Facing the Problem of Climate Change – Technology Shaping New Energy Policy Discourse

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Abstract

This paper focuses on the role of the Parliament as a forum for energy policy debate and a locus of confrontation between international regulation and national and local interests. It scrutinises the parliamentary energy policy discourse as a preparatory phase in the formation of new energy policy. It discusses the expectations and tensions related to the formation of new energy policy in the view of elected politicians in Finland through analysing parliamentary policy discourse regarding the National Energy and Climate Strategy (2005). The findings point to the ambiguous role of the nation-state in balancing concerns over energy supply security, self-sufficiency and energy efficiency with aspirations of technological and economic competitiveness.

Introduction

Recently, the search for solutions to the global problem of climate change has strengthened the role of science and technology in societal development, relating new technologies to the complex issues of environmental, economic and social sustainability. The increased international regulation such as the UN Convention of Climate Chance (1991) and the Kyoto Protocol (1997) has pushed governments to invest in new technologies[1] within energy sector. At the same time, academic and public discussions have emerged regarding energy policy options and related technologies, resulting in that traditional values and negotiation structures are increasingly confronting changing forms of governance and new interest controversies (see e.g. Wüstenhagen et al. 2007; Hajer 2003a). In this context, the possibilities and limitations of energy policy become necessarily defined both by technological and political spheres (Peltola 2007). Whereas traditional political analysis has often taken technology primarily as a neutral

[1] Especially new renewable energy technologies: concentrating solar power, solar photovoltaics, bioenergy, wind energy, geothermal energy and small hydropower technologies (IEA 2003); also combustible renewals and technologies fostering the efficiency of energy production (Prime Minister's Office in Finland 2005a).

object of decision-making, understanding the formation of new energy policy as a debate over a common goal of preventing climate change opens new roles for technology. As Andrew Barry (2001, 2) notes:

> "This is a political preoccupation with the problems technology poses, with the potential benefits it promises, and with the models of social and political order it seems to make available. We live in a technological society, I argue, to the extent that specific technologies dominate our sense of the kinds of problems that governments and politics must address, and the solutions that we must adopt".

Barry distinguishes between the notion of technical device as a material or immaterial artefact and technology that also refers to forms of knowledge, skills, and various means with which technical devices can be utilised. What follows is that technology can be perceived not only as an instrument in political controversies or in resolving them but also bound up with opening new political projects and space for political disputes (Ibid., 9).

This paper focuses on the meanings that are produced to new technologies and the ways in which energy policy takes references from other policy sectors, especially technology, economic and industrial policies. Sociological research on the governance of science and technology has produced a significant body of literature concerning e.g. knowledge production (Nowotny et al. 2001), forms of participatory democracy (Hansen 2005; Hagendijk 2004) and science-public relations (Jasanoff 2004; Irwin & Michaels 2003). Yet recently less attention has been paid to the formal institutions of representative democracy. This paper scrutinizes the political dimension of technology in the frame of representative democracy. The focus is on the formation of a policy discourse within a field where technology emerges as defining and shaping the political. Unlike an opposite or an unavoidable substitute to direct democracy as some theorists of participatory democracy have suggested (see Urbinati 2000), formal institutions of representative democracy may be capable of producing political and public space for practices of mediation, negotiation and confrontation (Brown 2006, 205–206; Mouffe 2005, 23; Young 2000, 130–131). The Parliament as the highest national decision-making unit with a formally legitimate position (Nousiainen 1998) is understood here as an important forum for energy policy debate and a locus of confrontation between international regulation and national and local interests. The paper will analyse the Finnish parliamentary debate on the National Energy and Climate Strategy (MTI 2005). Through the example of Finnish energy policy, it also reflects more generally the changing role of the nation-state within the context of increasing international regulation.

Energy policy and the neo-liberal state

Along with the processes of globalisation and Europeanization some functions traditionally belonging to the nation-state are shifting to supranational organisations such as the UN, the OECD and the EU. Not only international markets that largely operate irrespective of territorial and geographical boundaries but also deterritorialisation of political processes are claimed to weaken the nation-state and transform national and regional politics towards broader scale (Hardt & Negri 2004). These processes become visible especially in small countries like Finland that seek a balance between adapting to supranational commitments and fostering specific national interests. In this sense, energy policy appears as a compelling political field where the demands of global responsibility and regulation confront national concerns such as self-sufficiency, security of supply and undisturbed energy distribution.

Aside from the international level, critical state theorists argue that the nation-state is facing a fundamental internal dilemma of inclusion and exclusion that confronts representative-democratic institutions

operating in market economies. According to this account, the main challenge of the state is to balance inclusive efforts of participation and incorporation of non-state actors into political decision-making with exclusive forms of limited representation, delegated authority and the logic of the market in order to ensure state's successful operation. (Bailey 2006, 20–21.) The contemporary regimes in industrialised countries are also characterised by variants of neo-liberalism associated with marketization, deregulation, promotion of competition and individualisation (e.g. Jessop 2003; Harris 2006; Eddy 2006). Peculiar to neo-liberalism as a form of governmentality and a normative effort is also that the market rationality is increasingly extended to political sphere. In its attempt to impose market-based regulatory arrangements (Brenner & Theodore 2002), the state not only directs interventionist measures towards supporting market functioning but also submits its core functions to the economic rationale, taking economic growth and generalised cost and benefit calculations as measures of all state practices. (Brown 2003.) Neoliberalism is not, however, a fixed condition but a process that takes shape through contextually specific strategies and involves with a complex reconstitution of state-economy relations (Brenner & Theodore 2002). The conception of neoliberalism applied here is not only about "rolling back" the state (e.g. dismantling the Keynesian and welfarist modes of regulation) but also with actively "rolling out" new forms of state intervention (Peck & Tickell 2002; see also Jessop 2001).

