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Energy Policy: Concepts, Actors, Instruments and Recent Developments

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Andrea Prontera

Abstract

The article analyses the specific features of energy policy-making, by exploring the relevant dimensions of the matters and the interdependence between energy policy and other sectors. A recognition of the evolution of energy policy – and of the policy change which occurred in recent years – is provided, as a starting point for applying the tools of policy studies to the analysis of energy policy-making. Two different types are then identified: the external policy-making concerning security matters; and the internal policy-making concerning organizational and market-related issues. It will be seen that each type of policy-making is characterized by a particular policy sub-system with its own actors, instruments, arenas and dynamics.

KEYWORDS: energy policy, policy-making, policy sub-system

1. Introduction

Scholars of political science, even those who deal in public policy, seldom write about energy policy. The field is predominantly occupied by students of other disciplines who have a store of technical knowledge, by economists who have elaborated a series of instruments and theories on the topic, but especially by experts who a variously engaged in the sector.[1] Some contributions with a political science flavor (often coming from the international relations field) have been developed at the same time as events that created inescapable problems for many countries. Consider for example the oil shocks of the 1970s that highlighted the fragility of the systems of growth and economic development upon which many western states relied. The same is true of the bitter debates and fractures that went along with alternative technological options like nuclear power.

Notwithstanding the scarce attention it received, energy policy is a field rich with questions – theoretical in the first place – that are very relevant and have a general reach. It is worthwhile recalling the problems related to the complex and often conflictual relationship among institutions, interests and technology in a given society; in other words the themes linked to the influence of institutional variables – *institutional structure* (Lucas 1985) – on technological choices. Then there are the issues linked to the tensions between democracy and technocracy in the presence of technological options – like nuclear energy – and highly relevant decisions for a political community that are often taken at the margins of typically democratic procedures (Dahl 1987). Furthermore, all of the questions related to the role of the state or of the market in the regulation of crucial sectors to the economic development of a country and, finally, the tensions between national governments and supranational institutions and between center and periphery for the control of strategic resources for a state, which often have a strong local value.

All of these issues (and not only these) can be found in energy policy research. In particular, a politological approach to the study of this theme becomes necessary as soon as one abandons the simplistic view according to which energy policy is exclusively determined by material factors – for example the presence/absence in a certain territory of natural resources like oil, gas, coal, and so forth – or technological ones (technological determinism). In fact, the greatest part of scholars coming from different disciplines agree in stressing how energy policies are the product of the interaction of material and technological factors with political institutional ones (Lucas 1977, 1979, 1985; Lindberg 1977;

[1] This is not a novel realization; on the topic are relevant the observations made by Susan Strange fifteen years ago (1988:194). The discipline that has produced the largest number of theories and models on energy issues, and that has available a relatively well consolidated knowledge set, is economics. See for example the various chapters in the third volume of the *Handbook of Natural Resources and Energy Economics* by Kneese and Sweeney (1993).

Kohl 1982; Ninni e Rullani 1985; Clark 1990). In other words, energy policy in a given period is not only the fruit of the conditions of socio-economic development, but is also determined by the modalities of interaction among the actors involved in energy policy-making, by the distribution of the resources within the policy networks, by the logic of action that guide the choices of decision-makers and by the results of the choices and of the power configurations inherited from the past. Therefore, adopting the policy studies lens is necessary to pay the right attention to the role of these factors in the policy evolution of the energy sector.

In this article we aim to provide a general framework of this little dealt with policy area, through an analysis of the theoretical literature on the topic, and of the results of the main empirical research undertaken in European countries and in the United States. Furthermore, we shall try to develop a general analytical scheme that may be a useful basis for the development of a future research agenda.

A similar theoretical reflection, which begins from the specificity of energy issues to develop an interpretative framework of policy-making in these sectors, has not of yet been created. Therefore, the goal is to contribute to fill this gap and to underline the central role of policy variables in the evolution of energy policies during a period in which the debate around these themes is once again topical.

2. Definitions and Characteristics of Energy Policies

2.1 What is Energy Policy?

Energy policy involves interventions in the sectors of coal, electricity, oil and gas, as well as nuclear and renewable energy, and the activities aimed at improving energy efficiency in supply and consumption (McGowan 1996).

The attempt to define energy policy in a more precise manner faces all of the issues associated with defining a policy.[2] A simple but useful distinction can be the one between official energy policy and unofficial policies affecting the energy sector (McGowan 1996). The former can be defined as a strategy, clearly elaborated and explicitly formulated by the government, to govern the current and future energetic balance.[3] In many cases this implies a commitment to a series of specific investment and technology choices, and the realization of a coordination of the activities of different energy producing sectors. The latter involves all of those policies that governments adopt for a whole different set of reasons, but that

[2] For a discussion of the meaning of policy see Hogwood and Gunn (1984), Capano and Giuliani (1996:317) and Regonini (2001).

[3] In this context are included both the decisions adopted for the management of the energy *supply* (electrical generation, renewable energies, etc.), and those adopted for the management of the energy *demand* (energy savings, energy efficiency in construction and in transportation, etc.).

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influence the energy sectors, the firms that operate within them, and the energy balance, both intentionally and accidentally. This distinction can also be seen in the European Union (EU), where during the first twenty years of its existence it was attempted to develop a common energy policy – with scarce results – and where, starting from the 1980s, other policies have begun to exert a great influence on the choices of governments and of the firms that operate in the energy sector (Daintith and Hancher 1986).

Another useful analytical differentiation can be made distinguishing between energy policy as a whole and specific subsets of intervention within this broader set. Starting from this reflection, from the literature on the issue, and following consolidated operative divisions used by international agencies like the *International Energy Agency*, we can individuate for each country a general energy policy, various specific policies for the different sources of energy (oil, natural gas, coal, nuclear, renewable energy, electricity), and other decisions aimed at intervening on trasversal problems[4] (R&D, energy and environment, energy efficiency). Another similar subdivision allows to clarify each time which is the chosen subject of analysis, for example if it is the energy policy of state as a whole, of if instead a series of interventions in a subset like the electrical of gas sector. Once the sector is delimited (in whole or in part) it will be easier to individuate the main actors involved and the instruments and the processes of policy-making.

2.2 The Characteristics of Energy Problems

Energy problems are marked by some characteristics, relevant for their repercussions upon politics and its evolution. These characteristics manifest their effects with an intensity that varies depending on the specific energy sub-sector that is considered.[5]

International dimension. The relevance of *international factors* for domestic policy-making is important, but in certain sectors this connection is certainly more direct and exerts a larger influence on the choices of the decision-makers. This is the case with energy policy. Energy issues directly involve the relationship of a state with the other states in the international system. It is enough to recall that many of the primary energy sources for all industrialized countries (oil and gas; see figures 1 and 2) are concentrated in limited geographical (and geopolitical)

[4] See the various reports – *Energy Policies of IEA Countries* – prepared annually by the IEA on national energy policies (www.iea.org).

[5] For example the international dimension will have a stronger intensity in the issues related to the security of the procurement of sources like natural gas and oil, while it will have a reduced value for renewable sources.

areas.[6] The relationships among the exporting and the importing countries for these resources are, therefore, a fundamental aspect for energy policy, as the oil shocks of the 1970s demonstrated very well, and as shown daily by the relations among the countries of the EU and the countries that export oil and gas (like Russia).

