction of smart metering used in New Zealand: a voluntary market-led model, wherein customers have a choice of whether to accept a new meter or not. Policy mobility scholarship helps us to understand the change in Australia's policy to adopt a market-led model, for it fits with an observation – as noted above – regarding the allure of policies that have been tested elsewhere and already 'packaged', particularly when governments are searching in a hurry for a policy solution, as Australia was after the difficulties of retaining a mandatory implementation method were recognized post the Victorian AMI implementation. Temenos and McCann (2012, p. 1393), for example, observe in their analysis of sustainability policy in Whistler in British Colombia, Canada, that:

> This imperative toward 'fast policy' … leads local policy professionals to look for sure bets: policies that have been deemed by trusted contacts, professional authorities, and the policy consultancy industry to have been successful elsewhere and that seem easily accessible in packaged, readily consumable, and mobile form.

Crucially, though, using the MSA in conjunction with the policy mobility notion of fast policy provides a means of recognizing and better understanding that policy change will only take place if there is domestic or local receptivity. In other words, increased global circulation of policy ideas and knowledge does not necessarily result in more policy change. Through its attention to changes in domestic politics, problems and policies – and their alignment – the MSA thereby provides a complementary framework to policy mobility.

A second type of international policy activity – looking beyond the international circulation of specific policy models from particular countries – has been driven by a number of international organizations active in promoting smart meters. Their activities and impetus also help explain Australia's retention of a smart metering policy (albeit in a highly modified form), driven by Australia's role and reputation within these international organizations and forums, and a desire to 'keep up' with global utility sector innovation. Australia is active within the two main global organizations – the International Smart Grid Action Network (ISGAN) and the Global Smart Grid Federation (GSGF). ISGAN and the GSGF are typical of the international non-nation state organizations identified within policy mobility scholarship working to promote international flows of policy, such as the World Bank (see, for example, Webber 2015).

ISGAN is an intergovernmental agency established by the International Energy Agency in 2010. Australia participates along with around 25 other countries, and its focus is primarily on government discussions and policies, with its stated purpose to provide 'a mechanism for multilateral government-to-government collaboration *to advance the development and deployment* of smarter electric grid technologies, practices, and systems … *and to promote adoption of related enabling government policies*' (ISGAN 2015; emphasis added). As is evident from this quote, and common to other international smart grid and smart metering initiatives, the focus of ISGAN is to encourage the uptake of smart meters and other smart grid technologies.

The Global Smart Grid Federation (GSGF) is the other main international network organization similarly focused on promoting innovation with, and policies to support, the implementation of smart meters and associated smart grid technologies. The GSGF was

formed in 2010 and has a more corporate focus than ISGAN. Its stated aims are similar, however, including for example to 'Support rapid implementation of Smart Grid technologies' and to 'Foster the international exchange of ideas and best practices' (GSGF 2015). The GSGF has as its members a number of public–private partnership organizations such as Smart Grid Australia and Gridwise Alliance (USA) who have been active in promoting smart metering (see for example Smart Grid Australia 2014).

Australia also has a presence in relation to international standards through its national standards organization – Standards Australia – whose representatives are members of the international standards boards' committees such as the International Electrotechnical Commission Smart Grid User Interface Committee and Smart Appliances Committee. Australia also invested substantial resources into developing a domestic smart grid standard in the period 2011–13, and there is evidence that this work was also undertaken for international reasons. For instance, when the resulting Standards Australia's Smart Grid standard was published in 2013 it was promoted as 'a ground-breaking … world first' (Standards Australia 2013, p. i). Such positioning of Australia is part of a more general trend of competition and informal benchmarking between Australia and other countries in relation to the smart grids policy arena, as this extract from a report by Smart Grid Australia – the core industry network in Australia – exemplifies:

> Australia is comfortably positioned behind the global leaders in Smart Grid technology and implementations so that we are neither on the 'bleeding edge' nor too far behind … Australia is 'right up there' compared to international counterparts … (Smart Grid Australia , p. 48)

This international competition or pecking order between countries, and a clear sense of concern about being 'right up there' in the transformation towards smart grids, is a finding in keeping with other studies of international policy transfer across a range of sectors, including higher education, telecommunications, and economic policy (Ward 2006; Larner and Laurie 2010; Geddie 2015; Webber 2015). While not exerting direct pressure on Australia to adopt smart metering policy (in contrast to Dolowitz and Marsh's (2000) description of coercive policy transfer), the circulation of international policies brought a sense of comparison and emulation into the Australian smart metering policy sector, with policy decision making not only taking into account domestic issues, but also these international policy developments. The case in particular echos findings from policy mobility scholarship regarding the crucial role of non-state organizations operating internationally who have policy influence because of their significant and up-to-date technical expertise (Ward 2006; Larner and Laurie 2010; Prince 2012). Through combining the MSA and policy mobility concepts, these spatially and socio-technically diverse elements of the policy process are able to be considered holistically.

