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The Treaty of Lisbon and the European Border Control Regime

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Abstract

The question raised in the article is how the new provisions of the Lisbon Treaty and the Stockholm programme concerning the EU's asylum and migration policy might consolidate existing trends within the European border control regime. The regime is defined by a combination of three features: (i) a harmonisation of categories among the EU/Schengen member states, (ii) a growing use of new technology in networked databases and (iii) an increasing sorting of individuals based on security concerns. Although none of these features is new, the combination gives a new impetus to the European border control regime. The article concludes that the Lisbon Treaty and the Stockholm programme consolidate and strengthen existing trends. This implies that policies on border control, asylum, immigration, judicial cooperation and police cooperation are consolidated in a broader approach to border control, and that there is a strengthening of EU foreign policy within the European border control regime. The boundaries between previously dispersed policy areas are blurred. The combination of different aspects of security and various levels of authority requires coordination of policies with substantially different goals, and goes beyond mere border control.

Keywords

Treaty of Lisbon, Stockholm Programme, Border Control, Schengen, Databases, Security, Global Approach to Migration

INTRODUCTION

The Treaty of Lisbon, which came into force on 1 December 2009, lays a new legal foundation for the European border control regime. The Treaty brings together formerly dispersed policies on Justice and Home Affairs under one heading, "Area of Freedom, Security and Justice" (AFSJ). Together with provisions concerning border control, asylum, and immigration, it covers judicial cooperation both in civil and in criminal matters and police cooperation. Moreover, the EU member states underline the political importance of the AFSJ by moving it up the list of the EU's fundamental objectives, now ranking it higher than Economic Monetary Union, the internal market and the Common Foreign and Security Policy (European Parliament and Council 2008a). The Lisbon Treaty's new provisions concerning the asylum and migration policy were confirmed by the Stockholm programme on 11 December 2009 (European Council 2009a). While Lisbon lays a new legal foundation for the European border control regime, Stockholm defines political guidelines for legislative and operational planning within the AFSJ from 2010 to 2014.

In this article I analyse the Lisbon Treaty and the Stockholm programme within the framework of more general changes concerning the development of a new European border control regime: which borders it covers, how they are defined and how the control is carried out. The question I raise is how the Lisbon Treaty and the Stockholm programme might consolidate existing trends within the European border control regime.

The point of departure for the analysis of the existing trends within the European border control regime builds on scholars such as Bigo and Guild (2005, 2010), Bigo *et al.* (2010a), Geddes (2005), Huysmans (2006) and Lyon (2007, 2009), who have challenged the classical concept of border control. Bigo and Guild (2005; 2010) argue, for example, that in the EU the traditional border control of everybody at the territorial border is being replaced by an ever increasing filtering process of individuals before they arrive at the physical border, and that the control has become more targeted. This implies the focus of control is delocalised from the borders of the states. There are new

types of control both inside and outside the EU and Schengen territory, and control of the Schengen border is located at different places for different groups of individuals.

Inspired by how these scholars describe the changed relations between border and control, I define the European border control regime through a combination of three features. Firstly, we can observe an increased harmonisation of categories among the EU/Schengen member states. This implies that the member states apply the same criteria to those whom they allow to reside on European territory, and there is a complex category system of persons that relates to different forms of exclusion in the EU (Bigo *et al*. 2010a, Buckel and Wissel 2010). Secondly, there is a growing use of new technology in networked databases, with open access for a number of EU authorities and member states within the whole field of AFSJ. This reshapes control according to digital communication, which is less constrained by geography (Lyon 2009). Thirdly, there is an increasing sorting of individuals' access to the EU/Schengen territory based on security concerns (Huysmans 2006, van Munster 2009). The EU's desire to eliminate terrorism, to control immigration and to combat international organised crime implies that the distinction between immigrants and potentially "risky" groups becomes unclear, and internal and external security are seen as inseparable. Although none of these features is new, the combination gives a new impetus to the European border control regime.

My main argument is that the combination of these features of the European border control regime results in the boundaries between previously dispersed policy areas becoming blurred. This implies that policies on border control, asylum, immigration, judicial cooperation and police cooperation are consolidated in a comprehensive approach to border control, and that there is a strengthening of EU foreign policy in the European border control regime. The combination of different aspects of security and various levels of authority requires coordination of policies with substantially different goals, and goes beyond mere border control. These changes in the European border control regime define the background for my analysis of how the new legal and political foundations, along with the Lisbon Treaty and the Stockholm programme, might consolidate and even strengthen existing trends.

In addition to studying the Lisbon Treaty and the Stockholm programme, I include secondary legislation where appropriate. On the basis of analyses of the reasons for policies and actions, the decisions of principle behind the EU's asylum and migration policy are discussed in relation to the definition of European borders and their control. The evidence is based on analysis of public documents from EU institutions.

The article is divided into four sections. The first two sections present the article's theoretical framework. The first section discusses how the relationship between control and borders has changed. The second section describes the existing trends within the European border control regime with the harmonisation of categories, the use of networked databases and the sorting of individuals based on security concerns. The third and the fourth sections examine how the Lisbon Treaty and the Stockholm programme lay new provisions concerning the EU's asylum and migration policy, and analyse how these might consolidate existing trends within the European border control regime. The third section analyses the new legal and political provisions within the AFSJ, and the fourth section examines how the EU's external policy is defined within the AFSJ.

CONTROL AND BORDERS

In the twentieth century, border control was a central characteristic of state sovereignty. According to this principle, a state's sovereignty depends on a harmonious relationship between territory (geography), bureaucracy (state) and people (national identity). A physical border encircles the territory, and a necessary condition of statehood is that the state has a monopoly over both the legitimate use of violence within the territory and

the legitimate means of movement into and out of its territory. The concepts of inclusion and exclusion from territory, bureaucracy and people are inherent in the citizen/immigrant divide, and they are based on the existence of a physical border (Preuss 1995). National identification documents such as passports are based on this idea, and passports make it possible to distinguish citizens from non-citizens. The distinction between citizen and immigrant is particularly visible at the borders, which are barriers to entry and exit.

In the twenty-first century, scholars have challenged this classical concept of border control (see Bigo, 2002; Geddes, 2005; Guild, 2009; Bigo and Guild, 2005, 2010; Lyon, 2007, 2009; Huysmans, 2006; and Salter, 2004, 2007). Bigo *et al.* (2010:3a) emphasise that the EU's casual approach to borders permits a rethink about the meaning of exclusion and inclusion as embedded in state border practices. When the state's capacity to control entry and exit of an individual is moved away from the border of the territory, Bigo *et al.* (2010:19a) argue that if it is to be exercised at all, it must find other venues. Indeed, as they further argue, when the borders remain for some purposes but not for others, one must modify the very idea of border control.

The need to rethink the relationship between control and borders is related to two major changes that have taken place since 1995. One was the enlargement of the EU that led to substantial change in its size and shape. The 2004 and 2007 enlargements incorporated 12 new states with 130 million inhabitants, as well as causing an eastward and southward shifting of EU and Schengen external borders. The EU's increased activities in the field of asylum and migration at the turn of the millennium can be understood as a growing wish for control of the new and more complex external borders to the South and East once the enlargements were implemented. Since the mid-2000s, the EU has been working on developing and improving the refugee and migration policies of the new member states (Angenendt, 2008). A decisive factor in this process is that many of these states had little or no experience of migration. In practice, this enlargement policy implied that efforts were intensified to harmonise asylum rights, regulate labour migration, combat illegal immigration, establish partnerships with third-party countries, establish return programmes and intensify border controls. Labour migration and political and judicial cooperation in criminal matters continued to be decided at the national level.

The other main change was the abolition of control of the borders between most of the EU member states, and a change in the division of authority between the member states and the EU institutions. This was related to the establishment of an internal market and, gradually, one without internal border control between five of its member states with the implementation of the Schengen Agreement in 1995. Later, in 1999, the Schengen Agreement was incorporated into the EU legal framework, and the establishment of a common external border control system was handed over to the EU. In practice, this policy entailed the gradual incorporation of asylum and migration policy into the body of the treaties. The EU institutions were gradually placed in the driving seat regarding the control of external borders. By the turn of the millennium, the Schengen system included all EU members except the UK and Ireland. Since 2001 Denmark, Norway and Iceland have participated through special agreements. In 2006 the Schengen Border Code was adopted, and the following year nine of the new member states were included in the Schengen agreement. Switzerland was included in 2008, while Bulgaria, Romania and Cyprus have not been admitted.

The abolition of internal borders among Schengen members and the new definition of the members' common external borders are reflected in the Schengen Borders Code. The Borders Code defines the internal and external borders in relation to each other, as external borders are only defined in the context of internal borders. According to the Code "internal borders" means: (a) the common land borders, including river and lake borders, of the member states; (b) the airports of the member states for internal flights; (c) sea, river and lake ports of the member states for regular ferry connections. In

contrast, “external borders” means the member states' land borders, including river and lake borders, sea borders and their airports, river ports, sea ports and lake ports, provided that they are not internal borders (European Parliament and Council 2006).

There is a huge contrast in the Borders Code’s definition of border control related to internal and external borders. The Borders Code states the abolition of border control at internal borders shall not affect the exercise of police powers under national law. As long as this does not have an effect equivalent to border checks, the police may exercise their powers in border zones in the same way as elsewhere in their territory. By contrast, the crossing of Schengen external borders is criminalised if it is done at places other than border crossing points or at times other than the fixed opening hours. The Borders Code states such action should lead to penalties enforced in accordance with that country’s national law. The Borders Code specifies that the penalties must be “effective, proportionate and dissuasive”. There are several exceptions, for example, in connection with pleasure boating, coastal fishing or for individuals who are in an unforeseen emergency situation.

The Borders Code states all travellers should be treated equally when crossing an internal border, but there are different levels of control for EU-citizens and Third Country Nationals (TCNs) when crossing an external border. When crossing an external border, EU-citizens undergo a minimum check, which is carried out to establish their identity on the basis of their travel documents. By contrast, TCNs are subject to thorough checks. For stays not exceeding three months per six-month period, a TCN must: possess a valid travel document and a valid visa if required; justify the purpose of his/her intended stay; not have an alert issued for him/her in the Schengen Information System (SIS); and not be considered a threat to public policy, internal security, public health or the international relations of EU countries. Moreover, the travel documents of TCNs are systematically stamped upon entry and exit (*ibid* 2006).

THREE FEATURES OF THE EUROPEAN BORDER CONTROL REGIME

Based on these changed relations between border and control, I define the European border control regime through a combination of three features: i) harmonisation of categories among the EU/Schengen member states; ii) the use of new technology in networked databases; iii) and sorting of individuals based on security concerns.

None of these features is new. The harmonisation of common European categories has been a crucial part of the European integration process since it started in the 1950s. The networked databases have been in use for several decades, and as Chou (2009) argues, the security concern has been central to migration policy since the 1980s. The major concern in this article is how the combination of the three features defines the European border control regime. Nevertheless, each has its own dynamics.

Harmonisation of Categories

The first feature is how the harmonisation of the European states categories, which is evident in the European asylum and migration policy, implies that the various European states apply the same categories and sorting systems. Historically, state categorisation of people into different groups is not new. The modern western nation state has retained historical categories in national registers, especially those related to military service, taxation, permanent residence, social insurance and related benefits. The central category in the modern nation state is citizenship. The identification of the individual and categorisation as a citizen was intended to guarantee access to citizenship rights (Preuss 1995; Marshall 1998). In the European integration process, the main category is still citizenship in a European state, and the main distinction is between EU-citizen and TCN.

According to Bigo *et al.* (2010a) the understanding of the divide between the citizen, the essential participant in (national) community, and the foreigner has become exceptionally complex in Europe. The authors (2010:17) present a typology that comprises eleven categories of persons that relate to these different forms of exclusion in the EU. The construction of common categories in the EU's refugee and migration policy relates to the main distinction between TCNs who are inside or outside the common external Schengen borders. Those who are inside are categorised as TCNs with three month or long term resident status, refugees and illegal immigrants. Those who are outside the Schengen territory are divided into two main groups: those who require visas to enter the Schengen territory for a three-month stay (including those on the visa white list and black list) and those who do not. A valid Schengen visa allows admission to the whole Schengen territory for three months.

A new aspect of the EU's categories of persons is that all EU member states have agreed upon aims to apply the same categories and sorting system in relation to the European border control regime. Although we can observe that European countries have different practices in relation to migrants (Morris 2003), there is a general agreement to apply the same categories in the EU. This can be seen in the harmonisation of Community statistics on migration and international protection (European Parliament and Council 2007). The EU's aim with this harmonisation is to establish common rules for the collection and compilation of Community statistics on immigration to and emigration from the member state territories. This includes flows from the territory of one member state to that of another member state, and flows between a member state and the territory of a third country. It also includes common statistics on administrative and judicial procedures and processes in the member states relating to immigration, granting of permission to reside, citizenship, asylum and other forms of international protection and the prevention of illegal immigration (European Parliament and Council 2010b; 2010c).

The EU's classification system not only defines certain groups and determines whether an immigrant does or does not have access to European states' territory and rights, but it can also justify how the European states control migration flows across European borders. The EU has established an increased level of detail in the control of individuals, and this control is separated from any obvious relationship with borders. Instead, the control relates exclusively to the individual, or group of individuals, and the various categories of people have different access to move freely within the Schengen territory (Guild 2005, 2009).

Inside the territory, control takes the form of identification and policing functions, and these are achievable through methods of storing, combining and sharing data, and by linking them to electronic ID cards and passports (Glaessner and Lorenz, 2005). Schengen countries have intensified internal police activities and identity checks of potentially undesirable individuals (Guild 2009). This makes it possible to identify and track each individual within the EU territory. For the "wrong" individual this might lead to expulsion. Outside the territory, the control can be found at work within the territory of the other states by return agreements, through visa rules and on the high seas. The control takes different forms of remote control where the Schengen countries check the identity of people who want to enter or transit through their territory before they travel, instead of checking them at the border (Bigo and Guild 2010: 27). The EU's system of categories is important because it validates the uneven treatment immigrants receive. Today, the control of European borders is to a large extent based on common EU categorisation of individuals.

The use of Networked Databases

The second feature of the European border control regime relates to the use of new technologies, and particularly to how the sorting system is strengthened. The new technologies make it easier to place individuals into various categories, and they consequently have different access to rights. According to Lyon (2007, 2009:15) the growing computer-assisted capacity of social sorting makes surveillance easier. He (2009:42) argues that the real surveillance power lies in the possibility of discriminating between different categories for differential treatment. While Lyon has analysed the technologies of control and the categorisation and sorting of individuals related to them, this may be applied to how networked databases are used for control in the EU and Schengen area (Buckel and Wissel 2010). Technology not only enables control of the European border, but it also reshapes the control according to digital communication, which is less constrained by geography. Since the data is stored in common European databases, the European states are able to access this data in any place. The regulation of access to territory does not need to take place at the territorial border, but can also occur before the person arrives at the European territory and after the person has arrived in this territory. This implies that the bureaucratic logic of categorisation and administration is combined with networked databases.

At the operational level of the networked databases, the boundaries between asylum and migration issues, border control, criminal law and counter terrorism have become blurred. This can be seen in the way databases have open access for a number of EU authorities within the whole AFSJ (European Commission 2005). The European border control regime depends on a variety of transnational information flows, particularly the ones based on the Schengen Agreement, the Dublin convention, the Eurodac system and the Visa Information System (VIS).

The SIS became operational in 1995. It contains data on persons wanted for arrest or extradition, missing persons, people who have been refused entry, stolen vehicles and firearms, stolen or misappropriated identity cards. This information can be used to refuse entry to recorded people at the borders or it can lead to the refusal of their visa applications at embassies. The second generation of Schengen Information System (SIS II) (scheduled to become operational in the first quarter of 2013) will contain biometric data (photographs and fingerprints) (European Commission 2012). It is designed to become not only a reporting system but also an investigation system with open access for a number of EU authorities within the field of Justice and Home Affairs, such as Europol and Eurojust. Eurodac, operational since 2003, collects the fingerprints of all individuals aged over 14, who apply for asylum in an EU country, or who are found illegally present in EU territory. The system aims to prevent so-called asylum shopping by harmonising responses to asylum claims within the EU. The planned VIS, operational since December 2010, contains the biometric data of persons who have applied for a visa to any member state. The plan is to integrate this into SIS II.

These networked databases facilitate the rapid identification of people and connection to common European categories. Biometric data in particular identifies people more accurately, and sorts them into common categories. This technology facilitates the storage of huge amounts of information about people in the territory, and it enables automatic and continuous information sharing among the participating states. The connection to the searchable databases enables the authorities to access people's existing records extremely rapidly. As Lyon (2007: 162) argues:

> The 'surveillance' dimension of (inter)national security arrangements has everything to do with 'social sorting.' That is, they are coded to categorize personal data such that people classified may be treated differently.

While surveillance categories are sometimes elastic (Lyon 2009:40), the opportunities for discretion become more limited because the administrative identification involves an

automatic system for social recognition and sorting. The application of strict categories and criteria may have serious consequences for individuals who are sorted into a category where they do not belong.

Sorting of individuals based on Security Concerns

The third feature is that the EU's border control regime is based on security and safety concerns, which are not only based on a distinction between citizens and non-citizens, but also on a distinction between safe and potentially "risky" individuals. The EU's desire to eliminate terrorism, to control immigration and to combat international organised crime implies that the distinction between immigrants and the potentially "risky" groups is unclear. EU documents often use a sorting based on categories such as "organised terrorists", "lone wolves" and "illegal immigrants" (European Commission 2006; 2010b). These categories are related to bureaucratic and political construction of threats, which has led to a process of securitisation of migration in the EU (Huysmans 2006; Noxolo and Huysmans 2009; van Munster 2009).

It is difficult to identify an "organised terrorist" or an "illegal immigrant". However, in the EU, there seems to be a growing belief that security problems are best resolved by technical solutions (Huysmans 2006). It is decisive for the sorting system that the administrations in European countries to a large extent rely on databases. The integration of the databases, and the way they are used to identify immigrants and to investigate criminality, show a link between migration and security. The security demands have been transformed into extraterritorial immigration control, aiming to prevent individuals from accessing the actual physical Schengen border (Mitsilegas 2010: 51). According to Bigo *et al.* (2010b: 60) there seems to be a trend where information systems that were introduced to manage movements across borders are increasingly becoming criminal management systems. This means movements of TCNs across borders are more and more conceived and treated as a security issue and a potentially criminal activity. Moreover, by using a wide spectrum of technologies and measures, immigration checks at airports abroad are effectively moving control to outside the Schengen area (Salter 2007). The strengthening of the external Schengen borders means that control is exercised before an individual reaches the territorial borders, and the control can be found at work within the territory of the other states (Bigo and Guild 2010).

In parallel with the work being done by the member states on establishing a common, supranational refugee and migration policy within the EU, attempts are also being made to coordinate political agreements with third-party states (Chou 2006). The external dimension of the EU's refugee and migration policy, or the global approach to migration, covers cooperation agreements, return agreements, visa facilitation, financial support and establishment of bilateral and multilateral forums for discussing migration. With this policy the EU establishes an extraterritorial border control (Ryan and Mitsilegas eds 2010). The EU exerts considerable pressure on some neighbours, such as Turkey, the Balkan states, former Soviet republics and North African states, to improve their border control. By using aid and trade as financial incentives, the EU has signed repatriation agreements with a number of third countries, which will accept back illegal immigrants coming from or having lived in those countries. As Ryan (2010: 37) argues, strategies of extraterritorial border control enable destination states to free themselves from legal guarantees, which otherwise would be available to migrants. With the extraterritorial control, the states avoid international obligations concerning non-refoulment.

Frontex is a typical example of how the EU establishes an extraterritorial border control. Frontex was established as an external border agency in 2004, and one of its main tasks is to coordinate operational cooperation between member states in the field of management of external borders (European Parliament and Council 2004). Frontex has

for example coordinated several joint operations both at land and at sea, including Poseidon in the Aegean Sea Region, Hera in the Canary Islands, and Nautilus around Malta and the Italian islands of Lampedusa and Sicily. The purpose of these operations is to reinforce border control activities in relation to the illegal migration flows mainly coming from West and North African countries (Frontex 2009). The objective is to turn away illegal immigrants before they enter European territory (Bigo and Guild 2010). When refugees are stopped in international waters, the international law of the sea applies, and individuals do not have access to EU member states' rights (Guild 2009). This practice at the operational level confirms a distinction between the legally constructed EU inside and the extra-legal outside (Buckel and Wissel 2010). According to Léonard (2010) most activities of Frontex contribute to the securitisation of asylum and migration in the EU, although she concludes that the role of Frontex as a securitising actor in itself should not be overestimated, as it is a rather weak actor.

The European Border Surveillance System (Eurosur) is another instrument within the European border control regime, which is based on a gradual upgrading of national border surveillance systems. The main purpose is to prevent unauthorised border crossings, counter cross-border criminality and support measures against persons who have crossed the border illegally. The aim is to create a common information sharing environment among the relevant national authorities (European Commission 2008).

A third form of extraterritorial check is visa policy. The EU has concluded visa facilitation and readmission agreements with several states (Trauner and Kruse 2008). The visa application process takes place at the embassies of European countries. The decision is taken when the individual is potentially far from their common or individual borders (Guild 2009). The Visa Code came into force 5 April 2010, and contains rules for the processing of applications and requirements for obtaining a visa (European Parliament and Council 2009). The Visa Code covers visas issued for stays not exceeding 90 days in any 180 days period. Legislation on the issuance of visas for stays beyond 90 days remains in the national competence. The visa application process is based on the VIS (European Council 2004). Since the VIS will contain biometrical data of visa applicants and is scheduled to be integrated into SIS II, it will be centralised in the networked databases (European Parliament and Council 2008b). The consulates, police authorities from member states and Europol will have access to the databases, and the use of VIS crosses the boundaries between asylum and migration issues, border control, criminal law and counter terrorism. This shows how the boundaries between previously dispersed policy areas have become blurred.

In summary, the combination of these three features (the harmonisation of categories among the EU/Schengen member states, the use of new technology in networked databases and the sorting based on security concerns) gives a new impetus to the European border control regime. This implies that policies on border control, asylum, immigration, judicial cooperation and police cooperation are consolidated in a broader approach to border control. Moreover, the combination of the three features leads to a strengthening of the EU's external policy in the European border control regime. The trends to combine different aspects of security and various levels of authority require a coordination of policies with substantially different goals, and goes beyond the traditional control at the physical border. Based on these changes in the European border control regime, the following two sections examine how the Lisbon Treaty and the Stockholm programme might consolidate and even strengthen these existing trends.

NEW LEGAL AND POLITICAL PROVISIONS WITHIN THE AFSJ

While policy based on the Lisbon Treaty means continuing pursuit and implementation of decisions that were adopted during the 1990s and 2000s, the Treaty also provides the EU with an improved constitutional framework (Monar 2010). Moreover, it provides for a

reshaping of the balance among the institutions in the area (Kaunert 2010). The Lisbon Treaty abolishes the "pillar structure" introduced by the Maastricht Treaty (1993), which placed the internal market in the first pillar, Common Foreign and Security Policy in the second and Justice and Home Affairs in the third pillar. Decisions within the first pillar were based on community method in the EU institutions, which implies a much higher degree of integration both with regard to the institutional rules (majority voting, the Commission's right of initiative and enforcement powers, the full co-legislative powers of the European Parliament and the judicial review of the Court of Justice) and also with regard to the applicable legal doctrines (supremacy, direct effect and the implied powers). In contrast, the second and third pillars were in principle regarded as a matter of the member states and the areas were mainly dealt with intergovernmentally. With the abolition of this structure, areas of responsibility previously under the third pillar, such as judicial cooperation and criminal matters and police cooperation, are now treated under the same rules as the internal market.

This amendment is the continuation of a political process which has been in progress since the Amsterdam Treaty (1999), where more and more decisions concerning aspects of the rules on short term visas and residence permits, asylum policy, illegal immigration and judicial cooperation in civil matters have been made on the basis of the community method in the EU. The Nice Treaty (2003) introduced the community method for the asylum area from 2005. The main areas that with the Lisbon Treaty move from unanimity in the Council of the EU and only consultation in the European Parliament to majority voting are legal immigration, judicial cooperation on criminal matters, Eurojust, non-operational police cooperation, Europol, civil protection and some of the rules on short stay visas and residence permits. Also with the Lisbon Treaty, there are some areas that remain subject to unanimity, such as passports and identity cards, family law and operational police cooperation.

With the Lisbon Treaty, policies in most of the AFSJ areas are subject to the same decision-making procedure. This implies that policies on border control, asylum, immigration, judicial cooperation and police cooperation are consolidated in a comprehensive approach to border control. The decision procedure is qualified majority voting in the Council of the EU, full co-legislative powers of the European Parliament and the judicial review of the European Court of Justice. The Lisbon Treaty provides a new legal basis for European legislation in this area and widens the competences of the ECJ. There is a transitional period and the power of the ECJ and the Commission become applicable to the former third pillar on 1 December 2014.

In addition, the Lisbon Treaty converts the EU Charter of Fundamental Rights into a legally binding bill of rights for the EU (European Parliament, Council and Commission 2007). The Charter has the same legal status as the EU treaties, but it only applies to member states when they are implementing EU law, and does not extend the competences of the EU beyond those given to it elsewhere in the treaties. Although the Charter of Fundamental Rights of the EU already mirrors and develops the content of the European Convention of Human Rights (ECHR) in the EU, the EU is considering an EU accession to the ECHR. The main impact will be the possibility of challenging EU acts before the European Court of Human Rights (ECtHR) if they breach the fundamental rights of an individual.

The Lisbon Treaty's chapter on "policies on border checks, asylum and immigration" confirms the main distinction between EU-citizens and TCNs (European Parliament and Council 2008a: Article 77-80). Regarding TCNs the chapter refers to two main policy areas: the policy on asylum and subsidiary protection, and the policy on immigration. The aim of developing a common policy on asylum, subsidiary protection and temporary protection is confirmed in the Lisbon Treaty (*ibid*: Article 78). It aims to introduce a uniform status of asylum and subsidiary protection for TCNs, valid throughout the EU. By introducing the "uniform standard" in contrast to the former "minimum standard", the Lisbon Treaty strengthens the harmonisation of the EU's policy on asylum. The Lisbon

Treaty also includes the requirement of solidarity among the member states by emphasising that:

> In the event of one or more Member States being confronted by an emergency situation characterised by a sudden inflow of nationals of third countries, the Council, on a proposal from the Commission, may adopt provisional measures for the benefit of the Member State(s) concerned. It shall act after consulting the European Parliament (European Parliament and Council 2008a: Article 78 (3)).

Solidarity and fair sharing of responsibility, including its financial implications, among the member states is also stated as a general principle for all policies related to border checks, asylum and immigration (*ibid*: Article 80) . Cooperation in the field of asylum policy is based on confidence in other states' asylum procedures, and this means everyone shares responsibility for the actions of others (European Parliament and Council 2003). The Mediterranean states are facing particular problems because they form the EU's external border in the south, where the migration flow is greatest (Aubarell, Zapata-Barrero and Aragall 2009). The states in southern Europe have therefore argued for burden sharing and a redistribution of refugees to states in northern Europe (Thielemann, Williams and Boswell 2010). This poses a problem as long as the member states have different bureaucratic categories and divergent practices with respect to the aim of minimum standards and, according to the Lisbon Treaty, uniform standards. The central aim of this policy is to establish common categories and practice by implementing a Common European Asylum System (CEAS) in all member states (which for the most part covers the Dublin agreement, the reception directive, the status directive and the procedure directive).

In relation to immigration policy the Lisbon Treaty aims to develop a common immigration policy intended to achieve three targets: the efficient management of migration flows; fair treatment of TCNs residing legally in member states; and the prevention of, and enhanced measures to combat illegal immigration and trafficking in human beings (European Parliament and Council 2008a: Article 79). According to the Lisbon Treaty, the policy related to the conditions of entry and residence, including removal and repatriation, is decided at the European level. In contrast, the Lisbon Treaty states there are no aims to harmonise the laws and regulations of the member states policy on the integration of TCNs. This is still seen as a national concern.

The Lisbon Treaty puts the member states in a position to determine volumes of admission of TCNs moving from third countries to their territory to seek work (*ibid*: Article 79 (5)). It remains unclear how to interpret this division of competences between the EU institutions and the member states (Hailbronner 2010), but member states still want to maintain control of immigration quotas. One may question if this will have any practical consequences as long as member states cannot control movement across the internal Schengen borders. The aim to abolish any controls on persons, whatever their nationality, when crossing internal borders is also emphasised in the Lisbon Treaty (*ibid*: Article 77).

Within the legal framework of the Lisbon Treaty, the Stockholm programme defines a five-year plan for strategic guidelines for legislative and operational planning within the AFSJ (European Council 2009a). The decisions on justice and home affairs policy under the Stockholm Programme (2009) expand on the Tampere programme (1999) and the Hague programme (2004). While the Tampere programme introduced a five-year plan for a CEAS, the Hague programme introduced a new five-year plan for renewing the goals from the Tampere programme. The Stockholm programme also follows the major lines from the EU Immigration Pact (2008), but differs in the details (European Council 2008).

One main characteristic of the Stockholm programme is that it connects the asylum and migration policy to other policy areas. Migration policy is discussed as the question of the labour market needs to be decided within each member state, and as a contribution to the EU's economic development. This is related to the Blue Card Directive, which is a fast track procedure for issuing special combined residence and work permits to highly qualified TCNs (European Council 2009b). Although the asylum policy is connected to internal harmonisation through the establishment of a CEAS, it is largely discussed as a question of development and foreign policy (Collett 2009). The Stockholm programme focuses on the need for legal and political coherence within the AFSJ. It gives priority to the protection of the lives and safety of European citizens and to the tackling of organised crime and terrorism, and it emphasises the AFSJ must be a single area in which fundamental rights are protected.

The Stockholm programme emphasises the further development of digital systems that differentiate among groups of travellers. Firstly, an EU entry/exit system will register the entry time and place, length of authorised stay, entry and exit information of all visiting persons who are not citizens of the EU, including those who do not need a visa for entering the EU. Secondly, a European Electronic System of Travel Authorisation (ESTA) will be used to collect personal and passport information before the departure of TCNs who are not subject to a visa requirement. Thirdly, an Automated Border Control System will be used both by EU citizens and by TCNs who have achieved a “Registered Traveller Status”, and this will be based on their travel history. Biometrics is increasingly used at airports and borders to speed up the travel of these groups. Many of these control systems were controversial only ten years ago, but have now become a part of the EU’s vision for the twenty-first century (Hobbing 2010). The Stockholm programme calls for an integrated approach where security professionals share a common culture, pool information as effectively as possible and have the right technological infrastructure to support them. It stresses the need to enhance mutual trust between all professionals at national and EU levels (European Council 2009a: 37).

In summary, the trend to treat movements of TCNs across borders increasingly as a security issue is legitimised by the Lisbon Treaty’s aim to consolidate EU policy on asylum and migration issues, border control, criminal matters and counter terrorism. The Lisbon Treaty also legitimises the pattern at the operative level, in which the boundaries of these policy areas have become blurred. Furthermore the Stockholm programme confirms the consolidation of these policy areas with its focus on the usefulness of technology for collecting, processing and sharing information among national authorities and other European institutions within the AFSJ.

However, following the Lisbon Treaty’s entry into force, the transformation of the EU Charter of Fundamental Rights into a legally binding bill of rights is important for the balancing of individual rights and security. The Stockholm programme places a stronger emphasis on the rights of the individual, although the envisaged implementation action is often vague in substance and without any deadlines (Monar 2010: 158). Moreover, the Lisbon Treaty states that everyone has the right to the protection of personal data. As O’Neill (2010) shows, both the data protection and data security regimes for the EU law enforcement agencies were highly fragmented in the (pre-Lisbon) third pillar. The Lisbon Treaty might bring changes to data protection. It states the EU institutions shall lay down the rules relating to the protection of individuals with regard to the processing of personal data by EU institutions, bodies, offices and agencies, and by the member states (European Parliament and Council 2008a: Article 16(1) and (2)). The Stockholm programme underlines that the information technology systems shall be developed and used according to the principles of data protection and data security (European Council 2009a: 18 pp.).

It is important that the European Parliament has gained increased influence as a co-legislator in the area (Kaunert 2010: 173). With the involvement of the European Parliament in all these areas one may expect transparent discussions and due

consideration of expertise, especially in data protection matters. The scope and impact of the Court's activities in these areas is likely to increase significantly in future (Guild and Carrera 2010:51).

THE EU'S EXTERNAL POLICY WITHIN THE AFSJ

One of the aims of the Lisbon Treaty is to increase the coherence and the visibility of the EU's external actions. The Lisbon Treaty established a permanent President of the European Council. Previously, this position rotated among the heads of governments of the member states. Moreover, the Lisbon Treaty established a new High Representative for the EU in foreign affairs and security policy, and this person is also Vice-President of the Commission. The Lisbon Treaty defines the EU as a legal personality, which can enter into international agreements (European Parliament and Council 2008a: Article 47). These changes strengthen the EU's voice in relation to third countries and in international organisations.

In the chapter that deals with policies on border checks, asylum and immigration, the Lisbon Treaty states the EU may conclude agreements with third countries for the readmission to their countries of origin or provenance of TCNs who do not or who no longer fulfil the conditions for entry, presence or residence in the territory of one of the member states (*ibid*: Article 79 (3)). This is important for the question of whether the EU and/or the member states are entitled to conclude agreements with third states in matters of immigration policy. The question of competence to conclude agreements with third states is important for the EU's increasing emphasis on partnership with third countries in the global approach to migration (Hailbronner 2010).

To ensure that operational cooperation on internal security is promoted and strengthened within the EU, the Lisbon Treaty aims to introduce a new Standing Committee on Internal Security (COSI). It shall facilitate coordination of the action of member states' competent authorities. The priorities are developing, monitoring and implementing an Internal Security Strategy.