Given the scarcity of the main energy resources[7], and their geographic concentration, one of the main concerns of industrialized countries remains that of ensuring adequate supplies, diversifying the sources of energy and/or the area from which they are drawn.[8] From the analytical point of view – in which we are interested here – this means that distinguishing between *internal* and *external* lines is not always easy, and that in the study of energy policies we must pay particular attention to a whole series of decisions that cross the boundaries of foreign policy and international relations.[9] The international dimension of energy problems – as we shall see in more depth later – has important direct implications on the policy actors, on the instruments and the logics used, and on the modalities themselves of policy-making.[10]

Strategic dimension. The second characteristic of energy issues is their strategic dimension.[11] By *strategic dimension* we want to underline the fact that energy policy is indispensable for the pursuit of a great number of other goals that are typical of all modern societies.[12] Without an adequate energy policy – whatever that may be – even the basic functioning of a industrialized or developing country is unthinkable. Even considering just the minimal functions of any state, guaranteeing internal order and defending the polity from external attacks, there is no doubt that in mechanized societies both functions can be undertaken only if

[6] Furthermore, these are natural resources and are characterized, beside that they are not reproducible by human beings, by being economically scarce.

[7] In this case we refer to the so-called non-renewable sources. Even if renewable sources (for example wind of solar) are acquiring a growing weight in the production of energy, their percentage in the energy balance of industrialized countries still remains much lower than oil and gas (*Energy Balances of OECD Countries*, IEA/OECD Paris, 2005). As far as nuclear energy is concerned, it too has a strong international dimension, but it presents different problems than oil and gas.

[8] It is obvious that the problem is larger for countries that are highly dependent on foreign sources, while it has a smaller weight in the opposite case.

[9] For some reflections on the internal and external weight in the energy field see Deese (1980).

[10] Attention to the international dimension of energy issues has long been prevalent. In closing a review of the literature on energy policies at the beginning of the 1980s, a research could correctly point out that the least studied sector was that of domestic policy-making within the major industrialized countries (Turner 1980). With some exceptions, today the situation has not changed substantially.

[11] For a general framework of the strategic issue related to energy see Maul (1988).

[12] In particular, on the relationship between energy and security see Kalichi and Goldwin (2005).

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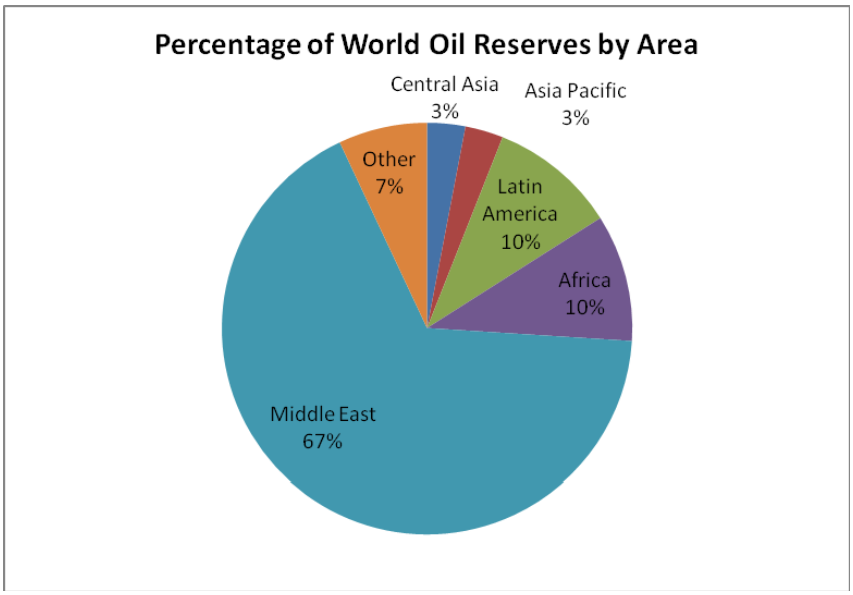
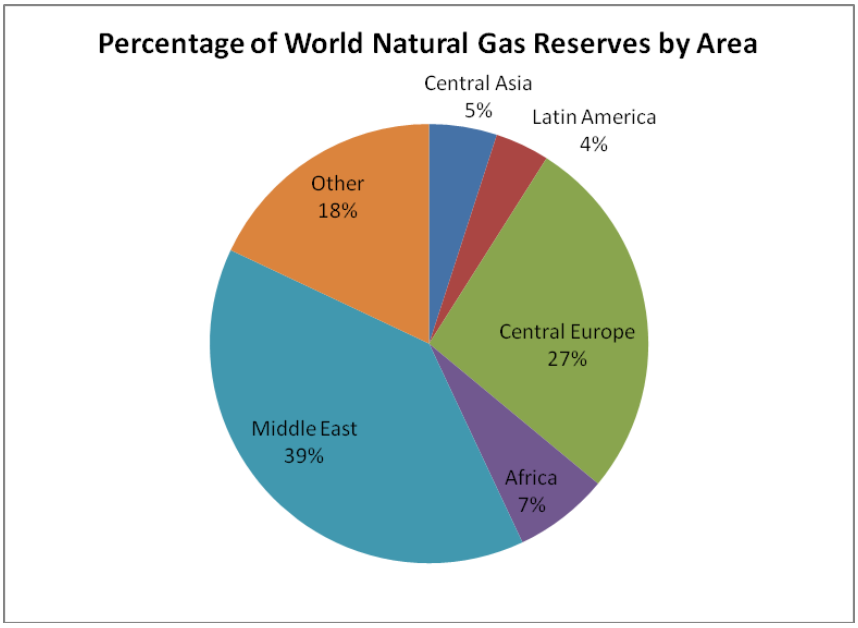
Figure 1. Oil reserves estimates in various geopolitical areas, percentage of total



Source: ENI, World Oil and Gas Review 2007 [www.eni.it]

Figure 2. Natural gas reserves estimates in various geopolitical areas, percentage of total



Source: ENI, World Oil and Gas Review 2007 [www.eni.it]

ahead of time is solved the problem of finding some energy source (which may be coal, oil, natural gas, nuclear, renewable, and so forth). It is evident that the importance of energy issues increases exponentially if we reflect on the enormous number of functions that any given state in fact has.

The strategic weight of energy issues has had – and still has – at least two important implications. The first is that national governments are very jealous of their competences in the field. While energy issues have an important international component, states have limited to a minimum the devolution of competences to supranational institutions and find it difficult to cooperate and to produce common decisions and policies. Competences on energy issues are predominantly given to central governments, and international cooperation takes place through bilateral agreements with the countries that supply the raw materials (mostly oil and natural gas). Therefore, each country has organized itself in a fairly autonomous way to solve the problem of its energy requirements, with different results.[13]

The second implication produces its effects along another dimension, the *state-market* one that is. Energy has long been treated as a strategic resource, and for this reason energy policy has been mostly interventionist, seeking implicitly or explicitly to correct market failures, just as it sought to reach other policy goals (Helm 1989). In this respect the energy sector was often different than other industrial sectors, which mostly were dominated by market laws. The use of planning has been prevalent, with the use of forecasting techniques for demand and for the evolution of the energy sectors. Even if these techniques a common in many industrial fields, the temporal horizon – often thirty or forty years – is much larger than in the other sectors, as well this instrument was used on much larger scale to guide and direct investment choices (Midttun 1987). Even in recent times, starting from the end of the 1980s, energy sectors are still the last ones holding out against neo-liberal prescriptions (liberalization and privatization), as shown very well by the difficulties faced by the proposals in this direction presented by the EU in the fields of natural gas and electricity (Matlàry 1997; Schmidt 1998; Eising and Jabko 2001).

