The motivation behind policy diffusion: A hypothesis for the replacement of policy instruments promoting renewable electricity in Japan, Finland and Norway (working paper)

Introduction

Promoting renewable energy sources (RES) is a policy field enjoying attention among an increasing number of jurisdictions[1] over the past two decades. A variety of goals can be thought of for the growing popularity of this policy field, among which (in no particular order) a desire to accelerate the decarbonisation of a jurisdiction's energy mix, improve energy security by enhancing energy independence, support the developers of novel technology by creating markets for their products, revitalise economically depressed regions by creating a labour market for "green jobs", answer to the shifting sensitivities of a greening electorate, or to assert environmental leadership internationally and so forth. These goals can act on decision makers either singly or in any number of combinations.

The technical literature on policies promoting electricity from renewable electricity sources (RES-E)[2] is vast. Over the years different variants of policy instruments have been developed theoretically and then been implemented practically in different jurisdictions. Political scientists have principally focused on the diffusion of these instruments globally (Matisoff 2008, Mendonça and Jacobs 2009), the evolution of a particular instrument in a given jurisdiction and its response to challenges (Jacobsson and Lauber 2006, Nilsson, Nilsson and Ericsson 2009, Uba 2010), or the divergent evolution of different jurisdictions (Laird and Stefes 2009, Young and Hager 2011). A substantial literature also debates the relative effectiveness of these instruments (Butler and Neuhoff 2008, Mészáros, Shrestha and Zhou 2010) and discusses how to evaluate and/or improve the effectiveness of one such instrument under given conditions (Groba, Indvik and Jenner 2011, Shrimali and Kniefel 2011).

However, a blind spot in the literature can be seen from these permutations, which, to the best of my knowledge, nobody has tackled yet: what are the conditions under which a policy instrument is entirely replaced with another one within a given jurisdiction? This is somewhat perplexing, since there is no scarcity of examples, including some high profile ones:

1. UK: tendering scheme replaced with a renewable obligation (2002);
2. Norway: tendering scheme to tradable green certificates (2012);
3. Finland: investment support and fiscal production support to feed-in premiums (2011);
4. South Korea: feed-in tariffs to a renewable portfolio standard (2012);
5. Japan: renewable portfolio standard to feed-in tariffs (2012).

These examples call out for analysis, especially because they pose an interesting question. The literature on RES-E policy shows that there is always room to improve policy by tweaking its supporting design features (Fischlein 2010, Carley 2011). Seminal works in divergent strands of political science (Hall 1993, Sabatier 1998, Thelen 1999) argue that such changes are difficult to enact, since policy equilibria, perpetually challenged as they may be, are stable for as long as massive external shocks or internal realignment upset them. Alternatively, the literature on policy learning (Dolowitz and Marsh 1996, Dolowitz and Marsh 2012, Murrall and Bailey 2008) and policy diffusion and policy convergence (Bennett 1991, Elkins and Simmons 2005, Liefferink and Jordan 2002, May 1992, Radaelli 2005, Radaelli 2009, Tews and Busch 2002) suggests that such change may intervene gradually as the community of stakeholders active within a given field becomes

[1] Since policies promoting renewable energy can exist at various levels of government (local, regional, national and supra-national), I prefer to refer to "jurisdictions" instead of "governments".
[2] The distinction of RES-E from RES is meaningful, as the latter also includes heat from renewable energy sources (RES-H) and transportation from renewable energy sources (RES-T). For details, refer to REN21 (2011).

acquainted with, and willing to introduce, policy measures previously adopted in other jurisdictions. What then are the circumstances that can force jurisdictions to take such a radical step as to abandon an instrument entirely and introduce a new one, operating on a fundamentally different logic?

Drawing on the development of policy replacement in three different case studies (Japan, Finland and Norway) I aim to show that by wedding advocacy coalition frameworks (ACF) with policy diffusion theory one can successfully reveal the micro-mechanisms through which policy diffusion occurs and thereby differentiate between more or less thorough versions of it. More importantly, the combination of the two theories can provide insights into a normatively tinged question: Under what circumstances does a "better" instrument emerge from this policy process?

Overview of RES-E instruments

The policy instruments currently popular in the field of RES-E are varied, but I present here a simplified typology adapted from the more exhaustive groundwork laid by Haas et al. (2008). Focusing only on regulatory measures explicitly linked to electricity generation, the following breakdown of instruments can be obtained:[3]

Targeted phase of projects	**Fixed sums**	**Fixed quantities**
Investment planning	Investment subsidies Advantageous loans	Tendering systems for investment grants
Operation	Feed-in tariffs Feed-in premiums	Tendering for long-term contracts Renewable portfolio standards Tradable green certificates

Investment subsidies are fixed sums of money granted upfront to project developers engaging in RES-E projects, typically by governments. Loans are equivalent forms of financing obtained from banks, etc., albeit under a government-sponsored program ensuring cheaper access to capital.

Tendering systems for investment grants are similar, but have a competitive edge. The fixed quantity here refers to the generating capacity for a particular RES-E installation for which a government puts out a tender. Developers' bids consist in cost estimates for the construction, maintenance and operation of these installations, with the winner decided by the lowest bid.

Feed-in tariffs (FITs) fix a guaranteed sum at which the electricity generated by an operating installation is purchased from its operator, typically by the utility whose grid the installation is connected to. Premiums (FIPs) refer to guaranteed fixed sums of money paid out to operators on top of the market price of electricity.