The Stockholm programme specifies how the Lisbon Treaty enables the EU to act with increased strength internationally, but there is little new of substance on the global approach to migration (European Council 2009a). It mainly reiterates and affirms the global approach to migration, although two lines of argumentation are especially interesting. Firstly, the Stockholm programme underlines the need to increase the integration of the external dimension of the AFSJ into the general policies of the EU. By referring to the 2008 European Security Strategy report, the Stockholm programme states that internal and external security are inseparable. It specifies that the European Security and Defence Policy (ESDP), and many external actions of the AFSJ, have shared or complementary objectives, and it encourages greater cooperation between these policy fields. It emphasises that ESDP missions make an important contribution to the EU's internal security in their efforts to support the fight against serious transnational crime outside the EU, and states: "Addressing threats, even far away from our continent, is essential to protecting Europe and its citizens" (*ibid*). Secondly, the Stockholm programme states that the Lisbon Treaty offers new possibilities for the EU to act more efficiently in external relations. It also states that the new legal basis under the Lisbon Treaty for concluding international agreements ensures the EU can negotiate more effectively with key partners. In the Stockholm programme the Council of the EU argues that it intends to capitalise on all these new instruments to the fullest extent. Moreover, it states that with regard to the AFSJ, the EU will have a single external relations policy, and specifies that the EU and the member states must work in partnership with third countries.

These two lines of argumentation affirm the willingness to merge external aspects of the AFSJ into the EU's foreign policy, and make use of the infrastructure that is in place. With the integration of border control into EU external relations, control can take place before an immigrant reaches the EU/Schengen border. The integration of internal and external security is the outcome of a process that has been evolving since the 1970s (Geddes 2005; Chou 2009). One innovative element in the Stockholm programme relates to the provisions made for the adoption of a comprehensive EU internal security strategy (Monar 2010: 159). This strategy shall, according to the Stockholm programme, include clear divisions of responsibilities between the EU and the member states, reflect a shared vision of today's challenges and respect fundamental rights. The Stockholm programme sees the implementation of the internal security strategy as one of the priority tasks of COSI, and states COSI shall cover security aspects of other policy areas within AFSJ and take into account the external security strategy (European Council 2005). It defines threats such as terrorism and organised crime, drug trafficking, corruption, trafficking in human beings, smuggling of persons and trafficking in arms, and underlines: "In a global world, crime knows no borders" (European Council 2009a: 35). The Internal Security Strategy was adopted in February 2010, and together with the Stockholm programme it lays the foundations for further integration of the internal and external aspects of EU security (European Council 2010a; 2010b; 2011).

At the operational level, the Stockholm programme states that priorities in external relations should inform and guide the work of relevant EU agencies such as the European Asylum Support Office (EASO), Frontex and Eurosur. EASO is a new institution, which was first suggested in the EU Pact on Immigration and Asylum in 2008, and formally established in May 2010 (European Parliament and Council 2010a). It is designed to facilitate, coordinate and strengthen practical cooperation between member states on aspects of asylum, and to help to improve the implementation of the external dimension of the CEAS. One aim is to coordinate the activities of EASO and Frontex. The Stockholm programme also emphasises the continued development of Eurosur at the Southern and Eastern borders. Moreover, according to the Stockholm programme the entry into force of the Visa Code and the gradual roll-out of VIS will create important new opportunities for further developing the common visa policy.

According to the Stockholm programme, the implementation of the global approach to migration needs to be accelerated by the strategic use of all its existing instruments and improved by increased coordination. The strategy of enlisting the co-operation of third countries in the task of border policing further highlights the blurring of boundaries between internal and external security policies, and the merging of foreign policy, migration management and development aid. The Stockholm programme specifies countries in Africa and Eastern and South-Eastern Europe as the areas to cooperate with, and underlines that a dialogue and cooperation should be further developed with countries in Asia and Latin America. These third party states consist mostly of countries that have considerably poorer resources and human rights records than the European states (Aubarell, Zapata-Barrero and Aragall 2009).

Libya is an example of the accuracy of predictions (Lavenex 2006: 346) that the external migration agenda could be caught up by the wider and more diverse context of EU external relations. Libya is (or was) central to the EU's global approach to migration because of those migrants transiting through North Africa and Libya into Europe. An agreement on migration cooperation between the EU Commission and Libya from October 2010, aims to establish a protection system able to deal with asylum seekers and refugees in line with international standards, but it does not include any promises from the Libyan side. In the agreement both sides agree on a number of initiatives on a border surveillance system, mobility-related issues, smuggling and trafficking in human beings, and dialogue on refugees and international protection. The EU promises to support Libya in its efforts to establish an integrated surveillance system along the Libyan land borders, strengthen the cooperation between Libya and the neighbouring

countries and to develop Libyan patrolling capacities in its territorial waters and on the high seas (European Commission 2010a). However, after the revolt started in March 2011, thousands of people arrived by boat in Italy and Malta from Libya. Moreover, hundreds of displaced people have been crossing back into Libya from Tunisia and Egypt with the intention of boarding boats to reach Europe (European Commission 2011b; UNHCR 2011). The blurred boundaries between foreign policy and border control require a use of political instruments that goes beyond the traditional control of territorial borders.

In summary, the Lisbon Treaty and the Stockholm programme confirm existing policies and lay new legal and political foundations for a further integration of policies in the AFSJ and the EU's foreign policy. This integration is related to changing definitions of what kinds of actions and threats should be classified as internal security questions and to what extent these threats are defined as external. The Stockholm programme states that cross-border crime has become an urgent challenge, which requires a clear and comprehensive response. It also emphasises that actions at the European level, combined with better coordination with actions at regional and national levels, are essential for protection from transnational threats. The EU's border control regime combines at least two forms of security. Security is defined both in terms of radical violence to the sovereignty and functional integrity of the state, and as a question of protecting the legal and social order in various sites within the state (Huysmans and Buonfino 2008). While the first refers to fundamental exceptions and crises such as 9/11, the second is a more continuous and bureaucratic policy with the introduction of policing technologies and surveillance systems. Such a combination of different aspects of security requires coordination of policies at various levels of authority, despite their substantially different goals.

CONCLUSION

The legal provision in the Lisbon Treaty combined with the political and operational guidelines in the Stockholm programme lay the foundation for further development of the European border control regime. The main characteristic of this foundation is the merging of asylum and migration policy within a broader management of border control within the AFSJ. The Lisbon Treaty lays the legal basis for a consolidation of the asylum and migration policy and judicial cooperation both in civil and in criminal matters and police cooperation. With the Lisbon Treaty's provisions to give the EU a voice in relation to third countries and international organisations, it also lays the foundation for a strengthening of the global approach to migration as a part of the EU's foreign policy. With the integration of border control into EU external relations, control can take place before an immigrant reaches the physical EU/Schengen border. The Stockholm programme confirms this merging with other policy areas. It presents political and operational guidelines for both the further consolidation of AFSJ and the strengthening of EU foreign policy in the European border control regime.

The Lisbon Treaty and the Stockholm programme both confirm previously established political processes at the operational level. They are legal and political documents that legitimise existing policies related to the European border control regime. These policies are characterised by a combination of the harmonisation of categories among the EU/Schengen member states, the use of new technology and the sorting of individuals based on security concerns. The use of technology for collecting, processing and sharing information among national authorities and European institutions leads to blurred boundaries among asylum and migration issues, border control, criminal law, counter terrorism and foreign policy. There seems to be a pattern whereby databases that were originally introduced to manage movements across borders are increasingly being used in criminal matters and as an integrated part of security policy. This changing use of information systems is related to new definitions of which kinds of actions and threats

should be classified as internal security questions and to what extent these threats are defined as external. Migration has increasingly been defined as a security concern, and the distinction between internal and external policy has become blurred. Such a combination of different aspects of security and various levels of authority requires careful coordination of policies with substantially different goals and goes beyond mere border control.

The way the Lisbon Treaty and the Stockholm programme confirm and legitimise existing policies at the operational level can lead to a strengthening of these current tendencies. The Lisbon Treaty may, however, also lead to more coherent decision-making processes in relation to the European border control regime. With the involvement of the European Parliament and the impact of the European Court of Justice in all AFSJ areas, one may expect transparent discussions and due consideration of expertise. This is especially important in relation to data protection matters. Moreover, the transformation of the EU Charter of Fundamental Rights into a legally binding bill of rights is significant for the balancing of individual rights and security. This balancing should, however, not remain limited to issues of ethical considerations since the developments in these fields started at the operational bureaucratic level, and were later confirmed at the legal and political level with the Lisbon Treaty and the Stockholm programme.

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Continuity and Change in the Politics of European Scientific Collaboration

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Abstract

Intergovernmental collaboration in the area of big science has been an important resource for European science since the 1950s. Yet, as a policy area, it has traditionally been left outside of the political integration work of the European Community/Union. Despite this formal detachment, the political realities of the collaborations often draw upon and reflect the (geo)political dynamics of Europe. This article reports on a study of two big projects in the making (the European Spallation Source and the European X-ray Free Electron Laser), and uses two historical cases for comparison (the European Laboratory for Nuclear Research and the European Synchrotron Radiation Facility). It highlights critical issues in establishing and operating collaborations, relates these to the broader context of European political integration, and discusses, on the basis of this, signs of continuity and change in this distinct area of European research policy.

Keywords

European scientific collaboration; big science; international science policy

INTRODUCTION

Europe's experience with multinational collaboration around large-scale scientific infrastructure – popularly called 'big science' – dates back to 1954 and the creation of CERN, the European Laboratory for Nuclear Research. Conceived as a peace project and talent pool for European competitiveness, CERN has been called an important a step in (Western) European integration well on par with the European Coal and Steel Community (ECSC) and the European Atomic Energy Agency (EURATOM) (Krige and Pestre, 1987; Pestre, 1987). In the following half-century, over a dozen[1] similar collaborative projects were established, with similar objectives of competence building and integration, sometimes created to run big science facilities such as reactors, accelerators, or telescopes. These collaborations are complex organisations, deeply embedded in (geo)politics and characterised by the same horse-trading as the jigsaw puzzle of political agreements that make up the European Union. Contrary to the EC/EU project, however, collaboration in scientific infrastructure and similar major undertakings in science (e.g. space programmes, joint laboratories, and other common research activities) have not been subject to coherent policymaking in Europe. Some authors have even claimed that this has actually been a success factor in these collaborative efforts, because it has left them untouched by bureaucracy and institutional inertia (Hoerber, 2009: 410; Gaubert and Lebeau, 2009: 38; Papon, 2004), but notable consequences of the incoherencies have also been a pluralistic system and an opaque and cluttered policy field. Almost every collaborative effort in large-scale science in Europe has been conceived and established on the basis of an *ad hoc* agreement. Starting with the articulation of a scientific need, the process of establishing a scientific facility involves technological design and development work at the cutting edge, as well as a vast and complex assortment of political agreements and negotiations. If successful, this political process leads to the signing of an intergovernmental agreement, sometimes comparable with an international treaty and sometimes establishing a private company with the member countries as shareholders, whereby the collaboration is founded. The variations with regard to the process and the eventual legal agreement are as many as there are collaborations; new shapes and forms have emerged for every new project.

Building on the seminal work of Krige (2003) and Papon (2004), this article updates and adds to the knowledge about European scientific collaboration in the area of large

facilities through the study of two contemporary projects, the European Spallation Source (ESS) and the European X-ray Free Electron Laser (XFEL).[2] Two historical cases are used for comparison, CERN and the European Synchrotron Radiation Facility (ESRF). By reporting on recent trends visible in the two contemporary cases and relating these to the two historical examples, the article shows that there is both continuity and change in the politics of European scientific collaboration. Although the small sample of cases limits the room for generalised conclusions and, as mentioned, every collaborative effort has been conceived and carried out differently, there are identifiable quandaries that appear to repeat themselves in new cases, but whose significance also clearly varies over time. The article identifies and analyses these and their impact on collaborative projects, and discusses possible implications for the overall understanding of the politics of European scientific collaboration. The article hence seeks to contribute to the literature on European research policy and the history of European scientific collaboration, as well as to highlight peculiarities in a policy area that is of significance for the understanding of European politics despite its formal detachment from the European Community/Union (EC/U).

THE POLITICS OF EUROPEAN SCIENTIFIC COLLABORATION

European scientific collaboration has been described as conceptually unique in science policy, a "new structure and a potent source of funding" for European scientists, made available after World War II (Krige, 2003: 897). A minor qualification is required; as a source of funding it is "potent" but also about *potential* – a lot of uncertainty is always involved, and many projects have historically been proposed but never realised. Despite being formally disentangled from European political integration, as set out in the introduction, collaborations around large-scale scientific infrastructure have been deeply embedded in politics, as will be discussed, and have had noteworthy importance for European integration (see below and Krige, 2006) as well as the long-term evolution of a common European science policy system.

The formal detachment from the European Union and its predecessors is historically rooted. The 1957 Treaties of Rome – establishing the Common Market as well as EURATOM – instructed the member countries to collaborate on very specific areas: coal, steel, agriculture and atomic energy. No collaborative mandate was given in the area of science and technology outside nuclear energy (Grande and Peschke, 1999: 45). The European political integration process that eventually led to the Single European Act and the Treaties of Maastricht and Lisbon was an offspring of the Common Market Treaty, whereas EURATOM after some initial failure evolved into a parent organisation for nuclear energy and thermonuclear fusion energy research activities,[3] including research but only in these distinct areas (Papon, 2004: 64-65; Grande and Peschke, 1999: 45). The European Community's lack of mandate for the promotion of science and technology was to be partly compensated from the early 1970s, when sectorial programmes aimed at closing the 'technology gap' were launched (Grande and Peschke, 1999: 45). These were mainly aimed at increasing competitiveness in specific sectors (such as ESPRIT, a flagship programme in information technology), well in line with international trends of science policy, to focus on innovation and applicability of research efforts, and did initially lack the ambition to maintain or develop a broad research base in Europe (Grande and Peschke, 1999: 45; Papon, 2004: 69-70). Nonetheless, in the area of large-scale scientific facilities, the EC had identified a need for coordination and appropriate support for smaller countries without national facilities and launched an *Access to Research Infrastructures* programme of EUR 30M within the Second Framework Programme (FP2, 1987-1991) to support mobility and information across the continent. This has since been successively enlarged, and in line with the mention of research infrastructures as a crucial element in the European Research Area (ERA) policy (European Commission, 2000), the share of Framework Programme funding for infrastructures has been significantly increased to several hundred million Euro. Besides

the Access programme, there is nowadays FP funding for initial planning of infrastructure projects (ESFRI, 2008). In 2002, the European Commission also established the European Strategy Forum on Research Infrastructures (ESFRI), with the mandate to develop a strategy and collect data to inform decisions, which is mainly done through the biannual Roadmap Report for European Research Infrastructures (ESFRI, 2006, 2008, 2010b). Hence while efforts on behalf of the EU have been intensified, they are limited to coordination, information and some seed funding for emerging projects.[4]

Though the historical lack of central coordination in European large-scale collaborative science projects may have been an advantage for the organisations, arguably creating dynamism and efficiency since every specific project has been allowed to meet the demands of its particular scientific community (Hoerber, 2009: 410; Gaubert and Lebeau, 2009: 38; Papon, 2004), it has also made it seemingly impossible to avoid typical pitfalls and repeated exposure to political strains within and between individual European countries. Countries normally partake in collaborations not as an activity separate from national science policy agendas but rather, from the perspective of an individual country, as "the pursuit of one's interests by other means" (Krige, 2003: 900). Most countries realise that collaboration is necessary to achieve goals beyond the reach of any one of them, but strong traditions of sovereignty create a constant tension between self-interest and the common good, for every participating country, in every collaboration. Quite paradoxically, given the separation of large-scale scientific collaboration from the mainstream European integration process, this tension and its concrete manifestations have often been mirrors of the cycles of the general political situation in Europe, and the scientific and foreign policies of member countries of European scientific collaborations are clearly linked (Krige, 2003). The collaborations are laden with politics, not least when concerning majestic physical pieces of infrastructure that can be made symbols of collaborative spirit. CERN was clearly at least as much a product of politics as of scientific ambition (Krige, 2006); what eventually became the European Southern Observatory (ESO) was delayed eleven years due to British-French political strains in the 1960s (Woltjer, 2009); the establishment of Institute Laue-Langevin (ILL) in Grenoble in 1967 by France and Germany was reportedly the result of a reconciliatory agreement between Charles De Gaulle and Konrad Adenauer (interview: Witte); and the subsequent healthy climate in Franco-German relations in the 1980s was of significance for the creation of the ESRF (Hallonsten, 2009). A recent example is the XFEL facility – the breakthrough in the establishing process for this facility reportedly came with an agreement between Angela Merkel and Vladimir Putin that Russia would contribute substantially, made at a summit meeting in October 2007 that was otherwise described as a "cold encounter" ("Kühle Begegnung", Kirschstein, 2007). The XFEL agreement was hence highly symbolic: "Paradoxically, just because it is seen as being a 'non-political' activity, scientific collaboration can be a particularly useful first and tentative step in a politically delicate context of alliance building" (Krige, 2003: 904).

CERN CRUISING ALONG AND DISRUPTING

The process of choosing a location for a facility is a typical area of controversy in the context of European scientific collaboration. The question of a site for the CERN laboratory had been a "delicate and contentious" issue even before there was a signed agreement between the member states, but the political bargaining over site selection that took place at the first meeting of the Council in 1952 appears to have been guided by the joint ambition of the member states to create a consensual and "unanimous" decision (Krige, 1987b: 239). Scientific prestige as well as the envisioned financial benefits made member countries keen on hosting the facility, but ultimately it appears that the common good of all member states was given primary importance in the negotiations.[5]

The enormous importance and impact of atomic energy for the ending of World War II had made nuclear physics a top priority for governments across the Western world, and it was no coincidence that the European 'peace project' in the shape of a joint scientific laboratory became an institute for accelerator-based nuclear and particle physics research (Krige and Pestre, 1987: 527-528). Created to complement national programmes rather than replace them, CERN did not threaten national science budgets in its first decade of existence, but was largely "cruising along" and leaning on the "universally euphoric state of the European economies at the time" (Pestre, 1990: 785; Pestre and Krige, 1992). This changed dramatically in the 1960s, when the international development in particle physics called for the expansion of CERN to keep up in the competition with the United States and the Soviet Union (see Greenberg, 1999/1967). The proposed upgrade programme was large enough to give rise to plans for a new, separate laboratory under the name 'CERN II'. Initially largely uncontroversial among the member states, the upgrade became a hot issue as soon as the idea of a new site was put on the table. Now member countries openly subjugated collaboration to their own national interest – the generally held view was that the prospective benefits of hosting CERN II were large enough to make the idea of participation without the advantage of hosting a very unfavourable option, especially among the countries contributing the most to CERN financially, i.e. France, Germany, Italy and the United Kingdom. Nearly all members proposed their own sites, and the Federal Republic of Germany (FRG) and the UK both issued ultimatums that they would withdraw completely from the collaboration should the new lab not be located within their borders (Pestre, 1996). An attempt to choose a site on so called 'scientific' grounds, i.e. by the work of an independent and 'objective' expert committee was "warmly praised, and promptly buried" (Krige, 2003: 905). In 1970, the situation was resolved by a decision to build CERN II at the existing CERN site in Geneva, and the cost reductions brought by this solution assisted in convincing the member states (Krige, 1996a; 2003).

The ultimate effect of the go-ahead decision for CERN II was that CERN became the only centre for experimental particle physics in Europe, with the exception of DESY in Hamburg (see below). The very costly construction of the new accelerator (and its sequels throughout the rest of the century) monopolised most national budgets for particle physics (Krige, 1996b). Perhaps policymakers' foresight of this development was what made member states rigidly guard their own interests during the site selection controversy. It is clear, however, that the CERN II project gave the question of *location* a whole new importance in the context of European scientific collaboration.

THE FRANCO-GERMAN ENTENTE AND THE CREATION OF THE ESRF

A general wave of renewed Europeanism marked 1970s Europe, getting its momentum from the highest political levels in France and the FRG – the entente between these countries became the historically important "motor of Europe" that eventually drove the development towards the Maastricht Treaty and European Monetary Union (Judt, 2005; Middlemas, 1995). But the entente played an important role also in scientific collaboration, outside the EU, such as in the establishment of the ESRF.

Synchrotron radiation is extremely intense electromagnetic radiation produced by circular particle accelerators that has been used since the 1960s for experimental work, primarily in the materials and life sciences. A vast expansion of the utilisation of synchrotron radiation in the 1970s gave rise to plans, foremost within the ranks of the newly established European Science Foundation (ESF), to construct a large, dedicated synchrotron radiation laboratory as a European intergovernmental collaboration (Schmied, 1990a). In a 1977 report, an ESF working group argued that neither the qualitative nor quantitative demand for synchrotron radiation in Europe could be met by the national sources in operation and planned at the time and that a European collaborative project could be a solution to this issue (ESF, 1977). ESF had, however, no

financial or political powers, so its work was limited to studying the feasibility of the project and mobilising a scientific community around it.[6] In May 1979, a 'feasibility study' was published by the ESF, in which the ESRF was outlined (ESF, 1979).

The location of the facility was identified as a problematic issue years before even a conceptual technical design existed or any countries had made binding declarations of support. Denmark, France, Germany, Italy, and the UK proposed sites, and co-location with CERN in Geneva was also briefly on the table (Dickson, 1984a; Schmied, 1990b). France's suggestion, Strasbourg, got passive support from Germany due to its close proximity to the German border, whereby prospects for realisation of the project were immediately improved. The facility design presented by ESF in 1984 envisioned a technically and scientifically world-leading laboratory, which reportedly gave the project some political leverage (Schmied, 1990b). Behind the scene, influential science policymakers in Grenoble managed, assisted by acts of local pork barrel politics involving support from President Mitterand, to switch the French site proposal from Strasbourg to Grenoble (Dickson, 1984b).

On 26 October 1984, France and Germany announced their joint decision to build the ESRF in Grenoble and together provide between 50 and 70 per cent of the construction costs of the facility. Other countries were invited to join (Schmied, 1990b). The same year, the First European Framework Programme for Research and Technological Development (FP1) had been launched, and the year after would see the signing of the Single European Act. The ESRF decision-making process can therefore be interpreted as a mere piece in the jigsaw puzzle of Franco-German partnership and renewed Europeanism in this era. But it did, of course, have its own political circumstances[7] and it caused surprise and resentment among the prospective collaborating countries, who felt run over by the two big nations (Dickson, 1984b).

The Franco-German proposal was, however, gradually accepted by other countries, and in 1985, a Memorandum of Understanding was signed by France, Germany (FRG), Italy, Spain, and the UK, to go ahead with the Grenoble site. Although technical and scientific updates of the facility took a couple of years, at the time of their finalisation, the legal documents and the negotiations over budget shares had not been concluded (Haensel, 1988). The UK, expected to contribute considerably to the ESRF due to its strong scientific communities in fields utilising synchrotron radiation, had offered to pay only 7 per cent of the construction and operational costs. This caused protests from the other countries and halted the process, but after hard negotiations, the UK contribution was increased to 14 per cent, which was still considered too low and only reluctantly accepted by the other partners (Hallonsten, 2009).

The ESRF Convention was signed in Paris on 16 December 1988, by Belgium, Denmark, Finland, France, the FRG, Italy, Norway, Spain, Sweden Switzerland, and the UK. The Netherlands signed a few months later. In January 1989, construction started, and in September 1994, the facility opened for users.

CONTEMPORARY CASE ONE: THE EUROPEAN XFEL

The aforementioned monopolisation of European experimental particle physics budgets by CERN in the 1970s had one important exception; the research centre DESY (Deutsches Elektronen-Synkrotron, German Electron Synchrotron) in Hamburg, founded in the early 1960s. In the mid-1960s, DESY's research mission had been extended also to include synchrotron radiation. In the 70s and 80s, DESY constructed new accelerators and managed to keep pace with CERN and other competitors in particle physics globally (Lohrmann and Söding, 2009). In 2001, DESY particle physicists presented a technical design report for a next-generation linear accelerator named TESLA (Terra-electronvolt Energy Superconducting Linear Accelerator), with a so-called free electron laser[8]

included as a supplemental facility. The German Federal Ministry for Education and Research showed greater interest in the free electron laser than in the TESLA machine, arguably not only looking at its smaller price tag (in 2001, TESLA had an estimated total cost of at least EUR 3.5 billion, whereas the XFEL facility in a separate estimation made a year later had a price tag of EUR 648 million, Richard *et. al,* 2001; 2002) but also part of a global trend of diminishing support for particle physics in favour of more application-orientated big science (see, e.g., Westfall, 2008; Stevens, 2003; Kevles, 1997). On the Ministry's request, DESY prepared a separate design for an X-ray Free Electron Laser (XFEL) (European XFEL, 2009b; interview: Witte). Prototype work at DESY in the shape of a smaller but fully experimentally operative free electron laser, which opened in 2005, was paralleled by policymaking initiatives to make the XFEL reality as a European collaborative project at DESY – organisationally separate, but with DESY as the German representative and a major shareholder and important contributor (Lohrmann and Söding, 2009; interview: Witte).

In February 2003, the German Federal Ministry for Education and Research announced its plans to go ahead with the XFEL as a European facility located in Hamburg, and to cover approximately half of the construction costs (European XFEL, 2009b; interview: Witte). DESY's strong tradition in synchrotron radiation and accelerator construction, and the aforementioned prototype facility, made Hamburg the obvious choice of location (European XFEL, 2007a). At the end of 2004, a Memorandum of Understanding was signed by France, Germany, Greece, Italy, Spain, Sweden, Switzerland and the UK, to jointly "prepare the ground for a governmental agreement" on the construction and operation of the XFEL. During 2005, China, Denmark, Hungary, Poland and Russia joined, and in 2007, Slovakia (European XFEL, 2009b). The technical documents were updated, and preparatory work for the legal documents was undertaken, but no further agreements were made. In order to get the project started, in 2007, the project group presented a smaller 'start-up configuration' of the facility. In June the same year, despite having only 75 per cent of the construction costs covered, Germany decided to begin construction on the basis of the start-up configuration. Most countries had pledged only very small amounts of money, and it was realised that the project needed another major contributor. Russia's entrance into the collaboration in October 2007 is described by the XFEL project management as a "breakthrough" (interview: Witte) and "turning point" (interview: Altarelli) and meant an effective go-ahead. But it also presented some difficulties. The EUR 250M commitment made Russia a heavyweight at the negotiating table, and when Russian representatives began reassessing issues of intellectual property and access to the facility, it resulted in a change of rules for majorities in Council decisions so that Russia was empowered with a *de facto* veto right on certain issues, such as policy decisions regarding access. Russia entered the collaboration at 23.1 per cent of the shares, and the legal documents were rewritten so that "qualified majority"– necessary for policy decisions about scientists' access to the facility, among other things – was defined as "at least 77per cent of the share capital and the Shareholders of not more than half of the Contracting Parties voting against" (European XFEL, 2009a: 25-26).

On 30 November 2009, the XFEL convention was adopted and signed by Denmark, Germany, Greece, Hungary, Italy, Poland, Russia, Slovakia, Sweden, and Switzerland (European XFEL, 2009b). On 4 February 2010, France signed. Among the other potential collaborating partners, Spain has declared its intention to sign, the UK has withdrawn from the collaboration with reference to increased costs for existing (domestic and international) facilities, and China has left the question of participation hanging (interview: Altarelli). The construction of the XFEL is now underway, based on the start-up configuration, which originally was estimated to cost EUR 849.3M (in 2005 prices) (European XFEL, 2007b). This price tag has since been adjusted due to unfortunate price fluctuations as a result of the global financial crisis, and the start-up configuration will likely cost almost as much as the original estimations for the full facility, which means that participating countries will have to commit additional resources in the future

(interview: Altarelli). It is estimated that the first part of the facility can become operative in 2015 (European XFEL, 2009c).

CONTEMPORARY CASE TWO: THE EUROPEAN SPALLATION SOURCE

An experimental resource for materials science, complementary to synchrotron radiation, is the use of neutrons from reactors or so-called spallation sources. A reactor for this purpose has been in operation since the early 1970s at the ILL in Grenoble (Trischler and Weinberger, 2005). According to abundant claims by the European neutron source user community, the ILL plays a big part in Europe's world-leading role in neutron-based science, a lead that allegedly will be lost unless the next generation neutron source, the ESS, is made reality (Tindemans and Clausen, 2003; ESS, 2002; ESFRI, 2003; 2008).

Plans for the ESS were drafted already in the early 1990s, but didn't get any political leverage until almost a decade later, when made part of recommendations for large-scale scientific projects by the Organization for Economic Cooperation and Development (OECD) together with similar projects in Japan and the USA (ESS, 2002). Work on the Japanese and American facilities promptly began, but even at the time of their completion some seven years later, Europe still had not reached any decisions. At the end of 2008, the issue was taken up by the Competitiveness Council of the Council of the European Union, a cabinet-level EU body for issues of research, industry, and the internal market. By this time, three site contenders had crystallised – Lund in Sweden, Bilbao in Spain, and Debrecen in Hungary – and the political lobbying on behalf of the three was intense. An 'independent' review of the three sites had been undertaken by ESFRI, and though no site was explicitly favoured, the review did in a sense 'approve' all three sites and pointed out their relative strengths and weaknesses, which apparently provided some basis for decision-making (Cesarsky *et al,* 2008; ESFRI, 2009, 2010a). On the initiative of the Czech EU presidency, a meeting was summoned in Prague on 29 May 2009, with representatives of countries that had declared interest in participating in the ESS. The outcome of this meeting was decisive although no formal agreements were made – a majority of the present delegations expressed support for the Lund site, and within the following months, Spain and Hungary conceded and joined the project (ESFRI, 2009).

Despite the message in local media and elsewhere that the ESS was thereby decided upon and that it would be constructed, the decision from Prague in May 2009 and the following written statements of support from the participating countries meant nothing more than an agreement that *if* the ESS is built, it will be built in Lund (interview: Vettier). The EU has not made any decisions on the matter, and the realisation of the ESS in Lund is still a subject of negotiation between interested countries, some of whom have submitted letters of intent to the Swedish government, although with neither any formal pledges of support nor any future financial contributions specified. The current overhaul of the technical design, the scientific case, and the cost estimates is expected to be concluded in early 2013, by which time a final decision is to be made by the collaborating partners, including Sweden. Although this work is by no means finished, very detailed cost estimations and schedules for construction and commissioning are available. A "basic design", not including built-in flexibility such as opportunity for upgrades, is estimated to cost EUR 1,478M (at 2008 prices). On top of this, a number of alternative configurations are currently being developed that will be subject to negotiation between the collaborating countries (interview: Vettier). Construction at the site in Lund is set to begin in 2013, and if the current 'basic design' is eventually implemented, the ESS is expected to be fully operational, with 22 instruments, in 2025.

CRITICAL ISSUES: SITE SELECTIONS, FAIR RETURN, AND IN-KIND CONTRIBUTIONS

The introductory paragraphs identified a constant tension in the politics of European scientific collaboration, that originates in the argument that such collaboration "always involves a loss of, or at least a dilution of, national sovereignty," a loss that is "accepted but not taken for granted," and whose "scope is limited, carefully monitored and constantly re-evaluated" (Krige, 2003: 900). In the following sections, the two contemporary and two historical case studies will be used to highlight some specific policy areas where the tension between self-interest and common good shows itself most conspicuously.

Troubles in connection with site selection have been set out above. Decision-making processes are generally surrounded by ample expectations of socio-economic benefits brought to the host country and region by an international research facility, such as the possibility of an emerging high-tech sector around the facility, a well-educated and well-paid workforce moving in, not to mention prestige.[9] To this should be added the potential benefits for the local scientific community and the risk of being disadvantaged by not hosting – countries may well be forced to reallocate science funding to the new facility abroad at the expense of national programmes (Widmalm, 1993).

As mentioned, the site selection for the original CERN laboratory had elements of bargaining and the safeguarding of national interests, but the allegiance to the common good appeared to be primary at the time (Krige, 1987b). By comparison, the CERN II site selection process was tortuous, including (temporary) withdrawals of Germany and the UK from the collaboration, and it was only resolved by the decision to build the new laboratory at the existing CERN site, which was considered relatively uncontroversial. Regarding the ESRF, for which several countries also made site bids, it seems the bilateral agreement between France and Germany was crucial for resolving the issue, although of course politically viable alternatives may have existed that are not known. The ESS seems perhaps to have had the most difficult site selection process – first drafted back in the early 1990s, the project was outrun by both of its international contenders, and though three clear candidates for hosting had crystallised in 2008, a lot of reluctance or even active resistance seems to have lingered, among European neutron users and in the European scientific communities in general. The project was reportedly "plagued by the unwillingness of European scientists collectively to solve the question of a site" because of "a kind of acceptance that it is never going to happen" (interview: Carlile). The neutron community was allegedly afraid that any government's commitments to the ESS would simultaneously reduce their national efforts in the area or their contributions to the ILL, or delay or cancel their involvement in the recently initiated ILL upgrade project (interview: Carlile). When a site decision was finally reached, in 2009, it was on the basis of a lengthy process where, after years of negotiation and lobbying, a sufficient number of European countries affiliated themselves with one candidate.

Logically, a predefined site would eliminate much of the difficulty, and the history of the European Southern Observatory (ESO), located in Chile, seems to partly confirm this, although another political disagreement also caused delays.[10] However, later cases show that a predefined site may also become a liability to the host country, because other countries appear to have less interest in participation if the site is already agreed upon. DESY have had trouble attracting the necessary foreign investment for their accelerator projects, being legally all-German projects as well as all being predestined for Hamburg (Lohrmann and Söding, 2009). Hamburg was also the predefined site for the XFEL, and this has reportedly made Germany's efforts to get other countries to join far more difficult than in previous cases where there was at least a theoretical chance for everyone in the game to win the prize (interview: Witte).

It could be argued that site selection processes have become more dominated by national interest because facilities like the ESRF, the XFEL and the ESS host research activities that in comparison with CERN and ESO (particle physics and astronomy, respectively) are closer to the market and therefore more attractive from the perspective of local and regional commercial spin-offs from the facility. Proving or rejecting such a hypothesis is difficult. Available empirical studies on the matter focus on CERN (Schmied, 1987; Nordberg, 1994), and it appears no clear connection can be established between the activities at ILL and ESRF and the industrial spin-offs in the Grenoble region[11] (Papon, 2004). Despite this lack of evidence, it is not unreasonable to conclude that policymakers act partly on the basis of prospects or expectations of industrial applicability and spin-offs from the facilities.

