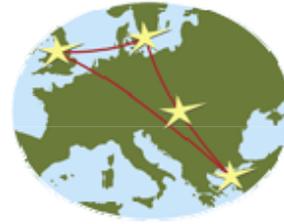


**A thesis submitted to the Department of Environmental Sciences and Policy of
Central European University in part fulfilment of the
Degree of Master of Science**

Nuclear Energy Discourses in Lithuania and Belarus

**Vaida PILIBAITYTE
May, 2010
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MESPOM

This thesis is submitted in fulfilment of the Master of Science degree awarded as a result of successful completion of the Erasmus Mundus Masters course in Environmental Sciences, Policy and Management (MESPOM) jointly operated by the University of the Aegean (Greece), Central European University (Hungary), Lund University (Sweden) and the University of Manchester (United Kingdom).

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ABSTRACT OF THESIS submitted by:

Vaida PILIBAITYTE for the degree of Master of Science and entitled: *Nuclear Energy Discourses in Lithuania and Belarus*.

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After years of stagnation, nuclear energy is believed to experience a revival. Despite a global momentum, little cross-cultural analysis exists about the national drivers for nuclear power such as geopolitics. Discourse studies are emerging as a way to examine approaches on energy security options in different countries.

This work documents nuclear energy discourses in two neighbouring pro-nuclear Eastern European countries in contrast with the global discourse. Both former Soviet states are dependent on energy supplies from Russia, but Lithuania is the European Union member, while Belarus is led by an autocratic regime.

Discourse analysis conducted in this study relied on Hajer's analytical concepts – discursive storylines and coalitions. National discourses were studied from 157 media texts published in 2006-2009. Pro-nuclear and anti-nuclear discourse coalitions have been described in Lithuania and Belarus. The results of this analysis were interpreted comparing them with similar storylines and coalitions found in the global discourse.

The results show that energy security is central for both global and national discourse. Climate change is emphasized internationally, while geopolitics is more important nationally. Pro-nuclear energy discourse coalitions in both countries utter global storylines promoting nuclear as cheap and reliable, and downplaying uncertainties present in the global discourse. The storylines of national anti-nuclear energy coalitions mirror those of global anti-nuclear discourse and are vocal about risks and lack of public involvement.

The study concludes that in political discourses like in Lithuania there are more opportunities to challenge dominant narratives than in the technocratic debate taking place in Belarus. However, political and corporate interests coupled with unspecialized reporting have a universally constraining effect on a national discussion on nuclear energy. As a result, significant misinterpretations of global trends and knowledge gaps seem to occur in both types of the national debate on nuclear energy.

Keywords: Belarus, democracy, discourse, environment, Lithuania, media, nuclear energy, policy

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ABBREVIATIONS

- CDA – Critical Discourse Analysis
- IAEA – International Atomic Energy Agency
- IEA – International Energy Agency
- IPCC – Intergovernmental Panel on Climate Change
- LEO – Lithuanian Electricity Organization
- NGO – Non-governmental Organization
- NEA – Nuclear Energy Agency
- NPP – Nuclear Power Plant
- OECD – Organisation for Economic Co-operation and Development
- UNDP – United Nations Development Programme
- WEC – World Energy Council
- WNA – World Nuclear Association

1 INTRODUCTION

*“There are always different ways of saying the same thing,
and they are not random, accidental alternatives”*

Roger Fowler

After years of stagnation, nuclear energy has been increasingly viewed as a source of steady and clean power supply again. Apart from some states reviewing their previously anti-nuclear energy policies, an unprecedented number of countries have expressed an intention to build their first plant. Despite the global momentum, nuclear industry faces many technological, economic and social challenges related to radioactive waste management, proliferation of weapons and public acceptance. Although the most of the World’s nuclear power capacity is concentrated in Europe, sociological surveys show that most Europeans feel unfamiliar with safety issues related to nuclear plants. Moreover, little cross-cultural analysis exists about the public debates taking place on a national level and different arguments for and against nuclear power as a way to secure supplies. This study documents recent national nuclear energy discourses in two Eastern European countries Lithuania and Belarus in contrast with the global nuclear energy discourse.

1.1 Research background

At the turn of this century energy policy-makers have been facing increasingly diverse challenges. Globally, energy use is the key to economic and social development and has been recognized as unsustainable (UNDP 2004; IEA 2009). Additionally, the range of energy-related vulnerabilities has extended to a propagating “energy diplomacy”, terrorism threats, political instabilities and conflicts, piracy, natural disasters, pollution and fuel poverty (Müller-Kraenner 2008; Brauch *et al.* 2009; Lugar 2009). Against the backdrop of a rapidly growing demand, dependence on imported fossil fuels concentrated in few regions and a pressing need for climate change mitigation many have argued that the current energy systems require substantial rethinking of prevalent policy assumptions and practices (UNDP 2004; Yergin 2006; Müller-Kraenner 2008; IEA 2009; Lugar 2009; Scrase *et al.* 2009).

Since the energy sector is responsible for around 70% of global greenhouse gas (GHG) emissions, there are calls for a “low-carbon energy revolution” – a major transformation in the way energy is produced, transported and consumed (IPCC 2007; IEA 2009). In its *World Energy Outlook 2009* the International Energy Agency (IEA) considers the estimated 40% increase in the primary energy demand and increase in the use of fossil fuels between 2007 and 2030 “alarming” and suggests increasing the nuclear power share in the energy mix as one of the means to reduce emissions (IEA 2009).

There seems to be a wide agreement that climate change concerns have instigated a worldwide shift back in favour for nuclear power (Marshall 2005; Nuttall 2005; Eerkens 2006; Wald 2008; Kojo and Litmanen 2009; MIT 2009; Teather 2009). The IEA climate change mitigation scenario projects a near doubling of nuclear power generating capacity by 2030 for 1.4 Gt of CO₂ emissions to be avoided as a result (IEA 2009). The United Nations Intergovernmental Panel on Climate Change (IPCC) also believes that nuclear could contribute to carbon-free electricity and heat in the future (IPCC 2007).

The proponents of nuclear energy argue that atomic power has a role to play in addressing major energy security challenges by providing an increased access to stable and affordable supply of low-carbon electricity¹ (NEA 2008; WNA 2009). In addition to lower emissions compared to fossil fuels, nuclear fuel has other advantages from the energy security point of view. The cost of uranium has a limited impact on the electricity price, is available from stable regions and can be stockpiled (Smil 2003; CEC 2008; NEA 2008).

There were 436 reactors operating worldwide as of the beginning of 2010, nuclear energy constitutes around 7% of primary energy and 14% of global electricity supply today (IPCC 2007; IAEA 2009, 2010). The International Atomic Energy Agency (IAEA) notes that although projections indicate future growth, the industry has been declining with an ageing global fleet and few new connections to the grid (WEC 2007; IAEA 2009). After accidents at the Three Mile Island in the United States (US) in 1979 and Chernobyl, Ukraine, in 1986 some developed countries halted their nuclear programmes or even introduced phase-out plans (Rüdiger 1990; Holton 2005). However, there have been several indications of changes in those policies lately. Public surveys show increasingly favourable attitudes in countries with existing nuclear plants, even in Sweden that had a phase-out policy since the 1980s (NEA 2008; IAEA 2009). The US, China and Russian Federation are planning the largest increases in capacity by 2020 (NEA 2008; IAEA 2009).

If one needs a proof for uncertainties that lie ahead for nuclear energy, the European Union (EU) can be one. Currently nearly half of the World's installed 372 GW(e) nuclear power capacity is concentrated in the EU where it meets one third of the electricity demand and avoids some 700 Mt of CO₂ emissions annually (WEC 2007). With its rapidly ageing energy infrastructure the EU is approaching a major crossroad. Only two new constructions have been started over the past two decades and future nuclear power development remains contested due to unresolved problems of long-lived radioactive waste and high infrastructure costs (CEC 2008; Umbach 2010). Other barriers include the long term availability of fuel without recycling, weapons

¹ Based on the data from qualified studies Sovacool (2008) calculates that the mean value of emissions over the course of the lifetime of a nuclear reactor is 66 g CO₂e/kWh compared to 1050 g CO₂e/kWh from coal, 778 g CO₂e/kWh from heavy oil, 443 g CO₂e/kWh from natural gas, 35 g CO₂e/kWh of solar photovoltaics, 31 g CO₂e/kWh from waste wood biomass and 9 g CO₂e/kWh from offshore wind.

proliferation, technological safety, security and negative public attitudes (Romerio 1998; Smil 2003; Barnaby and Kemp 2007; IPCC 2007). Notably, Europeans continue to feel unaware about nuclear safety, only 25% of the EU citizens saying they are “*very well*” or “*fairly well*” informed about these issues, while 49% are “*not very well informed*” and a further 25% are “*not informed at all*”. Although information about nuclear issues is mainly obtained from the media, people consider it to be insufficient (Eurobarometer 2010). Moreover, some authors argue that the nuclear revival may be hampered by new technological challenges such as proliferation of uranium enrichment capabilities to new countries, expansion of reprocessing activity and storage of spent fuel from new generation reactors with increased decay heat (Ebinger and Massy 2009).

With the ongoing scientific, economic, political and public debates in mind, a critical look at the re-framing from the predominant view from the 1980s of nuclear as a dangerous technology (McArdle Kelleher 1983; Yarrow and Newbery 1988; Rüdiger 1990) to the solution to climate change and energy security in the 21st century (Bodansky 2002; Eerkens 2006; Bickerstaff *et al.* 2008; Scrase and Ockwell 2009a) is necessary. The analysis of this nature can be important from energy policy-making perspective, for risk management and transition towards the low-carbon economy.

While there might be a well-founded need for increasing the share of nuclear power in a pursuit of more low-carbon electricity supply globally, the overall rationale, technological, economic and social factors have to be taken into consideration on a national level. For instance, both industry and scientists agree that, particularly when it comes to the economic competitiveness of nuclear plants, much depends on technology, previous project experience, annual hours of operation and other local circumstances (IPCC 2007; WEC 2007; NEA 2008). It is also necessary to note that the nuclear energy growth and cost estimates were made before the economic crisis of 2008 and no new projections have been made available yet (IAEA 2009).

However, the guidance for national decision making is often outside of the scope of international policy documents. For example, some authors see the top-down policy approach as commended by the Kyoto Protocol as one of the reasons for failing efforts to respond to the climate change (Antal and Hukkinen 2010).

In this light, some authors argue that cross-cultural *discourse studies*² exploring contrasting situations in which the nuclear energy is debated, could improve bottom-up policy making (Bickerstaff *et al.* 2008). In addition to political, economic and technological justifications, policy decisions are also influenced by values, beliefs and various knowledge claims that provide the

² Discourse is defined as a set of ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through an identifiable set of practices (Hajer 1995). Discourse analysis is framework to understand the relationship between discourse and social reality (Phillips and Hardy 2002).

basis for public debates in various political traditions and cultural contexts (Dryzek 1997; Fairclough and Wodak 2003; Scrase and Ockwell 2010).

Nonetheless, critical social inquiries into politics, sociology, and political economy of the modern energy are few (Byrne and Toly 2006; Devine Wright 2007). Searches in scholarly databases and the academic literature review show that discourse analysts have looked at the variety of environmental issues to date (Hajer and Versteeg 2005). There are several discourse-oriented studies that have touched upon energy in relation to climate change (Johannesson 2005; Grist 2008; Risbey 2008; Sarasini 2009; Telešienė 2009; Boykoff *et al.* 2010) and public acceptance of renewable energy sources (Szarka 2004; Hagggett and Toke 2006; Mander 2007; Barry *et al.* 2008; Mander 2008; Stevenson 2009). Discourse analysis has been conducted in the socio-political context of wind deployment (Wilson and Stephens 2009), energy consumption practices (Kurtz *et al.* 2005), energy innovation (Lovell 2008), carbon capture and storage (Wilson *et al.* 2009).

The most recent work on *nuclear energy discourse* looks at the rhetoric of the Cold War public debate (Nehring 2004), the history of technology (Proops 2001) and post-Chernobyl discourses of transition (Schmid 2004). Some researchers have also used discourse analysis to examine political communication (Windisch 2008), radioactive waste management processes (Johnson 2007) or studied issues surrounding Iran's nuclear program (Izadi and Saghaye-Biria 2007).

Apart from those, there are also several inquiries into nuclear energy discourses in the context of the renewed interest in nuclear power, energy security, climate change and risk perceptions (Bickerstaff *et al.* 2008; Baločkaitė and Rinkevičius 2009; Berg 2009; Scrase and Ockwell 2009a; Lehtonen and Martiskainen 2010). The study from Lithuania concludes that the public sphere is colonized by the *"talking and acting classes"* dominated by the political and business elite who are ignoring the society and preventing open discussions on these issues (Baločkaitė and Rinkevičius 2009). A couple of more recent analyses, mainly echoing intensifying nuclear capacity expansion debates, originate in the UK. Scrase and Ockwell (2009) found that the government consistently favoured nuclear new build in its policy documents while simultaneously implying to be undecided on the issue. Another group of scientists used a mixed-methods analysis to study discursive re-framing of nuclear in the climate change debate and concluded that wider cross-cultural comparisons of these issues are also absent (Bickerstaff *et al.* 2008). Therefore the fact that discourse studies of policy-making with the focus on nuclear power are lacking constitutes the focus problem of this research.

This study looks at nuclear energy discourses of the two former Soviet states, **Lithuania and Belarus**. They followed very different economic and political development paths after the fall of the Soviet Union, but both continue to depend on energy imports from Russia. As they have announced plans to simultaneously build new nuclear power plants, these countries present an interesting case for comparative national nuclear energy discourse analysis.

Lithuania is one of the three Baltic States that regained independence from the Soviet Union in 1990 and joined the EU and NATO in 2004. Although the country has a fairly developed energy infrastructure, its energy system remains centralized with no connections to the Western grid except the underwater 350 MW *Estlink* cable connecting Estonia and Finland (ABB 2010). Lithuania is home to the biggest Soviet-built Chernobyl-type Ignalina nuclear power plant (NPP) in the world in 1983 (INPP 2010). Since shutting down the plant in 2009 as per the EU membership agreement the country turned from the energy exporter to the importer and mainly relies on Russian imports to meet its energy needs. In order to address this it declared to build a new nuclear station with partners in Estonia, Latvia and Poland a national priority. The government is expecting to find a foreign investor in 2010 (Ministry of Energy 2010).

Belarus is Lithuania's neighbour to the southeast, it declared independence from the Soviet Union in 1991 and formed a Russia-Belarus Union in 1999 (Marples 2008). It is often referred to as "*Europe's last dictatorship*" and one of the most repressive places in the world with a *façade* regime where democratic "*scaffolding*" conceals a dictatorial style of governance (Korosteleva *et al.* 2003; Piano and Puddington 2009). For the past two decades Belarus has sustained an extensive and rather well-maintained energy sector and a strategic role as a key transit route for energy exports from Russia to the West. Nonetheless, the country is heavily reliant Russian imports itself (WB 2005). Although without a nuclear programme of its own, Belarus was one of the most severely affected by the Chernobyl accident of 1986 (UNDP 2002). Increasingly intimidated by the oil and gas price disputes with Russia, Belarus sees nuclear power as the key to its energy security and in 2008 finalized its political decision to build its first plant close to the western border with Lithuania (Belarus 2008). According to the current plans, both funds and technology for the project are to be sourced from Russia (BELTA 2010b).

In parallel, Russia has initiated its own new nuclear project in the Baltic enclave of Kaliningrad close to the Lithuanian border, while Poland plans on developing its first nuclear programme and is in the process of choosing location for two plants in its northern region (Polskie Radio 2010; Ria Novosti 2010). The situation was termed by the media the "*nuclear competition*" and instigated a new public debate about economic and security implications of building three to four new plants within such a close proximity (Krasauskas 2009).

Considering the above, the following research questions are addressed in this study:

- How does the role of nuclear energy in the global energy policies compare to that in the national energy policies in Lithuania and Belarus?

- What are the dominant nuclear-related *discursive storylines*³ in the global and national energy discourses?
- What are the main discursive drivers for nuclear energy in Lithuania and Belarus and what role does climate change play in their pursuit of nuclear energy?

1.2 Aims and objectives

The main aim of this work is to examine the most recent formation of national nuclear energy discourses in contrast with the global discourse. By documenting, analyzing and comparing them, this study aims to gain a better cross-cultural understanding of the discursive framing of nuclear power for energy security. The expected outcome of this work is a collection of the variety of narratives showing different ways of perceiving and debating a complex technological energy option on multiple – international and national – governance levels. Findings of this research could contribute to the energy policy decision-making and be benchmarked against other energy security assessment frameworks to help guide a transition towards a low-carbon economy.

In order to work towards this aim, the following objectives have been set:

- Identify and describe the main discursive storylines recently used by different national actors to express their views on nuclear energy in the context of national energy policies in Lithuania and Belarus and describe how some of them come to dominate the discourse;
- Identify and describe the main discursive storylines recently used by different global actors to express views on nuclear energy in the context of international energy policies;
- Compare the framing of nuclear energy in these countries to identify the dominant patterns and contrast the main discursive drivers for the pursuit of nuclear energy;
- Contextualize the findings of national comparative discourse analysis with respect to global nuclear energy discourse.

1.3 Methodology

Discourse analysis was used as framework to examine the current nuclear energy policy formation, describe how it relates to energy security and climate change mitigation and identify similarities and differences on global and national energy policy level when considering the nuclear energy option.

The literature review showed that there is an emerging work on energy policy using discourse-oriented analytical approach (Szarka 2004; Barry *et al.* 2008; e.g. Balockaitė and Rinkevičius 2009;

³ Discursive storylines are simplified narratives that allow actors to give meaning to complex physical or social phenomena. They play a key role in establishing particular views as people tend to follow certain structured modes of cognition: analogies, historical references, clichés, collective fears, etc. (Hajer 1995).

Smith and Kern 2009a; Stevenson 2009; Scrase and Ockwell 2010). As opposed to the linear take on decision-making based on facts and rationality, discourse analysts view policy-making as a “messy” process dominated by social interaction, argumentative battles and power struggles (Fairclough and Wodak 1997; Dijk 2001b; Jørgensen 2002; Phillips and Hardy 2002; Scrase and Ockwell 2009a).

Following this theoretical approach, Hajer (1995) believes that discourse actors not only try to promote their views using simplified *storylines*, but also seek influence over other rival thinkers to achieve a *discursive hegemony*⁴ – dominance of a certain definition of reality. By analyzing the linguistic framing of various phenomena, relationships between actors interacting in certain contexts, social researchers try to understand drivers for policy change (Hajer and Versteeg 2005). Moreover, discourse analysis helps to assess the quality of the democratic discussion in general (Jørgensen 2002).

In the context of this particular work, the concepts of special interest might be *cleanliness, safety, security* and *economics* of nuclear technology that may be described as “*nirvana concepts*” promoting simple, self-validating storylines and beliefs legitimizing specific pre-set models of policies (Molle 2008).

The empirical research was designed in the following way. The global nuclear energy discourse was analyzed first and national discourses constituted the second part of the research. Both parts were divided into three similar research stages: (1) the literature and policy review, (2) description of discourse context and compilation of the information-rich data sample and (3) discourse analysis.

For the global discourse analysis the literature on international nuclear energy development trends was reviewed to identify the international actors. Policy documents were *purposefully sampled*⁵ and coded using qualitative criteria detailed in Chapter 3. The global discourse analysis was carried out afterwards. The national discourse analysis proceeded in a similar way, except that national media outlets were selected first and purposefully sampled texts from them were used as the main data source. The list of analyzed texts is included in the Appendix.

The data was analyzed using four *discourse analytical categories*⁶ developed by Hajer (1995) to enable the comparison of the results between the countries and against the broader context of global nuclear energy policies. As a final step of analysis, findings of the empirical work on global and national nuclear energy discourses were compared.

⁴ Discourse can be considered hegemonic when theoretical concepts are translated into concrete policies and institutional arrangements (Hajer 1995, 61).

⁵ Data collection strategy characterized by a small sample size, but “*information-rich*” cases with focus on specific rather than general data (Patton 2002).

⁶ These are discourse context, main actors and themes, discursive storylines and discourse coalitions.

1.4 Scope and limitations

The comparative discourse analysis conducted here by no means claims to present a study of global and national nuclear discourses in their entirety. In both cases only the most recent debates and/or those triggered by certain *discursive events*⁷ were documented.

National discourses were studied by analyzing 157 purposefully sampled texts from three national media outlets in Lithuania and Belarus in order to answer the research questions of this M.Sc. thesis. This study does not include tabloid⁸, regional and broadcast media such as radio and television stations or popular science, monthly analytical and lifestyle magazines. Readers' letters, comments of online media users, online discussion forums, blogs and press releases, which are also part of a media discourse, have been excluded from this analysis. Although the study takes into account the national context, energy and media system, an in-depth socio-economic and/or cultural discourse analysis of nuclear energy in the two countries is outside the scope of this work.

The global part of discourse analysis covers only few energy-related publications by the key international players selected focusing on different aspects of nuclear power. This analysis is intended to provide a global background for the national discourse analysis rather than fully explore the international debate.

And finally, a purposeful data sampling technique was aimed at in-depth understanding rather than generalizations (Patton 2002). This work, just like other similar qualitative studies, though aspiring to be based on a rigorous methodology, does not claim to present final findings on the subject and remains open for further contributions and interpretations.

1.5 Outline

This thesis consists of seven chapters. Presented below is a general outline of the study.

Chapter 2 provides an introduction to the theoretical concepts behind discourse analysis as a framework for understanding a policy-making process. The link between *discursive power struggle* and *policy-change* is explained as well as the role of *discursive storylines* and *discourse coalitions*. *Discursive democracy*, *discourse management* and the role of *media* in the public debate are also covered. Studies using discourse approach to analyze issues surrounding nuclear energy are reviewed.

⁷ Events which are emphasized politically (often by the media) and influence the direction and quality of discourses to which they belong to (Jäger 2001).

⁸ Media characterized by oversimplified news coverage, big pictures, scandals-driven headlines and focus on crime, sports, celebrities and entertainment as opposed to the media following the highest professional standards.

Chapter 3 presents the *methodology*: data collection techniques for both global and national part of the study, analytical categories and approach to comparative analysis of the findings are part of this chapter.

Chapter 4 looks at the *global discourse of nuclear energy* as it is framed around the central energy challenges of 21st century. The global discourse context is described first. Then purposefully collected documents produced by the international actors are analysed. The recurring themes, discursive storylines and coalitions on nuclear energy are identified and documented for comparative analysis that comes later.

Chapter 5 contains the review of the empirical work conducted to examine *national nuclear energy discourses* in Lithuania and Belarus. Each section begins with an outline of national context and media system, and is followed by the presentation of recurring themes and actors, emerging storylines and discourse coalitions.

In **Chapter 6** the Lithuanian and Belarusian discursive storylines and coalitions are compared to identify dominant national patterns of nuclear energy framing and are accompanied by the *analysis and comparison* with the nuclear energy-related themes found on the global level.

The study ends with conclusions and recommendations in **Chapter 7**.

2 DISCOURSE AND POLICY-MAKING

To date, discourse studies have mainly focused on issues of social power abuse, but lately this theoretical approach has been also aimed at understanding social dimensions of sustainable energy transitions. However, the literature review shows that discourse analysis of energy security and nuclear energy is still a rare subject.

This chapter introduces discourse analysis as a framework for investigating the process of social construction and knowledge production. Section 2.1 begins with definitions of theoretical concepts, a brief overview of different discourse analysis traditions with an emphasis on critical analytical approaches. Section 2.2 deals with the discursive hegemony and democracy and the role of media in the public debate. Inter-linkages between the discursive power struggle and policy-change are also explained. Section 2.3 proceeds to review studies that use discourse analytical approaches to examine the debate on nuclear energy from various angles. Section 2.4 summarizes and concludes.

2.1 Discourse study as a socio-political stance

Discourse analysis has roots in ideology studies, rhetoric, sociology of science and language philosophy (Hajer 1995; Dijk 2001a). Jørgensen (2002) considers it both theory and method, but there are researchers like van Dijk (2001b) who reject discourse analysis as neither, and views it as a sort of research perspective instead. The existence of a great variety of discourse definitions originates from a multitude of academic disciplines that discourse studies evolve from, and issues that scientists strive to address (Burr 1995; Schiffrin *et al.* 2001). The authors of *“The Handbook of Discourse Analysis”* edited by Schiffrin *et al.* (2001) group different approaches to this concept into the three main categories: (1) anything beyond the sentence, (2) language use, and (3) a broader range of social practices.

In very general terms, discourse analysis is understood as a set of methods used to explore the production of social reality: the way language constructs, rather than reveals it. From a discourse perspective, reality is a social construct and is constantly produced and reproduced through human interaction (Phillips and Hardy 2002).

Figure 2.1 graphically depicts the existing empirical approaches to discourse analysis. These can be very broadly categorized according to the importance of text versus context and a process of social construction versus power dynamics, the latter being a part of critical studies (Phillips and Ravasi 1998). Depending on the theoretical tradition, some studies focus on a thorough linguistic analysis of individual texts, rhetorical devices and/or speech acts, while other studies are interested in overall discursive contexts; constructivist studies explore diverse ways of reality

production while critical studies examine power dynamics and discursive knowledge formation, although combinations of these approaches are also possible (Phillips and Hardy 2002).

As highlighted in the figure, considering the aims of this study, the focus hereafter is on critical approaches to discourse analysis that are less concerned with language *per se*, but more with knowledge production and linguistic character of social processes that, among other things, are driving or obstructing a *policy change*. It is believed that understanding policy-making through discourse analysis could inform more effective policy practices and contribute to improving democratic discussion in general (Wodak 1996; Rydin 1999; Jørgensen 2002; Feindt and Oels 2005; Hajer and Versteeg 2005; Scrase and Ockwell 2009a). This also has links with the concept of discursive democracy which is discussed further down.

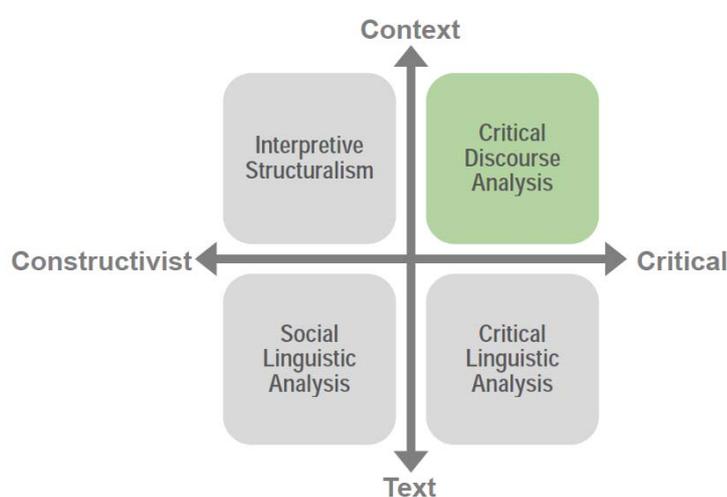


Figure 2.1 Approaches to discourse analysis (adapted from Phillips and Ravasi (1998))

Theoretical origins of critical discourse analysis (CDA) are traced back if not to Aristotle, then to philosophers of the Enlightenment, or, more recently, the Western Marxism and the Frankfurt School of Philosophy – thinkers like Antonio Gramsci, Jürgen Habermas, Louis Althusser and Mikhail Bakhtin and their followers whose main focus was on the use of language as ideological tool (Fairclough 1993; Dijk 2001a, 2003; Fairclough and Wodak 2003). But for the most part critical discourse studies are said to have been greatly influenced by the French philosopher Michel Foucault and his works on discourses, power and knowledge (Fairclough 1993; Jäger 2001; Jørgensen 2002; Phillips and Hardy 2002). His ideas follow the social constructionist proposition that knowledge is not a reflection of the reality, but is constructed discursively and delimited historically. Power is described as both productive and constraining force that is closely connected to discourse. Discourse is constructed in a way that gives an impression of true or false pictures of reality (Jørgensen 2002). In other words, discourse builds the “truth” from socially accepted ways of knowledge production (Feindt and Oels 2005).

Nonetheless, it is important to note that these works do not systematically deal with discourse, unlike later contributions from critical linguists, semiotics, socio-linguists, psychologists and social scientists primarily in the UK, Australia, Germany and Austria in the late 1970s (Dijk 2001a, 2003). CDA mainly concerns studies of social power abuse, dominance and inequality, the ways these are produced, reproduced and resisted through language in a variety of contexts (Dijk 2001a). The theoretical framework of CDA is socio-politically determined and aimed at change through critical understanding (Dijk 2003). Therefore it comes as no surprise that current interests in CDA are largely multidisciplinary and analytically diverse: they range from critical linguistics, social semiotics, socio-cultural change and socio-cognitive studies to discourse-historical methods and inquiries into linguistic and iconic characteristic of discourse (Dijk 2001a; Fairclough and Wodak 2003).

One of the pioneering architects of CDA, British discourse analyst Norman Fairclough together with a prominent Austrian scientist Ruth Wodak study discourse as a form of social practice. They argue that discursive events are shaped by situations, institutions and social structures (Fairclough and Wodak 2003). As social life is increasingly influenced by the media, the argument goes, society has become more susceptible to power manipulations in accordance to economic, political and institutional objectives. Therefore critical awareness of such discursive practices is seen as a *“normal feature of everyday life”*. Although based on a rigorous and systematic analysis, CDA is viewed as an openly subjective and engaged science. That said, this type of analysis is always open to interpretations and is never finished (Fairclough and Wodak 2003).

Along similar lines, the Dutch text linguist Theun A. van Dijk who studies ethnic prejudices and racism in discourse and communication contends that CDA is a *“critical perspective on doing scholarship”* (Dijk 2001b). The author takes a firm stance that that this type of research should focus on studying *“problems that threaten the lives or well-being of many”* (Dijk 2003), showing *“solidarity with the oppressed”* (Dijk 2001b) and be directed against those using discourse to legitimate power abuse. Just like Fairclough, van Dijk (2001a) advocates for the CDA that has a strong linguistic basis and takes into consideration some stylistic, rhetorical, semiotic or narrative elements of the discourse under study. Therefore he puts emphasis on such analytical categories as topics, local meanings of words, contexts, specific social situations, beliefs and ideologies of various social groups.

Critical discourse analysts observe that since the 1960s CDA has been applied mainly to study different manifestations of social power: racism, anti-Semitism, nationalism, xenophobia, gender and language in politics (Dijk 1997; Jenner and Titscher 2000). However, since the late 1990s there has been an increasing interest in discourse approach to policy-making and environment (Rydin 1999; Hajer and Versteeg 2005; Scrase and Ockwell 2009a). These studies are reviewed in section 2.3 ahead.

In sum, in this work, rather than a mere synonym of *discussion* or *talking* about the reality, discourse is understood as a form of a *social practice* and discourse analysis is seen as a way to address problematic social phenomena in the environmental realm through critical understanding. Following such approach, a broader definition would describe discourse as a set of “*ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through an identifiable set of practices*” (Hajer and Versteeg 2005; Scrase and Ockwell 2009a). By studying bodies of texts in various contexts discourse analysts explore the way political, societal views and expert knowledge is communicated, how opinions are shaped, decisions are made and powers exercised (Fairclough 1993; Hajer 1995; Jørgensen 2002). Discourses are not studied in isolation – they appear in historical, social and cultural *context* and relate to various actors involved in complex relationships (Phillips and Hardy 2002). This framework of understanding the relationship between a discourse and social reality pertains to all forms of discursive knowledge production from an everyday content produced by the media to social and natural science (Jäger 2001; Phillips and Hardy 2002).

Moreover, from the social constructionist theory perspective, what people believe to be true is in fact the result of a struggle between competing discourses to achieve *hegemony*, i.e. to establish the dominance of a particular view towards a certain social phenomena (Jørgensen 2002). Therefore, like in most critical discourse studies, central notions are those of discourse as a knowledge transporting and reality shaping “*agent*”, and social groups and/or institutions engaging in a discursive struggle (Dijk 2001a; Jäger 2001). A number of these concepts are elaborated in the section that comes next.

2.2 Discursive struggle, power, policy and public sphere

As noted above, because of the importance of language, gaining control over public sphere and communication becomes increasingly important for certain societal groups and institutions seeking knowledge formation (Dijk 2001a). As van Dijk (2001b) points out, certain groups maintain power over others by retaining *exclusive access* to multitudes of influential public discourses: scholarly, educational, legal, policy, media and others. He argues that access to this power is defined by the socio-political context and the actual control over structures of text and talk – in other words, occasions, forms of communication and topics; controlling more discourses results in more social power.

These discursively dominant groups, have been described as “*power elites*” (Mills 1956), “*talking elites*” (Lasch 1996), “*symbolic analysts*” (Reich 1993) or “*discourse technologists*” (Fairclough 1995) that have the most say – engineers, lawyers, scientists, academics, bankers, journalists and consultants who hold in their hands an enormous power of constructing reality in societies where information and expertise have become the most valued commodities. Many of them have privileged access to information and their public appearance tends to carry the “*aura of truth*”

(Fairclough 1995). Very often they speak specialized jargon and only to each other, shutting away the rest of society and degrading the public sphere (Baločkaitė and Rinkevičius 2009).

Inspired by Gramsci and others, Fairclough (1993) refers to the control over society (or even transnational scale) and its economic, political, cultural and ideological domains as *discursive hegemony*. Discursive practices – production, distribution and consumption of texts – are facets of a *hegemonic struggle* aimed at reproduction of the existing discourse order and existing power relationships. As he proceeds to elaborate, it may also lead to the *technologization of discourse* – hegemony of institutions or organizations facilitated by the above-mentioned powerful elites. In Fairclough’s understanding, democratization of discourse is linked to democratization of society and highly depends on abilities of certain actors to initiate innovative discursive events and rearticulate new orders of discourse (Fairclough 1993, 1995). However, as can be seen from research by the Dutch political scientist Maarten A. Hajer (1995) this may prove to be a rather difficult task in practice.