SUMMARY AND CONCLUSIONS

In summary, the analysis in this article has had the primary objective of challenging the MSA to better encapsulate international dimensions within its conceptualization of the early decision-making stages of the policy process. The article has examined a contemporary case study of the development of smart metering policy in Australia, and has built on the work of Bache (2013) and Cairney (2009), among others, who have similarly found evidence of the international constitution of the MSA 'streams'. Analysis has focused here primarily on the policy stream – one of the three 'streams' that constitute the MSA. Through reaching out to a new set of ideas from outside political science – termed policy mobility – the MSA has been opened up in a slightly different way from previous

studies drawing on policy transfer theories, in order to consider the implications of international flows of policy. In this short concluding section I reflect on the article's findings in relation to the three more specific aims of the article, and position these as implications for the MSA in the form of hypotheses or potential theoretical extensions.

The first aim of the article was to build on the MSA notion of the technical feasibility of policies to incorporate issues of materiality and the substance of policy (i.e. the influence of smart metering technology itself on Australia's policy process) using the notion of assemblage. The MSA criterion of technical feasibility within the policy stream has thus been reframed and extended to consider policy mobility ideas about the importance of the technical or material substance of policy. A focus on technical substance reveals how a policy stream that is both internationally constituted *and* comprises innovative fast-developing technologies might act to keep ajar a policy window once it has been opened.

The first proposed MSA theoretical extension is thus that in more technical policy sectors policy windows can be kept open by solutions that circulate internationally, through socio-technical assemblages. In Australia international flows of smart metering policy continued to influence policy decision making after the 2007 policy window, because of Australian policy makers' attentiveness to international policy developments and a desire not to lag behind in this competitive, economically significant sector, as well as a more practical objective of seeking out places to learn from where smart meters have already been installed.

This finding deserves further consideration because it problematizes a core MSA notion regarding the policy window neatly opening and shutting (see also Nugent and Saurugger 2002; Ackrill and Kay 2011). It also concurs with Cairney's (2012) suggestion of a policy transfer window. Further, the Australian smart metering case indicates some blurring of the policy and politics streams, for the decision to press ahead with smart metering in Australia was not only being driven by a search for knowledge and information about smart meters and how best to implement them, but also by a more political set of issues around Australia being anxious to 'keep up' with new global technology innovations. Taken together, these insights endorse an approach that is attentive to the material substance of policy – the technologies and things that constitute the MSA policy stream. The policy stream is hence usefully conceptualized as a complex and fragile smart metering policy assemblage comprising a mix of domestic and international elements, and within which the smart meter itself is a key policy actor.

The second related aim of the article was to consider the effect of continual ongoing circulations of international policy programmes and ideas on domestic decision making. This involved integrating the policy mobility concept of 'fast policy' into analysis of the smart metering policy stream. The proposed theoretical extension to the MSA – based on the case study findings in relation to the internationalization of the policy stream – is that in more technical policy areas such as smart metering the policy stream is more likely to be internationalized than the other two streams. The case of smart metering policy in Australia demonstrates the importance of being attentive to international flows in explaining domestic policy change, for there are a number of international organizations promoting smart metering, and several 'exemplar' smart metering policy programmes. There is evidence that ideas, practices and knowledge from these international forums and localities have influenced Australia's policy development, and that Australia is also attentive to its own status and positioning in relation to other countries. But the case also confirms the importance of domestic factors in policy change, most notably in this instance developments in the problem and politics streams.

The smart metering 'primeval policy soup' has thus been partially constituted internationally, but also domestically. Again, the empirical findings demonstrate the complex interplay of domestic and international factors, and hence the value of applying the MSA and theories about the international movement of policies in tandem, for there is much that is complementary. For instance, the requirement for policy decisions to be made under significant time constraints – a core concept within the MSA – resonates well with the policy mobility notion of 'fast policy'. Under conditions of intense time pressure on decision making, looking overseas for 'tried and tested' policy solutions – conveying legitimacy and reducing risks – is much more likely to occur.

The third aim of the article has been to explore the role of international non-state actors within the policy stream. Multinational companies, international industry networks such as the GSGF, inter-governmental organizations such as the ISGAN and international standards organizations have all acted in ways to encourage the global uptake of smart metering and adoption of smart metering policy programmes, such as through writing promotional reports, attendance at government meetings, and providing input to policy consultations. This finding is again one that resonates strongly with policy mobility scholarship, which argues that policy is increasingly influenced by a diverse range of international non-state actors. The third proposed theoretical extension of the MSA is thus that more technical policy sectors – particularly new fields with high levels of innovation – tend to privilege non-state actors in policy making.

To conclude, despite these findings indicating a strong international element to the policy stream, it is observed that in the case in hand the problem and politics streams remain primarily domestic. In other words, there have not been the same international developments observed within these two streams in the smart metering case. The only counter-evidence of this is the role of politics observed within international smart metering policy development, and a slight blurring of the politics and policy streams. The spatial constitution, framing and operation of the MSA streams would be useful to test across other cases – in different countries and sectors, building on the work of Bache (2013) in particular. It does seem probable that flows of problems and politics are inherently more domestic, tied as they are to national trends, debates, events, and parliamentary and governmental decision-making processes and timetables. So a degree of caution is required: the analysis here demonstrates a high degree of complementarity between the MSA and theories about the international movement of policy, but it does not question the fundamental tenets and assumptions of the MSA. Rather, the article has sought to theoretically extend the MSA's application – particularly in relation to new technical policy sectors – by proposing a number of theoretical extensions or refinements that attend to the internationalization of the policy stream and its socio-technical constitution.

ACKNOWLEDGEMENTS

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