One of the mechanisms that has been put in place to counter the imbalance effects of investment and return that may make hosting of a facility a major economic boost for the local region is so-called *Fair Return* (or *Juste Retour*) on procurement. This policy dates back to the creation of CERN and was institutionalised in the ESRF and codified in its financial rules document,[12] in which it is stated that the collected value of contracts awarded to firms in a member country should, in the long term, reflect that country's relative contribution to the ESRF budget (Krige, 1987a; ESRF, 2001). Although subordinated to the principle to always achieve best value for money, the Fair Return policy does in practice force the ESRF administration always to look for tenders from firms in countries that are "poorly balanced" and give them the contract if they can align with the cheapest offer (ESRF, 2001: 10; Hallonsten, 2009). Fair Return nowadays fall under the category of infringement of the competition policy of the EU's common market of (Leonhard 2010), which has meant that for new collaborations such as the ESS and the XFEL, procurement Fair Return policies are not applied.

One solution that could replace the procurement Fair Return policy is the application of *in-kind contributions* by member states – i.e. the opportunity for member countries to substitute direct financial investment in a facility for the delivery of goods and technology and thus spend their money domestically[13]. The policy does, however, have potential drawbacks; restricting the call for tender to the participating countries might exclude competitive alternatives, and there is also a risk that at the time of delivery, which might be several years after the in-kind agreement was made, the best qualified company may no longer be in the country providing the particular in-kind contribution. Both the ESS and the XFEL projects will rely heavily on in-kind contributions – approximately half of the total investment, according to estimates (ESS, 2011: 22; interview: Altarelli).

CRITICAL ISSUES: SCIENTIFIC FAIR RETURN

Though connected to foreign policy and the foreseen socio-economic benefits, the prime motivation for a country to participate in a European scientific collaboration is likely to be scientific. For member countries, collaborations are often extensions of national science policy, "the pursuit of one's interests by other means," and the balance between investment and return is carefully monitored in this area as well (Krige, 2003: 900).

The scientific facilities under study here are all *user facilities*, i.e. their prime purpose is to serve researchers from academia and other institutions who make shorter visits to the facilities to conduct experiments (except for CERN, where experiments are comparatively long-term). Access is decided on a competitive basis, through an organised peer review process in which scientific quality and technical feasibility of experiment proposals are normally the only (official) assessment criteria. In many of the fields that use neutron, synchrotron radiation, and free-electron laser facilities, experimental time at the leading facilities is simultaneously the most valued commodity and the most crucial resource – not only because it is normally free of charge but because facilities often provide unique

experiment opportunities and thus allow groups to conduct research at the forefront of their field (Hallonsten, 2009). At collaborative facilities, the principle of providing access to researchers solely on the basis of scientific quality and technical feasibility, with no reference to nationality or institutional belonging, is simultaneously lauded and considered somewhat suspect. Officially, by virtue of representing the highest scientific quality it is declared to be in everybody's interest, but participating countries also expect their investment to be matched by availability for their domestic scientific community.

The legal documents regulating the ESRF and the XFEL refer to the possibility of a "lasting and significant imbalance" between a member country's contribution and the use of the facility by this country's scientific community, and that the council of representatives from the participating countries "may decide measures" (ESRF, 1988) or "create the prerequisites" (European XFEL, 2009a) to correct this imbalance. The assertions are not qualified further.

In the late 1990s, the user statistics for the ESRF revealed just such a "lasting and significant imbalance", especially a constant under-use by German and Italian scientists and over-use by the scientific communities of the Nordic countries and the UK. After lengthy discussion of the problem in the ESRF council, a conclusion was reached that a *scientific* Fair Return policy be implemented through the use of a computer programme that would readjust the allocation of experimental time slightly, after the ordinary peer review process, to correct the imbalances. The algorithm used does not affect either the highest nor the lowest rated experiment proposals, and so it could be argued that it is only the groups around the cut-off limit that are meddled with; but the real effect of the policy is a partial subordination of scientific quality to nationality (Hallonsten, 2009: 242-246). Scientific Fair Return also has possible problematic legal implications. The facilities under study here are usually exempt from value-added taxes (VAT), because of their special international status and because experimental time is awarded free of charge. Scientific Fair Return, which means associating the budget contributions of the member countries with their scientific communities' share of the use of the facility, may make experimental time appear as a purchased service for which, according to most national standards, VAT should be paid. Attempts to evade the risk of such an interpretation by tax authorities, while still keeping the possibility for a scientific Fair Return policy open, was an important part of the work in drafting the XFEL legal documents (interview: Altarelli). It is clearly a problematic issue both from the legal and scientific points of view.

Although scientific Fair Return was implemented at the ESRF in the late 1990s and the policy is still in place, there is reportedly a consensus among European countries today – at least those participating in the XFEL collaboration – that scientific Fair Return is a non-preferable option and that, if used at all, it should be limited to a minimum and without question be subordinated to scientific quality guaranteed by peer review (interview: Altarelli). This consensus has one interesting exception – Russia's entering into the XFEL collaboration brought delay to the process because of expectations from the Russian representatives that investment and use should be balanced in detail, to the extent that countries would be allowed to sell the slots of experimental time they would not use (interview: Witte). It is apparently the official standpoint of the Russian shareholder in XFEL, the Russian Corporation of Nanotechnologies, that experimental time should be distributed among the scientific communities of the member countries in accordance with the relative size of their investment. In a press release from 27 November 2009, announcing Russia's signing of the XFEL convention, the Russian Corporation of Nanotechnologies writes: "The main resource of the complex – beam usage time – *will be* shared proportionally to each country's contribution to the project" (Russian Corporation of Nanotechnologies, 2009, emphasis added).

RE-NATIONALISATION?

Papon (2004: 70) suggests that a "re-nationalisation" trend started to show in European scientific collaboration in the 1980s and on, with origins in the growing expenditures of CERN and ESA that made European countries look increasingly to their domestic interest rather than to the wealth of collaborations. Examples include a major all-German accelerator project (at DESY) as well as the emergence in the 1990s of several national synchrotron radiation facilities across Europe (such as Elettra in Trieste, Bessy II in Berlin, Swiss Light Source in Villigen, and MAX II in Lund, Sweden). It is difficult to assess the accuracy of the suggestion, not least since national facilities indeed have been built and operated in European countries since the 1950s, parallel to collaborative projects. Furthermore, a re-emergence of national facilities in the 1990s should be seen in light of the 1970s decrease in the number of national particle physics facilities after the establishment of CERN II, whereby such a re-nationalisation trend would signify a return to the normal. It is, however, possible to suggest another re-nationalisation trend in the cases under study here, conceptualised rather as increased guarding of national interest in the processes of establishing collaborations. The practical implementation of the previously only formally existing scientific Fair Return policy at ESRF in the late 1990s is one indication of this, as is the heavy reliance on in-kind contributions at both the ESS and the XFEL. Another sign – although blame is laid on the economic crisis and associated budget austerity – is Britain's and Italy's recent lowering of their contributions to the ESRF, which led to a cutting of the facility's overall budget by 6 per cent and some reduction of capacity (ESRF, 2010).

In the case of the XFEL, there are further indications of an increase in the guarding of national interest at the expense of the common good. Massimo Altarelli, who is managing director of the European XFEL project and who has been Scientific Director at ESRF and Director of the Italian national synchrotron radiation laboratory, Elettra, has identified what he calls a "perverted mechanism" in the issue of investments, shares, and the expectations of fair return, that makes countries enter the collaboration at the lowest possible level. The background is the following. The minimum level on which a country can enter the XFEL collaboration is one per cent of the construction costs (with one exception, Greece, who have entered at 0.4 per cent but whose future status as a member of the collaboration is not yet fully determined), which equals EUR 11M (in 2005 prices) (interview: Witte). With procurement fair return outlawed in the EU, one possibility of return for investment for member countries is gone. The shares of the participating countries are very unequally distributed, with Germany and Russia having 53.6 and 23.1 per cent, respectively, and none of the other ten countries exceeding four per cent (European XFEL, 2009a: 7). This means that even a doubling or tripling of a smaller country's share does not increase the *de facto* relative power of that country in the collaboration. The aforementioned apparent consensus among countries that scientific Fair Return should not be implemented, and the generally controversial nature of such a policy, makes it inapplicable or at least not reliable enough to motivate a larger share. In fact, should scientific Fair Return be completely precluded and scientific quality the only standard applied, countries have little or no reason to enter the collaboration at a level higher than absolutely necessary or possible to cover by in-kind contributions, because their scientific communities will have access to the facility anyway, to the extent that they can compete with scientific quality. Here it should be added that although the German scientific community is allegedly extraordinarily strong in areas using synchrotron radiation and free electron lasers, and Russia is presently investing heavily in its public science and technology system, these countries are not likely to manage scientifically to match their shares of 53.6 and 23.1 per cent, which, in effect, means that other countries will become beneficiaries regardless of the size of their investment. In Altarelli's view, this "perverted mechanism" is worse today compared to when the ESRF was created, and hence the motivation for countries to lower their investment in a facility is now stronger (interview: Altarelli). His testimony would thus indicate re-

nationalisation, although it is restricted to the specific case of the XFEL and hence perhaps not possible to generalise to a 'trend'.

CONCLUDING DISCUSSION

The XFEL and ESS cases show similarities with both CERN and ESRF, but also differences. The constant tension between national interest and common good is a defining factor, and it is arguably a mirror of similar strains in the EC/EU collaborations (e.g. Middlemas, 1995; Bomberg *et al,* 2008; Misa and Schot, 2005). As discussed in the introductory paragraphs, scientific collaboration and the evolution of the practical manifestations of the tension has often reflected the cycles of the general political situation in Europe. CERN was established as a part of the first wave of Europeanism after the war; ESRF was clearly linked to the Franco-German entente of the 1970s and 80s; the breakthrough for XFEL came when Germany and Russia needed a symbol of unity in a time of political disarray. National research councils and science foundations, speaking in the interests of their respective scientific communities, may have important input in early stages of the genesis of an international research facility, not least in formulating initiatives, coordinating scientific and technological planning and design work, and gathering support. Several other aspects surely weigh in when the process moves towards the decision-making stage, such as regional attractiveness and communications. The conclusion here is, however, as the cases clearly show, that *final decisions* (including site selection) are made at the highest political level, on the basis of high-level political considerations.

This influence of high-level politics on the creation and evolution of scientific collaborations also has some impact on the details of how collaborations deal with the issues of site selection, procurement contracts, and scientific access. The Franco-German agreement on the ESRF involved the location of the facility in France (and simultaneously the wind tunnel in Cologne, as already identified). Russia's involvement in the XFEL has been mentioned as crucial for the future of the project but it also brought a re-opening of negotiations over access to the facility, that are still not resolved. For both the XFEL and ESS, it appears that the heavy reliance on in-kind contributions from participants other than the hosting country is compensation for the economic benefits associated with hosting, that these other partners do not gain from.

But the tension also acts out in particular ways in specific policy areas without direct connection with the high-level politics that is involved in the launching of collaborations. Here, continuity could probably be the word of the day. The ESS site selection process was apparently just as problematic as the CERN II issue, although it perhaps to a larger degree took place backstage. The XFEL management is evidently struggling with the legal aspects of scientific use of the facility in a similar way to the ESRF management twenty years ago. The similarities between ESRF and XFEL can perhaps be partly attributed to the relative scientific and technological conformity of these two cases – on the other hand, it could be argued that this similarity should have created customs or practices over time that could help in avoiding pitfalls.

On the level of specific countries, the UK appears to be retaining the complicated attitude towards Europe and European collaboration that, among other things and in combination with a reciprocal hesitance from mainland Europe, made it a late entrant into the EC (Judt, 2005; Gowan, 1997). British participation in CERN and in the ESRF, as well as in ESO and the ILL, was long uncertain and a source of conflict (Herman, 1986; Trischler and Weinberger, 2005; Woltjer, 2009) and so far, the UK has declined to join both the ESS and the XFEL.

Some issues have clearly changed. Considering (cautiously bearing in mind the slightly overstretched comparison) the entire fifty year plus period between the founding of

CERN and the creation of ESS and XFEL, it appears as if there has been a tilt towards national interest in negotiations and general sentiment, at the expense of the common good. The site selection process for CERN reportedly had its challenges but was resolved through consensus built on recognition of what would be the best solution as a whole. In the case of the XFEL, cynical calculations of value for money apparently make smaller countries seek to enter the collaboration at the lowest level possible. The contributions from non-hosting member states to ESS and XFEL is dominated by in-kind contributions. In this comparison, for all its imperfection, CERN almost appears a manifestation of altruism. It is, however, difficult to assess whether the comparable smoothness in the politics around CERN was due to the relatively low cost of the facility (compared to the other cases discussed here, that is), the clear ambition of not letting CERN compete directly with national programmes but rather complement them, the precondition that CERN be detached from military and commercial interests laid down in its founding documents, or whether it is perhaps created at the meta-level by the romantic aura that generally surrounds the accounts of scientific and political achievement in the immediate post-war era.

Apparently evident differences between cases within a relatively small sample are always possible to attribute to individual properties and contexts, and they are thereby disqualified. Only two of the four cases have enough scientific and technical similarities to be comparable, the ESRF and the XFEL, and similarities between these two facilities have already been highlighted. Also if the sample is expanded to include ESO, JET, and the ILL as well, the seven facilities that then would make up the empirical base are all unique with respect to scientific purpose, political circumstances, historical context, and technical challenges. The conclusion would then be, and this is not at all a retreat from the ambitions of the article but rather a sober recognition – that there are few or no *broad, unequivocal trends* in the development of the politics of European scientific collaboration, only different responses to different situations, that need to be analysed for their specificity.

* * *

1. A myriad of different organisations, institutes, councils and facilities exist. This article deals exclusively with large-scale scientific facilities that are open for use by scientists and groups from universities and similar research institutions, and that are multilaterally organised and funded. Thus it does not take into account collaborative scientific facilities of 'small science' character, such as the European Molecular Biology Laboratory (EMBL), or organisations put in place to enhance multilateral collaboration between existing institutions, such as the European Space Research Organization (ESRO) or the European Space Agency (ESA) (see Krige, 2002; Gaubert and Lebeau, 2009). Excluded from the analysis are also European multilateral collaborative projects in areas closer to commercial and/or military interest (see Trischler and Weinberger, 2005; Misa and Schot, 2005).

[2] Interviews were conducted by the author with: Altarelli, Massimo, Managing Director of the European XFEL, Hamburg, April 19, 2010; Carlile, Colin, director of the ESS Scandinavia consortium, Lund, April 7, 2010; Vettier, Christian, scientific director at the ESS Scandinavia consortium, Lund, April 7, 2010; and Witte, Karl, Administrative Director of the European XFEL, Hamburg, April 19, 2010.

[3] The Joint Research Centre (JRC) and the Joint European Torus (JET), both of which are still in operation, are funded by and run under the auspices of the EU. In recent years, the EU has played an important role in the process of establishing the International Thermonuclear Experimental Reactor (ITER), a joint EU-US-Japanese facility estimated to cost over 15 billion Euro and being built in Southern France (McCray, 2010).

[4] This seed funding has been criticised for lack of strategic priority and for spending money in support of projects that are unlikely to succeed, which might cause national governments to stay out of more mature and feasible projects in favour of projects that they have interest in but that are less urgent from a pan-European point of view (interview: Altarelli).

[5]. It appears that in the course of the negotiations, the attraction for each individual member state of hosting the facility became subordinated to the ambition to locate it in acceptable proximity to most

countries, as well as the desire to avoid giving a large country the advantage that would come with hosting CERN. Furthermore, Geneva was favoured also because of Swiss neutrality and the tradition in Geneva of hosting international organisations, which was beneficial given the ambition to establish CERN as such (Krige, 1987b).

[6]. Created in 1974 as an NGO, the European Science Foundation is more of a network organisation for European science councils and academies than a governing body (Herman, 1986), and has, like other collaborative European organisations for science, including the facilities studied in this article, been formally separated from the EC/EU political and economic integration process.

7. The location to Grenoble was a matter of local and national French politics. Furthermore, it is argued that the ESRF was in fact the second prize behind the European Transonic Wind Tunnel (ETW), a test facility for aircraft, that both countries had interest in hosting. The decision that it would be built in Cologne was part of the same agreement that produced the ESRF settlement for Grenoble (Papon, 2004; interview: Karl Witte).

[8]. Free electron lasers are often referred to as the 'next generation' light sources, and experimental work with free electron laser radiation can be described as synchrotron radiation experiments with significant improvement on one or a couple of parameters. Just like synchrotron radiation sources, free electron lasers can be built in varying sizes and to varying costs; the XFEL is a very large facility, consisting of a 3.4 km long subterranean linear accelerator ('linac'), and is in size and cost comparable to the ESRF.

[9] There is, however, ongoing debate whether the claims of substantial socio-economic benefits from hosting these kinds of large scale scientific facilities (e.g. Valentin *et al,* 2005; Waldegrave, 1993), often put forward by policymakers and lobbyists for specific projects, really can be proven (e.g. Papon, 2004: 71). It is not within the scope of this article to report on this discussion and its substance, as it is comprehensive enough for a separate study, but it is nonetheless important to acknowledge the emphasis with which claims of this sort are made in the decision-making processes for large scientific facilities.

[10]. The reported disagreement in site selection concerned a choice between South Africa and Chile and did not involve bids for sites within any member country, which arguably reduced potential disturbance and delays to the process. The background is an early agreement on a site in the southern hemisphere, which was "much less studied" than the northern at the time. The political disagreement that caused delays to the project concerned, in turn, UK hesitance and resistance, a common theme in European collaboration (see below), and whether or not ESO should share its site in Chile with the Association of Universities for Research in Astronomy (AURA) (Blaauw, 1991; Sterken, 2002; Woltjer, 2009).

[11] See also note 9; opinions differ widely on whether any (measurable) economic effects on local or regional level can be proven to be caused by large scientific facilities.

[12]. Fair Return or Juste Retour is also extensively used in many other European collaborative efforts within the realm of science and technology, for example for the awarding of contracts within ESA (Hoerber, 2009: 406).

[13]. Though nowadays implemented with the aim of including member countries' scientific communities in the construction work for a facility and securing benefits for their local economies, in-kind contributions were once invented as a way to *avoid* direct investment in a facility. At DESY in the 1980s, the next large accelerator project was regarded as too expensive even for West Germany, the world's third largest economy at the time, to carry singlehandedly. Foreign membership in DESY was not considered an option at the time, and thus in-kind contributions from foreign countries were invited and these countries' scientific communities given partial access to the facility. Apart from attracting investment, the model brought in complementary competences to the laboratory (Lohrmann and Söding, 2009).

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The Bargaining Power of Territorially Constituted Institutionalised Coalitions in EU Council Negotiations

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Abstract

There is growing evidence that negotiations in the European Union Council are not only taking place within the formal EU decision making structures. Member states strive to identify like-minded peers and to exchange information prior to the formal negotiations. Institutionalised intergovernmental coalitions that exist among the member states on a geographical affinity basis, e.g. Benelux and Nordic subgroups facilitate exchange among their members and grant them a bargaining advantage. The knowledge of the effects of territorially constituted institutionalised coalitions is, however, limited. Drawing on rational choice institutionalism, this study argues that territorially constituted institutionalised coalitions enhance the bargaining power through three mechanisms: first, exchange of information, which counterbalances the asymmetries in information distribution at the pre-negotiation stage; second, pooling of expertise that allows the member states to share resources and provide common argumentation for their positions; and, third, through rhetorical action that gives more strength to normative justifications ,which may lead to the normative entrapment of other member states outside the coalition.

Keywords

Bargaining power, coalitions, institutionalised, EU Council, pre-negotiation phase

INTRODUCTION

Informal interaction, consultation and coordination within subgroups of EU member states have increasingly become a part of the negotiation process in the EU Council. Pre-agreement beyond the formal decision-making scope is often facilitated by informal cooperation within coalitions with the aim of increasing bargaining power through joint action. Conventional views on coalition-building focus on voting power analysis (Ordeshook 1986) with less attention paid to coalitions as the strategic tools of interstate cooperation, such as in the case of territorially constituted coalitions. Assuming that the territorial groupings exist in EU decision-making (Schild 2010; Klemenčič 2011), this article poses the question: to what extent and under what conditions can the territorially constituted institutionalised coalitions enhance member states' bargaining power?

Studies on power-pooling show that member states may enhance their bargaining leverage by building coalitions (Zimmer *et al.* 2005; Selk and Kuipers 2005). By randomly selecting *ad hoc* peers for coalition-building, member states aim to reach blocking minorities or winning majorities through aggregating their votes (Ordeshook 1986; Winkler 1998; Hosli *et al.* 2009).This may occur through the formation of *ad hoc* coalitions, which are short-term issue-specific intergovernmental cooperation formats that are dissolved after adoption of the dossier. Apart from *ad hoc* coalitions, more stable or "solid" coalitions exist (Blavoukos and Pagoulatos 2011: 570). They demonstrate a considerable degree of institutionalisation in terms of an established cooperation structure, interaction frequency, durability and advanced internal coordination. These more durable coalitions are created with the intention of solving joint problems and achieving cooperative gains (Powell 1999: 219) and may operate on a common geographic-proximity basis. Territorially constituted institutionalised coalitions, e.g. Benelux, Visegrad, Nordic-Baltic, have been labelled in the literature as 'country partnerships', 'alignments', 'blocs', 'alliances' or 'groupings' (Hosli 1999; Tallberg 2008; Thomson 2009; Panke 2010; Veen 2010; Blavoukos and Pagoulatos 2011; Klemenčič 2011). This article applies the term 'institutionalised coalitions' by emphasising the deliberate choice of governments in engaging in a structured and repeated cooperative action with stable peers. A common trait of all territorially constituted coalitions is their

institutional setup that rests on existing territorial cooperation structures, frequent interaction, and commonly defined goals. It has become a tradition within the territorially constituted coalitions that the prime ministers and ministers meet in breakfast meetings in the run-up to the European Council and Council meetings. The effects of institutionalised territorially constituted coalitions are, however, largely unexplored. The issue of power-pooling through institutionalised cooperation at the preparatory phase of the negotiations is almost missing in the explanations of bargaining power. Drawing on coalition theory, one can assume that the member states strive to aggregate their voting power in order to create minimum winning coalitions (Ordeshook 1986; Laver and Schofield 1990; Winkler 1998, Hosli *et al.* 2009). This explanation, however, cannot explain territorial institutionalised coalitions, since their aggregated number of votes is usually insufficient for reaching the blocking threshold.

How then can we explain the effects of the territorially constituted institutionalised coalitions in Council negotiations? Defining these coalitions as institutionalised coordinated action in reaching jointly agreed goals (Elgström *et al.* 2001), I assume that institutions are established because member states strive to overcome collective action problems (Stacey and Rittberger 2003: 864), to reduce the transaction costs of bargaining (Tallberg 2010: 635) or to deal with information uncertainty (Moravcsik 1997: 522). If the interaction among the territorial alliances did not serve the common beneficiary goal of fulfilling the expected function, the practice of consulting and exchanging views prior to EU meetings would hardly exist.

By conceptualising bargaining power as actors' ability to shift the negotiation outcome towards its their ideal point (Tallberg 2008), this article argues that institutionalised coalitions enhance the bargaining power through three mechanisms: (1) exchange of information, which counterbalances the asymmetries in information distribution at the pre-negotiation stage, (2) pooling of expertise, that allows the member states to share resources and provide common argumentation for their proposals, (3) by 'rhetorical action' that gives more strength to normative justifications that may lead to normative entrapment of other member states outside the grouping.

By developing this argument, the study contributes to the existing literature in several ways: First, by approaching coalition-building as a process and offering a theory of the effects of institutionalised coalitions on bargaining power, it reveals additional aspects of the persistent coalition patterns that to date have often been neglected when focusing on voting outcomes (Winkler 1998; Hosli 1999; Mattila 2009). Second, the argument differs from the existing approach, which explains persistent coalitions with the help of sociological constructivist theoretical tools. This study, on the contrary, assumes that actors behave rationally and engage in intergovernmental coordination of their positions prior to negotiations in order to gain benefits; not for the sake of supporting a collective identity. Hence, territorially constituted coalitions, even the most institutionalised ones, are perceived by their members as instrumental to strategic action. Drawing on rational choice explanations, the study explains how the member states solve the shortcomings and the collective problems (Stacey and Rittberger 2003: 864) of the asymmetries in information distribution at the pre-negotiation stage, and how they use their institutionally embedded cooperation formats for power-pooling purposes in EU Council negotiations.

The article is structured as follows. The first section presents the argument and elaborates on the causal mechanisms behind the effects of the institutionalised territorially constituted cooperation on bargaining power. The second section introduces the role of preferences in determining cooperative behaviour among the parties of the subgroup. The third section illustrates the examples of the Benelux and Nordic-Baltic territorial coalitions. Finally, conclusions summarise the theory and outline the implications of this study for existing research.

POWER POOLING THROUGH INSTITUTIONALISED COALITIONS

There have been numerous attempts to pinpoint the sources of power within the context of EU negotiations and social science more generally. When proposing better understanding of bargaining power in the EU Council, it may be useful to address this concept by integrating insights from broader International Relations (IR) theory. In spite of attention devoted to the concept of power in discussions of IR, scholars have constantly experienced difficulties in defining and measuring this "elusive concept" (Keohane 1989: 9). In more general theoretical terms, power can be seen as the capacity to affect the behaviour of others, i.e. A can be seen as powerful when getting B to do something that B would not otherwise do (Dahl 1957). Power may also be seen as the ability to prevent things from happening or as control over the political agenda. However, Dahl's definition has limitations in application to all fields of IR because of the lack of causality (Goldmann and Sjöstedt 1979). It does not "distinguish clearly enough between the outcome and process which leads to it" (Clark *et al.* 2000: 71): namely, it is not clear *how* A causes B to behave in the way A wants, and *why* B behaves in the way A wants. A further problem in applying Dahl's definition of power to a negotiation environment is that it does not foresee multilateral relationships, which is a usual condition when applying the power concept to the field of international negotiations.

A more helpful definition of power in addressing bargaining situations, therefore, would be one that concentrates on the *determinants* of the outcome, not the outcome itself. Authors viewing states as actors who maximise their power relative to each other focus on power resources or capabilities in order better to calculate how power is distributed between states (Baldwin 2002). According to various interpretations of power determinants, the existing scholarship on power can be divided into studies focusing on resources of structural power in terms of size, military capacities, economic strength; behavioural power in terms of skills and applied strategies, and issue-specific power. For contemporary views on power in IR one should develop a view on power which includes more than only strategies based on structural power determinants (Nye 2011).

In the context of bargaining situations, the power concept amounts to those determinants that enable negotiation parties to reach their desired goal (Habeeb 1988; Sjöstedt 1993; Baldwin 2002). Therefore, in negotiation research, it would be more accurate to draw on Weber's (1921) classical definition of power, where power is seen as the ability to overcome the resistance of others (in Schneider *et al*. 2010, Bailer 2010). Scholars dealing with the bargaining power issue in EU negotiations usually follow traditional IR approaches and view power mainly as the ability to reach a specific outcome. For example, Tallberg (2008: 687) defines bargaining power in EU Council negotiations as a capacity of the member state to achieve a distributional outcome that as closely as possible reflects the preferences of the member state. Addressing power as the capacity of particular actors (or group of actors) allows for a focus on factors determining the ability of one player to get another player to alter behaviour (Clark *et al.* 2000). Elaborating on Weber's definition, this study defines power as the capacity that may be put to work in negotiations for reaching the best preferred outcome. It focuses on the actor's expectations of benefits from the coalition building and operationalises bargaining power as an actors' ability to shift negotiation outcomes towards theirown ideal point. Bargaining power is measured here by the difference between the distance to outcome and the distance to reversion point, which in EU decision-making is often treated as a *status quo* (Achen 2006).

In bargaining situations where parties engage in mutually beneficial trade but have conflicting interests, bargaining success depends on a variety of factors, such as impatience, risk aversion, strategic choice of inside and outside options (Muthoo 2000). In spite of the broad coverage of different bargaining power determinants, coalition-building as a power-pooling strategy has so far attracted insufficient attention in studies of bargaining power generally, and in the research on EU negotiations in particular. Coalitions have been viewed from different angles, i.e. as organisational processes,

group behaviour, and as outcome-orientated actions. IR literature has applied three main categories in addressing coalition issues: formation, stability and the impact on the outcomes. The discussion on coalition formation is directly linked to cooperation patterns, i.e. who cooperates with whom and what goals should be achieved. According to coalition theory, a coalition emerges as soon as more than two actors are engaged (Dupont 1994). In this sense, coalitions are the concept of multilateral, as opposed to bilateral, interaction (Laver and Scjhofield 1990). Different scholars provide different definitions, depending on a coalition's composition, duration and perceived aims. Dupont (1994: 153) defines coalitions as "cooperative efforts for the attainment of short-range, issue-specific objectives". Another definition focuses on the functions of coalitions "to reduce the complexity of the negotiation situation" (Zartman and Maurin 1982) by reducing the number of actors and thus facilitating the bargaining process. Odell (2010: 624) focuses on common preferences and defines coalitions as a "set of parties that explicitly coordinate among themselves and defend the same position". This study draws on the definition which is applied in the EU context, conceptualising institutionalised coalitions as a "set of actors that coordinate their behaviour in order to reach the goals they have agreed upon" (in Elgström *et al*. 2001:113). This definition emphasises the parties' considerations behind the coalition building, i.e. to improve their bargaining situation compared to one that would have been gained by unilateral action. It also approaches coalitions as coordinated action in reaching the previously agreed goal.

Existing scholarship on coalition building in the EU has mainly focused on the motives driving the choice of coalition partners, ranging from positions (Roozendaal *et al.* 2008; Reynaud 2008), cultural affinity (Elgström *et al.* 2001; Naurin and Lindahl 2007) and party ideologies (Tallberg and Johansson 2008; Hagemann and Hoyland 2008). Few scholars have approached coordinated coalition-building behaviour as a power-pooling process. The existing studies in this field evaluate the motives behind peer selection (Saam and Sumpter 2009), explaining the strategic considerations of small states to improve their influence via intergovernmental coordination (Panke 2010). Saam and Sumpter (2009) have investigated the reasons why an EU government should select another government as a coalition partner and concluded that preferences, the salience of an issue, power and neighbourhood matter. They do not, however, go beyond the issue of peer selection and keep the question of the effects of partner search open.

The relevance of coalition building behaviour greatly depends on the expected gains from coalition formation. Social psychology and game-theoretical models offer different models on how to deal with the motivation that would lead to alignment bargaining actors. The literature suggests two answers to the question of coalition-building goals: actors either strive for *power maximisation* to create minimum winning coalitions (Winkler 1998; Reynaud *et al.* 2008; Hosli 1999), or *to influence the outcome* by demonstrating common objectives and support for common preferences or a particular policy. In both cases, the rationale behind their choice is to improve their bargaining situation by acting collectively. Accordingly, coalition-building can be seen as a "strategy of pooling bargaining power, rather than an independent source of power" (Tallberg 2008:687). Power-pooling is one amongst several "strategies of the weak" that can be used to mitigate the disadvantages in power distribution (Keohane 1971). By pursuing coalition-building tactics, framing or joining coalitions, negotiation actors can increase the level of commitment by combining several individual commitments or increase control by combining their resources (Dupont 1994).

According to coalition theory, a coalition's impact varies with the prevailing voting rule when decisions are made by voting: a coalition "reaching the required minimum share of votes wins" (Odell 2010: 624). Analysts observe that member states particularly align when qualified majority voting (QMV) is applied (Winkler 1998; Hosli 1999; Selck and Kuiper 2005). Under QMV rules, member states seek coalition partners either to block the decision or to promote the issue (Elgström *et al*. 2001) because they cannot block a decision by vetoing. For this reason, Schure and Verdun (2008: 475) predict the

tendency of "power-pooling" will increase after the Lisbon Treaty. But even for those 30 per cent decisions taken by unanimity (Wallace 2010: 95), the role of coalitions should not be underestimated because the member states are concerned about reputation repercussions when unitarily blocking a decision (Tallberg 2008: 695). Moreover, Heisenberg (2005: 65) demonstrates that about 80 per cent of all decisions are made by consensus, even when QMV rules formally apply. This makes coalition-building behaviour relevant and "inevitable" (Klemenčič 2005) irrespective of voting rules in EU decision-making.

Power-based coalitions are supported by rational choice theories predicting that actors will strive to maximise their utility. The power-maximising hypothesis, with the goal of reaching a blocking minority threshold, however, cannot explain the widely practiced intergovernmental coordination in subgroups prior to negotiations. The member states often deliberately coordinate their positions with the partners of their territorial region at the pre-negotiation stage. Panke (2010) has studied territorial partnerships in the EU and found evidence that the Benelux countries and the Nordic countries have demonstrated the highest activity in coordinating their positions prior to EU negotiations.

In spite of the issue's significance, our knowledge of the effects of institutionalised territorially constituted coalitions is surprisingly scarce, with weaknesses being grouped into several categories. First, there are gaps in the application of theoretical tools in explaining the durable coalitions in the EU. Drawing on culture, geography, history and language as the explanatory factors of coalition-building, scholars often explain territorial coalitions by relying on social constructivist tools, i.e. the role of social norms that may constitute the identity of actors and create common "rules of the game" (Beyers and Dierickx 1998, Lewis 2005, 2010). This study, instead, explains the effects of geographic and preference proximity-based institutionalised coalitions on bargaining power by using rational choice theoretical tools. The argument here is that, through engaging in institutionalised cooperation, the member states take advantage of institutional preconditions whilst acting rationally. Second, the existing literature exposes considerable gaps in the empirical testing of the effects of durable coalitions. Though there are some studies on territorial partnerships (Kaeding and Selck 2005; Naurin 2008; Panke 2010; Schild 2010; Klemenčič 2011), the empirical findings are contradictory. Some scholars do not recognise the advantage of institutionalised cooperation and predict the decline of territorial alliances (Hosli 1996), whereas others acknowledge their potential in gaining influence in decision-making (Schild 2010; Klemenčič 2011). Finally, the existing research on coalition-building often treats coalitions as end-game products. Those studies that evaluate coalitions as power-pooling mechanisms mainly focus on the voting outcomes in terms of the relationship of votes and the ability to influence the outcome in decision-making (Reynaud *et al*. 2008; Hosli *et al.* 2009; Schneider *et al*. 2010). The issue of power-pooling through institutionalised territorially constituted coalitions is almost missing in the explanations of bargaining power. Drawing on coalition theory, one could assume that, by building coalitions, member states strive to aggregate their voting power, in order to block the decision (Winkler 1998; Hosli *et al.* 2009). This logic, however, cannot explain the effects of the territorial coalitions, since their aggregated number of votes is usually insufficient to reach the blocking minority thresholds.

Therefore, by developing a theory of the effects of institutional coalitions on the bargaining power, this article aims to complement the understanding of the informal inter-governmental cooperation processes that take place prior to the formal negotiations in the Council and fill the gap in the literature.