Finland provides a good example of efforts to balance political confrontations and destabilisations in the search for new energy policy. It has pursued long-term growth-oriented economic and industrial policies along with strong investments in R&D (Lemola 2001; Cabinet Programmes 1987–2003). At the same time, the post-war period's strong state intervention and centralised steering of the national economy has gradually been replaced by the deregulation of financial markets and the opening of national borders for international competition. These transformations have been characterised by a shift from a natural resource -intensive to a knowledge-intensive economy (Schienstock 2007) and from short-term macroeconomic to long-term microeconomic policies (Rouvinen & Ylä-Anttila 2003). Recently Finland has been placed among the leading economies in the world in several competitiveness rankings (EC 2007; Lopez-Claros et al. 2006) which has further encouraged the knowledge-intensive and market-led approach among national decision-makers (Häyrinen-Alestalo et al. 2005).

Despite the increasing market orientation in economic, industrial and technology policies since the early 1980s, Finnish energy policy has long remained rather protective. Until recent deregulations (see e.g. Al-Sunaidy & Green 2006), the national energy market has been largely dominated by the state and energy-intensive industry. Currently there are aspirations of renewing energy policy towards new technology and innovation -led approach. This effort is related to the broader political project of a knowledge-based economy (see Häyrinen-Alestalo & Kallerud 2004) but at the same time it serves as an illustrative example of a specific political field where the market-led ideas of technology policy are confronting traditionally state-regulated energy policy, resulting in struggles over power between different spheres and levels of political decision-making. Finland also illustrates the ambiguous position of the state in the context of globalisation and Europeanization. While aiming to secure the aspirations of national interests and respond to the demands of the global challenge of climate change, the emerging tensions shaken the governing functions of the state. It can thus be asked to which extent the emerging policy discourse resembles or differs from the nation-state centric understanding of energy policy regulation.

Pending narrative and the rhetorical force of sudden interruption

The parliamentary energy policy discourse can be seen as a process through which the representatives negotiate, deliberate and contribute towards responding to the challenge of climate change and the related commitments to the Kyoto Protocol. Whereas the aim is not only to describe the social world but also to lay foundations to socio-political changes, it points to policy discourse as argumentation rather than as objective statements (Gasper & Apthorpe 1996). In its efforts to reorientate energy policy, the policy discourse also embodies elements of a specific form of persuasive speech, a *pending narrative* where the objective is to make the future more controllable and to create a motivation basis for socio-political changes (Törrönen 2000, 81).

A pending narrative is a semiotic macrostructure that seeks to make the uncertain future more predictable. Typically, it is based on a problem or a contradiction that is seen as a threat in the field under discussion. The contradiction serves as a basis for imposing specific goals and means for action (Törrönen 1998). The aim is not only to sketch the current situation but also to convince the audience about the necessity of eliminating the identified problem. It is about creating a motivation and producing identities for the actors involved to commit them to the task. The subject outside of the text is motivated to take action by merging the reality of the task with the subject's reality. In this way, both the narrator and the audience become part of the story. The motivation is created along four modal components: "wanting to do" (will), "having to do" (obligation), "being able to do" (ability) and "knowing how to do" (competence). These are expressed by the relationships between the different elements of the story (sender, subject, object, receiver, helper, anti-subject and opponent). (Greimas 1980; Törrönen 2000, 81–86.) The task is then legitimised as a sole choice by using some sources of knowledge as an authoritative truth (Törrönen 1998, 284). After having laid the basis for the action, however, the story is not taken further[2]. A pending narrative does not contain actualisation or evaluation of the task but indeed takes its rhetorical force from its sudden interruption. When the motivation has been created, the actors are made competent for carrying out the task and the action is legitimised as a sole choice, the story is interrupted and the task is left to the audience.

Complementing policy discourse analysis (e.g. Gasper & Apthorpe 1996) with insights of the pending narrative, this paper scrutinises the parliamentary energy policy discourse as a preparatory phase in the formation of new energy policy. The focus is on the ways in which the parliamentary representatives articulate and interpret constraints, meanings and justifications for technology. These illustrate the points in the policy discourse where technology is anchored to and emerges from what is known as a social process of negotiation (Hosein 2002). The paper will examine the relationships between the different elements of the policy discourse as manifesting underlying assumptions and political expectations. The pending narrative serves as a tool through which they can be revealed. More specifically, the paper will first look at how the threats and the direction of the desired action are constructed in the parliamentary discourse. It will then analyse how commitment to the task and the means for action are articulated. The data consists of the Finnish Government's proposal for the National Climate and Energy Strategy (2005),

[2] Cf. the Greimasian model of the canonical narrative schema (See Törrönen 2000) where this preparatory phase is only the first of the three mini-narratives (the qualifying test, the decisive test and the sanctifying test) of an ideal narrative.

its background documents, Cabinet Programmes (1987–2003) and the three parliamentary plenary sessions in which the Strategy was discussed[3].

The parliamentary policy discourse is structured by certain contextual issues. The discourse takes place in a limited institutional context in which only elected politicians are entitled to participate in the discussions. They follow a formal procedure with rules regarding order, form and time limits for taking the floor. Although most addresses are prepared in advance, there is some space for unprepared comments and debate. Thus, the parliamentary proceedings are understood here as not only formal and pre-prepared decision-making practices but also as open-ended public discussions and potential spaces for undetermined political debates. The proceedings are public and anyone interested may attend a session as a listener. The discussions are also recorded and their transcriptions are publicly available. Due to the principle of proportional representation and the respective power structure among political parties, the politicians' positions in the discussions reflect more or less their parliamentary groups. As the National Energy and Climate Strategy is prepared by the government, the government parliamentary groups[4] represent, in principle, a defensive position towards the strategy whereas the opposition parliamentary groups[5] may have a more critical standpoint. Yet it seems that there are little differences between political parties in regards of the premises of new energy policy and thus the differences between them are not discussed here.

