How to Conceptualize Policy Change: An Analysis of the UK Electricity Policy Change, 2000–2010

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Abstract

Electricity is central to a wide range of daily activities in modern societies and therefore electricity policy is at the heart of contemporary public policy debates. It has always been an attractive ground for the battle of interests, ideas and values. The UK is no exception. For several decades, the UK's electricity policy has been dealing with fluctuations in the balance amongst the trinity of policy objectives: low-carbon, security and affordability; it has been constantly the subject of political controversies and policy discourses; it has recurrently experienced structural and institutional changes; it has always been influenced by the macro socio-economic patterns; and, finally, it has witnessed a continuous plethora of policy activities embodied in series of White Papers, consultations, Acts of Parliament and new institutions. Altogether, the UK electricity policy articulates a set of characteristics for an ideal policy change case study. However, while having been a subject of change for three decades, it is important to distinguish between different stages of policy change. In other words, there is no common understanding of the nature and the size of several significant changes that have happened throughout the first decade of the 21st century. In response, this paper suggests a distinctive typology of a range of shifts in policy this process has witnessed, from extremely fundamental to quite minor and marginal.

From a theoretical point of view, policy change theories conceptually deal with the question of 'How can we explain periods of relative stability, even inertia, which are then succeeded by often dramatic policy change' (Meijerink 2005, 2)? As a prerequisite for explaining the process of policy change, it is crucial to clarify the general term of policy change determining its typology on the basis of the extent, the aspects and the distinctive characteristics. Accordingly, this research is firstly to constitute a distinctive typology of policy changes. Then it will apply this analytical framework to the case of UK electricity policy to measure various stages of policy change, thus providing a better understanding of what kinds of changes in policy have happened in the last decades. This research is done as a part of a wider research about the UK's change in electricity policy, with a focus on the case of the Electricity Market Reform during my stay at the Institute for Advance Studies on Science, Technology and Society in Graz, Spring 2012.

1. Analytical framework: Policy change and its different typology

Policies function as a socio-political institution, once they get fully institutionalized (Clegg 2012). They then reflect signs of "path dependency", "policy feedback" and "status quo advantage" and thereby imply inertia and impose the challenge of "changeability". However, different modes of change in terms of "type" – continuous or disjuncture – and "process" – incremental or radical – are likely to occur in public policies (Streeck & Thelen 2005, 9).

Looking at the UK electricity policy since 2000 as the main analysis time frame, there is no common understanding of the level of "profundity" and the "type" of several significant changes that, with no doubt, have happened. Nevertheless, this history has been recurrently subject to different claims offering various models of change measurement in the UK energy policy. They are ranging from "profound change" (Blair in DTI 2003, 3) to the "new energy paradigm" (Helm 2005). They also extend to the vague title of "energy transition" (DECC 2009) and eventually lead to "the biggest transformation" and "fundamental reform" (DECC 2011, 2012). On the other hand, there are also some opposing arguments rejecting any fundamental shift in the UK electricity and energy policy and highlighting its "remarkable resistance" and "bands of iron" that have "locked it in" within the conceptual boundaries of a dominant policy framework (Kern 2009, Kern & Mitchell 2011, Kuzemko 2011, Mitchell 2008).

1.1. Hall's three orders change, policy paradigm and paradigmatic shift

Policy change is defined overall as change in the policy aspects of a "governmental program". Depending on the intensity and the breadth of its consequences, Hall (1993, 278) has simply conceptualized three distinct kinds of change. "The first order change" implies adjustment in the level or setting of current policy instruments, whereas change in policy instruments and techniques themselves is labeled as "second order change". Together they reflect "normal policy making" and "incrementalism". He then characterizes a "third order change"[1] entailing a shift in policy goals and

their priorities and hierarchy. Once all three components of policy alter simultaneously, the ascribed status is that of a "radical" policy change; however this rarely happens resulting from a fundamental shift in wholesale "policy paradigm". In addition to Hall's policy components including an integrative framework of ideas, policy goals and instruments, as well as policy settings, Kern and Mitchell (2011, 4) have recently added another dimension to measure the institutionalization of a new paradigm called "governance institutions". Building on Mitchell's work on the energy policy paradigm, they argue that the structure of governance institutions and structures also constrain the new policy paradigm's embeddedness: "the movement from one policy to another is likely to be preceded by significant shifts in the locus of authority over policy" (Hall 1993, 280).

Building on the "Kuhnian image of scientific paradigms", a paradigm is originally conceptualized as an integrated framework of analysis including "theoretical propositions" and "models" that provide an integrative explanation of a scientific phenomenon (Kuhn 1962, 10). Similarly, Hall (1993, 279) describes a policy paradigm as an "interpretive framework" that not only influences "numerous levels", from policy objectives to policy instruments and relevant settings, but also frames the fundamental understanding of policy problems, shapes the key philosophy behind policy-making, and cognitively "filters information and focuses attention" on a particular range of solutions. In other words, the policy paradigm interpretively "circumscribes what is feasible, possible and desirable" (Kern & Mitchell 2010, 6). It functions as a "band of iron" holding together a framework constraining "certain actions and policies" (Mitchell 2008, 2). A clear example is the emergence of the UK "Pro-market Energy Policy Paradigm" in 1980, which has dominated energy policy as an academic and political "orthodoxy" and is largely "taken for granted" over a period of decades (Kuzemko 2011, 17).

> Policy-makers customarily work within a framework of ideas and standards that specifies not only the goals of policy and the kind of instruments that can be used to attain them, but also the very nature of the problems they are meant to be addressing. Like a Gestalt, this framework is embedded in the very terminology through which policymakers communicate about their work, and it is influential precisely because so much of it is taken for granted and unamenable to scrutiny as a whole. I am going to call this interpretative framework a policy paradigm (Hall 1993, 279).

A paradigmatic shift analogously implies change in the "context" and "ideas" insofar as it results in new policy "objectives" and "instruments" (Helm 2005, 1). Although the terminology of paradigmatic shift overall implies a "clear break" in the previous framework of practices, Kuzemko (2011, 14 and 18) argued that in existing literature, its precise definition is still "complex" and therefore "difficult to assess" and measure. This terminology has been utilized in a few studies about the UK's energy governance (Helm 2005; Kern 2009; Kern & Mitchell 2011; Kuzemko 2011; Mitchell 2008). Regardless of contrasting conclusions they have made in terms of whether or not paradigmatic shift has happened within the UK energy system, none of them has offered a clear and rigorous definition or an explanation of its causes and dynamics. The sole exception can be found in the work of Kuzemko (2011), which will be elaborated on later.

Since a policy paradigm is expected to get interpretively institutionalized, any paradigmatic shift is more likely to come from a socio-political process than a scientific one: "paradigm shifts are generally associated…with highly politicized and public debates" (Hay 2001, 200). This process is also likely to involve the "accumulation of anomalies" and "dissatisfaction from policy failures" and thereby result in a shift in "policy authorities" (Hall 1993, 280). As a result, the process of "discrediting the prevailing paradigm" leading to its "obsolescence", is a necessary prerequisite for any paradigmatic shift. Notwithstanding, the policy paradigm shift is unlikely to take place unless a credible "alternative paradigm" readily exists to replace it (Hay 2001, 102).

1.2.The Multiple Streams (MS) framework and policy change typology

The policy components exploited in Hall's three orders change concept are also generally comparable with the distinction made by Kingdon (1984) in the Multiple Stream Framework amongst three semi-independent processes: problem, politics and policy streams. Problems are defined as societal discourses framing the political and policy issues. The political stream represents the interpretative direction that senior policymakers embody in the way of prioritizing problems and adopting policy instruments. Policy streams

refer to the instrumental solutions proposed to tackle the problem. In comparison, the definitions of distinctive policy, politics and problem streams are conceptually similar to Hall's policy components. Respectively, problem stream implies what Hall calls policy paradigm normatively framing policy problem; politics stream relates to politically elevating policy objectives; and policy streams pays attention to policy proposals and available instrumental solutions. More interestingly, the recent revisions of MS have introduced a fourth institutional factor called "policy milieu", which is fully compatible with the typology of policy components introduced in this research.

Although MS uses an evolutionary metaphor to illustrate the interaction between distinctive streams, it initially emphasizes on their separate process of life. Accordingly, the window of opportunity is central to the policy change dynamic highlighting the importance of coincidence and the combination of all three streams: "compelling problem", "available solution" and a "receptive political climate" facilitate the situation of "fixing subject into decision agenda" (Kingdon 1984). Arguably the concept of a window of opportunity in MS is merely focused on the extreme radical policy change which is called "paradigmatic shift" in our change typology. Similarly both definitions of policy change highlight the simultaneous change in all four semiautonomous policy streams/components/levels.