THEORY: EFFECTS OF INSTITUTIONALISED COOPERATION

The statement "institutions matter" (Tallberg 2010: 634) is the point of departure for this study. The institutional setting can contribute to the differences in outcomes (König and Bräuninger 1998). According to rational choice institutionalism, the behaviour of political actors is shaped by rules and procedures through which they maximise their utilities by calculating the best courses of action. Actions are chosen not "for themselves but as an efficient means to a further end" (Elster 1989: 22). One could expect institutions to be established because member states strive to overcome collective-action dilemmas, information asymmetries and dealing with transaction costs.

In solving these tasks this article distinguishes between the institutionalised and *ad hoc* coalitions. The distinction is made across the variation of the independent variable in terms of the degree of institutionalisation, which ranges from low to high. Coalitions with a low degree of institutionalisation are approached as *ad hoc* alignments with randomly selected peers, no underlying structure for cooperation framework and sharing short-term goals. The *ad hoc* coalitions are issue-specific and dissolved after the agreement on the dossier is reached. Contrary to the aforementioned, coalitions with a high degree of institutionalisation share long-term objectives and have an existing structural and procedural framework for cooperation and interact repeatedly. Such highly institutionalised coalitions are expected to be more stable and durable and may follow territorial alignment logics.

It is largely acknowledged that the institutional embeddedness of negotiations affects actors' attitudes and positions (Jönsson 2002: 223). Institutional conditions of cooperation have an impact on their efficiency to affect outcomes in several ways: through (i) ensuring structures and procedures; by providing conditions of interaction (ii) ensuring continuity and density; (iii) by promoting insulation and socialisation; (iv) and by drawing on common objectives.

Firstly, institutions provide a structural and procedural framework within which actors interact and shape their expectations. As channels of exchange, these institutional networks may stretch across territorial borders and frame intergovernmental links. Accessibility is no longer contingent on one's physical location (Jönsson and Strömvik 2004)**;** hence the contacts with other countries' experts within the territorially constituted coalition can be at least as intensive as with the domestic actors. Secondly, institutional setup provides conditions for interaction continuity and density of contact. Duration alone is not a sufficient condition: frequency is also important (Beyers 2005: 912). With both conditions present, territorially constituted coalitions can rely on the stability of their interaction and create an environment of insulation. Insulation is one of the central features of EU decision-making in general, and of territorially constituted coalitions in particular. It leads to two effects – thick trust and diffuse reciprocity. Institutionalisation serves as a prerequisite for trust both on individual and system levels through creating the reliability on a person or system. Given that the member states have incentives to misrepresent information (Fearon 1995), the in-camera setting of a limited number of participants may encourage better exchange of information. 'Insiders' may speak more openly about their own positions and exchange valuable knowledge about the 'outsiders'' preferences; on the other hand, they can keep the contents of their discussion at the international level concealed from the domestic arena, thus testing their own positions and "collectively legitimising" expectations (Lewis 2010: 652). A long-standing relationship, such as the interaction among the partners within institutionalised coalitions, positively affects diffuse reciprocity that allows for mutually beneficial deals in the future, since the shadow of the future is long enough (Warntjen 2010: 668). The institutional environment provides the necessary conditions for social interactions. Socialisation does not, however, mean that actors are supposed to adopt collective rules (Checkel 2001: 562; Beyers 2005: 904). Used by rational actors, socialisation may contribute to the normative justification of jointly shared values (Schimmelfennig 2005: 827).

Finally, according to functional logic, the institutionalisation of cooperation within the subgroup helps the actors to address the shortcomings in the negotiation environment – uncertainty about others' positions, shortage of expertise, and power distribution imbalances. Effective coordination may counterbalance scarce resources because the mutual exchange is carried out rationally and in the most effective way.

I explain the effects of the institutionalised territorial coalitions on bargaining power with the help of three mechanisms – exchange of information, expertise pooling, and through 'rhetorical action'.

Exchange of information

Negotiations in the EU are multilateral and highly complex, and as such, are characterised by uncertainty because of the large number of parties (Zartman and Maureen 1982; Odell 2010). Distribution of information can be seen as a source of power (Tallberg 2008; Bailer 2010). Firstly, shared information raises the efficiency of negotiations (Dupont 1994). Secondly, it gives a better bargaining advantage to those possessing information or to 'insiders' who take part in the information exchange. Some actors are better informed than others, and this creates asymmetries in information distribution. Access to information frames a negotiation's leverage (Dupont 1994; Shell 2006) because it gives an idea about the context in which the issue is discussed, what is at stake, what the goals are, and finally, what needs and preferences other parties hold. Parties that possess superior expertise and information are better positioned to identify possible agreements and shape outcomes in their favour (Tallberg 2008; Bailer 2010).

There are two types of information that are essential for a negotiator: information on the issue and information on others' preferences. According to information availability, one can further distinguish between public, private, and secret information (Dupont 1994). Negotiations in the EU are highly restricted and only the final voting results are available for public records (Hosli 1999). In the pre-negotiation phase, most information is either private (possessed by single member states) or restricted to groups of states. One can also observe information distribution asymmetries between the member states and institutions, e.g. the Commission. Hiding and misrepresenting information can be used for a strategic purpose. This creates uncertainty among negotiation actors about the fall-back positions and the range of agreements that would be acceptable.

I claim that information exchange can be facilitated by frequent communication, insulation and mutual exchange – conditions that are typical for an institutionalised setting of cooperation. It is assumed that institutions and organisations are efficient solutions for solving problems of incomplete information (Barnett and Finnemore 1999: 699). They can act as "intervening variables" mediating between states' "pursuit of self-interest and political outcomes" by changing the structure of constraints that states possess through their control over information (ibid.). Furthermore, an institution can become autonomous because of its control over information.

There is a clear correlation between the degree of insulation within an institution and effectiveness of information exchange. Limited negotiation setting (in subgroups) facilitates information exchange, generates information benefit (Delreux 2009: 735), and enhances information asymmetries in favour of 'insiders'. Exchange of information occurs more openly within less formal in-camera settings. Furthermore, international socialisation is based on strategic calculations of costs and benefits. Member states may use institutionalised coalitions for revealing their preferences and "testing" their positions before they are exposed in Council negotiations. By doing so, they can gain information about possible allies and avoid reputation repercussions if their positions happen to be too extreme. They can also use informal subgroup networks in order to acquire

information from better informed sources on the positions and goals of the EU institutions.

Expertise-pooling

EU legislation has become complex and technical content-wise. Decision making in the Council is a mixture of 'political' and 'technical' aspects that are difficult to separate (Fouilleux *et al.* 2005). More and more highly technical issues are transmitted to higher decision-making levels. Moreover, interaction with the Commission at different decision-making levels acquires good expertise on the issue. Negotiators need both content expertise and procedural expertise (Tallberg 2008: 700). Content expertise is related to the technical knowledge about the issue. It is important in two ways: it allows member states to identify their preferences in a highly professional way and to evaluate the preferences of others. Expert knowledge contributes directly to the bargaining power of the member states because they can formulate more nuanced positions, apply credible argumentation, and identify alternatives according to others' preferences. Expert capacity is particularly important for the framing phase of international negotiations (Shell 2006; Odell 2010) because experts have the capacity to evaluate and develop credible normative justification for their arguments (Risse 2000).

This article argues that the institutionalised set-up enhances expertise-pooling at different levels of EU Council decision making – in particular in the Council working groups and COREPER levels, with rational choice institutionalism providing further explanations for this argument. Rational actors communicate through their networks in order to gain information and pool expertise; indeed, Elgström *et al.* (2001) have observed that knowledge is one of the most important determinants in choosing networking partners.

One can expect that expertise-pooling will be enhanced through institutionalised cooperation. According to International Organisation theories, professionalism serves as one of the preconditions for insulation (Barnett and Finnemore 1999:723), shapes the environment for normative orientation and creates communities of professional networks inside the organisation. Moravcsik (1997:534), on the other hand, speaks about transnational communication and the dissemination of scientific information as a tool for cognitive ideological change.

Expert knowledge is particularly important for the preparation and framing phases in international negotiations (Shell 1999, Odell 2010) because experts have the capacity to evaluate and develop credible normative justifications for their positions (Risse 2000). From a rational choice perspective, arguing is the process of justifying one's positions and preferences (Risse and Kleine 2010: 709). Expertise becomes an important determinant of a member state's bargaining power in Council negotiations because actors argue about *factual* claims (Warntjen 2010:674), whereas the institutional set-up allows the coalition to develop a mutual "goal-oriented and strategic interaction" (ibid.) in framing a better argument. Due to the frequency and duration of interaction, the public preferences of member states within an institutionalised coalition are broadly known to all members, e.g. Nordic neighbours are aware of Danish opt-outs in the field of migration policy; Swedish preferences in environmental policy; Finnish expert capacities in the field of forest preservation, etc. Each of the members will have *expectations* about others' preferences, priorities and expert capacities. In long-standing institutionalised relationships, actors reveal their positions and engage in exchange more truthfully and explicitly and may "justify their positions in order to increase the reputation and/or provide information relevant for future negotiations" (ibid.). Coherent instead of constantly changing justifications will grant an advantage to the institutionalised coalition vis-à-vis their opponents. Finally, as group members cooperate in the environment of diffuse reciprocity, they may gain benefits from pooled expert-

capital and rely on exchange when it comes to factual and technical proficiency. Consequently, an institutionalised set-up enhances the conditions of exchange that equip group members with better bargaining conditions.

'Rhetorical action'

Finally, I suggest that the third causality mechanism of increasing the bargaining power of institutionalised coalitions is "rhetorical action". Rhetorical action refers to the joint development of a set of claims and justifications of positions with the purpose of convincing an audience or depriving opponents of rhetorical materials (Schimmelfennig 2001, Morin and Gold 2010: 567). This definition indicates two important conditions of rhetorical action – the presence of an audience and mechanisms for convincing opponents. The concept of rhetorical action in the tradition of rational choice accounts was applied by Schimmelfennig (2001) in illustrating normative arguments used by member states in justifying their bargaining positions regarding Eastern enlargement. As rational actors, member states are not interested in normative goals *per se*, but try to maximise their utility. They rather conform to norms by following cost-benefit calculations in order to avoid punishment in terms of exclusion or reputational damage. Rational actors enter negotiations with the motivation of achieving their preferences. Actors persuade the public of the appropriateness of the bargaining position by making reference to a normative goal. One can assume that the public are only partly informed and use cues in evaluating the actions of their governments. By using normative appeals, foreign governments may rhetorically address the public in other countries and rhetorically entrap their governments. It is acknowledged that the rhetorical action model only works when there is another party, i.e. audience, listening (Schimmelfennig 2001). The audience may be, for example, the "European public, who takes the role of an arbiter" (Grobe 2010:11). Risse and Kleine (2010:710) point out that at least someone in the audience must listen and *adjust* behaviour or rethink her understanding. It does not, however, mean that the actor deliberately changes preferences. By developing functional persuasion theory, Grobe (2010:12) explains argument-driven changes in the bargaining process from a rationalist perspective, suggesting the concept of "functional persuasion". An important distinction from Checkel's (2001) model of persuasion is that functional persuasion occurs under conditions of uncertainty – when new causal knowledge becomes available. The persuader provides new causal knowledge as a justification of their position and may convince the persuadee of the validity of their claims. In the functional persuasion model the persuadee simply "alters his initial beliefs *without* changing preferences" (ibid.).

If the government presenting convincing justifications for their positions uses rhetorical action strategically, it can grant them a considerable bargaining advantage. A good argument here is not understood in light of the deliberative process that to a great extent leads in the direction of sociological constructivism explanations (Risse 2000; Checkel 2002), but in rationalist accounts – approaching the argument as a means of leading to "better understanding of the problem at hand" (Grobe 2010).

How can institutionalised coalitions apply rhetorical action to enhance their bargaining power? In order to commonly pool norm-consistent arguments, a "forum" is necessary (Thomas 2009). In other words, a single actor is less successful than a group where the physical environment of trust and norm-diffusion plays a role (Manners 2002). Morin and Gold (2010: 567) argue that "participants must share a 'common lifeworld', i.e. a set of fundamental norms and a system of beliefs against which they can weigh their claims. This 'common lifeworld' is framed through communicative action – a prerequisite of institutionalised coalitions. Due to the institutionalised conditions of coalitions, their members develop mutual trust. Institutional conditions amongst cooperating parties create incentives to be trustworthy and to engage in a process of argumentation. Thus, member states may use the institutional setup as an intervening mechanism in creating

norm-based arguments. Members of an institutionalised coalition do not take norms and rules for granted, as their behaviour is "motivated by self-defined political preferences" and is thus power-orientated (Schimmelfennig 2005: 830). Provided that the members of an institutionalised coalition share converging preferences, they may jointly develop stronger normative justifications for their positions acting as a group and thus rhetorically entrap their opponents.

By defining the conditions of institutionalisation and developing causality mechanisms drawing on three elements – the exchange of information, the pooling of expertise and strengthened normative justifications that may lead to rhetorical action – the article hypothesises that: The higher the degree to which a coalition is institutionalised, the higher its potential for increasing its members' bargaining power.

BRINGING PREFERENCES IN

The effects of institutionalised cooperation cannot be explained by leaving preferences aside because preferences are a "fundamental raw material" when starting negotiations (Naurin 2008: 20). It is widely assumed that preferences are additional, necessary variables. Preferences tell us what actors want out of negotiations. While institutions define structures, procedures and the rules of governance, preferences determine an actor's ideal points regarding the outcomes. In multilateral negotiations such as those of the EU, the difficulties in agreeing on common policies stem from the complexity of negotiations, i.e. the large number of actors with a broad range of preferences. Each government's preferences reflect the underlying interests of its domestic electorate.

Thus, preferences can be approached both as dependent variables and as independent variables. Preferences as dependent variables are relevant for the argument of this study only in the sense of explaining the impact of domestic electorates, with Council negotiations indirectly reflecting the interests of the domestic constituency. Governments, in fact, have little flexibility in making concessions beyond the lines of their national preferences. Governmental preferences mainly reflect the economic interests of states. Governments often state their preferences publicly (Schneider 2011: 11), which puts further constraints in fulfilling their promises. However, the importance of geopolitical interests and ideology should not be underestimated. Approached as independent variables, preferences can directly affect bargaining power when strategically used by negotiation parties in the international arena. For example, member states demonstrating high preference intensity and commitment to their preferences gain a bargaining advantage (Bailer 2005, Thomas 2009). Presenting extreme positions is, however, a risky tactic, since the member state may be ignored. When dealing with the direct effects of preferences on bargaining power, Schelling (1960) introduces the "paradox of weakness" and hypothesises that domestic constraints can grant advantage at the international negotiation table (in Bailer 2005).

This article applies preferences as *intervening variables*, i.e. it does not explain the direct effects of preferences on the bargaining outcome but approaches preferences as conditions under which institutional settings can exert influence on outcomes (König and Bräuninger 1998). In other words, preferences determine how (and if) member states cooperate in power-pooling endeavours.

In EU negotiations the interaction between member states starts with defining policy preferences that are revealed in Council working groups as initial positions. Since enlargement, the heterogeneity of policy preferences has increased, with the complexity of reaching a compromise on a proposal increasing accordingly. Moreover, the outcome is determined not only by a single state's preferences and the capacity of the government to pursue them; as Moravcsik (1997:523) has noted, governments must think about their positions "within a structure composed of the preferences of *other*

states". Since intergovernmental bargaining is characterised by asymmetrical interdependence, it is assumed that negotiations will be more effective in environments where information is distributed widely. For this purpose, actors need to cooperate. Agreement to interact and cooperate is explained as part of a strategic choice of rationally acting states. Interaction amongst governments can be conceptualised as a cooperative game of framing coalitions (Saam and Sumpter 2009: 357). The logic behind selecting cooperation partners on preference-proximity is highly power-based: rational actors aim to influence negotiation outcomes, therefore they select like-minded peers, i.e. member states with converging preferences, in order to aggregate voting power to commonly shape future policies. A coalition framed by states that share preferences is perceived by outsiders as more credible, since it is less likely that splinters can fragment the group (Odell 2010: 625). Thus, *agreement to cooperate* is an important part of the strategic reasoning of rational states.

I assume that the policy preferences of member states are important explanatory factors for understanding the effects of institutionalised cooperation. Acting rationally, member states engage in power-pooling mechanisms only when preferences are close. Provided that the convergence of underlying preferences is a necessary pre-requisite for cooperation, this article hypothesises: The higher the degree of homogeneity of policy preferences amongst the members of a coalition, the more likely it is that cooperation will produce a bargaining advantage.

STAGES OF INTERACTION AND BARGAINING POWER

Both theories of negotiations and studies of EU decision-making acknowledge the importance of the pre-negotiation stage (Zartman and Maureen 1982; Shell 2006; Meerts and Cede 2004). According to Schiff (2008: 388), the goal of the pre-negotiation stage is to trigger the perceptions of the parties about the possible outcome of negotiations. Moreover, the pre-negotiation stage may lead to a common understanding among the actors engaged, within which the final and formal agreement will be sought (Balvoukos and Pagoulatos 2008). Member states' cooperation at working level grants them a better opportunity for exchanging expertise on the technical details of a dossier (Häge 2008). Informal rules of decision- making foresee that intensive negotiations take place on the lower levels of the Council organisation. Furthermore, cooperation networks among experts and civil servants of the particular dossier are stronger than the political level cooperation due to higher frequency of meetings. Lewis (2010: 655) points out that the officials who meet more frequently may also have a higher "interpersonal and normative dynamic". According to the estimates of Beyers (2005:904), 70 to 80 per cent of all issues are settled in the lower levels of decision making and do not reach the ministerial level. In practice, it means that the Council working groups and COREPER are real arenas for inter-state collaboration in terms of information and expertise exchange. Some studies indicate that well-developed communication networks are also present at the committees' level (Elgström *et al.* 2001). Acting rationally, member states will strive to cooperate within the established institutionalised frameworks as early as possible, i.e. at the decision-level that bestow them with most benefits. Taking into account these conditions, this study hypothesises that the lower the decision-making level for inter-state cooperation within institutionalised coalitions, the higher the possibilities of enhancing their bargaining power in the negotiations.

This study applies sociological constructivism as an alternative explanation of the effects of institutionalised cooperation on actors' bargaining power. Given the same necessary institutional conditions, i.e. a high degree of insulation, repeated interaction, and common goals- one could expect that, as a result of persuasion, member states would shift their policy preferences after the coordination within institutionalised groupings.

In contrast to the rational choice explanation, where institutions facilitate a beneficial position for members without influencing their preferences, social constructivism claims the cooperative institution has persuasive strength that shapes members' preferences. The alternative hypothesis would support the line of sociological constructivist thinking that the strength of institutionalised coalitions rests on their social interactions, social trust, and common historic legacy, which may result in a shift and convergence of the preferences of their members. According to the sociological constructivist approach, actors adopt certain practices that change their identities and interests (Wendt 1994: 384). Rule-guided behaviour differs from strategic behaviour in the sense that actors are not striving to maximise or optimise their given preferences (Risse 2004), but choose behaviour that is 'appropriate' (March and Olsen 1989: 162). Institutions are supposed to shape actors' preferences. The feeling of "we-ness" (Beyers 2005: 899), repeated interaction and socialisation would, according to the sociological constructivist accounts, result in a shift of actors' preferences due to persuasion. By applying sociological constructivist interpretation one could expect that the conditions of institutionalisation, such as a high degree of insulation and repeated interaction, would shift member states' preferences and enhance the bargaining advantage due to persuasion. Alternative hypothesis (AH): the higher the degree of institutionalisation, the greater the increase in bargaining power through persuasion and convergence of preferences.

INSTITUTIONALISED TERRITORIALLY CONSTITUTED COALITIONS IN THE EU

The aim of this section is to give general insight into two of the widely acknowledged territorial groupings in the EU. The formation of institutionalised territorially constituted coalitions in the EU decision-making dates back to the 1950s - the creation of the Benelux cooperation and the German-French partnership. The accession of the Nordic countries to the EU and the Eastern enlargement has encouraged further regionalisation (Antola 2009). With a large number of member states the socio-economic conditions and challenges in different parts of the EU differ. This heterogeneity has contributed to the aggregation of policy preferences across a geographical axis. Numerous studies have acknowledged a distinct Nordic-South divide with relatively consistent and durable coalitions (Kaeding and Selk 2005; Thomson 2009; Veen 2010; Blavoukos and Pagoulatos 2011). In terms of territorial alignment, the most prominent representatives are the Benelux group, the Nordic-Baltic grouping, the Visegrad group that emerged in 1991 and gained impetus with the enlargement in 2004 (Klemenčič 2011; Antola 2009), and a rather coherent Mediterranean bloc (Blavoukos and Pagoulatos 2011). All these regional formations have some common features: as relatively persistent coalitions, the territorially constituted coalitions operate within a regional framework among the neighbouring countries. Apart from geographic affinity, these persistent coalitions most often share socioeconomic preferences or, as Veen (2010: 10) puts it, "cooperate on the level of political space". Territorially constituted coalitions are composed of the same members and are rather stable over time. The choice of coalition members here depends "not on what you want, but who you are" (Naurin 2008: 2). The choice of peers is guided by common historic and regional legacy and therefore produces 'in-group' dynamics. Selection of cooperation partners within the territorial coalitions follows the logics of 'neighbours first'. Yet, this intergovernmental cooperation in subgroups rests on purely rational calculations without governments' readiness to sacrifice their policy preferences to collective solidarity. Among others, the two most prominent examples of institutionalised territorially constituted coalitions are the Benelux and the Nordic-Baltic (NB6) cooperation frameworks.

The Benelux group

Established by the Treaty of the Benelux Economic Union (BEU) in 1958, the Benelux cooperation is the most highly formalised territorial partnership in the EU. The original intention of framing a regional union was to promote coordination and pursuit of a joint policy in economic relations with third countries (Wouters and Vidal 2008: 18). Apart from the economic cooperation that is defined by the BEU Treaty as the key objective of intergovernmental cooperation in the region, another, more informal, part encompasses Benelux political cooperation. It aims to achieve coordinated positions in the multilateral negotiations. Exchange of views on the EU policies is a part of the Benelux political cooperation. Though the Benelux Union is not considered to be an organisation (ibid.), the Benelux Union Treaty foresees both structural and procedural elements, demonstrating a high degree of institutionalisation. The conditions of institutionalisation are further supported by a budget for fulfilling the operational objectives of the Benelux Union. Furthermore, the goals of institutionalised cooperation are jointly defined by framing a work programme. Apart from the internally well-defined goals and procedures, Benelux has established a legal link between the Benelux Treaty and EU law. The so called "enabling clause" grants the Benelux cooperation a particular status that in Article 233 of the Treaty of Rome enabled the integration between the Benelux countries without qualifying it as discrimination against other member states. Benelux states have further negotiated the reference in the Lisbon Treaty[1], maintaining the enabling clause for the Benelux also in the future. Article 350 of the TFEU is not, however, extended to other territorial groupings in the EU e.g. Visegrad or Nordic-Baltic.

The formal institutionalised agreement is relevant background for cooperation in the EU policy context because it creates a permanent consultation structure and defines channels for cooperation. Cooperation on EU issues is adjusted to the actors of EU decision-making, i.e. political leadership, EU coordination offices, COREPER ambassadors, staff of the Permanent Representation to the EU, and line ministries in charge of particular dossiers. While maintaining freedom of choice in selecting cooperation peers, the treaty favours the notion: "to consult each other" or even "give priority to consulting Benelux first" on the topics that are on the EU agenda (Altes 2007: 23). The most common consultation format is the so called "Benelux breakfast" - meetings of Prime Ministers, Ministers of Foreign Affairs and other ministers of different Council configurations prior to the Council meetings in Brussels.

In EU negotiations Benelux cooperation has been distinctive through jointly issued political statements, i.e. Benelux memoranda (Lehtonen 2009: 68), with examples of power pooling within institutional issues and Justice and Home Affairs. The preference proximity is among the most important conditions for successful joint action of the grouping. Hence, even the most formalised institutionalised cooperation cannot yield bargaining power to its members if the preferences are divergent.

Nordic-Baltic cooperation format

With a less formalised structure than Benelux cooperation, the Nordic-Baltic grouping (NB6) still represents one of the most institutionalised groupings in EU negotiations. The NB6 is often seen and approached as two separate territorial partnerships, i.e. the Nordic and the Baltic group. This section explains the evolution of the regional cooperation that consequently led to the formation of the NB6, the current formally acknowledged regional cooperation framework in the EU policy context (Birkavs and Gade 2010). Regional cooperation originated from Nordic cooperation and underwent several periods of structural changes and adjustments. After a failure to agree on regional economic cooperation in the 1960s, the Nordic countries managed to find common ground for political and cross-border cooperation by establishing regional cooperation structures, e.g. the Nordic Council of Ministers. Institutionalised interaction boosted the contacts

and exchange among the countries and developed a distinct Nordic voice internationally in terms of their voting cohesion in multilateral negotiations in the UN (Laatikainen 2003). After the Baltic States' accession to the EU, the core of regional cooperation shifted to the Baltic Sea region, which was more suitable to the geopolitical situation after the enlargement. Since 2004 a new institutionalised cooperation framework has emerged, coordinating the positions of six member states: Sweden, Finland, Denmark, Estonia, Latvia and Lithuania, known under the acronym of NB6. Contrary to Benelux cooperation, the NB6 framework does not operate on the basis of any formalised agreement. The cooperation format of the territorially constituted cooperation framework is highly informal and rests on an 'in-group' socialisation culture and 'a duty to consult' the partners (Naurin and Lindahl 2007: 6). NB6 consultations on EU issues are held either in the capitals on the expert and senior civil servant level or within the network of the Permanent Representations in Brussels. The civil servants tend to contact their counterparts at the ministries of the neighbouring countries in order to exchange information about their preferences and acquire knowledge on the technical and procedural aspects of the dossier. The most stable regional interaction format is the "NB6 breakfast", held prior to the Foreign Affairs Council meetings and the European Councils. As with Benelux cooperation, a convergence of preferences is a necessary condition for effective cooperation.

The NB6 is often perceived by the international community as a group. Following the initiative of the United Kingdom, a summit among the NB6 and the UK was organised in London with the aim of discussing political and economic issues of mutual interest (Bagehot 2011).Territorially constituted coalitions, therefore, possess the potential to use the reputation of 'acting as a group' to their advantage.

CONCLUSIONS

In this article I have developed a theory on the effects of institutionalised territorial coalitions on bargaining power in EU Council negotiations. Drawing on rational choice explanations, I have argued that the degree of institutionalisation matters for the efficiency of cooperative action, and that the bargaining advantage is enhanced through three mechanisms – exchange of information, sharing expertise and the aggregation of justifications through rhetorical action.

The most substantial focus in the theoretical model was put on the degree of institutionalisation of inter-state cooperation. Searching for power enhancement, the members of institutionalised coalitions cannot always rely on blocking the decision at the end-game because their combined votes often do not reach the necessary voting thresholds. Hence, the institutional setting provides additional power resources beyond their voting power. According to the functional logic, the creation of institutions helps the negotiating actors increase the efficiency of achieving common goals by overcoming collective action dilemmas, such as, for example, uncertainty and information asymmetries or a shortage in expertise. Since the institutions provide specific rules and structures, they can address shortcomings in the negotiation environment that individual states fail to solve on their own. To illustrate the argument, the article provided some insights into the structure and functioning of two territorial coalitions present in EU decision-making, the Nordic-Baltic group (NB6) and the Benelux group.

A common trait of all institutionalised coalitions in the EU refers to the institutional conditions that facilitate mutual exchange. Compared to *ad hoc* coalitions, institutionalised coalitions depend on structural, more frequent, durable and coherent interaction features, often stemming from the pre-existing regional cooperation frameworks that can be formalised by a mutual agreement or even an in-group treaty, as shown in the example with the Benelux group. Arguably, one of the most interesting and essential questions in studying the territorially constituted coalitions is related to the

policy preferences of the grouping's members. A high degree of institutionalisation alone is not sufficient for yielding bargaining power if not supported by converging preferences amongst the grouping's members.

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[1] Art.350 of the TFEU: "The provisions of the Treaties shall not preclude the existence or completion of *regional Unions* between Belgium and Luxembourg, or between Belgium, Luxembourg and the Netherlands, to the extent that the objectives of these regional Unions are not attained by application of the Treaties".

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A common vision of energy risk? Energy securitisation and company perceptions of risk in the EU

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Abstract

In the European Union, energy security is provided by EU institutions, member states and commercial energy companies. However, despite the important role companies play in the provision of European energy security, it is not immediately evident to what extent the interests of the internationally operating energy firms are in line with the energy security preferences held by EU institutions. Analysing this relationship from the perspective of perceptions of energy security and energy business risk, this paper examines the extent to which there is a convergence between the energy securitisation of the European Commission and the observation of business risk as perceived by major European and international energy firms. It finds that while there are some significant areas where Commission securitisation contradicts energy company interests (e.g. climate change and energy prices) there is also a high degree of convergence, in particular regarding perceptions of upstream political risk.

Keywords

EU external energy policy; energy companies; energy security; securitisation; energy risk; political risk

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INTRODUCTION: THE PUBLIC/PRIVATE PROVISION OF ENERGY SECURITY IN EUROPE

Energy is a largely distinctive area of the European security agenda. Unlike most traditional aspects of security such as military defence or intelligence, energy security (in terms of adequate supply at a reasonable cost)[1] is provided by a complex nexus of commercial companies and public actors. While supplies of oil, gas or electricity are divisible, tradable commodities and private goods, the security of their supply is essentially a public good for which member states and the EU institutions are ultimately responsible.[2] In the EU context, internationally-operating energy companies are responsible for the private provision of energy to and within the EU market and EU institutions and member states are responsible for creating and maintaining the conditions that allow them to carry out their market-based business functions, including security of energy supply (see Article 194 of the Treaty on the Functioning of the European Union).

This article examines a key relationship in the broader complex association between energy companies and the EU. While the interaction between public and private actors lies at the heart of European energy security, with the exception of a small number of analyses (such as Youngs 2007, 2009) little is known about the multifarious contours of these relationships. This article seeks partially to address this inattention by investigating the degree of convergence between European Commission energy securitisation and energy company perceptions of energy risk.[3]

This specific attention to the European Commission's securitisation discourse (2002 - 2011) reflects the Commission's role as the key agenda-setting actor within the institutional make-up of the EU. While it is true that the European Union offers an "unusually large number of access points for agenda-setters" (Daviter 2007: 655), its institutional role as policy initiator gives the Commission a particularly important position as a securitising actor in the EU. In addition, however, whilst not a Commission official,

this article also considers the securitisation discourse of the former High Representative for Common Foreign and Security Policy, Javier Solana, given his particularly important high-profile role as a supranational agenda-setter in foreign policy during the time frame analysed. In investigating these securitisation-risk perceptions, this article sheds light on the under-researched relationship between private and public actors in European energy policy.

Hypotheses

This article investigates the extent to which European Commission energy securitisation converges with the risk perception of energy companies. As will be demonstrated below, analysis of this convergence and divergence reveals a mixed picture. In a number of areas, EU actors and energy companies exhibit perceptions of insecurity that are unrelated to one another. In other cases, Commission securitisation runs directly counter to energy company risk. Nevertheless on other issues, specifically those concerning political risk in upstream producer countries, the European Commission and energy companies demonstrate a high degree of overlap in their identification of energy insecurities.

In terms of hypotheses, this article argues that the high level of convergence on external political risk identified occurs for two interlocking reasons. Firstly, this policy dimension sees the greatest mutual interdependence between the Commission and energy companies and therefore risks to companies in this area also present themselves as risks to the EU. Secondly, and in a more political sense, this article argues that the Commission's securitisation discourse in this area also represents an attempt to reflect the core-interests, and thus garner the support, of energy companies, and by extension member states, actors central to the development of a Europeanized energy policy. Without a strong focus on the risks faced by these actors, it is unlikely that Commission securitisation would have much impact on veto-player officials in energy companies or member states' capitals.

However, Commission discourses represent something of a paradox here. Despite the securitisation of the risks that energy companies face, the companies themselves are rarely securitised in Commission texts. Whilst needing to reflect company interests, this seeming contradiction is most likely explained by Commission desires not to be seen as too close to the energy sector, particularly in light of the broader debates surrounding the supposed "normativity-outcomes gap" in EU external relations (Bailey & Bossuyt 2011).

The first section below outlines the analytical framework based on the Copenhagen School conception of securitisation (Buzan, Wæver & de Wilde 1998). It justifies the utilisation of this framework and demonstrates how it can also be used to analyse the risk identification of commercial actors. The second section analyses a number of European Commission (and Solana) texts and high-level speeches on energy noting the security threats identified and the referent objects of securitisation. The third section analyses energy company risks identified by a number of international energy companies in company reports and submissions to public consultations.[4] The final section explains the convergence seen between the EU and energy companies on issues of political risk,

drawing attention to the discursive energy security framing of the Commission and the interdependence between the EU and commercial actors in external energy policy.

RESEARCH FRAMEWORK: IDENTIFICATION OF RISKS AND THREATS

This article is interested in the threats and referent objects of security identified in European Commission energy securitisation and, while not strictly securitisation in the International Relations sense of the word, the similar subjective identification of business risk by a number of major-globally operating energy companies. This article does not engage in the objective evaluation of risks to these actors, but rather utilises the methodology of securitisation to demonstrate the subjective interpretation of insecurities of both sets of actors and how these interpretations overlap in the areas related to political risk in upstream producer countries. As such, this section sets out the theoretical basis for this article in securitisation theory (Buzan, Wæver & de Wilde 1998). In doing so, it covers the methodological approach of securitisation that is employed in the analysis of the EU's energy securitisation and, in a looser form, energy companies' business risk identification.

Energy security or energy securitisation?

In the 1980s, both deepening globalisation and the ending of bi-polar Cold War competition sparked a fierce debate in the field of Security Studies relating to the scope of the subject. Up until that point, what is now often referred to as Traditional Security Studies (TSS) had been the dominant approach to the study of security, viewing security essentially as concerning military threats to states (Walt 1991). Much like the (neo-)realist paradigm the core assumptions of which traditionalists broadly mirrored, TSS was avowedly objectivist and rationalist, identifying and analysing threats that were considered to be "out there" (Smith, 1999: 79). However, the changing geo-political landscape of the 1980s and 1990s brought with it several new strands of security thinking that challenged TSS through the advancement of a so-called widening agenda (Walt 1991: 213; Buzan, Wæver & de Wilde 1998: 2-4; Smith 1999; Ullman 1983; Buzan 1983).