Setting the scene

In Finland, extensive activities promoting new energy technologies began in the 1990s through a bioenergy research programme funded by the Finnish Funding Agency for Technology and Innovation (Tekes), the Ministry of Trade and Industry and the Ministry of Agriculture and Forestry. Also many Tekes-funded technology programmes and the Ministry of Trade and Industry's programmes supporting renewable energies thereafter have indicated the growing importance of new energy technologies (Tekes 2006a; MTI 2003b; MTI 2003c). The National Energy and Climate Strategy (2005) further develops these ideas. It is based on strong expectations of a knowledge-based and high technology -led development in energy sector: technological innovations and respective financing are seen to be focal tools in attaining the objectives set by the Kyoto Protocol (MTI 2005, 34). Over half of the state funding within energy sector is allocated to R&D, with annually budget of 60 million EUR. The aim is to encourage innovations that contribute to restraining climate change especially in areas that develop new energy technologies or have a high technological risk (Ibid.). Also the parliamentary discussions support the main political objectives introduced by the Government. The search for new energy policy is grounded on the need to move from the import-dependent energy system that in Finland is still largely based on fossil energy sources (Statistics Finland 2006) towards the exploitation of renewable energies, along with the Kyoto Protocol's target of reducing greenhouse gas emissions. In this task, new energy technologies are seen to be promising and high political expectations are laid on them.

[3] PTK 128/2005vp, PTK 131/2005vp, PTK66/2006 vp. In the three sessions, there were 266 addresses consisting of 2002 quotations. The quotations are taken here as the units of analysis.

[4] the Finnish Centre Party, the Social Democratic Party, the Swedish People's Party

[5] the National Coalition Party, the Left Alliance, the Green League, the Christian Democratic Party, the True Finns Party.

Articulating threats

The basic tension framing the parliamentary discussions is that between the objective of sustainable environmental development and the demands of economic growth. Accordingly, the policy discourse is constructed along two intertwined storylines: the story of climate change and the story of competitiveness. They differ in their approaches to new technologies as well as in their primary goals. Whereas the story of climate change emphasises environmental sustainability and values technology primarily in achieving this objective, the story of competitiveness focuses on enhancing Finland's technological and economic performance, setting technological development as such among the main political objectives. In this way the stories produce varying meanings and expectations for technological development, bringing forth technology not only as a political instrument but also as a subject of political contestation. To convince the audience on the need of committing to the new technology-led energy policy, the stories begin by identifying the possible threats that may take place if action is not taken. These are brought forth by articulating the obstacles and hindrances, the opponents and anti-subjects in the pending narrative that may impede the task at hand.

In the story of climate change, among the biggest threats in the current policy are seen to be the potential environmental consequences of climate change. In the view of many representatives across parliamentary groups, profound changes in environment and climate conditions will occur if greenhouse gas emissions can not be reduced. Many arguments point to environmental, economic and social impacts such as floods, storms, drought and wildfires as well as spreading diseases, environmental refugees and uncertainties in energy production and use. The search for new energy solutions is also seen to be confronted by the possible threats in terms of national energy security and Finland's position in international energy system. Finland's relatively high dependency on imported energy is claimed to potentially result in problems such as the security of energy supply, self-sufficiency and possible disturbances in energy production and distribution.

At the same time, the discussions refer to Finland's possibly weakening position in international competition of technological and economic development. In this framework, it is not the threat of environmental catastrophes but more of unsatisfactory economic performance that forms the basis for new energy policy. Here the policy discourse draws from the story of competitiveness.

> "Finland has to keep up with technological development, because if we don't, it means that we are gradually losing the competition. This in turn results in that our technological development starts to regress when we should increase the development especially in the field of environmental technology, fuel technology, and develop new forms of energy production that in the future will certainly have the market potential not only in Finland but also internationally. The market is almost unlimited." (a representative of the Finnish Centre Party)

The representatives argue that if political means for new energy policy are not undertaken, Finland will lag behind other countries in technological development. As in regards to the broader economic and societal development economic growth and a good position in international competition are often seen to be among the most important policy objectives in national policies (Prime Minister's Office 2003; Cabinet Programme 2003), the threats of weakening international competitiveness, insufficient economic growth and failures in remaining in the technological forefront form a strong justification base also for new energy policy.

Constructing the task

Despite differences in justifying the need for taking action, the two stories have quite similar propositions regarding the task at hand. It is constructed, along the semiotic terminology, in the relationship between the subject and the object of the narrative. In order to prevent the harmful consequences of climate change (the story of climate change) and to support Finland's economic competitiveness in international markets (the story of competitiveness), the stories emphasise the need to renew national energy policy through the utilisation of technological innovations. The policy discourse takes its rhetorical force from the contradiction between old and new energy policies: a profound change is needed as old energy policy is incapable of responding to the challenge of climate change and in meeting the objectives of economically and environmentally sustainable development. The vision of future energy policy is placed as a part of the present, merging the social reality of the actors with the desired course of action (Törrönen 2000). In this way, the decision-makers and politicians become part of the story. New energy policy is constructed as a national task: "we" need to act in order to create a better world "for us". Drawing from the tension between old and new energy policies, the stories utilise three discursive strategies: the rhetorics of responsibility, possibility and necessity. The task is constructed upon these discursive elements.