Table 1. Comparison between the Multiple Streams' concepts and policy components

MS concepts	Policy settings	Policy instruments	Policy objectives	Policy institutions	Policy paradigm
Policy stream	✔	✔	—	—	—
Politics stream	—	Probably	✔	—	—
Problem stream	—	—	—	—	✔
Policy milieu	—	—	—	✔	—
Windows of opportunity	✔	✔	✔	✔	✔

1.3. The ACF's minor-major dichotomy

There is another change typology proposed by the advocacy coalition framework (ACF). Although ACF is not foremost and solely a policy change theory, it provides a clear-cut dimension classifying different forms of policy changes through a major-minor dichotomy. In the ACF, a major policy change is characterized both by topic and scope. In consistence with its proposed hierarchy of policy beliefs,[2] it defines major policy change as change in the policy core aspects of a "governmental program" (Nohrstedt 2008, 109). This entails significant shifts in some subsystem-wide important dimensions like the policy objectives and values, main challenges, their causes and overall solutions as well as policy proposals. Analogous to the belief system recognized by ACF, minor policy change represents an alteration in the secondary aspects of the policy proposal implying empirical settings and specific designs. Regarding the presumption of "deep core beliefs" as highly normative and cross-sectoral dimensions, they seem rather "non-negotiable" and "unchangeable" through a process of sub-system wide policy change. Therefore, the likely role of deep core beliefs in policy change in ACF has been theoretically overlooked and under-conceptualized. From ACF's perspective, the appearance of change in governmental agendas results from a longer process of change, "as policy image change and belief system coalesce" (Sabatier & Wieble 2007, 310). This typology is analytically consistent with other definitions found in literature (e.g. Cortell & Peterson 1999; George 1979; Hall 1993; Howlett & Ramesh 2003; Rose & Davies 1994).

1.4. A synthesized policy change typology

Arguably, Hall's definition of the policy paradigm fits well with what Sabatier acknowledges as "deep core beliefs". Both function as theoretical and ontological assumptions of the "nature and operation of the world" (Kern & Mitchell 2010, 7). They are similarly characterized as crosssectoral and worldwide normative-ontological beliefs spanning most policy areas (Campbell 2002, 171) and simulated with "landscape macro-political trends" (Kern & Mitchell 2010, 3; Shackley & Green 2007, 221). Further-

more, they are highly resistant against any change "akin to religious conversion" as they are "largely inculturated normative issues" (Sabatier 1993, 31). Similarly, both refer to a form of idea that is "taken for granted", and often represent "a constraint" on policy action and change compared to other forms of ideas, like new policy proposals that affect policy making more dynamically and proactively. In other words normative-paradigmatic ideas function primarily as a source of "stability" whereas others may impose "instability" (Cairney 2012, 15-16).

Having conceptually neglected the role of deep core beliefs in measuring policy change in ACF, they could synthetically complement the concept of paradigmatic shift by adding the highestlevel change to the currently two-folded ACF's change typology. Currently, the ACF defines minor change as the result of the alteration in secondary aspects of public policies. It also sees major change as derived from a shift in core policy aspects of a governmental program. As such, this research suggests that a paradigmatic shift could be characterized by change in the deepnormative and interpretative framework of state proposals as well. In order to relate this ACF-based typology with what is proposed by Hall, there is a suggestion that the first and, to some extent, second order changes in Hall's terminology would reflect ACF's minor policy change. Similarly, the Hall's second and third order changes would rather mean what the ACF calls as major policy changes. Accordingly, this research conceptualizes a paradigmatic shift that not only includes a substantial shift in all previous policy levels, but also changes the interpretative framework called "policy paradigm" by Hall. Technically, a paradigmatic shift would be represented by a radical change in all components of a policy, as previously elaborated. To conclude, this research proposes a hierarchical three-layered change typology based on both the *scope*, the number of altered policy components as Hall accounts, and the *topic*, the level of changed policy aspects as ACF introduces.

This typology is also generally comparable with the distinction made by Kingdon (1984) in the Multiple Stream Framework amongst three semi-independent processes: problem, politics and policy streams. While the MS itself has not expanded its policy change analysis beyond the concept of "windows of opportunity", which is to some extent comparable with what we call as a paradigmatic shift, such an analytical expansion, albeit, seems possible.

It means the MS' definition of change in policy streams could be compared with ACF / Hall's definition of minor/first-order policy change. Seemingly, shifts in both policy and politics streams, in MS terms, would rather mean what ACF calls as major policy change or what Hall categorizes under second and third-order changes. Table 1 has tried to conceptually link various definitions of policy change in ACF, Hall and MS frameworks.

Table 2. Synthesized hierarchical policy change typology and its linkage with policy components and levels

Change Types	ACF's characterization	Hall's characterization	MS's characterization	Policy components and levels				
				Policy settings	Policy instruments	Policy objectives	Policy institutions	Policy paradigm
Minor change	Secondary aspects	First order change	Policy stream	✔	Probably	—	—	—
Major change	Core policy aspects	Second and third order changes	Politics/ policy/milieu streams	✔	✔	✔	Probably	—
Paradigmatic shift	Deep core-normative aspects	Paradigmatic shift	Problem stream and window of opportunity	✔	✔	✔	✔	✔

2. An analysis of the UK energy policy change and paradigm shift

To measure the degree of change profundity and provide a clear image of different kinds of changes in the UK energy policy this section is to apply the conceptual framework presented above against a background study and historical analysis of the UK electricity policy since the early 2000s. In order to contextualize this period, this section begins with a review of the beginning of the liberalization and privatization era in the 1980s. This section is empirically informed by a range of policy documents and based

largely on the secondary analyses represented in published materials and finally crosschecked against some conducted interviews to contextualize EMR meaningfully within an integrative longitudinal context. The process tracing method has been partially used to structure the argument.

2.1. The emergence of the liberalized-privatized energy paradigm (1980s-1990s)

2.1.1. The problem of government failures in the centralized nationally owned energy paradigm (before 1980s)

After a long period of the nationalized energy system being characterized as "corporatism and technocracy" (Winskel 2010), and in the light of significant changes in socio-political patterns like the election of a Conservative government in May 1979 and widespread strikes as well as the 1970s oil price shock leading to an international increasing salience of energy policy; there were several obvious experiences of the British energy policy failures in meeting the targets, particularly in nuclear and coal industries. These problems were commonly conceived as the consequences of the main characteristics of the energy system such as centralized forecast and planning; state-owned energy industry; and the lack of competition and market (Pearson & Watson 2012, 5). The accumulation of several policy failures heavily undermined the credibility of the dominant paradigm and facilitated a public expectation for the emergence of a new paradigm.

This interpretation was reinforced by the emergence of an overarching privatization strategy as a "centerpiece" of the new government's program aiming at "rolling back the frontiers of the state" (Thatcher 1998 in Pearson & Watson 2012). Remarkably, the privatization process in the energy sector was directly led by one of the main architects of the entire privatization and liberalization program in the whole UK economy: Nigel Lawson, the second Conservative Secretary of State for Energy, who was famously quoted that "the proper business of Government is not the government of businesses" (Lawson 1982). This process was initially started by transferring ownership of the oil (1982) and gas (1986) industries to the private sector (Pearson & Watson 2012, 6). Then, it was expanded to the electricity sector that will be elaborated on later.

2.1.2. Privatization in the UK electricity sector, wholesale market "pool" and the status of "dash for gas" (early 1990s)

Subsequently, after the privatization of gas and partially unsuccessful attempts in the nuclear and coal industries (Pearson & Watson 2012, 12), the "non-nuclear" electricity industry became another subject of the privatization process in the early 1990s (Skea et al 2011, 42). Regarding the sector-specific characteristics – such as its complexity, scale, vertical integration, technological mix, non-storability, required excess supply, and successful nationalized experiences – the privatization process itself as well as the designing of a proper market were quite challenging and complicated (Pearson & Watson 2012, 9; Skea et al 2011, 42). The first innovative market mechanism was called competitive "Pool", in which compulsorily all power should be virtually sold into and then be bought from a wholesale market. The pool price justifiably consisted of both energy and capacity prices, which economically insured reserve capacity as well as timely future investment (Pearson & Watson 2012, 10). Helm (2010, 2) characterizes the pool's preliminary design with "transparency" and "liquidity". Overall the pool successfully achieved what its architects intended: "so much in so little time" (Henney 2011a, 36). However its technical shortcomings – complexity, "gameability", owners' centralized power, "inappropriate governance" and rules' rigidity – subsequently pushed it towards being a "single unified voluntary market" encouraging "vertical integration" and serving incumbents' interests (see Helm 2010, 2; Henney 2011a, 36 and 39). In addition to the wholesale market, privatization expanded to the National Grid and led to a "duopoly" in generators (Henney 2011b, 51). The rationale behind this large-scale division was to provide enough financial capability facilitating nuclear privatization.

Due to their inherent inflexibility, scale and risk, nuclear stations specifically faced the problem of economical unattractiveness for the investors (Pearson & Watson 2012, 10), despite strong governmental commitment to support them through the "nuclear tax" as introduced in the 1989 Electricity Act or the Non Fossil Fuel Obligation (NFFO). Consequently, in the 1995 Nuclear Review, the government declared its disappointing prospect for commercial attractiveness and interventional justification of nuclear power in the UK (Pearson & Watson 2012, 14).

Likewise, this process historically coincided with a dramatic decline in the coal industry's competitiveness due to a complex set of economic, political and legal reasons (Pearson & Watson 2012, 15). More apparently, the initial fall in prices for imported gas and its comparably lower investment risk (due to its low capital cost/ higher running cost characteristics) led to a widespread "dash for gas" and large installation of Combined Cycle Gas Turbines (CCGT) (Skea et al 2011, 21). This was regarded as yet another example of governmental failure in policy-making and future prediction.