Whilst the perspectives of those inclined towards a wider interpretation of security did not constitute a cohesive school of thought, they were united in their call for a broader recognition of both what should be the referent object of security and an extended understanding of security threats (Ullman 1983: 129; Smith, 1999: 83-96). These 'wideners' argued that both the state and other referent objects, most notably individuals and societies, were threatened in several quarters by non-military threats, in addition to the persisting military ones. Consequently, it was deemed that academic and policy recognition both of what constituted a threat to security and who faced these threats had to change (Buzan, Wæver & de Wilde 1998: 2-3).[5]

One of the most influential post-widening areas of security scholarship derives from the refocusing of security onto securitisation, commonly associated with the Copenhagen School (Smith 1999: 85; Buzan, Wæver & de Wilde 1998). Securitisation theory sees security as a discursive act, in the sense that "labelling an issue as a security threat imbues it with a certain sense of urgency and legitimises the use of special measures

outside the usual political process to deal with it" (Smith 1999: 85). Securitisation theory thus argues that any public issue, including the supply of energy resources, can be placed on a spectrum ranging from non-politicised, through to politicised, denoting that something should be the object of public policy, to securitised where it is argued that an issue warrants being placed 'above politics' or being subject to a 'special kind of politics' (Buzan, Wæver & de Wilde 1998: 23). 'Securitisation' theory holds that this process requires both a securitising move, that is, the presentation of an argument that represents a particular issue as a security threat, and the acceptance of that argument by a relevant audience (Buzan, Wæver & de Wilde 1998: 25). Correspondingly, the identification of energy security risks highlighted in this paper is in essence the analysis of securitising moves - at least in the case of the EU actors analysed.

Similarly, Wolfers (1967: 147) identified that the security analysis has both objective-rationalist and subjective-interpretivist dimensions depending on whether one is trying to study 'objective really-existing' threats or actors' subjective interpretations of them. In this sense, the objective study of security was about "measuring the absence of threats to acquired values", whereas the subjective was about "the absence of fear that such values will be attacked" (Wolfers 1962: 151). Securitisation, as per the Copenhagen School, entails a similar ontological distinction from both traditional and other widening schools of thought that focus on measuring the absence (or presence) of threats or risks, however widely defined. The Copenhagen School moves the debate on to the analysis of deliberate, subjective constructions of security through a process of securitisation (1998: 24). The securitisation of an issue therefore, does not imply that an issue objectively is a security threat (and that is not the purpose of this article) but rather suggests that it is subjectively perceived to be such a threat.

By making security dependent on a traceable process of threat identification, and acceptance, rather than an objective assessment of threat, securitisation theory allows for both the widening of the referent objects of security and an appreciation of a broader number of security threats (Buzan, Wæver & de Wilde 1998: 5). As mentioned above, the analysis that follows in this article tries neither to measure "the absence of threats" in an objective sense nor to assess the success of Commission securitisation (for an example see Natorski & Herranz Surrallés 2008). Instead, what follows is an analysis of Commission attempts to securitise both a wide number of risks related to energy and a number of different referent objects, and a comparison of these securitising moves with the risk identification of companies.

The energy risk categories developed in this article are derived from a discourse analysis of the texts in question and relate to those risks that both occur most frequently in Commission discourse and those that are most heavily stressed. The risks of increasing dependence and global demand are given particular focus as they represent broader overarching risks in which the other more specific risks are often framed. It should be noted that the focus on securitisation employed in this paper means that a number of energy security risks, including those potentially created by the Commission or energy companies, are excluded from the analysis as they are very unlikely to be raised by these actors. Given the focus of this paper is on the convergence (or otherwise) of discourses this analysis falls out of the scope of this paper.

Energy company risk identification

Assessing perceptions of energy business risk is simpler than analysing Commission securitising moves. While the EU represents an overlapping lattice of different actors, all of whom can be securitised against various different threats and risks, companies are both the securitising actors and (self-)referent(ial) objects of the risks they identify. The presentation of these risks in the company reports examined is also not strictly a case of securitisation as companies are not trying specifically to instigate a policy response in these instances. Indeed, they are compelled to attempt to give an accurate reflection of their business risk - mostly for the benefit of investors.[6] Conversely, however, their responses to European Commission public consultations do fit the model of securitisation more closely.

Nevertheless, in both cases the subjective identification of business risks by international oil companies provides a suitable basis for comparison with the subjective securitisation of the Commission. Indeed, the companies themselves refer to the bounded subjectivity of their statements when they note that expressions of risk are 'forward looking statements' that are subject to unpredictable change (Eni 2009: ii; Royal Dutch Shell 2009: 3).

However, it should be noted as an important methodological point, that while companies and the Commission perform securitising speech acts in the same problem areas (climate change, competition etc.) the two are not always securitising the same specific problem-issues or framing these problems in the same way. As will be discussed further below, it is sometimes the various EU responses to major energy-related problems, rather than the problem itself, that is securitised by companies. As such, the analysis that follows should not be seen as a direct comparison between identification of the same specific problems by the Commission and the companies, but rather an investigation into the similarities and differences between sometimes convergent and often competing securitisations in the same overall problem areas.

The classification of company risk used in this article is a modified version of the risk framework utilised by Eni in their annual reports. Eni's typology breaks down company risks into a number of overarching and distinct risk-areas, facilitating the systematic analysis of specific instances of that risk-area within each of the broader categories. To facilitate the analysis undertaken in this article, the section on company risk below modifies this approach and further divides these risks into: those that conflict with Commission perceptions; those that show no obvious tension with Commission security threats; and those where the risks identified by the two sets of actors overlap.

Instrumental intent? The political framing of securitisation discourses

Finally, it should also be noted that both Commission securitisation and company risk-identification represent a series of deliberate political acts. The Commission is not compelled to securitise a given issue as securitisation represents just one, albeit particularly potent, option amongst the many ways of framing a particular issue. It is therefore prudent to consider the instrumentality in Commission discourses, particularly in the areas where Commission and company discourses overlap. Here the concept of policy framing is useful (Daviter 2007: 2011). This draws attention to the fact that policy issues are not "out there" but rather that actors, when engaged in the framing of a

policy issue, undergo a process of "selecting, emphasizing and organizing aspects of complex issues according to an overriding evaluative or analytical criterion" (Daviter 2007: 654). A key evaluative criterion applied in the case of European Commission public discourses is likely to be whether and how political statements further Commission objectives, most notably in terms of the pursuit of Europeanized (in the sense of EU-ised) solutions to energy policy and the acquisition of greater Commission competences. Likewise, it should be noted that companies also engage in a form of framing, most notably in their response to public consultations. Certain issues are stressed and others given less attention. They too have certain evaluative criteria in their public pronouncements, including whether communications are likely to further their business interests and market position. As discussed below, it is important that these factors are considered, particularly in areas of convergence between the Commission and companies.

EUROPEAN COMMISSION ENERGY SECURITISATION

There is a wide range of energy insecurities highlighted in Commission public documents.[7] Certain risks feature more prominently than others, however, and most are framed through two over-arching risks: increasing dependency and increased global demand. This section initially addresses these two risks as they are the major concerns that most other threats are framed within. Subsequently, this section then focuses on climate change, geopolitical risks and upstream political risks such as producer stability and investment risk that constitute the other major challenges highlighted.

Over-arching risks: increasing dependency and rising global demand / prices

In its securitisation discourse, the Commission stresses the increasing dependency of the EU on foreign sources of energy. Commissioner Oettinger notes, for example, that "our [European] imports are rising while our oil and gas production is declining" (2010b: 2) and that this situation is likely to increase significantly over the next decade (2010d: 2). Javier Solana highlighted in 2008 that Europe is "increasingly dependent on energy imports" (2008: 1). Much of this analysis is rhetorically supported by the results of forecasts, with former External Relations Commissioner, Benita Ferrero-Waldner (2008), claiming that Europe will be dependent on imports for 64 per cent of its energy by 2030 and Commissioner Piebalgs (2006: 2)putting the number at 70 per cent. The Commission argues that the EU will be 65 per cent dependent on external sources of energy by 2030, with gas dependence rising from 57 per cent today to 84 per cent and oil dependence rising from 82 per cent to 93 per cent (EC, 2007: 3).

However, the Commission documents paint at first glance a somewhat paradoxical picture regarding the distinction between 'dependence on' and 'interdependence with' energy suppliers. On the one hand, dependence as described above is securitised in European Commission and Council discourses. The title of the publication Let us Overcome our Dependence (EC, 2002) clearly demonstrates, for example, how the Commission often securitises this dependence on external supplies. At the same time, the Commission frequently refers to the fact that relationships with producer states are characterised by interdependence (EC 2008a: 7; EC 2006: 15; Ferrero-Waldner 2008; Piebalgs 2008: 4). This interdependence, the Commission asserts, is born out of the

mutual relationship between Europe's need for security of supply and the producer's need for security of demand (EC 2008a: 7). Ferrero Waldner (2008) argues specifically that Russia is a 'significant' EU partner that 'needs' the European Union. She asserts that: "Our markets take around two thirds of Russian gas exports, and the revenues from our custom are vital to Russia's economic growth. Managing this interdependence will be an important challenge" (Ferrero-Waldner, 2008).

Despite these claims of interdependence, several of the EU documents somewhat inconsistently also talk of the need to establish relationships with energy producers based on "interdependence and mutual self-interest", suggesting that some relations at present are not based on these foundations (Piebalgs 2008: 4). The 2011 communication on external energy policy notes that relationships with suppliers "should be mutually beneficial, reflecting interdependence" [emphasis added] (EC 2011a: 9).

The seeming contradiction between Commission claims of being dependent whilst also being interdependent, whilst at the same time desiring interdependence is somewhat alleviated by thinking of interdependence in asymmetrical terms (Nye 2007). The Commission is correct to assert that the EU is dependent on foreign suppliers, particularly in the short term, just as it is right to characterise the relationship broadly as one of interdependence. However, the EU's energy relationship with its suppliers is perhaps best characterised as being one of asymmetrical interdependence. This is especially true in the EU's relationship with Russia. The EU relies on Russian gas just as Russia relies on revenues from the EU. However, the EU faces a greater immediate short term risk (and impact) in terms of disruptions in Russian supplies to the EU, whereas Russia faces a mid to long-term risk in terms of reductions in revenues from the EU.

The Commission documents suggest that Europe actively desires interdependence to alleviate this vulnerability, but an interdependence that is nonetheless less asymmetrical than at present. Furthermore, it is the potential political opportunities that this asymmetry presents that unsettles the Commission and leads to (inter)dependence being securitised. As Ferrero Waldner notes "there is nothing wrong with importing energy per se, provided that we are talking about open, transparent and competitive global markets. However, in today's world we are often not" (2008).

The second 'over-arching risk' mentioned extensively throughout the Commission documents is increasing global demand for energy. Piebalgs (2008: 2) notes that rising energy demand is one of the most serious challenges undermining stability in energy markets. He asserts that global demand is increasing by 1.9 per cent year on year and that at current rates an extra thirty-three million barrels of oil may be needed every day relative to current levels (Piebalgs 2008: 2). According to Piebalgs, gas demand faces an even more worrying picture with an annual usage rise of 3 per cent (Piebalgs 2008: 3). Ferrero-Waldner echoed these statements in 2008 when she noted that if China and India consumed the way Europeans do, adjusting for population, "we would need two planet earths to cope" (2008). More recently, Commissioner Oettinger has argued that "rising demand in developing countries is diverting supplies away from Europe" and that even if the worst effects of this shift are managed the EU "will face sharp price increases" (Oettinger 2011: 3).

The Second Strategic Energy Review mentions that a combination of energy resource depletion and increasing demand could lead to a situation where the "demand-supply balance will become increasingly tight, possibly critically so" (EC 2008a: 15). The 2011

Communication on External Energy Policy mentions several times the threat of heightened global demand, rising prices and increased volatility driven by rising populations and improving living standards in developing countries (EC 2011a: 2: 14). In this vein, rising demand in both producing states such the countries of North Africa and major consuming countries such as China and India is often mentioned (EC 2011a: 7, 11). The Commission notes that "the balance in energy markets is changing fast" and that a strong response is needed from the EU "to tackle the challenges it creates" (2011a: 11).

The threat of climate change is also highlighted extensively throughout the EU documents reviewed. The 2006 Green Paper notes that the Earth is getting warmer and all regions of the world including the EU will "face serious consequences for their economies and eco-systems" (2006: 3). Highlighting the risks to infrastructure posed by climate change, the Commission notes that all new infrastructure needs to be 'climate-proof' and take into account the impacts of changing climatic conditions (EC 2008a: 6).

Taking a more political tone, Ferrero-Waldner (2008) and Solana (2008: 3) both argue that climate change exacerbates risks as a 'threat multiplier'. Solana remarks that climate change opens up possible territorial disputes, particularly in the Arctic (2008: 3). He adds that climate change directly affects European interests by worsening existing tensions in countries and regions which are already fragile and conflict prone (2008: 3). Ferrero-Waldner asserts that climate change, by producing increased annual temperature fluctuations, aggravates other energy risks such as increasing global demand as consumers use more energy to stay cool in hotter summers and warm in colder winters (2008).

Political risks: geopolitics

In emphasising the risk that energy policy is frequently subject to and negatively affected by geo-political decisions and tensions, attention is often drawn to the geo-political dependence on a small number of external suppliers. The Second Strategic Energy Review (2008a: 3-4) notes on several occasions that a number of member states are overwhelmingly dependent on a single supplier (Russia) for energy. In An Energy Policy for Europe (2007: 4) the Commission talks of price rises and volatility being the consequences of "progressive concentration of hydrocarbon reserves in a few hands". Hinting at the political risks associated with this dependency on a few external suppliers, former Energy Commissioner Piebalgs notes that "80% of the world's oil reserves and a similar proportion for gas are in the hands of state-controlled companies" (2008: 2). In cases where the dependence on a small number of supplier states is not mentioned explicitly, the need to diversify sources of supply - which is a policy corollary - is often highlighted (Ferrero-Waldner 2008).

A further aspect of this geopolitical dependence also concerns the shipment of (gas) supplies, most notably in transit routes that traverse the Ukraine (EC 2009: 2). The Commission Staff Working Document on the January 2009 gas crisis between Russia and the Ukraine is very explicit in presenting the EU's dependence on Ukrainian transit, highlighting that the EU depends on the Ukraine for the transit of 80 per cent of Russian gas supplies to the EU - roughly a fifth of total EU gas supplies (EC 2009: 2). It is clear that the risks of this dependence are not spread uniformly throughout the EU however.

While the Commission argues that in the 2009 supply disruption "a majority of member states were affected, directly or indirectly" it also highlights that a number of countries "notably Poland, Slovakia, Hungary, and above all Bulgaria and Romania" were most severely hit (EC 2009: 4). In the same document, the Commission notes ominously that "a repeat of the January 2009 gas supply crisis, from a similar or different cause, cannot be ruled out" (EC 2009: 16). In response to these risks, the 2010 communication on infrastructure priorities argues that diversification of supply routes leads to greater competition and security of supply, but also asserts that "the defensive attitude of gas producers and incumbent players in monopolistic markets hampers diversification" (EC 2010:32-33). Likewise, it also mentions that supplying gas and oil directly to the EU might entail new suppliers (such as Turkmenistan and Azerbaijan) "accepting high political risk linked to their geo-political situation" (EC 2010: 34). While this "geopolitical situation" is predominantly a euphemism for Russia, the country is not mentioned directly. A number of these EU diversification efforts, including the Southern Corridor, are said to be aimed at creating a more stable regional gas market in Central and Eastern Europe so that the CEE region becomes "less vulnerable to a supply cut through the Russia/Ukraine/Belarus route" (EC 2010:34).

Those individuals tasked with managing the EU's external political affairs, such as former Commissioner Ferrero Waldner, put more stress on the geopolitical aspects of dependence on transit routes and geopolitically-minded suppliers than those representing DG Energy (Piebalgs and Oettinger). This is perhaps to be expected given the more overtly political nature of their appointments. Ferrero Waldner linked the 'events in the Caucasus' (the Russo-Georgian War) of 2008 to European energy security concerns on two separate occasions during her 2008 speech to the UN on external energy policy (2008). She noted in 2009 that the risk of pipeline disruptions is likely to increase and that energy security has many facets including an 'increasingly political' element making it a 'foreign policy issue' (2009: 2).

However, the most strident exposition of the geo-political risks of dependence in the sample of speeches reviewed comes from Javier Solana (2008). He notes how the expectation of tightened energy demand is already triggering "all sorts of behaviour" and a "dash for gas" (2008: 1). He adds that "by 2020, world energy markets will be tighter, leading to more political tensions. In all scenarios the power of resource-holders is set to increase" (2008: 1). Solana also highlights the threat posed by other consumers, something rarely mentioned by Commissioners Oettinger and Piebalgs. He asserts that "big deals are being done every day" and that "future [European] options seem to be narrowing while others move in a determined manner" to secure "decisions on pipelines to exploration deals to strategic partnerships" (2008: 1). He also raises the nature of the relationship between Europe and its suppliers noting that "both markets and international politics depend on trust and in energy issues there is an obvious trust deficit" (Solana 2008: 3).

Solana saves his strongest rhetoric for discussions of the relationship with Russia whose energy policy[8] he argues "follows a tight script" with a sense of "strategic purpose" (2008: 2). He asserts that the "Russians see their strategy as a rational way to maximise rents" and that "there is justified concern across Europe about Russia seeming more interested in investing in future leverage than future production. Contrast Gazprom's strategic spending spree abroad with the lack of investment and waste at home" (Solana 2008: 2). This kind of language and direct reference to Russia is unusual

amongst the speeches and documents analysed as in most of the references to the political aspects of dependence on suppliers, the suppliers deemed to be a threat or to pose a risk are not mentioned directly.

Political risks: producer state stability

Solana (2008) also talks of the political risks inherent in being dependent on domestically unstable energy suppliers. Inherent to this discussion is the risk of both assertive producer state behaviour, such as enforced contract decisions or renegotiations, and risks that derive, not so much from the deliberate actions of suppliers, but rather from consequences of the nature of their regimes. Linking European energy security directly to the domestic situation in producer states, Solana (2008: 2) argues that the rent seeking and high levels of corruption seen in many energy producing states mean that they are "nine times more likely to suffer from violent conflicts than those that are non-resource rich" and that "nearly all experience political instability, poor governance and human rights abuses"– factors that have contributed to recent instability in the Middle East and North Africa. Solana points out that the rents derived from oil and gas revenues shield producer regimes from external pressure to improve good governance, including from the EU (2008: 2). Ferrero Waldner highlights that there is "growing resource nationalism and interference by the state in producer countries" and that Europe needs to integrate its energy markets to achieve the "bargaining power we need" (2008). The other commissioners and the documents reviewed touch on these issues of domestic instability but tend to do so more from the perspective of investment and legal stability rather than the political standpoint taken by Solana.[9]

Political risks: investment risk

Issues surrounding potential lack of investment are some of the key risks highlighted throughout European texts. Principally these investment issues highlight the sheer number and cost of investments needed to meet future energy demand in Europe and the investment openness and stability needed in partner states both to encourage investments and to ensure investment security.[10] Emphasising these factors, the Commission, quoting the International Energy Agency (IEA), notes that "the ability and willingness of major oil and gas producers to step up investment in order to meet rising global demand are particularly uncertain" [emphasis added] (EC 2007: 4).

The problem of investment confidence and stability is afforded significant focus in Commission public documents. This is hardly surprising given that most of the above investment will come from the private sector and, as such, investment security is of crucial importance. Upstream investment security is inextricably linked to regime type and domestic business practices as described by Solana above and the Commission affords significant tract to highlighting necessary developments in investment climate and stability (EC 2006:15-18; EC 2007: 4 & 24-25; EC 2008a: 7-8). While, when talking about investment stability and legal business security, the Commission does not often directly mention the instability present in producer countries and concentrates rather on provisions needed to address it, one can deduce both from Commission discourse and

the space allotted to these investment provisions, the importance placed on this area of energy risk.

The 2006 Green Paper talks of the need to use 'trade policy tools' to develop a more secure investment climate and the need to "improve the conditions for European companies seeking access to global resources" (EC 2006: 17-18). According to the Commission, provisions "based on the Energy Acquis and where appropriate the Energy Charter Treaty", need to ensure a balance between security of demand and security of supply and in doing so provide clear conditions for access to markets, dialogue on policy and market developments, dispute settlement and transit arrangements to ensure normal flows of energy "even in periods of political tension" (EC 2008a: 8). The need for legally binding mechanisms is highlighted in the 2006 Green Paper, both the first (2007) and second (2008a) Strategic Energy Reviews and the Communication on External Energy Policy (2011), reflecting contemporary investment stability concerns such as those evidenced by alleged recent assertive state behaviour in Russia and Kazakhstan (see for example, Domjan & Stone 2010).

REFERENT OBJECTS OF COMMISSION SECURITISATION

The Commission securitises a number of different referent objects in its energy security discourse. Europe and the EU are unsurprisingly commonly formulated (and conflated) referent objects. "An Energy Policy for Europe" notes that "energy is essential for Europe to function" and that "Europe is becoming increasingly dependent on imported hydrocarbons" [emphasis added] (EC 2007: 3). The documents refer also to the 'EU' as a referent object of security, but this formulation is marginally less common.

Echoing the trend towards a broader number of referent objects of security discussed above, these designations of 'Europe' and the 'EU' are frequently broken down into several sub-formulations. Firstly for example, Commission documents and speeches refer at times to the energy risk to European citizens. The 2006 Green Paper notes that the effects of the new energy landscape of the 21st century "directly affect everyone" and that "our [EU] citizens are affected by higher prices, threats to the security of energy supply and changes to Europe's climate" (EC 2006: 4). An Energy Policy for Europe (2007: 4) notes how energy is essential for every European and that projected rises in oil prices by 2030 could equate to an increase of EUR350 per annum in costs for every EU citizen above prices today.

Secondly, competitiveness, jobs and growth in the European economy are often mentioned to be at risk. The 2006 Green Paper notes that "secure availability of energy at affordable prices is crucial" for the promotion of EU industry and subsequently contributes to securing jobs and growth (EC 2006: 7). Likewise, An Energy Policy for Europe (2007) highlights that without action on the part of the EU in the face of a changing energy landscape the Lisbon Strategy for growth and jobs "will be more difficult to achieve" (EC 2007: 3). Current Energy Commissioner Oettinger (2010a: 2) notes that one third of Europe's economic activity and almost the whole European transport sector depends on oil.

Commission documents place great stress on the inadequacies of current energy markets and the need for future market development. Almost all documents identify risks to the sound running of energy markets and propose fully functioning markets

(especially the EU market) as one of the solutions to the European Union's energy dilemmas. It is often argued that the EU is affected through the sub-optimal operation of energy markets both at the European and international levels (EC 2011a: 2 & 4). The 2006 Green Paper asserts that only when fully competitive internal energy markets exist "will EU citizens and businesses enjoy all the benefits of security of supply and lower prices" (EC 2006: 3); the implication being that markets are both a referent object themselves (in their idealised sense) in that they are affected by externalities that cause a lack of investment and supply disruptions, and that they also (in their current 'underdeveloped' state) pose a risk to some of the other 'referents', namely European individuals and business consumers because of their poor functioning.

Thirdly, member states are also identified as being at risk. The dependency of several states on 'a single gas supplier' (Russia) is often stated in EU documents, as is the assertion that national level responses are unlikely to be able to ensure energy security (Oettinger 2010a: 2). Energy Commissioner Oettinger notes that the "challenges facing us are too overwhelming to be resolved by one member state" (2010a: 2). Likewise, the memo to the Second Strategic Energy Review argues that "specific national solutions are often insufficient" (EC 2008b: 2). Of course, member states exhibit substantial differences in their levels of energy dependence, relations with producers and the risks they face in energy policy. The EU at times draws attention to the greater precariousness of some member states over others (e.g. Bulgaria, Poland and Slovakia), particularly in terms of dependence on Russia (EC 2010: 4). However, overly stressing the diversity of risks facing member states does not necessarily serve the Commission's interest in fostering both solidarity and a common approach to European energy policy. Rather, in much of its discussion on the risks to member states, the EU frames energy security risks as being only resolvable through a common, Europeanized approach between EU member states. Of course, this promotion of a common EU approach also reflects the Commission's preference for greater levels of community competence.

However, despite being the immediate beneficiaries of a number of EU policies and notwithstanding the stress on increasing dependence on imports (towards which companies contribute in both production and delivery),[11] energy companies are rarely mentioned in official EU documents, and when discussed, they are generally not securitised specifically. Indeed, they are sometimes presented as a bulwark against the Europeanization of energy (for example, see EC 2006: 5 & 7). The 2011 Communication on External Energy Policy (EC 2011a), for example, only refers to companies a couple of times and never directly securitises them, despite the fact that a large number of the measures it proposes directly relate to issues, such as the investment climate, that affect energy companies. Virtually all of the documents and some of the speeches refer to political risks in upstream countries, but very few refer to the upstream operating energy industry to which these risks predominantly apply.

ENERGY COMPANY PERSPECTIVES OF BUSINESS RISK

Companies perform a key role in ensuring energy security as the actors that actually carry out the exploration, investment, extraction, delivery, refining and in some cases, strategic stockpiling of oil and gas products. As such, some of the risks to their business operations also pose challenges for those tasked with mitigating risks and threats to energy security.

Examination of company documents shows a considerable commonality of risks facing energy businesses.[12] This is not necessarily surprising to note, given that all of these companies are involved in the same industry and form part of the same market. This section will outline some of the main areas of risk facing energy companies in the conduct of their business (competition, credit risks, liquidity risks, political and stability risks emanating from countries where they operate, as well as operational and climate change risks). Given the very different nature of companies and the Commission there are considerable differences in the risks that both identify.

As mentioned above, it should be noted that while the Commission and companies commonly securitise issues within same overall policy area (i.e. climate change), the actual specific issues they raise as threats are frequently divergent. Indeed, broader issue areas (such as climate change) often represent different threats to companies and the Commission respectively. Consequently, attention is initially drawn below to areas where companies and the Commission identify conflicting specific risks within the same broader issue areas. Secondly, areas that present no obvious tension or particular convergence are briefly mentioned. Finally, instances of convergence, where specific company perceptions of risk match closely with those of the EU, are discussed.

Areas of divergence: competition, demand, prices and climate change

Like the Commission, most of the companies note changes in global oil/gas supply and demand as a factor of risk. However, rather than focus on the political or social consequences of changes, energy companies tend to concentrate on the consequences in terms of increased competition, oil prices and precipitant profits.

Due to decreasing availability of supply, competition between companies in acquiring new resources to exploit is particularly fierce. Many companies note that not replacing current reserves as they are depleted poses a significant risk to their businesses. In this regard, increased competition as a result of EU legislation in Europe that may challenge their market position(s) is also considered a risk by several companies (Eni 2010: 38; Statoil 2010: 153).

Energy companies are deeply sensitive to the prices of oil and gas. All note that as commodity businesses, changes in energy prices significantly alter their business prospects. Low prices are inimical to company interests as they decrease profits and liquidity, impair the ability to attract finance for investment in future projects and risk reducing booked reserves as some may become uneconomical in a lower price environment. Conversely, higher prices are broadly positive for companies reversing the risks mentioned above and ultimately increasing profits. However, while higher prices are generally positive for oil companies, substantial increases in prices carry a number of drawbacks and risks. BP for example notes that higher prices can encourage ‘fiscal take’ from governments and more “onerous terms for access to resources” (2009: 14). Indeed as Friedman (2006) and Wilson (1987) note, higher energy price environments increase the prospects of assertive producer state behaviour and resource nationalism. However, perhaps the biggest risk from high prices concerns long-term moves away from hydrocarbon use, rising efficiency and the decoupling of economic growth and energy demand. All of these represent serious long-term risks for companies that sell hydrocarbons, and are in a sense risks for energy companies created, or at least

exacerbated, by the actions of member states and the EU institutions. Exxon Mobil (2011: 1) for example argues that an "effective EU energy strategy should provide clear and positive demand signals" and that such signals will "encourage investment in the EU but also help ensure long term investments from outside the EU". Price volatility represents another price related risk for companies. Large variations in energy prices create uncertainty that increases the risks of investment for companies, hampers companies' mid to long-term planning, and threatens to reduce (or even eliminate) the profits from certain projects.

In both these areas we see partially conflicting agendas between company and Commission perceptions. Highlighted specifically as risks by Eni (2010: 38) and Statoil (2010: 153), the EU's attempts to increase competition in the internal gas market sit uncomfortably with energy company fears over greater competition in their previously-protected home markets. In their 2009 annual report, Eni discusses the implications of increased competition deriving from the implementation of Italian legislative decree 164/2000, itself implementing EU directive 98/30/CE that required member states to restrict national companies to a certain percentage of input into national gas transport networks and volumes of gas sold to national companies. This allows new competitors to enter the market and reduces selling margins on gas (Eni 2010: 38). Likewise companies' general inclination towards higher prices (despite the challenges posed by this eventuality) does not fit easily with the risks to the European economy and citizens from high prices highlighted by the Commission above.

Climate change policies and the low carbon agenda are mentioned by most of the companies addressed here as risks. Some such as BP, ExxonMobil and Statoil note that a combination of increases in general public awareness of climate change and international climate change regulation are likely to reduce demand for the kind of products that oil and gas companies produce and impose tougher emissions controls on them directly as businesses. Exxon Mobil (2011: 1-2) notes that the EU needs to provide "clear demand signals that Europe is a long term market" but notes that "the 20:20:20 Climate and Energy Package provides no long term signal that investments in projects with long payback times will still be needed". BP notes climate change legislation can result in capital expenditure to meet compliance requirements, increased taxes, higher operating costs and reduced revenues (2009: 15).

Total and Statoil point out the risks posed by EU climate legislation to their businesses. Statoil notes that the EU's Environmental Package[13] implemented in 2008 will have "positive and negative impacts on the competitive position of natural gas as a fuel" (Statoil 2010: 154). Total (2009) notes that "growing concerns in the EU and globally that rising greenhouse gas emissions and climate change may significantly affect the environment and society could adversely affect our businesses, including by the addition of stricter regulations that increase our operating costs, affect product sales and reduce profitability" (p.6). It should be noted however that some companies do not see aspects of the EU decarbonisation agenda as threatening. For example, concerning carbon capture storage (CCS), Shell highlights that "the technology required for geological sequestration is proven and in common use in the oil and gas industry for enhanced oil recovery". They add "this fits with our business and builds on our strength in understanding subsurface structures and processes" (Shell 2006: 7).

Areas of no apparent tension or convergence: credit and liquidity risks

Another theme common to all of the companies examined is a concern with the risk from exposure to counterparties (such as banks) unable to pay amounts due. The risk from these counterparties is distinguished from the other forms of credit risk such as those emanating from retail customers. This risk is very similar to that facing most commercial operations and is not specific to the energy companies, although the size of the industry does make the sums notable.

Another risk cited by energy companies with energy security repercussions is that of maintaining liquidity. Liquidity risk refers to the ability of oil and gas companies to maintain access to finance to be able to fund future projects and debt obligations. This is of course a direct concern to energy companies as it would be to any company, but it has a broader significance for energy security in terms of the ability of energy companies to maintain both the investment in infrastructure and exploration needed to meet projected demand.

The prevailing economic climate provides an important context here as periods of recession make it more difficult for energy businesses to raise finances through commercial loans from banks and through financial instruments such as issuing bonds and commercial paper. BP also notes the impact of the commodity prices on investment programmes, highlighting the damaging effect of prolonged low prices (BP 2009: 14).

It should be noted, however, that while there is little evident co-identification of this form of risk between companies and Commission securitisation, the actions of political actors (at the member state and the EU level) can have a negative effect on company prospects and credit ratings and, as a result, their relations with financial institutions. Given the large sums of investment needed to ensure future European energy supplies (predominantly carried out by companies), this is a potentially important form of risk.[14]

In terms of liquidity, Shell highlights the risk deriving from partner organisations in joint ventures (Royal Dutch Shell 2009: 14). Eni also notes the liquidity challenges posed by ‘take or pay’ and ‘ship or pay’ clauses whereby a company is obligated to buy a certain amount of gas (take or pay) or transport capacity (ship or pay) from their supplier and transit partners regardless of demand (2010: 93). Such contracts pose a risk to gas companies as they are usually non-cancellable and long term obligations. Here there is some potential convergence with EU efforts to take actions in this area.

Areas of convergence: operational-environmental risks, political and legal upstream risk

Energy companies face a number of operational-environmental risks in the conduct of their business that are broadly in line with Commission objectives. Primarily these refer to the risk of industrial disasters to people and the environment. The main ramifications associated with these risks refer to litigation and reputational damage. Most of the documents analysed here note that environmental damage caused through oil spills, pipeline ruptures or refinery explosions, for example, carry significant risks to company reputations (the Gulf of Mexico Deep Water Horizon oil spill is a case in point here) and expose company employees and the company more broadly to the risk of legal action.

However, the clearest area of commonality in the risks identified by both energy companies and the EU relates to the levels of political and legal security in producer states. Eni goes as far as to say (2011: 3) that "the primary aim of the EU external energy action should be that of applying all political tools to guarantee investment protection at an international level". The energy company focus on these issues closely echoes the Commission's attention to producer domestic stability and the investment environment and it is clear that for energy companies, stability and investment climate are both inextricably linked and central to the risks associated with the oil and gas business. Exxon Mobil (2006: 9) states that the "EU should keep promoting with its energy partners political and legal stability, reliable institutions and respect towards contractual agreements (particularly those increasing investment)". Likewise, all of the other energy company documents reviewed here place significant focus on such risks in their respective analyses.

As highlighted above by Solana (2008), the authoritarian nature of oil and gas producing countries tends to create a number of social problems that can impact on the business of energy companies. In particular, the unintended consequences given attention by most of the energy companies are highlighted as being terrorism, civil unrest, international conflict, industrial action and sabotage (Eni 2010: 94; Chevron, 2010:30; BP 2009: 14; Statoil 2009: 151; Exxon Mobil 2010: 4).