Hajer (1995) studied discourse of ecological modernisation in order to explain why some interpretations of environmental problems come to dominate, while others remain discredited. He concurs with the authors mentioned earlier who believe that power structures should be studied through discourse. Hajer (1995) puts forward the “*social-interactive*” discourse theory where actors not only promote different views in a form of narratives but also seek influence over other rival thinkers as part of an argumentative game to achieve a *discursive hegemony* determined by: (1) credibility, (2) acceptability and (3) trust (Hajer 1995, 59). Hajer (1995, 54) maintains that this argumentative interaction has an important role to play in discourse formation and the eventual prevalence of certain concepts. Furthermore, he states, the fact that rules and various concepts have to be constantly reproduced through language so that a certain social order is maintained has implications for policy-making research as it is closely related to introducing *policy change* (Figure 2.2).

Building on works of Foucault, Bronwyn Davies and Rom Harré, Hajer (1995) suggests two analytical categories to study environmental discourse: *discursive storylines* and *discourse coalitions* which are described in more detail in Chapter 3 on the methodology used in this study. According to Hajer’s interpretation, discursive storylines, as simplified narratives, are at the heart of the formation and establishment of certain concepts and realities. The author contends that the power of storylines mainly stems from their multi-interpretability, because “*it sounds right*” to the multiple groups of actors. Storylines cluster the knowledge and thus facilitate the formation of discourse coalitions within the given realm. Therefore a socio-political change becomes possible only if someone challenges the prevalent storylines. However, it is particularly difficult if that goes against the dominant economic and political interests. That is to say that discourse actors are more often than not forced to argue within a dominant discursive frame which results in a reproduction of the same narratives of a prevalent discourse order (Hajer 1995, 61).

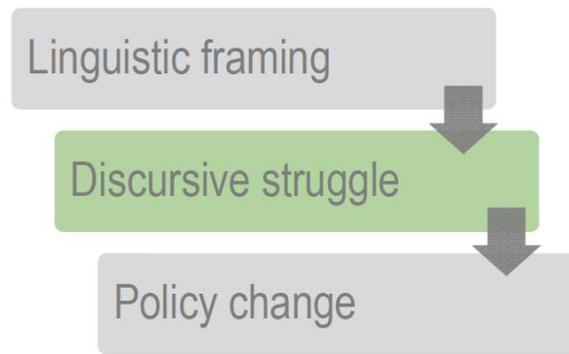


Figure 2.2 Links between language, discourse and policy change

This perspective on *policy-making* as a constant communicative struggle, is in fact challenging the dominant view of this process as an objective and linear one that includes series of logical steps typically performed by officials and experts and excluding a variety of other voices (Rydin 1999; Scrase and Ockwell 2009a). In turn, the *discursive approach* holds that policy-making should be informed by language and argument, and be closely linked with social interaction, value judgements, individual and collective learning (Lehtonen 2009b; Scrase and Ockwell 2009a). Following this view Scrase and Ockwell (2009) point out that way too often policy debates ignore the fact that so-called expert judgements are also coloured by personal values and made in the face of a lot of uncertainty, especially in the field of environmental policy. Within this realm parallels are also drawn with a discursive or “macro” theory of deliberative democracy which deals with opinion formation in messy forms of public debate (Dryzek 1994; Hendriks 2006; Lehtonen 2009a). Summarizing works by Dryzek and Habermas, Hendriks (2006) concludes that *discursive democracy* is more inclusive as it is less formal and constrained; it allows for a more open public debate and extends the range communicative spaces from small intimate discussions to social movements and the media. However, it is also susceptible to a communication distortion, illegitimate claims and repressive social power abuse (Hendriks 2006).

As one of the ways of overcoming these challenges the notion of *discourse management* is proposed. It was alluded earlier that language has an important role to play in the policy process; it alters perceptions, defines priorities, promotes policy agendas, constitutes the basis for discourse storylines and coalitions (Rydin 1999). Hence, with planning for sustainability policies in mind, Rydin (1999) argues that discourse theory offers a potential for using language *purposively* with the aim of *normatively* reshaping discursive structures as it has been previously done and proved effective in environmental and political campaigns in the UK and elsewhere. The author emphasizes though, that such action has to take a form of a debate, be collective and based on consensus, among other things. Seen in a similar way, Renn *et al.* (1997) suggest exploration of what they call *discursive processes* among various stakeholders and to develop environmental policy goals in a more inclusive way. It is argued that *discourse models* can be the effective way to

complement the decision-making based on professional knowledge and expertise with prudent contributions from citizens (Renn *et al.* 1997).

Considering the discursive nature of socio-political relationships, many authors often point out at the *role of media* in these power struggles (Herman and Chomsky 1988; Fowler 1991; Fairclough 1995; Cotter 2001; Dijk 2001a; Dahlgren 2002; Bell and Garrett 2003; Fairclough and Wodak 2003). The media as an arena of social interaction where different arguments are presented is one of the key dimensions of the public sphere (Dahlgren 2002). It is also described as a “*discourse-bearing institution*” (Bell and Garrett 2003) and one of the key prerequisites of access to knowledge production (Dijk 2001a). The power relationships between the media and politics – as to who is manipulating and/or exploiting who and to what extent – has been the center of attention of various studies (Herman and Chomsky 1988; Fairclough and Wodak 2003). It is well described in the literature that in societies where democratic structures are weak social hierarchy tends to shape public sphere in an especially detrimental manner (Dahlgren 2002). A well known British linguist Fowler (1991, 4) observes that media language often carries ideological character: “*There are always different ways of saying the same thing, and they are not random, accidental alternatives*”, he notes. It is acknowledged that rather universally, because of the exclusive decisive power of granting the access to the public arena, “*filtering-out*” messages and deciding on *topics* that are to be covered, media becomes a discourse actor in itself, with a significant contribution to the construction of reality (Dijk 2001a; Baločkaitė and Rinkevičius 2009). Herman and Chomsky (1988) describe the model of media operation as the “*systematic propaganda*”. Hence the need to study media discourse, as Cotter (2001, 431) notes, with an aim “*to make sense of a great deal of what makes up our world*”. There are also those who argue that especially with regard to understanding environmental issues in the media, research has to employ the constructivist framework (Hansen 1991).

Indeed, some authors point out that the last decade has seen a growing interest in the role of discourses in policy-making and environmental policy in particular (Rydin 1999; Hajer and Versteeg 2005) and there has also been more focus on energy and energy security lately (Scrase and Ockwell 2009a). Some of these studies also do turn to media texts to greater or lesser extent, but cross-cultural media discourse analysis of the recent debate on nuclear power appears to be limited (Bickerstaff *et al.* 2008). The next section looks at the literature examining the role of discourses in energy policy-making and nuclear energy in particular.

2.3 Deconstructing energy discourses

To put energy discourse studies in a context, one should note that over the past decade environmental issues have been a subject of various academic inquiries. Researchers have analyzed the concept of nature (McKibben 1990; Feindt and Oels 2005) and rhetoric of nature (Bennett and Chaloupka 1993), have described and analyzed *Ecospeak* (Killingsworth and Palmer 1992), *Environet* (Myerson and Rydin 1996) and *Greenspeak* (Harré *et al.* 1999) as distinctive languages of environmental campaigning involving knowledge control. Environmental politics

and policy has also come under scrutiny of several researchers (Hajer 1995; Dryzek 1997; Addams and Proops 2000; Latour 2004; Smith and Kern 2009b). There are also some recent studies using discourse analysis to study climate change, environmental risk and biotechnology (Johannesson 2005; Balžekienė *et al.* 2008; Rimaitė and Rinkevičius 2008; Risbey 2008).

The claim that there is a similarly substantial body of recent literature on energy discourse would be quite an overstatement. Searches in scholarly databases and academic literature review show that energy, energy security and energy policy discourse has come into research focus only very recently and mainly in the UK, while specific discourse studies of nuclear energy in the context of new energy challenges are also rare.

Nonetheless, although they are few, the coverage in terms of issues is rather diverse. Even though some of the studies listed here do not explicitly apply or refer to discourse analysis as a theoretical framework, they do look at energy narratives, rhetoric, cognition and communicative strategies. Several authors touch upon it in relation to climate change (Bulkeley 2000; Johannesson 2005; Grist 2008; Risbey 2008; Sarasini 2009; Telešienė 2009; Boykoff *et al.* 2010) and public acceptance of renewable energy sources (Szarka 2004; Haggett and Toke 2006; Mander 2007; Barry *et al.* 2008; Mander 2008; Stevenson 2009; Raven 2010). Few more recent discourse-oriented works look at energy transitions (Bouzarovski 2010), energy consumption practices (Kurtz *et al.* 2005), energy innovation (Lovell 2008), emerging energy technologies such as carbon capture and storage (Wilson *et al.* 2009), socio-political context of wind deployment (Wilson and Stephens 2009), rhetorical visions in discussions about hydrogen economy (Sovacool and Brossman 2010) and the concept of energy (Amin 2009).

As mentioned earlier, within this body of academic work there are several studies that examine nuclear energy discourses from perspectives including media coverage and policy-making. Considering the focus of this thesis, the remainder of the chapter is devoted to the review of the literature that exists.

2.3.1 Nuclear discourses: from the Cold War to climate change

This study divides the literature on nuclear discourses published over the last decade into three categories based on the research focus: retrospective studies, nuclear revival analysis and other nuclear-related issues.

The research in the first category looks at the history of technology (Proops 2001), the Cold War rhetoric (Nehring 2004) and the post-Chernobyl discourses (Schmid 2004), while these in the second group study the renewed interest in nuclear power (Bickerstaff *et al.* 2008; Baločkaitė and Rinkevičius 2009; Berg 2009; Scrase and Ockwell 2009a; Lehtonen and Martiskainen 2010). The third category includes researchers who use discourse analysis to examine political communication (Windisch 2008), radioactive waste management processes from policy and public consultation documents (Johnson 2007) and newspaper articles, leaflets and books

(Anshelm and Galis 2009); the rest cover issues surrounding Iran's nuclear program from newspapers editorials (Izadi and Saghaye-Biria 2007).

The sub-sections below provide an overview of the research in all three categories of nuclear discourse studies.

2.3.1.1 Retrospective research

Several retrospective academic articles reviewed here outline the research aimed at understanding the role of language in fostering the rise of nuclear energy, shaping early environmental movement and mobilising society in post-Soviet transition. Unfortunately, none of them specify the discourse analytical techniques used to obtain the results.

Proops (2001) studies discourses of Western governments and industries as strongly attached to the notions of *“modernisation”*, *“independence”* and *“control”*, and tries to apply this interpretation to a modern-day nuclear revival. He understands discourse as *“a set of views and attitudes on a particular topic”*. First of all, the author argues that development of nuclear industry coincided with the rise of the modernising and interventionist state. By outlining inherent differences in the language use of nuclear opponents and proponents Proops (2001) points at the difficulties of bridging these diverging perceptions and comes to conclude that nuclear debates are not a scientific matter, but issues of personal and social identification. Referring back to the rise of modernising and interventionist state between the 1930s and the 1960s he compares the language of these ideals with the language of nuclear industry. By doing so, the author finds significant similarities. Nuclear is seen as more *“modern”* and offering more *“control”* as opposed to conventional and alternative technologies delivering electricity; wind energy is associated with *“pre-modern”* windmills and in the light of the oil crisis of the 1970s fossil fuels appear *“insecure”* and *“finite”*. Similarly, *“industrial army of miners”* is contrasted with *“clean and well-educated”* nuclear engineers in white coats delivering *“limitless power for the greater benefit and glory of the modern state”*. Following this analytical approach, he maintains, nuclear revival is hardly possible as states move towards liberalization of energy markets and cleanliness and safety of nuclear is questioned following the serious accidents of the past decades (Proops 2001).

This echoes research findings of Nehring (2004) who examines public debates around nuclear weapons and civilian use of nuclear in the UK and West Germany during the Cold War. Taking into consideration the historical context of each country, the study finds that most opposition to nuclear was linked with dangers originating in its military use, while the civilian nuclear energy was seen as a guarantee of peace. The author states that anti-nuclear movements of the time were intimately related with technological discourses, and focus on planning and rationality from the perspective of the state. The discussions were characterised by the enthusiasm for science, the present was considered an *“atomic age”* presenting both threats and challenges (*“curse”* and

“*blessing*”). The peaceful use was perceived as a symbol of modernity and welfare, a way to overcome the legacy of the World War II and the Cold War.

Nonetheless, Nehring (2004) writes, the existence of “*nuclear euphoria*” does not mean there were no concerns about dangers of military use. There were groups emphasizing the moral aspects of the nuclear energy use who spoke of the “*atomic plague*” and “*atomic epidemic*”. Sceptical and optimistic interpretations continued in parallel and it is in this light that it was not rare for the movements to be accused of instigating public hysteria. Finally the study concludes that the environmental movements of the 1970s and 1980s are rooted in the period of growing environmental awareness during the 1950s and 1960s (Nehring 2004).

Another recent retrospective study looks at the Soviet media discussion following the Chernobyl disaster of 1986. Schmid (2004) finds that while in the West the accident was perceived primarily as an evidence of the catastrophic consequences of the civil use of nuclear energy, in the Soviet Union it constituted a powerful transition discourse “*welding together the Soviet people*” just before the collapse. Furthermore, this discourse of national and moral unity resulted in the emergence of activist movements and the survival of nuclear industry, as Chernobyl was portrayed as a “*lesson learned*” for a safer use of this energy source.

Describing Chernobyl as a powerful rhetorical device Schmid (2004) demonstrates how it was used by the various groups for conflicting goals. During the early years of the *perestroika* media was urging to help mitigate the consequences of the accident as part of everyone’s moral obligation. It united people in a similarly strong way as it had shocked them. Those living in the vicinity of the plant were presented in the media as exemplars of strength and calmness. Meanwhile, reports by the Western press citing much higher impact estimates were condemned and the West was portrayed as falling victim to “*this ‘freedom’ of information*”. The “*us and them*” rhetoric was especially strong.

This discourse analysis also depicts discursive transformations documented by the media: major shifts in the relationship between the state and the press, the nature of interactions between experts and the public, the attitudes toward the technology and scientific progress. Following the accident, media uncertainties in the official reports were discursively transformed into risks, while the new environmental discourse challenged the origins and the secrecy of the nuclear industry and the complete lack of public participation in decision-making.

The author concludes that discourse analysis reveals how apart for the policy implications Chernobyl served as a crucial factor for the negotiation of the new social order (Schmid 2004).

2.3.1.2 Nuclear revival analysis

As noted above, there seems to be some recent surge of interest in nuclear discourse studies, especially in the light of the so-called revival, climate change and energy security debates. Some

researchers analyze more specific issues such as a high level waste management and proliferation of nuclear weapons. Most of them utilize policy documents and expert interviews as their main source of data, while others look explicitly at the debate covered by the media, books or leaflets.

As mentioned earlier, Scrase and Ockwell (2009) advocate for the discursive approach to policy analysis. These authors strongly believe in the importance of linguistic framing and its constraining and enabling effects for the policy change especially in the context of sustainable energy transitions. By “*framing*” they imply the assumptions made and the “*constructing*” power of the public debate. In the recently published book “*Energy for the future: a new agenda*” edited by Scrase and MacKerron (2009) they review a number of policy documents to demonstrate how the government of the UK consistently favoured the new nuclear build in 2006-2007 while at the same time holding on to the position of indecisiveness on the issue. They analyze the energy policy process through four central goals pursued by the government: access, security, efficiency and environmental acceptability, and argue that each of them has been discursively constructed to highlight shifts in discourse according to certain interests (Scrase and MacKerron 2009).

The study shows that when it comes to *energy security* it is not framed around justice or equity in the UK which was a storyline prevalent previously during the post-war era, but around defending the national interest under international pressures. It is also discursively constructed, according to the authors, as essential to sustaining economic growth. Against the backdrop of the depletion of North Sea oil and gas it has been moved the center of the government’s rhetoric.

The study shows changes in discursive framing from “*energy supplies*” depending on imports in 2003 to the dependent “*we*” – implying a more personal threat; similarly, while in 2003 development of renewable energy was presented as a “*major opportunity*” for the UK business, in 2006 their development was seen as an “*obligation*”, though renewables were “*not yet enough by themselves*” to secure supplies. Scrase and Ockwell (2009) argue that this discursive shift was “*central to reframing investment in nuclear electricity as necessary in the UK*”. The storylines around nuclear portrayed the UK threatened by the activities of foreign nations, international terrorism included, implying domestic energy source as the only viable way to ensure security. Historically resonant metaphors of a “*fleet*” of nuclear power stations were used alluding to Britain once defending its shores with mighty naval ships. The nuclear lobby played an important role in promoting this rhetoric. However, the authors underline, such emphasis on the new nuclear build was not grounded in any new empirical analysis indicating a major energy gap that occurred in those three years. Therefore they come to the conclusion that the energy policy debate was characterized by increasing fears around energy security and rhetorical fabrication of a non-existing energy gap (Scrase and Ockwell 2009a).

Another study from the UK by Bickerstaff *et al.* (2008) analyzes discursive re-framing of nuclear energy as a solution to climate change. This paper somewhat similarly argues that the expansion of nuclear power is constructed by industry, scientists and political elite through the manipulated

public debate aimed at a greater acceptability of this controversial resource. They point at nuclear being talked about as the “*real green*” means to fight the “*devastating climate change*”, plug the “*energy gap*” and diversify supplies. In order to study public risk perceptions in the context of this debate, the study used the qualitative data collected from two focus groups and a representative survey conducted earlier with the total sample of 1,547 respondents. They were questioned, among other things, on climate change and radioactive waste.

The results show that in both instances people perceive the two issues in very different ways. While impacts of climate change seem to lack personal immediacy, nuclear waste is associated with intense dread and fear. Only two out of 32 individuals are said to have consistently viewed nuclear power as an acceptable way of addressing climate change. The authors note the great deal of institutional scepticism traced back to problematic technological decision-making in the UK and anticipate a lot of manipulative strategies aimed at addressing institutional problems and legitimizing political and economic policy drivers (Bickerstaff *et al.* 2008).

The introduction to this thesis has already noted that apart from the fact that modern nuclear discourses are hardly studied, cross-cultural work is almost non-existent. One attempt to close this gap is a research project at the Sussex Research Group of the University of Sussex, under the title “*Governance of the nuclear revival in Finland, France and the UK – framings, actor strategies and policies*”. Just like in the previous paper, the authors do not really refer to it as a discourse analysis, but their main research focus areas such as issue framing in policy debates, argumentative strategies and roles of actors are at the heart of discourse studies as well. Lehtonen and Martiskainen (2010) use documentary analysis and semi-structured stakeholder interviews in their study. They structure their findings into five phases called “*nuclear histories*” with some elements resembling Hajer’s (1995) discursive storylines that underpin the analytical framework of this thesis outlined in the following Chapter 3. They are divided by the historical periods from the post-war technocracy, emergence of risk and fear and post-Chernobyl to the “*death of nuclear*” and revival.

The study highlights some similarities and differences among the three studied countries. Historical analysis shows that early days of nuclear development were marked by a highly non-transparent decision making, strong public trust in science, pro-nuclear media and strong power in the hands of industry experts. However the 1970s saw the emergence in “*counter expertise*” in France and the UK when previously neglected issues of ethics, safety and waste management in particular started to be raised. Lehtonen and Martiskainen (2010) stress that the latter is likely to remain important in the decision-making with regard to future projects. One example is Finland where the new reactor was approved only after the waste issue was perceived as “*solved*”. Nonetheless, the nuclear technocracy and public trust in engineers remains very strong in France and Finland.

Another key aspect of nuclear development common to all three countries is the importance of national security and sovereignty. Nuclear seems to be almost universally perceived as the way to

generate “*truly domestic*” electricity and the source of national pride, with exception of the UK where series of earlier safety problems have diminished its image over the time. In Finland the debate on the 5th reactor featured the “*fear of Russia*” argument and was “*sold*” to the public as a “*Finnish project*”, although the main supplier was French “*Areva*” and only a quarter of workers were Finnish.

The authors also argue that “*despite the seemingly successful reframing*” of nuclear energy as the solution to climate change opposition remains very strong on the local level due to safety concerns. Sceptical non-governmental organizations (NGOs) have gathered strength in France following radioactive leaks in 2008; the project in Finland is clouded by the safety control concerns, delays, cost overruns, waste exports to Russia, uranium mining in Africa. France is losing competition in the global market to stronger players such as South Korea and shaky top management of the “*Areva*” does not help either; the progress towards more industry openness and transparency remains slow. Therefore according to the authors the convergence in terms of the recent reframing around climate and security in the three countries may not endure (Lehtonen and Martiskainen 2010).

Following this line of inquiry it must be said that the history of nuclear energy and its revival in Finland seems to have been documented rather well by Finnish scientists. Although most of this work has been published in Finnish, one recent publication in English (Kojo and Litmanen 2009) provides quite an extensive overview and includes a section on discursive aspects of the recent nuclear development. The study by Berg (2009) is based on 12 focused interviews with members of the Finnish Parliament who participated in the vote regarding the decision on the 5th nuclear unit in May 2002 – half of those interviewed voted in favour and rest – against the new build (Berg 2009). Author’s discourse analysis is aimed at the describing the ways politicians perceived their roles, roles of experts and citizens when deciding on the issue. Other themes include risks, values and the debate in general. The analysis is conducted drawing on Hajer’s (1995) discourse analytical categories and tests the theoretical model assuming the existence of three ideal types of development: simple, ecological and reflexive modernization. Berg (2009) takes this scientist’s discourse definition and puts more emphasis on content, ideas, categories, systems of meaning and examines the way they compete in the debate.

The study reveals what is depicted as “*four nuclear discourses*”: the pro-nuclear progress discourse characterized by the idea of simple modernisation and economic growth, the two discourses reflecting principles of ecological modernization – pro-nuclear climate discourse and the pro-renewables climate discourse, and the fourth – reflexive anti-nuclear discourse that questioned economic growth and expertise in charge of managing modern environmental risks.

Berg (2009) interprets these findings as the end of the bipolar way of discussing issues surrounding nuclear power. In the light of ecological modernisation and widespread environmental concerns, economic growth, institutional expertise and technology are seen in

Finland as means to solve environmental problems. Meanwhile climate change is used to downplay nuclear risks and reframe this technology as a GHG mitigation option. This seems to strip environmental NGOs of the power they once had making it difficult to counter balance the debate with the industry. In the Finnish discussion experts with strong institutional background seem to have enjoyed the most influence, while NGOs were seen as biased and prejudiced. An overall conclusion, the study notes a shift on nuclear energy in Finland from the idea of reflexive modernisation of the 1980s and 1990s to the optimistic ecological modernisation enabling to choose nuclear as a “*cleaner*” option for addressing climate change.

One more study that deserves a mention here comes from a country which is part of empirical research for this thesis. Baločkaitė and Rinkevičius (2009) studied the discourse on nuclear power in the Lithuanian media and society. Their main focus was risk framing and symbolic meanings in public communication. The researchers performed both quantitative and qualitative analysis of over 400 texts published in the most popular Lithuania dailies over the period of four months in 2008. The results indicate that nuclear energy is a much more popular theme (50%) compared to other risk related subjects such as genetically modified organisms and climate change put together. Authors also examined 37 longer texts in terms of their narrative structure and emerging storylines. In doing so Baločkaitė and Rinkevičius (2009) found that dominant themes are confrontational, characterized by the power struggle. Furthermore, they observe that Lithuanian press headlines on the subject often feature symbols of death, irony and uncertainty, while nuclear is mainly linked with politics and economics completely ignoring potential technologic and environmental risks or downplaying them as belonging to the past.

Another significant aspect of the Lithuanian nuclear discourse relates to the main actors quoted in media publications. Researchers conclude that Lithuanian public sphere is dominated by the so-called “*talking classes*” – politicians (60% of publications), experts (20%) and businessmen (17%) who retain the “*legitimacy*” to discuss nuclear issues and thus control the discourse, while citizen groups (7%), scientists (5%), NGOs (2%), medical doctors (0.5%) are left as outsiders.

2.3.1.3 Other nuclear-related issues

Along somewhat different lines, a handful of authors employed discourse approach to study the public communication, radioactive waste management policies and the ideological stance of the press on Iran’s nuclear program. It can be said that nuclear *per se* is secondary to this research and the policy making process is a primary subject of inquiry.

Johnson (2007) analyzes discursive coalition building among environmental, religious, and Aboriginal organizations in the context of the nuclear waste management policy in the Canadian context. The author traced their narratives aimed at advocating for a more inclusive decision making in this field. The study draws on interpretive analysis of policy statements, written and oral submissions to the environmental assessment panel, consultation documents and interviews.

It goes on to argue that this sort of consultation process in reality did not lead to more inclusion, equality, reciprocity, agreement, and integration. According to the author, the policy-making evaluation reveals that despite their efforts and apparent achievements the new discursive coalition became a victim of the historical power dynamics as influential decision makers asserted their dominance behind the closed doors (Johnson 2007)

Similarly, Anshelm and Galis (2009) use discourse approaches to investigate the agendas of nuclear energy industry and social groups with regard to the high level nuclear waste management in Sweden from the 1950s to date. Their point of the departure is the view that nuclear waste management in this country originates in complex political, cultural, ethical, geographical and economic argumentative struggles and therefore can be studied through the public discourse. Their research constitutes an analysis of over 1200 documents including newspaper articles, scientific journals, reports, leaflets and books that were closely read and coded according to prevalent themes.

The findings show the evolution of the industry's statements being perceived as universally scientifically valid in the 1950s and 1960s to the current conflict and negotiations-based nuclear waste management practices. Based on their research Anshelm and Galis (2009) claim that the development of the underground high level waste storage method was lead by intense conflicts between authorities and the anti-nuclear movement and not the consensus-based Swedish political culture as often maintained (Anshelm and Galis 2009).

Pro- and anti-nuclear debates are the center of the study of political argumentation an communication in the Swiss direct democracy context (Windisch 2008). With a focus on ordinary, everyday forms of argumentation, the author utilized an impressive volume of tens of thousands of archived letters written by ordinary citizens to the press over the course of two decades. For the sake of providing one example the vote on nuclear energy held on 29 September 1990 was chosen and data was analyzed to identify the themes of the political discourse, social and political representation, the construction of images and discourse strategies. The aim of the study was also to examine how the actors make their points and address one another.

The analysis reveals that the dominant topics in the Swiss public debate are safety, issues of nuclear waste, and the potential military threat to the power stations, economics, ecology and alternative energy sources. For example, in the safety debate, the anti-nuclear protagonists use generalizations and essentializations to argue that history repeats itself, that there is no fundamental difference between reactors and safety culture of the Soviet Union and the West and that nuclear is intrinsically evil.

Meanwhile, Windisch (2009) demonstrates how the pro-nuclear actors employ a completely different logic of argument based on contestation, denial and rejection of the anti-nuclear discourse. A strategy of attack and exposure is also often used. As demonstrated in the

discussion on waste, nuclear energy is portrayed as inherently dangerous in terms of potential contamination and military attack. In turn, a pro-nuclear lobby refuses to debate this danger as purely hypothetical and even stigmatizes such arguments as psychological and not based on facts. Their stance is that waste is a technical problem for which the solution can always be found. Amid the debate nuclear opponents call for energy saving, a qualitative change in society and a different kind of economy. Ironically, the pro-nuclear camp actually welcomes the ecological debate on nuclear and argue that it provides an ideal solution to climate change and rejecting it would lead to a much more severe pollution.

What regards the argumentation, Windisch (2009) points out that it is fundamentally interactive and dialogic. The more materialistic and economic arguments-based strategy of the pro-nuclear side contrasts with a more voluntarist and idealistic discourse of the anti-nuclear camp. A very common statement from the pro-nuclear camp is that their arguments are based on hard facts and objective science, while the other side is portrayed as inconsistent and illogic. In sum, the author underlines that these adversarial “*verbal wars*” in essence can lack “*the vital dimensions of the concrete and everyday operation of effective political argumentation*” (Windisch 2008).

One last study summarized here relies on media publications chosen to critically assess ideological themes in three US newspapers: *The New York Times*, *the Washington Post* and *The Wall Street Journal*. The focus of this research is the discussion on Iran’s nuclear program in editorial columns as they are primarily aimed at the economic and power elites. Izadi and Saghaye-Biria (2007) aims to examine the formation of the Orientalist images based on the dichotomous Western worldview of Islam and Muslims stemming from the structuralist use of language. They identify eight Oriental themes: inferiority, backwardness, irrationality, submissiveness, Islam as threat, Jews versus Arabs, strangeness and untrustworthiness. Additionally, authors trace argumentative structures used in editorials in order to promote a certain perspective on events, players or agents, also norms, values and rhetoric (Izadi and Saghaye-Biria 2007).

The study finds that the themes of Islam as a threat and Oriental untrustworthiness are the most common in the editorials that were studied. When it comes to the nuclear technology use in Iran, the authors argue that three newspapers perceive the danger as inherent to the Iran’s scientific and technological capabilities and not the potential military applications. Furthermore, the three editorials depict Iranian nuclear weapons program as a reality despite the lack of definitive intelligence. Although newspapers’ positions diverge, none of them challenge the assumption about the existence of the nuclear programme and all seem pessimistic about the success of a diplomatic solution. As a result, Izadi and Saghaye-Biria (2007) conclude that elite media lacks critical approach towards the official governments’ policies.

2.4 Summary and conclusion

This chapter contains the literature review and consists of three sections. They introduce discourse analysis and link it with democracy, media and public sphere, argumentative struggle, hegemony and policy-making. Literature with focus on issues surrounding nuclear energy using discourse analytical approaches is reviewed as well.

The first section defines discourse as a form of social practice. From this perspective, reality is a social construct and is constantly produced and reproduced through language and human interaction. Media as an arena of social interaction where different arguments are played out becomes one of the key prerequisites of access to knowledge production. As social life is increasingly influenced by the media, societies have become more susceptible to power manipulations. Discourse actors not only promote different views through narratives but also seek influence over their rivals to achieve the discursive hegemony. In this, simple discursive storylines play the key role. The more multi-interpretable they are, the more difficult to challenge. The perspective towards policy-making as a constant communicative struggle rejects decision-making as a linear process and calls for more discursive democracy and normative discourse management. With sustainability policies in mind, some authors suggest complementing decision-making with significant contributions from citizens.

The second section focuses on the links between discourse and policy making. The last decade has seen a growing interest in the role of discourses in environmental policy-making and lately also in energy and energy security. Nonetheless a cross-cultural discourse analysis of the recent debate on nuclear power appears to be limited. This study divides the literature on nuclear discourses published over the last decade into retrospective studies, nuclear revival analysis and research on other nuclear-related issues. The first part looks at the history of technology, the Cold War rhetoric, and the post-Chernobyl discourses of transition society, while the topical ones mainly focus on the renewed interest in nuclear power. The remainder include studies that examine political communication, radioactive waste management and discursive framing of issues surrounding the Iran's nuclear program.

The third section includes a literature review on nuclear discourse studies. In summary, it indicates that discourse analysis can provide interesting and varied insights for decision making. To name a few, it shows how nuclear accidents can be used to consolidate the nation and drive social transition (Schmid 2004) and how certain technological developments can be fostered and/or hampered by different perceptions about the role and/or trustworthiness of the state and science (Proops 2001; Nehring 2004). Several studies demonstrate various attempts to linguistically frame pro-nuclear policies by pinning them either to state security, energy security or climate change mitigation without much reference to facts that substantiate such claims (Bickerstaff *et al.* 2008; Scrase and Ockwell 2009b; Lehtonen and Martiskainen 2010) and note the end of a bipolar debate on nuclear energy (Berg 2009).

Moreover, discourse analysis also helps tracing techniques various social groups use to shape and manipulate public opinion and/or interfere with public participation (Johnson 2007; Baločkaitė and Rinkevičius 2009), reveals how uncritical of official policies elite media can be (Izadi and Saghaye-Biria 2007) and how confrontational and adversary argumentation strategies degrade public discussions (Windisch 2008).

The review also shows that recent cross-cultural studies linking nuclear energy and energy security and/or nuclear energy, democracy and public debate are absent. There are only few isolated studies originating mainly in the UK. Nuclear discourse in the Lithuanian media has been studied only in the context of risk perception studies, while no such work exists on situation in Belarus.

3 METHODOLOGICAL FRAMEWORK

“...Neither the implications, nor the desired outcome of critical news analysis are purely academic: they are social, political and personal”

Roger Fowler

Discourse analysis was used in this study as a framework to examine the debates on nuclear energy. The research was divided into three stages pictured in Figure 3.1. The global nuclear energy discourse was studied first, the analysis of national discourses in Lithuania and Belarus followed, and comparative analysis took place last.

For both global and national discourse analysis the literature was reviewed to describe the context; in parallel text samples were collected for qualitative coding and depiction of recurring themes and narratives, and findings were compared and interpreted in the final stage.

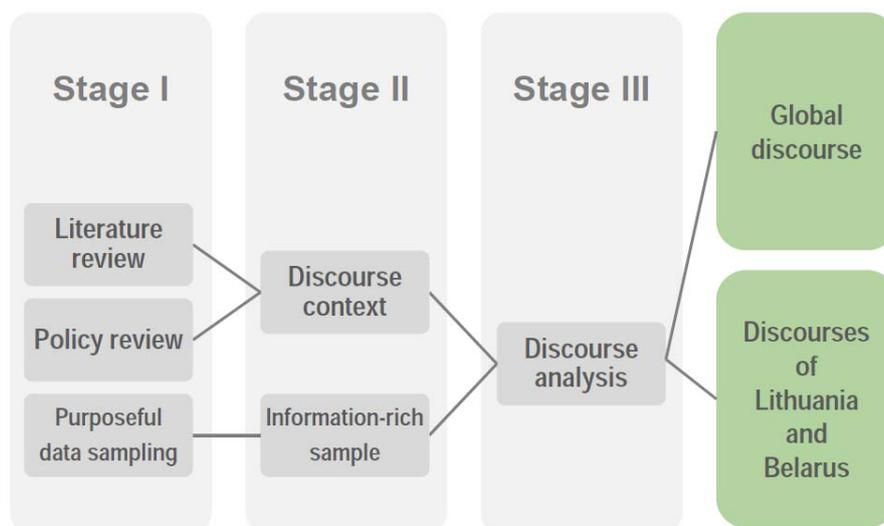


Figure 3.1 Research stages

This chapter contains details on the methodology. Section 3.1 deals with data collection – it explains the choice of data sources, sampling strategy and additional criteria. Section 3.2 introduces the author’s analytical approach based on concepts developed by Hajer (1995). Section 3.2 outlines the comparative part of this work, while section 3.4 sums up and concludes.