Cognitive dimension. The problems connected to energy lend themselves, because of their characteristics, to different interpretation. A simple example can illustrate this statement. The high use of oil as energy source by a country can be evaluated as a cost for the economic system, more or less sustainable depending on its market price in a given moment; as a political risk for independence and national security, to avoid independently of its economic cost; and finally as an

[13] This situation is very clearly observable even in the European context, where the growing strategic importance of the energy sector has led national governments to the jealous safe-keeping of policy autonomy.

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environmental problem, tied to the pollution generated by the consumption of this energy source. In other words, the perception of the nature of the energy problem to be faced is an important factor in understanding both the definition modalities of the problem itself, and the eventual solutions.[14] As we shall see, over time the interpretation of the energy problem can change, influencing the evolution of the policy connected to its solution. From the end of World War Ii until the mid-1980s, the main concerns were of an economic kind, or tied to national independency, while afterwards ecologic ones acquired an increased weight.

Wide temporal horizon and uncertainty. Another characteristic of the interventions undertaken to answer energy requirements is the necessity to operate with quite large temporal horizons and in a contest of uncertainty. Technological choices in this field are characterized by very long construction times and life, and this is reflected in the long-term vision linked to energy issues. The nuclear energy case I paradigmatic of this situation, given that this kind of option presupposes interventions that manifest their effect fully over decades. This condition generates a problem of dyscrasia – which is also present in other policy sectors as for example the environmental one (Lewanski 1997) – that is situations in which the times of the political and policy processes are 'dissonant' (Lewanski 1997:37) with respect to those that aim at resolving energy issues. In other words, the temporal horizon of the political actors, that seldom goes beyond the next electoral deadline, often collide with the long cycles of interventions in the energy field.

The context of uncertainty linked to energy issues has a double nature. The first concerns the real availability of the natural resources from which a good part of energy offer in industrialized countries (oil and natural gas) depends. Of these resources, which are finite, and therefore exhaustible, we do not exactly know the quantity that is still exploitable.[15] The second aspect concerns the uncertainty of energy sources' markets. The price fluctuations – and the availability of the product – in some of these markets (oil and natural gas) are tied to unpredictable, or in any case difficultly manageable, phenomena.[16] Just consider the effects that an atmospheric phenomenon, an unforeseen accident,

[14] It is possible, that is, seek cheaper, more environmentally friendly, or more autarchic sources, and the three criteria may lead towards different solutions. For a recent critical review of cognitive frames in public policy analysis see Surel (2000).

[15] On this point different schools of though collide. In the oil field, among the most important, the first believes that the 'peak' of discoveries of new oil fields was reached thirty years ago and that, since then, oil reserves did nothing but decline. Another – based on research from the United States Geological Survey (USGS) – believes that only a third of existing resources have been utilized up to now, and that the 'peak' will not be reached before 2025 (*The Economist* April 22 2006:65-67.

[16] See Chow and Elkind (2005).

international tensions, or internal problems of individual countries can have on oil markets.

High technical-scientific content. Often, energy issues also exhibit a high technical and scientific content. This has at least three political implications. The first is that, if it is true that an issue can involve a broad public only if it meets the requisite of simplicity (Meny and Thoenig 1991), the attention and the participation in energy themes by 'non specialists' risk being demotivated as the their complexity grows, independently of their importance.

The second implication can be summed up in the formula 'knowledge is power'; that is the control over know-how – and over technologies – turns out to be decisive in the policy-making process. Certain examples can shed some light on this issue. In an important research on three large cities – Chicago, London and Berlin – at the initial moment of the development of electrification (1880-1930), Thomas Hughes has shown how in Chicago the technology dominated politics, in London the contrary was true and in Berlin there was a coordination between political and technological power (Hughes 1983). In the 1950s, in Italy the government policy for the electrical sector depended almost completely on the information coming from private electric firms. For example, the programs for the construction of new power plants were simply based upon the collection of projects of private electric companies, so that one could not speak of an effective public regulatory control, but rather of a simple flow of information from the firms to the government. The latter on the basis of these data arranged for interventions in the areas of subsidies and contributions, and of fees (Giannetti 1989). In the 1970s and 1980s, in France, the electrical-nuclear complex led by EDF (Electricité de France) managed to operate within the planning process, formulating growth forecasts for the demand of electricity that ensured to the public company large resources to increase its development (Ninni and Rullani 19850, so much so that in the 1980s the French electrical system has known an over-capacity that pushed the government to export the electrical surplus.

Finally, the third implication is that the success of new solutions and technical proposals can affect many important aspects of the policies (Grubb and Winterton 1992). Technological innovations can redefine the actors that participate in the policy-making, the relations among them, and the distribution of resources within the energy policy-networks.[17]

High interdependence. The fundamental analytical unit for policy studies is specific issue of public relevance (Regonini 2001:23); however, public policies face tangles of problems and solutions that are deeply interweaved (Dunn 1981).

[17] This situation is not specific to energy issues alone, but is also found in other policy sectors with high technological content like, for example, transportation (Tebaldi 1999).

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This condition, typical of many policies, is particularly accentuated for energy issues, so much so that it is difficult to find a sector or an aspect of social and economic life that is not interconnected in various ways with these themes. From this situation of interdependence follows that, to generate an adequate comprehension of the dynamics, the choices, and the results of energy policies, we must also pay some attention to the processes that taken place at the same time in other connected policy areas. Furthermore, the awareness of this strong interdependence has created, in recent years, phenomena of integration – policy integration – between energy policy and some sectors that are close to it.[18]

2.3 Contiguous Sectors

As noted above, the specificity of energy issues places them in close contact with a truly broad set of other spheres of public intervention. However, it is possible to individuate a series of sectors that present a more marked contiguity and interdependence with energy policies.

External relations (foreign policy). The international dimension of energy issues has resulted in the creation, since the beginning, of a close relationship between energy policy and foreign policy.[19] On the contrary, very often being able to draw a line separating these two spheres of intervention is almost impossible. Since the last century, many countries' foreign policies had as their content energy issues. On the other hand, energy policies were being carried on with instruments, goals and purposes that were typical of foreign policy. In fact, in various countries the first phase of the energy policy was essentially based on oil policy, and it developed, as far as goals and instruments are concerned, following the logic of power politics in a sector where various nations were present (Frankel 1970; Adelman 1972; Choffel 1976; D'Amarzit 1978; Grayson 1981; Feigenbaum 1985). Still today maintaining and promoting good relations with the countries that re the major exporters of energy sources like oil and natural gas is an absolute priority for the greatest part of governments to guarantee supply security.

Transport. In the case of the relationship between energy and transportation more than of contiguity, it would be better to speak of interactivity. The interactive relationship between energy and transport can be articulated along two distinct

[18] Among the approaches that are most advanced in this direction we can point to IEP (Integrated Energy Policy) programs that explicitly aim at integrating energy issues with other activities that are contiguous to them.

[19] The foreign policy of a nation can be defined as the specific public policy that is established, decided and adopted within the political system, by on the basis of the permanent interaction with its international context (or environment) (Santoro 1990).

but concurrent aspects that are often present in the same modality of transport (Talice 1986). Solving the problem of the mobility of things and persons (Tebaldi 1999) implies the utilization of energy. The transportation sector, in fact, is first of all a great consumer of energy. In the largest industrialized countries, it is the first sector in terms of consumption of energy products, followed very closely by the industrial sector.[20] As a result, through appropriate organizational and technological measures, this area of intervention can contribute to the achievement of great energy savings and to the improvement of a country's general energy situation. From another point of view, which is just as important, transport achieves the dislocation of raw material and of the products that are necessary for the production of energy.[21] Given this situation, transport in all of its multimodal forms is, at least for the major types of energy, determinant both for the vectoring of raw materials indispensable for the production of energy and for the distribution of energy that is produces.