However, the majority of the focus put on political and stability risk is concentrated on the potential intentional actions of producer states. In terms of what is highlighted as risk by the energy companies here, one can make a distinction between the politico-legal context (i.e. a lack of well-established and reliable legal regimes) and the intentional actions of governments ranging from tax and royalty changes to nationalisation and expropriation that the lack of a developed (and respected) legal order permits (Eni 2010: 94; Total 2009: 78; Statoil 2009: 151; Exxon Mobil 2010: 3; Chevron 2010: 30; BP 2009: 14).

Several of the energy companies (Statoil 2009: 151; Eni 2010: 94; ExxonMobil 2010: 3) note that a number of the countries in which they operate have underdeveloped legal structures, creating uncertainty and risk in their operations. ExxonMobil asserts that even when this risk is circumvented by international agreements to arbitrate disagreements, companies still rely on local legal systems to enforce decisions (2010: 3). The nature of the producer state legal derogations and infractions highlighted by energy companies range from issues related to interpretation of tax and royalty entitlements, production and exploration restrictions, to more serious issues such as unilateral contract changes, forced changes to mineral asset ownership, expropriation and nationalisation (Eni 2010: 94; Total 2009: 78; BP 2009: 14; Chevron 2010: 30-31).

A number of the companies assert that state-run entities in producer countries may not be operating to commercial imperatives and may factor political interests into their commercial decisions. Statoil notes that in the recent past governments and national oil companies in some regions have begun to exercise greater control over and more stringent restrictions on energy projects and that this is a trend they expect to continue (2010: 151).

As mentioned above BP notes that rising prices can lead to increased 'fiscal take' and "more onerous terms for access to resources" (2009: 14). ExxonMobil argues the same and alludes to a shifting power relationship between producers and energy companies

when they note that "restrictions on foreign investment in the oil and gas sector tend to increase in times of high commodity prices, when national governments may have less need of outside sources of capital" (2009: 3).[15]

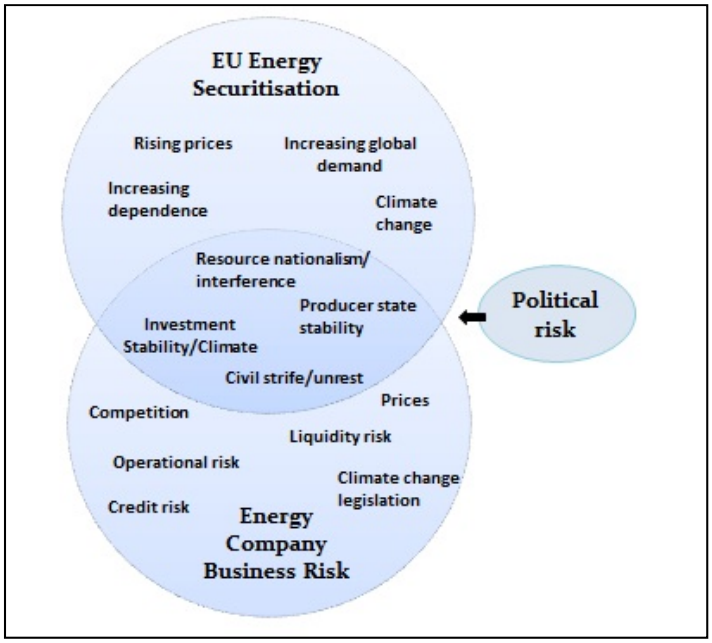
Explaining convergence in upstream political risk

The area that sees by far the most alignment of risk perception convergence between the EU and energy companies surrounds issues of political risk in upstream countries. This section seeks to explain this convergence by first highlighting the underlying structural reasons for this overlap based on the interdependence of energy companies and the EU, and secondly using the notion of framing discussed above (Daviter 2007, 2011) to suggest the political reasons for Commission convergence around company perspectives.

Political risk emerges from both the deliberate state actions and unintentional consequences of regime types. On the one hand, authoritarian energy producing states, particularly those captured by powerful domestic constituencies, can be prone to unpredictable behaviour, including interference in markets (e.g. including forced renegotiations, expropriation) (Jarvis & Griffiths 2007: 14). On the other hand, unintentional trends, stemming from the nature of such regimes (widespread corruption, repression, terrorism, etc.), have a negative impact on stability and impede regimes' ability to govern effectively (Jarvis & Griffiths 2007: 14; Stafford 2011).

One can observe that company and Commission perceptions are aligned on these questions of upstream risk in a way that they are not in areas related to the broader geopolitical questions of energy security, the domestic issues of internal energy or climate policy, or on the specific business details of energy company operations.

Figure 1: The interplay between EU energy securitisation, political risk and business risks.



Structurally speaking, this is partially explained by the fact that the relationship between the EU and energy companies is at its most interdependent on questions of upstream energy market functioning and the risks associated with it. Oil and gas, integral parts of the European energy mix,[16] are largely supplied in Europe by commercial companies operating for profit, and in this sense, commercial energy companies contribute significantly to European energy security. As such, and reflecting this reliance, the European Commission promotes – and securitises – a lack of governance functions (such as strong investment protection) that support the fundamental need for adequate, continuous and reasonably priced energy supplied by commercial actors.

With increasing levels of European demand on external supplies, Western company involvement in the upstream is seen as important for the efficient meeting of future demand (Pirog 2007: 5). National Oil Companies (NOCs) are often seen to be unwilling to invest in future supplies due to depletion policies that view oil in the ground as 'worth more than money in the bank' (due to expected price rises) and unable to invest as many producer governments are not forthcoming with sufficient investment funds (Stevens 2008:7-8). Generally higher levels of inefficiency and opaque business practices amongst NOCs exacerbate this risk by restricting the ability of NOCs to attract financing from international capital markets (Pirog 2007: 13). If national companies do not make these necessary investments or do not permit international oil companies to do so, then there is an increased chance of demand outstripping supply globally with price rises for European consumers an almost certain consequence (Pirog 2007: 11).[17]

Consequently, given the reliance of the EU on the effective functioning of energy companies and given that companies require a stable environment, consistent application of the rule of law, a secure investment climate and reduced instances of preferred treatment for national companies in order to deliver adequate and efficient supplies, any threats to the provisions of these factors is also a risk to the EU (as shown on the diagram above). At the same time however, this relationship is not only one way. Energy companies recognise that the EU level represents a potentially useful and powerful source of diplomatic support in these areas (Eni 2011: 4; Shell 2011: 4; Statoil 2011: 3; Eurogas 2011: 3). Some companies also argue for the benefits of EU interaction in terms of capacity building in producer states (Shell 2011: 4). The importance of the EU role in energy diplomacy is also stressed by some member states (French Permanent Representation 2011: 2; Government of the Czech Republic 2011: 2).

However, in the specific context of Commission communications (and in a more political sense) the notion of framing discussed above draws one's attention to the instrumentality that can be read into the political aspects of Commissions securitisation. The Commission, interested in garnering support for its agenda of increased Europeanization in energy (and subsequent greater energy competencies), has a clear interest in framing a large part of its securitisation discourse in light of the risks facing the companies that are key veto-playing actors in external energy policy. Likewise, it is highly unlikely (given the close interdependent relationship between member states and companies) that any energy securitisation move that did not frame its message in the context of these upstream factors would resonate in national capitals. Consequently, while reflecting the underlying structural dynamics that characterise European energy supply, the Commission's discourses should also be viewed in terms of their

instrumentality and political intentions, particularly in this area where Commission and company interests most overlap.

This does raise the question of why (as described above) the Commission does not more specifically securitise the energy companies that operate in the upstream as referent objects, whilst at the same time securitising the threats to them. In this attempt not to focus specifically on companies, the Commission is likely concerned about creating a perception of being too close to upstream-operating energy firms. While the EU (necessarily) pursues a set of policies that works to the benefit of energy companies in the upstream, the Commission is keen not to be seen to be overly reflecting the interests of industry players, particularly in the light of the broader normativity-outcomes gap debate in EU external relations.

CONCLUSION

As demonstrated above, analysis of the risk perceptions of EU actors and energy companies shows both convergence and divergence. While the Commission and companies frequently highlight energy risks in the same overall area they often draw attention to different specific, but deeply interrelated threats. Indeed, sometimes the threats companies identify derive directly from Commission/EU actions (climate change presents a clear example here).

In a number of areas (prices, competition and climate change) the risk perceptions of both parties exhibit divergence. While energy companies are weary of overly high prices (for fear of windfall taxes, contract renegotiations and long term demand reduction), in general a higher price environment is in their interest. For the Commission by contrast, high price environments hamper effective functioning of the European economy and consequently serve to spur efforts to increase competition between companies - which companies in turn perceive as a risk to their business operations. Likewise, climate change represents an important area of divergence. Legislation to reduce greenhouse gas emissions is considered vital by European actors to avert the worst effects of climate change. Companies however see legislation in this area as demand-reducing, burdensome, costly and threatening.

The analysis above also indicates that the Commission, at least in its public discourse, is not concerned with the day-to-day business risks - such as liquidity or credit risk - that companies face. This reinforces a distinction that EU officials note between third party interference or infringements to legal or investment frameworks: where there is a legitimate EU interest to act, and specific business affairs that are not the realm of EU action.[18]

However, on issues relating to the upstream political risks facing firms, the analysis above suggests a strong convergence between the security/risk perceptions of the EU and energy companies. This can be partly accounted for by drawing attention to the interdependent relationship between public and private actors in European energy supply. Companies face a number of different political risks in the upstream ranging from renegotiations to regime instability. The European Commission's preferred model of energy policy relies however on energy companies for the provision of continuous, long term, efficient energy supplies and thus securitises risks to this model. At the same time companies are reliant (in part) on the EU for support in the creation of an environment

conducive to business operations in these countries. However, it must be borne in mind that Commission (and company) public presentations of risk are in effect political statements that are deigned to achieve certain outcomes. As such this article argues that one could see the securitisation of energy company risk as an attempt by the Commission to frame its communication in light of the interests of core commercial actors central to a successful European energy policy. Without a strong inclusion of the risks faced by these actors, it is unlikely that European Commission proposals would carry much weight with veto-playing energy companies or member state capitals.

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[1] For a discussion of the multiple meanings of the term 'energy security', see Chester (2010).

[2] In the case of security of gas supply, see for example articles 23-24 EU Regulation 2010/994/EC.

[3] Some academic debate exists as to the distinction between risk and threat (see Güllner, 2008). This distinction however is not made specifically in this paper and the terms risk and threat are used more or less interchangeably. This paper is concerned with the *identification* of these threats/risks and the *degree* to which they are shared between actors rather than their intrinsic qualities *qua risk or threats*. Furthermore, the language of threat is more common in political circles, whereas the concept of risk is more often employed in the business related literature. Unpacking which of these designations of threat were really risk and vice-versa is neither possible within the scope of this paper nor necessary for the analysis presented here.

[4] This includes a mix of European IOCs and US-based IOCs that supply to Europe. Different results may well be found if the analysis of actors was to include those operating only in the EU or domestic member state markets.

[5] Accepting some of the arguments of wideners, most notably the broadening of referent objects of security and the increasing focus on non-military threats, is necessary in any analysis of insecurity identification by a non-state actors such as the EU and energy companies, and of non-military risks such as energy security.

[6] This is likely to mean that risks are underestimated rather than exaggerated. However given that this paper is interested in the convergence of the risks identified, not the extent to which they correspond to reality, this point is not of direct relevance here.

[7] For this paper, a number of documents have been examined. In particular, seven important texts - released between 2002 and 2011 - from the European Commission on energy security and policy have been analysed (see bibliography). In addition, a number of speeches on energy security and energy policy have been addressed. These include two speeches by (former) External Relations Commissioner Benita Ferrero-Waldner, three speeches by former Energy Commissioner Andris Piebalgs, and five speeches by current Energy Commissioner Günther Oettinger. A speech given by former High Representative for Common Foreign and Security Policy, Javier Solana, has also been included to give an additional perspective from another important supranational agenda-setting (former) official.

[8] By which he is referring to Gazprom/Russia's external commercial policy.

[9] Less direct than Solana, Oettinger notes for example that "uncertainty [in oil] is exacerbated by poor governance and a lack of transparency in parts of the global oil market" (2010c: 2).

[10] Investment attraction and investment security are intrinsically linked, as no one is likely to be attracted to invest in areas where pervious investments (theirs or others) are not secure.

[11] Of course, not all of these companies are European.

[12] With regard to energy companies, the analysis in this paper is based on the examination of annual reports and responses to European Commission public consultations from a number of European and international energy companies - BP, Eni, Statoil, ExxonMobil, Chevron, Royal Dutch Shell and Total. In cases where annual reports did not include a section on risk factors facing each of the respective companies, filings to financial authorities - the United States Securities and Exchange Commission and the French Financial Markets Authority - that do include a section on risk were analysed.

[13] The Environmental package in question consists of (*inter alia*) a revision of the EU Emissions trading Scheme (ETS), binding targets on the production of renewable energy, promotion of carbon capture storage (CCS) and revised rules for state aid on environmental projects (IEEP, 2008).

[14] The author would like to thank one of the anonymous reviewers for this insight.

[15] Several of the companies (Chevron, BP, ExxonMobil and Statoil) also highlight the potential risks associated with OPEC's ability to apply production quotas, change supply levels and consequently affect oil prices.

[16] The most recent figures available from the 2011 Annual Report of the European Commission's Market Observatory for Energy note that oil represents roughly 36.5 per cent and gas 24.5 per cent of total EU energy consumption (figures for 2008) (EC, 2011b: 10). Figures for 2009 are thought to be close to this value (EC, 2011b: 10). Europe is dependent on imports for 84.1 per cent (oil) and 64.2 per cent (natural gas) of these supplies respectively (figures for 2009) (EC, 2011c).

[17] In a more critical sense, it should also be noted that these international oil companies are also major taxpayers in their home countries and their financial performance is of significant interest to governments given their presence in pension and investment funds.

[18] Interview with EU Official, Brussels, 2011.

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Innovation subject to sustainability: the European policy on biofuels and its effects on innovation in the Brazilian bioethanol industry

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Abstract

Biofuels are a suitable complement for fossil energy in the transport sector and bioethanol is the main biofuel traded worldwide. Based on the assumption that innovation can be influenced by regulation, the Brazilian bioethanol industry is facing new requirements from external actors while reaching for international markets. Until 2010, national environmental laws were the main sustainability instrument that the biofuel industry faced. With the introduction of sustainability criteria for biofuels in the European Fuels Quality Directive (FQD) and Renewable Energy Directive (RED) of 2009, bioethanol producers have been pressured to innovate in respect of the requirements of future markets. Here, the aim is to analyse the case of Brazil, given the potential exports of sugarcane-based ethanol from this country to the EU. Brazil provides an interesting overview of how a bioethanol industry innovated while facing sustainability requirements in the past. A comparison between the European requirements and the industry´s status quo is then explored. The EU criteria are likely to have effects on the Brazilian bioethanol industry and incremental improvements in sustainability levels might take place based on the sustainability requirements. In addition, the industry could follow two other paths, namely risk diversification by engaging in multi-output models; and market leakage towards less-regulated markets. At the same time, an environmental overregulation of the biofuel market may make it more difficult for emerging biofuel industries in other countries, especially in Africa, by creating a barrier rather than contributing to its expansion. The results of this analysis show the main challenges to be addressed and the potential positive and negative impacts of the European Union biofuels policy on the Brazilian bioethanol industry.

Keywords

Bioethanol, Innovation, Sustainability, Sugarcane, European Union, Brazil

INTRODUCTION

Biofuels have been the target of much interest, debate and research. For multiple reasons, it is in the interest of individuals, governments and international organisations to reduce the established dependency on oil-based transport fuels. In this context, and given the restrictions posed by the existing transport sector infrastructure, biofuels are an option for a more sustainable energy carrier, while better options mature.

In recent decades, ethanol fuel has grown from small scale and unregulated production to a major industry, acting now as a significant blend alternative in the global transport fuel pool (UNCTAD 2009).[1] Innovation processes have been key enablers to the scale and market dynamics which exist in bioethanol markets (Walter 2009). Global bioethanol production reached 86.1 billion litres in 2011 (REN21 2012). High oil prices became the main motivation for the expansion of this market, but policy drivers for biofuels also included issues of energy security, climate change as well as rural development (Correlje and Van der Linde 2006; European Commission 2007). The European Renewable Energy Directive (2009/28/EC) provided incentives towards an increased share of biofuels in Europe´s transport sector. The directive was initially proposed in January 2008, shortly before oil prices peaked at USD 146 per barrel. The directive also contained a sustainability scheme applicable to biofuels, mandatory for such fuels to be counted towards the 10 per cent renewable energy target in the transport sector by 2020.

In the context of international competition, industries are required to keep pace with innovation on a constant basis and this is no different for the bioethanol industry. While seeking ways to improve production systems, the bioethanol industry is faced with different sustainability requirements which tend to influence its future innovation paths. Brunnemeyer and Cohen (2003) found evidence that environmental innovation is most

likely to occur in industries that are internationally competitive, which suits the present context for bioethanol.

This paper uses the case of the Brazilian sugarcane-based ethanol industry, investigating how its innovation forces behaved in the past while facing national sustainability regulations, and how they are likely to respond to the sustainability criteria introduced by the European Fuels Quality Directive and Renewable Energy Directive from 2009. Brazil is chosen here due to its status as the biggest sugarcane-based ethanol producer worldwide and with significant potentials for exports in the medium and long term. This paper assumes that Brazilian bioethanol may be a relevant contributor to the 10 per cent renewable energy share in the transport sector proposed by the European Directive (Goldemberg and Guardabassi 2009).[2]

Nevertheless, Brazil is likely to keep increasing its ethanol production in the long term, considering its sugarcane expansion in the last decade (MAPA 2009a) and the Brazilian plan for this sector (MAPA and Embrapa 2006), although most of this growth is expected to supply primarily the Brazilian domestic ethanol market, which is still in expansion. In spite of the recent crop shortfalls and reductions in the number of greenfield projects in Brazil, this sector is likely to recover its capacity of investment in the coming years, given the favourable macroeconomic fundamentals of this sector, such as growing international demand, carbon markets, the global need for renewable liquid fuels, and the gradual depletion of oil reserves.

In order to proceed with the analysis of how the European policy for biofuels could affect innovation paths of the Brazilian bioethanol industry, this paper is divided into three broad sections. First, a discussion of concepts on the sources of innovation is presented. Secondly, the historical sources of innovation in the Brazilian bioethanol industry are discussed and classified in two broad categories, namely endogenous and exogenous sources of innovation. The third part of the paper focuses on the signals sent by the European sustainability criteria for biofuels towards future innovation paths of Brazilian ethanol, examining and discussing their potential impacts based on how the industry reacted previously when subject to similar national laws. The methodology was based on an extensive literature review and semi-structured interviews with policy makers and private sector representatives.

SOURCES OF INNOVATION

Innovation is a process that improves the production, diffusion and utilisation of resources within a system. Innovation is not a linear process and generally causes disequilibrium in economies, leading them to higher levels of competition and development (Schumpeter 1934). The emergence of innovative processes is highly dependent on forward and backward linkages between industries, suppliers, consumers and their respective demands for improvement and adaptation (Hirschman 1958; Robertson 2003).

We consider in this paper that innovation paths can be influenced by two main forces: endogenous (produced or growing from within) and exogenous (derived or developed from outside). The first is specific to industry concern, driven by profit-seeking, competitive behaviour. The second is specific to where innovation processes occur in national or international business spaces, where firms are subject to regulation and standards (Tonelli et al. 2010; Lachenmaier and Woessmann 2004). Jaffe and Lerner (2005) state that innovation can be influenced by public policy in two main ways: by raising costs to industries and by changing the rate and path of future innovation. Policy also plays an important role for market deployment of technologies, especially via standardisation (De Souza and Hasenclever 2008).

Innovation is not only confined to the technological aspects of an industry. Additional dimensions of industrial lobbying, learning curves, advances in governance and risk management all play a role in innovation.[3] Innovation processes are multidimensional, being comprised of production systems and methods, scientific and engineering knowledge, organisation, infrastructures and social patterns of technology use (Smith 2008).

Economic theory provides a possible viewpoint on mechanisms that promote innovation from an international trade perspective (Krugman and Obstfeld 2008; Lachenmeier and Woessmann 2004). Considering tradable commodities such as biofuels, there is often the issue of trade restrictions which reduce the space for industries to operate internationally. As numerous countries make active usage of import tariffs, countries willing to export to markets protected via entry duties must overcome this financial burden to remain competitive.

Although ways of overcoming import tariffs vary significantly, innovation presents itself as one of the more interesting alternatives, as, while costly, it is one of the few options which effectively create value, reducing negative trade-offs such as trade diversion.[4] By innovating, firms can deliver more efficient production and add more value to commodities, resulting in lower costs. According to this argument, tariffs can thus constitute a pressure factor for innovation in export-orientated industries, since they increase the requirements for access to a certain market. Regulations can be seen as analogous to tariffs, in the sense of representing an economic obstacle for market access.

Sustainability strategies in the private sector are not based on altruism, but firmly on down-to-earth marketing decisions to meet specific consumer preferences. According to KPMG (2008) companies see their sustainability strategies as profit-orientated, from which is to be understood that firms seek profit in their operations. The same study states that sustainability is seen by companies as a primary driver of innovation, rather than a cost burden.

When external sustainability regulation signals to an industry that it needs to adapt in order for a market to be fully realised, the first consideration is the impact on costs. Sustainability regulation could limit the scope of market possibilities (e.g. reduce the stocks of eligible land for crop expansion and exclude fossil-intensive technologies), thus meaning an inflation of costs, making existing firms less competitive and new firms unable to emerge in new potential ethanol-producing countries. While societal welfare is pursued by the introduction of sustainability rules, the industry will most likely not be able to maximise profit to the same levels as before, given that part of the revenues will have to be re-invested in order to adapt to the new rules.[5]

During the development of the European Renewable Energy Directive (2009/28/EC), representatives from the Brazilian ethanol industry were quick to approach the European Commission inquiring whether the proposed sustainability criteria would represent a form of red-tape barrier to access to the European Market. The European Commission responded that the sustainability criteria were to apply to both European and non-European producers, with no differentiation whatsoever in the level of requirements. It is still an open discussion as to whether the certification system to be used to verify the adoption of the sustainability criteria for biofuels will represent an equal burden among different ethanol producers in various parts of the globe.[6] However, these discussions are still controversial, because many political and commercial interests are involved in this issue, for example the strong rural lobby from some biofuel local producers in the EU, which are concerned about the potential competition between domestic biofuel production and the Brazilian sugarcane-based ethanol.

This discussion is important because over time the best performers who will lead the international market for bioethanol are likely to be those who excel in innovation rather

than those who are best shielded by protectionist policies. Perhaps this calls for a brief discussion of two relevant concepts often present in successful industries:

- Receptive Capacity: a concept formulated by Robertson et al. (2004) which can be applied to the biofuels industry. Perhaps the most interesting variation of this concept in the biofuel industry nowadays is the question: "Will the first generation champions also be the second generation forerunners?" This is dependent on how well the established industry absorbs and perfects the various inputs of innovation that it receives. Natural soil and climate conditions suitable for an efficient biomass production would also affect this competition and tropical countries may still have an advantage over temperate latitudes.
- Forward and Backward linkages: Even though these are relatively old concepts formulated by Hirschman in 1958, the idea of linkages seems to be, from an industrial dynamics perspective, very appropriate to analyse which industries thrive and which become stagnant. Linkages could arise on an intermediate level, in the case of the bioethanol industry moving towards improving the inflow and assimilation from suppliers of agricultural feedstock and applied research (backward linkages) and by coordinating efforts with the automobile industry (forward linkages).

The bioethanol industry behaves in line with Hirschman´s linkage concept. Moreover, the effectiveness of such links when innovation arises remains the key issue for determining which technologies will become market-spread and those which will not.

The initial perception that sustainability regulation tends to elevate costs should not be generalised. Innovation can unlock efficiency gains that compensate for the regulatory burden. Also, the cost of regulation can be overstated before implementation takes place. For example, Warhurst (2005) cites initial estimations of the national costs for improved vehicle emission standards in the UK, pointing to a cost of GBP 16.1-22.8 billion for 1990-2001. In contrast to the early estimations, the UK-based consultancy AEA estimated the costs of the same regulation to be roughly GBP 3 billion over the same period, in an ex post analysis. Therefore, the innovation effects on costs must be analysed case by case.

THE BRAZILIAN BIOETHANOL INDUSTRY AND ITS INNOVATION MECHANISMS

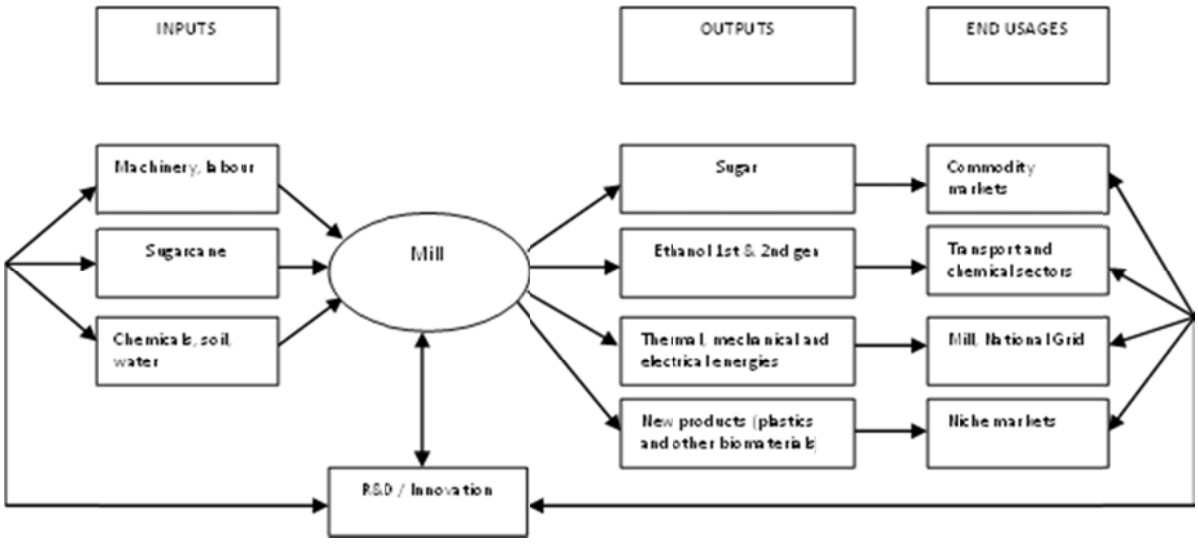
The Boston Consulting Group´s global innovation index ranks Brazil as only the twentieth most innovative country in the world (BCG 2009). Adding to this, natural-resource based industries are usually classified as low-tech according to the OECD´s criteria for reinvestment in Research and Development (R&D) (Laestadius 2000). Challenging this perception, the Brazilian ethanol industry is highly innovative and has evolved throughout more than 35 years (Barzelay 1986; Goldemberg et al. 2004). In fact, Brazil has been producing and consuming ethanol in vehicles since the 1930s, but just after 1975 ethanol became a relevant source of energy in the Brazilian energy mix, with the launch of a federal programme called Proalcool. As will be shown in this section, the industry demonstrated great receptive capacity and multiple linkages with other sectors of the Brazilian economy, and these are perhaps the main reasons behind its success (Furtado et al. 2011). This section identifies and analyses the main endogenous and exogenous sources of innovation faced by the Brazilian ethanol industry in the past, highlighting its main mechanisms.

The ethanol industry can be considered as the key dimension in the production, distribution and consumption of biofuels. In the transport sector, two main forms of ethanol usage prevail: as a low blend with gasoline and as a high blend, separate fuel option (Pacini and Silveira 2010a and 2010b). The industry is growing increasingly international. It is now not only confined within a country (as it has been for almost

three decades in Brazil) but has a cross-border, international character. As an interconnected system, it is hardly possible to dissociate the industrial part (mills) from feedstock plantations and demand structure (vehicle fleets). Besides, companies that own the mills in general also manage feedstock production, having land ownership or renting lands, although independent farmers are very important in the Brazilian sugarcane production chain too, including thousands of small farmers. Therefore, from efficiency and sustainability perspectives the performances and linkages among plantations, industry and fleet are of primary concern. The integration of these variables is a fundamental benchmark for bioethanol production in order to obtain a better energy and greenhouse gases balances than fossil fuels.

In addition to the connection between plantation and mills, the bioethanol chain includes the demand structure represented by the fleet. Major changes in the industry were caused not by agro-industrial processes, but by innovation on the demand side such as the introduction of flex-fuel technologies. Ethanol has been used in two main forms in Brazil: as a blend of anhydrous ethanol (99.3 per cent ethanol minimum) into gasoline (E18-E25);[7] and in its pure form i.e. E100, in this case hydrous ethanol (92.6 - 94.7 per cent ethanol and remaining water residues). Prior to 2003 fleets were mono-fuel, with cars using either ethanol or gasoline. After 2003, the flex-fuel technology effectively made these two fuels interchangeable, allowing new vehicles to run on any blend of gasoline and ethanol. This interchangeability alleviated demand-side bottlenecks, allowing a renaissance in agro-industrial processes tied to bioethanol production. Therefore, firms autonomously engage in innovation by improving technology, and this involves research processes (Figure 1).

Figure 1: A conceptual model of the Brazilian bioethanol industry.



Source: Developed by the authors, based on Andersen (2009) and BNDES (2008).

Given the existence of functional and established industrial processes for bioethanol, why is innovation needed and when does it happen? An insight into these questions can be found in the conceptual framework from Swedish economist Erik Dahmén, who described

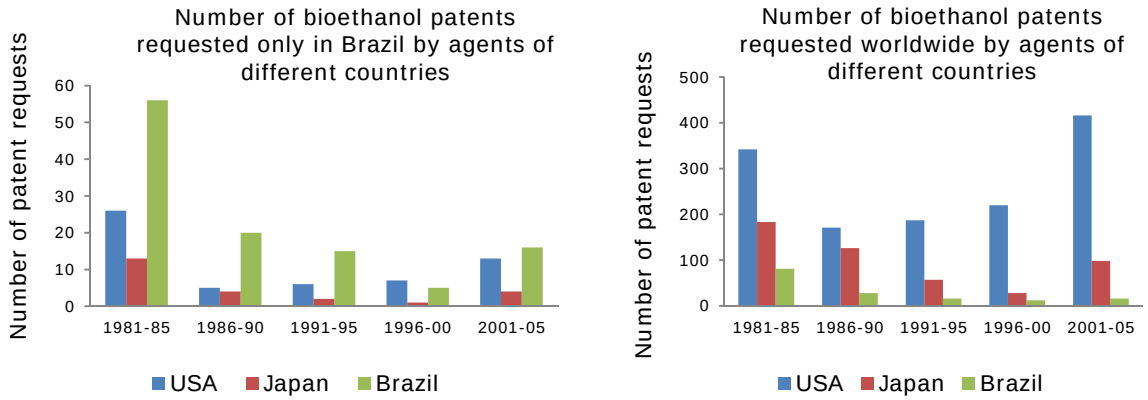
sources of structural tension which drive technological innovation and market possibilities (Andersen 2009):

- Introduction of new methods of production and marketing;
- Appearance of new markets and marketable products and services;
- Opening of new markets;
- Exploitation of new sources of raw material and energy;
- Scrapping of old methods of producing and marketing products and services;
- Decline and fall of old markets;
- Closing of old sources of raw material and energy.

According to Spiro (2009), the economic contribution of research and development at the industry level can take place in different forms. These include R&D processes leading technology to: become embedded in machines (Malcolmson 1975); take over certain tasks (Zeira 2007); improve existing products (Grossman and Helpman 1991); improve efficiency (Sollow 1956; Romer, 1990); and even generate new industries (Aghion and Howitt 1992).

In many sectors patent requests are related to innovation performances. However, this correlation does not happen in the Brazilian bioethanol industry. Patent data points to the United States, the European Union and Asia as having more patent applications than Brazil (Figure 2), although Brazil presents the best performance in ethanol production. The US and Japan led in the number of patent requests, despite the fact that Brazil had the largest ethanol production in the world until 2005, currently just behind the US and working without a subsidy policy. Hence, the smaller number of ethanol patents deposited by Brazilian industries worldwide most likely reflects Brazil´s lack of tradition in patenting, not a deficit in innovation.

Figure 2: Number of bioethanol patents requested in Brazil and as a total in the world, by country of requesting agent.



Source data: Brazilian Federal Patent Database, Cleantech Group (2008) and Mayerhoff (2006) and European Patent Office (EPO).

R&D investment was almost twice as high in the USA as in Brazil (Harari 2008). Against the odds, Brazilian ethanol has become the only renewable source of transport energy that is competitive with petrol so far (Hira and Oliveira 2009). At the same time, the strong protectionism of the European Common Agricultural Policy has not been particularly beneficial towards the European bioethanol industry, as it clearly failed to evolve into a market-based and subsidy-free competitive force in international markets (Wiesenthal et al. 2008; Costa 2007).

Innovation can also be fostered by market conjunctures. The nominal peak in oil prices in mid 2008 raised international interest in the Brazilian bioethanol experience and as a consequence the industry strived to increase output and many governments enacted blending mandates (UNCTAD 2009). As oil-based fuels became expensive, potential markets for biofuels naturally expanded.[8] Therefore, in order to analyse the innovation pressure on the bioethanol industry, the following section presents a conceptual discussion about its two main forms i.e. endogenous and exogenous, as already mentioned. This classification is important for understanding the different causes and effects involved in each part of the whole innovation process.

Endogenous innovation

Endogenous pressures for innovation can be understood as those pressures driven by the natural competitive character of firms, which continuously seek to improve cost-performance by developing more efficient machinery, fermentation processes, labour skills and co-generation output. Endogenous innovation determines the competitive edge of a firm, which is itself a determinant of its profitability (Lima 2002).

Innovation has played a central role in the history of ethanol industry (Walter 2009). At the same time, investments in research and development alone did not correlate to industrial success. The Brazilian bioethanol industry has only invested in R&D half of what has been allocated to such a purpose in the industry equivalent in the United States (Harari 2008). However, various reference indexes over time – energy balances, carbon emissions, market prices – favour the Brazilian ethanol experience instead, as recognised even by biofuel critics (Pimentel 2003). This reinforces the idea that successful innovation is not a reflection of the proportion of resources devoted to R&D, but rather how the resources are used (Andersen 2009: 3).