The rhetoric of responsibility

In terms of responsibility, the policy discourse points to the significance of the task at hand in a broader scale. Climate change is seen to affect all countries and regions irrespective of national or territorial boundaries. The representatives place Finland as a part of the global energy system, bearing responsibility for climate change not only as a single nation but also as a member of a wider international community.

> "If we say that emissions have to be reduced globally, it also means that we have to reduce emissions in Finland because Finland is not in the outer space but we are part of this global entity." (a representative of the Green league)

In the story of climate change, the commitments to international agreements bind Finland to carry its part of the collective responsibility and take action for preventing climate change. Many arguments point that the problem of climate change should be solved "jointly" by the "global community", indicating a universalistic understanding of common good. Here the policy discourse departs from the state-centric energy policy by creating a discursive construction of a global community that is held responsible for taking action. Yet the criteria on which such a conception should be based remains unquestioned. The idea of a global community is problematic also in the sense that there are no existing mechanisms through which it could be brought into the political sphere (See also Mouffe 2005; Pollack 2005). Thus, these global responsibilities remain rather moral claims than political obligations.

In the story of competitiveness, the rhetoric of responsibility relates to the division of responsibilities in the global scale. Many representatives view the role of industrialised countries as important in creating tools for developing countries, i.e. creating new energy technologies and high technology components that can be utilised in low emission energy production. They reflect a notion of common but differentiated responsibilities of nation-states (Caney 2005, 772–773) where the duties and responsibilities generated by climate change are defined by the available technologies and financial resources in different countries. As a representative of the Finnish Centre Party notes:

> "I would like to emphasise the responsibility of the industrialised countries. If they have the courage to set targets to themselves, we will also have the resources to develop the technology through which we can

> reach the targets. It is pointless to assume that the developing countries would be able to develop the technology, it is the responsibility of the industrialised countries and then the developed technology can also be transferred to the use of the developing countries."

Referring to the differentiated resources, the quotation assumes not only the idea of technological development as inherently natural for industrialised countries like Finland but also that the uneven economic and technological development in the global scale would be a fixed condition and a normal state of affairs. The claimed superiority of industrialised countries in terms of technological development also suggests their supremacy in making judgments on the needed forms of action. The "global community" thus seems to become here one dominated by industrialised countries rather than a collective effort or a sense of global responsibility indicated in the story of climate change. Although there is no space here for discussing in more detail the question of the distribution of responsibilities or who should bear the burdens created by climate change (For overview, see Caney 2005), it is worth noting that this conception of responsibility reflects more industrialised countries' aspirations of new market opportunities and emission credits under the Kyoto Protocol's Clean Development Mechanism (CDM) than objectives such as environmentally and socially sustainable development (For discussion on CDM, see Olsen 2007).

Aside from the international level, the rhetoric of responsibility has a strong ground in national interests. It draws here from Finland's economic structure with high dependency on energy-intensive industry and the tradition of producing inexpensive electricity for industrial use (Cabinet Programmes 1987–2003). Regardless of the recent neo-liberal deregulatory development towards opening markets, the representatives want to retain corporatist elements of old state-centric energy policy in order to gain political support to the new policy orientation. The discourse points to the responsibility of the national political system to secure the operational conditions of national industry.

> "The strategies and activities aiming at controlling the climate change affect the competitiveness of Finnish economy and industry (…) The operational conditions of the energy-intensive industry have to be maintained when we make international agreements. Necessarily they have to be secured." (a representative of the Social Democratic Party)

> "Currently we have quite energy-intensive industry. We need to keep energy policy in our hands at the national level as much as it is possible in the situation of opening markets." (a representative of the Left Alliance)

Especially the story of competitiveness emphasises the role of national policies in securing the operational conditions of national industry and the functioning of national economy. The representatives argue that strong national policies and state intervention are needed to respond to economic uncertainties in the world market. These rather protectionist tones also indicate a tension that emerges here between international climate commitments and the functioning of global markets on one hand and securing national industrial interests on the other.

Rhetoric of possibility

The ways in which the two stories perceive the outcomes of the desired action indicates their divergent interpretations concerning technology. This becomes visible in the rhetoric of possibility. In the story of climate change, developing technology -led energy policy fosters low emission solutions for energy production, supports domestic energy sources and strengthens national and EU-level self-sufficiency in energy production and distribution. In the story of competitiveness, investments in R&D contribute to

creating commercial innovations and goods for international markets. It points out that Finland has significant economic possibilities in the field of new energy technologies, being currently among the leading countries in the world in the use of bioenergy. Yet the tension between old and new energy policy is illustrated also here as the utilisation of this potential is regarded as insufficient. The motivation for the action is derived from the possibilities that new technologies may offer by setting rather high expectations to new technologies' growth potential. These expectations are visible also in a trust in new technologies' ability to create jobs and business opportunities.

> "It would be reasonable to support the growing field of domestic environmental technology that has rapidly growing international market and a huge potential for employing effects." (a representative of the Christian Democratic Party)

> "In energy discussion, we have to move to the 2000s. We have to concentrate on modern, sustainable technology through which we can create jobs, export revenues and entrepreneurial opportunities in Finland. " (a representative of the Green League)

While framed in the story of competitiveness by energy technologies' economic importance, new energy policy becomes articulated in economic terms. The representatives do not question or specify, however, the employing or market mechanisms related to new technologies. Nor is there discussion on the extent of the expected results or their governing processes. In this way, the story of competitiveness seeks to push through abstract ideas of a knowledge-based economy in energy sector, taking the market-led approach as self-explanatory. Paradoxically, the strong R&D investments have not recently been able to fulfil the high expectations of economic growth when measured e.g. by growth in the GDP and the amount of new jobs. Finland has also been unable to fully utilise innovations and investments in R&D at a more general level, lagging behind other Nordic countries in broadening technological development towards sustainable development and social values (Prime Minister's Office 2004; Naumanen 2004).