2.1.3. Incumbency of the neo-classical liberalized energy paradigm (mid-late 1990s) and thereby the official abolishment of the Energy Department

In addition to the process of privatization of the traditionally-owned industries, Nigel Lawson for the first time classically expanded the typical Hayekian "New Right" notion of "governmental and bureaucratic failure" into the area of energy policy through a "pragmatic, market-based conservatism" (Helm 2003). Significantly in his speech (1982), he acknowledged this approach by a clear rejection of state responsibility in energy planning and an emphasis on market regulation and monitoring as being the only main governmental tasks (Helm 2005, 5). It was even predicted that under the wake of "full disciplines of the market", the regulatory role of the government would be naturally downplayed (Pearson & Watson 2012, 7). Legally, this rhetoric for the first time crystallized in the 1983 Energy Act and following policy documents. This pattern eventually resulted in the official abolishment of the Department of Energy in 1992 by John Major's government. He transferred its remaining functions to other governmental departments (mostly Department of Trade and Industry, like other "economic commodities" and "traded goods") and created an independent regulatory body, Ofgem, to ensure effective competition (Skea et al 2011, 43). Analytically this institutional change led to an intentional "depoliticization" of the energy sector through transferring responsibilities from government to the market and an independent regulator (Kern et al 2013, 9).

Historically, the UK energy policy has been widely dominated by a neo-classical economic paradigm limited to market-based instruments for

almost two decades (Scrase et al 2010, 2), not only as an implicit policy framework but also as a declared-orthodoxy policy objective (Kern et al 2013, 8). This paradigm was characterized by privatization, liberalization and competition (Helm 2003; Helm 2005, 1; Kern et al 2013, 8; Mitchell 2008). In contrast, it is quite pessimistic about any form of state intervention because of the negative perception of potential impacts of political interests, limited information and lack of "rationality". In other words, it prefers to rely on the market rather than the political process. Instrumentally, this approach primarily justifies targeting policies, market efficiency, externalities, market failures and institutional merits (Scrase et al 2010, 6). Even in the case of market failures, government should preferably use "market-based mechanisms" and "economic instruments" to resolve the problem, amongst a range of four policy mechanisms presented as an instrumental typology by Ekins et al (2011, 49): market-based, classic regulation, negotiated agreement, and information-based instruments. Practically, this approach has been widely advocated for, promoted and implemented by an influential cross-sector coalition including governmental departments, associated third parties and high-profile academics. Similarly, this pattern was followed by most of the EU member states with different speed of progress (Skea et al 2011, 3).

2.1.4. The relative success of the competitive market and its rationales

This paradigm worked reasonably well in the 1980s and 1990s, because of a set of acceptable background conditions: over-supply, effective competition and low-emission (Helm 2006, 1). Arguably, these conditions were shaped by some sub-factors like disconnection between economic growth and energy consumption and, thus, the temporary fall of energy ratio; as well as limited improvement in energy efficiency, reduction in oil price and a gradual reduction in CO2 due to a shift from coal to gas: "dash for gas" (Helm 2005, 4). Luckily, this process coincided with the "ready availability and security" of indigenous cheap gas resources in the North Sea. Its apparent success in enhancing "the productivity of electricity industry" was generalized over-positively somewhere as "the reality of competition in a commodity market" (Henney 2011a, 335). Propo-

nents highlighted the achievements of the privatization process as freeing the generation industry from politics-laden policies, harnessing the political power of industry, enhancing its accountability, lessening the bureaucratic restrictions and enabling government to concentrate on its exclusive duties (Henney 2011a, 3). Nonetheless, some criticisms on the "overstated" benefits of privatization regardless of its "transaction costs" for consumers, unequal gain of shareholders and the lack of actual competition as well as the ignoring of the role of stronger regulation during temporary price falls remained alive (Pearson & Watson 2012, 15).

In that period, apparently there was no serious concern justifying any kind of state intervention in the energy sector. In reality, the compatibility of wider political objectives and market behavior gave contextual feasibility to "the hands-off state" concept (Henney 2011a, 339). This minimalist approach to the role of government resulted in reluctance towards any form of energy policymaking (Scrase et al 2010, 5). Exemplarily, there was no governmental department responsible for energy policy between 1992 and 2008 and also a significant decrease on the research and development (R&D) budget (Scrase et al 2010, 4). In addition, the government's strong commitment to liberalization and emphasis on the regulation through competition instead of policy-making led to a dramatic loss of civil service energy policy "intelligence" and "capacity"; this was also facilitated through the ongoing trend towards "outsourcing" (Helm 2002; Kern 2012, 14). In addition to the typical characteristics of state-decisions as being politics-laden, "superficial", bureaucratic and far from "practicality", the state's withdrawal from energy policymaking left the state being visibly short of experience and competence (Henney 2011a, 342). This pattern could also partly explain the dynamics behind the increasing dominance of private actors in the British energy sector. Altogether, they could display the difficulty of state-owned policy making without any "co-operative partnership" with the private sector and industry (Skea et al 2011, 3). This paradigm has been deeply institutionalized in Ofgem, as the main regulatory institute for the energy market. Basically, Ofgem has clearly prioritized the issue of price as being the main "current consumer" interest and thereby conceptualized the promotion of market competition as the primary statutory duty (Kern & Mitchell 2010, 9).

2.1.5. The entrance of the environmental agenda in a "benign context" and the emergence of policy objectives "trinity" (mid 1990s)

Under the ideal situation of economic growth and a rather unintentional reduction in emissions derived from the shift in UK economic driver and energy mix, an international agreement called the Large Composition Plan Directive (LCPD, 1988) was "reluctantly" (Pearson & Watson 2012, 13) signed by the government. In addition to the extra-pressure this had on coal-fired power plants, it incrementally brought the discourse of environmental concern into the UK policy rhetoric and, since then, has posed "fundamental challenges" to energy policy (Skea et al 2011, 1). For the first time, an environmental target was acknowledged by the 1993 Coal White Paper (DTI, 1993) stating the aim of a "secure, diverse and sustainable supply at competitive prices". Since then and while the wording of policy objectives has remained relatively similar in that "triangle" (Skea et al 2011, 2), the level of their saliency and priority as well as the degree of their reinforcement or tension has been affected by other factors.

For the first stage, the sustainability target was practically followed unsatisfactorily by some pure economic instruments like the "blind" (Pearson & Watson 2012, 13) energy VAT in 1993, which failed as the result of a widespread affordability concern. Instead of a strong intra-governmental policy belief, the main driver of the emerging environmental policy at that time arguably was, on the one hand, the pressure exercised through international and European agreements, such as the 1992 UNFCCC and Kyoto in 1997. On the other hand, the second driver was derived from the Foreign and Commonwealth Office's (FCO) efforts to internationally introduce the UK as being a leader in climate change. In other words, the UK's sustainability policy was limited to the internal impacts of international agreements, while still the mainstream economic perspective was clearly disinterested in any form of energy and innovation policy (Scrase et al 2010, 4). Nonetheless, the Conservative government proclaimed that it was a deliberate policy move at the cost of losing the subsequent election in 1997 (Pearson & Watson 2012, 19).

2.2. The acceleration of climate change up the agenda and the re-birth of energy policy (the late 1990s–the early 2000s)

Following the installment of a Labour government in 1997, it clearly showed a continuing strong commitment to liberalized energy policy. In contrast to the "Old Labours" who were traditionally associated with the values of affordability and equity, the new government tried to be seen as quite market-friendly. Nevertheless, they were politically rather pessimistic about the social consequences of the nature of utility-maximization of the free market (Interview 10). Therefore, they also emphasized the significance of environmental objectives in energy policy as well as the reassurance of liberalization's effectiveness for meeting social objectives. Such social concerns swiftly resulted in an ideological criticism of the "market power" of the Pool mechanism. Based on their political evaluation, the wholesale market has "discriminatingly" facilitated the privilege of gas and has consequently led to an increasing unemployment of coal miners, who are a community traditionally associated with the Labour party (Henney 2011b, 52). They also pledged to put environmental concerns "at the heart of policy-making" rather than it being "an add-on extra" (Henney 2011a, 255).

2.2.1. The first change in the UK electricity market and its consequences: New Electricity Trading Arrangement (NETA)

This complex approach was officially acknowledged by the DTI White Paper in 1998 and was then legislated by the 2000 Utility Act. It technically led to the first reform in the electricity market in 2001 replacing the wholesale mandatory power market (pool) with a "voluntary bilateral contracting" design: the New Electricity Trading Arrangement (NETA). It was then extended to Scotland in 2005 and entitled British Electricity Transmission and Trading Arrangement (BETTA). To intentionally open up competition beyond the duopoly, it placed a high degree of vertical integration and resulted in "an oligopoly" consolidation. Although electricity was originally a vertically structured industry, its "coupled consolidation" (Henney 2011a, 338) heavily undermined the real competi-

tion. This permission was conceived as a "game changing" (Interview 19) momentum, insofar as contrary to the initial assumptions, the new design had been contested as being "fruitlessly" less transparent, less liquid and more difficult to enter; mainly because of the absence of a "benchmarking" function of the pool market (Helm 2010, 2). Henney (2011a, 4) critically calls it as an "ill-conceived and naïve economic ideology". Although NETA's outcome is still controversial, some opponents like Henney have assessed it as a policy "failure" in terms of either missing its objectives or undermining competition. They particularly point to the fact that in NETA, the capacity-related part of energy price was perceived redundant and thus got suspended (Helm, 2010, 2). It was arguably derived from a context characterized with an oversupply; dash for cheap gas; competition for lower price; and, the "controversial" allowance of vertical integration. Consequently, ignoring such an important market feature undermined any incentive for long-term electricity-specific investment and thus insured the maximized profit for current incumbents. As Helm (2010, 4) describes, there was a situation that "no rational capitalist would deliberately create excess supply". This notion will be discussed in detail later.