The main bioethanol producers i.e. the USA and Brazil have two fundamental differences regarding their ethanol industries. Firstly, the feedstock used in the North American production process is mainly maize (corn), while in the Brazilian case, sugarcane is mostly used. Secondly, the average geographic conditions such as solar incidence, water availability and average temperatures are more favourable in a larger proportion of the Brazilian territory, when compared to the USA. Although Brazil has an efficient sugarcane industry, other agricultural industries in the USA, such as wheat, soybeans and corn, show an efficient model and aggressive participation in the world market. Therefore, the differences between Brazilian and American ethanol industries can be partially explained by geographical conditions and their respective feedstock choices.

Ricardian comparative advantages would advocate that the higher solar incidence, water resources and low-cost labour would give a fundamental advantage to Brazilian ethanol production and potentially to many other tropical countries as well. However, this is not enough to explain the Brazilian case, since not all sugarcane producing countries (e.g. Mozambique, Cuba, Tanzania, South Asian countries) in the tropical region, with low labour costs and large agricultural potential, have managed to build-up a highly productive and innovative bioethanol production in the same way that Brazil has to date. In addition, for highly-mechanised first generation and especially second generation biofuels, which are in principle more capital intensive, the European industry would appear more competitive.

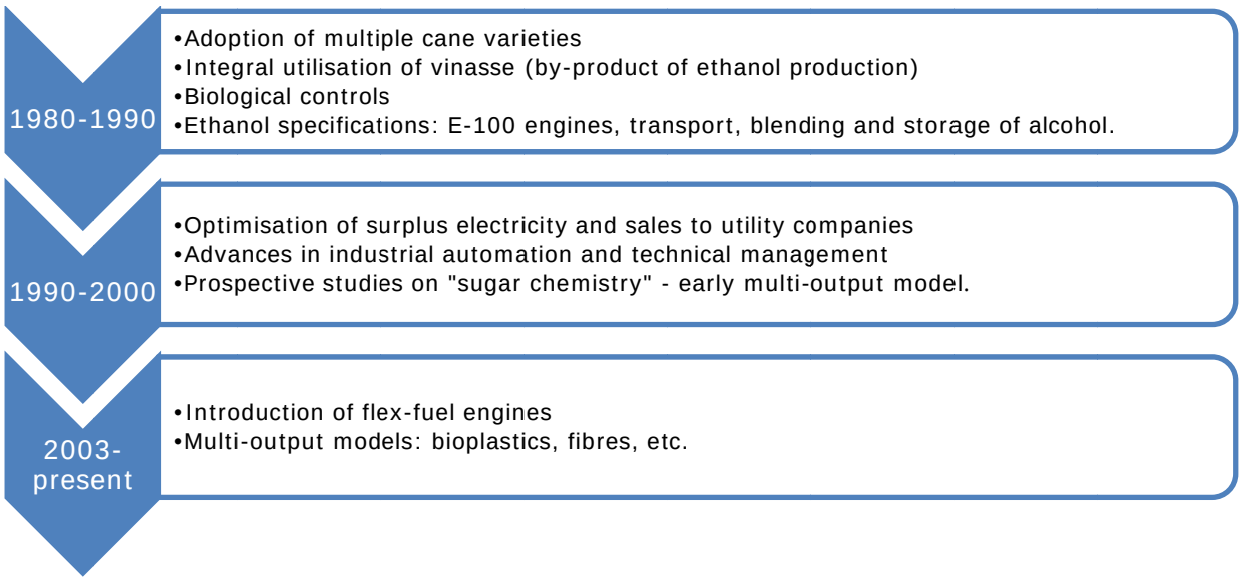
Therefore, Brazilian success in the ethanol industry is not only a consequence of its geographical advantages in agricultural production, but also the pioneering activities of innovation and investments carried out during past decades by both public and private sectors. Important institutions contributed to this progress, such as: Sugarcane Technology Centre (CTC); Interuniversity Network for the Development of Sugarcane Sector (Ridesa); and the former Sugar and Alcohol Institute (IAA), through its sugarcane

research programme called Planalsucar. Moreover Brazil has not only innovated in its ethanol industry, but is also becoming a technology exporter in this sector.[9]

The sugar market was historically the main raison d'être of sugarcane activity in Brazil. A long-time international commodity, Brazilian sugar, however, was exposed to foreign competition and experienced innovation pressures accordingly. The integration between the sugar and ethanol markets is an advantage for its sugarcane industry for it increases the yields in the combined sugarcane mills, for example using the molasses remaining from the sugar factory in the ethanol distilleries, amongst other technical aspects. It can be seen that its successful ethanol programme benefited indirectly from the sugar-led investments of previous decades. Currently, Brazil is a leading country in the international sugar market, with more than 50 per cent of world sugar exports in the free-of-quotas market share (ISO 2010).

In addition to these arguments, Krugman's and Obstfeld's (2008) views on international economics, especially trade barriers, state that creating incentives for innovation can only be partially used to explain the past innovation pressures in the Brazilian ethanol industry. The international ethanol trade started to put pressure on the industry much later than the sugar market. This effect started in about 2003, paving the way for the commoditisation of bioethanol as the US and the EU began importing it. However, as can be seen in Figure 3, innovation in the sugarcane industry has increased steadily in Brazil, achieving substantial cost-performance long before the introduction of flex-fuel technology (Fingerut 2004; Van den Wall Bake et al. 2008). Thus, the innovation processes acting on the biofuels industry prior to 2003 were most likely driven by internal policy and native industrial dynamics.

Figure 3: Endogenous innovation timeline in the Brazilian ethanol industry.



Source: adapted from Macedo (2007)

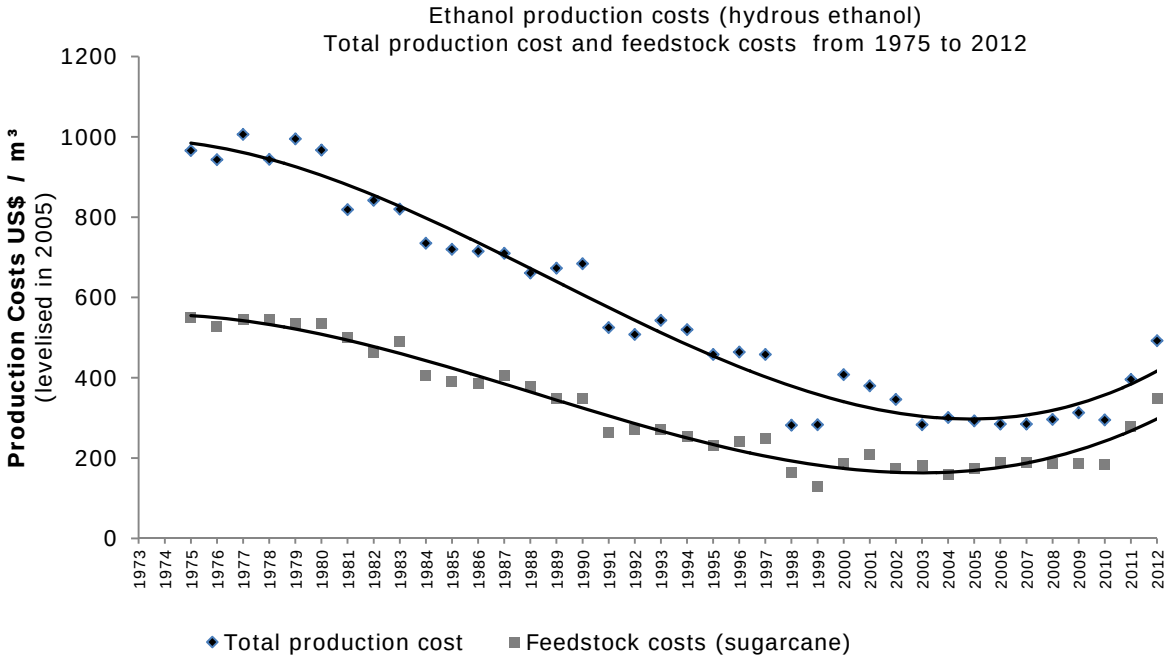
The Brazilian ethanol industry has translated innovation into yield. For instance, from the beginning of the Proalcool Programme (i.e. 1975) to the last crop seasons, the agricultural yields of sugarcane production increased from 47 t/ha to 78 t/ha (without using full irrigation systems), and in terms of TRS (total reducing sugar) from 105 kg/t to almost 150 kg/t (MAPA, 2009a). In the same period, sucrose-to-ethanol conversion

increased by 14 per cent and the productivity of industrial fermentation achieved a 130 per cent improvement (Macedo 2007).

As Figure 3 also shows, researchers began to investigate new possible uses for sugar and ethanol, which become known as sugar and ethanol chemistry, an attractive concept for early biorefineries (Andersen 2008: 27). A large range of chemical products made from both sugar and ethanol was intensively researched. This sugar and ethanol chemistry has been studied since the 1980s and more intensively after the end of the Proalcool Programme, in 1990. However, the relatively low oil prices in the 1990s damaged the economical viability of this new market, but an important consequence of this early investigations into alternative usages for sugarcane is that when ethanol reached the world stage after 2003, technological capabilities and research lines were at least partially developed, allowing firms to carry on old concepts in a new market context providing price-premiums for renewable plastics (Braskem 2009). Sugar-based biodegradable and non-biodegradable plastics have been proven feasible by using the surplus of sugar production (Velho and Velho 2006); similarly, ethanol can be chemically processed into ethylene, which can then be converted to, for example, poly-ethylene, the most widely used plastic (Piringer and Baner 2008).

As a result of constant innovation in the sugarcane industry, the cost of ethanol production has fallen over recent decades, as illustrated in Figure 4. This decrease is significantly contributing to the re-emergence of the chemical industry of ethanol, under a sugarcane biorefinery concept. Hence, the Brazilian ethanol industry achieved its success via both improvements in traditional production processes and also due to novel ways of adding value to production. Figure 4 also shows that the feedstock costs, i.e. sugarcane, represent between 45 per cent and 65 per cent of the total ethanol production cost. Thus innovation at the agricultural level also has a significant impact on the total ethanol production cost. The calculated coefficients of determination (R2) for both curves (total production costs R2 = 0.9662; and feedstock costs R2 = 0.9647) significantly fitted the data, showing that the regression curves reasonably explain the observed variations. The variation of these levelised costs in Brazilian Real and previous national currencies might have an even greater correlation, because of the high exchange-rate variation with the US dollar throughout this period. For the crop-season 2011/2012 an increase in the total production costs of ethanol was expected, mainly due to the recent increase in the agricultural costs of sugarcane, which were impacted by unfavourable weather and low investments in crop renewal, including in fertilisers, in recent years (Jank 2011).

Figure 4: Ethanol production costs: Total production cost and feedstock costs (1975-2012) for hydrous ethanol (E100).



Source: Prepared by the authors. Data sources: Van den Wall Bake et al. (2008) and information provided by ESALQ/PECEGE at the University of São Paulo.

With regard to the automobile fleet, the introduction of flex-fuel technology in 2003 effectively created a new market for the then declining Brazilian ethanol industry. This technology allowed ethanol to be supplied to a market that was once captive to gasoline-driven vehicles, as most of the new vehicles produced in Brazil became equipped as factory standard with flex-fuel technology (Hira and Oliveira 2009). Technical improvements in the fleet were also present before flex-fuel vehicles became widespread, such as the development of corrosion-resistant engines in the late 1970s and early 1980s (Sperling 1987; Cortez 2010; Goldemberg 2004). In addition, government regulation adapted the tax system for these new vehicles by slightly reducing the tax on imported products (IPI) in order to keep their selling prices competitive with the traditional gasoline technology for the consumers. Therefore the flex fuel vehicles acted as both endogenous and exogenous factors of innovation.

Another important innovation applied in the sugarcane industry was the production of energy in combined heat and power systems (CHP or cogeneration), using the bagasse, a solid by-product from industrial process (Strapasson 2008). The re-utilisation of the distillery wastewaters (vinasses) and the filter cake as fertilisers as well as the higher share of mechanical harvesting meant major improvements in the system too.

The integration of all these technologies and sources of innovation has been a key-issue for the competitiveness of the sugarcane sector. However all of this occurred in a country which lacks a patenting tradition, at least as measured by conventional benchmarks, as already presented. It is known that patent statistics do not clearly represent how innovative industries are, due to the fact that not all patents produce the same impact on markets (Watanabe et al. 2001). They can at best be seen as a measure of business interest in the future of specific technologies, possibly hinting at future innovation paths. Contrary to the trend pictured in patent deposit statistics, Brazilian

sugarcane-based ethanol became a symbol of a value-added product and highly dynamic endogenous innovation. Thus, patenting tradition differs in the industrial sector, since some industries innovate without registering patents (Cassiolato et al. 2009).

Moreover, there are many environmental benefits in the sugarcane industry compared to fossil fuels (Strapasson and Job 2007), but much of the environmental performance of the sugarcane ethanol industry derives from domestic regulatory requirements, i.e. an exogenous factor, as discussed in the next section.

Exogenous innovation

In addition to the endogenous competitive forces which led to strong technological progress from the late 1970s, external pressures were paramount for transforming the industry. Exogenous innovation pressures originate in regulation from national and supranational authorities, but also from the requirements of market agents. They usually take the form of regulation or standards seeking to guarantee minimum quality levels or minimise negative externalities of various sorts. Broad legislation has covered the sugarcane industry in Brazil throughout the period of the Sugar and Alcohol Institute (IAA, a federal body which regulated the sugarcane sector between 1933 and 1990) and then less intensively after its liberalisation in the 1990 onwards (MAPA 2009b). Currently the Brazil's Government aims to enhance the regulation system in order to guarantee the domestic ethanol supply and to reduce high price volatility through the year.

Exogenous innovation does not necessarily increase profitability, but seeks to guarantee acceptance in a regulated market (Jaffe and Lerner 2005). In this sense, the Brazilian ethanol industry has been subject to various exogenous innovation pressures in the past, mostly in the form of national legislation. These sought to mitigate the potentially negative environmental and social impacts of biofuels production. A summary of the exogenous pressures which have led to systemic innovation in the Brazilian ethanol industry is presented in this section.

Sugarcane harvest

Unlike bioethanol feedstocks from colder countries, sugarcane has extensive and sharp foliage covering the sucrose-rich canes and crop fires are used to remove the excess foliage of sugarcane prior to harvesting. This was a common and useful practice for many years before mechanisation became viable. Artificial fires facilitate the manual harvest of sugarcane, but at the same time emit a large amount of carbon dioxide and pollutants into the atmosphere (Strapasson and Job, 2007). This phenomenon has sparked a strong debate in Brazil (SPPT 2005; Uriarte et al. 2009). Evidence correlates the practice of crop fires to the large incidence of respiratory disease in nearby communities (Cançado 2007).

Faced with societal pressures to regulate the practice of crop fires, the state of Sao Paulo, responsible for about 60 per cent of the Brazilian sugarcane production, imposed norms in 2002 on how crop fires should be used, as well as a deadline for their phase-out.[10] The industry responded with an increased share of mechanical harvesting, which is efficient for low declivity terrains and does not require the usage of fire. The increase in mechanisation processes also reduced the number of accidents in comparison to manual harvesting (Scopinho et al. 1999). There is an additional advantage to mechanical harvesting regarding the lifecycle emissions of sugarcane, as avoiding exfoliation via fire helps further reduce carbon emissions in the ethanol fuel cycle. Other Brazilian states are trying to adopt this practice. Additionally, in 2009 the federal government submitted the Federal Law Project n. 6.077 to the Brazilian Parliament's approval, regulating

sugarcane burning at the national level, but this project is still under analysis in Parliament.

Mechanisation cannot be seen as a simple consequence of exogenous governmental pressures to phase out crop fires. The cost of harvesting sugarcane with machines is lower than doing so using manual labour, where soil declination allows (Van den Wall Bake et al. 2008: 651). Barriers to accessing this harvesting modality consist mostly of large investments in machinery, but once carried out, operational costs tend to be lower than manual harvesting.[11] On the other hand social public policies must be implemented to integrate the displaced workers into other agricultural and industrial activities. In addition, areas with more than 12 per cent of declivity are still not suitable for mechanisation and this is the case for many traditional areas in Brazil, especially in most of the northeast states (e.g. the states of Pernambuco, Paraíba and Alagoas) and parts of the central and southern states (e.g. the state of Minas Gerais), where sugarcane has been produced for centuries. In addition, depending on the sugarcane variety and type of mechanical harvester, sugarcane can have a yield reduction in the subsequent crop season (proportionally slightly worse than in the manual harvest), mainly due to damage to the plant root system caused by the vibrations of the harvester's cutting blades. Therefore, technology innovation is still required to overcome this challenge.

Water resources

Brazilian environmental law foresees conservation areas in which no agricultural activity can take place. Brazilian Federal Law n. 7.803 from 1989 states that no crops should be cultivated within 30 meters of the riverbank. In addition, Brazilian Law 12651/2012, which recently revoked Law 7.803/1965 (former forestry code law), prohibits cultivation near wetlands, sand-dune barriers, and water springs. Important amendments to Brazil's environmental legislation were extensively discussed at the Brazilian Parliament with the purpose of establishing a new Forestry Code Law (Araújo and Strapasson 2009), which then resulted in the Brazilian Law 12651/2012.

There are concerns about whether this legal framework is enforced at all. This is partly due to the economic power of the agricultural sector, the high costs and bureaucracy attendant on environmental legislation, and partly because of fragile enforcement mechanisms reliant on understaffed institutions such as the state attorney´s office, the forestry police and the Brazilian Institute of Environment and Renewable Natural Resources – IBAMA (Martinelli and Filoso 2008). Still, the sugarcane sector, for instance in the state of Sao Paulo, significantly contributes to native forest recovery, especially in the riparian vegetation zones, under the Agro-Environmental Protocol agreed with the Secretariat of the Environment in this Brazilian state (SMA 2011).

Labour protection norm NR31 and the National Sugarcane Labour Agreement

Sugarcane harvesting is considered to be a harsh activity for those involved in field operations (Martinelli and Filoso 2008: 893). With regard to labour conditions, there is a wide body of legislation in Brazil, which involves high penalties, surveillance and standards. One important piece of legislation is Brazilian Norm NR 31, adopted in 2005, which lists a variety of obligations to protect workers engaged in sugarcane activity, including protective gear, working hours, health and insurance cover, which are often not available in other agricultural activities (MTE 2011).

The problem of enforcement is again present regarding labour protection norms (Martinelli and Filoso 2008: 893). Although widely adopted in the state of São Paulo, it would be challenging for all sugarcane areas in the country to follow special labour protection norms like NR 31, which is frequently questioned by farmers and industrials

on the basis of being difficult and costly to put into practice, especially in rural areas. The Brazilian sugarcane industry associations indirectly recognise the problem, stressing their commitment to improving labour standards within the agro-industry (Desplechin 2010).

Additionally, in 2009, the National Sugarcane Labour Agreement was signed, as a term of social commitment between representatives from the sugarcane industries (e.g. UNICA and Forum Nacional Sucroenergético) and agricultural labour organisations (e.g. CONTAG and FERAESP). The negotiation process for this agreement was mediated directly by the Office of the Presidency of the Republic together with the Ministry of Labour and Employment (MTE) and the Ministry of Agriculture, Livestock and Food Supply (MAPA). This agreement is voluntary with the aim of enhancing best labour practices in the sugarcane sector, focused on agricultural activities, especially because the mechanical harvest is not fully expanded in all sugarcane fields.

It is important to emphasise that, despite the fact that manual harvesting is arduous work, of the approximately 1.3 million people formally working in the sugar cane sector in Brazil around 500,000 people work as sugarcane cutters (Sousa and Macedo, 2009). Hence the conversion from manual to mechanical harvesting must be gradual in order to allow the incorporation of these workers into other activities; some of these employees could work at the sugar and ethanol industries, for example. The current challenge is to stimulate best labour practices while also promoting mechanical harvesting. Therefore, the social agreement was a pioneering initiative in terms of collective labour negotiation at a national level and could be used as a reference for other sugarcane producing countries worldwide. This modernisation process is a market trend and even with mechanical harvest, ethanol still generates more jobs than gasoline per unit of energy delivered (Sousa and Macedo, 2009).

Legal reserve for native vegetation and the Sugarcane Agroecological Zoning

Environmental regulation also presents exogenous innovation effects in the sugarcane sector. For example, restrictions in land use were implemented via environmental legislation in Brazil. Federal Law n. 12651/2012 foresees 20 per cent natural reserve for native species in agricultural properties for the main sugarcane production regions. These reserves can be even higher in other Brazilian regions, up to 80 per cent. Mandatory reserves per farm at such levels are not seen in Europe for instance.

Although sugarcane is cultivated on less than 1 per cent (8.3 million ha) of the Brazilian territory (851 million ha), and only 0.6 per cent considering the amount used for ethanol production, the potential impacts of its large scale expansion has been discussed by the Brazilian Government and the international community, taking into account the high biofuels market potential worldwide. Therefore, in 2009 the Sugarcane Agroecological Zoning scheme was published as an additional environmental requirement for the sustainable sugarcane expansion. The work was carried out by a technical working group[12] coordinated by the Ministry of Agriculture, Livestock and Food Supply (MAPA) and the results were published by the Brazilian Government as a legal framework[13] and also through Embrapa Soils (Embrapa 2010; Manzatto et al. 2009). This case could be used as an innovation reference for the sustainable expansion of biofuels worldwide, as proposed by Strapasson et al. (2012).

Agroecological Zoning sought to promote sustainable land-use in a symbiotic relationship between food production and the environment, by respecting legal boundaries. With this mapping tool, sugarcane expansion will most likely occur on those pasture lands, of which Brazil has more than 170 million ha, with a significant proportion of low efficiency livestock production. In order to avoid negative impacts on land use change, sugarcane agroecological zoning has excluded the following areas for the expansion of this crop: all

the Amazon Region, Pantanal (swampland biome) and the high Paraguay-river Basin; any native vegetation, including Cerrado (a Savannah-like biome) and the Atlantic forest; any indigenous reserves; areas with a high conservation value (UN-consistent); areas lacking favourable conditions on soil and climate; areas with more than a 12 per cent slope, in order to promote mechanical harvesting; and areas that demand full irrigation to produce sugarcane.

The zoning has ruled out 91 per cent of the Brazilian territory for sugarcane development. Nevertheless the available areas for its expansion are 63 million ha, ten times more than the current sugarcane area planted for ethanol production. Thus, Brazil is already committed to avoiding building new sugarcane mills in environmentally sensitive areas. Transport costs dictate that sugarcane must be cultivated at a maximum distance of 40km from processing mills, preventing expansion of sugarcane plantations into non-indicated areas, according to agroecological zoning. The legal framework has also made any source of financing conditional upon this zoning. In practical terms, there is no funding for projects that do not meet this legal framework, from any bank, such as BNDES and Banco do Brasil. This measure is key public policy for promoting a responsible expansion of sugarcane in Brazil in line with climate change commitments (Araújo and Strapasson 2009) and reducing the risk of potential negative land use change effects from biofuels expansion (Strapasson et al. 2012). As a result, according to the SAP-Cana[14] database, since the publication of this zoning in 2009, all new industrial projects have been installed according to the agroecological zoning requirements to date i.e. only in municipalities authorised by the zoning legal framework.

In addition to this agroecological zoning there is another official zoning in Brazil called Ecological-Economic Zoning, which disciplines land use as a whole, in a more general context than agroecological zoning, through the identification of areas for agriculture, environmental conservation and others. Ecological-Economic Zoning is supported by a federal legal framework but its description must be established and approved by each state parliament. This type of zoning has been already implemented for the Amazon region for example (Strapasson et al. 2012).

THE SIGNALS SENT BY EUROPEAN DIRECTIVE 2009/28/EC TO THE BRAZILIAN ETHANOL INDUSTRY

In the European Union, biofuels started to be significantly traded only in the early 2000s (REN21 2012). In the European Renewable Energy Directive (2009/28/EC), sustainability requirements are proposed, creating a long-term market for biofuels coupled with regulations. This provides an exogenous signal to the biofuel industry that innovation is needed to meet the requirements of the newly opened markets.

In the past, national laws were the major external regulating mechanism in the industry. With the introduction of sustainability criteria, an external actor (the European Union) has directly reached the industry, in new cross-border interplay. Since the early development of the European directive Brazil has demonstrated clear interest in EU policies on biofuels, embodied by the sugarcane industry association's (UNICA) decision to open an office in Brussels in early 2008.[15]

Global problems such as carbon dioxide emissions from the sugarcane burning for harvesting were not considered as a priority in past Brazilian environmental regulations linked to the bioethanol sector.[16] Increasing environmental concerns worldwide in the 1990s, especially after the Rio-92 Earth Summit, pointed out new issues should also be addressed, such as climate change and biological diversity, with the creation of the United Nation Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD) at that Summit. While environmental legislation applied to

the ethanol industry in Brazil often had the goal of improving sustainability as a whole, to date it has done so within a fragmented legal framework.

With the internationalisation of bioethanol as an energy commodity, and in the face of simultaneous Brazilian commitments to the UNFCCC process as a signatory of the Kyoto Protocol, other aspects of bioethanol production and usage came to the centre stage. Then, greenhouse gas emissions during the lifecycle of ethanol became the main benchmark of the contribution of biofuels to efforts to mitigate climate change. In this section we analyse the sustainability requirements for biofuels contained in European Directive 2009/28/EC. We then compare the European requirements with past innovation and the latest moves from the Brazilian ethanol industry.

European Directives and the sustainability criteria for biofuels

Amid general demands to improve multiple aspects of the European energy infrastructure, the European Commission (EC) redefined its initial biofuels strategy from 2003, and unified previous documents on the promotion of renewable energy into a single directive launched in 2009 (EC 2001; 2003; 2007; 2009). For most of 2007 the EC Directorate-General for Energy and Transport (DG TREN) spearheaded the policy-making process on biofuels sustainability, carrying out consultations and developing initial draft versions of the upcoming new renewable energy directive, which was finally put forward on 23rd January 2008 in Brussels and adopted on 17th December of the same year. The final version – 2009/28/EC was published in May 2009 (EC 2008; EC 2009).

The development of the new directive was closely watched by lobby organisations from Europe and abroad due to its potential effectively to change market conditions for the development of biofuels. The proposed target for 2020 - 10 per cent renewable energy in the transport sector – much of it likely to be fulfilled via biofuels - was accompanied by intense debate. As the production of first-generation biofuels is a land-intensive activity, the inevitable expansion of production to meet European demand has international repercussions on land use, as well as biodiversity and social systems. Responding to the debate on whether biofuels can de facto deliver positive results, the European Commission proposed a set of sustainability criteria to be followed to make biofuels eligible for the mandatory 10 per cent renewable energy target in the transport sector by 2020.

According to the adopted directive, only biofuels which are certified sustainable can be counted by European member states towards the mandatory 10 per cent share of renewable energy in the transport sector. Still according to the directive, biofuels counted towards this target should be certified sustainable irrespective of their origin (European Commission 2009: 36-38). According to the European criteria, biofuels: should deliver a minimum of 35 per cent savings in greenhouse gas emissions, when compared to lifecycles of their fossil-equivalents. These requirements are elevated to 50 per cent after 2017 and 60 per cent after 2018; cannot be produced in areas of high biodiversity; cannot be produced in untouched forests, areas of protection and highly biodiverse grasslands; should not be sourced from areas with high carbon stocks, wetlands and continuous forests; must be produced under work conditions which observe the Conventions of the International Labour Organization (ILO)

The sustainability scheme for biofuels was not adopted in the exact form initially proposed. While the proposal of the Renewable Energy Directive was being discussed in the European Parliament and the Council in 2008, the sustainability scheme was changed slightly. The final text adopted in May 2009 contained requirements for periodic reporting on labour conditions according to ILO Conventions and on the impacts of

biofuel demand on food prices and land rights, especially regarding people living in developing countries.

Practical implementation of the sustainability criteria and verification schemes is an ongoing process as of 2011. Member states have their own task forces to adapt to the requirements, and the European Commission proposed implementation guidelines to help policy makers ensure national compliance and trade tracking of biofuel trade chains by issuing guidelines published in June 2010. Moreover, 13 voluntary certification schemes have been recognised by the Commisson to date. As it is unlikely that all biofuels will be produced under the same conditions, a mass-balance system may be implemented to weight the share of sustainable biofuels in each commercial shipment.

The European market is important for Brazilian ethanol producers given trade volumes with countries like Germany, Sweden and the Netherlands. In the face of this market interest, the sustainability criteria have exerted innovation pressures on the bioethanol industry. The areas where innovation will take place depend on the relative maturity of present technologies and pressures from the European requirements for change.

However, potential EU overregulation, as well as uncertainties, regarding the implementation of the sustainable biofuels criteria is causing major concern for the Brazilian ethanol industry and also potential new global ethanol producing countries, especially in Latin America and Africa. Common sense is needed in the European biofuels agenda, combined with science-based arguments, if innovation and the biofuels market are to be promoted worldwide, rather than weakening this important source of renewable energy in Europe or restricting the market only to domestic producers.

Perceived reactions from the Brazilian ethanol industry to the EU criteria: Three paths based on policy uncertainty

The European sustainability criteria for biofuels invoke market credibility, since adopted directives are binding to all EU27 member states. But while the European criteria are representative of a market of 500 million people, other markets such as the US are already large trade partners in bioethanol without sustainability requirements. According to statistics from the Brazilian Secretariat for Foreign Trade (Secex), ethanol exports to the US amounted to 4.38 billion litres between 2006 and 2009, while exports towards the EU amounted to 3.4 billion litres during the same period. Added to this, a number of other sustainability schemes for biofuels have been proposed at different levels (UNICA 2012). This puts the ethanol industry in an uncertain position prior to engaging in costly compliance investments. The lack of clear guidelines on sustainability criteria has been raised by bioenergy traders (Junginger et al. 2010). Even as the European Commission published guidelines for implementation and monitoring of the sustainability criteria in 2010, as well as an initial batch of 13 voluntary schemes recognised so far as meeting the sustainability requirements, the lack of definition in some aspects of implementation, as well as inaccurate cost estimations for different certification methods means uncertainty persists.[17]

Uncertainty is especially pronounced due to the two main pending points of the EC directive (RED): the approach to incorporate indirect land use change (Art. 19 §6) in the methodology for accounting of lifecycle emissions, as well as the definition of highly biodiverse grasslands (Art. 17 §3c). These two issues create strong uncertainty in critical market aspects, because they can render biofuels “sustainable” or not depending on the methodologies used.

Indirect Land Use Change (iLUC) caused by biofuels expansion is still a controversial issue and deserves further study and clarification about its potential effects before it can be incorporated into any sort of legislation. It means that an expansion of land for

biofuels production onto agricultural land may lead the original crop indirectly to displace another land elsewhere. The International Energy Agency, through its Bioenergy Task Force 38, is conducting many international debates on this matter. However, results about a potential carbon-debt effect from iLUC still present high variation and uncertainty, depending on the methodology used, especially because the models are sensitive to the type of crop, country, yields, land availability, the agricultural and energy market dynamics, and other factors (see Akhurst et al. 2011 on iLUC multi-modelling analysis). The incorporation of iLUC criteria could, for example, render most types of biodiesel unfit to meet the minimum 35 per cent GHG threshold depending on the econometric parameters used (EBB 2011).

Based on the available literature, it is likely that no scientific consensus on the iLUC issue will be met in the short-term or even the long-term, due to the high uncertainties associated with both complex agricultural dynamics in a globalised food market and energy scenarios worldwide. However, an innovation agenda using iLUC mitigation policies could already be implemented by biofuel-producing countries through best practice schemes, for example: increasing agricultural and industrial yields; stimulating the use of efficient crops and residues; promoting biofuels agroecological zonings and capacity building programmes.

Therefore, the European Commission recently decided not to make the introduction of iLUC criteria compulsory to determine biofuels sustainability, but limited to 5 per cent first generation biofuels out of the 10 per cent biofuels target by 2020. This restriction may attend to some NGOs claims and political concerns, but may also negatively affect the infant biofuels market worldwide, by, for example, not differentiating the types of bioenergy crops. In contrast to the USA, which considers sugarcane-based ethanol as an advanced biofuels, the EC simply generalised all types of biofuels in this recent decision. As an example of such a contradictory measure, first generation sugarcane-based ethanol currently has higher ethanol productivity than the possible second generation ethanol based on wheat. Moreover, the European Association of Farmers' Organisation (Copa-Cogeca), FEDIOL, ePURE, COCERAL and European Biodiesel Board stated that the 5 per cent cap is an irresponsible U-turn on the EU biofuels policy (Copa-Cogeca et al. 2012). This measure may undermine investors' confidence and therefore many organisations have been questioning the credibility of EU policy in respect of decarbonising transport.

With regards to the EU RED sustainability criterion on highly biodiverse grasslands, proposed as one of the no-go areas for biofuels crops, this measure may directly affect Brazil and many African countries with high potential for biofuels production. In Brazil grasslands already converted to agriculture especially for pasture are precisely those considered by the Brazilian legislation as one of the main potential areas for the expansion of bioethanol production with the lowest environmental impact. In addition, a potential enforcement from the EC in this regard has been seen as a tendentious policy, given the measure would be inequitable or unbalanced, since the European biomes' biodiversity are more damaged than third countries grasslands to date, but Europeans would not be directly affected by this criterion.

As the industry is faced with policy uncertainty, it could be seen as engaging in three non-exclusive strategies: (1) Adapting its innovation paths towards compliance with the EU criteria; (2) seeking market security by focusing innovation efforts on biorefinery models, diversifying its input-output strategy and risk; (3) and market leakage, by seeking less-regulated markets.

Adapting to the European Criteria

The past development of environmental legislation made Brazil achieve standards which generally ensure compliance with many of the European criteria for sustainable biofuels. Even though it is difficult to identify absolute causality between the EU sustainability scheme for biofuels and the current reactions from the Brazilian industry, there are recent events which indicate some level of possible influence:

Accounting of emissions

Part of the success of the Brazilian ethanol industry is the greenhouse gas balances of ethanol (Macedo et al. 2008). Methodologies have been established which measure GHG emissions in the production and usage of ethanol both as E100 and as E25 (blend with gasoline). The balance of GHG reductions in the usage of ethanol instead of gasoline vary between 80-90 per cent in the absence of significant land use change (Macedo 2004). Strong consensus is achieved on GHG savings thresholds, with studies ranking Brazilian ethanol far above the minimum of 35 per cent required by the EU. The directive itself provides a default value for ethanol production via sugarcane as delivering 71 per cent GHG savings compared to gasoline (European Commission 2009a: 52). Similar figures are presented by the US EPA (61 per cent), the IEA (90 per cent) and academics such as Macedo (85-91 per cent). (EPA 2010; IEA 2002: 13; Macedo et al. 2008: 11).