3.1 Data collection

This study mainly relied on data from secondary sources: published research, policy documents, and media publications. Publications by international organizations served as the main data source for global analysis and texts from the media – for the national cases.

Since discursive storylines were the main object of analysis, for both global and national research parts data was collected using *purposeful sampling strategy*. This kind of strategy is characterized by a choice of a smaller sample size focusing on “*information-rich*” cases: specific rather than general data aimed at in-depth study of a phenomenon or issue of interest (Patton 2002). Further details of data collection techniques are provided in the following sub-sections.

3.1.1 Context description

For the discourse context description literature on global and national energy policies, and national media systems was reviewed. Searches in international scholarly databases such as ISI Web of Knowledge, Science Direct, Wiley Inter Science, and Google Scholar were conducted. Databases of the Library of the Lithuanian Academy of Sciences and the National Library of Belarus as well as Russia’s (eLibrary.ru) electronic scholarly databases were searched for collecting national data on energy policies. Access to the Central European University library, e-books of the Lund University library and Google Books was used as well.

Since academic publications on the most recent developments related to nuclear power and media system in Lithuania and Belarus are limited or not available, some reliance on the national science institutes’ reports and other “*grey*” sources such as non-governmental organizations, think-tanks and media articles was unavoidable. The most recent country-specific materials such as official documents, doctoral dissertations and journal articles in press were obtained through personal contacts during the field research in Belarus and Lithuania as well.

3.1.2 Global discourse

The global part of discourse analysis is intended to provide the background for the national discourse analysis rather than fully explore the international debate. Therefore it covers only few energy-related publications by the key international players selected focusing on different aspects of nuclear power. In order to describe the global discursive storylines, international actors were identified first and sampling of their publications took place afterwards.

A following list of global discourse actors was compiled focusing on the stakeholder diversity: the Greenpeace, the IAEA, the IPCC, the Nuclear Energy Agency (NEA) of the Organization for Economic Co-operation and Development (OECD), the United Nations Development Programme (UNDP), the World Energy Council (WEC) and the World Nuclear Association (WNA). Their detailed profiles are presented in Table 4.1 included in the next chapter. An information-rich data sample was obtained by applying the additional qualitative criteria for publications produced by these organizations:

- *Topical* – addressing nuclear energy issues in a context of global energy challenges of the 21st century;

- *Policy focus* – dealing with the global energy policy and/or nuclear energy from a variety of perspectives: policy analysis, sustainable development, climate change, energy supply, technology and safety, industrial and public advocacy;
- *Interests* – representing a diversity of international stakeholders: scientists, experts, governments, industry, public;
- *Timeframe* – published in 2004-2009, i.e. in parallel with texts selected for the national discourse analysis to enable comparison.

A list of publications purposefully sampled for the analysis contains seven items and is included in the Table A.1 of the Appendix. These texts were qualitatively coded for recurring nuclear energy-related themes and interpreted using analytical categories described in section 3.2 of this chapter.

3.1.3 National discourses

The national nuclear discourse analysis was conducted in a similar way. The difference compared to the global discourse analysis is that three national broadsheet⁹ media outlets were selected first. Selection criteria includes a diversity of *type* (news portal, national daily, political and/or business weekly), *circulation* (high and low), *editorial stance* (pro-government, pro-nuclear, opposition, anti-nuclear, and neutral) and *regular coverage* of nuclear energy and energy security.

The texts were sampled according to a publication date, taking into consideration several national events listed in the following sub-sections 3.1.3.1 and 3.1.3.2. These events are termed in the literature *discursive events* as they are emphasized politically in the media, and trigger peaks in discussion on a subject matter (Jäger 2001).

The texts were collected performing searches in online archives using keywords “nuclear energy” in Lithuanian¹⁰ [“*atominė energetika*”, “*branduolinė energetika*”] and Russian [“*атомная энергетика*”, “*ядерная энергетика*”, “*АЭС*”].

In order to compile information-rich data samples, search results were refined to filter out thematically irrelevant and/or repetitive items and reduce each sample to manageable size applying qualitative criteria listed below:

- *Topical* – directly pertaining to the research subject and selected discursive events;

⁹ Media that adheres to the highest professional standards compared to a lower quality tabloid media.

¹⁰ A note on translations and transliterations: all translations of texts in Lithuanian and Russian are by the author. Belarusian and Russian names and titles have been transliterated using the *American Library Association – Library of Congress* transliteration tables (without diacritics).

- *Genre* – news (reporting facts), background articles (presenting views, explaining context), interviews (in-depth talk with one person) or a commentary (opinion piece presenting subjective point of view);
- *Polemic, analytical* – including a diversity of views expressed by multiple actors; providing more detailed explanations on various themes and/or national and/or international background of the issue;
- *Rhetoric* – use of various connotations, metaphors, allusions, irony, sarcasm and other stylistic elements to explain the issue.

3.1.3.1 Lithuania

The Lithuanian nuclear energy discourse analysis is based on the media texts published in 2007-2009 period, characterized by the following discursive events:

- Adoption of the new *National Energy Strategy* which declares building the new Visaginas NPP the strategic priority in January and the *Law on the Nuclear Power Plant* passed in June 2007;
- Formation of the public-private consortium “*Leo LT*” responsible for the construction of the new NPP and connecting Lithuania to the western grid in May 2008;
- Liquidation of the “*Leo LT*” and decommissioning of the Ignalina NPP in December 2009.

The reviewed media articles were sampled from three national broadsheet media outlets¹¹: the biggest national daily newspaper “*Lietuvos rytas*” [eng. “*Lithuanian Morning*”], the political weekly “*Atgimimas*” [eng. “*Revival*”] and the biggest online news portal *Delfi.lt*.

During the first search around 200 publications by “*Lietuvos rytas*” daily, 490 publications – by *Delfi.lt* and over 100 – by “*Atgimimas*” weekly were reviewed. The list of texts selected for the analysis can be found in the Table A.2 of the Appendix; it includes a total of 78 items. A breakdown of the sample by media outlet looks as follows: “*Lietuvos rytas*” – 29, “*Atgimimas*” – 20, *Delfi.lt* – 29 texts.

3.1.3.2 Belarus

The Belarusian nuclear discourse was examined by reviewing the media articles from the period of 2006-2009. This timeframe is characterized by these discursive events:

- The President’s approval for building the new NPP at the meeting on increasing national energy security in December 2006;

¹¹ For more details on the Lithuanian media outlets selected see p. 61.

- Approval of the updated *Conception of Energy Security of the Republic of Belarus until 2020* declaring building the new NPP a strategic priority in September 2007;
- The final decision on building the new NPP in January and its siting in December 2008; public consultation procedures on the environmental impact assessment of the plant in October 2009.

The texts published during this period by the main government daily “*Sovetskaia Belorussia – Belarus Segodnia*” [eng. “*Soviet Belarus – Belarus Today*”, thereafter “*Sovetskaia Belorussia*”] the private business weekly “*Belorusy i Rynok*” [eng. “*Belarusians and Market*”] and the leading private online news portal “*Naviny.by – Belarusskie Novosti*” [eng. “*News.by – Belarusian News*”, thereafter *Naviny.by*] are the media outlets¹² serving as a data source for the Belarusian nuclear discourse analysis.

The initial archival searches returned over 400 articles in “*Sovetskaia Belorussia*”, around 100 in “*Belorusy i Rynok*” and over 200 in *Naviny.by* that were published over the selected period. The final list of Belarusian texts selected for analysis is included in the Table A. 3 of the Appendix to this document and contains 79 texts. A breakdown of the sample by media outlet looks as follows: “*Sovetskaia Belorussia*” – 29, “*Belorusy i Rynok*” – 20 and *Naviny.by* – 30 texts.

3.2 Analytical categories

As mentioned earlier in Chapters 1 and 2, the empirical research approach employed here draws on argumentative discourse theory developed by Maarten A. Hajer (1995). The analysis, graphically depicted in Figure 3.2, includes four categories: (1) description of the *discourse context*, (2) identification of *actors*, their expressed beliefs and *themes*, (3) characterization of prevailing *discursive storylines* and (4) identification of *discourse coalitions*.

Arguably, such approach facilitates understanding of the formation of social coalitions on certain meanings and effects of specific ways of talking (Hajer 1995). When analysing why and how particular ideas come to dominate the discussion, *context* in which statements are made is studied, relationships between various *actors*, producers and intended recipients of knowledge-producing messages and also *themes* and *storylines* – symbolic references that unite them into coalitions.

When elaborating on the concept of *discursive storylines* Hajer (1995, 56) argues that these simplified narratives play the key role in establishing particular views because people tend to follow certain structured modes of cognition: analogies, historical references, clichés, collective fears, etc.

First of all, the author argues, storylines act as social devices that reduce complexity in the debate by suggesting common understanding. Second, as they get accepted by a group of discourse

¹² For more details on Belarusian media outlets selected see p. 88.

actors, they stabilize the debate and sometimes create a sense of achieved solution to a problem. And finally, they usually possess the ability of providing a common narrative that actors from various disciplines can refer to (Hajer 1995, 63).

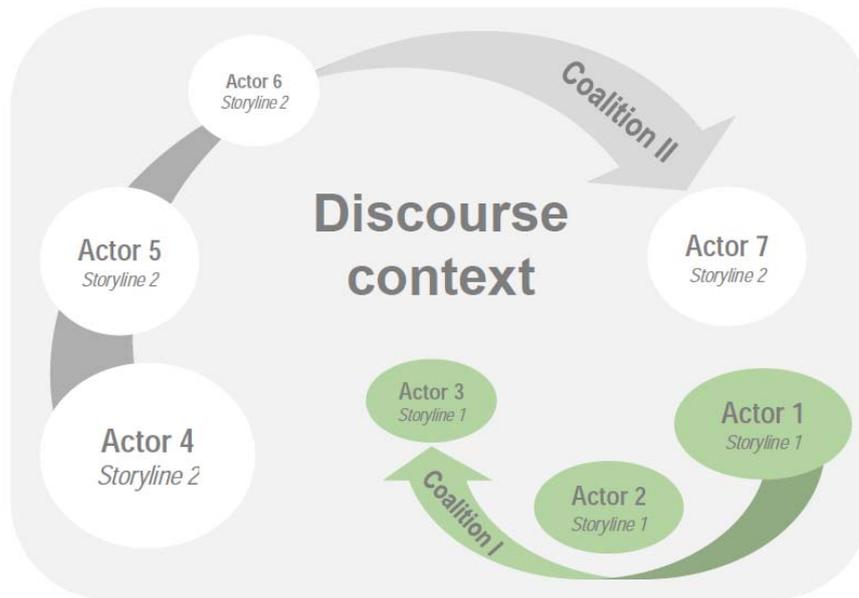


Figure 3.2 Discourse analytical categories (produced based on concepts by Hajer (1995))

By clustering the collective knowledge and positioning discourse actors as victims, problem solvers, leaders or scaremongers, storylines act as cement for *discourse coalitions* – communicative networks of actors with shared perceptions. Storylines, not interests, Hajer (1995) explains, are the basis for the formation of discourse coalitions as well as willingness, the need and ways to express them.

These argumentative communicative networks are the potential vehicles of policy change, determined by the power and attractiveness of the storylines. What is more, according to the author, the most powerful storyline is not necessarily the most logical or strategically chosen one, but “*it sounds right*” to the majority of recipients. Therefore, as already pointed out in Chapter 3, it is their multi-interpretability that helps win the struggle for discursive hegemony, which usually takes the form of the translation of theoretical concepts into concrete policies and institutional arrangements (Hajer 1995, 61).

3.3 Discourse analysis

Publications produced by global actors and articles selected from the Lithuanian and Belarusian media were examined following the same analytical sequence. They were qualitatively coded for the recurring themes, beliefs and arguments expressed by various actors about nuclear power in different contexts. Later these were grouped according to the discursive storylines based on the

similarities in argumentation to identify discourse coalitions, describe and interpret them in relation to the socio-political and economic context they belong to.

After documenting and analyzing both global and national discourses, empirical findings were compared. The most often appearing issues, themes and their interpretations, dominant storylines and competing discourse coalitions were contrasted by incorporating findings of the global nuclear discourse analysis with results of the national analysis. Policy implications of differences in the actor behaviour, discursive framing of nuclear, argumentative strategies and features of the discursive power struggle were discussed.

3.4 Summary and conclusion

This chapter explains research methodology. Discourse analysis is used in this study as framework to examine the current nuclear energy policy formation, describe how it relates to energy security and climate change mitigation and identify similarities and differences on global and national governance level when it comes to considering the nuclear option.

The research was divided into three stages: the literature was reviewed to describe the global and national discourse context, then information-rich data samples were collected and qualitatively coded for recurring discourse actors and themes, and global and national analysis was conducted last.

The study relied on secondary data sources. Texts for the Lithuanian and Belarusian discourse analysis were collected from six national media outlets according to major discursive events in 2006-2009. Texts were sampled by performing searches in online archives using contextualized keywords. The results were refined using qualitative criteria to filter out irrelevant and repetitive items and to reduce the samples to manageable size. A total of 157 texts were sampled and analyzed. Global discourse was analyzed in order to provide background for comparative national discourse analysis. For that purpose seven international publications produced between 2004 and 2009 by the Greenpeace, the IAEA, the IPCC, the NEA, the UNDP, the WEC and the WNA were examined.

The data was interpreted using concepts of discursive storylines and discourse coalitions proposed by Hajer (1995). Storylines are simplified narratives replacing complex disciplinary debates. By implying simplified problem resolutions they form discourse coalitions – communicative networks driving policy stalemate or change. After documenting and analyzing both global and national discourses following the same methodological sequence, empirical findings were compared and interpreted.

4 GLOBAL NUCLEAR ENERGY DISCOURSE

*“Nuclear can be beneficial if employed carefully,
but can cause great problems if not”*

The IPCC

Despite the stagnation of the past two decades, prior to the economic crisis of 2008 the projections for nuclear power have been starting to go upwards in response to energy challenges of the 21st century (IAEA 2009). Many have argued lately that due to a growing demand, energy security and climate change challenges nuclear energy has been posed for a revival (Marshall 2005; Nuttall 2005; Eerkens 2006; Müller-Kraenner 2008; Wald 2008). New reactor orders have started coming in again, the IAEA reports a wave of newcomers and countries such as Sweden, Germany, the UK and the US are reviewing their policies (Vaughan 2009; DJN 2010; Wald 2010; Westlén 2010).

However, some believe that the proclaimed nuclear energy comeback might be overshadowed by technological problems linked to unmanaged radioactive waste, risk of weapons proliferation and public opposition (Ebinger and Massy 2009). Moreover, there are doubts that nuclear energy can be competitive under the liberalized market conditions (Finon and Roques 2008).

This chapter explores the arguments for and against nuclear power by examining the global discourse of nuclear energy. Discourse was analyzed by reading into competing narratives found in international publications produced by several global actors. The chapter begins with a discourse context overview in section 4.1 then goes on to introduce the selected global actors and recurring discourse themes in the publications analyzed in section 4.2. It also includes a description of storylines forming three discourse coalitions that drive contrasting strands of discursive knowledge on nuclear energy in section 4.3 and a summary in the form of tables in section 4.4.

4.1 Global discourse context

The origins of nuclear fission of uranium go back to military applications around the time of its discovery in 1938 and during the World War II (Bodansky 2005). It was not until 1954 that the first civilian reactor started generating electricity for a residential power grid in the Soviet Union (IAEA 2004). Although initially it carried a great promise of a limitless energy source that will be *“too cheap to meter”*, since the late 1950s industry developed rather slowly (Bodansky 2005). Amid the global oil crisis it started growing rapidly and for a decade between 1970 and 1975 reached impressive growth rates averaged 30% per year to achieve more than 16% share in a global electricity mix by the 1987 (IAEA 2004).

During this period the large-scale use of civilian nuclear power started in the US, the former Soviet Union, France, Germany, Japan and South Korea. It was developed by vertically integrated state-run utilities that bared all associated risks and in many cases in parallel with nuclear weapons programmes (Bodansky 2005; Finon and Roques 2008).

The slowdown of nuclear energy expansion started in 1980s due to economic reasons and public concerns that followed the accidents at Three Mile Island in 1979 in the US that was the first, and Chernobyl in 1986, in Ukraine, that was the most severe in the history of civilian nuclear power (IAEA 2004). As a result of Chernobyl disaster over 5 million people were directly affected by land contamination in Ukraine, Russia and Belarus and are still dealing with environmental, public health and socio-economic consequences of this tragedy (Kinley 2005). This led to a complete halt of nuclear programmes in countries like Italy, while others like Sweden, Germany and Belgium introduced phase-out plans (Rüdiger 1990; Bodansky 2005). Ever since 1987 no new programme has been started and the industry has been declining with an ageing global fleet and few new connections to the grid mainly in the Eastern Europe and Asia (Bodansky 2002, 2005).

But recently there were signs of what some are calling a revival or even a renaissance of the nuclear industry. There were 436 reactors operating worldwide as of the beginning of 2010 in 30 countries – nuclear constitutes around 7% of primary energy and 14% global electricity supply today (IPCC 2007; IAEA 2009, 2010). According to the IAEA, the year 2008 was the first one since 1955 with no new reactors connected to the grid, but the largest number, ten new constructions have been started since 1985. In the beginning of 2010, there were a total of 56 nuclear units under construction worldwide; 29 of them are located in China where plans to increase nuclear capacity fourfold by 2020 are underway (Ebinger and Massy 2009; IAEA 2010).

In addition, more than 55 new countries have expressed interests of starting a nuclear programme, most of them in the developing world (IAEA 2009; WNA 2009).

The IAEA public acceptance index survey has shown increased positive attitudes among most of the surveyed 12 countries that already have a nuclear programme (IAEA 2009). Previously sceptical countries like Sweden and Germany have been in the process of reviewing their policies (DJN 2010; Westlén 2010), while the United Kingdom (UK) and the US are the latest ones to have announced their nuclear expansion plans quoting environment among the main motivating factors (Vaughan 2009; Wald 2010).

Nevertheless, as noted by Finon and Roques (2008) the current regulatory context for new nuclear build is very different from the historical arrangements that conditioned the global nuclear development. All the plants operating today were built when all the costs, performance, fuel price and other risks were borne by consumers rather than suppliers. The potential revival of nuclear power under the conditions of the liberalised electricity market will have to address hurdles associated with instability of safety regulations and design licensing, political risks of

electoral cycles affecting long-term projects such as construction of waste disposal facilities and difficulties when “*re-learning*” the technology (Finon and Roques 2008).

These factors might explain the fact that even though today half of the installed nuclear power capacity is still concentrated in the Europe, there is only a handful of ongoing new projects compared to more centralized market in China. Out of 56 above mentioned units only six are under construction in the EU: two modern reactors in Finland and France and four more Soviet technology-based projects in the Slovak Republic and Bulgaria started back in the late 1980s (IAEA 2010). But more than 80% of European installed power generating capacity (more than 1000 GW and around 1/3 of it nuclear), is expected to retire between 2010-2030 and will have to be replaced (WEC 2007). Nonetheless, the policy consensus over the status of nuclear energy in the future European mix has not been reached mainly due to unresolved issues of waste and economics of this power source (Ebinger and Massy 2009; Umbach 2010).

In summary, nuclear power development globally is facing uncertainties and challenges linked to costs, institutional and technical capacities, shortage of qualified workers and lack of skills, waste management, proliferation concerns, accidents and incidents, public opposition and climate agreements (Jewell 2009).

It might be fair to say, that in more general terms, apart from the hyped-up media headlines announcing the so-called “*nuclear renaissance*”, context-dependent political statements from the top-ranking world podiums and the recent interest in energy discourse studies reviewed in Chapter 2, little is known about the discursive nature of the global nuclear revival.

How different issues surrounding nuclear energy are linked with global challenges regarding meeting growing energy demand, ensuring energy security and low-carbon economy transitions? What are the competing arguments and knowledge claims communicated by different global actors regarding the risks and prospects of nuclear?

The following sections are aimed at addressing these questions.

4.2 Global discourse actors and recurring themes

Like any other international subject matter, global energy governance is a multi-actor and multi-level process. The field of expertise among the actors selected for this study ranges from policy analysis, technology transfer and industry matters, to the science of climate change, sustainability of energy supply, infrastructure security and nuclear disarmament advocacy. Due to diverging missions and interests of organizations, the target audience and the scope of reporting, the degree of attention devoted to nuclear energy in the seven sampled publications¹³ varies. Nonetheless,

¹³ All the references in this chapter thereafter are made to the appended list of analyzed publications in Table A.1.

this allows for coverage of a wide range of issues from multiple perspectives on the global governance level. Table 4.1 displays actors' profiles representing the diversity of policy areas they are involved in.

Table 4.1 Profiles of global energy discourse actors selected for analysis

GLOBAL DISCOURSE ACTORS: FOCUS ON ENERGY	
NEA	The Nuclear Energy Agency (NEA) was established in 1958 within the framework of the Organisation for Economic Co-operation and Development (OECD). NEA unites 28 countries representing 85% of the global installed nuclear capacity. It works as a forum for sharing information, technical expertise and facilitating policy analysis. Responding to renewed interest in nuclear NEA published its first <i>Nuclear Energy Outlook</i> in 2008.
IAEA	The International Atomic Energy Agency (IAEA) is the United Nations intergovernmental science and technology-oriented organization with 151 Member States. It was established in 1957 to promote safe, secure and peaceful nuclear technologies. The IAEA facilitates technology transfer, develops safety standards and verifies the use of nuclear material for civilian purposes.
UNDP	The United Nations Development Programme (UNDP) is a UN body focusing on global development challenges: governance, poverty, HIV/AIDS, crisis and sustainable energy for human development. It authored the <i>World Energy Assessment: Energy and the Challenge of Sustainability</i> in 2000.
IPCC	The Intergovernmental Panel on Climate Change (IPCC) is a scientific body established by the United Nations Environment Programme and the World Meteorological Organization in 1988. It reviews and assesses scientific, technical and socio-economic data in order to understand the climate change. The IPCC aims to present rigorous and balanced policy-relevant information to decision makers. Its <i>Climate Change 2007</i> report won a Nobel Peace Prize in 2008.
WEC	The World Energy Council (WEC) is the UK-based charity established in 1923 with members in nearly 100 countries. It aims to promote the "sustainable supply and use of energy for the greatest benefit of all people" and covers all types of energy, including coal, oil, natural gas, nuclear, hydropower, and renewables.
WNA	The World Nuclear Association (WNA) is an international organization that serves as an international forum for the global nuclear industry from uranium miners to equipment suppliers and power producers since 1975. It is represented in the IAEA and other UN policy forums and maintains a free online industry news service <i>World Nuclear News</i> .
Greenpeace	The Greenpeace is an international environmental organization established in 1971 with regional offices in 41 countries. It is campaigning for sustainable energy, agriculture, forestry and fishing, against the use of hazardous chemicals and nuclear power and advocating for nuclear disarmament.

Data source: (NEA 2008; WEC 2010; Greenpeace n.d.; IAEA n.d.; IPCC n.d.; UNDP n.d.; WNA n.d.)

The qualitative coding resulted in a list of recurring nuclear energy-related themes that are presented in Table 4.2 The table breaks down these topics according to problems nuclear is intended to address, justification for or against deployment, potential risks involved, constraints and future prospects for this energy source.

Most global actors discuss nuclear energy in relation to increasing access, securing supplies and mitigating climate change. When addressing the viability of this energy source they cover economic costs, availability of fuel resources, the extent to which nuclear helps to reduce GHG emissions, touch upon the dynamics of global energy policies and public views. None of the publications go without mentioning risks. These either pertain to safety performance record, externalities of the nuclear fuel cycle, or health and environmental risks and accidents like Chernobyl, also weapons proliferation.

Table 4.2 Nuclear energy themes featuring in international publications analyzed

T H E M E S							
PROBLEMS ADDRESSED	Climate change	OPTION JUSTIFICATION	Economic costs	RISKS INVOLVED	Chernobyl etc.	CONSTRAINTS & PROSPECTS	Economic costs
	Energy demand & access		Energy security		Fuel cycle		Fuel availability
	Energy security		GHG emissions		Health & environment		Human resources
			Global trends		Performance & safety record		Installed capacity
			Public acceptance		Proliferation & terrorism		Liability
			Waste management	Newcomer countries			
				Public acceptance			
				Regulatory framework			
				Technology			

Themes such as economics of nuclear, fuel availability qualified workforce, installed capacity projections, public acceptance issues and technological development are discussed as constraints determining the future of this industry. Liability, regulatory framework and newcomer countries also fall into this category.

4.3 Global discursive storylines and coalitions

Although analyzed publications share most of these themes, there are disparities in understanding to what extent can nuclear be a solution to global energy challenges such as growing energy demand, energy security and climate change, also development of nuclear technologies, risks involved and future prospects.

A multitude of storylines emerge when reading into selected texts. Forthcoming sub-sections document narratives found in reviewed publications by grouping them into three discourse coalitions: pro-nuclear, anti-nuclear and moderate. The varied arguments are summarized in the tables presented in the concluding section of this chapter.

4.3.1 Pro-nuclear discourse coalition

Storylines clustered in this discourse coalition depict nuclear as the “*only viable*” climate change mitigation option also able to provide “*cost-effective*” baseload energy supply. The industry is said to have an “*excellent*” safety record, promising technological solutions for waste management and proliferation prevention. They also claim that public attitudes are increasingly turning positive towards this energy option.

Narratives summarized below mainly belong to industrial actors, the OECD members and the IAEA.

4.3.1.1 Problems addressed

This set of arguments portrays nuclear as a power source that has a *“potentially strong role to play”* in meeting increasing **energy demand**, reducing health effects of fossil fuel use, avoiding CO₂ emissions and securing supplies. With respect to **climate change** nuclear is viewed as *“the only mitigating technology with a proven record at the scale required”* (NEA 2008). The abundance of uranium that comes from diverse sources located in *“politically stable countries”* and small fuel requirements arguably makes it attractive from the **energy security** standpoint (UNDP 2004; WNA 2009).

4.3.1.2 Justification for nuclear energy

Low-carbon, economic attractiveness, secure fuel supply and increasing public support are among the main arguments with respect to viability of nuclear power.

Nuclear industry notes, that although it has been seen as *“dormant”* over these past decades, its share has remained constant since 1980s and capacity even expanded in Eastern Europe and Asia. Currently, it is **climate change** that is *“making the case”* for nuclear: *“Europe would not be able to make any significant impact on reducing carbon dioxide emissions without relying on nuclear”* (WEC 2007). In addition to being *“virtually carbon-free”* on the whole lifecycle basis, nuclear can also provide carbon-free heat and hydrogen to fuel the future transport (NEA 2008; WNA 2009). In this light, the government of the UK believes that it is *“in the public interest”* to develop nuclear power.

Moreover, there are *“solid”* **economic reasons** to develop nuclear in Europe (WEC 2007). Nuclear industry is shifting from national to global serial production schemes which will eventually *“drive construction costs down”*. Existing plants are especially economically attractive because of possible capacity increases, lifetime extensions and license renewals (WEC 2007). Additional economic benefits are expected through various government incentives and emission trading schemes for low carbon energy generation (WNA 2009).

Another advantage is that nuclear power is characterized by more stable prices as uranium prices have low impact on electricity production **costs** (the cost of fuel constitutes only 5%) (WNA 2009). Large **uranium reserves** are *“practical and affordable”* to store as it is denser fuel (NEA 2008). Even without spent nuclear fuel reprocessing, there are enough resources to fuel future expansion at least until 2050. In fact, global nuclear energy programme could be *“fuelled for thousands of years”* in fast breeder reactors, but those are not commercialized yet (NEA 2008). **Waste management** costs represent only 3% of electricity generation costs and **reprocessing** helps to deal with 96% of the spent fuel (WEC 2007). Pro-nuclear actors argue that an international facilities for **fuel reprocessing and enrichment** would make them even more economically viable but their siting remains problematic (WEC 2007).

The IAEA reports a slightly increasing **public support** in countries with existing nuclear programmes (IAEA 2009). There are also claims that *“the percentage of declared ‘opponents’ is decreasing in several countries”* (WEC 2007). Public is more concerned with issues like waste and terrorism and not the actual plant operations (WEC 2007; NEA 2008). Worldwide experience shows that more information leads to more support and that scientists and NGOs are trusted the most in this issue (NEA 2008). Moreover, in Sweden and Finland communities were competing to be selected for the siting of final radioactive waste repository (WNA 2009).

4.3.1.3 Risks involved

Talking about risks, pro-nuclear actors emphasize absence of accidents, existence of waste management solutions and proliferation-resistant technologies of the future.

The pro-nuclear coalition narratives argue that industry’s **safety record** over the last 20 years has improved *“dramatically”* (IAEA 2009) is *“unrivalled”* (WNA 2009), *“excellent”* in OECD countries and proving maturity and effectiveness of the regulatory system. Chernobyl accident is considered a single event caused by absence of safety culture and specific design flaws *“that could have never been licensed outside the Soviet Union”* (WNA 2009). Public health effects of the Chernobyl accident were *“smaller than anticipated”* (WNA 2009). In general, contrary to the popular opinion, **health effects** of nuclear operational emissions are negligible and less lives are lost due to nuclear-linked pollution compared to fossil fuels (NEA 2008).

Volumes of the **waste** produced by nuclear plants are small, and technologies to manage them are *“widely available”* and well known. The international consensus exists that geological disposal is *“feasible and safe”*, though no universal solution exists (WEC 2007). Most spent fuel is stored in pools at reactors or at away-from-reactor facilities that are being expanded regularly (IAEA 2009).

And finally, **future reactors** are designed to be more *“proliferation resistant”* and more *“robust against terrorism”* threats. Multilateral approaches to nuclear fuel cycle could help control the spread of nuclear weapons (NEA 2008).

4.3.1.4 Constraints and prospects

Nuclear industry’s globalization is seen as a positive trend that may improve plant safety and economic viability, in addition to reducing the risk of proliferation. With the projected global capacity two-fold and even three-fold over the coming decades, the main message is that with the right government policies and regulatory frameworks the new take-off should be *“smooth”*.

The industry speaks about **the future** with great confidence, reporting that with 50 reactors under construction today and 130 more planned over the next decade, global nuclear industry is *“clearly going forward strongly”* (WNA 2009). According to the NEA (2008), there are *“authoritative statements of intent”* from several countries that allow to expect the US, France, Japan, Russia,

China and Korea to lead nuclear revival. Reportedly, a number of other countries are moving ahead with their nuclear plans. Italy is planning to restart its program, while power upgrades, investment agreements, contracts, siting, building approvals and licensing applications were initiated in Romania, Bulgaria, Finland, Switzerland, Slovakia, Canada and the US in 2008 alone.

The WNA projects an increase from of global capacity from 373 GWe to 1100 GWe by 2060. Other estimates include an increase by a factor of 1.5 and 3.8 by 2050, mostly in OECD countries and Asia (IAEA 2009; WNA 2009). Moreover, *“historic evidence suggests”* that new plants can be constructed at a rate more than sufficient to meet the high demand (NEA 2008), as most reactors today are built in under five years (WNA 2009).

Moreover, the IAEA reports that interest in starting new civilian nuclear programs persists (IAEA 2009). It is argued that developed countries should assist developing countries to gain access to this technology and *“address poverty without emissions of GHG”* (WNA 2009). Nonetheless, **newcomers** are likely to add only 5% of global nuclear capacity by 2020 (NEA 2008).

With regard to **costs**, new build is said to be *“economically viable in most circumstances”* without special financial support, but governments may need to mitigate some financial risks in order to encourage investments (WEC 2007; NEA 2008). Actors argue that stable political situation and clear **regulatory framework** together with experience of utilities have positive impact on project costs (WEC). According to some estimates, in some circumstances nuclear may be competitive with coal and gas (NEA 2008).

For the years to come the responsibility for the **qualified workforce** training *“is likely to remain at the national level”* (WEC 2007).

Talking about **technology**, around 80% of current nuclear fleet are Generation II light water reactors built in 1970s and 1980s, and they will remain dominant until the mid-century. However, most future growth will rely on new Generation III reactor designs with passive safety features and better economics (NEA 2008). This technology is now on the market, projects have started *“smoothly”* in China, Korea and Russia (IAEA 2009). In 2008 at the IAEA Fusion Energy Conference in Switzerland a record number of over 500 scientific papers have been presented (IAEA 2009).

4.3.2 Anti-nuclear discourse coalition

The opposing discourse coalition promotes the stance that nuclear is unsustainable, expensive, dangerous and unnecessary. It contains narratives that provide a different stance on energy security and climate change mitigation potential and health and proliferation risks in particular. This section summarizes discourse storylines mainly found in the publication of an international environmental NGO Greenpeace, but also others.

4.3.2.1 Problems addressed

The narratives in this coalition argue that since planning, licensing and putting a nuclear reactor online takes more than a decade, nuclear delivers “*too little too late*” and can not guarantee **energy security**.

The industry is “*attempting to exploit the climate crisis*” by promoting it as low-carbon, but in reality nuclear cannot live up to its promise (Greenpeace 2009). Moreover, the argument goes, as a result of the global push for nuclear the investments urgently needed to the real **climate change** solutions such as clean, renewable sources are diverted away from them.