2.2.2. Tackling climate challenge through a set of market-based policy instruments

Despite the accidental luckiness of the new government in coincidence with the "dash for gas" pattern, the increasing importance of climate change (not yet, albeit, as the main driver of energy policy) and some remarkable efforts to bridge economic incentives and climate targets eventually resulted in a set of policy instruments: targeted taxation, a revision of currently-narrow regulator duty and the replacement of ineffective policies like NFFO with that of Renewable Obligation (RO). RO is supposedly a market-friendly mechanism functioning as a "premium" scheme (Henney 2011a, 280). More importantly, the influential report of the Royal Commission on Environmental Pollution (RCEP, 2000), which wisely chose a 60% carbon reduction as a target by 2050, set an initiative scene for Prime Minister Blair to get involved in energy policy – nationally and then internationally (Henney 2011a, 257). This pattern

led to a governmental Energy Review in 2002 (PIU, 2002) which to some extent upgraded the concern of climate change in energy policy (Pearson & Watson 2012, 21). Kern et al (2013, 12) argue that it was this report that, for the first time, not only proposed environmental interpretation of the conventional "sustainability" term, but also suggested some significant institutional changes to tackle a highly prioritized climate agenda. In the case of nuclear energy, despite massive lobbying by its advocates including energy minister Brian Wilson, its commercial viability was disputed and any "concrete" state-support was disappointingly rejected, while it was still kept vaguely open as an option. This trend resulted in the deterioration of British Energy's financial outlook and its subsequent "collapse" in September 2002 (Henney 2011a, 95).

2.2.3. The 2003 Energy White Paper; Official acknowledgment of energy objectives and nuclear rolling out

As a conservative response to the rather radical 2002 Energy Review, DTI published its Energy White Paper in 2003 endorsing RCEP's target setting, highlighting the role of renewables and energy efficiency, continuing the downplaying of nuclear power and thereby energy security to some extent, and emphasizing on the prospect of new technologies like CCS. Despite the restatement of RCEP and the Energy Review's principal conclusions, the 2003 EWP resulted in an ambiguous and "imprecise" (Pearson & Watson 2012, 22) policy design for tackling the climate agenda without any visible impact in practice. It literally rejected ambitious Energy Review recommendations particularly for the creation of a new department. This fact was seen by Kern et al (2013, 13) as a sign of continuous strong commitment to the market paradigm in DTI. They accuse DTI for not only its optimism towards the ability of internal market to automatically meet new targets, but also for its over-reliance on the international competitive market. This fact resulted in a "benign interpretation" of uncertainties in the international energy context and the under-estimation of forthcoming geopolitical security threats. Having interpreted the emerging challenges of the British energy system as only a normal example of market failure, there was significant effort to reconcile the market paradigm with new the context in order to avoid an

entire rejection. It was the time that energy policy change was constrained by only introducing two new objectives alongside continuous commitments to preserving competitive market.

2.2.4. Climate change at the heart of energy policy: the Stern review and the European Emission Trading Scheme

In continuation of the increasing role of a climate agenda in energy policy, a high profile statecommissioned report was published by Sir Nicholas Stern (2006), which was seen quite influential and persuasive with respect to an economic justification for climate change policy. It primarily undertook "a Herculean effort" to warn of consequences of "anthropogenic" climate change (Henney 2011a, 259). While its terminology, logic and elaborate modeling method were fully compatible with the dominant neo-liberal approach, it successfully broadcasted its central message about saliency, scale, urgency and the likely economic benefits of tackling climate change amongst policy makers and businesses. The report remarkably stated that the benefits of "strong, early and coordinated" mitigating policies economically "far outweigh" its expenses and perhaps prevent from the unavoidable "costs of doing nothing" (Henney 2011a, 260). It is noteworthy that it, albeit, received a set of criticism regarding its supposedly "over-optimistic" approach and inherent "simplification" (Helm 2008).

At the same time, international incentives – such as a clear political desire of the UK's government for having a leading climate agenda and "saving the planet" as well as a series of mainly EU-wide, important agreements like the European Emission Trading Scheme (EUETS, 2005) – intensified the momentum of climate change as the main policy driver. The Scheme was primarily suggested as a "cost-effective", "economically efficient" and market-driven instrument and got widely accepted as being "the UK government cornerstone policy" (Henney 2011a, 261) for tackling climate change. As a result, however, it then practically failed due to the both "low" and "volatile" carbon price (Newbery 2011, 3). Nonetheless, dealing with climate change at that time gradually became central to energy policy with some "fundamental implications" for the whole economy (Skea et al 2011, 1).

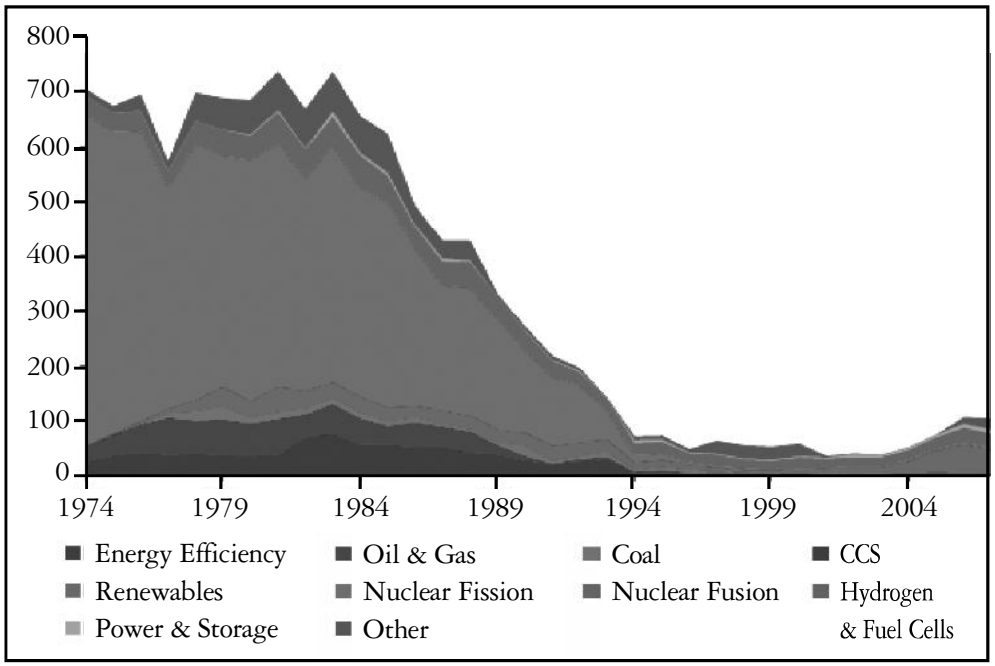
2.2.5. The low-carbon industrial policy discourse and a cluster of low-carbon technology institutes and industries

Subsequent to a dramatic collapse in energy technology and R&D funding, shown in figure 1, due to the liberalized approach dismissive of innovation as a public good, Kern (2012, 9) points to the gradual emergence of a new policy rhetoric around the notion of "developing low carbon technology". This developed since the Utility Act in 2000, which was seen as a complementary policy instrument to the market. For the first time since 1980s, the Act was designed to partially support low carbon technologies. Regarding the process of devolution, this storyline was supported by the ambitious target of the Scottish government to create a renewable industrial sector (Watson 2009, 140; Winskel 2007, 186), which did not necessarily reflect the desire of the UK central government. Furthermore, it was promoted by the formation of an advocacy coalition, or a "discourse coalition" as Kern calls it (Kern 2011, 15; Kern 2012, 10), around the notion of the significance of supporting "low carbon innovations and technologies" beyond market signals. That advocacy coalition consisted of ACBE, the Confederation of British Industry, DETR, the Treasury, the Prime Minister Office, green groups, and parliamentarians (Kern 2012, 14). This change in the policy discourse manifested in the creation of a new institution: the Carbon Trust. As a result, this pattern casted an apparent doubt on the sufficiency of a neo-liberal discourse to tackle emerging energy system challenges without supporting a form of low-carbon industrial policy.

Eventually, a more active industrial-technological policy approach became visible by designing some policy instruments like the Climate Change Levy and the Climate Change Agreement in 2001 and, subsequently, establishing several supportive low-carbon technology institutes such as the Energy Technology institute, the Carbon Trust, and the Technology Strategy Board. The new direction of policies gradually altered the traditional perception of low-carbon technologies by introducing them as emerging "business opportunities". In practice, this pattern led to the creation of a growing industrial cluster of low-carbon businesses. It happens rather unchallenged within a predominantly market-based policy context mainly because, as Kern (2011, 16) has pointed out, the idea of low-carbon industrial policy was intentionally conceived as almost con-

sistent with the neo-classical concerns about competitiveness by influential business actors. In return, Kern (2012, 15 and 16) believes that such a minimalist expectation constrained this emerging discourse to achieve a wider radical and political paradigm shift due to institutional constrains.