Operators winning long-term contract tender are obligated to provide a fixed amount of RES-E over a specified period of time. Conversely, under renewable portfolio standards (RPSs) the obligation to consume or purchase a certain amount of RES-E (typically progressively larger) is imposed by

[3] Note that RD&D financing is explicitly excluded from this typology.

governments on consumers, electricity suppliers or some other actor. Tradable green certificate (TGC) systems are a more flexible variant of RPS, allowing those actors who have over-achieved their obligation to sell off their over-compliance to underachievers through a green certificate (GC) market similar to an emissions trading scheme.

In many, though by no means all, jurisdictions the trend has been towards operations phase instruments. The dichotomy between FITs and FIPs on the one hand, which specify a fixed price for the "greenness" of the RES-E, and tendering, RPS and TGC systems on the other, which specify quantities of electricity, has given rise to the facile terminology of price- and quantity-based instruments. It is important to note that no instrument is inherently better than any of the other ones. Perhaps the most relevant differences that can be discerned between the two categories are in terms of the balance between budgeting and policy outcome, breadth of technologies targeted, and the kinds of actors whom they benefit.

Price-based instruments provide security to all developers, as the tariffs and premiums are calculated with a certain advantageous internal rate of return in mind, meant to attract investments into otherwise uncompetitive electricity generation technologies. However, since such instruments provide all potential investors with the same blanket guarantee, booms occur easily, making financing such an instrument potentially extremely expensive. Carelessly calibrated price-based instruments can be easily politicised if a perception develops that electricity prices have increased intolerably due to them. On the other hand, quantity-based instruments grant decision-makers control over market size, which essentially acts as a cost containment mechanism. However, often the total supply of GCs is not in line with the obligation percentage of the scheme, resulting in wild fluctuations in their price. This acts as a deterrent to investors, potentially resulting in less investment than desired.

Price-based instruments are very effective at achieving rapid deployment of extremely finely defined technology categories, as the granularity of the distinctions between technology categories is simply a question of the political will of the decision-makers to promote a particular category. Conversely, under quantity-based schemes, where the GC prices are fickle, investors focus on the available technologies with the cheapest marginal cost. These are typically mature technologies, making the uptake of more expensive options such as some solar options or offshore wind extremely slow and unlikely.

Finally, as mentioned above, since under the price-based instruments the price guarantee is extended to everybody, very small scale actors can also easily participate in such schemes. Since quantity-based create demands for pools of electricity on the scale of a country's yearly consumption of electricity, large-scale developers, who can provide large amounts of GCs, are at an advantage for a host of reasons, but perhaps especially because they can weather swings in GC prices more easily than small-scale investors and because they may even be able to game the market by controlling the supply of GCs.

These instruments' advantages and disadvantages can be offset by policy design (Carley 2011, Fischlein 2010). Beyond quantity or price, some of the key features that can have an impact on instrument effectiveness and efficiency are duration of coverage, technologies covered, capacity limits, method of financing, distribution of costs, enforcement mechanisms (e.g. the strictness of local utilities' duty to connect RES-E installations to the grid), relaxed approval processes etc. Features that can particularly affect price-based instruments are household net metering, penalties to utilities refusing to purchase RES-E, cost capping mechanisms, etc. Policy outcomes from quantity-based instruments are also greatly impacted by the possibility to engage in banking and borrowing (stocking up GCs for future compliance periods vs. using hypothetical future GCs that have not been

generated or purchased yet), price floors, ceilings or collars, technology banding (issuing technology-specific numbers of GCs), credit multipliers (for the use of domestic technology and/or labour, energy efficiency technology, etc.), and so forth.

Therefore, since a great number of adjustable design features exists, policymakers have plenty of options available if they should agree that a policy requires overhaul. Furthermore, if an external shock should create a demand for enhanced policy outcomes, policymakers following the path of least resistance would be expected to consider scaling up the instruments' budgets first, and second to perhaps consider instruments functioning to similar logics (i.e. not crossing over to the other side price- or quantity-driven instrument dichotomy). In fact, the German experience shows how an instrument, even while it is vigorously challenged by unsatisfied stakeholders, still stays largely unaltered, with only changes in some design features (Jacobsson and Lauber 2006, Lenz Blog 2012, Renewables International 2012). Similarly, Denmark, switching in 2001 between FIP and FIT (Energistyrelsen website), did not adopt an instrument operating on a fundamentally different logic. This is in line with the predictions of path dependency informed by historical institutionalist theory. Consequently, the radical changes that have taken place in Japan, Finland and Norway need to be analysed through a different prism.

The evolution of RES-E instruments in Japan, Finland and Norway

Japan

Japan introduced its first policy instrument, an RPS, in 2002, obligating electricity suppliers to use a certain amount of "new energy", i.e. wind, solar, geothermal, biomass and, within certain limits, hydro. This amount was set by ministerial notice every four years. Trading between obligated entities was permitted, while banking was also permitted between periods for up to two years. A further target easing mechanism was also included by ministerial decree, lowering the obligation of companies that implemented certain energy efficiency measures.

Such flexibility enhancing measures are generally a desirable feature, yet their settings proved to be too lax in the Japanese scheme. The RPS had already initially very low targets for RES-E, even taking into account minimal increase in ambition level decreed in 2009. The target for the RPS in 2011, the year the scheme was suspended, was 12.82 TWh, which amounted to 1.15% of all electricity generated in the same year. Moreover, the market for GCs had been constantly flooded with certificates banked from earlier periods since its very inception, drowning out demand for newly generated credits.