4.3.2.2 Justification against nuclear energy

Anti-nuclear discourse coalition rejects this power source entirely. Mainly due to risks and constraints detailed below, the position of the Greenpeace (2009) is that simpler, cheaper and more reliable ways of generating electricity are technically accessible and capable of producing six times more than current global demand.

Moreover, nuclear power only generates electricity. Today it represents less than 7% of a global energy supply and its contribution to heating and transport needs is marginal. Even if the installed capacity would be quadrupled by 2050, its share would still be less than 10% of global electricity generation and global GHG emissions reduced only by 4% (Greenpeace 2009).

4.3.2.3 Risks involved

Anti-nuclear narratives emphasize “*complex and uncontrollable*” nuclear risks linked with pollution occurring throughout the fuel cycle, public health concerns, industrial accidents, absence of safe radioactive waste management solutions, proliferation and terrorism.

Greenpeace (2009) notes environmental contamination taking place even before energy is produced: during **mining, enrichment and fuel conversion**. Afterwards operating plants are turning nuclear fuel into a “*highly-toxic and dangerous cocktail of radioactive elements, such as plutonium*” that is used to produce bombs and remains dangerous for about 240,000 years. Despite significant investments made to date, no permanent radioactive **waste management** solution has been found and new “*experiments are still being presented as solutions*”, but they will not be commercially viable for a long time. No deep **geological repositories** have been built and it appears that it is impossible to find suitable location where safety can be ensured. Repositories in Yucca Mountain and Finland are presented as projects causing concerns. Because of that nuclear facilities are built in remote closed cities like those in Ural and Siberia in Russia, turning them into the most contaminated places of Earth. One of them is Mayak, where importing foreign waste for storage and reprocessing is planned (Greenpeace 2009).

In relation to this issue, other global actors also maintain that due to social opposition to disposal facilities **spent fuel reprocessing** remains “*de factor interim ‘waste management strategy’*” (UNDP 2004). However, such plants are few worldwide and controversial. Commercial **reprocessing** is carried out only in France, Russia and the UK. These plants release large volumes of radioactive waste on a daily basis, and experience leaks (IAEA 2009). In fact, reprocessing requires repeated transportation of dangerous materials across borders and oceans. Moreover, it is critical for weapons **proliferation** (Greenpeace 2009).

Nuclear critics note that nuclear power evolved from military use and materials produced during enrichment and typical plant operation still can be used to construct 10-15 bombs every year. It has been demonstrated that **weapons** can be produced in weeks with a minimal industrial base. Such programs exist in China, India, Iraq, Israel, North Korea, Pakistan and South Africa. Nuclear facilities and waste transports are potential **terrorism** targets and preventing the proliferation remains an “*impossible task*” (Greenpeace 2009).

Presenting Russia as an example, the Greenpeace claims that the history of nuclear industry is marked by disasters, contamination and **public health** scandals. The Chernobyl disaster is considered the worst civilian disaster in the world as it released more radioactivity than the bombs dropped on Hiroshima and Nagasaki. The death toll is said to exceed 90,000 people and more than seven million are suffering every day. It is argued that **nuclear accidents** and “*near misses*” continue to occur around the world. The US is one example where there have been nearly 200 of them since Chernobyl. Russia’s the record of managing nuclear waste has been “*appalling*”.

As an example of detrimental health effects, publication mentions a proven link among waste reprocessing and increased leukaemia cases, among 25-year olds living within 10 km from a facility in France. It also calculates that over the next 40 years reprocessing plant in Japan will lead to a public exposure to radiation equivalent to half of that released in Chernobyl.

Finally, apart from technological risks, **natural disasters** like floods and earthquakes continue to pose danger for nuclear plants worldwide.

4.3.2.4 Constraints and prospects

In nuclear opponents’ view, in addition to risks listed above, there are social and economic constraints to nuclear. The above mentioned health, environmental and proliferation concerns are the main reasons for the diminishing **public support** for this power source. Reactor safety and siting of waste disposal facilities are also mentioned (UNDP 2004; IPCC 2007).

Talking about **economic costs**, anti-nuclear critics like to refer to nuclear as “*the most expensive way to boil water*” (Greenpeace 2009). In their view, nuclear power is considered cheap today only because it has been subsidized by governments for over a half of a century. In reality, **costs** are

two to three times higher than industry estimates – it is the case in countries like India and Finland where projects have been over-budget up to three times.

Furthermore, since **uranium** can be found in a handful of countries in reality it leads to a dependence on a limited source of supply.

4.3.3 Moderate discourse coalition

Experts with the IPCC, the UNDP and, in some instances, the IAEA do not reject nuclear completely, but put a lot more emphasis on the uncertainties than pro-nuclear discourse actors in their narratives. As shown in more detail below, actors stress cost under-estimates, technological challenges and safety controversies that may put the future nuclear industry development under question. Narratives about the importance of persuading sceptical public and feasibility of future technologies also bring together other actors to this discourse coalition.

4.3.3.1 Problems addressed

IPCC (2007) believes that nuclear power can provide energy *“without emissions of conventional air pollutants”* and is an *“effective GHG mitigation option”*, especially through plant retrofitting and upgrading. However, with regard to **climate change** there is no certainty to what extent it can contribute to GHG mitigation efforts since contradicting figures on lifecycle emissions are provided by different authors (IPCC 2007). Moderate actors maintain that nuclear can contribute by providing increased access to energy and helping to diversify supplies only if existing public concerns are addressed (UNDP 2004).

4.3.3.2 Justification for nuclear energy

Considering all the constraints and uncertainties presented further down, one storyline concludes that nuclear *“can be beneficial if employed carefully, but can cause problems if not”* (IPCC 2007). Advanced nuclear technologies is seen as *“worth exploring”* in terms of potentially lower costs, greater public confidence in safety and non-proliferation as well as more effective management practices (UNDP 2004). Nonetheless, a general consensus among the cautious actors is that it is up to individual countries to decide whether to go nuclear: *“While some countries considered nuclear power as a sustainable energy source with both economical and environmental advantages, other countries do not consider nuclear energy as compatible with the objective of sustainable development”* (UNDP 2004).

4.3.3.3 Risks involved

Nuclear-related health and security risks occur during entire nuclear fuel cycle that are in the way of greater public nuclear acceptance are reiterated in the storylines in the moderate coalition.

Despite the safety culture improvements recognized, leakage risks during operation and transport of spent fuel and the associated **health affects** *“remain controversial”*. Mining, milling, power plant operation and fuel reprocessing are the main sources of collective radiation doses (IPCC 2007).

Although **radioactive waste** volumes produced in the nuclear reactors are small and geological repositories have been studied extensively, their safety has not been proven and the issues involved are *“not only technical”* (UNDP 2004; IPCC 2007). International **waste** repositories may have considerable economic, safety, security and non-proliferation advantages, but the resolution requires more work on technical, political and social constraints (IPCC 2007).

When discussing other risks, the sceptics also note that spent **fuel reprocessing** does not offer economic gains and leads to a pile-up of dangerous plutonium that requires safeguarding as potential weapons material. There are hopes that advanced reprocessing would help minimize volumes and toxicity of waste, but necessary alternative breeder concepts may take decades to develop and issues of cost and proliferation risk remain (UNDP 2004; IPCC 2007).

4.3.3.4 Constraints and prospects

Safety, costs, waste management and transport and public concerns are described as main challenges for nuclear deployment, but more constraints are in its way. According to UNDP (2004) the **projections** are that nuclear *“will not grow, will grow only slowly or may even decline during the initial decades of 21st century”*.

For the most part, the future of this technology depends on the success of persuading the *“significant fraction of public”* that is concerned about nuclear safety, waste disposal and decommissioning, non-proliferation, security, and costs (NEA 2008). While previously **the public** trusted authorities to decide on nuclear power (WNA 2009), today public is asking for more information and more than half of the EU citizens believe that nuclear risks outweigh its advantages (WEC 2007).

When it comes to **project costs**, actors note that estimates have been on the higher end lately and financial uncertainties are hard to explain, just as the impact of the financial crisis of 2008 (IAEA 2009). Generally, this varies due to differences in definitions, perspectives and technology used as well as regulatory environment. Practice shows that building on green field site is more expensive and experience reduces uncertainty. Experts with the UNDP (2004) also point out that competition from alternative energy sources is also driving nuclear power costs upwards. The pressure on prices has been also driven by the shift from the buyers’ to suppliers’ market (IAEA 2009). Electricity prices for power produced by fast breeders are also expected to be higher than for light water reactors (UNDP 2004). Liabilities for third parties in the event of accidents may also come at a high cost and further diminish public acceptance (UNDP 2004; IPCC 2007).

Even with industry expansion **uranium** reserves estimates vary depending on assumptions for its use: with or without reprocessing, taking into account commodity price fluctuations or not (IPCC 2007; IAEA 2009). Lack of **low-cost uranium** may constrain the nuclear power development based on the current design (UNDP 2004). Additionally, uncertainties about the supply of fresh uranium to meet the existing demand are related with decreasing availability of

secondary sources that meet 40% of current demand (IAEA 2009). While the use of **thorium** that is believed to be more abundant than uranium for energy production is also possible, it has not been commercialized yet (NEA 2008).

Spent fuel reprocessing is another example where public support is the key. **Institutional measures** to keep military and peaceful nuclear applications separate are mentioned among other determinants of the future nuclear developments (UNDP 2004). If this was not addressed through closer relationship between policy makers, industry and society (NEA 2008), nuclear power is to remain a “*controversial and much-politicized affair*” (WEC 2007). There are hopes that fuel reprocessing and plutonium recycling could be halted whatsoever if uranium extraction from seawater where it exists in low concentrations was deployed (UNDP 2004).

What regards qualified **personnel**, industry is facing problems in retaining existing skills and competences. This is blamed on market liberalization, pressure to reduce costs and decreasing government funding for nuclear research (NEA 2008). During years of decline expertise has been hard to sustain and there is a lack of data on various skilled workers needed and training programs available (IAEA 2009). Initiatives aimed at addressing this problem include attempts to attract new students to nuclear related fields, but little progress has been made so far (NEA 2008).

Speaking about **future technologies**, pebble-bed, gas-cooled reactors with promising inherent safety measures may be commercially viable by 2020, small reactors are not commercially viable yet and Generation IV may come after 2030 (UNDP 2004; NEA 2008). In 2008 at the IAEA Fusion Energy Conference in Switzerland a record number of over 500 scientific papers has been presented (IAEA 2009). Nonetheless, **nuclear fusion** are still at the experimental stage, and are expected to become viable no earlier than after 2050 (IPCC 2007; NEA 2008).

4.4 Summary and conclusion

This chapter contains the global nuclear energy discourse analysis. After the two decades-long industry stagnation, projections for nuclear energy have been going upwards again. There are hopes that it can help meet new challenges such as access to electricity, security of supply and climate change. Today nuclear power constitutes around 7% of primary global energy and 14% global electricity supply. There are 436 reactors operating and 56 nuclear units are under construction in 30 countries. Over 55 newcomer countries intend to start a nuclear programme. The largest number, ten new constructions, have been started in 2008 since 1985 and many more are planned as post-Chernobyl public concerns appear to be waning. However, the regulatory environment for new nuclear build is very different from the historical arrangements that conditioned the global nuclear development back in 1950s and 1970s.

Global energy governance is a multi-actor and multi-level process that is, among other things, influenced by the argumentative power struggle. In order to track the contrasting strands driving discursive knowledge on the topic, seven publications on energy by the Greenpeace, the IAEA, the IPCC, the NEA, the UNDP, the WEC and the WNA have been analyzed. This analysis shows that recurring nuclear energy-related themes include economic costs, technology, safety and risks, waste management, weapons proliferation issues as well as public attitudes, fuel cycle and availability, liability, regulatory framework, human resources and global installed nuclear power capacity projections.

Following Hajer's discourse analytical approach, three diverging strands of discursive storylines have been identified and grouped into pro-nuclear, anti-nuclear and moderate discourse coalitions. They are characterized by varied degrees of confidence about nuclear power deployment.

The **pro-nuclear energy** global discourse coalition argues that the industry is well posed for revival, that nuclear power is economically viable in most cases, with excellent safety record, feasible waste management options, promising future technology and waning public concerns. The **anti-nuclear** energy discourse coalition considers nuclear energy a costly and dangerous waste of time. It points at low GHG mitigation potential, project cost overruns and issues like radioactive waste that can also be used to develop nuclear weapons, if mismanaged. The third, **moderate** nuclear energy discourse coalition does not reject it as a way to secure supplies, meet the demand and mitigate climate change, but contains a set of storylines putting a much greater emphasis on economic and technological uncertainties as well as social challenges for new nuclear energy projects.

The tables below summarize argumentative lines from the three described global nuclear energy discourse coalitions according to the issues discussed.

Table 4.3 includes narratives pertaining to global energy challenges nuclear energy can address as argued by the international actors studied.

Table 4.3 Storylines relating to problems nuclear energy can or cannot address worldwide

	PRO-NUCLEAR	ANTI-NUCLEAR	MODERATE
Problems addressed	Energy demand		
	It has a potentially strong role to play in meeting increasing energy demand; it is feasible and available.	It would be able to deliver too little, too late.	It can increase access to electricity if existing constraints are addressed.
	Energy security		
	It helps to ensure energy security.	It generates only electricity; it can not meet our needs and is a threat to global security.	It can contribute to energy security if existing constraints are addressed.
	Climate change		
	It is the only viable large-scale climate change mitigation option on the scale required.	It would contribute to climate change mitigation only marginally and too late.	It can contribute to climate change mitigation, if existing constraints are addressed.

The narratives describing reasons to favour or oppose nuclear energy are listed in Table 4.5.

Table 4.4 Storylines relating to justification for and against nuclear energy worldwide

	PRO-NUCLEAR	ANTI-NUCLEAR	MODERATE
Option justification	Economic costs		
	New nuclear energy plants are economically viable in most cases; existing plants are especially attractive due to licence renewals and capacity increases.	Cheaper alternatives should be considered.	It is more costly than projected, costs are technology and context dependent, and uncertainties exist.
	Energy security		
	Fuel is abundant available from several stable countries, can be stocked up and its share in the power production cost is small.	Planning and building NPPs takes a very long time; limited uranium availability leads to dependence on limited suppliers.	Uranium reserves estimates depend on assumptions.
	GHG emissions		
	On the whole life-cycle basis nuclear energy is virtually carbon-free.	Nuclear can deliver too little too late, investments should be made in safer alternatives.	Estimates on the extent of mitigation potential vary.
	Global trends		
	There are authoritative statements of intent to develop nuclear energy in many countries; the EU sees it as necessary for climate change mitigation; China is planning six-fold increase; a number of projects underway.	Nuclear projects in Finland, France and India are facing delays and cost overruns up to 300%; global investment in renewables has doubled in the past three years and costs are going down.	Some countries consider it sustainable option; others believe it is not compatible with sustainability.
	Public acceptance		
Public support has been restored; communities in Finland and Sweden have been competing to site repositories.	.-	Public acceptance is slightly increasing in countries with nuclear power.	

Different arguments dealing with nuclear risks are included in Table 4.5 below.

Table 4.5 Storylines relating to nuclear energy risks worldwide

	PRO-NUCLEAR	ANTI-NUCLEAR	MODERATE
Risks involved	Chernobyl and other accidents		
	Chernobyl accident was due to specific design flaws and absence of safety culture.	Chernobyl accident was the worst civilian disaster in the world; accidents continue to occur around the world.	Unlike Chernobyl-type reactors light water reactors have a good safety record.
	Fuel cycle		
	Waste reprocessing helps to solve problems of spent fuel disposal and fuel availability.	The whole nuclear fuel cycle causes environmental and security risks.	Waste reprocessing could minimize volumes of high level radioactive waste, but uncertainties about proliferation and costs exist.
	Health and environment		
	Health risks have proven to be lower than perceived.	Mining, plant operations and waste reprocessing cause long-term health risks.	Health risks remain controversial.
	Performance and safety record		
	Safety record is excellent, unrivalled.	Accidents and "near misses" continue to occur around the world.	It can be beneficial if employed carefully, but can cause problems if not.
	Proliferation and terrorism		
	New reactor models are more proliferation resistant.	Transport of waste creates terrorism threats. Natural disasters also present significant risks	International waste repositories and enrichment facilities would be more cost effective and help minimize proliferation risks.
Waste management			
Waste volumes are small and management solutions are widely available.	Nuclear creates dangerous waste for which there is no viable solution.	Waste management is still facing technological, economic and social obstacles; no single solution exists.	

Table 4.6 lists narratives on factors constraining or driving nuclear power globally.

Table 4.6 Storylines relating to constraints and prospects for nuclear energy worldwide

	PRO-NUCLEAR	ANTI-NUCLEAR	MODERATE
Constraints & prospects	Economic costs		
	Globalization, industrial cooperation and serial production will drive costs down.	In reality costs are 2-3 times higher than industry estimates; often not viable without government subsidies.	Competition from alternatives may drive costs up; building on green field site is more expensive.
	Human resources		
	Responsibility for preparing qualified workers remains with the countries.	–	Industry is struggling to retain existing skills and competences; there have been attempts to attract students, and consolidate international training, but more needs to be done.
	Installed capacity		
	Current capacities are set to double or triple by 2050; future development will be in OECD countries and Asia. awareness raising is important	Nuclear energy renaissance is only on paper; it diverts funds from simpler, cleaner and more reliable energy options.	It will not grow, grow slowly or even decline; it will depend on public acceptance;
	Public acceptance		
	Examples in Finland, Sweden and France show that more information leads to more acceptance; scientists and NGOs are the most trusted information sources.	Public confidence has been lost due to safety, waste management and proliferation concerns.	One accident or proliferation incident can further reduce acceptance.
	Fuel availability		
	Uranium is available for hundreds or even thousands of years ahead; nuclear fuel can also be based on thorium.	Uranium is available from only few countries, enrichment facilities are also limited.	Low-cost uranium reserves are limited. Thorium can be used as an alternative, but is still to be commercialized.
	Technology		
	Generation II reactors will dominate the global fleet until 2050; advanced reactors with better safety features and economics are available on the market; gas-cooled reactors may become feasible by 2020.	–	There are uncertainties about the feasibility and commercialization of most future reactors, but advanced technologies are worth exploring.
	Liability		
	–	Nuclear reactors present too large liability for insurance companies to accept; taxpayers shoulder the costs.	Operators of nuclear plants are usually liable for any damage to third parties in case of an accident.
	Newcomer countries		
Developing world should be assisted in gaining access to cleaner technologies.	–	–	
Regulatory framework			
Stable political situation and clear regulatory framework would have positive impact on project costs.			

5 NATIONAL NUCLEAR ENERGY DISCOURSES

“Energy is not about economy, it is about geopolitics”

President of Lithuania Dalia Grybauskaitė

“This will be the greatest achievement of our times”

President of Belarus Aleksandr Lukashenko

Lithuania and Belarus have been selected for this comparative discourse analysis for several reasons. Although both are the former Soviet Union states, their political and economic development since the 1990s has been different. Lithuania joined the EU and NATO, while Belarus has retained autocratic state leadership and close ties with Russia.

Nonetheless, the geopolitical context that countries are sharing has substantial influence on their energy security policies. The energy systems of Lithuania and Belarus remain integrated with the Eastern Europe and are primarily reliant on energy imports from Russia (WB 2005; Vilemas 2008). Aiming to diversify supplies and reduce dependence on a single source, both countries have adopted pro-nuclear energy strategies.



Figure 5.1 Existing and planned nuclear plants in Lithuania, Belarus, Russia and Poland

In 2007 the **Lithuanian** government made the decision to build a new nuclear plant to replace two decommissioned Ignalina NPP units in Visaginas, less than 10 km from the Belarusian border (Figure 5.1). In the beginning of 2010 it started looking for an investor together with international partners in Estonia, Latvia and Poland (Ministry of Energy 2010).

Belarus has never had its own nuclear power, but was one of the most affected by the Chernobyl disaster in the neighbouring Ukraine in 1986. Increasingly intimidated by oil and gas price

disputes with Russia, in 2008 the government decided to construct a nuclear plant in the western part of the country, 55 km from the Lithuanian capital Vilnius (Lukashenko 2008; Krylovich 2010).

Moreover, early in 2010 in **Kaliningrad**, the Russian enclave between Poland and Lithuania, the Russian state-owned company “Rosatom” laid a ceremonial first stone for its new Baltic NPP close to a town of Neman (Ria Novosti 2010). Furthermore, **Poland** started listing the most suitable sites for the two planned NPPs and one of the top locations, Zarnowiec, is in the northern part of the country on the Baltic coast (Polskie Radio 2010). This has been termed by the Lithuanian media the “*nuclear competition*”, as it instigated a new public debate about economic and security implications of building three to four nuclear plants within such close proximity (Krasauskas 2009).

This chapter is divided into two sections 5.1 and 5.2 by country. Each of them contains the description of the national discourse context, followed by the analysis of the studied Lithuanian and Belarusian texts. There is a summarizing and concluding section 5.3 in the end.

5.1 Lithuania

This section describes Lithuanian discourse context with focus on energy system and policy, also introduces the media and news outlets selected for the analysis. Sub-section 5.1.2 presents discourse actors and themes, while 5.1.3 contains a detailed description of discourse storylines and coalitions. The findings are summarized in the tables presented in sub-section 5.1.4.

5.1.1 Lithuanian discourse context

Lithuania is the southernmost and the largest of the three Baltic countries with a territorial size of 65.3 thousand sq km and a population of 3.3 million (Statistics Lithuania 2009). It was the first country to re-gain its independence in 1990, following the break-up of the Soviet Union. Lithuania is a multi-party parliamentary democracy with the President elected directly for a five-year term. Having undergone economic and political reforms the country has joined the EU in 2004, citizens voting for the membership with an overwhelming 90% majority. Together with the NATO membership, this has strongly represented the national identification to re-orient towards the “*West*” and away from Russia (Duvold and Jurkynas 2004).

However, according to some authors, democratic consolidation has been more complex for Lithuania and its Baltic neighbours compared to other Central and Eastern European states. Political volatility has been high over the past two decades largely due to the contrasting societal and elite interests. Scientists also note “*disturbing*” preferences to some form of authoritarian rule in Lithuania: as many as 40% of respondents expressed them in 2001 (Duvold and Jurkynas 2004). Nonetheless, although more than one-third of the population support democracy and market economy, the trust in institutions including the EU is exceptionally low and very few

people participate in politics (Duvold and Jurkynas 2004; EBRD 2007). Economic discrepancies between rural and urban areas remain high. This has contributed to high labour migration abroad: around half a million of Lithuanians are estimated to have left the country over the last two decades to countries like Ireland and the UK; these trends are set to continue due to the economic crisis that has hit the country in 2008 (Gruževskis *et al.* 2009; IMO 2009).

Before the global economic downturn Lithuania was one of the fastest growing European economies. Average annual GDP growth rates up to 8% since 2000 allowed to catch-up with average EU income levels, but also increased risks to financial stability (WB 2009a). The recent economic contraction has been dramatic: GDP fell by 20% in 2009, the unemployment was projected at 15%-20% by 2010 (EBRD 2009b; Gruževskis *et al.* 2009).

Although the country has reoriented its market towards the EU (over 60% of total exports in 2008), Russia remains a very important trade partner (16% of total exports in 2008) (Statistics Lithuania 2009). Sectors like banking, energy, transport and communication went through privatization schemes, though not without scandals and alleged corruption affairs overshadowed by fears of excessive Russian influence on strategic sectors such as energy (Duvold and Jurkynas 2004).

5.1.1.1 Energy system and policy in Lithuania

Lithuania has a rather well-developed energy infrastructure such as the only oil refinery in the Baltic States, thermal power plants, natural gas distribution and district heating systems (Miškinis *et al.* 2008). However its energy system remains very centralized and energy market liberalization has only just started. The electricity grid is integrated only with the East; an underwater 350 MW *Estlink* cable connecting Estonia and Finland is a single exception (ABB 2010). For this reason Lithuania together with neighbouring Latvia and Estonia are termed the “*Baltic energy island*” (Tubalkain-Trell 2009). The problem of isolation of the region has been recognized on the EU level. The 2008 *Strategic Energy Review* together with the *Energy Security and Solidarity Action Plan* named the *Baltic Interconnection Plan* a priority. This has secured funds worth of 131 million Euros for the power connection linking Lithuania with Sweden (CEC 2008; CEU 2009; Delfi.lt 2010).

The reliance on imported resources from a single supplier and predominantly fossil fuels-based power generation are important factors contributing to the low level of energy security of Lithuania. The share of indigenous resources constitutes only around 10% of the primary energy balance, making the country very dependent on Russian imports to meet its needs. 100% of its natural gas and coal and more than 90% of crude oil comes from this country (Miškinis *et al.* 2008; Miškinis *et al.* 2009). In 2009 the national audit of the use of renewable energy resources showed that Lithuania has a sufficient potential of wind, biomass, solar and geothermal resources to meet the EU target of 20% share by 2020 and even exceed it, but is likely to fail in doing so due to a number of administrative and legal hurdles (Bačiauskas *et al.* 2009).

This situation is mainly attributed to the existence of the large Soviet-built Ignalina NPP in Visaginas, the north-eastern part of Lithuania (Figure 5.1), with more than double the installed power capacity compared to the national demand (KTU 2004). Until 2010 the two high-power, channel-type RBMK-1500 reactors [similar to those used in Chernobyl] were the only ones left operating outside of Russia. The Ignalina NPP was capable of generating up to 87% of the country's electricity (Vilemas 1995; Schneider *et al.* 2009). At the time of construction, in 1983, the plant was intended for the needs of the north-western region of the Soviet Union to which Lithuania belonged. So it was the central Soviet government that provided not only technology and resources, but also the workforce to build and operate the Ignalina NPP on what is today the Lithuanian-Belarusian border (Čėsna *et al.* 2004; Schneider *et al.* 2009). The latter resulted in a specific demographic make-up of the town where majority of the inhabitants are Russian speakers with family members working at the plant or related organizations (Balžekienė 2006). After 1991 when the plant came under the Lithuanian authority Lithuania had to develop the necessary national expertise base, establish the regulatory authorities and undergo the licensing procedure that was not previously carried out (Vilemas 1995). The Ignalina NPP played an important role in proving affordable energy during the economic transition and eventually turned Lithuania into the main power exporter in the region (Štreimikienė 2008; Miškinis *et al.* 2009).

In addition to its obvious economic significance, the Ignalina NPP had one more, symbolic importance for Lithuania. It was considered a domestic energy source, similarly to other Eastern European countries that inherited strategic Soviet energy infrastructure during the early years of independence. Moreover, it has become a symbol of national sovereignty, independence and even pride (Foss 1999; Vilemas and Galinis 2000). Notably, its symbolic nature was twofold: the independence movement in Lithuania was synonymous with a strong mobilizing environmental movement. In the aftermath of the Chernobyl disaster the Green movement saw the Ignalina NPP as an environmental hazard and confronted the planned expansion, eventually contributing to halting it in 1988 (Čėsna *et al.* 2004; Elliott and Cook 2004).

However, sociological research shows that public concerns associated with nuclear power have been diminishing over time. A year later, in 1989, less than a third of the population was for its full shutdown and more than 60% supported the continued operation, provided that the safety was improved (Gaidys and Rinkevičius 2008). Although 83% of those polled said they were *very concerned* about nuclear risks in 1992, about the same share of population was still opposed to the Ignalina NPP decommissioning in 1998. Even more, 94% of those surveyed a decade later, said they would support the extended operation and 55% of respondents were in favour of building a new plant (Gaidys and Rinkevičius 2008). On the other hand, 80% of Lithuanians admit that they feel uninformed about nuclear safety related issues (Eurobarometer 2010).

Nonetheless, the full closure of the Ignalina NPP by 2009 was made a pre-condition for the Lithuania's EU membership in exchange to financial assistance for the decommissioning

procedure (Vilemas and Galinis 2000). Despite numerous modifications and improvement programmes, the safety features of this reactor design [e.g. absence of secondary containment] were considered insufficient from the western perspective; though difference in safety culture is sometimes referred to as being of primary concern (WNA 2010). But regardless, given the energy security situation, retaining the facility was considered of a key strategic importance for Lithuania (KTU 2004). Many national experts and politicians insisted that the plant could operate safely much longer (Vilemas and Galinis 2000). Negotiations regarding the extended operation of one of the Ignalina NPP units were initiated with the European Commission on the basis of the economic consequences and energy security implications (Samoškaitė 2008). A deliberative referendum on the matter was organized in October 2008, but did not resolve the issue, and the plant was eventually shut down in December 2009 (BNS 2010a). As the date of the full shutdown was approaching in 2009, the issue of energy security went very high on the agenda: the increased dependence on Russia and rising electricity prices were among the primary concerns (Vilemas 2008; BNS 2010a).

These concerns are not completely groundless. Observers have been noting signs of active Russian “energy diplomacy” in Europe for a while now (Smith 2008; Makarychev 2009). Increasingly more Baltic energy companies went under the control of state-owned Russian business (Rostoks 2009). One of the Lithuania’s biggest gas companies “*Lietuvos dujos*” [eng. “*Lithuanian Gas*”], was sold to Russia’s state-owned “*Gazprom*” company in 2004 right before Lithuania became the EU member (Mitė 2004). In 2005 Russia and Germany announced plans to build the “*Nord Stream*” gas pipeline along the Baltic seabed surpassing the Baltic States (Smith 2008). The sense of insecurity was further aggravated after Poland’s largest oil refiner “*PKN Orlen*” bought 84% of the “*Mažeikių nafta*” [eng. “*Oil of Mažeikiai*”] oil refinery outcompeting rival Russian companies in 2006. Soon afterwards Russia stopped supplying oil to Lithuania by the “*Družbba*” [eng. “*Friendship*”] pipeline via Belarus citing technical difficulties and have not re-opened it to date (EIU 2007; Smith 2008; Martewicz and Kozłowski 2010).

Therefore the Lithuanian *National Energy Strategy* declared energy security an integral part of the national security in 2007. Apart from the reliability, diversity, economics and environmental aspects, it recognizes the need to ensure “*independence from a dictate of a monopolistic supplier*” [lith. “*monopolininkų dikato*”] (Seimas 2007). The strategy outlines plans to build a new nuclear power plant together with partners in Latvia, Estonia and Poland by 2015. Other strategic objectives include integration with the EU energy system, diversification of gas supplies, increasing the share of renewables and improving energy efficiency. Connections with the Nordic and Polish power networks, renovation of the existing infrastructure, a new natural gas storage facility and terminal are also listed among the key strategic priorities (Seimas 2007; Miškinis *et al.* 2008).

Lithuanian parliament passed the *Law of the Nuclear Power Plant* the same year (*Law on the Nuclear Power Plant* 2007) and approved the establishment of an energy holding company – the “*Lietuvos*

elektros organizacija” [eng. “*Lithuanian Electricity Organisation*”], or “*Leo LT*”, by consolidating the main energy company and two regional power distributors. This national consortium was supposed to implement both the nuclear plant construction and the energy market integration projects, but the government’s negotiations were overshadowed by the lack of transparency and violation of the EU policy regarding the energy sector unbundling (Damulytė 2008; EIU 2008). Although the outgoing President Valdas Adamkus was urging the government to go on with the project, the new government was determined to reverse the decision of its predecessor. Therefore President Dalia Grybauskaitė, who took office after Adamkus, proceeded with the liquidation of the “*Leo LT*” a little more than a year later (Samoškaitė 2009).

Nonetheless, the current political leadership remains committed to nuclear power not only on the basis of security needs, but also positive public attitudes towards this energy source (BNS 2010a). A sense of urgency is often emphasized by pointing at Russia’s plans to build the Baltic NPP in Kaliningrad and similar projects in the neighbouring Belarus and Poland.

5.1.1.2 Media system in Lithuania

The media has played a very active role in the Lithuanian independence movement during the late 1980s and early 1990s. Ever since, unlike the energy system, it has gone through liberalization, diversification, marketization and tabloidization: after the censorship was abolished, all newspapers were privatized, private radio and television stations sprouted up and have been increasingly entertainment oriented lately (Balčytienė 2006). Television is the most popular media in Lithuania and the press readership is rather low while the number of internet users is increasing (Juraitė 2008).

Notably, the share of foreign owners is rather low. In fact, the media business has seen an increasing trend of concentration of the local industrial capital in recent years: chemistry, food, pharmaceuticals, energy, construction, banking business among others (Nugaraitė 2004). Since the public media registry is absent in Lithuania, no official information on media owners and their business interests exists (Gudaitis 2009). The monthly magazine “*Valstybė*” carried out a survey of 80 media representatives and political analysts in April 2010 asking about the influence of foreign countries on the Lithuanian media. According to the results, 85% of respondents name Russia as the most influential one (Valstybė 2010).

In 2009 an international organization *Reporters Without Borders* rated the level of press freedom in Lithuania very high, 10th out of 175 countries worldwide and positioned among Switzerland, Iceland and Belgium (RWB 2009). Nonetheless, researchers, regulatory bodies and NGOs have been questioning close relationships between businesses and politicians, and raising the issue of media corruption – a wide-spread phenomenon of so-called “*commissioned*” publications and radio or television air time that has been paid for (Nugaraitė 2004; Juozapavičius 2007; Gudaitis 2009). In 2007 a study conducted by the international NGO *Transparency International Lithuania* found

that 54% of businessmen were in the situation when it was implied to them that a newspaper offers a positive coverage in exchange to the advertisement and 49% believed that it was a very common practice in the national press (Juozapavičius 2007).

5.1.1.3 Lithuanian media outlets analyzed

As detailed in Chapter 3, the data sample contains 78 texts from three media outlets targeting different audiences and guided by a slightly varied editorial policy determined mainly by their ownership and financing model.

The biggest national daily newspaper “*Lietuvos rytas*” [eng. “*Lithuanian Morning*”] is a privately-owned former Soviet mouthpiece with an average readership amounting to 19% of the total national print market (TNS 2008). It has been openly supporting the new NPP project since 2007 and has hired a former CEO of the “*Leo LT*” as their Head of Administration after the consortium’s liquidation in 2009 (BNS 2010b). A recent public opinion survey about the most influential media, politics and business actors in Lithuania shows that “*Lietuvos rytas*” tops the list (Gudaitis 2009).