The awareness of the close interaction between these sectors has pushed towards the adoption of unitary decisions that are able to face up together to these two problems.[22]

Industry. In the greatest majority of industrialized countries government responsibilities in the energy sectors are mostly given to the industry ministry (or to those dedicated to economic development).[23] This situation should not be surprising for at least two reasons. Because of its high energy needs the industrial sector is closely connected to the choices in this field.[24] Furthermore, many energy sectors – as in the case of natural gas or electricity – are 'occupied' by large companies that engage in the research, production, transportation and distribution of energy; and traditionally these companies have been directly owned or controlled by the state.

Therefore, on the one hand, the firms are often a target of energy policies, especially of the decisions that aim at promoting energy efficiency (both in the

[20] The transportation sector in the OECD countries absorbs over 30% of the final consumption of energy (*Energy Balances of OECD Countries*, IEA/OECD Paris, 2005).
[21] The inclusion of natural gas and oil pipelines in the transport sector is now accepted.
[22] The European Union level is a good example. The EU treats together – under the same General Division – energy and transport issues and has put in place various interventions that attempt to act in a unitary manner upon the two policy areas.
[23] This especially on the domestic (national) front of the energy policy, while in the external (international) one the responsibilities are taken up by the top political echelons (heads of government and heads of state) or by the minters of foreign affairs, exactly because of the overlap between energy issues and foreign policy issues.
[24] Right after the transport sector the industrial sector is the one absorbing the highest quota of energy's final consumption in industrialized countries (*Energy Balances of OECD Countries*, IEA/OECD Paris, 2005).

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productive cycles and in the supply of products at reduced consumption). On the other hand, the firms that operate in the different energy sectors have long been – and often still are – important policy instruments in the hand of governments.

Environment. Notwithstanding the fact that the relationship – better, the perception of the relationship – between energy issues and environmental issues is more recent, it has now reached a relevance that makes it by far one of the aspects that most influences the evolution of energy policies at the global level. Even in this case, more than of contiguity we can talk of interdependence, and in the end of true integration between energy and environmental issues.[25] Choices in the energy sector obviously have a direct influence on environmental policies. The answers given to the energy crisis of 1973, based on a diversification of the sources staring from coal and nuclear, had a strong influence on the context of environmental policies (Jones and Matthes 1983). On the other hand, the relation goes both ways and the borders between the tow areas tend to vary and overlap according to the how a particular problem is perceived and defined. One such example is nuclear energy (Lewanski 1997:36); the latter must 'objectively' be placed within the scope of energy policy, but 'subjectively' (from the point of view of the actors involved) has become increasingly an environmental problem, so much so that nuclear power plants are either built or not built not for economic or technical reasons, but based on the acceptability of the risks that linked to this technology. In the same way, the construction of a regassifier for Liquid Natural Gas (LNG), or of a coal-powered electrical plant, while being instances of energy policy, at the same time will be evaluated and interpreted as environmental issues. Right from the choices made to answer environmental problems seem to come the main challenges to traditional energy policies. The case of the Kyoto Protocol is, in this sense, paradigmatic of the effects that the decisions taken to protect the environment can have on energy decisions. Deciding to reduce CO2 emissions implies – among other things – betting on 'clean' energy sources, and therefore reorienting energy strategies from one technology to the other. This change of course also has noticeable effects on the policy-making in the energy field (the actors, objective, instruments, processes, etc. change).

Management of the territory. Even in the case of the interventions aimed at managing the territory, the overlaps with energy issues are evident. This point of contact can create even strong tensions because many activities tied to production, transport and distribution of energy have a strong impact on the territory. The construction of nuclear, hydro, wind plants, of regassifiers, and so forth have a strong weight especially at the local level, so much so that often the decisions in

[25] The recent Environmental Policy Integration (EPI) programs consider energy as a privileged area of intervention.

the energy field must face the NIMBY syndrome. However, beside this, from a certain point of view obvious, aspect there are a series of activities directly linked to energy that are undertaken by the local authorities that are in charge of the management of the territory. In particular, these involve areas like efficiency and energy savings, and renewable sources. In the former case, interventions in the field of urban planning and construction can have important effects in achieving energy savings and in general to promote a more efficient and rational use of energy resources. In the latter case, the use of renewable sources – as for example solar or biomass energy – because of the diffusion and functioning modality is strictly connected to interventions in the matter of government and management of the territory.[26]

3. The Evolution of Energy Policies

3.1 An Historical Overview

The orientation of official energy policies, and of the whole of other policies that influence the energy sector, changes over time.[27] After the end of World War II, it was a constant preoccupation to increase national energy sources and to manage the transition towards a balance of the energy balance, particularly to answer to the concerns of supply certainty (and this is especially evident after the oil crises of the 1970s). The planning processes had an especially important role in the process of policy-making: forecasts in the future development of demand and supply, fixing quantitative goals, and introducing specific intervention mechanisms.

The other aspect of the policy was strategic in another sense. The energy sector was used to achieve general macroeconomic goals: the development of new technologies, the control of the balance of payments, the control of inflation, and the prosecution of social goals (Clark 1990). The goals of the policy were prosecuted through an influence on the same industries that operated in the energy sectors, thanks to a strong involvement of the state – often through direct ownership – in the energy industry and in the energy markets (for example establishing barriers to entry and monopoly situations). However, in the following years, the emphasis on supply security and the strategic importance of the sector – the idea that energy was a 'special case', that could not be brought back to other

[26] In general, it can be noted that the closer we get to distributed energy production, the more the issues connected to the management of the territory that are devolved to the local authorities become relevant.

[27] For this paragraph, we base our work on, besides the cited literature, on the analyses published yearly for OECD countries by the *International Energy Agency*. In particular, on *Energy Policies of IEA Countries*, 1978-2000 (www.iea.org).

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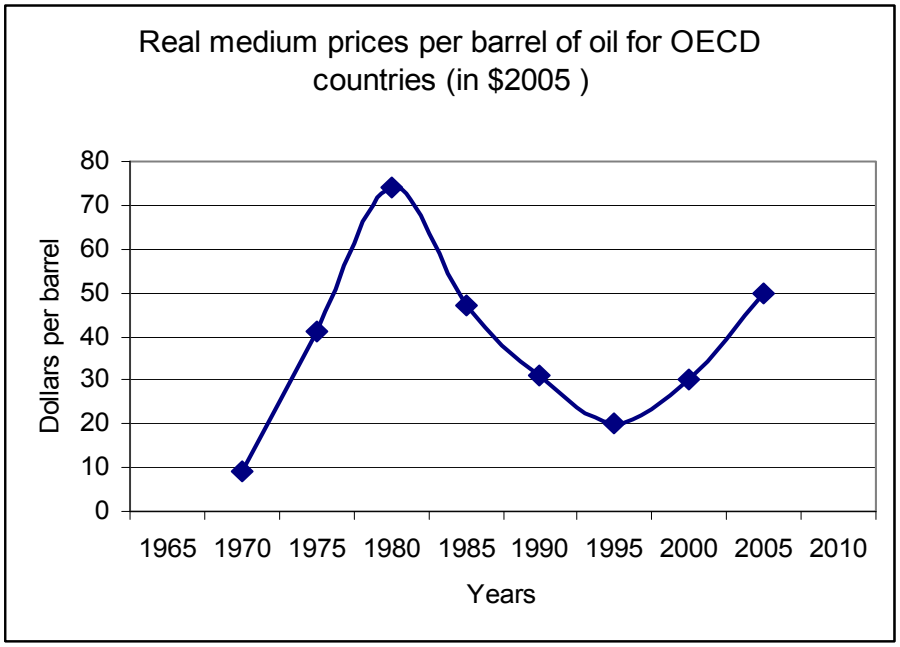
economic and industrial sectors – began to decrease as a result of important changes that had taken place in the energy markets. An important event was the fall of oil prices starting in the 1980s (Figure 3), followed by a more favorable relationship in the balance between demand and supply, by some technological changes – like the emergence of new information technologies – and by other, more general, political and economic transformations (like the development of the service sector in industrialized countries, and more favorable geopolitical conditions in the countries that export energy sources). In this way, other preoccupations began to emerge, like the protection of the environment and the promotion of competition (McGowan 1990).