With no such demand, no real business case could be made in Japan for the construction of new RES-E installations during the eight-year period that this policy instrument was in place. In fact, between 2002 and 2011 Japan's total installed capacity for RES-E generation decreased, from 47.1 GW to 44.4 GW, while wind, solar, geothermal and biomass also decreased over the same period, from 707 MW (1.50% of all RES-E) to 600 MW (1.35%). Having started out with 500 MW of geothermal in 2002, the conspicuous policy outcome of Japan's RPS during its implementation was to eliminate, not increase, wind and solar power, which were at the same time entering a boom period elsewhere.

Although Japanese companies had developed solar cell technologies that dominated the world market during the early 2000s, thanks in no small part to government-financed assistance payments for the installation of solar panels between 1994 and 2005, by 2004 FITs introduced in multiple European countries had started to erode Japan's global market share. To aid this flagging industry eventually a ministerial order established a feed-in tariff in 2009. It only targeted solar power,

heavily favouring small-scale domestic versus commercial use. It met with enthusiastic response, with more than 230,000 applications for support within the first five quarters of implementation.

In unrelated events 54 years of nearly uninterrupted domination of Japanese domestic politics by the Liberal Democratic Party were ended in August 2009 by the spectacular victory of the Democratic Party of Japan (DPJ), who immediately embarked on a plan to widen the FIT to include other RES-E technologies. Formal working groups began convening in November 2009, but the March 11, 2011, earthquake affecting Japans Tohoku region and causing the multiple accident at the Fukushima Daiichi nuclear power plant gave added impetus to their work, prompting a Diet-appointed committee to issue some of the most generous tariffs in the world. However, these tariffs are subject to a yearly revision, increasing political risk. The law also leaves room for utilities to deny grid connection under certain circumstances, making siting a difficult proposition for would-be developers. Furthermore, the system of vertically integrated power utilities constitutes a very different landscape for RES-E policy from European countries, with the neutrality of the Japanese electricity transmission sector being especially questioned by some actors.

Norway

The Norwegian government decided in 1998 to generate 3 TWh of wind power by 2020. At the invitation of the Swedish Parliament, Norway began negotiations to set up a joint TGC scheme to help achieve this goal. While the joint scheme was being negotiated, a tendering scheme was set up in 2002, meant to provide support to developers until the launch of the TGC scheme.

Negotiations with Sweden broke down unexpectedly in 2006, with Norway concerned that the scheme would prove too expensive for its domestic consumers. The promotion of RES-E had to rely entirely on the tendering scheme, whose funding was insufficient to lead to a forceful deployment of RES-E installations. The Norwegian experience also highlighted some of the dangers of tendering schemes, consisting in developers putting forward artificially low bids in order to win tenders. Investment support won in such fashion turned out to be too low to support RES-E projects, which resulted in situations where funds were disbursed without ever being truly used.

This produced a small policy crisis in Norwegian energy policy, with the Oil and Energy Department tabling a hastily prepared White Paper advocating the introduction of an FIT scheme. However, the proposal lacked backing from the policy community, which had grown accustomed to the market logic of the TGC scheme, while the business community derided the tariffs deemed to be too low to stimulate any kinds of investment. The proposal was quickly abandoned.

Although the Norwegian investment support scheme was overhauled in 2009, it was the passing of the EU's 2009 Directive on Electricity Production from Renewable Energy Sources that truly caused the Norwegian government to take steps towards a more vigorous renewables policy. Although not a member of the EU, Norway has to comply with EU legislation, including energy matters, due to its membership in the European Free Trade Area (EFTA). The directive created an obligation for Norway to increase the share of RES to 67.5% of its gross final consumption of energy by 2020, amounting to an increase of circa 9.5 percentage points from 2005 (Ministry of Petroleum and Energy 2011). Given a widespread understanding that the TGC was indeed the cheapest instrument to achieve the directive's goals, Norway decided to re-enter negotiations with Sweden. Negotiations met with success in 2011 and now the two countries hold a joint target for 2020.

The law establishing the joint TGC scheme is very sparse. While it creates a renewable obligation all the way to 2035, instead of providing a steadily rising percentage the obligation percentage has a hump – with obligations peaking in 2020 and steadily decreasing thereafter to nearly zero. No price

collar is specified, and no technology banding is employed, either. This invites the conclusion that most investments will be clustered in cheaper technologies and, due to cheaper costs, potentially be located in Sweden instead of Norway. This would leave Norway's coastal and offshore wind power potential, some of the best in the world, hardly tapped at all.

Finland

Finland had until recently a system of fiscally financed RES-E support mechanisms, consisting of both an investment support and a production support mechanism. The former granted upfront investment support from the national budget starting the year 2001 for a wide spectrum of energy related technologies, among which also RES-E; the latter took the form of a tax deduction proportionate to the amount of RES-E generated.

This mixed system produced some modest results, but it advantaged large-scale actors who had relatively easy access to civil servants. Moreover, even though a formal application procedure existed for receiving the investment support, no criteria existed for formalising the decision-making procedure for civil servants to select among applicants. Finally, being a budget-driven process, it was subject to yearly fluctuations and offered only a very limited pool of funds to would-be investors.

In 2008 Finland, like its neighbour Norway, also decreed that it was aiming to produce 6 TWh of electricity from wind power by 2020. However, upon the adoption of the 2009 EU renewables directive the current policies proved to be insufficient to reach the objective, as the total budget for renewables was calculated to be insufficient for the construction of a single wind farm. The scale of the initial instruments was not sufficient to achieve the 9.5 percentage point increase from 2005 levels to the 2020 target of 38.5% RES as a percentage of gross final energy consumption.