The political weekly “*Atgimimas*” [eng. “*Revival*”] originates in the Lithuanian independence movement of the 1990s and is registered as an NGO. It is mainly publicly funded, but sells some advertising and has a weekly circulation of around 1000 copies; though some of its articles are featured in the leading news portal *Delfi.lt* and thus reach a much wider audience (Donauskaitė pers.comm.). The “*Atgimimas*” weekly has been consistently critical towards the government’s energy policies.

The third media outlet selected for analysis is the number one Lithuanian internet news portal *Delfi.lt* with nearly 900 thousand unique weekly visitors (TNS 2010). It belongs to the Estonian-owned company “*Ekspress Group*” and is listed 13th in the above mentioned survey. The website has its own editorial staff, but re-publishes a lot of texts produced by other national and regional media. *Delfi.lt* appears to be trying to remain impartial when it comes to the energy security coverage.

The sampling technique and criteria are detailed in Chapter 3 dealing with methodology. The full list of analyzed Lithuanian media articles can be found in the Table A.2 of the Appendix¹⁴.

5.1.2 Lithuanian discourse actors and recurring themes

The texts sampled for the Lithuanian nuclear energy discourse analysis have been qualitatively coded to identify the recurring discourse actors and themes. A list that has been developed as a result is presented in Table 5.1

¹⁴ All the references in this chapter thereafter are made to the appended list of analyzed articles in Table A.2.

Table 5.1 Nuclear energy themes featuring in the Lithuanian media analyzed

T H E M E S							
PROBLEMS ADDRESSED	Energy security	OPTION JUSTIFICATION	Alternatives	RISKS INVOLVED	Chernobyl accident	CONSTRAINTS & PROSPECTS	Capacity & HR
	Dependence on Russia		GHG emissions		Health & environment		Capital costs
	Geopolitics		Energy costs		Technology & safety		Geopolitics
	Ignalina NPP		Geopolitics		Waste management		Global trends
			Global trends				Ignalina NPP
			Ignalina NPP				Other projects
			Project legitimacy				Public & critics
			Project model				
			Prestige & progress				
			Public acceptance				

The table indicates that when discussing the reasons for pursuing or rejecting nuclear power, discourse actors often mention energy security and dependence on Russian resources, geopolitics and the Ignalina NPP.

Topics concerning justification for the new nuclear plant and against it relate to the viability of alternatives, GHG emissions, energy costs, geopolitics and global nuclear industry trends, the chosen project model and overall legitimacy of the country’s nuclear plans, the Ignalina NPP decommissioning, public attitudes, the prestige and the progress it can potentially deliver.

The risk-related themes cover the Chernobyl accident, health and environment, technology, plant safety and radioactive waste management.

The national capacity to proceed with the project and availability of human resources, capital costs, geopolitics and neighbouring nuclear projects, global trends, the Ignalina NPP decommissioning and public attitudes are discussed in relation to existing constraints and prospects for Lithuania to remain the nuclear state.

The analysis was also aimed at the identification of nuclear discourse actors. The list includes economic and political analysts, businessmen and green entrepreneurs, farmers’ associations, the Ignalina NPP workers, NGOs, government officials, politicians, former and acting presidents, scientists and journalists commenting on the above-mentioned issues. On several instances the media quotes lawyers, an architect and unnamed state security officers.

quantitatively depicts the actors who are represented the most and the least in the text sample analyzed in relation to the themes they discuss.

Table 5.2 Actors and themes they discuss in Lithuanian media, number of times quoted

THEMES	ACTORS ¹⁵														Theme total	
	State security	Farmers	Lawyers	Architects	Engineers	IAE workers	Citizens	President	Analysts	NGOs	Scientists	Businessmen	Journalists	Politicians		Officials
Energy security/Russia	1				2			1	5	3	10	8	19	16	4	69 ¹⁶
Geopolitics/other projects							5	2	2	2	4	6	7	10	5	43 ¹⁷
Economic costs				1		1		1	7	2	6	3	5	3	10	39
Project model/Leo LT								1	2		1	6	8	9	9	36
Global trends				1	1				3	3	6	8	1	1	8	32
Alternatives		1		1						5	5	5	4	5	5	31
Project legitimacy			2					4	3	1		2	2	15	1	30
Ignalina NPP						2		1		2	2	2	4	8	7	28
Capacity/HR						3				1	3	5	5	1	7	25 ¹⁸
Technology & safety					1	1			1	1	4	3	1		6	18
Health & environment							3			3		2	2		7	17
Public & critics		1		1	1					1	2	2	3	2	2	15
Waste management										1	4	1			4	10
Climate change										1	3	1		1	1	7
Prestige & progress			1								1	1	1	2	1	7
Chernobyl accident											1		3			4

Theme cell value scale									0	1-5	6-10	11-20	21-30	31-40	<40	
Actor cell value scale									0	1-2	3-4	5-6	7-8	9-10	≤10	

Individual cells indicate the number of instances each actor was quoted in the texts on the themes listed in the far left column; the theme total column on the far right represents the total number of quotes on each theme in the sample, counted separately by actor. The legend explains the shading spectrum that corresponds with the frequency of the total quotes counted per actor and/or the theme in the sample.

The table indicates that officials, politicians, journalists, businessmen and scientists predominantly discuss energy security, geopolitics, economic costs, project model, global trends

¹⁵ Category “Analysts” includes political and economic commentators, “Businessmen” includes both green entrepreneurs and corporate investors, “Officials” includes ministers, civil servants and diplomats, “Politicians” includes the Prime Minister and parliamentarians, “Scientists” includes mainly pro-nuclear physicists.

¹⁶ Number includes 38 quotes on energy security and 31 with specific reference to Russia.

¹⁷ Number includes 21 references to geopolitics and 22 to neighbouring countries’ nuclear projects.

¹⁸ Number includes 17 quotes on national capacity and 8 pertain to human resources.

and alternatives to nuclear, which are the most often covered themes in the sample. Analysts also stand out as they draw the attention to economic costs.

Although results in the table are not representative of the entire Lithuanian nuclear energy discourse in the media, it can be argued that they provide a rather accurate indication about the dominant themes in the analytic and discussion articles, since this was the primary focus of the sampling strategy used for this study.

The following sub-section describes the storylines featuring these themes in detail, and based on argumentative lines and strategies groups them into two discourse coalitions: pro-nuclear and anti-nuclear.

5.1.3 Discursive storylines and coalitions in Lithuania

All discourse actors featuring in the analyzed texts agree that issues of energy security and dependence on resources imported from Russia put Lithuania at a certain risk. The threat posed by **Russia** is very pronounced in most texts and colourful language is used to describe it. The media warns that Lithuania's energy sector is *"controlled from Russia and entangled by a clan of Moscow-serving mediators"* (Sotvarienė 2008), and that the current government needs to have a strong business watching its back and *"kicking some butts"* (Makaraitytė 2007b). A former Conservative Prime minister writes that the country is *"so deeply in this corrupt crap that a Russian-controlled company was granted exclusive rights to set prices for the electricity transported via the Russian-Lithuanian grid"* (Vagnorius 2009). *"Politicians and experts are talking about the necessity of the country's energy independence and in the meantime a phantom of 'Rosatom' is roaming around Lithuania"*, another article comments on the registration of a Russian company, allegedly interested in the national nuclear energy projects. The title implies a new threat to the state security as *"one more Russian tentacle"* gets observed in Lithuania (Gurevičius 2009).

However, as detailed below, different actors see the gravity of the situation in Lithuania and solutions rather differently. Therefore here we observe at least two discourse coalitions emerging in the Lithuanian media: the pro-nuclear and the anti-nuclear. As described by Hajer (1995), a discourse coalition brings together those actors who share the same storylines. It was explained in Chapter 3 that these coalitions do differ from political advocacy groups since storylines rather than interests unite them. Thus one should not be surprised to find some pro-nuclear discourse actors in the anti-nuclear coalition when they agree with anti-nuclear actors on the high economic costs of producing nuclear power.

The following sections present the argumentative lines uttered by discourse actors addressing previously listed themes from the two diverging perspectives. The coalitions are described based on narratives explaining the problems that nuclear energy is intended to address, the justification for or against this power source, the risks involved, the possible constraints and prospects. Section 5.2.4 summarizes the findings in the form of tables.

5.1.3.1 The pro-nuclear discourse coalition

Political leaders, government officials, businessmen, scientists, analysts and journalists are the main proponents of nuclear power. They portray it as an energy source enabling electricity generation at the lowest cost and minimal or controllable risk. A new NPP is seen as a tool for Lithuania to establish its regional role and ensure both energy and national security.

The argumentative strategy of these actors is primarily focused on the geopolitical necessity to counter-balance Russia's dominance in the region and the global trends.

5.1.3.1.1 Problems addressed

From the perspective of the pro-nuclear discourse coalition, nuclear power is supposed to mainly address challenges of **energy security** and **dependence on Russia**.

“Lithuania is killing the golden egg layer”, one title reads. This is how the shutdown of the Ignalina NPP is described by its workers who believe it could have safely operated for two more decades (Digrytė 2009) after over 70 million Euros worth of safety improvements were made (Bartasevičius 2008). Today, closing the plant as the EU demands, Lithuania is facing a two-fold extremity: *“Not only financial, but also energy crisis”* (Digrytė 2009). A shortage of 100 to 500 MW is estimated during winter (Bartasevičius 2008) and the electricity price is expected to be one of the highest in Europe (Plunksnis 2008). Moreover, without nuclear power Lithuania becomes *“fully dependent on Russian politics and the goodwill of this country”* (Delfi.lt 2007). Import dependence is of the biggest concerns for many: *“Right now Lithuania is chained to the Russian pipeline and starting with 2010 it will be hooked on Moscow's power lines”*, says one green entrepreneur (Aleksandravičius 2009). Scientists stress potential risks as well: *“Russians can cut off power lines and our stability becomes very fragile at once.”* (Skiniulytė 2007). Energy experts argue that power bridges with the West would not be sufficient to ensure **energy security**. The power demand in Scandinavia is growing and Russia is facing gas shortages in the coming years (Makaraitytė 2007c).

The **neighbouring projects** represent another key factor. The joint Belarusian-Russian nuclear plant across the border in Ostrovets is interpreted as an attempt to *“threaten Lithuania who risks turning from the regional nuclear energy center into a mere provincial energy actor very soon”*. A commentator of the analytical monthly *“Valstybė”* [eng. *“The State”*] argues that a firm commitment to build a nuclear plant in Lithuania would be the *“best way to cool off neighbours' ambitions to take over the lead in the nuclear construction competition”* (Varanavičius 2009).

5.1.3.1.2 Justification for nuclear energy

Nuclear power is mostly presented as an energy security option that has no alternatives. Renewables, efficiency measures and imports through interconnections with the West are rejected as insufficient and/or costly. The global trends, legitimacy of the plant financing model,

prestige, progress and positive public attitudes are the themes brought up to justify the pro-nuclear policies.

Most political leaders and some analysts refer to the decision to build the plant as strategic, final and unquestionable (Damulytė 2008a). President Adamkus sees it as a way to “*integrate into the Western power grid and liberate ourselves from the energy sources from the East*” (Damulytė 2008b). Additionally, the implication of **national prestige** and **progress** can be sensed in their argumentative lines. The Energy Minister believes the new NPP will be “*the biggest green field investment in Lithuanian history and will give a great boost to the Lithuanian economy*” (Delfi.lt 2009a). One Lithuanian member of the European Parliament believes that Lithuania “*may not come across such a gigantic and exceptionally important project ever again*” and that a new NPP would contribute to energy security, increased welfare and would help Lithuania to “*finally face the future*” (Rainytė-Bodard 2009). Media calls it a “*unique*” project since four countries come together to build a NPP for the first time in the EU (Lietuvos rytas 2007). According to the officials, a flying crane, a “*cautious and vigilant bird*” picked for the logo of the new plant represents an “*increasingly important economic and geopolitical role*” of the country (BNS 2008b).

Early in 2007 the leading national daily “*Lietuvos rytas*” repeatedly publishes eloquent depictions of the consortium that is being established for building the new plant and linking the national grid with the West. The first public mention about this **project model** appears in this very newspaper declaring it as the “*revolutionary*” plan: “*Up to now, the government was dividing energy companies and aiming to privatize them, but now it’s turned towards a different direction. Soon a three-headed dragon will emerge in Lithuania that will be able to manage billions-worth projects or even eat up electricity distribution and generation networks of other countries*” (Sotvarienė 2007a). Prime Minister Gediminas Kirkilas considers this deal as historic: “*This idea is ambitious, and this decision – transparent and fair*” (BNS 2008a). He also rejects the concerns that the decision undermines the **public**: “*This project is truly public: various institutions have contributed including business associations and banks*” (Lukaitytė 2007). The Prime Minister’s arguments are seconded by the government’s business partners who foresee the success referring to countries like Jordan and the Czech Republic where similar energy market consolidation has taken place (BNS 2008a). Pro-nuclear media claims that this type of business models are “*very popular abroad*” (Damauskas 2007b) and the government will maintain the “*decisive role*” in the partnership (Sotvarienė 2007b). In fact, only four EU countries do not have a similar national energy company: Bulgaria, Romania, Poland and Lithuania (Bartasevičius 2007). According to pro-nuclear media commentators, the country will benefit from it as “*the business will guarantee modern management solutions, while the government officials will spearhead the political ice*” (Lietuvos rytas 2007).

However, this does not become a reality. A year later, the “*Leo LT*” is liquidated by the Conservative government, but the new Prime Minister expects to have a new plant by year 2018 or 2019. He mentions new feasibility studies that are underway: “*so far the numbers show that the plant*

is necessary, worth it and there are no doubts about it” (BNS 2009a). Moreover, some foreign investors are showing their interest – the French presented their services to the Prime Minister already (Skiniulytė 2007) and Germans are *“very interested”* as well (Krasauskas 2009). The Minister of Energy expects to find an investor during the first half of the year 2010 and sign the contract in 2011. Media comments that plans to build the plant by 2018 are *“very ambitious”*, while 2020 sounds more *“realistic”* (Deksnyš 2009).

Meanwhile, the position of President Grybauskaitė undergoes a transition over the course of few months. After she wins the presidential election amid controversies surrounding *“Leo LT”* in 2009, Grybauskaitė calls for more studies on nuclear and possibilities of developing *“green”* options such as geothermal, waste to energy and wind power. According to her, taking into account nuclear projects in Russia and Belarus is also necessary (Samoškaitė 2009b). Shortly she deems that *“five nuclear plants could be built in our region anyway”*, that the interest from foreign investors is there (BNS 2009c).

A detailed discussion about the planned **reactor type** is not found in texts sampled for the analysis. There are experts who argue that the planned 3,200 MW or even 1,600 MW [different data exists] capacity for the new plant has not been justified. One expert suggests that in case Belarus refuses to synchronize its power distribution system with Lithuania, only a small, around 670 MW plant for meeting domestic needs should be constructed. Moreover, he proposes construction of *“small and reliable nuclear power stations that would not heat the lakes, but people’s homes”* in several major Lithuanian cities. The so-called IRIS reactors are expected to be on the market starting 2015. The energy system should not be centralized, as *“wars, pirates and terrorists are becoming more widespread on this planet”* (Siurbis 2009). One text writes about the municipality of Kaunas, the second biggest city in Lithuania, discussing a possibility of building an own small nuclear power plant similar to those developed by the *“Toshiba”* company (Dambrauskas 2009).

The **global trends** represent another distinct theme among proponents. The discourse actors argue that rising oil and gas prices and the so-called energy diplomacy is driving the nuclear energy revival in the developed as well as developing countries worldwide (Delfi.lt 2007; Giedra 2008; Ivašauskas 2008). Finland is presented by the officials as an example where one plant is under construction and two more are planned (Makaraitytė 2007c). *“Look at Switzerland: this relatively small country has even five nuclear power plants”*, is the answer given by the officials to those sceptical about viability of three nuclear power plants in the region (Saladžius 2009).

Climate change mitigation is also mentioned among reasons to keep nuclear power; the Ministry of Energy believes that the nuclear plant *“will help to achieve the commitment to reduce GHG emissions by 20% by 2020”* (Delfi.lt 2009a).

According to the scientists, the above mentioned global problems determine more favourable **attitudes** towards nuclear energy (Kimtyš and Remeikis 2008). Business quotes the **public**

opinion polls they commissioned showing that 61% of the population supports the new nuclear plant: *“We hope that constant information provision will increase the public trust even more”* (Samoškaitė 2009a).

A number of other energy officials and analysts also argue that nuclear energy is the *“cheapest and the most independent way to generate power”* as the **electricity price** very little depends on the fuel price and the amount of it needed is small (Giedra 2008; Ivašauskas 2008). Energy experts involved in the project argue that *“the plant will come at no cost to the state”* (Makaraitytė 2007a). Moreover, according to scientists, there is a possibility of obtaining a low-interest bank loan from *“Euratom”*, the institution responsible for the nuclear power development in the EU (Damauskas 2007d). Political analysts see the fact that the *Baltic Interconnection Plan* is the EU-backed priority also as an advantage (Krasauskas 2009).

Other energy security options are denounced as unavailable, insufficient, or simply not economically viable. The Minister of Economy refers to the so-called energy forest in a rather sarcastic way: *“You can only go so far by burning wicker”* (Makaraitytė 2008b). Energy experts go on to agree that renewable sources can not be compared with nuclear whatsoever because *“one can not compare apples and oranges”* (Giedra 2008). Scientists argue that **renewables** are twice as expensive and able to cover up to 30% of the power demand, but as they are intermittent, they can be developed only as *“some kind of exotic green energy, but there is no country where they provide a baseload”* (Samoškaitė 2009b). *“Producing a big share of electricity from wind, sun and biomass is still too expensive. For this reason Lithuania and other countries are choosing nuclear which is the cheapest and the most environmentally friendly”*, the CEO of the *“Leo LT”* explains (Ivašauskas 2008).

Other **alternatives** like upgrading thermal and hydropower plants and/or importing the shortage from neighbours is rejected as a *“short-sighted”* approach by politicians (Rainytė-Bodard 2009).

5.1.3.1.3 Risks involved

When it comes to nuclear risks, actors emphasize possibilities to control them. The existing waste management solutions are presented as reliable and long-term health concerns associated with accidents like Chernobyl are downplayed.

According to the Lithuanian officials, this is the way to produce electricity with the lowest **environmental impact**. Contrary to fossil fuels, management of radioactive materials enables their isolation from the environment: *“Proper and responsible operation allows achieving very high levels of safety”*. They also emphasize the need to distinguish between military and peaceful use of nuclear energy (Giedra 2008). The majority of scientists quoted in the Lithuanian media argue that new **technologies** are able to bring nuclear risks to a minimum. According to them increased safety is attributed to *“new materials and technologies used for building reactors, producing fuel and control and operation equipment”*. According Lithuanian scientists the so-called Generation III reactors are tried and tested worldwide, so the possibility of an accident is minimal if any. They claim that building a

Canadian CANDU reactor would solve the problem of spent nuclear fuel management. However, regulatory bodies respond that this type of reactor generates “*seven times more radioactive waste*” and that there are at least ten more reactor designs Lithuania could choose from (Čekutis 2007).

Meanwhile scientists note that managing spent nuclear fuel is the most challenging task. Lithuanian officials claim that the most modern radioactive **waste management** technologies are used in Finland, the US and Switzerland. They believe that it should be considered a valuable resource rather than dangerous waste (Čekutis 2007). However, only few countries are able to recycle it; the UK and France are among the few most advanced ones in this field (Kimtys and Remeikis 2008) (Čekutis 2007).

In general, it can be concluded that information on management of spent nuclear fuel from the Ignalina NPP is contradictory in the analyzed media. Scientists admit that there is no technology for recycling spent fuel used in RBMK reactors. The place where spent nuclear fuel could be buried in Lithuania is not found yet (Čekutis 2007). But the manager of the plant says Lithuania is planning to manage this waste on its own territory and there is “*too little*” spent fuel to be sent for recycling anyway, so it is safeguarded in temporary storage containers. This management method is safe and even if “*the plane hits, the containers will remain leak proof*”, the manager says.

He is also wondering why neighbouring countries express concerns regarding storage which is not a simple landfill: “*In 20 years it will be a green hill. People will be able to live here, no harm to the environment will be done. Radiation level will be slightly higher than natural, but not dangerous. People will be able to pick mushrooms and fish here, just like now*” (Kauzanas 2008).

A well-known Lithuanian journalist Algimantas Čekuolis argues that people are exposed to varied doses of radiation on a “*regular basis*” and that most figures about the victims and health impact of nuclear accidents like that in **Chernobyl** are “*incredibly distorted*” and a “*mere fantasy*”. He goes on to argue that much of the concerns are of a psychological nature: “*Put a harmless toothless whip snake to a man’s back, call it a poisonous snake, scratch it with a needle and a man can die. Symptoms would look like those from a snake bite. Even some respected countries like Sweden succumb to such public fears; the Germans refuse to pick mushrooms in Bavarian forests, even though it’s been 20 years since Chernobyl. This can not be considered a wise approach*” (Čekuolis 2008).

Other than in relation to waste, the **environmental and health** impact of the existing plant appears in the analyzed texts very marginally. The manager of the Ignalina plant talks about the positive impact the warm waters of the lake cooling the Ignalina NPP reactor used to have on the bird population: “*How do we explain to the tamed birds that this paradise of theirs is being shut down now?*” (Kontrimavičius 2009).

5.1.3.1.4 Constraints and prospects

Although the actors of the pro-nuclear coalition recognize some constraints to nuclear deployment, most of them downplay the challenges or emphasize possibilities to address them. Issues of national capacity, human resources and geopolitics of nuclear energy are among the documented themes.

The business involved with the “*Leo LT*” project speaks in favour of nuclear energy listing Lithuania’s advantages: “*Our country has experience, expertise and technical infrastructure. Around 30% of the capital costs is infrastructure and it already exists in Visaginas [Where the Ignalina NPP is located]*”(Bartasevičius 2007). Along similar lines, there are national businessmen who believe they are capable of and plan on taking part in the project, others claim they would do it for the sake of “*honour*” if nothing else (Tvirbutas 2008).

On the other hand, the government officials do recognize the challenge of re-training **the personnel**: the English language is one [most workers at the Ignalina NPP are Russian-speakers]. Nonetheless they believe that the new experts will be prepared “*on time*” (Tracevičiūtė 2007). The scientists are convinced that the new plant will contribute to the development of the national potential and increase competitiveness (Kimtyts and Remeikis 2008). Speaking about the **national capacity**, they point at the existing experience and ability to educate workers required for the new plant. One university already has a student exchange agreement with several educational institutions in Russia and France (Tvirbutas 2008).

Meanwhile, **neighbouring countries’** plans to build their own NPPs are seen as **geopolitical**. Russia’s invitation to implement the project in Kaliningrad is denounced as “*provocation*” (Makaraitytė 2009e). “*While Lithuania hesitates, Poland knows for sure that it will be using nuclear energy*”, media warns about Poland’s intentions, amid the stalemate in the negotiations with Lithuania (Lietuvos rytas 2009). Analysts are convinced that Russia’s intentions to have own plant in Kaliningrad are serious, even though it might be driven by “*political reasons*” or the local ambassador’s “*personal ambitions*” as there is no evidence of the existence of project documents (Krasauskas 2009). However, top politicians consider it a “*bluff aimed at seeking a share in the Lithuanian project*” (Rainytė-Bodard 2009) or “*political games and propaganda*” with the intention to discourage construction plans (BNS 2009b). One scientist downplays Russia’s plans to complete the construction by 2010 as “*absurd*” and the Foreign Affairs Minister responds in this context: “*Our country understands the necessity of implementing its energy plans even better*” (Deksnys 2008). According to officials, all three projects are seen as “*theoretically competing for the foreign investor*” (Krasauskas 2009).

Uncertainties about the capacity of the planned nuclear power project and conditions under which Russia would be allowed to export electricity via the Lithuanian power lines to the West are also mentioned. There is an alternative suggestion regarding the choice of project partners:

“Maybe an even bigger plant would be economically viable if, say, Sweden would be interested in taking part and importing electricity from Lithuania through the power bridge that will connect us?” (Eigirdas 2007).

Geopolitical implications of nuclear energy also appear in the context of the radioactive waste repository near the Belarusian border. Officials admit that one of the main reasons for choosing the site was political – it is the most distant with respect to the Belarusian border (Damauskas 2007a). This theme is present in negotiation with project partners in the Baltics as well. One official says that Latvia is determined to take part in the Lithuanian project since the NPP would guarantee its energy security, but Poland and Estonia who have resources of their own are merely *“playing business games to gain more advantage in negotiations”* (Damauskas 2007a). Moreover according to consortium partners *“only political or geopolitical factors”* may prevent the NPP from being built by 2015 (Lietuvos rytas 2008a).

Critical opinions are portrayed as factors constraining the development of nuclear power in Lithuania. This is also articulated in relation to the alleged urgency of the project: *“The longer we discuss the weaker we’ll become and with less possibilities to establish the company based on the national capital”*, a businessman warns (Makaraitytė 2007b). The discussion about the legitimacy of the energy consortium *“Leo LT”* one parliamentarian calls populism: *“Each day costs us a lot, international partners can get driven away by uncertainty”* (Nastaravičius 2008). In media’s view, the two years that it has taken to establish the *“Leo LT”* consortium is *“a very long time”* and it is due to those manipulated by the figures of the *“energy system that Lithuania is trying to escape”* (Lietuvos rytas 2008b).

The former Minister of Agriculture writes that leaders of this country *“have forgotten about the Lithuanian people’s interest to get cheap and secure energy”*, that is – nuclear power. In the meantime, the construction of new reactors is delayed because of various interest groups such as politicians, gas suppliers, representatives of the oil refinery *“Mažeikių nafta”* and *“alternative energy enthusiasts”* (Prunckienė 2009). Some media commentators attack critical politicians and businessmen for having *“personal issues”* or imply their ties with Russia (Ignatavičius 2008), green NGOs opposing the plant (Gintalaitė 2008) and President Grybauskaitė who approved liquidation of the *“Leo LT”* consortium is among them (Tilindis 2009). Environmentalists are blamed for their scaremongering tactics and *“black public relations techniques”* causing negative **public attitudes** towards nuclear energy *“unlike elsewhere in the world”* (Giedra 2008).

5.1.3.2 The anti-nuclear discourse coalition

Green entrepreneurs, NGOs and alternative, publicly funded media are among the most vocal critics of nuclear power. They emphasize geopolitical, economic and environmental risks of building a new NPP and blame the government for creating barriers for alternative energy sources. There are also scientists, analysts and politicians whose argumentative lines complement the critical discourse coalition. These are mainly relating to themes concerning high capital costs

and environmental risks posed by nuclear projects of the neighbouring countries. Doubts about national capacity and legitimacy of the decision are pronounced as well.

5.1.3.2.1 Problems addressed

As mentioned earlier, anti-nuclear actors acknowledge problems of **energy security** and **dependence on Russia** as well. Contrary to their opponents, these actors do not see nuclear energy as an urgent and the only solution to securing energy independence, but rather a problem. The storylines explaining the negative impact of the Ignalina NPP monopoly, underdevelopment of alternative sources and dangers of “*nuclear competition*” are described here.

“This is a mix of economics and psychology. [...] Seems that there is an intention to convince the public saying “we are Lithuanian patriots with nuclear”, as if we have a bomb”, a well-known physicist comments (Krasauskas 2009). Along similar lines, smaller businessmen blame Lithuania’s **nuclear power ambitions** for “*provoking several neighbouring countries to build their own ‘hellish’ reactors*” and for preventing the development of safer and cheaper **alternatives** (Aleksandravičius 2009). Journalists also blame the government for the lack of action on other energy policy options: “*The officials are absolutely ignoring even ecological initiatives that start coming from the public and government’s program on the renovation of residential housing is a complete failure*” (Makaraitė 2008a).

President Grybauskaitė is also among those who mention the problem of the nuclear power monopoly. When commenting on the Ignalina NPP closure as the EU Budget Commissioner she says that the existence the **Ignalina NPP** has monopolized the energy market, allowed price manipulations and prevented liberalization: “*Lithuania is paying so much for electricity not only because we are buying resources from Russia at a high price, but because our own monopolists are exploiting the country*”, she says. She is convinced that after its closure the country will not be that dependent on Russia and will not experience power shortages (Makaraitė 2008c). Grybauskaitė argues that the shutdown of the Ignalina plant finally opens the door to **energy security**: “*Prices will be determined by the market and every Lithuanian citizen will be protected from the lawlessness of monopolies*” (Delf.lt 2009b).

There are scientists who point at the fact that even before closing the Ignalina NPP Lithuania was dependent on nuclear fuel and spare parts supplied by **Russia**. Having said this, the argument goes, the situation Lithuania finds itself after shutting down its main power source is not so dramatic: even though electricity prices will increase, the power shortage will not occur. Meanwhile a failed nuclear energy project may have grave economic consequences for the country (Vilemas 2008).

5.1.3.2.2 Justification against nuclear energy

Arguing against the nuclear power, the Lithuanian discourse actors bring forward lack of public consultation, especially regarding the public-private consortium “*Leo LT*”, also economic

assessments, consideration of alternatives and misinterpretation of global trends when it comes to ways of ensuring energy security.

In some politicians', energy experts' and commentators' view, the decision regarding the new NPP and the chosen **project model** lacks a proper **public consultation** (Skiniulytė and Navickaitė 2007). National and international NGOs complain about not being able to gain access to the new nuclear plant feasibility study (Gintalaitė 2008). One journalist notes that *“in order to analyze this new wonder of the Lithuanian economy more data would be necessary, but in the information presented to the public it is missing”* (Eigirdas 2007). The official of the Ministry of Environment agrees that in countries like Sweden or Finland *“it takes an entire generation before such decisions are made”*. Green NGOs refer to the environmental movement of the late 1980s when the Ignalina NPP expansion was opposed and brought to a halt: *“It is time to dust off the old banners, remember the good old days and publicly and actively discuss about the new NPP”* (Lukaitytė 2007).

The theme of “*Leo LT*” consortium stands out particularly in the texts sampled during the years 2008-2009. Parliamentarians including the leader of the then opposition Conservative Party consider the entire process of creating the consortium very rushed and unconstitutional. Financial analysts also criticize the choice of the private business partner without any tendering procedure (Damulytė 2008a). Raimundas Kuodis, one of the leading economists of the Lithuanian Bank, titled the “*Leo LT*” consortium the biggest *“fraud of this century”* (lith. *“amžiaus afera”*) as it does not guarantee the construction of the NPP and power bridges and is only aimed at profit through shares manipulation (Damulytė 2008b). Since the very beginning of the negotiations he has insisted that on a cost benefit analysis and a proper project risk assessment to be conducted first (Lukaitytė 2007; Makaraitytė 2007c).

In 2007 one un-named analyst argues that the consortium is a business plot aimed at re-selling a privatized power distribution company to gain profit (Makaraitytė 2007a). Two years later media quotes the study conducted by independent law experts who conclude that agreement between the government and private investor was conducted in such a way that it would be impossible to track illegal actions based on the existing documentation (Makaraitytė 2009a). *“All of us are the shareholders in a company that nobody knows what to do with”*, a year later one editorial writes noting the conclusion of the Constitutional Court that laws regulating the consortium do not even include an obligation to construct a NPP (Makaraitytė 2009b). Promoters of renewables argue that *“building a new NPP is only in the interest of those producing equipment, supplying nuclear fuel and selling their product, and corrupt officials”* (Giedra 2008).

Acknowledging the risk of relying on electricity imports from **Russia**, some experts and scientists argue that the new project is very risky and that Lithuania should focus on the grid interconnections with Poland and Sweden instead (Skiniulytė and Navickaitė 2007; Vilemas 2008). The link with Sweden is expected to be complete by 2015. These links would ensure affordable and secure supply even without a new NPP. More decentralized power and energy

saving could also be part of the energy costs reduction strategy (Vilemas 2008). Some officials also propose building a liquefied gas terminal and storage facility as an alternative energy security measure (Samoškaitė 2009a).

However, there are green entrepreneurs who oppose even interconnections. According to them, *“these chaotic linkages across the Baltic have nothing to do with the sustainable grid development and synchronisation”*, so-called renewables-based *“supergrids”* is a better solution (Paulauskas 2008). Similarly, small businessmen reject the government’s energy business consolidation plans claiming that a *“natural energy system development leads to decentralisation and brings energy production closer to the consumer.”* They refer to the government plan as *“a dangerous gamble”* and view the decision to build a NPP as *“worthless, misleading and posing a great economic disaster and danger to future generations”* (Paulauskas 2008).

Contrary to the proponents of nuclear energy, green entrepreneurs talk about different **global trends** in terms of energy security. According to them, the world is turning to safer and greener energy sources that are becoming more affordable as traditional fuels are facing a *“total ban”* in the coming decades (Giedra 2008). One architect specializing in green technologies points out that modern **alternatives** exist in Lithuania, but their development is constrained by existing public attitudes and energy supply monopolies. In his view, the resources intended for the new nuclear power should be rather invested in awareness raising, renewables and green buildings as it was done in countries like Sweden where state support helped to the make energy system more sustainable (Pocienė 2009).

In the view of green entrepreneurs and NGOs there are studies proving that Lithuania is able to secure energy supplies without building a NPP, but using **renewables** such as wind and biomass and reducing the energy intensity of the economy (Lukaitytė 2007; Paulauskas 2008). Green NGOs claim that by introducing new local renewable sources every 5-10 years – mainly biomass and wind, but also sun and geothermal – Lithuania can achieve absolute energy independence. This requires designating 7% of arable land for energy plants and increasing energy efficiency. In the NGO’s view, decentralized, local renewable sources based energy systems pay back sooner, are much more stable and create more jobs compared to nuclear (Gintalaitė 2008).