Figure 1. A collapse in the UK energy R&D expenditure after liberalization (UKERC, 2010)



2.3. Energy security in the spotlight and the re-politicization of energy policy: "Power and politics are inextricably entwined" (mid 2000s)

Contrary to the presumptions of the 2003 EWP, dramatic changes in the UK energy system's background conditions like oil-price increase, the necessity of huge re-investment and replacement of forthcoming closures of power stations, fuel protests in 2001 and the "electricity blackout" in 2003 (Pearson & Watson 2012, 23), geopolitical concerns like the Russian problem in gas transfer and a fundamental shift in UK status from an

energy self-sufficient and net exporter to a substantial importer of energy sources, raised serious concerns about the security of supply alongside climate change as newly prioritized energy objectives instead of just cost minimization.

2.3.1. Intensified security concern in the electricity sector

Particularly for the electricity sector, the security concern was regarded as being more persistent and complicated. The fundamental problem of the new electricity market design, NETA/BETTA, in abandoning capacity investment resulted in a sector-specific capacity gap regardless of geopolitical and climate factors (Helm 2010, 3). This meant that electricity market arrangements suffered from a lack of sufficient incentives to respond to the increase in the normal demand. It is noteworthy to remind that this happens at the end of the "golden period" of excess supply, and an urgent need for the replacement of outdated power stations – contrary to Ofgem's simplistic evaluation, as Dieter Helm (2010, 3) criticizes, of CCGT's timely economic attractiveness. This technical trajectory led to a "tight demand-supply balance" and obviously that concern was amplified under the fear of import limitation and low carbon targets.

2.3.2. The 2007 Energy White Paper; highlighting security concern

In contrast to the rather "relaxed" approach of the 2003 EWP regarding the notion of energy security, a widespread politician-led fear of energy security was generalized as a top "national security" agenda by the public and mediated by press, insofar as compared by Kern et al (2013, 14) with the public panic that arose in the 1970s oil shock. Consequently, the government was persuaded to compensate the lack of current policies with a sense of urgency and "vengeance", as Pearson and Watson (2012, 22) describe. This trend led to a highly pressurized expectation to "do something" and a plethora of policy documents. Together, DTI and Ofgem established a Joint Energy Security of Supply (JESS) to react to the increasing demand. JESS published several reports highlighting the risk of import dependency and the lack of "timely investment" (JESS 2006). This pattern eventually resulted in a new Energy White Paper in 2007 (DTI, 2007), which clearly

acknowledged energy security as another emerging top-rated agenda for the UK and worldwide energy policy and also highlighted a rather urgent need to incentivize energy investment (Skea et al 2011, 58).

2.3.3. The return of nuclear via 2007 EWP and 2008 Nuclear White Paper

In parallel, as a response to the disappointing stance of the 2003 EWP towards nuclear option, the nuclear lobby started an intensive effort to convince the Government and policymakers through an opportunistic association with the energy security agenda and the concept of supply diversity. In government, this led to a positive shift towards a nuclear option presented in the 2007 White Paper. It clearly stated that "the economics of nuclear power now look more positive than 2003" and "new nuclear power stations lowers the costs and risks associated" (DTI 2007). By saying that "it would be for the private sector to fund, develop, and build new nuclear power stations" the White Paper has kept its "careful language", in Pearson and Watson terms (2012, 24), not to declare any tendency towards public support for nuclear energy. Nevertheless, the following Nuclear White Paper (BERR 2008) confirmed some forms of support, like "decommissioning costs".

As an analysis of the failure in deploying other low carbon options, the White Paper optimistically reflected to just some RO's limitations like the exclusion of emerging technologies and over-reliance on only commercially viable technologies. However due to its continual interest in economic instruments, the White Paper resisted against the adoption of alternative instruments like a Feed-in Tariff (FiT) or long-term contracts, suggested surprisingly by Ofgem (2007). Though RO has been widely contested by some critics like Henney, (2011a, 290) as neither practically effective nor economically efficient. Even after modification, it was seen too complex to be understood. In terms of Carbon Capture and Storage (CCS), the White Paper also endorsed the UK approach to this emerging technology through opening up a potentially international economic opportunity.

Although the 2007 EWP deeply institutionalized two major policy objectives in the UK energy policy debate, it remained yet fully committed to the market-based approach through expanding the liberalization

agenda in a wider European market (Pearson & Watson 2012, 23). Helm (2005, 16) concludes that the continuous commitment to the market paradigm, notwithstanding such policy failures, showed that "shaking conventional wisdom" still requires a more political visibility of energy crises. Nonetheless, it is worth indicating that as the result of those challenges, the 2007 EWP has presented a deeply "re-politicized" perception of energy in the UK with a clear prioritization of new objectives.

2.4 Transition from rhetoric to practice: the seeds of the liberalized paradigm dispute (late 2000s)

Given the scale of required change, the adequacy of a sort of minimal policy adjustments in order to achieve the new objectives was widely disputed. Despite a long process of low-carbon policy making, there was "mounting empirical evidences" (Kern et al 2013, 17) to easily challenge the credibility of the existing policy paradigm due to almost disappointing policy outcomes in meeting climate targets. Therefore, the re-evaluation of the process of policy design and implementation seemed increasingly crucial. It resulted in a growing recognition of the scale of the energy de-carbonization challenge and consequently created a public demand for a more interventionist approach in low carbon innovations. So, some analysts like Scrase et al (2010, 17) believe that in that period the predominance of the neo-classical approach was visibly undermined.

2.4.1. The problematization of the policies for reaching the objectives and disputing "naïve marketism"

During 2006-7, several influential scholars and high profile reports warned the Government that it would be almost impossible to promote low carbon technologies only with a marginal role of the state (IEA 2007; Stern 2006). Stern described climate change as "the biggest market failure (…) ever seen". Toke and Lauber (2007) argued that the neo-liberal approach is unable to translate targets into practice, while a group of critics concluded that the UK's energy policy still relies more on the superiority of the market framework than an intelligent interventionist approach. Insofar

as they believed that sustainability policies were normally unlikely to get enough momentum, except those that have been approved by what they called the "market test" (Scrase & MacKerron 2009). So in general, the level of shift in British energy governance was seen as a quite insufficient to meet the requirements of achieving policy objectives and to tackle long-term challenges confronting the UK energy system (Foxon, Pearson et al 2005, 23; IEA 2007, 176).

During those years, it gradually turned out that in reality, energy policy is "much messier" than what was assumed by simply applying the market logic to it thus assuming it was "a normal commodity". In this approach, energy was intrinsically conceived as an attractive ground for political, ethical and economic interest groups; whereas such a complex set of issues has never been fully addressed in the liberalized system. It happens due to, as Pearson & Watson (2012, 30) have pointed out, either a "misplaced optimism" about the market and extreme pessimism about any form of state intervention, or an overlooking of their salience compared to solely economic justifications. This is what Henney (2011a, 343) critically terms as the "naïve marketism". It means the prescription of a unified market formulation too far into all areas regardless of other issues like "complexity, transaction cost, relevance, and, practicality". Accordingly, Helm (2005, 9) warned that it would take years to achieve the objectives under the context of a liberalized energy system.

2.4.2. An avalanche of policy papers and new institutions: 2008 Climate Change Act, the Climate Change Committee, and the Department of Energy and Climate Change

Therefore, a clear desire for a "radical re-thinking" about a "structural break" and subsequently more visible signs of an urgent need for a "paradigm shift" became apparent (Helm 2005, 1 and 3; Helm 2006, 1). It was officially stated by Ed Miliband (2008, 4) that the market dynamic is "no longer enough for a successful energy policy" and it needs to get "re-assessed" (Kern & Mitchell 2013, 20). He declared that in the case of substantial conflicts between market design and the targets, it is certainly the market that should leave the scene. Consequently, policy framework moved slightly from an overreliance on pure market instruments

to what was differently called as either a "quantity-based" planning (Helm 2005, 12) or a "target and plan" framework (Pearson & Watson 2012, 30). It briefly included encouraging investment, the capacity market, support R&D and setting new institutions.

In fact, the highly prioritized policy objectives opened up an obvious space for more active state intervention. In addition, in the wake of a critical scrutiny of policy implementation and redominance of the climate change agenda, a cross-party demand for more effective climate change legislation was campaigned by a coalition of the Conservative party and some other organizations. In a politically proactive response (Pearson & Watson 2012, 25), the 2008 Climate Change Act was supported by the Labour Government as well. It included not only a "clearlyworded" more ambitious emission reduction target, but also a set of clear strategies like "carbon budgets" and a new institutional proposal: the Climate Change Committee (CCC). It was assumed an independent, de-politicized monitoring body to institutionally crystallize the longterm de-carbonization targets. In a parallel move, the Department of Energy and Climate Change was also established from the merge of energy-related policy functions of the Department of Business, Enterprise and Regulatory Reform (BERR) and the Department of Environment, Food and Rural Affairs (DEFRA).

These institutional changes reflected official signs of the rebirth of a state-centered energy policy. It was conceptually inter-linked with both environmental policy and a long-term political commitment to the energy policy objectives. New challenges also brought the role of Ofgem into question. Skea et al (2011, 43-44) criticized the level of Ofgem's commitment to the "social and environmental guidance" as well as a narrow focus on the interests of current consumers rather than future generations. As a result, while the preservation of market competition remained still as the main issue for Ofgem, the 2008 Review included sustainability-related statutory objectives as well. It also proposed a process of Ofgem's re-structuring, whereas Skea et al (2011, 46) believed that there were yet doubts about the inherent complexity and internal tensions in Ofgem's duty package.