In closed-door consultations with the government Finnish stakeholders progressively rejected a number of different policy options. Most relevantly, the TGC was rejected because the Finnish market was viewed as too small to support a properly functioning scheme. Joining neighbours Sweden and Norway in a Nordic-scale TGC scheme would have resulted in investment being syphoned off to more favourable sites abroad, leaving Finns with little benefits and potentially quite large costs. By late 2008, a consensus had developed that an FIP would be introduced. A public working group was launched in 2009, resulting in the legislature passing a law to enact the instrument in 2010.

The Finnish instrument has a number of unusual characteristics. First, it features a number of caps for the maximum capacity of the various forms of RES-E technology. This is a cost containment mechanism, albeit a very blunt one – not to mention politically contentious. This is especially so in the case of wind power, whose maximum generating capacity eligible for finance the law limits to 2,500 MW, although even conservative estimates of Finland's economic potential are many multiples of that value. Second, the technological scope of the Finnish instrument is also quite limited. While it may be somewhat understandable that Finland did not choose to cover geothermal, small-scale hydro, ocean or tidal energy like its neighbour, the exclusion of solar, which is covered in Norway, at similar geographic latitudes, is somewhat surprising. Finally, the most remarkable feature of the Finnish FIP is that, unlike most other instruments deployed elsewhere, which are financed at least partially by surcharges on end-users' electricity bills, it is financed exclusively from the national budget, making it in that sense a spiritual successor to the instruments implemented in Finland before the renewables directive.

While the premium is generous, the degree to which the Finnish instrument is going to impact renewable deployment is uncertain, as budget financing enhances perceptions of political risk. But

perhaps most importantly, the difference between the capacity caps and estimated potentials suggest that Finland's government's priorities in the field of energy lie elsewhere.

Micro-level mechanisms for policy diffusion

The sequential appearance of similar policies in distinct jurisdictions has already been researched for a long time. The concepts and typologies used to refer to this process often differ from author to author, with various references being made to "policy convergence" (Bennett 1991), "policy learning" (May 1992), "policy transfer" (Dolowitz and Marsh 1996), "policy clustering" (Elkins and Simmons 2005), "policy diffusion" (Busch and Jörgens 2005), and so forth. Furthermore, various theories of political science, such as constructivist theory, coercion theory, competition theory and theories of social learning, provide explanations for the global spread of policies (Dobbin, Simmons and Garrett 2007). Based on this great variety of theoretical possibilities, researchers have put forward a number of different possible macro-level mechanisms through which this phenomenon takes place, such as learning, imitation, bandwagoning, emulation, mimicry, competition, elite networking, regimes, etc. (Bennett 1991, Elkins and Simmons 2005). The list is not exhaustive and many mechanisms may conceptually overlap.

In the case of the non-coercive spread of policy one can speak of policy harmonisation, if one observes cooperative intergovernmental activities to re-evaluate domestic practices, or of diffusion, if the processes are independent (Busch and Jörgens 2005). Under diffusion "governments are independent in the sense that they make their own decisions without cooperation or coercion but interdependent in the sense that they factor in the choices of other governments" (Elkins and Simmons 2005, p. 35). One can therefore assert that some sort of policy diffusion has taken place in the case of RES-E policy, because there has been no formal pressure on jurisdictions to adopt policies promoting RES-E and harmonisation has been exceedingly rare, with the joint TGC scheme of Norway and Sweden being the only national-level example I am aware of. But, although there has been a trend towards policy instruments targeting the operation phase of RES-E projects, one can still not claim that policy convergence has taken place. While one may be able to say that FITs and FIPs cluster in Europe driven by to the examples of Germany and Denmark, on the global level it is not immediately apparent what instrument a jurisdiction would prefer.

However, before I can discuss what drove the replacement of policy instruments in Japan, Finland and Norway, it would be helpful to improve the conceptual precision of the discussion by first unbundling the two concepts of "policy" and "government". Theory on policy convergence provides the conceptual categories for the former, while for the latter I draw on ACF.

When discussing policy diffusion it is important to recognise that not all aspect of policy diffuse to the same extent. It is therefore useful to distinguish among several policy dimensions. Based on prior work (Bennett 1991, Dolowitz and Marsh 1996) I suggest that in the case of this discussion of RES-E policy development the relevant dimensions to be taken into account are ideas, goals, instruments and outcomes. Ideas consist of certain normative, scientific and technical beliefs that decision-makers hold about the policy field they are active in. Goals are the final state which a policy aims to achieve, while the outcomes are the impact and consequences of policy implementation. Policy instruments are the tools available to policymakers to arrive from goals to outcomes. I include in the definition of instruments any new institutions and organisations that result from these instruments' implementation.

The three case studies taken into account here display the effects of policy diffusion at the level of policy goals, yet not on that of policy instruments. This is what lies at the bottom of the divergence in policy outcomes between the three case studies under review here and other jurisdictions where

the promotion of RES-E has produced more noticeable outcomes within a shorter time frame, such as Germany, Denmark, etc. This divergence between the diffusion of policy goals and policy instruments is consistent with research findings dealing with other policies, such as for instance in the case of regulatory impact assessment (Radaelli 2005).