5.1.3.2.3 Risks involved

With regard to nuclear risks, discourse actors touch upon issues related to the management of the Ignalina NPP waste and safety of technology in general, but also discuss specific concerns about the environmental impact of nuclear plants planned in neighbouring countries.

Not only critics, but also proponents of nuclear energy mention the fact that the Three Mile Island and Chernobyl accidents have *“radically”* changed the attitudes towards this power source (Kimtys and Remeikis 2008). Representatives of green NGOs argue that safe **nuclear technology** is a myth: *“This is like a new car model. It is a bit advanced, but the in essence stays the same”*

(Gintalaitė 2008). According to Polish businessmen, modern technological options for reactors are limited; they also refer to Russian reactors as “*not tested yet*” (Lietuvos rytas 2009).

Anti-nuclear storylines argue that nuclear power can contribute to **climate change** mitigation only marginally, as its emissions are substantial of the entire lifecycle is taken into account (Gintalaitė 2008; Pilibaitytė 2009). According to them, the ecosystem change in the lake of Drūkšiai that was used to cool the Ignalina NPP is a proof of thermal impact on water systems (Gintalaitė 2008).

The anti-nuclear actors are vocal about **health and environmental risks** and **radioactive waste** generated by nuclear plants. Some go as far as to call it a “*monster*” referring to the planned capacity or “*castles in the air*” – depicting way too ambitious plans that may never become reality (Paulauskas 2008). “*It is fair to say that every Lithuanian is losing 14 years of their lives due to the misuse of energy sources. [...] There is nothing more dangerous than nuclear radiation that is usually found when nothing can be done about it. It has nothing to do with progress, but hazards alone*”, an active green entrepreneur warns (Paulauskas 2008). The businessmen advocating for renewables consider nuclear power a source of dangerous waste for which no permanent management solution exists (Giedra 2008). Representatives of green NGOs note: “*Nobody seems to consider it a problem in Lithuania, although the whole world thinks it is*” (Lukaitytė 2007).

The health impact theme is mentioned in one article describing the possible risk to the workers during the waste management work at the Ignalina NPP. According to the officials, the workers transporting the waste to the surface repository will receive the highest individual doses among the staff (Damauskas 2007a).

Other actors discuss **environmental risks** posed by other nuclear plants in the region. Russian activists raise concerns about the effect the Baltic NPP in Kaliningrad would have on the rivers and the port of Klaipėda (BNS 2009b). Belarusian NGOs express concerns about environmental impact assessment carried out by the Belarusian authorities whose findings are said to be underestimated hundreds of times: “*The absurdity of the expected impact is not even worth a comment*”, they say (Krasauskas 2009).

Nuclear power is seen as dangerous by those in the pro-nuclear coalition as well, as they are discussing plans of the neighbouring countries. Both Belarusian and Russian plants are planning to use the water from rivers shared by the countries for cooling purposes: “*We can only imagine what the Neris river will be like when it reaches Vilnius*”, one commentator speculates. The fact that plants will be based on the Russian technology “*marked by Chernobyl*” is also of concern: “*Maybe they are modern and reliable, [...] but if the Kremlin manages to use gas as an intimidation tool, is a nuclear reactor any different?*” Lithuanians living close to the planned Belarusian NPP site are concerned about environmental impact: “*When Belarusians release some chemicals into the river, fish get killed immediately. When that plant is built we can forget about fishing whatsoever*”. They also mention politics:

“We built a nuclear plant under their nose once, now they are coming back at us with a similar “toy” (Dumalakas 2008).

Moreover, the media points at the fact that the region of Ostrovets [that is also described as a *“historically very important ethnic land for Lithuania”*] is the area of the highest seismic activity in Belarus (Varanavičius 2009). These risks are brought up by geologists in the context of the safety of the Ignalina NPP that was built in the same region where the new plant is planned as well (Čaplikas 2007).

5.1.3.2.4 Constraints and prospects

Actors of this discourse coalition emphasize difficulties the industry is facing globally, high capital costs, lack of national capacity and human resources among the main constraints for pursuing nuclear energy in Lithuania.

The green NGOs note the failures of the ongoing project in Finland – construction delays, budget overruns and technical failures: *“Since 2005 there have been around 2,000 various violations. They are contracting inexperienced companies, using corrosive metals for construction. Concrete works are of a low quality. This will have an irreversible effect on the safety of this plant”*. They are convinced that the Finnish example represents global nuclear industry trends (Gintalaitė 2008).

Although scientists and bankers advocate for nuclear power, many of them warn about the high **costs** of producing electricity in the new plant: *“We do not pay for radioactive waste management at the Ignalina NPP. It is partly covered by the EU. We did not invest ourselves in the construction, that is why electricity is cheap”* (Žvirblytė 2009). The head of the Ignalina NPP shares this view and adds: *“The new plants are more modern and safer, but they are also more expensive”* (Kauzanas 2008). Financial analysts admit that the main disadvantage of nuclear power is high **capital costs** and financial risks involved (Delfi.lt 2007). Scientists and analysts note that the state may have to provide its guarantees for loans to secure investment (Skiniulytė 2007; Makaraitytė 2007a). They warn that projects of this scale may have a serious systemic impact on the country’s economy and energy sector in particular: *“Electricity price increase of 10% reduces Lithuanian GDP by several tenths of a percent”* (Makaraitytė 2007a). Green NGOs argue that the pay-back time of nuclear projects is the longest of all energy sources (Gintalaitė 2008).

Furthermore, considering the global nuclear **industry trends** and economic crisis it seems highly unlikely that the new plant will be constructed sooner than in a decade and that it will guarantee lower **prices**: *“We might run into great economic losses and thus put much more important national priorities at risk”*, a well-known Lithuanian physicist Jurgis Vilemas (2008) warns. In his view, exactly for economic reasons, the project in Lithuania is the riskiest of all three in the region as it will not be backed by state investments like the plants in Belarus and Russia (Krasauskas 2009). There are also political analysts who support nuclear plans for geopolitical reasons but admit that the *“economic logic”* may not be in favour of nuclear and that building power bridges to the West

should be prioritized (Samoškaitė 2009b). However, the power bridge with Poland may face an opposition from the local public as it crosses the cherished region of lakes (Vilemas 2008).

There are texts raising the issue of compatibility of the Eastern and Western power distribution systems and lack of calculations of costs of planned disconnection of Lithuania from the Russian system and connecting to the West (Makaraitytė 2007c).

With regard to **national capacity**, the former leader of Soviet Lithuania, the President and the Prime Minister Algirdas Brazauskas is one of the few influential political figures who are highly sceptical about Lithuania's capacity to build the new plant. According to Brazauskas, the costs of building a new plant today and generating nuclear electricity can not be compared to the 1980s: *"Ignalina NPP was constructed without any estimates. I remember it very well, the money was provided through the special open account at the USSR Construction Bank and there was as much as required. Therefore it is impossible to assess the present value of the Ignalina NPP"*, he recalls (Lukaitytė 2009). He points at resource-intensive grid interconnection projects that have been pending for more than two decades and out-dated grid infrastructure with the East. Therefore the politician argues that the new construction would be extremely expensive and possible only with foreign investment that would be interested in importing the main share of the electricity produced in Lithuania. Meanwhile he alludes at **geopolitics** advocating for the *"relevant foreign policy"* in order to secure imports from Russia (Lukaitytė 2009).

Just before taking the post of the new Energy Minister Arvydas Sekmokas also expresses his doubts about Lithuania's ability to implement the project, even with its regional partners: *"It is highly unlikely that four countries with no experience in nuclear energy and projects of this kind will be able to agree on this"* (Samoškaitė 2009a). However, he changes this stance shortly after becoming a minister. NGOs warn about lack of safety culture among industry workers and regulatory capacity (Gintalaitė 2008). There are businessmen too sceptical about the ability of national companies to take part in the project (Tvirbutas 2008).

After the Conservatives-led *"Leo LT"* liquidation, media points at the recent electricity import contract with the Russian company *"Inter RAO JES"* that eliminates any motivation to build a NPP or grid connections with the West: *"Now we have committed to buy from Russia and Belarus around three times more electricity than is produced in Lithuania over the next 20 years. When Russia and Belarus build their own nuclear plants we will be able to enjoy a true electricity surplus"* (Tilindis 2009).

And finally, the theme of the **Ignalina NPP** appears in the context of deteriorating energy security due to the EU commitment to shut down this Chernobyl-type plant. It creates severe social problems locally as residents of Visaginas where the plant is located are facing three-fold increased energy prices and unemployment.

Another concern is related to the **human resources** needed for a new Lithuanian plant. As the qualified workforce is leaving the country (Tracevičiūtė 2007), the media warns about the risk of a brain drain to the Belarusian or Russian plants planned by the neighbours (Varanavičius 2009). The plant management claims that this has also operational security implications for the plant since qualified workforce is leaving (Kontrimavičius 2009).

Some authors describe suspected corruption and mismanagement of the decommissioning project funds (Čerkauskas 2009). There are estimates that delays of these EU funded projects may result in budget overruns of up to 300 million Euros (double the estimated costs). State auditors came to a conclusion that they have been deliberately stalled and the government lacks leverage to control these processes. Expenses may have to be covered by Lithuanian taxpayers (Makaraitytė 2009g).

According to the officials, there is the issue of **national capacity** in this context as well: *“We have always argued that Lithuanian nuclear energy experts are the best, they know everything and they can do everything. But as the projects started it proved otherwise and we have to seek knowledge in Moscow”*. However, they claim that the situation is still *“better than in Chernobyl”* and there are objective reasons for delays (Makaraitytė 2009c). The critics argue that this raises doubts about Lithuania’s capacity to build the new plant. One commentator in this context notes that the planned nuclear plant *“is drowning, collapsing together with the unconstructed power bridges to Poland and even Sweden”* (Makaraitytė 2009d).

5.1.4 Summary of findings

This sub-section looks at the nuclear energy discourse of Lithuania which is part of the national discourse analysis in this study. In 2009 due to its EU membership commitments this formerly Soviet state had to shut down the Chernobyl-type Ignalina NPP that served as the main domestic electricity provider since 1983. Lithuanian electricity market liberalization is still in its infancy, the share of local renewable sources in its energy mix is small and the country mainly relies on energy resources imported from Russia. Hence the government’s strategic goal of remaining the nuclear energy-producing state and building a new plant with the international partners.

The Lithuanian nuclear energy discourse analysis is based on a study of 78 purposefully selected national media texts with a primary focus on analytical publications from the period of 2007-2009. The review shows that government officials, politicians, journalists, businessmen and scientists mainly discuss energy security, dependence on Russia, geopolitics and neighbouring nuclear energy projects, economic costs, project model, global trends and alternatives. Based on the analysis of the sample, recurring storylines have been grouped into two discourse coalitions: pro-nuclear and anti-nuclear. The **pro-nuclear** energy narratives argue for nuclear energy as the most economically viable solution to secure Lithuania’s energy independence and maintain regional nuclear electricity exporter’s role. A considerable emphasis is put on Russia’s potentially

detrimental energy diplomacy, global trends, absence of risks and national capacity to build a new NPP. The storylines of the **anti-nuclear** energy coalition stress the absence of feasibility studies and public discussion on alternatives as well as potential risks linked with nuclear energy technology such as long-lived radioactive waste.

The majority of anti-nuclear energy arguments are found in the articles from the foreign-owned online media and the publicly-funded analytical weekly, while the texts in the leading private national daily “*Lietuvos rytas*” are predominantly pro-nuclear power.

The tables below contain a summary of diverging narratives from the two coalitions laid out according to the following argumentative categories: problems to be addressed, option justification, nuclear energy-related risks, and constraints and prospects for deployment.

Table 5.3 summarizes those storylines that describe problems related to nuclear power and energy security as seen by different Lithuanian discourse actors.

Table 5.3 Storylines relating to problems nuclear energy can or cannot address in Lithuania

		PRO - NUCLEAR	ANTI - NUCLEAR
Problems addressed	Energy security and dependence on Russia		
		Lithuania entirely depends on resources imported from Russia; the energy sector has close ties with Russian companies resisting any change.	Lithuania depends on the Eastern power distribution network, but importing electricity from non-Russian sources is possible; no shortages will occur; local resources are underexploited, efficiency can be increased.
	Geopolitics		
		Neighbouring countries are planning their own plants; this puts Lithuania's role as the leading electricity exporter at risk.	Lithuania's nuclear energy ambitions are provoking dangerous “nuclear competition” in the region.
	Ignalina NPP decommissioning		
		After the Ignalina NPP closure Lithuania will experience shortages and one of the highest electricity prices in Europe.	The Ignalina NPP has monopolized energy sector and prevented development of local renewables.

Argumentative lines pertaining to nuclear energy risks as seen from the perspective of two discourse coalitions are laid out in Table 5.4.

Table 5.4 Storylines relating to nuclear energy risks in Lithuania

		P R O - N U C L E A R	A N T I - N U C L E A R
Risks involved	Chernobyl accident		
		Chernobyl was a human error, repetition is not possible.	Russian technology is "marked by Chernobyl".
	Health and environment		
		Proper management minimizes the risk.	Neighbouring plants put Lithuania at risk.
	Technology and plant siting		
		Modern reactors are much safer, accidents are hardly possible; Lithuania is choosing from 11 reactor types.	Nuclear safety is a myth; The region where the Ignalina NPP and Belarusian plant is planned has a high seismic activity.
	Waste management		
		Radioactive waste will be managed safely; no harm to environment and people will be caused.	No permanent solution for managing nuclear waste exists worldwide; there is no way to reprocess spent fuel from RBMK reactors built in Ignalina NPP.

Table 5.5 below presents narratives providing different arguments for and against the pursuit of nuclear power in Lithuania.

Table 5.5 Storylines relating to justification for and against nuclear energy in Lithuania

		P R O - N U C L E A R	A N T I - N U C L E A R
Option justification	Alternatives		
		There are no alternatives; renewables are insufficient, expensive and unable to provide baseload electricity.	Lithuania has enough renewable resources to secure affordable supplies; monopolies have prevented their development; bridges to the West should be prioritized.
	GHG emissions		
		It will help meeting the EU GHG emissions reduction targets.	It contributes to climate change mitigation only marginally.
	Energy costs		
		It is the cheapest way to generate electricity; a new plant would come at no cost to consumer.	Power produced in the new NPP may be twice as expensive.
	Geopolitics		
		It helps strengthening geopolitical role.	Politicians demonstrate patriotism through showing off with a new NPP "like with a bomb".
	Global trends		
		The whole world is turning to nuclear power.	The world is turning to safer alternatives and decentralized generation that creates more jobs.
	Ignalina NPP decommissioning		
		Operation of Ignalina NPP should be extended until the new plant is built.	Ignalina NPP should be closed as per EU accession commitments.
	Project model/ Leo LT		
		The model is transparent and right; such public-private capital consolidations are common elsewhere in the world; foreign investors are interested.	The chosen model is corrupt, unconstitutional and does not guarantee that the plant will be built; cost benefit analysis should be conducted first.
	Prestige and progress		
		It will help maintain the regional leader's role; it will be the biggest green field investment in Lithuanian history; it will boost economic development and research.	Nuclear power project failure may have considerable economic consequences.
Public acceptance and awareness			
	61% of the public support new construction, the public was consulted.	The Three Mile Island and Chernobyl accidents have radically changed public attitudes towards nuclear power.	

Table 5.6 depicts storylines uttered by discourse actors when discussing constraints and prospects for nuclear power in Lithuania and worldwide.

Table 5.6 Storylines relating to constraints and prospects for nuclear energy in Lithuania

		P R O - N U C L E A R	A N T I - N U C L E A R
Constraints & prospects	Capacity and human resources		
		Lithuania has experience and infrastructure to build a plant; qualified workforce can be re-educated and educated on time.	Lithuania and its partners have no experience in such projects and will not be able to handle it; qualified workforce is leaving; existing workers may not meet the requirements of the new plant (e.g. English).
	Capital costs		
		The more time is spent on discussions, the more expensive the project will become.	These projects have high capital costs and government usually bares all financial risks.
	Geopolitics and other projects		
		Neighbours are bluffing about their NPPs to discourage us or seeking their share in the project; we are competing for the foreign investor.	Russian is seeking influence in the country; electricity supply contract with a Russian company removes an incentive to proceed with the project
	Global trends		
		If we waste time on discussions, will lose project partners and potential investors.	These projects are characterized by delays and cost overruns; Finland's failures illustrate global trends.
	Ignalina NPP decommissioning		
		Ignalina NPP decommissioning project delays are due to objective reasons.	Corruption, mismanagement and project delays may have to be covered by tax payers; it is a proof of lacking national capacity to handle big nuclear projects.
Public acceptance and critics			
	Gas and oil industry, environmentalists and populist politicians with Russian ties are blocking the project lead by "personal issues"; scaremongers are manipulating public option.	There is a lack of public debate; information about the NPP project is not available.	

5.2 Belarus

This section introduces the context of the Belarusian nuclear energy discourse, energy system and policy, outlines national media landscape and briefly presents analyzed outlets. Sub-section 5.2.2 presents recurring actors and themes found in the texts, while discursive storylines and coalitions are described in sub-section 5.2.3. The snapshot findings in the form of tables are included in the sub-section at the end.

5.3 Belarusian discourse context

Belarus, the Eastern European country positioned between Russia in the north, Ukraine to the south and Poland with Lithuania to the west, has around three times more sizeable population (9.7 million) and geographic territory (207.6 thousand sq km) compared to Lithuania (Statistics Belarus 2010). It has declared independence from the Soviet Union in 1991, but maintained planned economy and close political and economic ties with Russia. They formed the Russia-Belarus Union in 1999 (Marples 2008). Ever since 1994 the country has been led by the autocratic President Aleksandr Lukashenko who personally controls the state administration, and altered the Constitution to extend his term in office (Silitski 2005). Belarus is often termed the “*Europe’s last dictatorship*” and one of the most repressive places in the world with a *façade* regime where democratic “*scaffolding*” is concealing dictatorial style of governance (Korosteleva *et al.* 2003; Haiduk *et al.* 2009; Piano and Puddington 2009). Some authors consider the Belarusian regime neo-authoritarian as it uses democratic instruments such as elections for the purpose of its consolidation (Usov 2008).

The business environment has seen some improvement due to recent deregulation reforms (EBRD 2010). Belarus stands out within the Eastern European and Central Asian region with very large firms, high female participation and high government or state share in a mixed ownership [10% on average]. The country is well integrated in international trade with 26% percent of firms exporting and 73% of manufacturing firms using foreign inputs, but lags in innovation and technology (WB 2009b). The global financial crisis has also severely affected the newly opened-up Belarusian economy that has been growing by 10% in 2008 (EBRD 2009a, 2010).

The level of social inequality in Belarus is low and 70% of population a satisfied political and economic situation in the country, most saying that things have improved since 1989 (EBRD 2007). Some analysts describe the current *status quo* as the “*vertical social contract*”¹⁹. Belarusians are said to have adapted to such state, and today no more than 4% are ready to personally take part

¹⁹ Social contract is defined as a social order secured by the state. Society cedes its rights to a sovereign who redistributes them without their consent by suppressing opposition and buying loyalty (Haiduk *et al.* 2009).

in a protest action (Haiduk *et al.* 2009). According to citizen groups, it is not uncommon for NGOs and individuals to be harassed by secret police, denied public funds or get fired from a state institution for one's civil activity; therefore conciliation with autocratic government policies is commonplace (Sukhy pers.comm).

5.3.1.1 Energy system and policy in Belarus

After the fall of the Soviet Union, Belarus inherited an extensive electricity and gas transmission network and substantial oil refining capacity. Over the last two decades Belarus has also been able sustain and even improve the performance of its energy sector largely because it preserved centralized structure and command and control mechanisms (WB 2005). Belarus has an effective energy efficiency management system that involves assigned energy saving plans for companies. During 2000-2005 it resulted in a total GDP energy intensity reduction by 25% (Chuprov *et al.* 2009). Overall, during the last decade both electricity and gas sectors have received sufficient investments to improve technical efficiency and energy savings which contributed to the macroeconomic stability (WB 2005).

On the other hand, energy infrastructure in Belarus is aging, oil and gas storage facilities are limited and operations have limited commercial focus (WB 2005). Although Belarus has extensive local wood resources, the share of indigenous energy in the mix is very low. Imported Russian natural gas accounts for more than 90% of electricity generation; it is also the main provider of heat in the country (Chuprov *et al.* 2009).

Moreover, the country has an important strategic role as a transit route for energy exports to Central and Western Europe and has benefited from low-priced energy supplies from Russia and crude oil conversion into refined product exports for many years now²⁰. As an example, the total estimated Russian energy subsidy for Belarus amounted to 1.1 billion US\$ in 2000-2004 (WB 2005). However, according to the analysts, since Russia is developing alternative transit routes, the role of Belarus as a transit territory for Russia's trade with the West will gradually diminish along with the price preferences offered by the supplier (Kostyugova 2009). The changes in bilateral policies have been noted when Vladimir Putin took the post as Russia's President in 2000. The oil and gas price disputes between the two countries have resulted in supply disruptions to the EU (Belorusy i Rynok 2007). Russia has been insisting on price increases, while Belarus has retaliated by increasing transit duties prompting temporary supply cuts (Belorusy i Rynok 2007; Shuster 2010). Nonetheless, the latest contract envisages a gradual unification of terms of trade and prices for Russian imports by 2011 (Kostyugova 2009).

²⁰ For example, according to the World Bank (2005) calculations Belarus paid 30.6US\$/1000m³ (compared to 93US\$/1000m³ paid by the Western Europe) in 2002, 36.9US\$/1000 m³ (compared to 104US\$/1000m³) in 2003 and 47.7US\$/1000m³ (compared to 135US\$/1000m³) in 2004 accordingly. However, in 2007 it jumped to 100 US\$/1000m³ (compared to 130 US\$/1000m³) in 2007 and continued to grow reaching 150 US\$/1000m³ (compared to 255US\$/1000m³) in 2008 (Kostyugova 2009).

About two-thirds of transit gas crossing Belarus is transported by Russian “Gazprom”-owned transcontinental pipeline “Yamal-Europe”, operated by the Belarusian state-owned “Beltransgaz”; 50% of its shares have been bought by “Gazprom” in 2007 (BELTA 2009). This is seen as part of Moscow’s strategy to gain more influence in Belarus is the idea of the joint Belarusian-Russian holding company that would operate the transit pipeline system, refineries and petrochemical companies (Manenok 2009).

Amid energy price disputes of 2007, President Lukashenko stepped up with a new directive outlining strict energy saving plans with a particular reference to the “security of the state” (BISS 2007). Later that year the updated *Conception of Energy Security for the year 2020* was approved which, according to observers, for the first time was taking into account increasing prices of imported energy (Manenok 2007). Among other things, it mentions the need to renovate energy infrastructure and “intensify work” on constructing the new NPP (Lukashenko 2007a). As paradoxical as it may seem, Russia seems to be the main partner in this project as well.

The idea to build a nuclear plant in Belarus dates back to pre-Lukashenko times. The construction was started back in 1983 with plans to build a facility of 2,000 MW near Minsk, but the project was halted in 1986 (Chuprov *et al.* 2009). Plans were renewed in 1992 with intention to construct 1-3 units by 2010 (CNS 2007). Consultations with Russian, Canadian and American producers were held in 1994-1996 and financing from the World Bank and the EU was considered. But with the Chernobyl aftermath still fresh, society was opposed the idea. Environmentalists insisted on a popular referendum to be held on the matter by the then newly elected President Lukashenko. While plant siting continued, scientists held anti-nuclear conference in Minsk in 1997 demanding a moratorium, and a year later a 10-year ban was put on constructing a NPP in the country. It expired in 2008 (CNS 2007).

Although Belarus has never had a nuclear programme of its own, together with Ukraine and Russia was is one of the most affected countries by the Chernobyl NPP accident in 1986 (Kinley 2005). The number of Belarusian citizens affected amounts to 18% of the population: 135,000 people have been resettled and over 1.5 million are living in contaminated areas (UNDP 2002). The socio-psychological effect of the disaster will be felt by the society for the years to come (UNDP 2002; Kinley 2005).

An opinion survey conducted two decades after the accident by the Belarusian research institute registered in Lithuania showed that the views on the nuclear new build remain divided: 47.7% were opposed to the idea, 32.5% of respondents supported the plans and 14.5% were undecided on the issue (IISEPS 2006). The Belarusian government reports different figures from 2008: over 54.8% of those polled supported the new station, 23% were against and over 21.8% – undecided (Dulinets 2008).

President Lukashenko presents the new nuclear plant as “*the way to guarantee the national security that has no alternatives*” (Lukashenko 2007b). The plans were reiterated all throughout 2007, but final political decision to construct a new NPP was made in the meeting of the National Security Council in 2008 (Lukashenko 2008). The chosen location for the plant is 20 km from the Lithuanian border in the region of Ostrovets (Spasiuk 2008). The site, arguably selected out of 74 initially short-listed locations, is said to be the most suitable one (Gonchar 2009). The environmental impact assessment has been conducted, the local public and the neighbouring countries have been consulted following the requirements of Aarhus and Espoo conventions to which Belarus is party to. However, the Belarusian NGOs reject the assessment as economically, technically, environmentally and legally flawed, and consultation procedures as undemocratic (Sukhy *et al.* 2009; Ekodom 2010). Citizen association “*Ekodom*” [eng. “*Ecobouse*”] has filed the law suit against the authorities for restricting access to information on the project (Atomby.net 2010). Several observers also note that infrastructure development in Ostrovets has started around the planned site although no edict has been signed by the President as required by the Belarusian law (Krylovich 2010).

Although it has been announced that the Russian consortium “*Atomstroyexport*” will be contracted for the project and crediting assurances from the Russian government have been received, the contract has been pending (Krylovich 2010). In spring of 2010 the media reported that the President’s partnership offer to the Chinese companies elicited discontent from the Russian side that has threatened its withdrawal from the project (BelaPAN 2010).

President Lukashenko has recently publicly regretted for giving up nuclear weapons stationed on the territory of Belarus in 1990s. He called it an “*awful mistake*” and went on to announce that Belarus still has “*hundreds of kilograms*” of weapons-grade uranium (BELTA 2010a). According to Belarusian scientists, this sounds as politically motivated exaggeration, as to their knowledge the stock contains no more than 90 kg of low-level material that is used for research purposes (Sergeichik 2010).

5.3.1.2 Media system in Belarus

Officially, the legislation guarantees the freedom of speech and information to Belarusian citizens, but in reality the media is strictly controlled by the President’s apparatus. “*The nongovernmental media are already hammered with crippling fines, bureaucratic harassment, pressure on printers and distributors to deny them service and on businesses not to advertise with them, and politically motivated prosecutions*”, – this is how the *Committee to Protect Journalists* in New York, US, described the situation in Belarus in their address to President Lukashenko in 2008 (Simon 2008). *Reporters Without Borders* rate the level of press freedom in Belarus 151st out of 175 countries, among Sudan, Azerbaijan, Israel, Fiji and Russia (RWB 2009).

The majority of newspapers, 85% are state-run. Similar situation is observed in the broadcast media, but five out of six news agencies are private. According to the *European Journalism Center* in Maastricht, the Netherlands, the content and appointments of senior editors of the state outlets are controlled and in return they get administrative and financial support (BAJ 2010a). Meanwhile, majority of the non-state press (around 30 papers) are banned from official distribution points – i.e. kiosks and subscription. Control by economical means exists too: state companies are forced to advertise only in state-run newspapers; banks are ordered to deny donations and printing houses – to refuse contracts to private press (EJC 2009).

During the infamous presidential elections in 2006 the Belarusian media suffered further deterioration; a number of newspapers were shut down or driven to an abroad or underground printing. International organizations report that more than 30 Belarusian and 12 foreign journalists were imprisoned and many more harassed (RWB 2006; EJC 2009).

As of February 2009 the new *Law on Mass Media* requires re-registration the existing outlets, enables the authorities to order close down in case of a single serious violation of the law, introduces an obligatory press accreditation for foreign correspondents and considers illegal any journalistic activity without official accreditation. As a result many have faced problems to register, often being told by the Ministry of Information that editor-in-chief had insufficient competence or improper premises for editorial offices (BAJ 2010a).

Until recently the internet media market was described as growing and vibrant, however, with 2011 presidential elections approaching there have been signs of further tightening restrictions. Estimates about the number of internet users in Belarus vary from 30% to 50% of the population, although only 5% of users have access to a broadband connection (EJC 2009; Nefedov 2009).

One of the most severely criticized were the new plans on registration and regulation of online activities. The President's edict coming into force from July 2010 authorizes identification of computers with internet connection, collection and storage of personal data of online-users and services provided at the internet-cafes in Belarus. Although not explicitly stated as aimed at the media, the edict provides for disabling the websites that disseminate “*unwanted or banned*” information (BAJ 2010a).

The NGO *Belarusian Association of Journalists* (2010a) reports that situation further deteriorated in the end of 2009. Four influential independent periodicals received warnings from the Ministry of Information, the public prosecution bodies and the KGB and are facing closure; some 20 journalists were officially warned for their professional activities. It is not uncommon for Belarusian journalists to be harassed, their homes raided and equipment confiscated (RWB 2010). Civil servants and officials tend to deny them access to information or refuse interviews without local ideological workers' consent (BAJ 2010a, 2010b).

5.3.1.3 Belarusian media outlets analyzed

As mentioned in Chapter 2, the data sample contained a total of 79 texts. The choice of the Belarusian media outlets selected for the analysis was determined by their ownership and editorial profiles and was intended to represent both the reality of the national media and the diversity of the existing views.

“*Sovetskaja Belorussia*” [eng. “*Soviet Belarus*”] is a leading state-run daily with the highest circulation and established distribution possibilities. In other words, it is the central government print mouth-piece characterized by the allocated space for the press releases by the President’s office and meticulous accounts of his visits and public speeches. It has an impressive daily circulation of 500,000 (EJC 2009). However, many organizations are forcibly made to buy their subscription (BAJ 2010a).

“*Belorusy i Rynok*” [eng. “*Belarusians and Market*”] is a leading privately-run analytical weekly that was established in 1990. It has a weekly circulation of 13,000 copies and is available both by subscription and from kiosks (Krylovich pers. comm.). The main focus of the publication is on the free-market, business-related issues and developments of democratic institutions. It has a strong regular section devoted for critical analysis of the national energy issues. Initially titled “*Belorusskii Rynok*” [eng. “*Belarusian Market*”] the newspaper had to change it after the President issued an edict restricting the use of words such as “*national*” and “*Belarusian*” in 2005 (BR 2010).

Naviny.by [eng. *News.by*] is a prize-winning online media project run by a privately owned Belarusian news agency “*BelaPAN*” which was established in 1991 (Naviny.by 2010). *Naviny.by* publishes online since 2002 and is one of the leading independent online resources with an average of 70,000 unique Belarusian visitors per week (Open.by 2010). In addition to publishing own *BelaPAN* newswires, the website has a team of authors covering various issues including energy.

Text sampling criteria are detailed in Chapter 3 on methodology and the list of analyzed publications is included in Table A.3 of the Appendix²¹.

5.3.2 Belarusian discourse actors and recurring themes

Qualitative coding of texts resulted in a list of nuclear-related themes listed in Table 5.7. The analysis shows that the discussion in the Belarusian media is rather vibrant. The sample indicates that similar to the Lithuanian debate, nuclear power in Belarus is considered primarily as means to address issues of energy security and dependence on Russian resources.

²¹ All the references in this chapter thereafter are made to the appended list of analyzed articles in Table A.3.

Table 5.7 Nuclear energy themes featuring in the analyzed Belarusian media

T H E M E S							
PROBLEMS ADDRESSED	Energy security	OPTION JUSTIFICATION	Alternatives	RISKS INVOLVED	Chernobyl accident	CONSTRAINTS & PROSPECTS	Capacity & HR
	Dependence on Russia		GHG emissions		Health & environment		Capital costs
	Geopolitics		Energy costs		Plant location		Geopolitics
			Energy security		Technology & safety		Public acceptance
			Geopolitics		Waste management		Fuel availability
			Global trends				
			Potential investor				
			Prestige & progress				
			Project legitimacy				
			Public acceptance				

Availability of alternatives, climate change and pollution, growing energy costs, global trends, geopolitics and project partner options are discussed in relation to reasons for choosing or rejecting nuclear. Other themes related to this category are perceived prestige and progress that accompany this power source, project legitimacy and public acceptance. In relation to potential risks Belarusian discourse actors bring up the Chernobyl accident, health and environment, technological options, and safety, plant location, and nuclear waste management issues. National capacity and availability of human resources for the project, construction costs, uranium availability, geopolitical implications and public attitudes are among issues pertaining to constraints and prospects.

A variety of actors quoted by the analyzed media is also considerable. The analysis shows that scientists, officials, the President and journalists dominate in the analyzed sample. The views of different analysts, politicians, businessmen, engineers, NGOs, citizens, church leaders, medical doctors, historians and writers are covered less.

Table 5.8 provides an overview of these themes in relation to the actors discussing them in the analyzed Belarusian press. Just like in the similar table in Lithuanian discourse section, individual cells indicate the number of instances each actor was quoted on the themes listed in the far left column; the theme total column on the right represents a total number of quotes on each theme in the sample, counted separately by actor. The legend explains the shading spectrum that corresponds with the frequency of the total quotes counted per actor and/or the theme in the sample.