2.4.3. The UK Low Carbon Transition Plan: the "culmination of interventionist industrial strategy"

As a reflection to the CCC's recommendations and its loader criticism of Government policies (Pearson & Watson 2012, 26), a more intensive round of policy activity happened in 2009-2010. The UK Low Carbon Transition Plan (LCTP) was a clear example of such a significant move (HM Government, 2009). Scrase et al (2010, 2, 6 and 34) have described it as the "culmination" of an "interventionist industrial strategy", which has tried to balance the role of the market framework alongside other policy frameworks. Particularly, it complementarily introduced a set of new mechanisms inspired by industrial policy, in order to meet the social and political risks of the alone application of price signals. The LCTP casted significant doubts on the possibility of meeting UK ambitious targets through simply intensifying current policies. Instead, it was the first time after the liberalization process that LCTP proposed a systematic sector-level transformation that emphasized not only on low carbon products, but also on low carbon institutions and infrastructures (Scrase et al 2010, 6). Nevertheless, it was criticized by Scrase et al (2010, 8) for its inherent inconsistency and incoherency, due to combining a diverse set of measures from different paradigms. Another example of such a clear move towards industrial policy was the Low Carbon Industrial Policy, introduced by BIS and DECC (2009). Pearson & Watson (2012, 27) saw it as an effort to bridge economic potentials of quick transition to low carbon economy to broader industrial opportunities.

2.4.4. Signing the European Renewable Directive and its instrumental consequences

Simultaneously, the European Union published a "climate and energy package" (EC, 2008). It was a significant sign of a political tendency to enhance the role of renewables in the energy portfolio to 20% on the European level. It was then translated nationally into 15% from the entire UK energy production under the Renewable Directive. Having conceptualized renewable technologies as a "public good" legitimizing public support, Newbery (2011, 10) described it as an over-ambitious

demand-pull instrument to encourage investment in renewable innovation. At the time of signature, "the mandated level" was highly contested due to either the huge economic costs it "hysterically", in Henney's (2011a, 261) words, imposes on the UK compared to other European countries, or its weakening effects on current de-carbonization policies. Respectively, the UK Renewable Energy Strategy (DECC, 2009) was published. It has been described somewhere as "the most comprehensive strategy" (Skea et al 2011, 51) that breaks down the way of meeting 15% renewable obligation from the entire UK energy and also specifies the share of different sectors in this. Furthermore, it led to a range of instrumental change from "banding" in RO to introducing a small-scale Feed-in-Tariff.

2.4.5. Shaking conventional wisdom: "energy-climate nexus" and disputing the adequacy of the competitive market in energy policy

In the late 2000s, in the wake of increasing public contestation of policy failures and as a result of institutional changes, some signs of policy change gradually became visible. On the one hand, the coincidence between the security challenge and continuous climate challenge, amplified by the renewable target, highly discredited the existing energy governance. Such an "energy-climate nexus", in Kusemko's (2011) terms, had also been institutionalized in the creation of DECC, where it was assumed collectively responsible for both policy objectives. On the other hand as a result of accumulative criticism of the adequacy of the liberalized energy system to meet emerging priorities, the credibility of market logic alone without any form of intervention had been highly contested (Helm 2005, 10). Consequently, a clear shift from liberalization terminology and language became apparent in the published policy papers towards a more "reregulative", "quantitative, plan-based, centrally directed" (Pearson & Watson 2012, 31-32) and a "command and control" approach (Skea et al 2011, 3). The emerging approach presented a greater role for energy system modeling and forecasting tools as well as proposed "policy packages" combining different types of policy instruments (Skea et al 2011, 49-50).

Nonetheless, it is noteworthy to remind that the new pattern, by no means, was conceived as a conceptual return to a single-central planning model, similar to what had been experienced prior to the privatization process in the 1980s. This can be demonstrated by a statement made during one of the conducted interviews by a former MP and then board member of UKERC:

> There is an ideological commitment to the market in the UK, and it is very interesting that despite the commitment to climate policy, there is no movement to re-nationalize the energy sector at all. This is of course privatized since late 1980s and we are now amongst the first energy market in Europe. There is just commitment to regulate it and it is quite different from re-nationalization and it is more about persuading market to operate in a certain way in the light of market failure than an ideological commitment to regulation (Interview 15, November 2011).

In reality, a group of critics like Skea et al (2011, 3) argued that at the time, a substantial shift towards a re-nationalized energy system seemed neither desirable nor possible. There was a status of a complicated interdependency between government, industry and the international context in which the state itself was being challenged by its extremely weak policy capacity. It practically meant that in order to meet the large scale investment required for energy-climate policies, every policy crucially needs to convince the private sector to "mobilize" a huge amount of investment (Skea et al 2011, 51). In fact, such a funding could not be afforded by the state alone and therefore, there was a serious concern about the harmful consequences of overintervention.

In contrast, Pearson & Watson (2012, 31) emphasized that the new approach was showing an intensive attempt to not only bring about positive dimensions of the competitive market but also to meet other societal goals that had been traditionally overlooked by the liberalization process. In other words, although several questions arose about the specific failure of the market in achieving energy goals, there was no fundamental doubt about the suitability of the market in this area (Kern & Mitchell 2010, 12). As Kern and Mitchell have described: "the role of market has amended rather than entirely rejected" (Kern et al 2013, 22).

2.4.6. "Inter-paradigm borrowing" and preparation for a major paradigmatic shift

In spite of increasing visibility of the signs of major policy change as outlined above, some scholars argued that those were still insufficient at the time to reflect a comprehensive paradigmatic shift (Kern & Mitchell 2011, 22). Similar to Helm (2005), they have evaluated the extent of actual change just in the priority of objectives and partially on the policy instrument level, not necessarily in the problem framing, as analogous to Hall's "three order changes". Kern and Mitchell argued that by 2010, out of four components of a paradigm shift, the overall policy objectives have been institutionalized; institutional change has taken place; new forms of instruments like FiT have gained some marginal acceptance; and the "energy-climate nexus" has been shaped alongside the idea of a greater role of the state, whereas fundamental belief in the market still remained rather intact. This implies that while policy objectives and institutions had experienced a remarkable degree of change, policy instruments and "overall interpretive frameworks" had shifted less. Therefore, there was yet a lack of a coherent and cross-sectoral policy paradigm alternative and thereby, a comprehensive paradigm shift still could not be claimed to exist.

Similarly, Helm (2010) characterized the mixed situation in the UK energy policy as being "neither market nor state". Kuzemko (2011) termed it as an "inter-paradigm borrowing" from dimensions of the "climate" and "geopolitical" narratives, which presumably could undermine the "intellectual consistency" of the paradigm and facilitate the way of a further likely paradigm shift. In such an incoherent and incompatible policy paradigm that is influenced by a combination of diverse paradigms, Hall (1993, 280) predicted a pattern of gradual decline in dominant-original paradigm. Theoretically, this then might lead to a profound radical shift resulting from further likely shocks. He then emphasized the role of politics for paradigm shifts by intensifying the "contestation" pressure on a certain dominant paradigm. Compatible with the ACF assumptions, Mitchell (2008, 204) pointed to the central role of a variety of actors in the process of a paradigm shift. Nonetheless without the existence of an integrative, coherent and acceptable alternative paradigm, no paradigmatic shift is expected to fully occur.

3. Conclusion: conceptualizing the UK electricity policy change since the liberalization until the late 2000s

Taking the brief exploration of the history of energy policy in recent decades into account, it was apparent that it had been recurrently subject to continuous change and constant evolution. Even though after the process of liberalization and its early success it was widely believed that energy could be seen as a normal commodity and that there was no longer any need for public concern and state intervention, the reality turned out to be entirely different. Energy policy has always been susceptible to be affected by any change in the wider socio-economic and political context as well as to new ideas and technological changes. The fact of continuous instability in British energy policy was also pointed out by a well-experienced expert during an interview:

> I've got young people in my office that think this is it, energy policy has always been the same, it is now going to be changed and it will be like that forever or for the rest of my working life – no it blooming well won't. It gets changed pretty frequently and you might conclude at the end of this discussion that the real question is, "I wonder how long … [a new proposal] will actually exist?" How long will it be before somebody says this needs changing again? (A board member of Energy UK, 12 July 2012).

Figure 2 (see annex, page 111) is to visualize the main changes in energy policy, in particular in electricity policy, since the liberalization until 2010. Thereafter, early years of 2010s are marked here as the beginning of the reform era through the official start of the policy process of the Electricity Market Reform (EMR).

Having reviewed the history of the UK' electricity policy since its liberalization, it can be argued that there is a sufficient amount of empirical evidence supporting the credibility of the proposed change typology. The latter explains why policy instruments did not necessarily support newly adopted energy policy objectives in the early 2000s. Furthermore it shows how an institutional lock-in within the boundaries of a policy paradigm was constraining the range of practically applicable and politically acceptable policy options to substantially reform British energy governance.

The hierarchical model also articulates the extent to which sociopolitical dynamics were resisting against easy and fast major policy changes, let alone a full paradigmatic shift. And finally, it displays how resistant the existing energy policy paradigms and normative core aspects of those policies were, whereas they were adapting the secondary aspects, as ACF words, rather easily. Studying this case also shows that under the circumstance of high external pressure and demonstrating mounting policy failures, even policy core beliefs might ultimately shift. Nonetheless, there were still a high level of strong normative commitments to these core beliefs and paradigms.