This may be ultimately tied to the motivation behind the introduction of the initial policy instrument. To facilitate discussion, I suggest introducing motivation as an intermediary variable, distinguishing between two kinds of macro-level (i.e. jurisdiction-level) motivations – instrumental and symbolic. Concretely, under a functionalist account of policy development within a single jurisdiction, policy develops in order to address a perceived problem. I call this instrumental motivation. Other jurisdictions facing similar problems may choose to ignore the issue or, being instrumentally motivated, either to innovate a novel solution on their own or to copy and adapt the already proven solution of the initial innovating jurisdiction. Once a sufficiently large number of jurisdictions have adopted similar policies, a shift in the world model of the role of government occurs, triggering the adoption of the policy across a much broader group of jurisdictions than before. This pattern has been observed before, for instance in the case of the expansion of mass education (Meyer, Ramirez and Soysal 1992). While no doubt a part of the jurisdictions introducing new policies in this ideationally driven phase will do so out of a genuine desire to address a policy problem, operating therefore under an instrumental motivation just like the policy pioneers, it is unavoidable that other states will merely emulate the policy under the effects of symbolic motivation, i.e. out of a desire to gain legitimacy.[4]

The analytical added value gained by introducing the concept of macro-level motivation is apparent once the concept of "government" is also unbundled along the lines of the ACF theory developed by Sabatier and Jenkins-Smith. Below follows an abbreviated and simplified account of their analysis framework.[5]

In order to make sense of policy change ACF focuses over a longer period of time, i.e. a decade or more, on a particular policy subsystem. Subsystems consist of actors of various backgrounds regularly dealing with a particular issue area, and are immersed in a policy background characterised by relatively stable parameters, i.e. characteristics of the policy environment that are typically not the focus of actors' goals and strategies, such as a jurisdiction's constitutional structure, the values of its population, its natural resources, etc. This background however is subject to systemic events at irregular intervals, such as major socio-economic changes, changes in government, policy decisions in other subsystems, etc.

Actors in these subsystems are animated by a three-tiered belief system, centred on a set of policy core beliefs that actors are reluctant to change. These beliefs consist of their value priorities, basic perceptions and preferred strategies concerning the problem dealt with in the subsystem in question. Secondary policy beliefs, such as the design of certain institutions or the settings of policy instruments, are subordinated to policy core beliefs and therefore easier to change, whereas deep core beliefs, such as the prioritisation of individual freedom versus social equality, etc., supersede them and are therefore basically immovable. These belief systems unite disparate actors into

[4] Examples of legitimacy as a motivating agent can be encountered in Gilardi 2010 for unemployment policy and Radaelli 2009 for regulatory impact assessment. Busch and Jörgens (2005) quote further are quoted from the fields of norm theory (Finnemore and Sikkink 1998) and media studies (Markus 1987). Discussing diffusion caused by adaptation to altered conditions, Elkins and Simmons mention cultural norms as one of three obvious mechanisms: "In terms of norms, the predominant benefit is reputational. Joining a majority of other actors confers a degree of legitimacy or, in the case of a negatively valenced practice, *cover* for criticism" (Elkins and Simmons 2005, p. 39 – emphasis in the original).

[5] For fuller explanations consult Sabatier 1998, Sabatier and Weible 2007, etc.

advocacy coalitions seeking to maximise impact on policy in ways that are of common interest to them. Conflicts among advocacy coalitions are mediated by policy brokers.

Through the macro-level phenomenon of policy diffusion ideas that have originated in equivalent subsystems from different jurisdictions enter novel contexts. As most new policies create new winners and losers, within any subsystem there may be advocacy coalitions both favouring and opposing change, more or less vehemently. Should advocacy coalitions favouring change enjoy dominance within the subsystem at the time, they will be able to induce thorough policy change, along both dimensions of policy goals and policy instruments. Thus, the subsystem, and by extension the entire jurisdiction it is a part of, will come to display instrumental motivation. However, if the dominant coalitions find that it is in their interests to oppose the implementation of the policy, then diffusion may not occur at all. Alternatively, if the need to conform to an emerging idea and gain legitimacy cannot be avoided, then underdog coalitions may be thrown a bone through the *pro forma* implementation of the emulated policy goals, yet without the policy instruments that run counter to the interests of the dominant coalitions in the subsystems. Paying ostensibly lip service to the policy goals based on the ideas developed in the original jurisdiction, while implementing emasculated policy instruments that do not produce equivalent policy outcomes is what I call the result of symbolic motivation.

The latest iteration of ACF argues that policies can change given one of three conditions, or a combination thereof: policy learning, external shocks and internal shocks. Such developments redistribute political resources available to coalitions and reinforce or undermine their beliefs in the correctness of their policy preferences (Sabatier and Weible 2007, p. 198-9 and 204-5). I argue that policy instruments developed under instrumentally motivated policy processes are more likely to be adapted by means of policy learning, whereas symbolic motivation requires shocks if change is to occur. This is because hegemonic coalitions have no real incentive otherwise to contemplate change. First, they are likely to be suffering from confirmation bias, as in the absence of a shock by definition no events have taken place to disabuse them of the belief that their instrument choice is suboptimal and that the implementation of the policy is the best possible within their jurisdiction. Second, as shown above, different instruments favour different actors, so dominant coalitions are likely to have pushed for the implementation of their preferred instrument already at an earlier stage and, having won, are unlikely to abandon their favourable position. Third, while other coalitions may be contesting the status quo and the ideas behind it, events so far have provided them with sufficient leverage to alter the balance in their favour.

These reasons strengthen the case for a shock-driven change in the case of instrumentally motivated decision-making. A shock saps at all three of them. Most relevantly, a shock calling for more progressive policy outcomes can greatly upset the equilibrium in a subsystem where dominant coalitions had imposed a conservatively structured instrument. I propose that under such conditions old instruments would lose their legitimacy quickly and a proposal more in line with progressive coalitions' beliefs would come to be adopted. Of the two, it is safe to expect internal shocks to have a stronger effect on policy. This is because external shocks exercise only blunt pressure on the subsystem, within which previously dominant coalitions can still control the policy process within the narrower margins afforded to them. Yet internal shocks surgically alter subsystems' internal equilibria, granting greater discretion to progressively minded coalitions.