Rhetoric of necessity

The tension between old and new policy is demonstrated also in the rhetoric of necessity. In the view of many representatives, new orientations in energy policy are necessary due to the insufficiency of the current energy policy measures and Finland's international regulatory obligations. Moreover, through the strong trust in new technologies' potential not only in terms of the objectives of climate change but also in enhancing Finland's economic performance the representatives tend to construct the technology-led energy policy as a hegemonic national project. Its objectives are regarded as "a common good" and a shared goal that requires a profound commitment of all. To strengthen the necessity of new energy policy, the representatives appeal to a sense of mutual commitment and a joint interest at the national level.

> "The self-sufficiency and supply security of energy has to be sufficient enough to secure the basic functions of the society and the industry also in the case of interruption in international energy supply (…) This is a very important message and we can say that it has been developed in a mutual understanding between the government and many others. Energy policy is, as also the Committee's consensual report indicates, increasingly common policy so that it is about the interest of Finland and the interest of the Finnish people how electricity and energy are going to be secured for us in the future." (a representative of the Social Democratic Party)

These arguments illustrate the prevailing consensual approach among the national policy-makers on the overall political goals (E.g. the Cabinet Programmes 1995–2003; STPC 2003; 2006; Tekes 2006b). In

addition, normative claims such as "climate and energy policy *has to be based* much stronger on developing research and technology" (a representative of the National Coalition Party, emphasis added) implicitly point that developing new energy technologies is an indispensability. Unanimity is constructed here upon an assumption of a predefined common interest, resulting in that only those parts of more specific interests that fit to the sphere of the shared goal become considered legitimate. The discourse also reflects an orientation among the representatives towards reproducing political consensus. Unlike in a compromise where the legitimacy of various viewpoints derives from the parties' reciprocal recognition of one another's interests as inherently partial (Kettunen 2006), the new energy policy discourse grounds the basis for motivation by constructing the task at hand as a shared approach. In this sense, the political consensus becomes both an explanation and a policy objective.

Qualifying the actors

Authorising the task

The ways in which new energy policy is justified in the parliamentary discourse reflect what in the pending narrative is called preparing the audience to the task. Here the stories construct specific subject positions for the actors through the modal components of obligation, will, abilities and competences. Legitimating the task refers to will which can be understood by the desired course of action described above and obligation, i.e. the relationship between the sender and the subject (Törrönen 2000). Many representatives tend to base their arguments for technology-led energy policy on the obligations that have to be fulfilled due to Finland's commitment to the Kyoto Protocol. The story of climate change justifies the task by placing international regulation as a basis of obligation, referring especially to the EU policy documents as powerful sources of legitimacy and authoritative definers of energy policy.

In both stories, legitimacy for the task is also sought from scientific and expert knowledge. Despite the diverse estimations concerning climate change and the degree of uncertainty inherent in scientific-technological development (e.g. Sarewitz 2004), scientists and experts in general are taken in the parliamentary discussions as rather uncontested actors and objective producers of knowledge. Knowledge claims are legitimated through references to a number of individuals and institutions that have commonly recognised positions and are thus perceived as reliable (Carvalho 2007). Here references are made in particular to natural sciences and technical explanations. The representatives utilise e.g. technical universities, individual researchers, international energy and health organisations and public research institutes as reliable sources of knowledge. In this way, they seem to accept "the ideology of science" as an objective source of authority and "a judge of truth" (Edmond & Mercer 1999). Climate change becomes defined as a problem which can be solved through (natural) scientific research and technological development, illustrating a relatively narrow understanding of what is regarded as relevant knowledge in the policy discourse. These ideas thus operate as simplifying questions concerning energy solutions as if they would be neutral and quantifiable objects of decision-making.

> "According to the European Commission, 900 000 new jobs will be created in the field of renewable energy in the next 15 years. It depends on us in Finland how many of them will be created in Finland. According to the VTT [Technical Research Centre of Finland], the export of wood energy technology alone could employ 9 000 people in Finland. Investing in wind power, in turn, is estimated to be able to produce as much as 18 000 jobs. The government seems not to be interested in these jobs, as the Social democrats

> hanging themselves in the chimney industry have decided not to use this historical opportunity." (a representative of the Green League)

By referring to expert knowledge, technical details and economic calculations, the representatives construct energy policy largely as a technical matter, placing new technologies as such outside of their social, cultural or political context. They are related, however, to many contentious questions such as agricultural production, transportation and private consumption, bringing forth new interest controversies beyond technical justifications as a variety of stakeholders (e.g. private forest owners, NGOs, car owners, producers of raw materials) become involved with energy policy. As Wynne (1996) notes, different stakeholders may possess knowledge that is valuable and contextually valid but incompatible with scientific explanations while expressing different empirical and normative assumptions and knowledge cultures. Thus, the scientific-technological explanations seem to offer only a limited basis for solving the potentially emerging technological controversies. Moreover, the technical justifications tend to point to the premises of new energy policy as universal and generalisable across regions, countries and continents disregarding differences e.g. in their economic structures, energy resources and political cultures.