Table 5.8 Actors and themes they discuss in Belarusian media, number of times quoted

THEMES	ACTORS ²²														Theme total
	Doctors	Historians	Writers	Church	Business	Politicians	Engineers	Citizens	NGOs	Analysts	President	Journalists	Officials	Scientists	
Economic costs		1				1	1	3	4	3	4	7	6	14	44
Capacity/HR							2		1		5	4	12	17	43 ²³
Potential investor					3	2	3		1	3	5	3	8	11	39
Energy security/ Russia		1			2					4	5	7	6	10	35 ²⁴
Plant location					2	2	3	6	1		2	4	4	10	34
Public acceptance			1					2	3	2	6	6	8	2	30
Health & environment	1		1	1			2	4	2	1	1	1	7	7	28
Global trends		1					1	2	1	2	2	4	4	9	26
Technology & safety				1	1		1		2		2	2	2	15	26
Project legitimacy				1		1	1			1	7	6	2	6	25
Alternatives				1		1	1		3	2	2	4		6	20
Chernobyl accident	2		1			1		1		1	2	4	2	4	18
Waste management								1	2	2			2	7	14
Progress & prestige					1	1					3	1	5	3	12
Fuel availability							1		1					6	8
Climate change										1	1	1	3	3	8
Geopolitics										1	1	2	1	2	7
Theme cell value scale								0	1-5	6-10	11-20	21-30	31-40	<40	
Actor cell value scale								0	1-2	3-4	5-6	7-8	9-10	≤11	

The table quantitatively details how in analyzed texts scientists, officials, journalists and the President mainly discuss issues like economic costs of nuclear energy, national capacity to implement the project, potential investor, energy security and the plant siting. The scientists have a lot of say on technological safety, global trends, health and environmental risks, while the President is rather outspoken on the overall project legitimacy. The citizens are quoted mainly about their concerns and expectations with regard to the location for the plant.

²² Category “Analysts” includes sociologists, economic and political commentators, “Businessmen” includes both local entrepreneurs and foreign investors, “Officials” includes both the government officers and foreign diplomats, “Scientists” includes both pro- and anti-nuclear researchers (mainly physicists), “NGOs” and “Doctors” include national and foreign discourse actors.

²³ The figure includes 21 quotes on national capacity and 22 references to human resources.

²⁴ The figure includes 19 references to energy security and 16 – specific reference to Russia.

There are also a few actors such as medical doctors, a church leader, a historian and a writer who appear only once and speak up on Chernobyl, risks, public attitudes, alternatives and project legitimacy. Again, like in the Lithuanian case, although not representative, these results can be considered rather indicative of the nature of discussion articles in Belarusian media due to sampling strategy focused on analytical texts.

A more detailed overview of the diverse arguments and fact interpretations in the nuclear energy debate over the course of the past three years is documented in sections 5.2.3 and 5.2.4 below.

5.3.3 Discursive storylines and coalitions in Belarus

The Belarusian nuclear discourse is quite distinctly characterized by the two sets of contradicting storylines that, following Hajer's (1995) analytical approach, are grouped into two dominant discourse coalitions: pro-nuclear and anti-nuclear.

The view that nuclear power is the cheapest and the only way to develop economy, diversify energy supplies, reduce electricity costs and dependence on a single power source unites a considerable share of discourse actors into the **pro-nuclear** coalition. The **anti-nuclear** coalition is being held together by narratives explaining concerns about costs and risk associated with nuclear energy, legitimacy of project preparation, quality of the environmental impact assessment and plant siting, and the extent of public involvement in the decision making. Notably, there are differences in argumentation within the same group of actors: not all scientists are pro-nuclear just like not all the citizens are against the plant in their vicinity.

This section looks at the media coverage of the above-mentioned discourse themes in greater detail. Discursive storylines uttered by previous actors are presented according to different arguments that diverge to form the two opposing discourse coalitions. Just like in the previous section, narratives are laid out in the following order: problem identification, option justification, associated risks, constraints and prospects for nuclear deployment.

5.3.3.1 Pro-nuclear discourse coalition

The set of storylines depicted here contains a variety of arguments in favour of the project. The analysis of the selected sample shows that pro-nuclear energy discourse coalition unites mainly elite scientists, government officials, the Russian ambassador, the President and journalists. Some engineers, politicians, one historian and local businessmen also support the decision to construct a new plant.

Their position seems particularly strong in the state-run media where they have the possibility to present their arguments virtually without any opposition. The argumentative strategy of most actors of this coalition involves active references to the authority of the scientific knowledge and global trends. Opposition is never confronted directly, often accused of being incompetent,

aggressive, pursuing scaremongering tactics, seeking personal popularity and inducing conflict and “radiophobia”.

5.3.3.1.1 Problems addressed

The dependence on a single power source and the need to ensure access to affordable energy are the center of the debate in the media. Dependence on Russia is sometimes addressed directly, but otherwise implied. Influential actors also speak about neighbours pursuing nuclear as well thus introducing a geopolitical dimension to the argumentation.

The President’s reasoning bares a very distinct ideological as well as rhetorical character. He talks about absence of alternatives and strategic importance of the decision. According to Lukashenko, apart from **energy security** goals (Volianiuk 2007), the plant will ensure national security (ITAR-TASS 2006). Moreover, the President points at the fact that Belarus is already surrounded by nuclear stations: “*Whichever way we look, Europe is packed [rus. “napichkana”] with nuclear plants*” (Kirillov 2006). Critical arguments are rejected by alluding to **geopolitics**: “*some opposition members and scientists seem to be living in a vacuum*” and ignore plans to build “*more than ten*” nuclear reactors in the countries neighbouring Belarus (Sergeichik 2008). The President also refers to the depleting global energy resources and believes that future generations will “*appreciate*” this decision (Sergeichik 2008).

The President’s arguments are seconded by the Belarusian science elite who are put in charge of the science behind the project. The decision to opt for nuclear power is said to be “*absolutely fair and justified*” and necessary so that “*economy does not collapse*”; the possibility to take the “*way towards innovations*” and build a plant is described as a “*salvation*” (BelaPAN 2008b; Kuvshynov 2008).

The Ministry of Energy also reiterates that there are no other ways to secure the **energy independence**. Officials talk about the necessity to reduce dependency from Russian oil and gas and estimate that NPP would help save 4bn cubic meters of gas annually (BELTA 2006). There are officials who insist that nuclear power will help bring down **electricity production costs** by up to 30% (Manenok 2007d; Legkaia and Kirilenko 2007).

5.3.3.1.2 Justification for nuclear energy

The decision is mostly presented in Belarusian media as necessary and irreversible. Many countries are turning to nuclear energy as it is the cheapest option, guarantees development and progress, while local alternatives are insufficient and expensive. Belarus has the necessary research base and choosing Russia as a project partner is based on objective reasons. Although public is weary, it is likely to become more supportive as the awareness is raised.

The **legitimacy** of the government’s decision is emphasized either by referring to national energy security strategy, global trends or other “*studies*”. The leading scientists note that it would be “*silly*”

to assume that government made the decision without any studies: *“If someone claims that they have not seen them, it does not mean they do not exist”* (Ermak 2008).

It is implied that it was the idea of science elite that nuclear energy is the best technological option for the country: the National Academy of Sciences *“unanimously”* agreed on the necessity of building the plant (ITAR-TASS 2006). Academics are convinced that *“just like a satellite, it will give a powerful boost to educational and scientific development”* (Strazhev 2007). The motif of progress and technological development is rather pronounced in the rhetoric of leaders. The President argues that the public is *“psychologically ready”* for nuclear and goes on to compare nuclear energy development with the space exploration: *“This will be the greatest achievement of our times. Nuclear power plant is just like space exploration – a completely different level of the development of the state. We need this. Crises come and go. We need to teach people new technologies”* (Spasiuk 2009). Similarly politicians also consider it a matter of *“national prestige”* (Novitskii 2008).

The scientists point at the **global trends**: *“China is building new plants, Iran is. Take Europe – Europe is perfectly feeding on nuclear energy”* (Avimova 2006). The United Arab Emirates are *“bathing in oil and, but even they have made a decision to build NPP”* (Nezvanov and Kirilenko 2008). The UK is presented as another example (Romanova 2008). This is the view supported by responsible engineers too (Krylovich 2008b). Some locals in Ostrovets are also convinced that *“all developed countries are using nuclear energy and there are no alternatives to nuclear in the near future”*. However, they believe it should be better built in the regions already polluted during the Chernobyl disaster. Whereas local authorities believe that the NPP will bring an *“absolutely new status”* for the region, while ecological situation will not worsen (Semashko 2008). A local businessman says that the *“entire world is switching to nuclear”*, the project will turn Ostrovets into a *“real big, rich city”* and denounces **safety** concerns as *“mere speculations”* (Naviny.by 2008). Others point out that *“today even authoritative figures from Greenpeace have changed their views”* (Kolchenko 2007).

On top of that, journalists quote the EU officials who claim that the EU does not mind that Belarus is choosing nuclear power (BELTA 2008). Therefore one commentator concludes that Belarusian government is making a *“modern and rather European decision”* (Vetrova 2008).

Although President Lukashenko mentions the importance of developing local renewable energy sources, he is concerned about the overuse of biomass: *“If we do it extensively it may lead to the deforestation in our country and fill our skies with smoke”* (Lukahsenko 2007). Otherwise the **alternatives** are trivialized by commentators by suggesting it is like choosing between *“NPP or a splinter”* (Nezvanov 2007b; Legkaia and Kirilenko 2007). Comfortable and civilized life requires nuclear energy: *“What else should we Belarusians do if we only have peat and forest? Even wind turbines can operate only a few hours per week”* (Kriat 2008). At the same time *“nobody is preventing entrepreneurs, farmers from developing such local energy sources as biomass wind and hydropower that well is known in Europe”* (Vetrova 2008). Nuclear is considered to be clean: scientists mention the economic benefit of the

absence of the **GHG**: “*We will be able to sell quotas and receive additional income*” (Legkaia and Kirilenko 2007).

The local and national government officials and diplomats speak in favour of nuclear energy from an **economic** point of view as well. Moreover, building a NPP is said to be not more expensive than a coal-fired plant, while producing electricity is cheaper (Minchenko 2008). The scientists argue that building nuclear is 1.5 times cheaper than developing local resources: “*This requires efforts and significant resources. Nuclear is much more advantageous for Belarus*” (Manenok 2007b). High costs of decommissioning that may amount to the project construction costs are to be taken into account. However, it is argued that the new plant will be profitable from the first day of its operation as Belarus will be selling the electricity surplus (Krylovich 2007). However, at the same time responsible officials admit that **economics** is “*secondary*” in this, and the primary motivation is **security** (Krylovich 2007). The commentators put the advantages of nuclear energy into three clear points: diversity of nuclear fuel suppliers, necessity to refuel plant only every 5 years and nuclear electricity price resistance to uranium price fluctuations (Volianiuk 2008).

The Ministry of Economy emphasizes benefits the NPP to the region – increased number of residents for the area, working population and employment opportunities (BELTA 2008), whereas the Ministry of Environment argues that nuclear plant provides an advantage for tourism development, contrary to concerns of the locals (Kozhemiakin 2009a). One governor from the neighbouring Russia believes that saying no to nuclear power means “*purposefully setting back oneself two decades back in terms of development*” (Minchenko 2008).

The issue of **choosing the investor** is very high on the agenda. It is fair to say that the prevalent storylines reiterate advantages of the Russian company. However, at early stages of the debate, the decision is presented as still open for discussion. Initially “*Areva*” is considered by scientists as offering the “*most developed and wide range of services*” and the global leader in nuclear energy. However, their proposal costs some 1.5 times more than that of the Russian “*Atomstroyexport*” (Levshina 2007), whereas advantages of choosing Russia as partner include “*close ties*” (Krylovich 2008e), the “*same language, and possibility to train workers in Russian universities and centres, utilization of the Union’s [Russia-Belarus Union] budgetary resources*” (Krylovich 2007). A Russian ambassador seems reassured as well: “*There are issues of nuclear fuel and its utilization, also training of workers. We think that we are somewhat closer*” (Krylovich 2008d). Notably, the President tries not to express any preference for the contractors (Volianiuk 2007).

The scientists admit that **geopolitics** do determine the choice of a project partner (Levshina 2007). According to them any foreign company can take part in the project, but only the “*Rosatom*” is ready to also consider crediting schemes. Tendering procedures usually take years, plus, the argument goes, since companies arrange deals among themselves, it may be a “*fictitious tender*” anyway (Krylovich 2008a). Belarus “*simply has no time*” for this and “*luckily*” laws allow speeding up these processes (Levshina 2008). At the same time it is “*wrong to say that this*

construction will be “forced” (Nezvanov 2007a). At some point the Belarusian Prime Minister speaks about the possibility of a joint nuclear power project with Lithuania (Manenok 2007e). However officials from the Belarusian Ministry of Energy note that possibility of taking part in a project of another country would not be as attractive from the **energy security** point of view (Manenok 2007a).

With regard to the **national capacity**, there is a quite distinct storyline that tells about the past and present nuclear research in Belarus (Semashko 2007). One article tells a story of the United Institute for Energy and Nuclear Research “*Sosny*” that was established around four decades ago near Minsk to work on a mobile nuclear plant. The institute, the story goes, was once home for “one of the most powerful computers of the Soviet Union”. Unfortunately Belarusian researchers had to destroy “two unique nuclear plants that were ahead of the time” as a result of “radiophobia” that has taken over the society after the Chernobyl disaster. The sarcasm in the tone of the pro-nuclear journalist telling the story is very strong: “Everyone from a writer to a teacher of Marxism considered themselves big experts in nuclear physics and started fighting nuclear energy seeking personal popularity as exposure-type publications and street protests were at their peak” (Semashko 2007). Nevertheless, today it is a place where unique research is taking place that might help solve the global problem of radioactive waste management (Nezvanov 2007c). Moreover a powerful supercomputer developed in cooperation with Russian scientists is to be re-located here (Siulzhina 2008).

The officials maintain that majority of the public is supporting nuclear, media quotes favourable **public opinion** surveys. In fact, an “open and honest conversation” between scientists, engineers, contractors and public organizations and citizens has started a while ago. During the public hearings everybody had a chance to express their views. More than 800 participants took part in consultations in Ostrovets and overwhelming majority supported the construction of the NPP (Popko 2009).

5.3.3.1.3 Risks involved

The discussion about nuclear energy risks is limited to assurances about an unquestionable safety, possibility to control them, and hopes for the advancement of technology.

The scientists describe nuclear industry as “absolutely transparent” (Legkaia and Kirilenko 2007). Overall, the government scientists argue that all modern nuclear plants are “10,000 times and even more” safer than the old ones like that of Chernobyl; a 60-ton jet or a 9-storey house can hit it at full speed and “nothing will happen”. Plus nuclear is “ecologically safer compared to traditional thermal plants” (Avimova 2006).

The chosen type of reactor, VVER, it is said to be “the safest in the world” (ONT 2008). The leading scientist argues that “80% of the nuclear plants across the world are of this type; second, they have undergone the whole development and many years of operational experience”. Therefore this choice is preferable since Belarus does not want any “experiment on its territory” (Krylovich 2008a) and the Russian company

is the only one that has actually built the reactors they offer elsewhere (Krylovich 2008e; Kolchenko and Volianiuk 2008). The President himself “*guarantees*” that the highest level of safety will be ensured to minimize risks (Bibkov 2006).

According to the scientists, the global practice of managing spent nuclear fuel is such that it is returned for recycling to the country supplying it. However, there are still materials that need to be returned for the permanent storage to the host country, but this is considered to be the problem of a very distant future (Nezvanov 2007c). Moreover, they stress that a plant produces only 5-6 cubic meters of waste over the course of 3-4 years (Legkaia and Kirilenko 2007) and that there are “*many ways of managing it*” (Nezvanov and Kirilenko 2008). Other scientists reject concerns about **radioactive waste** by saying that in 30-50 years it will be rendered harmless using so-called transmutation technology (Ermak 2008). There are reminders about the fact that radioactive wastes from medical applications have been managed in Belarus safely for years.

There is an argument that it is very difficult to find a geologically suitable site in Belarus for any project (Manenok 2007b). Nonetheless, **the chosen site** in Ostrovets is the “*most promising one*” (Semashko 2008) and that “*the best national forces*” are utilized for its selection (Krylovich 2007). Moreover, requirements are said to be more stringent in Belarus than anywhere else in the world (Bulatetskaia 2008). And finally, as one commentator notes, the NPP is “*just a simple enterprise producing electricity*” that at the same time contributes to supporting the museums and churches in the neighbourhood (Minchenko 2008).

5.3.3.1.4 Constraints and prospects

Needs to address the lack of qualified workers, to consider geopolitics when implementing nuclear projects, find alternatives to Russia for nuclear fuel supply and convince the sceptical public regarding the plant location and the safety of technology are presented as challenges that are possible to overcome.

One of the central themes relating to the constraints is Belarusian **capacity** to implement the project. Although the leading scientists emphasize the experience in place, they admit that developing a nuclear programme solely on their own is hardly possible (BelaPAN 2007; Nezvanov and Kirilenko 2008). There are concerns about the lack of local **human resources**: the scientists admit that shortage of qualified workforce is a serious issue not only in Belarus, but in countries like Finland as well. That is why Belarus will have to rely on other countries such as France, Japan and Russia (BelaPAN 2008b).

Nonetheless, there are plans how to address this: four Belarusian universities will train own experts who will be operating the plant and will provide them with higher stipends (BelaPAN 2009; Nezvanov and Kirilenko 2008). There are hopes that good salaries and housing that Belarus is ready to offer will help bring back Belarusians currently working elsewhere (Siulzhina

2008; Legkaia and Kirilenko 2007). Experts from Lithuania where the plant was recently closed are also willing to work in Belarus (Nezvanov 2007b).

Another constraint brought up by the opponents relates to the **availability of uranium resources**. The pro-government scientists argue that talks about uranium depletion are “worthless” for “professionals”. The proponents of nuclear argue that nuclear fuel can be bought not only from Russia, but also from the US, France or China (Ermak 2008) and stocked up for 10 years (Krylovich 2007). Moreover, nuclear weapons can be used as a nuclear fuel and there are new generation reactors that are twice as efficient. Moreover, nuclear power can be used to produce hydrogen – an ecologically clean fuel for cars (Nezvanov and Kirilenko 2008).

Moreover, some authors imply that nuclear power has always **geopolitics** to it. One article writes about government’s plans to build the nuclear plant in the North at the Russian border and rhetorically asks: “*But will the neighbour like the placement of such a dangerous object in their proximity?*” (Naviny.by 2007). Selecting the site in the town of Ostrovets near the Lithuanian border is also described as “political” in more ways than one: I would be a good revenge for their plans to store radioactive waste close the Belarusian border, it would be easier to sell electricity to them, and to monitor all the “greens” since it is a border zone requiring carrying a passport (Krylovich 2008f). Even the science elite confirm the speculation: “*We do consider the political basis as well, but is the most important one is safety*” (Naviny.by 2007).

As mentioned earlier, negative **public opinion** and fears mostly related to memories of Chernobyl are mostly denounced as unfounded “radiophobia”. It is pointed out that NPPs operate “in city centers” in France for many years now (Minchenko 2008). If it was dangerous, nobody would live near them in the West, where environmentalists are active: “*Have you seen the locals protesting there?*” Furthermore, “regions are fighting to be selected as a NPP construction site” in those countries (Nezvanov and Kirilenko 2008).

However, the President recognizes the need to take “psychological state of society” into account (Lukashenko 2008). The government promises to collect all the questions and answer each of them in a “clear and understandable way” (Nezvanov 2008). The head of the National Academy of Sciences Mikhail Miasnikov says that **the public** will get rid of “post-Chernobyl syndrome” and support the idea as soon as they are “informed about the situation in the energy sector and development opportunities” (Kirillov 2006). There is also a historian who denounces “radiophobia” and is convinced that “professionals have taken everything into account” (Lepeshko 2008). After all, nuclear power production has the lowest death rate of all energy sources and all the fears are rooted in “rumours and low awareness of the issue” (Nezvanov and Kirilenko 2008).

5.3.3.2 Anti-nuclear discourse coalition

The privately-run Belarusian media presents a variety of critical arguments directed against the nuclear project. Here we find scientists who used to be part of the science elite in the past (some

of them studied the aftermath of Chernobyl), the national, Russian and international NGOs, analysts, citizen, French and Lithuanian ambassadors, doctors, a writer, a Church leader and journalists from a non-state media. They are vocal about limited possibility to express their opinion, point at different global industry trends and potential risks involved. In their argumentation they emphasize the graveness of Chernobyl aftermath and give references to the Belarusian political system: autocratic government and Russia as its nuclear project partner are perceived as untrustworthy.

5.3.3.2.1 Problems addressed

While the anti-nuclear groups recognize the risks linked to the dependence on imported energy resources, they maintain the view that a NPP built together with **Russia** can not possibly address the issue of **energy security**; quite the opposite – they stress that it would lead to an increased dependence.

Several analysts argue that the decision which was made secretly and “*under the effect of nuclear lobby*” lacks “*elementary logic*” (Sergeichik 2008). The international green NGOs describe the project as “*very dubious*” (BelaPAN 2006) and risky for country’s economy also due to high costs involved (Avimova 2006). The position of the privately-run media can be often felt among the lines of the analytical articles: “*What sort of diversification of sources is that if we are relying on Russia again in terms of equipment and subsequently also fuel?*” (Krylovich 2007), or “*why we were so eager to become dependent during this last decade so that the only way out would be the NPP?*” (Krylovich 2008a).

5.3.3.2.2 Justification against nuclear energy

The following storylines of this discourse coalition argue that nuclear energy is expensive and risky. A poor public consultation process and the lack of consideration for alternatives is at the heart of the discussion detailed below.

Several critical parliamentarians point out that nuclear technology is “*expensive*”, “*unsafe*” and “*complicated*”. In their view, **economic viability** of the new build is questioned worldwide because of the expenses needed to ensure the security of such objects (BelaPAN 2008c). One of the anti-nuclear physicists also argues it is the most expensive and the most dangerous way to produce electricity, also considering costs of safeguarding the nuclear waste (BelaPAN 2008d). Analysts argue that “*there are controversies that are not due to the fact that nuclear energy is bad in itself, but with questions of waste management and maintained dependence from Russia in terms of nuclear fuel supplies*” (Novozhilova 2007). Talking about investment options, the Russian green groups note that the Western countries do not subsidize foreign projects and the only country who does lend for this purpose is Russia that is involved in projects in countries like Iran, India, China and Bulgaria (Ianushevskaja 2008). Some journalists believe that Russia has a vested interest in the participation “*not only to get an order from the brotherly country, but supposedly win over its key competitors*” (Krylovich 2008e).

Commenting on the **choice of investor**, one correspondent concludes: “*When it comes to the choice of company that will build the plant there is no suspense at all*” (Avimova 2008). In the light of the speculations about the fictitious tendering procedures another commentator implies that all the government wants is “*to enjoy private connections with western companies – under the circumstances of political isolation this looks rather flattering*” (Krylovich 2008e).

Several Belarusian parliamentarians note that the decision was made without a proper consideration of other **alternatives** such as renewable energy sources (BelaPAN 2008a). The Russian *Greenpeace* emphasizes that nuclear produces only electricity, while biomass can also supply heat. According to them, there are 2,000 suitable sites for producing wind energy in the country (Avimova 2006). There are analysts who believe that a much more effective investment choice would be the one made into energy saving which has been ignored in the country (Sergeichik 2008).

The journalists and NGOs are outspoken about the lack of consideration of **public opinion**. One of them notes that the government “*seemingly has forgotten about its promises to “consult the nation”*” (Levshina 2007). Another author points out somewhat sarcastically: “*Another ‘construction of the century’ is coming*” and some “*ideological work*” with the public will be needed as the majority still does not support the idea (Kirillov 2006). Another journalist notes that officials in the presentation of the new *Conception of Energy Security until 2020* did not mention nuclear project whatsoever: “*One even may start wondering: is it possible that experts managed to convince the President that this ambitious project is not viable in such a short time despite the great enthusiasm?*” (Manenok 2007c). Well into the discussion, the Lithuanian ambassador complains he has only heard about the government’s plans “*on television*” only (Krylovich 2009a). The NGOs accuse the authorities for violating the Aarhus convention on public access to information (Bykovski 2008). The journalists also point at the fact that consultations require registration and are organized in the middle of working day: “*Who will not make it on time, sorry, too late, the plant will be built without you*”, – one commentator sarcastically notes (Krylovich 2009b). According to NGOs, the **public consultation** in Ostrovets was organized in a very improper way, giving obvious advantage to those speaking in favour and interrupting the critics (BelaPAN 2009).

In the context of the poor social status of the Belarusians who took part in the so-called “*liquidation*” of the **Chernobyl** aftermath political analysts make the link with plans to build the new station and point at the fact that **public opinion** in the country is rarely taken into account. “*The absence of open public discussion on certain problems blocks possible ways to the best solution*”, – one of them says and adds that the problem of Chernobyl is often considered as a “*done deal*” (rus. “*uzbe razygrannaia karta*”) (Spasiuk 2007a). Commenting on the latest results of sociological surveys showing increasing support for nuclear one Belarusian writer says she is deeply sorry that despite the tragedy that resulted from a Chernobyl disaster, Belarusian society “*did not wake up*” and remains “*submissive to the flow of life and circumstances, to the totalitarian government*” (Spasiuk 2009).

5.3.3.2.3 Risks involved

The potential health and environmental risks and the lack of trust in the nuclear technology linked to experiences after the Chernobyl disaster and radioactive waste managed in the neighbouring Lithuania are discussed in relation to nuclear risks.

However, the voices of the protesting local residents of Ostrovets are present in the non-state media. *“Belarusians do not want to live on a gunpowder barrel”*, – announces another headline of the story quoting the local leader of a protestant Church who has collected 300 signatures calling for the reversal of the decision to build a plant and advocating for safer **alternatives**. *“Nuclear power plant is a potential nuclear bomb”* – they insist and that makes it an illegal project (Sergeichik 2008).

In the context of the final decision made about the **location of the new plant**, the media reports about 106 local residents who sent a letter in protest to the President calling the decision to build the nuclear plant a *“tragic mistake”*. The people are saying they do not want a recreational site to be turned into one more *“black “Chernobyl hole” on the European map, where slow, but irreversible mutation of everything alive will be taking place”* (Naviny.by 2008; BelaPAN 2008e). Similar position is shared by the green NGOs who maintain that **safe nuclear technologies** simply do not exist. They point at nuclear waste issues and long term health effects of nuclear stations as well as negative effects on tourism and local ecosystems (Naviny.by 2008; BelaPAN 2008e). Environmental groups note that authorities underestimated the potential negative impact of a serious accident at least 4,000 times. They believe that if it was carried out properly it would be obvious that the project should not be approved (BelaPAN 2009). Therefore given all the violations, the NGOs believe that the project is still reversible (Krylovich 2009c).

Not only citizens and the NGOs, but also some physicists are concerned about the new project. One of them warns that over 15 years of normal operation the **radioactive fallout** in the country would equal that of the **Chernobyl** disaster (BelaPAN 2008d; Ianushevskaja 2008). Other scientists who worked with the aftermath of the Chernobyl disaster also point out that this fact has been *“confirmed by numerous studies”* and it is well known that normal operation leads to increased cancer cases in the population living in the vicinity (Ianushevskaja 2008). A group of Belarusian scientists united in the initiative *“For Belarus Without Nuclear”* [rus. *“Za bezjadernuiu Belarus”*] believe that nuclear energy is not economically, socially and technically justified and that *“increasingly more countries seek a non-nuclear status”*. They also reject claims about nuclear industry revival in the West referring to nuclear standstill in the US and France.

In this light Belarusian scientists raise concerns regarding **radioactive waste** stored across the border in Lithuania and note what is arguably less stringent requirements in terms of allowed doses of irradiation compared to the Belarusian standards (Spasiuk 2007b). Issues of waste are also raised by the NGOs who are concerned about the fact that even if parts of radioactive waste will be sent for recycling to Russia, final burial will take place on the Belarusian territory: *“We need*

to consider the fact that nuclear plants also produce waste and the problem of safe management of this waste is not resolved in any country” (Bykovski 2008).

The international medical experts are quoted referring to the Belarusian society as “closed” when it comes to discussing radiation-related health effects, while these are “considerably more complicated than it seems at the first sight” (Spasiuk 2007b).

5.3.3.2.4 Constraints and prospects

The high costs, rising prices of depleting uranium resources, lack of expertise, safety culture as well as open discussion are considered to be key constraints to successful nuclear deployment

The scientists point to the fact that **costs of decommissioning** the plant may come up to the cost of building the station. In the opinion of critics, “*the cheapness of nuclear is a myth*”. The new plant will not be able to function in 10 years as the fuel will be too expensive, while developing alternatives will not be possible since all the resources will be consumed by the nuclear power development (Korotkaia 2008). The NGOs also note that uranium prices are growing even faster compared to the fossil fuels (BelaPAN 2008f).

Among other **energy costs** related arguments there are views that given the Lithuania’s and Russia’s plans to construct plants in Visaginas and Kaliningrad there might be an overproduction of nuclear power in the region rendering the Belarusian project unprofitable (Krylovich 2008a). Some experts say they believe that there is the possibility for the project to be “frozen” whatsoever. They also consider partnership with Russia as the only viable option, but raise doubts about its financial capacity to fully fund a NPP. Even if the project will turn out not **economically viable**, it is believed that President Lukashenko “*will hardly turn back, it seems it is already too late*” (Kozhemiakin 2009b). However, the President is said to have admitted in one interview that he was not always pro-nuclear power and journalists interpreted this as – at least theoretically – a possibility of a different stance on the issue (Krylovich 2008a).

Many agree that in reality participation of other country than **Russia** is hardly possible. Even the French ambassador points out that “*given the political situation in Belarus there is a substantial lack of international agreements in this area*” (Krylovich 2008c). There are also Russian green groups that believe Belarus is not able to handle the construction of the NPP on its own. Only Russian experts will be able to operate the plant and the required fuel will be supplied also from Russia (Ianushevskaja 2008). Others also note that it was clear from the very beginning that “*Russian will not miss the chance to tie-up Belarus even more*” (Levshina 2008).

With regard to the **national capacity** the national regulator notes as well that “*there has to be a certain nuclear safety culture and safety culture in general, but in this sense we have very little clue in the country*” (Levshina 2007). According to some critics, “*it is a very complicated object that has not been built in Belarus properly*” and that the whole process so far indicates that it should not be built today

(BelaPAN 2008a). The analysts quoted by the Belarusian press also argue that a non-democratic state can not even think about nuclear power (BelaPAN 2008d). Amid the prolonged talks between the Belarusian and Russian side, referring to state engineer media raise the question about the level of preparedness of the government: *“It is understandable that our responsible organizations would like to have not only advertisement leaflets and media articles, but more serious papers as a reference”* (Krylovich 2008b).

One critical scientist is concerned that the Belarusian society will never find out the *“true costs”* of the NPP and it may lead to the *“repetition of Chernobyl”*. In his view, a NPP should not be built in the society that is *“closed”* and where the government does not respect *“universal public values”* and takes away social benefits from those who suffered from a nuclear disaster (Ianushevskaja 2008).

5.3.4 Summary of findings

This section documents the Belarusian nuclear energy discourse which is part of the national discourse analysis conducted in this study. Belarus is a former Soviet state which has been led by the autocratic President Lukashenko since 1994 and retained strong ties with Russia. It has a strategic role as an important transit country for Russian energy trade with the West. Belarus has pursued some reforms, though its economic stability has been mainly attributed to its planned economy model fuelled by subsidized oil and gas imports from the neighbouring Russia. However they have been having import price disputes that have caused supply disruptions to Europe lately. Amid one of such crises Belarus has decided to build a nuclear power plant to increase its energy security. Russia has been chosen as the main investor and technology supplier for the project.

A sample of 79 media articles from three different Belarusian media outlets have been purposefully selected for discourse analysis: from the leading state-run daily *“Sovetskaja Belorussia”*, a private business weekly *“Belorusy i Rynok”* and one of the top online news outlets *Naviny.by*. The qualitative analysis resulted in a list of discourse actors and a set of nuclear energy-related themes recurring in the discourse over the studied period of 2006-2009.

The Belarusian nuclear energy discourse features various issues including energy security, economic costs, national capacity to implement a nuclear power project, waste management, risks, public involvement, geopolitics and global trends. Pro-nuclear energy scientists, officials, the President and journalists seem to dominate the discourse, especially in the state-run media, but analysts, NGOs and citizens are also represented, though mainly in the pages of privately-run press. Based on the multitude of discursive storylines described during the analysis, two distinct Belarusian discourse coalitions have been documented: pro-nuclear and anti-nuclear.

The **pro-nuclear** energy discourse coalition promotes nuclear power by emphasizing the authority of scientific knowledge praising energy security aspects, economic advantages of nuclear, favourable global trends, Russia as the chosen project partner and substantial national

capacity to develop a national nuclear programme. Meanwhile, **anti-nuclear** energy storylines point at different global trends, risks of partnering with Russia, ignored public opinion and technological dangers linked with the memories of the Chernobyl accident.

Tables below summarize the storylines used by discourse actors of the two coalitions. Table 5.9 provides a summary of themes related to energy security issues and geopolitics of nuclear energy in Belarus.

Table 5.9 Storylines relating to problems nuclear energy can or cannot address in Belarus

	PRO - NUCLEAR	ANTI - NUCLEAR
Problems	Energy security and dependence on Russia	
	Nuclear helps to reduce electricity costs, diversify supply and contributes to national security.	Nuclear is expensive and risky; the reactor from Russia means even more increasing energy dependence.
	Geopolitics	
	Belarus is already surrounded by nuclear plants and more are planned.	-

Simplified narratives describing reasons to favour or oppose nuclear energy according to various themes from alternatives, global trends and public awareness are listed in Table 5.10.