Figure 3. Evolution of Oil Prices (1970-2005)



Source: estimates from IEA and IMF data (various years)

These changes also led to a change in the interests that are usually involved in policy-making. In the past, energy companies were the main targets and beneficiaries of these policies (Clark 1990). This, on the other hand, should not come as a surprise given that they were very close to governments, either through ownership or because of privileged ties. However, it is wrong to believe that the policy was simply 'captured' by the companies that produced oil, because the choices were not always made in their interests. As far as the consumer side, often the great industrial consumers enjoyed special advantages, while there was a strong political consensus towards maintaining prices for domestic customers at levels that were not high, and in attempting to ensure a substantial equality among

different areas of a country. Furthermore, in general national companies were protected by a specific legislation (especially in the electrical sector). So, while addressing themselves in particular to energy companies, the policies were based on a certain conception of national interest, which implied and evaluation of general social and economic demands.

The necessity to manage markets characterized by a strong uncertainty contributes to explain the persistence of energy policy priorities and the techniques utilized for the best part of the period after World War II. The 'institutional memory' of market failures, and the perception that the dependence on imported energy sources exposes all sectors to risk were and remain the decisive motivations for government intervention. We must then underline the presence of other explicative factors (McGowan 1996). First of all, the existence of a community of experts that has produced the greatest majority of knowledge utilized or energy policy and the planning procedures is particularly significant. Then, one must keep in mind the interests of the politicians and of the public servants in utilizing public policy to achieve different results, like regional development, or social cohesion, and so forth.

In conclusion, a similar mix of official and unofficial energy policies characterized the majority of the countries, even if there were differences in both the way in which these were carried out and in the way in which priorities were individuated. These differences have always increased when the debate on energy policies changed. The main political factors that influence in a decisive manner this new debate – the growth of environmental movements (and the general attention of public opinion towards safeguarding the environment) on the one hand and the growing influence of neoliberal ideas in the economic field on the other – have a different effect from country to country, intersecting with the specific situation of existing energy resources, with the structure of the industry and with the general economic and political and institutional situation.

The recent changes in the energy sectors influence both the priorities and the policy instruments, modifying the trim of the interests that are represented. An increasing attention is devoted to environmental issues, and to the promotion of competition through liberalizations (that theoretically increase the weight of consumers, reinforcing their ability to orient the market through the choice among the actors that operate in it). Therefore, the organizational trims, and the redistribution between economic, political and social costs and benefits, are changing in many countries.

3.2 Recent Developments and New Challenges in the European Context

The attempts to build a common energy policy on a European scale are as old as the integration process (CECA, EURATOM). However, it has only been a few

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years since the EU became an influential actor in the energy field passing mainly through the integration policies if national markets.

Soon enough after the end of World War II, the sources around which the CECA and the EURATOM had been constructed achieved a marginal role in the European energy mix, because of technical and economic (in the case of coal) or political (in the case of nuclear power) reasons. Gradually, the interest towards the sectors for which the Treaties directly gave responsibility to the European Community waned. Therefore, the chances of defining a common approach to energy issues became ever scarcer. The European Economic Community Treaty (1957) did not contain provisions that explicitly attributed to the Community competences in the energy field. Starting in the early 1960s, the activities of the European Community's institutions were limited to some isolated interventions, to forecasts, to the collection of data and the monitoring of price variations (Matlary 1997).

Successive attempts at inserting a section on energy cooperation in the following Treaties all failed. However, in an increasingly more insistent manner, to advocate the cause of a common energy policy, the Commission has presented to the European Parliament and the Council many proposals aimed at sensitize national governments. Among the various documents are very important the Green Book of 2000 and that of 2006, from which emerges as a key goal of European energy policy the creation of a common action aimed at guaranteeing the security of supplies. A watershed was also reached in March 2006, when the European Council embraced many of the suggestions that were formulated by the Commission in its last Green Book, laying the bases for a energy policy for Europe (*Energy Policy for Europe, EPE*). In reality, even if the member countries are showing a general consensus on the main paths to be followed, the disagreements are not lacking on specific points.[28] In other words, the EU is only moving its first steps in the direction of a common energy policy. Better luck and impact at the domestic level instead had the attempts to open national energy markets. When, in 1988, the Commission began to make an inventory of the obstacles to the realization of an Internal Energy Markets (IEM) identified the main issues in the electrical and natural gas sectors.[29] While slowly, because of the confrontations ignited among the main member states and the most important interest groups in the sector, some steps forward have been achieved, which have

[28] The final document approved by the European Council, in fact, does not give any specific indications on how to face the individual problems that were highlighted and, moreover, provides that the EPE will "Fully respect Member States' sovereignty over primary energy sources and choice of energy-mix" (Conclusions of the Presidency of the European Council of March 23-24 2006, http://europarl.europa.eu/summits/pdf/bru032006_en.pdf, p.26)

[29] *The Internal Energy Market*, COM (88), p.238.

increased the role and weight of the actors and of the common decisions in the national policy field (Arensten and Kunneke 2003; Glachant and Finon 2003).

Finally, and in a growing fashion, the interventions aimed at the safeguard of the environment and at the promotion of renewable sources promoted at the European level that have a strong influence on national energy policies.

4. Policy-Making in the Energy Sectors: Actors, Instruments, and Processes between Continuity and Change

Energy problems showed to be characterized by a marked complexity and interdependence with various other spheres of public intervention. One way to create order in the study of policy-making in the energy sectors can be the one of distinguishing analytically between its external and internal side.[30] In fact, to these two aspects of the same problem often coincide with different actors, processes and instruments.[31] External policy-making is represented by all of those decisions that have as their main goal the security of supply, and that have as a target that of guaranteeing (at least) an adequate flow of energy sources to support the economic and social development of a country.[32] *Internal policy-making*, instead, includes all of the set of decisions that have for a goal the use of energy within the national territory (production, transport, distribution, sale, energy saving, and so forth).[33] This distinction – while simple and reductive – can put some order among a number and a variety of actors, processes and logics that are otherwise difficult to classify.

[30] Energy issues have characteristics that also emerge in other areas of intervention, but with regard to other policy areas the problems tied to energy seem to have a strong international and strategic weight, which have important repercussions of all the aspects of policy-making

[31] This analytical distinction interacts in a variable way with that between general and sectoral energy policy. For example, we can study the internal or external general energy policy of a country, or the policy relative to the natural gas on the internal or external side.