At the same time however, technical knowledge is used also strategically, as a political tool in the struggle over power between the opposition and the government parliamentary groups. In the quotation above, a representative uses expert knowledge to distinct fact-based "rational argumentation" from partial viewpoints and interest group related explanations. Technology is used as a means for undermining the traditionally state and industry -dominated power relations by pointing to the interests of heavy industry as confronting several sources of assumedly objective expert knowledge. Here technology thus operates both as an object of decision-making and a strategic tool of opening space for political disagreement.

Knowledge and competences in the service of new energy policy

In addition to obligation and will, the stories construct two other modalities, namely competences and abilities manifested by the helpers of the pending narrative. These are articulated by identifying the ways in which the actors are able to and have the relevant knowledge to carry out the task (Törrönen 2000). In the story of climate change, many representatives stress that Finland already has top-level research and technical know-how in renewable energies and energy efficiency.

> "Strengthening the degree of domestic energy production requires exploiting the high-level and reliable Finnish know-how. In order to follow the principle of sustainable development, both energy saving solutions and the development and better utilisation of new energy technologies are needed." (a representative of the Social Democratic Party)

Also the story of competitiveness stresses the importance of technological and industrial competences. In the view of many representatives, new energy policy not only needs to utilise the economic potential of new technological innovations but also requires better exploitation of the existing competences. As a representative of the Green League argues:

> "Finland has top-level research and technical expertise to develop renewable energy sources and efficient energy economy. How is it possible that this knowledge has not in any way come over to the Government's energy and climate tragedy? Engineers already have the solutions. Now the question is whether we want to utilise them."

Articulating the competences that are needed in the new energy policy also points to the relevance of traditionally more low technology oriented production sectors such as forest industry. Some of the

premises of old energy policy are maintained in the new energy policy discourse: e.g. in developing renewable energy sources the combination of the existing competences and experience in forest industry with new aspirations in energy sector is seen to be a potential economic success with a significant relevance for domestic employment, energy supply security and technology export. Also the existing domestic production structure, know-how and raw material supply are considered important competences for instance in the production of bioethanol and biodiesel. Yet new energy policy is needed to fully utilise these competences.

Towards a better future: means for the action

The abilities are manifested in the two stories by the means through which the objectives of new energy policy can be achieved. In Peck & Tickell's (2002) terms, these illustrate both rolling back some forms of state intervention and rolling out new regulatory means for energy policy. Whereas engineers and researchers in universities and research institutes provide technical and knowledge-based competences it is the state and the politicians who are regarded as able to and capable of conducting new energy policy. Renewable energy sources and new energy technologies are seen to require political, regulatory and financial support in order to become seriously taken solutions for environmentally sustainable development (the story of climate change) and economically competitive components of new energy policy (the story of competitiveness). Especially in the latter story, the representatives emphasise the high industrial relevance of new technologies and call for increasing interaction between universities and industry. The role of the state is to promote these cooperation activities and the utilisation of research results through new institutional and political arrangements such as multidisciplinary research programmes and reforms in education policy. The policy discourse also calls for political reorientation among policy-makers towards a broader understanding of energy policy. It is claimed to require taking distance from sectoral policies due to increasing connectedness of energy policy to many political fields also outside of its traditional scope.

> "The question of energy policy should be seen from a broader viewpoint. It is technology policy, environmental policy and employment policy, and we should invest especially in renewable energies from this basis. This is the energy and technology vision of Finland." (a representative of the Green League)

Also the aspirations of technology policy become visible in many arguments through the strong emphasis on new energy technologies. More effective production methods and processes are seen to require support for high-technology -based applications and knowledge production. The role of the state in this respect is to provide sufficient financial resources for technological development.

> "The government really has to begin to invest in technology that increases energy efficiency, contributes to energy saving and reduces emissions. (…) In my opinion, the government should now start to strongly support Finnish environmental technology companies as well as research and development work within the field." (a representative of the National Coalition Party)

In regards to more traditional forms of state intervention the representatives propose e.g. direct investment subventions, subsidies and concentrated investments in promising fields of energy technologies. Also new forms of state intervention are established in the discourse. In addition to compensating the mechanisms of emission trade and indirectly promoting industrial competence, state action is called for to balance market positions of renewable energy solutions and to compensate for their weaker price competitiveness. Yet some representatives suggest a further roll-back of state regulation due

to the rising price of imported energy and restructurations in international energy market, indicating a trust in the market dynamics as a self-regulating mechanism.

Concluding remarks

In the parliamentary policy discourse, new technology-led energy policy seems to emerge as a complex policy field. The unpredictability of international market dynamics along with the uncertainties related to the climate behaviour and socio-economic outcomes of the reduction of greenhouse gas emissions transfers governing tasks from politicians to experts, from national level to broader scale and from the state to the market. Yet at the same time the discourse points to a strong and active state. Despite the international orientation in the search for new energy policy, the implementation of the action plan is strongly bound to the national level: the state, politicians and decision-makers are considered both capable and competent for carrying out the task. The reorientations in energy policy are seen to require active state intervention and a joint political will among the national policy-makers. As Peck & Tickell (2002, 381) argue, albeit rhetorically antistatist contemporary neoliberalism utilises state's power and governing functions in striving for its goals. While the new technology-led energy policy is strongly market oriented emphasising the economic potential of new technologies, evaluating them in terms of their market value and extending the market logic also to the state in the rhetoric of Finland's international competitiveness, various forms of state action are called for in the policy discourse. These reorientations include e.g. balancing the market positions and price competitiveness of new energy technologies, creating new institutional arrangements for the utilisation of research results and adopting a broader understanding of the policy field.