Having applied the policy change typology presented in the first section to the historical review carried out above, the table below aims to overall conceptualize and measure different levels of policy change as occurred in the UK's electricity policy between its privatization in the early 1980s to 2010 (see annex, page 112).

Notes

1 There is an ambiguity in Hall's classification when he takes third order change as both change in policy objectives and change in all dimensions simultaneously. To prevent confusion in cases that policy objectives change while other dimensions are still stable, I have taken third order change as change in policy objectives compared to paradigmatic shift as change in all dimensions and framework.

2 ACF's policy belief system will be elaborated on further below. In brief, it recognizes three layers for coalition beliefs: deep core-normative belief, policy core belief, and secondary ones. This classification is also consistent with Cairney's distinctive typology of ideas as paradigms, norms, policy ideologies and beliefs, and policy proposals (2012, 15).

References

BERR (2008), *Meeting the Energy Challenge: A White Paper on Nuclear Power*, London, BERR, http://webarchive.nationalarchives.gov.uk/+/http://www. berr.gov.uk/files/file43006.pdf [May 2014].

Cairney, Paul (2011), 'The New British Policy Style: From a British to a Scottish Political Tradition?', *Political Studies Review* 9: 208-220.

Campbell, John L. (2002), 'Ideas, politics and public policy', *Annual review of sociology* 28(1): 21-38.

CCC (2009), *Meeting Carbon Budgets - The need for a step change*, http:// www.theccc.org.uk/publication/meeting-carbon-budgets-the-need-for-a-step-change-1stprogress-report/ [May 2014].

CCC (2010), *The Fourth Carbon Budget: Reducing emissions through the 2020s*, Committee on Climate Change, http://www.theccc.org.uk/publication/the-fourth-carbon-budget-reducingemissions-through-the-2020s-2/ [May 2014].

Cortell, Andrew and Susan Peterson (1999), 'Altered States: Explaining Domestic Institutional Change', *British Journal of Political Science* 29 (1): 177-203.

Clegg, D. (2012), 'Policy change session', Political Issues in Public Policy master course, Edinburgh, Edinburgh University.

DECC (2009a), *The UK Low Carbon Transition Plan: National strategy for climate and energy*, London, The Stationary Office, https://www.gov.uk/government/ uploads/system/uploads/attachment_data/file/228752/9780108508394.pdf [May 2014].

DECC (2009b), *The UK Renewable Energy Strategy*, London, HMSO, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228866/ 7686.pdf [May 2014].

DECC (2011), *Planning our electric future: A White paper for secure, affordable and low-carbon electricity*, DECC, https://www.gov.uk/government/uploads/ system/uploads/attachment_data/file/48129/2176-emrwhite-paper.pdf [May 2014].

DTI (1993), *The Prospects for Coal: Conclusions of the government's coal review*, HMSO, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/271969/2235.pdf [May 2014].

DTI (1995), *The Prospects for Nuclear Power in the UK: Conclusions of the government's nuclear review*, HMSO.

DTI (1998). *Conclusion of the Review of energy Sources for Power generation*, HMSO, http://webarchive.nationalarchives.gov.uk/19990117061127/dti.gov.uk/energy/ [May 2014].

DTI (2000), *New and Renewable Energy: Prospects for the 21st Century*, The Renewables Obligation Preliminary Consultation, BERR, http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file21097.pdf [May 2014].

DTI (2003), *Energy White Paper: Our energy future- Creating a low-carbon economy*, HMSO, http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file10719.pdf [May 2014].

DTI (2006), *The Energy challenge: Energy Review report*, The Stationary office, https://www.gov.uk/government/uploads/system/uploads/attachment_data/ file/272376/6887.pdf [May 2014].

DTI (2007), *Meeting the Energy Challenge: An Energy White Paper*, London, TSO, http://www.berr.gov.uk/files/file39387.pdf [May 2014].

Foxon, Timothy and Peter Pearson (2005), *Transformin policy process to promote sustainable innovation: some guiding principles. A report for policy makers*, London: Imperial College.

George, Alexander (1979), 'The Causal Nexus between Cognitive Beliefs and Decision-Making Behavior: The "Operational Code" Belief System', in Lawrence S. Falkowski (Ed.), *Psychological Models in International Politics*, Boulder, Colo.: Westview Press, 95-124.

Hall, Peter A. (1993), 'Policy paradigm, social learning and the state: the case of economic policy making in Britain', *Comparative Politics* 25(3): 275-296.

Hay, Colin (2001), *The Crisis of Keynesianism and the Rise of Neoliberalism in Britain: an Ideational Institutionalist Approach*, Princeton: Princeton University Press.

Helm, Dieter (2005), 'The assessment: the new energy paradigm', *Oxford Review of Economic Policy* 21(1): 1-18.

Helm, Dieter (2006), 'Energy policy: politics vs. economics', *New Statesman*, http://www.newstatesman.com/node/153257 [May 2014].

Helm, Dieter (2007), *The New Energy Paradigm*, Oxford: Oxford University Press.

Helm, Dieter (2010), *Market reform: rationale, options and implementation*, Policy paper, http://www.dieterhelm.co.uk/sites/default/files/Market%20reform% 20October% 20paper.pdf [May 2014].

Henney, Alex (2011a), *The British Electric Industry 1990-2010: The Rise and Demise of Competition*, London: EEE Limited.

Henney, Alex (2011b), 'How the Greening of Britain's Electric Industry Spells the Third and Final Step in the Death of the Market', *The Electricity* 24(5): 50-56.

HMG (2008), *The 2008 Climate Change Act*, DECC, London: HMSO, http://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf [May 2014].

HMG (2010), *The Coalition: Our Programme for Government*, Cabinet office, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/78977/coalition_programme_for_government.pdf [May 2014].

Howlett, Michael and M. Ramesh (2003), *Studying Public Policy: Policy Cycles and Policy Subsystems*, Oxford: Oxford University Press.

IEA (2007), *Energy Policies of IEA countries: the United Kingdom 2006 Review*, Paris, http://www.iea.org/publications/freepublications/publication/unitedkingdom2006.pdf [May 2014].

Ipsos-MORI (2012), *Issue Index*, Ipsos MORI, http://www.ipsosmori.com/ research publications/researcharchive/poll.aspx?oItemID=56&view=wide [May 2014].

JESS (2006), *Long-Term Security of Energy Supply*, DTI Report, London, DTI.

Kern, Florian (2011), 'Ideas, Institutions, and Interests: Explaining policy divergence in fostering 'system innovations' towards sustainability', *Environment and Planning C: Government and Policy*, 29 (6): 1117-1134.

Kern, Florian (2012a), 'The discursive politics of governing transitions towards sustain-ability: An analysis of the Carbon Trust in the UK', *International Journal of Sustainable Development* 15(1/2): 90-106.

Kern, Florian (2012b), 'Using the multi-level perspective on socio-technical transitions to assess innovation policy', *Technological Forecasting & Social Change* 79 (2): 298-310.

Kern, Florian, Catherine Kuzemko and Catherine Mitchell (2013), 'Measuring and explaining policy paradigm change: the case of UK energy policy', *Policy & Politics* [in print, ISSN 0305-5736].

Kern, Florian and Catherine Mitchell (2010b), 'Policy paradigm as part of the landscape: How do policy paradigm influence attempts to govern transition?', Presented at the 14th Annual Conference of the International Research Society for Public Management (IRSPM) conference, Bern, Switzerland.

Kingdon, John W. (2003), *Agendas, Alternatives and Public policies*, Boston, MA: Little, Brown.

Kuhn, Thomas S. (1962), *The structure of scientific revolutions. International encyclopedia of united science*, Chicago: University of Chicago Press [2nd ed. 1970].

Kuzemko, Catherine (2011), *UK Energy Governance in the Twenty-first Century: Unravelling the Ties that Bind*, Warwick: University of Warwick.

Lawson, Nigel (1982), Oil and Gas (Enterprise) Bill, House of Commons Debate on 19 January 1982, http://hansard.millbanksystems.com/commons/ 1982/jan/19/oil-and-gas-enterprisebill [May 2014].

Lynas, Mark (2011), 'You mustn't believe the lies of the Green zealots. And I should know – I was one', *Daily Mail*, 4 July 2011.

McIlveen, Robert and Dieter Helm (2010), *Greener, cheaper*, Simon Less, Policy Exchange, http://www.policyexchange.org.uk/images/publications/greener%20cheaper%20-%20jul%2010.pdf [May 2014].

Meijerink, Sander V. (2005), 'Understanding policy stability and change: The interplay of advocacy coalitions and epistemic communities, windows of opportunity, and Dutch coastal flooding policy 1956-2003', *Journal of European Public Policy* 12(6): 1060-1077.

Miliband, Ed (2008), 'The Rise and Fall and Rise Again of a Department of Energy', The Energy Futures Lab, Imperial College, London, 9 December 2008, http://www3.imperial.ac.uk/pls/portallive/docs/1/54221696.PDF [May 2014].

Miliband, Ed (2009), 'Wind, sea, coal and nuclear power. Yes please', *The Times*, 27 April 2009.

Mitchell, Catherine (2008), *The Political Economy of Sustainable Energy*, New York: Palgrave Macmillan.

Newbery, David (1998), 'The regulator's review of English electricity pool', *Utilities Policy* 7(3): 129-141.