Motivation in context

All three cases display the introduction of different policy instruments promoting RES-E at two separate points. When Japan, Finland and Norway introduced their initial policy instruments, they were not pioneering a new policy area, as for instance Germany had launched its own FIT already in

1991. In Germany however technology-specific coalitions promoting RES-E emerged from networks of universities, entrepreneurs and politicians in the wake of the energy crises of the 1970s (Jacobsson and Lauber 2006). These coalitions were able to thrive thanks to a constellation of external shocks that shaped the policy environment in a manner favourable to them: the Chernobyl nuclear disaster, EU rulings against the subsidisation of coal extraction, the unification of the two Germanies after the fall of the Berlin Wall, and the burst of global warming on the political agenda (Laird and Stefes 2009). Potential technology-specific coalition groups in the other countries were operating in different environments, where other advocacy coalitions were not interested in the creation of vigorous policy instruments, or even saw a danger in doing so. This resulted in all three jurisdictions to relatively modest policy outcomes up to the introduction of the second policy instrument (See Table 1).

		Japan			**Finland**			**Norway**		
		1990	2000	2010	1990	2000	2010	1990	2000	2010
Percentage of all installed capacity	All RES-E	19.6	18.1	18.9	19.8	18.0	20.1	99.1	99.0	97.4
	Non-hydro	0.1	0.4	2.2	0.0	0.3	1.2	0.0	0.1	1.4
	Solar	0.0	0.1	1.3	0.0	0.0	0.0	0.0	0.0	0.0
	Wind	0.0	0.0	0.8	0.0	0.2	1.2	0.0	0.0	1.4
Percentage of all installed RES-E capacity	Non-hydro	0.7	2.0	11.9	0.0	1.4	6.1	0.0	0.1	1.4
	Solar	0.0	0.7	6.7	0.0	0.1	0.2	0.0	0.0	0.0
	Wind	0.0	0.2	4.2	0.0	1.3	5.9	0.0	0.0	1.4

Table 1: Rough track record for the installation of RES-E generation capacity in Japan, Finland and Norway.
Source: IEA, Beyond 20/20 database, Electricity information, OECD Net Electrical Capacity (2012).

Energy-poor Japan has invested heavily in diversifying its energy mix in the wake of the energy crises, diversifying away from geographically concentrated oil to more diffusely distributed gas, coal and uranium as the main fuels for energy generation. With limited options for geothermal and hydro development, Japanese power utilities were until recently able to argue successfully that electricity prices, historically some of the highest in the OECD, would rise further if Japan were to rely on expensive and wind and solar generation. Ensuring the safety and stability of electricity supply in Japan was said to be tied to an increased role of nuclear power, with the number of reactors set to increase from 54 in 2010 to 68 in 2030.

The Finnish pulp and paper industry, one of the country's most important economic pillars and an important consumer of electricity, has come to own large amounts of shares of the nuclear power plants. These plants' profitability can in turn be strongly affected by the generation of electricity from large-scale wind power facilities, which in the liberalized Nordpool electricity market can feed power into the grid sometimes even at negative prices. Furthermore, renewable energy already figured highly in the Finnish energy mix thanks to the presence of biomass and combined heat and power plants. Yet the development of a larger role for biomass-based renewable energy sources, electricity or otherwise, would raise the price for this most fundament raw material of the powerful pulp and paper industry. Thus, an increased role for RES-E under most of its forms was likely to have deleterious effects on the interests of one of Finland's most important economic sectors.

Finally, the Norwegian experience is tied to the availability of cheap hydro power, which generates currently 98% of all of Norwegian electricity and has fostered the development of certain highly electricity-dependent industries, such as for instance aluminium processing. Norwegian electricity is therefore already one of the greenest in Europe. Furthermore, just like in Finland, to which Norway

is joined through the Nordpool electricity market, a concern exists that installing additional wind power generating capacity would amount to an expensive investment that would ultimately lead to a collapse in electricity prices, wrecking business models for national and municipal utilities.

All three cases show jurisdictions where the dominant advocacy coalitions in the energy-related subsystem were uninterested in the promotion of RES-E technology due to their prior investment, both physical and institutional, into other competing technologies and/or had a direct stake in preventing the development of RES-E beyond a minimal threshold. While the ideas underpinning the RES-E policy field diffused rapidly through network of technology developers and environmentally concerned segments of civil society, they were ultimately unable to steer the policy process in a direction that would generate more notable policy outcomes in terms of additional installed RES-E capacity and RES-E electricity generated.

The interests of dominant actors within the power sectors of Japan, Finland and Norway, coupled with the unimpressive policy outcomes and the minimal efforts to improve policy outcomes over the course of the implementation of the initial policy instrument, suggests that all three jurisdictions were operating according to symbolic motivation at the time of that instrument's introduction. Moreover, some of the features of the ulterior policy instruments still suggest that instrumental motivation is still not dominant in these jurisdictions.

Conclusion

Novel policy fields can either diffuse or not to receiver jurisdictions. However, if diffusion occurs, what dimensions of policy diffuse actually markedly depends on whether the jurisdiction is driven by instrumental or symbolic motivation. This in turn depends on whether the ideas supporting the policy's goals find supporters among the advocacy coalitions within the relevant subsystem in the receiver jurisdiction, and on whether these supporting coalitions enjoy dominance within the subsystem, or can quickly rise to such a position. Jurisdictions where such ideas do not strike a chord with enough actors will see only anaemic policy instruments that do not manage to produce policy outcomes in line with the original policy goals.