Besides establishing new regulative tasks typical for the roll-out neoliberalism, however, it is peculiar to Finland that the state also retains some of its old regulative functions. The long tradition of corporatist negotiations, consensual political culture and state control over energy market seem to have a strong hold also in new energy policy. The aggressive national policies related to the heavy industry-dependent economic structure together with the strong position of the political Centre pushing through ideas of balanced regional development and agricultural interests favour old forms of energy production and state-centric regulation.

In regards to the task at hand, references to technological development as a competitive advantage for the national economy and the growing international markets for energy technologies overvalue the aspirations of the story of competitiveness in relation to the concerns raised by the story of climate change. The parliamentary discussions seem to place new energy policy largely in the frame of economic and industrial policies, reflecting the prevailing importance of national industry and the ideas of international competitiveness and economic growth. Yet as the new energy policy discourse takes its references mainly from the economic sphere it tends to subordinate other justifications to the economic rationale. It seems indeed that economic competitiveness becomes a normative principle that has to be secured before other arguments can be considered. What follows is that the rationalistic and scientific-technological approaches dominating the policy discourse prove limited in their capabilities of grasping complex energy policy questions.

References

Al-Sunaidy A. & Green, R. (2006): Electricity deregulation in OECD (Organization for Economic Cooperation and Development) countries. Energy 31(6–7): 769–787.

Bailey, David J. (2006): Governance or the Crisis of Governmentality? Applying Critical State Theory at the European Level. Journal of European Public Policy 13(1): 16–33.

Barry, Andrew (2001): Political Machines. Governing a Technological Society. New York: The Athlone Press.

Brenner, Neil & Theodore, Nik (2002) (eds.): Spaces of Neoliberalism: Urban Restructuring in North America and Western Europe. Oxford: Blackwell.

Brown, Wendy (2003): Neo-liberalism and the End of Liberal Democracy. Theory & Event 7(1).

Caney, Simon (2005): Cosmopolitan Justice, Responsibility, and Global Climate Change. Leiden Journal of International Law 18(4): 747–775.

Carvalho, Anabela (2007): Ideological cultures and media discourses on scientific knowledge: re-reading news on climate change. Public Understanding of Science 16(2): 223–243.

EC, European Commission (2007): European Innovation Scoreboard (EIS) 2006. Comparative Analysis of Innovation Performance.

—— (2005):

Eddy, Elizabeth (2006): Neo-liberalism and Political Inclusion. Social Alternatives 25(2): 20–25.

Edmond, Gary & Mercer, David (1999): Creating (public) science in the Noah's Ark case. Public Understanding of Science 8(4): 317–343.

Gasper, Des & Apthorpe, Raymond (1996): Introduction: Discourse Analysis and Policy Discourse. European Journal of Development Research 8(1): 1–15.

Greimas (1980): Strukturaalista semantiikkaa. Helsinki: Gaudeamus.

Hagendijk, Robin P. (2004): The Public Understanding of Science and Public Participation in Regulated Worlds. Minerva: A Review of Science, Learning & Policy 42(1): 19–59.

Hajer, Maarten (2003): A Frame in the Fields: Policymaking and the Reinvention of Politics. In Hajer, Maarten & Wagenaar, Hendrik (eds.): Deliberative Policy Analysis. Understanding Governance in the Network Society. Cambridge University Press. Pp. 88–110.

Hansen, Janus (2005): Framing the Public. Three Case Studies in Public Participation in the Governance of Agricultural Biotechnology. Florence: European University Institute.

Hardt, Michael & Negri, Antonio (2004): Empire. Harvard University Press.

Harris, Patricia (2006): Neo-liberalism and the State: Implications for Economy, Society and Human Relations. Social Alternatives 25(2): 8–13.

Hosein, Ian (2002): A Research Note on Capturing Technology: Towards Moments of Interest. In Wynn, Eleanor, Whitley, Edgar A., Myers, Michael D. & DeGross, Janice I. (eds.): Global and Organizational Discourse about Information Technology. Kluwer. Pp. 133–153.

Häyrinen-Alestalo, Marja, Pelkonen, Antti, Teräväinen, Tuula & Villanen, Sampo (2005): Changing Governance for Innovation Policy Integration in Finland. In Remoe, Svend-Otto (ed.): Governance of

Innovation Systems: Volume 2. Case Studies in Innovation Policy. OECD. Paris: OECD Publishing. Pp. 111–138.

Häyrinen-Alestalo, Marja & Kallerud, Egil (2004): Towards a Biotech Society - Nordic Perspectives. In Marja Häyrinen-Alestalo & Egil Kallerud (eds.): Mediating Public Concern in Biotechnology. A Map of Sites, Actors and Issues in Denmark, Finland, Norway and Sweden. NIFU Report 1/2004, Oslo. Pp. 7–22.

IEA, International Energy Agency (2003): Renewables for Power Generation: Status & Prospects. Paris: OECD/IEA.

Irwin, Alan & Michael, Mike (2003): Science, Social Theory and Public Knowledge. Maidenhead & Philadelphia: Open University Press.

Jasanoff, Sheila (2004): Science and Citizenship: a New Synergy. Science and Public Policy 31(2): 90–94.

Jessop, Bob (2001): From Thatcherism to New Labour: Neo-Liberalism, Workfarism, and Labour Market Regulation. Department of Sociology, Lancaster University.

Kettunen, Pauli (2006): Kirkuvan harmaa 1970-luku. Työväentutkimus. [http://tyovaenperinnefi/tyovaentutkimus/tt2006/a_kirkuvan.htm].

Lemola, Tarmo (2001): Tiedettä, teknologiaa ja innovaatioita kansakunnan parhaaksi. Katsaus Suomen tiede- ja teknologiapolitiikan lähihistoriaan. Työpapereita 57. Helsinki: VTT.