There are active efforts to reduce further the lifecycle emissions of sugarcane ethanol, as illustrated by recent efforts by the Brazilian Bioethanol Science and Technology Laboratory (CTBE) to develop low impact machinery and private sector investments on ethanol pipelines, which can further reduce the carbon intensity of ethanol.

The common practice of co-generating electricity at ethanol mills also helps to reduce the GHG footprints of biofuels. Modern cogeneration equipment, which produce both heat and power, has at present a very high efficiency level, overall ranging from 80 to 93 per cent (Kamate and Ganvati 2009; Andersen, 2009; Procknor, 2008). The cogeneration module provides power for the bioethanol plant and the excess electricity is fed into the national grid. This method of producing electricity, non-reliant on fossil inputs, is a fundamental reason behind the good energy balances associated with sugarcane ethanol (Goldemberg 2006). This fact is even recognised by sceptics of biofuels, such as Pimentel (2003). However, the high performance already achieved can limit further improvements, via decreased returns on investments. In addition, the possible emergence of second generation bioethanol might create internal competition for feedstock (sugarcane bagasse), today used for energy generation in the mills.

Since 2009 Brazil participates in the GlobalSoilMap initiative, an international consortium which aims to increase information on soil characteristics of different regions of the globe, which includes carbon stocks as required by the European Directive. The Brazilian Agricultural Research Corporation (EMBRAPA), through its soil research centre, is leading mapping efforts for Latin America and Caribbean.

Labour conditions

As a signatory to the ILO conventions, Brazil has a labour norm for agricultural field work (NR 31) which regulates safety and health standards of workplaces. Proper observance of NR 31 would be compatible with the ILO, which in principle would safeguard against negative labour assessments from the European Commission. On the other hand, as the European requirements only call for countries to be signatories to the ILO conventions, the effectiveness of this item is questionable. Signing is relatively easy and the directive does not go as far as specifying specific monitoring methodologies for reporting labour standards. This thus constitutes a weak source of innovation pressure in the industry.

As seen in the sections above, the Brazilian ethanol industry has been actively coordinating with government, private and research institutions to innovate towards

reducing carbon footprints, gathering data about soil conditions and reinforcing labour standards. Some of the measures, especially those linked to carbon management and land mapping, correlate in time with the development of the European directive 2009/28/EC. Others such as forest and waterways protection, as well as labour protections were in place long before the European legislative process on biofuels. It can be said that the EU directive has been at least a partial motivator for the recent innovation processes which are developing in the Brazilian ethanol industry. Table 1 summarises the potential impacts of European legislation on the industry, assuming compliance with this legal framework.

Table 1: European Sustainability Criteria and potential signals for innovation

EU sustainability criteria for biofuels (in 2009/28/EC)	Brazilian bioethanol industry	Pressure for future innovation
Minimum of 35 per cent GHG savings	• GHG savings in the order of 50-90 per cent for sugarcane ethanol • Phase-out of crop fires (state of Sao Paulo Law 11.241/2002; Federal Law Project 6.077/2009)	• Incremental innovation on existing processes • Shift from truck-based to pipeline ethanol transport systems (planned) for long distances • Replace diesel by ethanol or biodiesel in field machinery
Land use restriction: High biodiversity	• Environmental law: minimum distance from water sources • Mandatory 20 per cent reserve in agricultural properties for native species • Agroecological zoning and ecological-economic zoning	• Clarification of status of different land in the country • Production and dissemination of information
Land use restriction: Protected areas	• Federal Law 12.651/2012 on environmental protection • Agroecological zoning and ecological-economic zoning	• Clarification of status of different land available in the country • Production and dissemination of information
Land use restriction: High carbon stocks	• GlobalSoilMap participation in initial stages • Agroecological zoning and ecological-economic zoning	• Map carbon stocks of land countrywide. • Clarification of status of different land-use in the country
Labour conditions	• Brazilian labour legislation e.g. NR31 and others. • National Sugarcane Labour Agreement	• Homogenisation of labour standards within industry • Better enforcement of existing labour norms compatible with ILO conventions of. • Capacity building for sugarcane manual harvest workers to have other job opportunities.

Risk-avoidance strategy

In the face of increasingly complex conditions – tariffs and sustainability mandates – present in international biofuel markets, the ethanol industry might steer innovation towards diversifying its activities. As Dahmén (1994) says, innovation occurs via the creation of new capacities and diversification of business risks. From the industry perspective, there is always uncertainty involved when shaping innovation paths due to the requirements of a single market. This has its roots in two main reasons. Firstly, the European Commission has to deliver periodic reports on environmental sustainability aspects. In principle, a country might be downgraded to unsustainable biofuels producer (in practice excluded from the market) if sustainability problems are uncovered in those reports;[18] secondly, it is not desirable to rely on one export product (bioethanol) for a single market. Experience with low-diversification monoculture brings back lessons from the decline of the coffee industry in Brazil after 1930. Additionally, given the amount of research interest in transport energy, it is plausible that new energy carriers might achieve price-parity with combustion engines, reducing demand for bioethanol somewhere in the future.

That said, the industry might respond to such signals by innovating in other ways, that is by expanding beyond the core ethanol business. This is the reason behind the concept of biorefineries. Given multiple raw inputs, a biorefinery yields a variety of outputs, from energy to chemicals, construction materials, food, biogas, plastics, among others (Ragauskas et al. 2006). In a biorefinery strategy, such as in a mixed portfolio of financial securities, multiple inputs (sugarcane, straw, wood) could be selected, and multiple end-products could be generated (ethanol, sugar, biomaterials, electricity, heat) depending on market conjunctures. Such a multi-product model is similar to the innovation strategy pursued by the pulp and paper industry for many years (Laestadius 2000).

Like the crisis of the Brazilian ethanol programme from 1989, when the so called “sugar chemistry” investigations focused on diversifying the output of sugar mills, the European directive might prompt such a renewal of this market-diversification behaviour. Just as sugar kept the ethanol industry alive during the 1990s and ethanol and electricity co-generation reinforced the sugar business after 2003, robustness tends to increase when a new output is added to the sugarcane mill (Andersen 2008: 27).

Market leakage

There is concern from developing countries that global environmental problems such as climate change might be used as an excuse for disguised trade barriers, known as green protectionism (UNCTAD 2010). Thus, sustainability criteria could be seen as a green conditionality or a non-tariff barrier to trade, leading countries to potential commercial litigation at the World Trade Organization (WTO). The bioethanol industry is expected to react, if necessary, to the European requirements proportional to the level of interest it has in that market, or if it believes the EU criteria will serve as a basis for global standards for biofuel sustainability. In other words, if member states do not uptake their biofuels usage in line with the directive´s targets, the absolute size of the European market will be smaller than once thought. Similarly, if other important trade partners (e.g. the USA) adopt very different approaches towards biofuel requirements, the incentive for compliance with the EU criteria could be weakened.

Given the characteristics of commodities such as bioethanol, international trade is highly dynamic, and fast entry of new producers and consumers is expected (UNCTAD 2009). In the presence of regulations, trade could be always directed to the market with lowest requirements. Given the existence of demand in alternative markets, sustainability has to command a price premium in Europe, although this has not been verified in practice

yet, otherwise the end result might be trade diversion. As south-south trade volumes are on an ever-increasing trend, the Brazilian industry could soon bypass major destinations (such as US and the EU) looking instead to China, India and other countries interested in diversifying their transport fuel portfolios (Hira 2010). Japan and South Korea also represent potential strong consumer markets.

The United States has no comprehensive, nationwide sustainability scheme in line with the European directive. While EU ethanol production reached 4.3 billion litres in 2011, US production reached 54.2 billion litres in the same year (REN21 2012). In Europe, biofuels that are not certified as sustainable will not be banned from the market, but will not be counted towards the European mandatory target of 10 per cent by 2020. In this sense, biofuels which do not adhere to the EU criteria will struggle to find markets in Europe unless very advantageous in price compared to the fossil alternative. As restrictions are lower in the USA, unsustainable biofuels according to the European regulation might well be absorbed there. In global terms, this could mean a setback for efforts to improve the global transport energy infrastructure by promoting better biofuels. Here lies the importance of future coordinated policy on higher standards for biofuels in all relevant markets, avoiding market leakage which would reduce the efficiency of sustainability schemes applied to ethanol.

CONCLUSION

Based on a broad review of recent literature as well as semi-structured interviews with academics and officials from both the Brazilian government and European Commission, this paper has explored the innovation mechanisms of the Brazilian ethanol industry and how these are likely to respond to the sustainability criteria for biofuels contained in the European Renewable Energy Directive proposed in 2009 (2009/28/EC). In its 37-year history, the Brazilian ethanol industry has shown itself to be highly innovative. While innovation has not been captured by patent statistics, the ethanol industry developed deep forward and backward linkages within the Brazilian economy, securing support from the government, financial institutions, farmers, the automobile industry and other sectors of society.[19]

The industry has shown rapid innovation capacity in a market facing constant change. Even as the Brazilian ethanol industry overcame difficulties in the 1990s, ethanol production costs kept falling. The domestic ethanol market expanded sharply after the introduction of flex-fuel technology in 2003. After 2005, with the coming into force of the Kyoto Protocol allied with climbing oil prices, ethanol came under the international spotlight, no longer as an example of successful national green energy policy but as a global energy commodity. Despite the complex national environmental and labour legislation, the sugarcane sector has been significantly progressed through innovative public policies, such as sugarcane agroecological zoning and the national labour agreement.

As ethanol attracted global attention, it was criticised for its potential dangers to ecosystems, to human health during production and to competition with foodstocks. Comprehensive sustainability criteria specific to biofuels were then introduced by the European Union as part of its Fuels Quality Directive (FQD) and Renewable Energy Directive (RED) adopted in 2009. However the effects of these legislations and further related bills on the Brazilian ethanol industry are still unclear. Potential agro-industrial innovations are expected to be undertaken in order to comply with European biofuels criteria, but at the same time an overregulation of this market could discourage the production of sugarcane-based ethanol to attend the European market, not only in Brazil, but in many other tropical countries too, especially in Africa.

Based on an examination of the historical development of the Brazilian bioethanol industry, it is clear that ethanol in Brazil was subject to strong innovation pressures between the early Proalcool Programme in 1975 to the present. Sources of innovation can be divided into two main categories: (1) endogenous; (2) and exogenous. Endogenous innovations were driven by the profit-seeking, competitive nature of the industry. The 1980s saw the adoption of multiple sugarcane varieties, the utilisation of production residues (vinasse) into fertiliser, biological controls and the establishment of technical standards (such as E100, along with its transport and blending infrastructures). The 1990s marked the optimisation of surplus electricity from bagasse-fired cogeneration, advances in automation and management, increases in the sugar exports as well as prospective multi-output models for the sugarcane mills. After 2000, the key innovations were the introduction of flex-fuel engines and the emergence of additional markets for sugarcane products, such as fibres and bioplastics, which hedged against fluctuations in ethanol prices and further contributed positively to the climate change agenda.

Exogenous innovations were introduced mainly in the form of regulations. Even though the Brazilian industry has been shown to have a long history of being subject to regulations – and has innovated accordingly – the introduction of internationally-applicable sustainability criteria by an external agent challenged the traditional domestic policy context in which the Brazilian ethanol industry operated. The European sustainability criteria adopted in 2009 called for minimum GHG savings, restrictions on usage of certain ecosystems for biofuel production and periodic reports on labour conditions and food supply primarily affecting populations in developing countries.

Sugarcane-based ethanol from Brazil was subject to similar requirements long before the European directive was introduced. These have facilitated some aspects of compliance. In recent years, federal and state laws were directed at watershed and wetland protection, the gradual phase-out of sugarcane crop fires and labour standards. The sugarcane agroecological zoning from 2009 also represented a major national step towards ethanol sustainability. All these regulations have been acting as external, although domestic, sources of innovation and were broadly incorporated by the industry to date. On the other hand, aiming to give further contribution and support to this progress in Brazil and other countries, the European indicators could be more objective, applicable, affordable and executive, respecting the reality and the specificities of different biofuels industries and also the economic viability for the implementation of such indicators worldwide. Moreover, biofuels is still an emerging industry in Africa for example and additional external costs may reduce its competitiveness and development.

In parallel, it is also important to highlight that there are no sustainability criteria for fossil fuels being regulated worldwide or at the EU level, representing unequal competition between renewable and non-renewable fuels. This especially favours the gasoline and diesel markets. If climate change is really a global concern, renewable sources of energy should compete on a level playing field with fossil fuels, to ensure that carbon-pricing schemes are extended to liquid fossil fuels sold within the EU and so better reflect their environmental impact. This paper has shown that while there are similarities between the EU sustainability criteria for biofuels and past national laws affecting the sugarcane ethanol industry in Brazil, there are clear differences in the objectives of past regulations introduced by national authorities and the new requirements implemented by the EU.

While national laws sought to regulate the sugarcane industry so as to steer innovation towards solving problems, the consequences of which affected Brazil itself, such as local damage to ecosystems, waterways, harsh labour conditions and pollutant emissions due to crop fires, those were all problems in which the negative externalities had observable local impact. The EU sustainability requirements, on the other hand, are primarily part of the European strategy for climate change and energy security, which seeks to diversify energy sources in Europe, favouring those with lower carbon intensity so as to help

tackle climate change; which impacts may not affect a single country, but the entire globe. In addition local conditions are introduced by the EU such as the necessity of ratification of ILO conventions and monitoring food and fuel prices. Brazil already signed all the main ILO agreements and already monitors its food and fuel market.

The introduction of sustainability requirements for biofuels to be counted towards the mandated target of 10 per cent renewable energy in EU transport by 2020 sends three non-exclusive innovation signals to the industry. The first represents compliance with the introduced sustainability criteria on the innovation paths of the industry. This has already been taking place in a number of ongoing initiatives to minimise carbon intensities and environmental degradation about the production of ethanol, such as pipeline transportation, agroecological zoning and low impact machinery. While costly, adhering to the EU criteria signals the Brazilian industry is betting on new market conditions created by the EU strategy for climate change mitigation. The second signal sent to the industry is innovation towards risk-minimisation, as there are uncertainties about whether or not the EU criteria will develop into a dominant system for setting the rules for international trade of sustainable biofuels. By diversifying its input-output portfolio, the ethanol industry can expand beyond the trinity of sugar-ethanol-electricity which has characterised the core business model to date. This builds historically on the so-called “sugar and ethanol chemistry” attempts to diversify the industry in the 1990s. Bio-plastics, fibres and organic products are examples of alternative outputs that already work as a hedge against uncertainties in the bioethanol markets. The third signal would be plain market leakage. While a “race to the bottom” in environmental standards is unlikely due to the advanced status quo of the industry, high entry tariffs in the European market might gradually shift the industry away from compliance with EU sustainability criteria, adhering instead to requirements in other attractive markets such as the USA, India or China. All three signals for innovation are pursued simultaneously by market agents without a command-and-control structure, since production mills are decentralised and ownership is still fragmented.

While absolute causality cannot be established between the EU sustainability criteria and recent innovation efforts from the ethanol industry, the European directives coincided with many recent efforts from the industry towards reducing the lifecycle emissions of ethanol production, increasing transparency in the production process, enhancing accountability of production indicators and promoting greater scrutiny of its impacts on the environment and local societies.

Like other energy sources biofuels might not be absolutely sustainable, but an attempt to improve their status with transparent, private and independent certification could be a positive step forward, using market power in a positive way for both the environment and societies seeking green development paths.

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[1] In Brazil ethanol surpassed gasoline as the main liquid fuel for light vehicle fleets since 2008.

[2] In late 2012 the European Commission limited to 5 per cent the total share of first generation biofuels out of the 10 per cent renewable energy target for transport by 2020. This reduction may significantly affect new investments in sugarcane industries with the view to supply ethanol from Brazil to Europe.

[3] For example the industrial lobbies which are often present in political arenas, trying to gather support for the creation of new markets or the adoption of support mechanisms which cater to the interests of their supporting industries.

[4] There are many ways an industry can bypass an entry tariff, such as by dumping, looking for alternative entry routes (product bundling), reducing profits, reducing costs, starting production locally, asking their national government to contest trade barriers through the World Trade Organization etc.

[5] In theory firms could earn higher profits with the introduction of regulations in the short term. One example of this occurring is when a regulation effectively lowers standards relative to former common practice. By downgrading (meeting the minimum necessary), an industry could engage in "regulated" markets at lower-than-usual costs. This is rather unusual and occurs mostly in specific circumstances given that regulations tend to be introduced when industrial trends are not internalising all relevant costs, such as environmental and health aspects.

[6] In July 2011, the European Commission published a list of seven recognised voluntary certification schemes for biofuels. The list currently has 13 recognised voluntary schemes. How different certificates will compete in the market is still unclear. See:
http://ec.europa.eu/energy/renewables/biofuels/sustainability_schemes_en.htm

[7] Blending ratio recently re-established at 18 per cent by the bill (Medida Provisoria) 532/2011, which also gives additional power to the National Agency of Petroleum, Natural Gas and Biofuels (ANP) to regulate the ethanol market. Before this law the blending ratio varied between 20 per cent and 25 per cent.

[8] Most biofuels have a lower Energy Return on Investment (EROI) than oil. This makes biofuels more expensive than fossil equivalents, compared in free market conditions. The only biofuel that has been more price-attractive than gasoline is sugarcane-based bioethanol. High oil prices make gasoline more expensive, thus, the alternative (biofuels) become more price-attractive, with some correlations with the sugar market as well.

[9] As for example, the Brazilian company WEG ships electric generators to be used in boilers worldwide. Industrial infrastructure companies such as Renk-Zanini and Dedini are active exporters of bioethanol plant technology.

[10] São Paulo State law Nr. 11.241 of 19th September 2002.

[11] Mechanical harvesting accounted for 46.6 per cent of all sugarcane harvested in the major production state (Sao Paulo), for the harvest of 2007/2008, a 36 per cent increase compared to the 2006/2007 harvest (Aguiar *et al*, 2009). Additionally, wages in the sugarcane industry are among the highest in the agricultural sector of Brazil (Costa 2007).

[12] MAPA Ministerial Decree (Portaria) 333/2007.

[13] Presidential Decree 6.961/2009; MAPA Ministerial Decree (Portaria) 333/2007 Normative Instruction 57/2009; Bacen (Central Bank of Brazil) Resolutions 3.813/2009 and 3.814/2009; Federal Law Project 6.077/2009.

[14] SAP-Cana is an online official monitoring system of the Brazilian sugarcane industry, established and managed by the Department of Sugarcane and Agro-energy at the Ministry of Agriculture: www.agricultura.gov.br

[15] The Brazilian Ethanol Industry Association (UNICA) opened a representation office in Brussels in May 2008, following a similar move in Washington (late 2007). The Brussels office serves as a gathering point of regulatory matters of interest to the Brazilian ethanol industry.

[16] Crop fires were, but due to their detrimental effects to the health of populations in nearby areas.

[17] The voluntary schemes recognised by the European Commission can be seen at:
http://ec.europa.eu/energy/renewables/biofuels/sustainability_criteria_en.htm

[18] The first report of 2011 foresees the assessment of issues such as food security and labour conditions in biofuel producing countries/regions.

[19] Patents were not analysed in depth in this study on purpose. This because patent statistics have a substantial weakness attributing the importance of each patent registration in total patent registries (many patents do not yield productive innovations), as well as due to different organisational cultures, as some patenting is much stronger in some regions (US, EU) than others (Brazil) and that has not been a good proxy for innovation, as Brazil had the lowest production cost for bioethanol as of 2010.

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Book Review

Cristina Ares Castro-Conde *University of Santiago de Compostela*

The Impact of European Integration on Political Parties: Beyond the Permissive Consensus by Dimitri Almeida
Routledge (2012), ISBN: 9780415693745 (hb)

This volume presents a comprehensive comparative analysis of the positions of more than 100 national parties towards the European Union (EU) covering all current member states from the beginning of the integration process to the present day. The main research question focuses on the extent to which common ideological traditions lead to the emergence of convergent attitudes and programmatic responses to European integration. The author studies party-based positions towards the EU within those party families which shaped the integration process (social democratic, liberal and Christian democratic party families) or embodied partisan opposition to the EU (radical left and right-wing party families).

According to Almeida's cleavage-based approach, national party attitudes and responses to European integration are dependent on their perception of the closeness of fit between their party-based identity and the political course of European Union as revealed by the direction of domestic policy change. Intra-family variations are attributed to specific domestic contexts and the author reveals large cross-family variations concerning the extent to which party origins shape partisan positions in respect of the integration process.

The 202 pages of the volume contain an introduction entitled "Political Parties and the Politicization of Europe", six chapters, and a conclusion. To begin with, the introduction contextualises the contribution to the field of EU Studies, presents the research design and makes explicit the relevance of an analysis centered on the notion of party families. Chapter one develops a general model for describing the main drivers of party behaviour prior to elucidating the relevant factors for explaining party positions on specific policy issues such as European integration. Subsequently, the rest of the chapters are devoted to examining partisan responses to the EU in respect of national parties from each one of the political families covered (one family per chapter). Finally, the conclusion includes a section about the limitations of the study and a final one dealing with the future research agenda concerning the Europeanization of national parties and party systems. Additionally, throughout the book, ten figures and seven tables clearly and efficiently summarise the research agenda and the evidence gathered.

Although the author´s theoretical model of party behaviour is not capable of predicting future partisan responses to European integration, and at least green and regionalist party families would be very much welcome in a broader research design, The Impact of European Integration on Political Parties is undoubtedly a valuable contribution to the fields of EU Studies, Comparative Politics, and Political Parties and Party Systems. The

main reasons are two. First, it develops a theory of party behaviour by putting forward a general model to explain the whole spectrum of party positions on European integration. The model, a "junction point between actor-centered and historical institutionalist approaches" (p. 160), considers both the ideological and strategic drivers of party positions as well as a broader than usual spectrum of goals that parties seek to attain. Second, using party programmes and quantitative data, the author provides a large amount of valuable data on national party reactions to the EU across the 27 member states.

Added to this, the book provides cause for academics working in the field of EU Studies to consider in greater depth the contribution that a comparative research approach can make to our understanding of party-political attitudes and behaviour at this stage in the integration process.

The volume would be of interest for both scholars and experts on partisan issues and those people concerned with the politicisation of the EU.

Very much recommended.

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Book Review

Panos Stasinopoulos *King's College London*

Europe's Constitutional Mosaic by Neil Walker, Jo Shaw and Stephen Tierney Hart Publishing (2011), ISBN: 9781841139791 (hb)

The interaction of the EU and national legal orders has been long debated by those who focus on the EU and its sui generis legal order. At the heart of this discussion lies constitutional law, not only because the constitution is the founding document of numerous Member States, but also because it is a reminder of an endeavour in which the EU did not succeed: the short-lived Draft Constitutional Treaty of 2003.

Europe's Constitutional Mosaic emerged as a compilation of papers presented during a series of seminars organised by the Edinburgh Law School and is constituted of six parts. The first part examines the constitutional paradigm of the EU itself and its relationship with national Constitutional orders. The European Convention on Human Rights is discussed in part two, while the following part reviews the Constitutional realities in the states in the outer sphere of the Union. Parts four and five give different perspectives on the constitutional tensions, covering Europe's roles in the sub-state and international arenas, respectively. Finally, the book closes with an examination of the Criminal and Labour law functions in the EU.

The introduction explains the raison d'être of the book, and provides the reader with the necessary fundamental knowledge needed, namely what one means by 'constitutional' and to what the titular 'mosaic' refers. It is made clear early in this first chapter that the EU's constitutional powers are fundamentally different from their constitutional equivalents at state level as they are based on plurality and heterarchy and are more diverse and fluid. Within this discussion too, the authors also explain key issues such as legitimacy, identity, and the boundaries of the EU's constitutional expansion, revealing how the discussion of said boundaries has resulted in judicial disputes initiated by Member States, such as the famous reaction of the German Constitutional Court to the Treaty of Maastricht.

This relationship is at the heart of Part 1 which is one of the strengths of the book. The first contribution, by Cormac Amhlaigh, focuses more on the sovereign character of EU's powers, while the second contribution, by Cruz, more explicitly deals with the different approaches to EU-Member States relationship. Amhlaigh's article rightly commences with references to the case-law of the Court which established the quasi-constitutional elements of the EU during its early stages, before examining various means to explain the EU's constitutional nature. The first is, rather fittingly, the Court of Justice of the European Union (CJEU), to which the chapter returns later; the second is a more federation-like paradigm based on the multiple levels of governance and legal compliance in the EU; and the third strand concerns constitutionalism as a forum of debate and discussion. It is this discussion on the means one needs in order to explore the EU's legal and constitutional reality upon which the second essay is based; it then

examines different strands varying from the state-centric ones to constitutional pluralism (the more EU-friendly one) via examples of integration beyond the state paradigm (which tries to bridge the other two conceptions). Its conclusion is insightful, if not entirely optimistic. None of these conceptions can effectively explain the EU's constitutional evolution owing to their strict boundaries and constructs, and, thus, EU constitutional reality may still be a terra incognita.

Part 2 focuses on the human rights regime in the EU, and more specifically on the ECHR, a mosaic within a wider mosaic. The first contribution, by Andrew Williams, is based on the premise of a failed structure which explains the ECtHR's shortcomings and proposes five challenges to the established view which does not see any failures in the regime's structure. These suggestions range from the intriguing (that the current regime has failed human rights entirely) to the expected (that recent judgments aptly demonstrate this failure). However, the idea that the system is fundamentally and severely flawed is a common thread in the fabric of these suggestions. Douglas-Scott's contribution, which concludes the part, operates along the same lines of a fragmented human rights regime. Its premise is very well thought-through; it opens with a very poignant question on what Europe is, approached from a geographical but also a legal perspective; and then it explores the meaning of constitutionality in the context of the Charter. The cyclical character of the part is more evident when the essay focuses on the Charter's place in the wider mosaic before reiterating the point about a multi-faceted regime, arguing, however, that it might give rise to a new basis for EU law, as supremacy and direct effect did in the early years of European integration.

An amalgamation of said integration is the citizenship of the Union with which Jo Shaw's essay is preoccupied in Part 3. The premise of the piece is consistent with the rest of the essays as it endeavours to examine citizenship from the assumption that it operates in a multi-level framework. Therefore, the essay starts with an examination of the relationship between the national and supranational citizenships and the character of the latter. Its later focus on the citizenship experience of the Eastern European states and the international dimension of the titular mosaic, through the examination of five ways in which externally-generated norms infiltrate states' domestic laws, concludes the chapter. It is a testament to the book's well-thought-out structure that the second contribution of Part 3, by Gwendolyn Sasse, is preoccupied with the Council of Europe as 'a reservoir of norms'. In this contribution, the author considers other ways norms can affect national laws, this time through the Council of Europe and, more specifically, its structure, its remit, its coherence, and the interaction with other organisations.

Part 4 offers a very interesting insight into another aspect of constitutionalism which is very relevant in the case of Europe: it concerns the extent to which a constitution can be combined with effective diversity in the cases of culturally diverse communities, such as those which comprise the Union. The essay, by Hans Lindahl, uses the example of the famous case which was brought before the Canadian Supreme Court and referred to Quebec's right to secede to explore how unity and diversity can both be safeguarded while keeping the constitution intact. It is argued that constitutionalism is used as a means to achieve stability and a brief reference is made to the new right to withdraw from the Union. The remainder of Part 4, by Ferran Requejo, is the more philosophical contribution to the book and is preoccupied with the difficulties in attaining pluralism in federal structures. It is less focused on the EU than other contributions, but its relevance

to said Union and the book itself is manifested by the essay's examination of institutional solutions to the problem of maintaining a degree of unity in diverse societies.

The penultimate part examines the EU's constitutionality in the international context, and, more specifically, it focuses on the constitutional character of international organisations and on the EU's role in the global mosaic. The former element, in an essay written by Anne Peters, covers issues such as the autonomy of international organisations, their democratisation process, the judicial element, and their accountability, whereas the second contribution, by Jan Klabbers, complements the first by focusing on the rules stipulating the conflict of laws in the international environment, while it also focuses on the EU's hierarchy of legal norms and on ways in which the tension between the two may be resolved.

This leaves the final part with the task of exploring other case studies which demonstrate the EU's advancing constitutionalism. Kimmo Nuotio's essay focuses on EU criminal law and its relevance to the premise of the book; it examines the law itself, but also its legitimacy problems, which suggest a sort of constitutionalism, and it closes with the challenges the EU faces in its efforts to create a coherent criminal law regime. Ruth Dukes focuses on a rather different area, that of labour law. Using the suggestion that a constitutionalised labour law would safeguard working rights, the author examines the evolution of labour law, the impact of the Charters, and the constitutional framework in which a social dialogue between labour rights and the market could operate.

Overall, this is a well edited book, covering a wide variety of issues from political philosophy to law, including constitutional law, the law of international organisations, criminal, and labour law. All these areas are explored in the context of the book's wider premise, which is always evident in the various contributions. The contributions are well-researched and the writing style approachable, regardless of one's academic discipline. That said, some background knowledge is needed; the issues tackled are multiple and may not be equally accessible to all. However, the topics are finely chosen and this selection of essays is coherent and a very good tool for anyone with an interest in the EU and the future of its constitutional character.

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Book Review

Inês Sofia de Oliveira *University of Edinburgh*

Cultural Diversity, European Identity and the Legitimacy of the EU by Dieter Fuchs and Hans-Dieter Klingemann (eds)

Edward Elgar Publishing (2011), ISBN: 9781848446298 (hb)

Legitimacy, identity and culture are concepts which frequently instigate disputes on the relationship between the "common man" and the European Union (EU). Fuchs and Klingemann's latest publication provides some surprising data on citizens' opinions regarding the EU and thus is one most researchers will find a useful aid to developing swift and incisive argumentation.

The book is an empirically original piece aiming to contribute to political theory through normatively inspired concepts and the analysis of European citizens' attitudes and views towards the European project. Legitimacy, identity and cultural diversity are central elements in this book, guiding an interesting and comprehensive discussion on the character and potential of the EU integration process.

Fuchs introduces the topic by arguing that the link between legitimacy, culture and identity is the sharing of common values and thus one which is intrinsically linked to culture. Hence, in regards to European integration the author believes it useful to treat cultural diversity and the formation of identity as crucial variables and clues to the formation of a European collective. He notes, nevertheless, that group opinions and the sense of identity are mostly influenced by elite discourse and media reports which may promote or discourage EU support. The core of the book, as a result, is an overview of how these elements work together and a summary of their impact.

Fuchs and Schneider begin by analysing citizens' impressions of the usefulness and profit brought to them by the European Union. It proceeds to establish a link between European and national concepts of identity, concluding that EU identity is profoundly based on shared democratic values and not in any sort of post-Maastricht decline. But then, why is there still a notion of individual nationality above Europe?

In the chapter that follows, Schlenker-Fischer dwells on the citizen's capacity to assimilate co-existing concepts of group belonging. Ultimately, if citizens are proven able to belong to two distinctive communities, the sense of threat stemming from externally or distant constructed imageries is eliminated and "europeanness" protected. Indeed, whilst an "us-them" antagonism proved strong in some EU countries, the average of all EU member states considered is still "EU optimistic" and confirms compatibility is possible between more than one community and individual imagery.

Similarly, both Schlenker-Fischer and Guinaudeau's reflections agree that much of citizens' perception of the EU is due to their own national formulations of identity and the way in which that is exported. The latter study, for example, concluded that people who view Europe as a political construct are much more prone to identifying with it than those who view it as a cultural competitor. Empirical data has, in fact, confirmed early assumptions on mass opinion formation as being key to the development of the EU

identity and the acceptance of legitimacy. The authors have not, however, elaborated further on the motivations behind either kind of mobilisation.

Additional corroboration of attitude formation is provided through a meaningful analysis of the role of the civil society and its impact on the construction of the European project. Here, Bornschier identifies various elements that may be used for mass mobilisation, only to settle on cultural and economic elements as the main promoters of and opponents to the European project. Accordingly, Vries and Arnold argue national political parties utilise those very elements to mobilise or hinder support. But, interestingly, that compatibility between citizens' views and party positions is not often a reality.

In the end, economic factors and political stability emerge from the case studies as unifying elements relying on the maintenance of utility and efficiency of EU-led operations. Whilst culture does appear to have a part in integrating nations into the EU collective, its determinism can be overcome by other common elements of association such as shared economic and political values.

Overall, the set of empirical studies presented grant the reader a detailed and scientific evaluation of citizens' perceptions of the European Union. Moreover, it focuses on citizens' own identity, the manner in which different nations react towards cultural diversity, how they perceive threats to their identity and the legitimacy of the integration process. Whilst all contributors depart from the assumption that legitimacy is dependent on the existence of a cultural demos and therefore will be scarce in Europe wide terms, Fuchs affirms, convincingly so, that perceptions are often the product of media reports and biased elite discourse. As a result, it is suggested that EU legitimacy will depend on both instrumental reasoning and more abstract concepts of collective and national identity.

"Identity matters" is perhaps the expression which best defines this publication and summarises its goals. Both the authors and editors either focus on or come to that conclusion, leaving the reader to question further and develop their own research projects based on the numerous quantitative data brought to their attention. The book is, in reality, more successful in presenting and analysing results than in further advancing EU literature *per se*. At times, it feels that too much effort is spent on explaining the process behind variable selection than on offering a critique of the produced results. There is, certainly, an underlying suggestion of a broader discussion concerning the importance of the elites who created Europe and those who opposed it; however, perhaps one which is not presented with sufficient conviction.

To be sure, elites' role in controlling information output into the public sphere and the consequent effect it had/has on citizens can ultimately only confirm what citizens' views already hint at. As Fuchs himself points out, future work should focus on the framing of the EU through political and media discourse in order to assess the most relevant actors and the degree of correlation between them, collective identity and perceptions.

Objectively, the aim of this publication is not to debate politically the origin of mass opinion but to assess whether or not cultural diversity itself, regardless of origin, has an impact on identity and consequently EU legitimacy. On that point the book is successful, albeit limited in its problematisation of what cultural diversity is and signifies to different people.

In sum, the book is an overall good quality addition to the library of any EU researcher. Its well defined focus does not in any way reduce the relevance of its conclusions. Ultimately, its original empirical findings, its impressive display of quantitative methodology and its contribution to integration and diversity literature will be advantageous in respect of almost any EU-related argument, not to mention a good starting point for future research.