[32] It goes without saying that the relative importance of the *internal/external* dimensions often depends on their dependence that each single country has on energy sources that are not located on its territory. The bigger this dependence, the bigger (probably) will be the sensitiveness towards external issues and vice versa.

[33] We must stress once again that this distinction is only valid from the analytical point of view, and it is useful if we consider that the two sides are closely correlated and interdependent. For example, giving incentives to the use of renewable resources – or of nuclear power – on the internal side it can have as a goal exactly the reduction of the dependence for foreign sources, and to answer therefore the necessity of more security in the supply (understood in this sense as energy independence).

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4.1 The External Side of Energy Policy

The external side of energy policy is the one that presents a higher continuity with respect to the past, and that seems to have change dynamics that are decidedly more reduced and slower than the internal ones.

The actors. The main actors of external policy-making are the national governments. Bilateral relations among the highest levels of the national executives are, still today, the principal modality of interaction to tackle the problems related to the security of supply. Furthermore, exactly because of their high politics valence, these decisions do not involve the executives as a whole (therefore not necessarily the ministers that on the domestic side take care of energy issues) but especially the heads of government or the heads of state (often accompanied by the ministers of foreign affairs) who interact with the logics and the instruments that are typical of a foreign policy. Other important actors, who often perform an action that is complementary to those of the top members of the executive, are the large energy firms that operate in sectors like natural gas or oil. In many countries, these firms are directly controlled by the government through ownership or are subject to a substantive influence on the part of the national executives.[34] The strategic dimension of energy problems has limited the role of supranational organizations in this field. An important exception (at least in part) is the European context. To all intents and purposes, the EU can consider itself an actor in the field of external policy-making for member states. In fact, it tries to intervene in an ever more direct manner to tackle the problem of energy dependence and the security of supply, proposing itself as the unitary interlocutor towards other countries.[35] Even experts can have an important role. Those committed with external policy-making are especially diplomats and experts in international relations (or have knowledge of specific geo-political areas). As we shall be able to see, the communities of experts involved with the external side are deeply different from those active on the internal side.

The instruments. The peculiarity of the problems that decision makers must face on the external side of energy policy leads them to utilize a set of instruments that are seldom used – and often receive little analysis – in other sectors of public intervention. These instruments are very similar to those traditionally used for the

[34] As a matter of fact, this relationship is not always obvious nor unidirectional (Katzenstein 1976; Ikenberry 1986).

[35] This aspect of European energy policy is less developed, while the EU is by far the most important actor on the internal side of energy policy-making for individual member countries.

management of foreign policies.[36] Often therefore, these are instruments that have as a goal to *influence* the behavior of other states.[37] Among these we can recall diplomatic instruments like negotiation, bargaining, and various tactics like the threat of sanctions, the promise or offer of rewards, and persuasion.[38] In particular, it is a matter in many cases of techniques of economic influence in the form of negative or positive sanctions.[39]

Other instruments, which can be used to pursue goals of energy policy on the part of governments, are international organizations. For example, the IEA (International Energy Agency) is – among other things – an instrument created by the countries dependent on oil imports to manage crisis situations – of price or of availability – and therefore to answer the concerns of supply security.

Arenas and processes. On the external side, energy policy-making shows various analogies with foreign policy. The study of foreign policies presents – for public policy analysts – some peculiarities. Lowi (1964) initially excluded that his analysis could apply to the case of foreign policy, but afterwards tried to adapt it to this sector too (Lowi 1967). The principal distinction for foreign policy issues is among crisis situations (tied to international threats) and non-crisis situations. In the former case, the decision process is elitist; however, unlike what happens for domestic policy, the stakes are not the redistribution of resources but the *protection* of the political community (Panebianco 1986). Furthermore, in this case elite means something different than in domestic policy processes: the decision, or decisions, are in the hands of a narrow group of persons institutionally delegated to tackle crisis situations. Excluding crisis situations, to which we can adapt with the needed adaptations the elitist model, there remain a large number of issues of 'normal' foreign policy, in which foreign policy is an extension of domestic policy, subject to its practices, interests and values.

Because the types individuated by Lowi are to be considered analytical instruments, therefore as a touchstone with which confront concrete policies, it is possible to extend some of the observations made in regard to external policy making to energy policy. In this case, in fact, we could have a decision process approximating the elitist one. Understood here as characterized by the presence of a reduced of relevant actors, with a prevalent role for the institutional ones, and

[36] This should not be a surprise, exactly because of the contiguity and the overlap that characterizes these two policy areas.
[37] Regarding the instruments of influence in relations among states see Russett and Starr (1997).
[38] For example, in the sector of natural gas the Italian and Russian governments are contracting – in a bilateral fashion – an agreement that provides for the entrance of ENI in the Russian market and a continuation of its contracts for the supply of gas, against the entrance of Gazprom (the Russian public company that operates in this sector) in the Italian natural gas distribution market (*Un patto Italia-Russia sull'energia*, in «Il Sole 24 Ore», 13/03/2007).
[39] On economic sanctions, see Baldwin (1985).

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with a more centralized decision structure. The privileged decision making locale will tend to be the government. Furthermore, the more the themes being tackled are perceived as essential to the security of supply, the more they will approximate the interaction modalities having as an object the *protection* of the political community.[40] The perception of the energy problem, as a question tied more or less closely to national security is, therefore, decisive in orienting the dynamics and the characteristics of policy making.

4.2 The Internal Side of Energy Policy

The internal side of energy policy presented in the last few years the biggest set of changes, which involved the actors, the instruments and the processes of policy making. In many energy sectors the policy networks are transformed with the entrance of new actors (institutional and not), and with a redistribution of the resources within them. Furthermore, the policy instruments and the goals themselves pursued by governments have changed. These changes are the fruit of the combination of various factors, among whom the establishment of liberal paradigms in the energy field and of the priorities given to the safeguard of the environment are certainly more relevant, especially in the more advanced countries.

The actors (old and new). The number of the actors that participate in the energy policy making on the internal side is decidedly superior to those active in the external side. Below we shall limit ourselves to list only the most important. Among them, the government certainly occupies center stage, because it has the task of formulating and implementing the general energy policy of a certain country. In comparison with what happens on the external side, though, in this case beside the top members of the executive the ministries directly tasked with formulating and following sector energy policies (the ministries dedicated to industrial or development activities) have a key role. From this point of view it is interesting to note that in the majority of industrialized countries does not exist a ministry that is solely dedicated to energy, even if sometimes can exit a position more committed in energy policy (as is the case of the state delegate to energy in France). Usually, it is within these ministries that we find the directorates that deal with energy (natural gas, electricity, coal, etc.). Furthermore, when many of the firms present in the different energy sectors were directly controlled by the state, these ministries were the most involved in their operations.

The great firms active in the energy sectors are another important category of policy actors. In reality, energy forms can be seen both as actors and as policy

[40] In these cases, the problem of energy security is considered as part of the general problem of national security (Yergin 2005); hence the tension towards the ideal type of protection policy.

instruments.[41] The case of the electrical and natural gas sectors, can serve as an illustration of this statement. In various countries, for a long time, these two sectors were solidly occupied by large monopolistic public firms. The creation of public firms was the principal instrument through which government ensured an adequate offer of natural gas and electricity to their citizens and firms. In reality, the relationship was much more complex, as often these large organizations did not behave like simple executors of the will of the government, on the contrary, often they were able to formulate and pursue policies and strategies that were defined in a substantially autonomous manner[42] (hence the double nature of instrument and actor). The situation appears to have become even more complicated as a result of the processes of liberalization and privatization that were initiated at the end of the 1980s. In fact, in various sectors the ex-public firms (in which the state continues, in most cases, to hold a controlling share) cohabit with totally private firms. In this case, we can distinguish them considering the latter as policy actors, while for the former remains the dual nature of actor/instrument. Furthermore, the firms that are active in the energy sectors have created various organizations to represent their interests, which play an important role in energy policy making.