This model of policy diffusion solves the question of why in some jurisdictions sudden policy replacement occurs without prior attempts at reform. It also provides some initial answers to why seemingly radical policy reforms produce instruments that do not go as far as they could. However, a number of challenges remain in terms of details that still require further clarification.

First and foremost future research needs to show how the transition takes place between the macro-level and the micro-level, i.e. within the subsystem. The introduction of the concept of jurisdiction-level motivation was necessary in order to construct a hypothesis on what distinguishes jurisdictions that replace policy instruments from ones that do not. But that motivation is epiphenomenal: a convenient indicator for the result of the behaviour of different advocacy coalitions. What are the channels through which the ideas behind the innovative policy goals actually enter the policy subsystem? How did policies supporting RES-E actually become an accepted part of the role of government? How did this perception spread from jurisdiction to jurisdiction? Furthermore, if one accepts the assertion of ACF that most policy is generated within policy subsystems, if the dominant coalitions oppose such policy innovations, how does such a topic come to be discussed?

Another aspect that requires further fleshing out is the nature of the shock that triggers the replacement of the initial instrument with a new one. In the case of Finland and Norway the development of the EU's RES directive conveyed the message to the respective countries'

subsystems that the status quo was no longer sustainable, whereas in Japan it was the spectacular end of the five-decade LDP government. More work needs to be conducted here, especially as advocacy coalitions in each jurisdiction had probably been involved on some level in bringing about the "external" shock. Conversely, while the Fukushima accident had knock-on effects that no doubt made Japan's RES-E policy much more ambitious than it would have otherwise been, it was not the kind of external shock that any advocacy coalition would have been able to directly prevent. Also, while it had a great effect on Japanese energy policy, no noticeable effects on Finnish or Norwegian energy policy can be observed – even though interestingly enough in Germany, the reference point for RES-E policy, it led to a reaffirmation of the desire to phase out nuclear power! Clearly more effort needs to be spent on problematizing this concept further.

The role of political parties is an additional aspect that could be developed further. Most of the decisions regarding the design features of policy instruments are likely to be beyond the expertise of the average legislator, making it difficult to believe that parties would have *a priori* positions on any of them. This leads one to believe that most of the technical discussions that would have an impact on the effectiveness of new instruments would occur among the experts of individual coalitions within the subsystem, yet the potential role that parties can play as policy brokers cannot be overlooked. Also, all three case studies addressed here are democracies, so ultimately all proposals from ministerial working groups need to undergo at least a formal discussion in the legislative body, giving parties yet another venue where to inject themselves into the policy process.

Last but not least, the lynchpin of this model is that jurisdictions that casually replace policy instruments on RES-E do so because they were not enthusiastic enough about those policies to begin with and only introduced them in order to gain legitimacy. Yet, just as the quality of the way a policy is being implemented is subject to interpretation, so is the concept of legitimacy. In the eyes of exactly whom did the jurisdictions expect to gain legitimacy? And, on a more micro-level: How did perceptions of legitimacy, and of the need for legitimacy, play out among the advocacy coalitions within the subsystem?

I hope to be able to answer at least some of these questions in the future and I hope that those that I will fail to will receive the worthy attention of other researchers.

Bibliography

Bennett, Colin J. (1991). What is policy convergence and what causes it? *British Journal of Political Science* 21 (2): 215-233

Butler, Lucy and Karsten Neuhoff. 2008. Comparison of feed-in tariff, quota and auction mechanisms to support wind power development. *Renewable Energy* 33 (2008): 1854-1867.

Busch, Per-Olof and Helge Jörgens. 2005. The international sources of policy convergence: explaining the spread of environmental policy innovation. *Journal of European Public Policy* 12 (5): 860-884.

Carley, Sanya. 2011. The era of state energy policy innovation: A review of policy instruments. *Review of Policy Research* 28 (3): 265-294.

Dolowitz, David and David Marsh. 1996. Who learns what from whom: A review of the policy transfer literature. *Political Studies* 44: 343-357.

Council Directive (EC) 2009/28/EC of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

Elkins, Zachary and Beth Simmons. 2005. On waves, clusters and diffusion: A conceptual framework. *Annals of American Academy of Political Science* 598: 33-51.

Energistyrelsen. The history of Danish support for wind power. http://www.ens.dk (accessed December 2, 2012).

Finnemore, M. and K. Sikkink. 1998. International norm dynamics and political change. *International Organization* 52 (4): 887 – 917.

Fischlein, Myriam Lydia. 2010. *Renewable energy deployment in the electricity sector: Three essays on policy design, scope, and outcomes*. University of Minnesota, Ph.D. dissertation. http://purl.umn.edu/99640 (accessed December 31, 2011).

Fouquet, Doerte, Thomas B. Johansson. 2008. European renewable energy policy at crossroads: Focus on electricity support mechanisms. *Energy Policy* 36: 4079–4092.

Groba, Felix, Joe Indvik and Steffen Jenner. 2011. Assessing the strength and effectiveness of renewable electricity feed-in tariffs in European Union countries. Deutsches Institut für Wirtschaftforschung Discussion Papers 1176. http://www.diw.de/sixcms/detail.php?id=diw_01.c.390081.de (accessed on September 7, 2012).