Newbery, David (2011), *Reforming Competitive Electricity Markets to Meet Environmental Targets*, Cambridge Electricity Policy Research Group: CWPE 1154 & EPRG 1126, https://www.repository.cam.ac.uk/bitstream/handle/1810/ 242033/cwpe1154.pdf?sequence=1 [May 2014].

Nohrstedt, Daniel (2008), *Crisis and Policy Reformcraft: Advocacy Coalitions and Crisis-induced Change in Swedish Nuclear Energy Policy*, Uppsala University.

OFGEM (2008), *Energy Supply Probe – Initial Findings Report*, Ofgem, https://www.ofgem.gov.uk/ofgem-publications/38409/transact-response.pdf [May 2014].

OFGEM (2009), *Project Discovery: Energy Market Scenarios*, Ofgem, London, https://www.ofgem.gov.uk/ofgem-publications/40361/discoveryscenarioscondocfinal.pdf [May 2014].

Pearson, Peter and Jim Watson (2012), *UK Energy Policy 1980-2010: A history and lessons to be learnt*, London, Parliamentary Group for Energy Studies.

PIU (2002), *The Energy review*, Cabinet Office for Performance and Innovation Unit, http://www.gci.org.uk/Documents/TheEnergyReview.pdf [May 2014].

Platchkov, Laura, Michael Pollitt and Irina Shaorshadze (2011), *The implication of recent UK energy policy for the consumer: A report for the consumer's association*, ESRC Electricity Policy Research Group, Cambridge Electricity Policy Research Group.

RCEP (2000), *Energy: The Changing Climate*, The Twenty-second Report of the Royal Commission on Environmental Pollution, London, http://www. viewsofscotland.org/library/docs/RCEP_Energy_The_Changing_Climate_Jun_00.pdf [May 2014].

Rose, Richard and Phillip Davies (1994), *Inheritance in public policy: Change without choice in Britain*, Yale University Press.

Sabatier, Paul A. and Hank C. Jenkins-Smith (1993), *Policy Change and Learning: An Advocacy Coalition Approach*, Boulder, CO: Westview Press.

Sabatier, Paul (2007), 'The need for better theories', *Theories of the Policy Process*, Boulder, CO: Westview Press.

Sabatier, Paul and Chris Weible (2007), 'The Advocacy Coalition Framework', *Theories of the Policy Process*, Boulder, CO: Westview Press.

Scrase, Ivan and Gordon MacKerron (2009), *Energy for the Future*, New York: Palgrave Macmillan.

Scrase, Ivan, Adrian Smith and Florian Kern (2010), *Dynamics and deliberations: com paring heuristics for low carbon innovation policy*, SPRU Electronic Working Paper Number 184, SPRU.

Shackley, Simon and Ken Green (2007), 'A conceptual framework for exploring transition to decarbonised energy system in the United Kingdom', *Energy* 32(1): 221-236.

Skea, Jim, Paul Ekins and Mark Winskel (2011), *Energy 2050: Making the Transition to a Secure Low Carbon Energy System*, London/ Edinburgh: Earthscan from Routledge.

Sovocal, Benjamin (2011), *Contesting the future of nuclear power: a critical global assessment of atomic energy*, London: World Scientific.

Stern, Nicholas (2006), 'Stern Review on the Economics of Climate Change', in Streeck, Wolfgang and Kathleen Thelen (Eds.), *Beyond Continuity: Institutional Change in Advanced Political Economies*, Oxford: Oxford University Press.

Toke, David and Volkmar Lauber (2007), 'Anglo-Saxon and German approaches to neoliberalism and environmental policy: The case of financing renewable energy', *Geoforum* 38(4): 677-687.

Watson, Jim (2009), 'Technology assessment and innovation policy', in Scrase, Ivan and Gordon MacKerron (Eds.), *Energy for the future: a new agenda. Energy, climate and the environment*, New York: Palgrave Macmillan, 123-146.

Winskel, Mark (2007), 'Multi-level governance and energy policy: renewable energy in Scotland', in Murphy, J. (Ed.), *Governing Technology for Sustainability*, London: Earthscan, 182-199.

Annex

Figure 2. A summary of the UK energy/electricity policy evolution since the liberalization

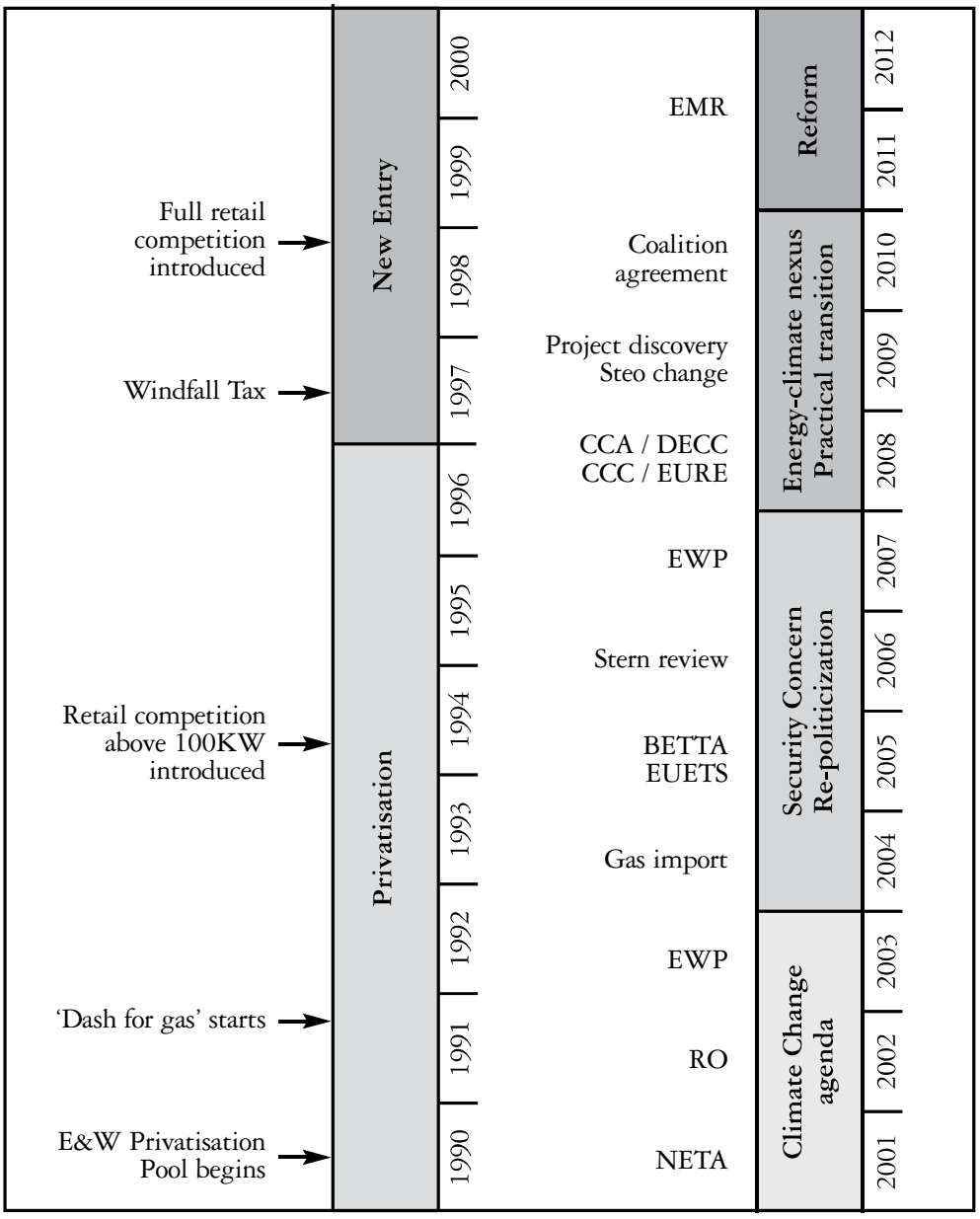


Table 3. A summary of policy changes in the UK energy policy between 1980 and 2010

	Policy settings	Policy instruments	Policy objectives	Policy institutions	Policy paradigm	Type of overall change
Liberalized-privatized paradigm (1980s–90s)	✓	Wholesale pool market	Competition and efficiency	- Shifting ownership from nationalized monopoly to privatized oligopoly - Demolishing department of energy - Creation of Ofgem	Full replacement of nationalized-centralized paradigm with liberalized-privatized paradigm	**Fully-fledged paradigmatic shift**
NETA (2001)	✓	Bilateral contract	Competition and efficiency	Vertically integrated companies	Still well-fitted within market paradigm	**Minor policy change**
Early climate policies (early2000s)	✓	RO EUETS Both marginal compared to whole market	Emission reduction objective but vaguely worded	Nothing particular	- Starting by "competitive market is enough" - Then moved to climate change is the biggest market failure	**Minor policy change**

				- Both were within market paradigm	
Security concern and repolitization (mid 2000s)	✓	Nuclear retr-urn - Security on top - Climate remains	Minor changes like "boosting energy division within "DTI and SCO"	- Energy re-politization - Market sometimes needs supplementa-tion	**Towards a major policy change**
Transition (late 2000s)	Minor alteration in banding RO and EUETS	Small-scaled FiT - Clear legal target setting - Security-climate nexus - Renewable target	- Creation of DECC - Establish-ment of CCC - Revising Ofgem duties	- Discrediting market - Mistrusting market institutions - Admitting more strategic role for state - Inter-paradigm borrowing - Market remains the only option	**Major policy change**