Beside the government and the large firms there are other important actors, new and old. In the electric and natural gas sectors, following the shift towards more market-oriented approaches, a new category of institutional actors emerged: *the independent authorities*[43] (sector-based and not). The independent authorities in these sectors (natural gas and electricity) undertake a set of tasks that were previously carried out by governments, and in particular by the ministries that were responsible for energy policies in the sector. Among the most important there is the determination of the technical and quality standards for the services and the determination of the prices according to transparent and public criteria. Recently, the independent agencies in charge of market control (antitrust agencies) have also had an important role.

On the institutional side, local governments have an ever expanding role, even if not in all countries and with a truly noteworthy variance from case to case. Historically, the role that was assigned to the local authorities varies quite a bit from country to country and across time periods, but the recent evolution is leading to changes even where energy policy was highly centralized. This tendency is clearly visible on the European continent, where it is guided by politico-institutional and technological factors (Marcou and Wollman 2007). In

[41] On publicly controlled firms as policy instruments see Howlett and Ramesh (2003).
[42] This is a constant theme in the literature on the topic (Lindberg 1977; D'Amarzit 1978; Kohl 1982; Lucas 1985; Ninni and Rullani 1985).
[43] For an overview of the OECD countries see *Regulatory Institution in Liberalised Electricity Market*, IEA/OECD, Paris, 2001; and Energy *Market Reform: Gas*, IEA/OECD, Paris, 2002.

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the former case, as for other policy areas, the process of decentralization that is underway in many countries is reinforcing the involvement of local actors in energy policy making. In the latter, the choice is to aim on energy efficiency and on renewable sources and to further increase the role played by local authorities.

The large industrial clients, and the associations that represent them, because of their large use of energy in the production cycles, are traditionally influential actors in energy policy choices, especially those that involve the setting of fees and the taxation of energy products. Even the trade unions in some countries play an important role. They trade union confederations become the carriers for general demands regarding the guarantee of access for all citizens to energy services. The sector organizations operate as an important interest group within the various sector policy networks. In recent years, consumer associations have acquired an increasingly important – even if often still marginal – role.

Within the European context, the EU institutions are now centre stage. They play a critical role both in a direct manner, intervening through the competencies in matters of unified market, therefore promoting positive or negative integration, and in an indirect manner through softer integration strategies (framing integration).[44] In the first case, we can place all of the interventions connected to the buildup of the common market for electricity and natural gas. In the latter, all of the proposals formulated in dozens and dozens of documents by the European institutions and that often serve as guidelines for the actors at the national or sub-national levels.

Another relevant category of actors is that constituted by the experts. The communities of experts that are involved in the energy policy making vary even in a broad way in terms of composition and competences according to the specific questions being discussed. Surely economists always had an important role, first tied to the planning processes and today to those of opening markets. The fact that new theories and new paradigms about the functioning of networked industries (electricity and natural gas) asserted themselves has been an important factor in the evolution of energy policies in many countries.[45] In recent years, the experts most involved in the decision making related to the liberalization, privatization and regulation of many energy industries have almost always been economists. Another influential group of experts, historically important for the development of energy policies, are engineers, who are the bearers of different competencies and logics than the economists. They have a bigger role in the technical and technological choices related to the design, set up and 'daily' workings of all of the phases of energy industries. In fact, engineers often occupy a centre stage

[44] For a distinction between these two modalities of European policy making, see Knill and Lehmkhul (2002). For an analysis of the effects that the decision of the EU can have on the policies of the member states see Levi-Faur (2003), Prontera (2008).
[45] On the new organizational paradigm that asserted itself in these sectors see De Paoli (2002).

position in the main firms and in the bureaucratic or operational structures in charge of the control and management of the energy sectors.[46] Finally, another community of experts has acquired a growing importance in recent years. These are all of the scientists who, in various ways and with various competences, are involved with environmental issues. The ever closer connection between energy and environmental problems makes this category very influential even in energy policies.

Instruments. In many energy sectors some traditional instruments have been replaced with new ones. This situation is primarily due to the new role that the state decided to play passing from producing state to regulating state (La Spina and Majone 2000). However, the situation remains very different from case to case and, also because of the complexity of energy problems, a very different set of policy instruments exists in every country.[47]

Traditionally, public firms were the main instruments for intervention in many key sectors (early on in the oil sector and then in natural gas and electricity ones). The situation is being transformed because of the processes of liberalization and privatization that began at the end of the 1980s. However, in many countries states still own enough stocks to control these firms.

The instruments colligated to regulation are acquiring an increased weight;[48] in particular independent agencies have an ever more important role in sectors like electricity and natural gas. As the processes of liberalization and privatization advance, the state deals less and less with direct management and more and more with making markets work, adding some bonds or obligations onto the firms as it thinks necessary. Beside these more recent instruments cohabit other 'classic' instruments like planning and long term planning.

Taxation on energy products is another traditional instrument of energy policy, often used to govern demand and create incentives/disincentives for the utilization of certain energy sources. Furthermore, increasingly financial incentives and subsidies are used to promote energy conservation or renewable sources, which have costs that are not yet competitive in the market. There is then a whole series of other instruments tied to forms of information and exhortation, used by governments to promote a rational and responsible use of energy and to improve efficiency and energy savings.

[46] For example, from one of the few researches relative to the Italian case, we can see that in the main public agencies active in the energy field during the early 1990s, the percentage of engineers in relation to all of the degree holders employed was by far the broadest.

[47] *Energy Policies of IEA Countries*, IEA-OECD, Paris (2000-2006).

[48] For a review of the main regulatory instruments see Capano and Giuliani (1996: 386-392).

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Arenas and processes. On the domestic side, energy policies have appeared to be characterized, for a long time, by their tension towards the distributive ideal type[49] (Lowi 1964). The costs of the policies were often hidden or anyways not easily found and were usually made to fall upon the general fiscal pressure or upon the fees for energy services. The policy was disaggregated in micro-decisions established in decision making arenas like parliamentary commissions or administrative agencies. In many cases there was a direct relationship between the groups involved in energy choices and the structures in charge of sector policies in the public administration. Some firms, especially those that operated in the area of energy supply, had a privileged access to decision making arenas, which remained mostly opaque for the citizens (Lindberg 1977). In many sectors, relations and interactions were established between interest groups active in the energy field and the public administration[50] (Chubb 1983). Even the big industrial clients – the firms with high energy consumption – could conditions in these ways the choices and the policy objectives.

In the last few years, in a differentiated manner from country to country and not without tensions and resistances, the situation is starting to change. Alongside with the processes of deregulation and privatization, with governments that decide to play a new role – with new policy instruments – in policy making, the arenas, the processes and the interactions among the various actors are being transformed. Energy policies are therefore moving from the distributive ideal type towards the regulative one, with important implications for the politics of the policies in these sectors.