Lopez-Claros, Augusto, Porter, Michael E., Sala-i-Martin, Xavier & Schwab, Klaus (2006): The Global Competitiveness Report 2006–2007. World Economic Forum. Palgrave Macmillan.

Mouffe, Chantal (2000): The Democratic Paradox. London: Verso.

—— (2005): On the Political. London:Verso.

MTI, Ministry of trade and Industry (2003a): Uusiutuvan energian edistämisohjelma 2003–2006: työryhmän ehdotus. Uusiutuvan energian työryhmä. Kauppa- ja teollisuusministeriön työryhmä- ja toimikuntaraportteja 5.

—— (2003b): Uusiutuvien energialähteiden edistämisohjelman arviointi. Helsinki: Kauppa- ja teollisuusministeriön raportteja.

—— (2003c): Teknologia- ja innovaatiopolitiikan linjaukset 2004–2007. Helsinki.

Naumanen, Mika (2004): TEKBARO. Teknologiabarometri kansalaisten asenteista ja kansakunnan suuntautumisesta tietoon perustuvaan yhteiskuntaan. Helsinki: the Finnish Association of Graduate Engineers TEK. [Technology Barometer].

Nousiainen, Jaakko (1998): Suomen poliittinen järjestelmä. Juva: WSOY.

Nowotny, Helga, Scott, Peter & Gibbons, Michael (2001): Re-thinking Science. Knowledge and the Public in an Age of Uncertainty. Cambridge: Polity Press.

Olsen, Karen Holm (2007): The clean development mechanism's contribution to sustainable development: a review of the literature. Climatic Change 84(1): 59–73.

Peck, Jamie & Tickell, Adam (2002): Neoliberalizing Space. Antipode 34(3): 380–404.

Peltola, Taru (2007): Paikallisen energiahuollon ympäristöpoliittinen liikkumavara. Vaihtoehtoiset teknologiat, poliittiset käytännöt ja toimijuus. Acta Universitatis Tamperensis 1203. Tampere: Tampere University Press.

Pollack, Mark A. (2005): Theorizing the European Union: International Organization, Domestic Polity, or Experiment in New Governance? Annual Review of Political Science 8: 357–398.

Prime Minister's Office (2005a): Maatalouspoliittinen selonteko. Helsinki.

—— (2005b): The Strategy Document of Prime Minister Vanhanen's Government. Publications 1. Helsinki.

—— (2004): Osaava, avautuva ja uudistuva Suomi. Suomi maailmantaloudessa –selvityksen loppuraportti. Valtioneuvoston kanslian julkaisusarja 19/2004. Helsinki. [Finland's competence, openness and renewability. The final report of the 'Finland in the Global Economy' project].

Rouvinen, Petri & Ylä-Anttila, Pekka (2003): Case Study: Little Finland's

Transformation to a Wireless Giant. In Dutta, Soumitra, Lanvin, Bruno & Paua, Fiona (eds): The Global Information Technology Report 2003–2004. New York: Oxford University Press. Pp. 87–108.

Sarewitz, Daniel (2004): How science makes environmental controversies worse. Environmental Science & Policy 7: 385–403.

Schienstock, Gerd (2007): From Path Dependency to Path Creation. Finland on its Way to the Knowledge-Based Economy. Current Sociology 55(1): 92–109.

STPC, Science and Technology Policy Council (1993): Towards an innovative society. A development strategy for Finland. Helsinki.

—— (2003): Knowledge, innovation and internationalisation. Helsinki.
—— (2006): Science, Technology, Innovation. Helsinki.

Statistics Finland (2006): Suomen neljäs maaraportti ilmastosopimukselle. Ilmastosopimuksen ja Kioton pöytäkirjan toimeenpano. Helsinki.

Tekes, the Finnish Funding Agency for Technology and Innovation (2006a): Ilmastonmuutoksen hillinnän liiketoimintamahdollisuudet. ClimBus-teknologiaohjelman katsaus 2006. Alakangas, Eija & Jussila, Jatta (toim.). Teknologiakatsaus 193. Helsinki.

—— (2006b): Innovaatiotoiminnalla kilpailukykyä ja kasvua. Tutkimus- ja kehitystoiminnan vaikuttavuus yhteiskunnassa. Hyvärinen, Jari & Rautiainen, Anna-Maija. Teknologiakatsaus 188. Helsinki.

Törrönen, Jukka (2000): The Passionate Text. The Pending Narrative as a Macrostructure of Persuasion. Social Semiotics 10(1): 81–98.

—— (1998): The Finnish Press's Political Position on Alcohol between 1993 and 2000. Addiction 98(3): 281–290.

Urbinati, Nadia (2000): Representation As Advocacy: A Study of Democratic Deliberation. Political Theory 28(6): 758–786.

Wüstenhagen, Rolf, Wolsink, Maarten & Bürer, Mary Jean (2007): Social acceptance of renewable energy innovation: An introduction to the concept. Energy Policy 35(5): 2683–2691.

Wynne, Brian (1996): Misunderstood Misunderstandings: Social Identities and Public Uptake of Science. In Irwin, Alan & Wynne, Brian (eds.): Misunderstanding Science? The Public Reconstruction of Science and Technology. Cambridge University Press. Pp. 19–46.

Young, Iris Marion (2000): Inclusion and Democracy. Oxford University Press.

Data:

Cabinet Programmes 1987–2003.

PTK 128/2005vp

PTK 131/2005vp

PTK 66/2006vp

MTI, Ministry of Trade and Industry (2005): Outline of Energy and Climate Policy for the Near Future – National Strategy to Implement the Kyoto Protocol. Government Report to the Parliament. 24 November 2005. MTI Publications 27.