Haas, Reinhard, Niels I. Meyer, Anne Held, Dominique Finon, Arturo Lorenzoni, Ryan Wiser, and Ken-ichiro Nishio. 2008. Promoting electricity from renewable energy sources – Lessons learned from the EU, US, and Japan. In *Competitive electricity markets: design, implementation, performance*, ed. by Fereidoon P. Sioshansi, 419-468, Elsevier Science.

Hall, Peter A. 1993. Policy Paradigms, Social Learning, and the State: The Case of Economic Policymaking in Britain. *Comparative Politics* 25 (3): 275-296.

IEA. 2011. Deploying renewables 2011: Best and future policy practice. Paris: IEA.

IEA. 2012. Electricity information, OECD Net Electrical Capacity (2012). Beyond 20/20 Database.

Jacobsson, Staffan and Volkmar Lauber. 2006. The politics and policy of energy system transformation – explaining the German diffusion of renewable energy technology. *Energy Policy* 34: 256-276.

Laird, Frank N. and Christoph Stefes. 2009. The diverging paths of German and United States policies for renewable energy: Sources of difference. *Energy policy* 37: 2619-2629.

Lenz Blog. No Renewable Portfolio Standard in Germany, Says DIW. Entry posted on November 9, 2012. http://k.lenz.name/LB/?p=8063 (accessed November 18, 2012).

Liefferink, Duncan and Andrew Jordan. 2002. The Europeanization of National Environmental Policy; A Comparative Analysis. University of Nijmegen, research team Governance and Places, Working Paper Series 2002/14. http://www.ru.nl/publish/pages/515103/2002-14.pdf (accessed November 26, 2012).

Markus, M.L. 1987. Towards a "critical mass" theory of interactive media: universal access, interdependence and diffusion. *Communication Research* 14: 491 – 511.

Matisoff, David C. 2008. The adoption of state climate change policies and renewable portfolio standards: Regional diffusion or internal determinants? *Review of Policy Research* 25 (6): 527-546.

May, Peter J. 1992. Policy Learning and Failure. *Journal of Public Policy* 12 (4): 331-354.

Mendonça, Miguel and David Jacobs. 2009. Feed-in tariffs go global: Policy in practice. http://www.renewableenergyworld.com/rea/news/print/article/2009/09/feed-in-tariffs-go-global-policy-in-practice (accessed on December 1, 2012).

Mészáros, Mátyás Tamás, S.O. Bade Shrestha, and Huizhong Zhou. 2010. Feed-in tariff and tradable green certificate in oligopoly. *Energy Policy* 38: 4040-4047.

Meyer, John W., Francisco O. Ramirez and Yasemin Nuhoğlu Soysal. 1992. World Expansion of Mass Education, 1870-1980. *Sociology of Education* 65: 128-143.

Ministry of Petroleum and Energy. 2011. Target of 67.5 percent for Norway's renewable energy share by 2020. Available at: http://www.regjeringen.no/en/dep/oed/press-center/press-releases/2011/target-of-675-percent-for-norways-renewa.html?id=651715 (accessed on December 21, 2012).

Nilsson, Måns, Lars J. Nilsson and Karin Ericsson. 2009. The rise and fall of GO trading in European renewable energy policy: The role of advocacy and policy framing. *Energy Policy* 37: 4454-4462.

Radaelli, Claudio M. 2005. Diffusion without convergence: How political context shapes the adoption of regulatory impact assessment. *Journal of European Public Policy* 12 (5): 924-943.

Radaelli, Claudio M. 2009. Measuring policy learning: Regulatory impact assessment in Europe. *Journal of European Public Policy* 16 (8): 1145-1164.

REN21. 2011. Renewables 2011: Global status report. REN21. Available online from http://www.ren21.net/REN21Activities/Publications/GlobalStatusReport/GSR2011/tabid/56142/Default.aspx (accessed on December 1, 2012).

Renewables International. Renewables raise German retail power rate by 7 percent but lower industry prices by 18 percent. Entry posted on October 15, 2012. http://www.renewablesinternational.net/renewables-raise-german-retail-power-rate-by-7-percent-but-lower-industry-prices-by-18-percent/150/537/57492/ (accessed on October 26, 2012).

Sabatier, Paul A. 1998. The Advocacy Coalition Framework: Revisions and Relevance for Europe. *Journal of European Public Policy* 5(1): 98-130.

Sabatier, Paul A. and Christopher M. Weible. 2007. The Advocacy Coalition Framework: Innovation and Clarifications. In: *Theories of the Policy Process*, ed. by Paul A. Sabatier, 189-220. Boulder: Westview Press.

Shrimali, Gireesh and Joshua Kniefel. 2011. Are government policies effective in promoting deployment of renewable electricity resources? *Energy Policy* 39: 4726-4741.

Tews, Kerstin, and Per-Olof Busch. 2002. "Governance by diffusion? Potentials and restrictions of environmental policy diffusion". Global Environmental Change and the Nation State: Proceedings of the 2001 Berlin Conference on the Human Dimensions of Global Environmental Change.

Thelen, Kathleen. 1999. Historical Institutionalism in Comparative Politics. *Annual Reviews of Political Science* 2 (1): 369-404.

Uba, Katrin. 2010. Who formulates renewable-energy policy? A Swedish example. *Energy Policy* 38: 6674-6683.

Wüstenhagen, Rolf and Emanuela Menichetti. 2012. Strategic choices for renewable energy investment: Conceptual framework and opportunities for further research. *Energy Policy* 40: 1–10.

Young, McGee and Carol Hager. 2011. Grassroots activism and the institutionalization of renewable energy policy in Germany and the US. Presentation at the Annual Meeting of the American Political Science Association. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1901852 (accessed April 24, 2012).