4.3 A General Outline of Energy Policy

The analytical distinction between internal and external policy making has shown itself to be useful to individuate some differences in terms of actors, instruments, processes and arenas that characterize the varied problems tied to the management of energy. Starting from the peculiar nature of the energy issue to which public authorities attempt to respond, we can in fact activate different policy subsystems, even very different from one another. Following this road, it is possible to propose a general outline for the analysis of energy policy (see Table 1).

[49] This result emerges for research conducted on the main European countries and on the United States (Lindberg 1977; Khol 1982; Chubb 1983; Lucas 1985).

[50] Even for the Italian case in the electricity and natural gas sector "[…] the decisions on the fees and the arrangements were taken in an opaque manner, according to interest collusions among the political class and the state boyars and to the total detriment of the end users" (La Spina and Majone 2000: 321).

Table 1. Aspects of policy making and characteristics of the energy issue

	Guaranteeing supply	Organizing/Managing the industries and the markets
Paradigm	Statism	Statism/Liberalism
Guiding criterion	Security	Efficiency
Regulative mechanism	State	State/Market
Actors	Prevalence of institutional actors	Institutional and non-institutional actors
Arena	Protection	Distributive/regulative
Type of policy making	External policy making	Internal policy making

The nature of the energy issue can oscillate between guaranteeing supply and organizing and managing industries and markets. In the former case, it is a matter of intervening to ensure an adequate availability of primary energy sources (oil, natural gas, and so forth) to the country. In other words, it is about facing the issue of energy security, in particular all of the issues related to the security of supply.[51] In the latter case, it is a matter of making energy usable to citizens and firms; that is facing issues correlated to the production, transportation, distribution and consumption of energy within the national territory.[52] This means intervening to organize and/or manage the principal industries and regulating energy markets. According to whether the problem to be solved moves to one side to the other, we shall have changes in the arenas, in the actors (their number and nature), in the dominant paradigms, in the criteria that guide policy choices and in the regulative mechanisms. In particular, for issues tied to the security of supplies, the policy process will get close to the ideal type of the protection policies. The number of the actors involved is reduced; there a prevalence of institutional actors, a more centralized and hierarchical decision making structure, and the privileged decision making locale will tend to be the executive. For issues related to the organization/management or regulation of energy industries and markets, instead, the policy process with oscillate between the distributive and the regulative ideal type (with a dynamic of change towards the second type). In these cases, we shall have a decidedly larger number of actors involved and very different modalities, locations and processes of policy making. Furthermore, on the one hand the guiding criterion of the choices will tend to be certainty and the regulative

[51] I am referring to the energy security of the consuming countries, that is to a stable, abundant and relatively cheap supply of resources (be they oil, natural gas, coal or whatever).

[52] In this case, it is taken for granted that energy sources are available, and it is just a matter of making usable on the national territory in an efficient matter, eventually following even the other preoccupations, like the social ones (guaranteeing a minimum universal service), or of stewardship of the environment.

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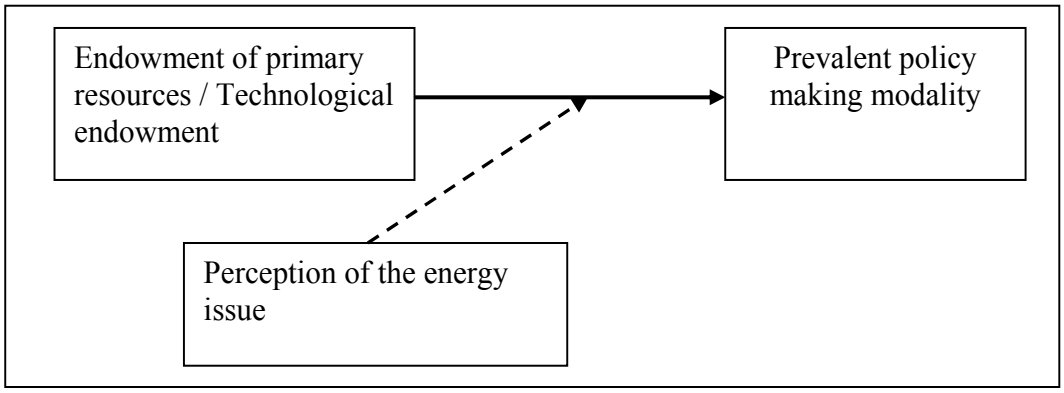
mechanisms centered on the state. On the other hand, we will have an orientation towards the efficiency and a more extensive use of market mechanisms.

A similar analytical outline, even with all of its limitations in grasping the varied facets the empirical study of energy issues sheds light upon, can be very useful to order the various questions related to energy policies. Furthermore, it can also be useful to grasp the effects that important changes in the nature of energy issues have on the political and institutional dynamics. For example, changes in the technological options – like those relative to the establishment of renewable sources for the production of electricity – can shift the nature of the energy issue 'from the left to the right' of the table, with the corresponding implications in terms of actors, arenas, processes and so forth.[53] Another important explanatory factor of the prevalence of a modality of policy making over another, seems also tied to the perception that one has of the 'energy issue' in a given time period. When the retrieval of energy sources is not perceived as a relevant issue – as during the 1980s when the price of oil remained low and there were no imminent risks of a geopolitical nature – energy policy tends to be understood mainly as a matter of organization and management of the industries and of the markets, and as a consequence there can be a sliding towards modalities of policy making of a mainly internal type. That is, the criteria that orient the policy choices seem to be more directed towards efficiency that security, as is confirmed by the movement towards the liberalizations and privatizations that emerged between the end of the 1980s and the early 1990s. Starting from these reflections it is possible to develop an explanatory outline of energy policies that takes into account the various factors analyzed.

Figure 4. Energy policy making: explanatory factors



[53] In fact, with the increase in the use of renewable sources the issue of the supply of traditional sources like oil and natural gas diminishes, and as a consequence the issue of the security of supply from third countries is reduced.

Given the distribution of the endowments of primary energy sources, and given the technological endowments (independent variables), the modality of policy making (dependent variable) is influenced by the considerations on the nature of the energy issue (intervening variable), that is the political factors that influence and orient the perception of the problems on the table. In fact, the relationship between primary and technological resources and policy making is only apparently deterministic, because it is filtered and redefined by the elements that influence the perception of the issues related to energy.

5. Conclusions

The energy issues occupy an ever more central space in the national and international public debate. However, systematic reflections on the peculiarity of energy issues and on policy making in these sectors do not seem to be equally developed. The goal of this article is to provide a contribution to the study of energy policies through the policy studies' lens. The main implications for policy making have been underlined, starting from the specification of the peculiar characteristics of energy issues. The study of the diachronic evolution of energy policies has shown how these policies are exposed to new challenges of a different nature, and how elements of novelty but also of continuity with the past continue to persist. On the basis of the analytical distinction between internal and external policy making, we have reconstructed the various energy policy subsystems, the policy instruments that have been used, and the interaction within the different arenas. Furthermore, this distinction allowed us present a more articulated image of the ongoing dynamics, stressing how the transformations are concentrated mostly along the internal side, while, on the external one we can find a more marked continuity. We have then proposed an overall outline for the analysis of energy policies starting from the nature of the problem on the table. If, at first blush, the prevalence of a policy making modality over another seems to be determined by the primary resources and by the technologies that are available, the analysis highlights the decisive role that the perceptions of the nature of the energy problem to be solved have.

Such an outline can be the basis for the development of a future research agenda, hinging upon the diachronic and comparative analysis of energy policies, and aimed at understanding the way in which the interaction of the different factors that we have analyzed is able to explain their evolution.

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