Table 5.10 Storylines relating to justification for and against nuclear energy in Belarus

		P R O - N U C L E A R	A N T I - N U C L E A R
Option justification	Alternatives		
	Renewables are insufficient and/or more expensive.	Nuclear only produces electricity; there is a big biomass, wind and energy saving potential.	
	GHG emissions		
	Nuclear does not emit GHG; selling pollution quotas can generate additional income.	–	
	Energy costs		
	NPP can help reduce electricity production costs by 30%.	Rising fuel prices eventually will render the plant unprofitable.	
	Energy security		
	Nuclear fuel is available from several sources; volumes are small and can be stocked up.	In 10 years the plant will not be able to function, but no resources will be available to develop alternatives.	
	Geopolitics		
	Politics play a role in plant siting; a plant near the Lithuanian border is an “answer” to their radioactive waste repository nearby; it will be easier to export electricity to them and control trespassers.	Russia is just seeking more influence in Belarus.	
	Global trends		
	Everybody is going nuclear; it is a European decision; nobody is protesting against nuclear elsewhere; communities want nuclear plants in their region.	Nuclear industry is in a standstill; increasingly more countries are seeking a non-nuclear status.	
	Potential investor		
	“Rosatom” has the most experience, their reactors are tested and it considers crediting schemes.	Russia may not have the financial capacity to build the NPP in Belarus.	
	Prestige and progress		
	Nuclear will drive national research and economic development.	NPP will turn Ostrovets into “another black Chernobyl hole on the map”.	
Project legitimacy			
Scientists have informed the decision; studies exist; the EU does not mind Belarus going nuclear.	Decision was made secretly and without considering alternatives; assessments underestimate environmental impact; it’s illegal.		
Public attitudes and awareness			
Public consultation scheme is in place; majority supports the decision.	Public was not consulted and had limited access to information.		

Different arguments dealing with Chernobyl, environment and health-related risks, plant location and safety as well as radioactive waste management can be found in Table 5.11 below.

Table 5.11 Storylines relating to nuclear energy risks in Belarus

		P R O - N U C L E A R	A N T I - N U C L E A R
Risks involved	Chernobyl accident		
		Chernobyl disaster was caused by old technology, it can not happen again.	New project can lead to one more Chernobyl disaster.
	Health and environment		
		Even if a plane hits, no harm will be done.	15 years of normal operation equals Chernobyl fallout and increased cancer cases.
	Plant location		
		Ostrovets is the most promising location.	Ostrovets is the last non-polluted area in the country.
	Technology and plant safety		
		Industry is very transparent to accidents; modern reactors are 10,000 times safer.	Safe nuclear technology does not exist; NPP is a bomb.
	Waste management		
	Many solutions exist; volumes are small; fuel suppliers are taking back spent fuel for recycling; in 30-50 years the problem will be solved completely.	There is no solution to waste worldwide; it will need to be managed in Belarus; neighbouring Lithuania poses risks – they have less stringent requirements for the waste stored near the Ignalina NPP.	

Table 5.12 lists narratives related to factors constraining or driving nuclear power in Belarus.

Table 5.12 Storylines relating to constraints and prospects for nuclear energy in Belarus

		P R O - N U C L E A R	A N T I - N U C L E A R
Constraints & prospects	Capacity and human resources		
		Belarus has world-class nuclear research and nuclear development plan; Belarusians working elsewhere will return, new experts will be educated on time.	Belarus has no financial and human resources, poor safety culture and lack of democracy; experts will have to be brought from Russia.
	Capital costs		
		Building NPP is no more expensive than a coal-fired plant and 1.5 cheaper than developing local resources.	Cheapness is a myth; nuclear involves high financial risks; safety measures bring up costs.
	Geopolitics		
		Any country can take part in the project, but Russia is “closer” and considers a crediting scheme.	No foreign country will invest in Belarus.
	Public attitudes and awareness		
		Critics induce “radiophobia” by pursuing personal popularity.	Civil society in Belarus has limited opportunities to participate; NPP should not be built in a “closed” society.
	Fuel availability		
	Uranium is an abundant resource and its price is steady.	Uranium is ending and its price is growing faster than fossil fuel price.	

5.4 Summary and conclusion

This chapter contains nuclear energy discourse analysis of the two neighbouring former Soviet states: Lithuania and Belarus. These countries have been selected because of the differences in their political and economic development and similarities in their pro-nuclear energy policies. Recently they both have expressed the commitment to develop civilian nuclear power in order to diversify supplies and reduce dependence on Russia. Lithuania has just decommissioned a Soviet-built nuclear power plant as per the EU membership commitments in 2009 and Belarus never had its own nuclear energy, but has been affected by the Chernobyl disaster in 1986.

Discourse analysis of the two countries is based on 157 mainly analytical media articles from a variety of national media outlets. The texts were qualitatively coded for the recurring themes and actors discussing them have been identified. Two dominant discourse coalitions – pro-nuclear and antinuclear energy have been documented based on similarities of argumentative storylines in the media of each country.

The analysis of the texts sampled from the **Lithuanian** media shows that deployment of nuclear power is primarily a political, geopolitical and economic issue. Government officials, politicians, journalists and businessmen discuss energy security, geopolitics, economic costs, project model and global energy trends. The Lithuanian **pro-nuclear** discourse coalition argues for nuclear as the cheapest way to secure Lithuania's energy independence and maintain regional electricity exporter's role, while storylines of the **anti-nuclear** coalition stress the absence of feasibility studies and the lack of public debate on alternatives.

In the **Belarusian** case, the debate is much more dominated by scientists, officials, journalists and the President who discuss the economics of nuclear, national capacity to implement the project, potential investor, energy security and plant location. The **pro-nuclear** discourse coalition promotes this energy source because of the energy security gains, economic advantages, favourable global trends and development opportunities. Meanwhile, **anti-nuclear** storylines warn about increasing dependence on Russia, ignored public opinion and technological risks linked with the memories of the Chernobyl accident.

In summary, **pro-nuclear** energy storylines in both countries contain very similar arguments about the role as a source of the cheapest, the cleanest and reliable energy source. In both **Lithuania** and **Belarus** pro-nuclear energy actors are talking about global nuclear revival as an important justification for building their own plant and link it with regional prestige and national progress. In both cases the technology is considered safe, risks – manageable and national capacity – sufficient. All **anti-nuclear** energy storylines refer to nuclear as the most expensive way to generate electricity, raise issues of waste management and health risks. Insufficiency of the national capacity and lack of public consultation is of particular concern in both countries, though slightly more emphasized in Belarus.

When it comes to differences, it can be concluded that although both countries are dependent on imports from Russia, unlike in Belarus, in **Lithuania** Russia is perceived as a universal threat by all discourse coalitions. In **Belarus** only anti-nuclear energy coalition is concerned about complementing dependence on Russian gas with the dependence on Russian technology-based nuclear power plant.

Overall, political aspects of nuclear energy are emphasized more in Lithuania, while debate appears to be more technical in Belarus. This is mainly due to the different argumentative strategies among the discourse actors that are discussed in more detail in comparative analysis of the two discourses in the global context is presented in the following chapter.

Talking about the role of media, the most pro-nuclear energy storylines are found in the leading dailies of both countries, while the texts representing more diverse views are from the online outlets. It seems that the alternative analytic media tends to be more anti-nuclear energy in both countries.

6 COMPARATIVE ANALYSIS AND DISCUSSION

The institutional conditions such as political system and the level of press freedom for establishing and maintaining discursive advantages in Lithuania and Belarus differ. Therefore it is worthwhile comparing the characteristics of their nuclear energy discourses with the findings of the global discourse analysis. This may not only highlight important differences in the debate on the two governance levels, but can also help to understand the national discursive drivers for nuclear power.

This chapter provides insights into the differences of the content and rhetoric of the global and especially the two national debates, looks into argumentative strategies of discourse actors, and discusses the effect the political system and media have on discussions surrounding nuclear energy.

6.1 Contextualizing global storylines

As illustrated in Table 6.1, the central problems nuclear energy is supposed to be addressing differ globally and nationally. The national discourses include most global themes pertaining to nuclear energy justification and risks, but geopolitics and other country specific issues are discussed only on the national level. Several global constraints for nuclear energy deployment such as liabilities and technological development are either left out or largely misinterpreted by national discourse actors. Moreover, there are some substantial differences in the interpretation of these themes.

6.1.1 Problems addressed

Unlike in the global nuclear energy discourse, **climate change** or growing **demand** that are not among the main motivating factors for pursuing nuclear power reflected in the Lithuanian and Belarusian discourses.

In Lithuania the nuclear power project is mainly **geopolitically** driven and intended to plug the energy gap occurring after the **Ignalina NPP** is decommissioned, as required by the EU. **In Belarus** the need to diversify energy supplies and secure access to affordable electricity is articulated the most. However at the same time the pro-nuclear coalition tries to manoeuvre around the obvious paradox in trying to increase energy security by partnering with **Russia**, the very same country Belarus is dependent on.

6.1.2 Justification for nuclear energy

Economics of nuclear energy, ability to secure supplies, global trends, GHG emissions reduction, alternatives, and the role of public opinion are the themes featuring in all the studied nuclear energy discourses.

Table 6.1 Nuclear energy themes featuring in international and national texts analyzed²⁵

T H E M E S									
PROBLEMS ADDRESSED	Energy security	OPTION JUSTIFICATION	Alternatives	RISKS INVOLVED	Chernobyl	CONSTRAINTS & PROSPECTS	Capacity & HR		
	Dependence on Russia		Economics		Health & environment		Economics		
	Geopolitics		Energy security		Technology & safety		Global trends (installed capacity)		
	Ignalina NPP		GHG emissions		Waste management		Public acceptance		
	Climate change		Global trends		Plant location		Geopolitics		
	Energy demand		Public acceptance		Fuel cycle		Fuel availability		
			Geopolitics		Proliferation & terrorism		Regulatory framework		
			Prestige & progress				Ignalina NPP		
			Project legitimacy				Other projects		
			Project model				Liability		
			Ignalina NPP				Newcomer countries		
	Potential investor		Technology						
Shared themes		Global themes		Lithuanian themes		Belarusian themes			

When it comes to advantages or alternative of nuclear energy from the point of view of fuel supply, the global and national narratives are very similar. As noted above, one of the central ones in the global discourse, the **climate change** argument is only marginal in both countries. The Lithuanian pro-nuclear narratives mention the EU emissions reduction commitments, while Belarus hopes to benefit from selling CO₂ quotas. Only the Lithuanian discourse contains some counter-arguing narratives echoing global debate about doubts whether nuclear is the most effective climate change mitigation option.

²⁵ In the table "Shared themes" represent issues found in both global and national discourses, mixed shading indicates the themes that are found either in both national discourses, but not in global, or a combination of national and global.

There are a few interesting discrepancies in covering other themes. Notably, not even the most pro-nuclear global storylines address the issue of **economic costs** without caution or being conditional about it [e.g. *“economically viable in most cases”*]. One example is the IAEA that points out that no estimates taking into account global economic crisis have been made so far. International actors emphasize either the need for governments to minimize financial risks of such projects, or many financial uncertainties, while critics are quoting cost overruns up to three times initial estimates. In other words, costs become more part of constraints than justification for nuclear. But national pro-nuclear narratives are almost unilaterally referring to it as *“the cheapest”* and even coming *“at no cost for consumer”*. The Belarusian storylines also describe nuclear reactors as *“not more expensive”* than a coal-fired plants and certainly much cheaper alternative to developing local renewable resources.

The **global nuclear revival** is one more theme that is worthwhile taking a closer look at since it is one of the central arguments of pro-nuclear camps in both countries. Global narratives talk about *“authoritative statements of intent”* to renew or extend nuclear capacities in countries like US, France, Japan, Russia, China and Republic of Korea and projected doubling or even tripling of installed nuclear capacities mainly in Asia and OECD countries. Nonetheless, the pro-nuclear actors of the two countries insist that *“the whole world is turning to nuclear”* and present it as the main justification for their own nuclear programmes. The Belarusian media refers to nuclear plant construction as a truly *“European decision”*. At the same time national anti-nuclear coalitions counter-argue that *“more and more countries are seeking a nuclear-free status”* and that *“countries are turning to renewable energy sources”*, but their voices are much weaker and the reasons for that are discussed further down.

Variations on the theme of **public acceptance** are following somewhat similar pattern. It appears that on the global level, lack of public acceptance is recognized as one of the key problems requiring special attention and more awareness raising effort. A pro-nuclear storyline can merely say that there is a *“slight increase”* in a number of supporters in countries with operating plants and fewer *“declared opponents”*. Local communities in Finland and Sweden that are supposedly *“competing”* for waste repositories to be sited in their region are a *single example* put forward by global discourse actors. But in Belarus that is turned into a *universal trend* of public acceptance of nuclear energy projects in Europe. In both countries pro-nuclear actors cite public opinion polls to back their claims about majority supporting nuclear power and claim that as long as the members of the public are provided with *“all the information”* they will eventually it.

There are also several themes that are only characteristic to the national discourse and are shared by both Lithuania and Belarus: **geopolitics** of energy, **national prestige and progress** and **project legitimacy**. In general terms, in both countries the existence of nuclear power plants or plans in neighbouring countries is a very strong motivating factor to proceed with their own program. Moreover, this introduces the aspect of urgency to the debate. In Lithuania

neighbouring plants are understood as potential competitors for a foreign investor on the one hand and on the other – as a result of Lithuania’s “*nuclear energy ambitions*”. Both in Lithuania and Belarus nuclear power is presented as a major driver for national economy and research: Belarusian proponents compare it to a space exploration, while Lithuania aims to maintain a perceived regional nuclear energy leadership as opposed to becoming an “*energy backyard*”.

Another theme that unites the two countries is an overall need to confirm the **legitimacy** of the decision to pursue nuclear power. In both cases statements about “*no alternatives*” or abstract “*studies*” are common and critics complain about difficulties with obtaining such documents.

What regards a nuclear **project model** Lithuanian discourse actors focus on how to best finance the plant – should it be a national capital based public-private partnership or should the government announce an international tender and try to attract a foreign investor. A similar discussion in Belarus is predominantly about the controversial decision to choose Russia as the main project partner, while in Lithuania this is simply a no-option. There is an interesting discrepancy related to this that is described in the next sub-section.

6.1.3 Risks involved

The theme of Chernobyl is perhaps the only one where global and national pro-nuclear and anti-nuclear storylines more or less match: in is either perceived as a one-time technological event or a grave disaster that proves fallibility of nuclear technology. In most other cases variations on interpretations of risk themes exist.

The global nuclear energy discourse analysis divides these storylines rather clearly into those that claim risks and impacts to be low and/or controllable and those that note controversies and point at industry’s failures. In national discourses portrayal of risk perception is not so straightforward.

Similarly like in the global discourse, national pro-nuclear energy discourse coalitions in Lithuania and Belarus present the problem of managing radioactive waste as resolved, while the issue of spent nuclear fuel management is left for the distant future. But there is a general tendency even among opponents to dread possible negative **environmental** impacts from the neighbouring nuclear installations, at the same time perceiving nuclear risks from facilities in your own territory as a more manageable technical problem. This holds true in relation to technological safety as well. The radioactive **waste management** and linked health and environmental impacts is one example. Lithuanian media tells stories about dangers of pollution from Russia and Belarus through shared rivers, while Belarusian local inhabitants fear the mismanagement of radioactive waste repositories across their border.

However, Belarusians who are still living with the aftermath of Chernobyl disaster are also concerned about possibility of a similar accident and uncertainties about waste management –

especially risks associated with its possible transportation across the country for recycling in Russia. Suitability of the chosen **plant location** and a general lack of safety culture in Belarusian regulatory institutions are also of concern. Meanwhile Lithuania has years of experience of operating nuclear power plant on their territory. Waste management issues are discussed mainly in the light of costs and corruption related to managing plant decommissioning funds.

This shows that the pro-nuclear global storyline arguing that the public is mainly concerned about **proliferation and terrorism** and less so about operations of nuclear plants as such does not hold true. In fact, the storylines on weapons proliferation along with other nuclear **fuel lifecycle**-related risks such as accidents and pollution occurring during uranium mining, enrichment and recycling that are emphasized by anti-nuclear and moderate global discourse coalitions are absent in national discourses studied. The reason for this may be the fact that these countries do not feel the imminent threat of terrorism, whereas impacts occurring elsewhere are not considered as equally relevant for the national discourse; though in global discourse themes pertaining to fuel cycle are linked with health and environmental impacts as well.

Another interesting discrepancy exists in the framing of **reactor safety**. Although Lithuania has not yet made a decision about the type, Russian technology is considered “*marked by Chernobyl*” and advanced reactors “*not tested yet*”. Moreover, the whole idea of building a plant to become less dependent on Russia leaves this option out. Meanwhile, Belarus has been severely affected by the Chernobyl disaster, therefore those advocating for another “*Russian*” plant have to be much more specific to convince the public that it is safe. Nevertheless, scientists’ arguments about it being “*the only technology tested elsewhere in the world*” and “*10,000 times safer than in Chernobyl*” are very hard for opponents to contradict.

6.1.4 Constraints and prospects

As already noted earlier, when discussing storylines related to nuclear power project justification there is one rather distinct tendency to interpret global expectations and projections as non-debatable facts on the national level. This is especially true for constraints linked to costs, installed global capacity projections, public acceptance and the state of technology. However, the anti-nuclear energy coalitions in both countries are trying to counter-argue some of these overly optimistic claims.

Both national anti-nuclear discourse actors argue that local alternatives would be able to meet the energy demand at much lower **cost**. In Belarus critics emphasize the resources needed for safety measures and radioactive waste management. In Lithuania they are also referring to the ongoing project in Finland that is facing difficulties and suggesting power links to the West as an alternative.

The storylines about diminishing expertise base and lack of **human resources** as well as possibilities to train them that are present in global discourse are very much downplayed on the

national level. Even though in both countries claims about the possibilities to train the necessary workforce at home are confronted by anti-nuclear discourse coalitions. This is especially the case in Lithuania, where decommissioning of the **Ignalina NPP** is not going as smoothly as planned and many point at the fact that Lithuania did not actually build the existing plant itself. Meanwhile in Belarusian discourse national scientists are portrayed as standing at the forefront of the global nuclear research.

A number of rather specific constraints such as financial **liabilities** and the state of **technological** advancement of new reactors is only part of global discourse linked to constraints. However, the national pro-nuclear actors often talk about nuclear industry's future technological promises such as inherent safety features or fast breeders to support the argument about "*advanced modern reactor technology*", although in reality most of these have nothing to do with the actual planned construction in the country.

Geopolitics as a constraint by itself has rather different interpretation in both countries. In Lithuania it is mainly linked with neighbouring countries ambitions to build their own plants and competition over a foreign investor as perceived by the pro-nuclear discourse coalition. It also relates to fears about Russia's influence, but not so much as in Belarus where it is seen as the main constraint for any other foreign capital to take part in the project.

Fuel availability is touched upon in Lithuania in relation to energy security, but it does not become a truly distinct theme like in global and Belarusian discourses. The importance of this theme is greater here because of the question whether uranium can be supplied by other country than Russia given that Russian company is also providing nuclear technology. Therefore this issue has much stronger links to energy security and geopolitics in Belarus.

6.2 Argumentative strategies

As explained in Chapter 2 of this study, according to the "*social-interactive*" discourse theory, apart from promoting their views, actors are aiming to achieve *discursive hegemony* or dominance over others (Hajer 1995). Following Hajer's (1995) definition, it can be argued that pro-nuclear energy coalitions in both Lithuania and Belarus are hegemonic, since their views are being translated into concrete policies. According to Hajer (1995), discourse hegemony is determined by at least three factors: credibility, acceptability and trust in terms of how particular arguments are perceived by others.

Comparative discourse analysis demonstrates that although in terms of the content the two nuclear discourses have many similarities, there are some significant differences among strategies for winning over the argumentative struggle in the studied countries.

First, it can be argued that the very nature of the debate in Lithuania is more democratic, while in Belarus the issue is discussed in a more technocratic way. Although tables 5.1 and 5.8 in the previous Chapter outline the dominant actors and themes mainly in analytical texts sampled, they can be considered indicative of the power certain actors have over other in the studied national discourses. Second, the language plays an important role in the discursive struggle taking place on the national level. One such illustrative example common for both countries is anti-nuclear actors referring to the “*dependence on Russia*”, while top political leaders diplomatically preferring to say dependence on the “*East*” or simply a “*single source*”.

6.2.1 Lithuania

Political leaders and officials are the main pro-nuclear advocates in Lithuania, but they have much less monopoly over a credible argument as such, compared to scientists in Belarus. It seems that such line-up does create more opportunities to challenge the dominant pro-nuclear coalition on more equal terms. Rather than only justifying why nuclear is the best technological option, the Lithuanian political leaders are pressed to present economic feasibility studies. There is at least one rather significant difference among the two national discourses in terms of credibility and trustworthiness of discourse actors, especially in the anti-nuclear coalition. In contrast with the Belarusian debate described below, the Lithuanian discourse also features one of the top nuclear physicists who is also representing the National Academy of Sciences, the head of the Economic Department of the Bank of Lithuania and some other prominent financial analysts who are questioning the feasibility of the project not only in pages of the alternative, but also the mainstream media.

Moreover although the tone of the Lithuanian debate is also getting emotional at times, the attack on the critical camp rarely bares an openly pejorative character. The diverging narratives are competing with war, slavery and mythical metaphors that are particularly eloquent in editorials and opinion pieces. Nuclear project is portrayed as a “*three-headed dragon*” fighting Russian gas “*giant*” that is threatening to “*enslave*” Lithuania and turn into an “*energy desert*”; others dread it as a “*monstrous*” and “*hellish*” reactor that may eventually bring on the “*nuclear winter*”.

The story about the “*Leo LT*” consortium can be considered symbolic of a relative strength the pro-nuclear coalition has in Lithuania as it never proceeded with national nuclear projects, but was liquidated due to wide-spread corruption concerns. The narratives mainly pertaining to themes of project model and legitimacy documented in Chapter 5 serve as examples of discursive struggle on this issue. Today the Lithuanian discourse remains very political, without much discussion on issues like technology and safety. But this particular debate also highlighted failures of the Ignalina NPP decommissioning and helped to introduce to the debate more diverse themes such as national capacity to handle big nuclear projects.

6.2.2 Belarus

A technocratic discourse is unfolding in texts sampled from the Belarusian media. Here it proves much more difficult to question and counter-argue dominating proponents of nuclear, especially given the role of the state media that excludes critical actors from the public discourse or denounces their arguments as ill-informed or anti-state. Elite scientists are put at the forefront to answer most of the nuclear-related questions be it safety, waste management or advantaged of the chosen investor. Since most often they are expressing their views unilaterally by explaining and educating rather than justifying, they gain an advantage of framing nuclear themes in the way that they become more difficult to challenge. Similarly like in the study by Windisch (2008) on political argumentation cited in the literature review, they reject any public doubts as “*psychological*”, not based on “*hard facts*” or simply “*silly*”. Belarusian scientists refer to themselves as “*professionals*” who do not succumb to “*radiophobia*” (Ermak 2008; Lukashenko 2008). Government officials and engineers who are complementing their arguments are also difficult for the critical public to confront.

Their argumentative position is strengthened by President Lukashenko himself who notes that it was scientists who suggested nuclear as the most suitable option for strengthening energy security. Moreover, while he leaves the technical discussion to scientists, Lukashenko is rather straightforward about his opinion about critics whom he at times addresses in a rather pejorative manner. For example, he attacks anti-nuclear scientists for scaremongering: “*Are these scientists?! These are either brainless people or people without consciousness, and most probably without either*” (Lukashenko 2007). Other opponents are portrayed as people pursuing publicity or personal benefit: “*These are political bandits of a second political Chernobyl wave. [...] I will use all resources and power in my possession today to not allow this*” (Krylovich 2008a). Pro-nuclear media commentators also contribute to promoting such views. Those who oppose nuclear have knowledge are called “*old ladies*” (rus. “*babushka*”) and “*green loudmouths* (rus. “*zelionye krikuny*”)” who haven’t not suggested a viable way solve energy problems in any country and just “*want Belarusians to live at the splinter*” (Kriat 2008).

Meanwhile, the opposing camp has less leverage in terms of credibility, since it is mostly comprised of weary local citizens, church leaders, concerned intellectuals, retired physicists, and foreign medical doctors or randomly quoted sociological analysts. They raise concerns about nuclear projects in a “*closed society*”, secrecy of decision making, underestimated environmental dangers or becoming another “*black Chernobyl hole on the map*” that are easy to denounce as “*radiophobia*”. Some attempts to emphasize the credibility of the alternative expertise come in a form of underlining the background of the leader of a Russian green NGO who is presented as “*nuclear physicist*”.

However, apart from the above mentioned power imbalances, there are instruments that media of both countries are putting at play to the advantage of-pro nuclear coalition. They are discussed in the next section further down.

6.3 The role of media

As noted in the literature review, the media as a discourse scene and an actor substantially contributes to knowledge production and often becomes an ideological manipulation tool in the power struggle. The information about media system, regulation, circulation and ownership structure in the studied countries can help to understand the origin of recurring narratives; to some extent the degree of influence of quoted actors as well. Therefore comparing the debate in Lithuanian media which is considered among the most free in the world and in Belarus where media ranks among the lowest is also worthwhile.

The study shows that despite this significant disparity, both the Lithuanian and Belarusian leading dailies are producing exclusively pro-nuclear storylines, leaving out sceptical arguments and attacking the critics.

6.3.1 Lithuania

The leading Lithuanian privately-owned *“Lietuvos rytas”* has a tag *“independent”*, but is a rather good example of the extent to which business and the governing party can manipulate press coverage for its own benefit in a similar way an autocratic government is using its own media for propaganda purposes. Enthusiastic journalists describe the plan to build a new plant by consolidating public and private enterprises as *“revolutionary”* (Lietuvos rytas 2007), purported it as the *“project of the century”* (Sotvarienė 2008) that will *“cut the umbilical cord with the mother Russia”* and help the country to *“escape from the Russian energy trap and integrate into the EU energy system operating on completely different principles”* (Sotvarienė 2008). Amid the heated debate about legitimacy of the deal that was taking place in the parliament and was reflected in other media outlets, this daily was consistently praising the national business corporation (Sotvarienė 2008a) and lashing critics by denouncing them as *“bristling”* and *“panicking loudmouths”* (Ignatavičius 2008). Pro-nuclear inclinations of this newspaper were obvious not only in editorials, but in the news items as well, a rather crude violation of a standard requirement of journalistic ethic to separate facts from subjective author’s opinions that quality media is supposed to adhere to.

The discursive storylines are much more diverse in the Lithuanian online media of foreign ownership that appears to be more resistant to national business influence on their content. However, the most anti-nuclear storylines originate in alternative publicly-funded analytical media, but their journalists focus more on energy politics rather than the variety of issues surrounding energy security options or nuclear power in particular. Furthermore, despite the formal regulatory media freedom journalists hardly do a good job when covering energy issues in Lithuania. Even background stories often are mere collections of different views rather than in-depth analysis of the government’s energy policies, nuclear technology, global trends, and national capacity to implement nuclear project or alternatives. Media largely disregards policy inconsistencies and allows vague and unsubstantiated political claims go unchallenged.

6.3.2 Belarus

An illustrative example of media manipulations in Belarus can be the state-owned “*Sovetskaia Belorussia*” and the way it manages to imitate the public “*debate*”. Notably, none of the sampled analytical texts from this paper actually quote critical experts or scientists. Instead, referring to unnamed “*experts*” or concerned members of the public some critical arguments are included in a form of “*critical*” interviewer’s questions to be “*explained*” and “*clarified*” by those put in the position of power, authority and expertise to answer: scientists, government officials or political leaders. Another similar technique observed is an interview with several interviewees sharing pro-nuclear power opinions. This way a discursive illusion of a debate is created utilizing otherwise theoretically perfectly standard interview genre, only with ideologically pre-determined purpose. In one instance a journalist of “*Sovetskaia Belorussia*” goes as far as to publishing a fictitious-sounding polemic dialogue between a pro-nuclear citizen [himself] and a sceptic [his friend] that follows a scenario where a “*reasonable*” person convinces the “*ill-informed*” sceptic. Moreover, it is not uncommon for journalists to sometimes subtly imply or suggest the “*right*” way of interviewee’s argument reception with comments like “*a serious argument*” (Legkaia and Kirilenko 2007) or “*logical and well economically grounded stance*” (Minchenko 2008).

It is worth noting that the privately-owned Belarusian media is also tending to mix facts and opinion. Only in this case they are mostly directed against the government’s nuclear plans. The author’s sarcasm appears to be a way to attract critical attention to flawed official statements apart from a standard technique of providing an alternative opinion. As an example, one journalist is sceptical towards the official stating that anyone can obtain information on the nuclear power project and is encouraged to show an initiative to discuss the environmental impact assessment: “*It is obvious that in the country where citizen activities mainly take the form of collective watching of the television broadcasting the press conference of the President on all three channels, there are not too many communities interested in discussing something oddly called the ELA*” (Krylovich 2009b). One way to explain this style of reporting in Belarusian media could be a limited availability of politicians, scientists and experts willing to publicly criticize or analyze the government’s policies due to the nature of the political system in the country.

In summary, the characteristics of the Lithuanian and Belarusian nuclear energy discourses mirror similar studies reviewed in Chapter 2. This work complements similar findings by Baločkaitė and Rinkevičius (2009) about the dominance of “*talking elite*” and focus on economics and politics rather than risks in Lithuanian nuclear energy debate. The Belarusian discourse seems to bare many traits of the early days of nuclear development in France, Finland and the UK where it was marked by non-transparent decision-making, dominance of nuclear technocracy, pro-nuclear media and lack of “*counter-expertise*” (Lehtonen and Martiskainen 2010). Just like in these countries nuclear energy is perceived as a source of national pride in Lithuania and Belarus, pro-nuclear policies are promoted using adversarial argumentation (Windisch 2008) and pinned to energy or state security without much reference to facts to back such claims (Scrase and Ockwell 2009b).

7 CONCLUSIONS AND RECOMMENDATIONS

This thesis aimed to examine the recent national nuclear energy discourses in Lithuania and Belarus in contrast with a global nuclear energy discourse. The analysis was based on Hajer's (1995) theoretical concepts of discursive storylines and coalitions: simplified narratives used by discourse actors to define policy issues that form communicative networks to promote certain problem solutions. Within this analytical framework policy-making is understood as a part of argumentative power struggle, determined by credibility, acceptability and trust among actors.

Discourse analysis conducted in this study relied on Hajer's analytical concepts – discursive storylines and coalitions. National discourses were studied from 157 media texts published in 2006-2009. Pro-nuclear and anti-nuclear coalitions have been described in Lithuania and Belarus. The results of this analysis were interpreted by comparing with similar discursive storylines and coalitions found in the global discourse.

Comparative analysis focused on the interpretations of various recurring themes globally and nationally such as energy security, dependence on Russia, global industry trends, economics, waste management, public acceptance, national capacity to build a plant and several others. National analysis also examined argumentative strategies used by actors to promote their views and win a discursive struggle over credibility, acceptability and trust in Lithuania and Belarus. Finally the analysis drew some conclusions about the role of political system and media in the debate.

7.1 Global nuclear energy discourse analysis

The three global nuclear discourse coalitions, pro-nuclear, anti-nuclear and moderate are characterized by various degrees of confidence about the future nuclear deployment. The **pro-nuclear** coalition argues that nuclear energy is well posed for revival, is economically viable in most cases, with excellent safety record, feasible waste management options, promising future technology and waning public concerns. The **anti-nuclear** discourse coalition rejects nuclear energy as a costly and dangerous waste of time. Discourse actors stress that nuclear only produces electricity, hence the low GHG mitigation potential. They also talk about failing ongoing projects, the legacy of Chernobyl, pollution and risks throughout the fuel cycle, unresolved radioactive waste management issues and risk of the nuclear weapons proliferation. The third, **moderate** coalition does not reject nuclear solution as a way to secure supplies, meet the growing demand and mitigate climate change. Instead, it contains a set of storylines putting a much greater emphasis on the economic and technological uncertainties linked with nuclear development and especially social challenges such as public distrust in nuclear projects.

7.2 Lithuanian nuclear energy discourse analysis

The Lithuanian nuclear discourse analysis was based on 78 national media texts sampled focusing on analytical publications from the period of 2007-2009 as characterized by national events causing peaks in discussion. The themes related to energy security, dependence on Russia, geopolitics, own and neighbours' nuclear projects, economic costs, global trends and several other topics dominate the reviewed texts. Decommissioning of the Ignalina NPP, that was the main country's electricity provider until 2010, stands out as a country-specific topic. Based on the analysis of the sample, recurring storylines were grouped into two discourse coalitions: pro-nuclear and anti-nuclear.

In the studied sample most narratives are focusing on the geopolitics of energy. The **pro-nuclear** discourse storylines depict nuclear energy as the only viable way to secure energy independence from Russia and maintain the regional leading electricity exporter's role. A considerable emphasis is put on the energy gap occurring after the closure of the existing Ignalina NPP and potentially detrimental reliance on Russian electricity and gas imports. A sense of urgency to go on with the project is expressed due to other countries planning nuclear plants in the region. The problem of waste is articulated as technical and solved. Meanwhile, **anti-nuclear** storylines point out the absence of economic feasibility studies and public discussion on alternative options. There are mentions about economic consequences of a failed project such as the one in Finland. The controversies surrounding the Ignalina NPP decommissioning process are seen as an indication of lacking national capacity to handle the construction of a new plant.

As mentioned earlier, the nuclear energy debate in Lithuania is mainly about politics and economics, linking technological aspects and risks with neighbouring projects for the most part. Eloquent language and symbols of poverty, slavery and war are very common especially in relation to Russia; there are some examples of verbal attack and exposure [accusing for having links with Russia] strategy used against the opponents. Although powerful actors such as politicians, officials and businessmen seem to dominate the pro-nuclear coalition, while NGOs, with green entrepreneurs are on the anti-nuclear side, there are equally credible politicians, scientists, economists and journalists on both sides.

The majority of critical arguments were found in the articles from the online media and the publicly-funded analytical weekly, while texts in the leading private national daily "*Lietuvos rytas*" contained predominantly pro-nuclear narratives.

7.3 Belarusian nuclear energy discourse analysis

For the Belarusian discourse analysis 79 media articles were sampled from the three national media outlets over the period 2006-2009. In these publications the recurring themes are economic costs, national capacity to implement a nuclear project, potential investors, energy

security, dependence on Russia and plant location, but also a number of other issues. The narratives were grouped into pro-nuclear and anti-nuclear discourse coalitions.

The studied Belarusian discourse is predominantly economic and technical. The **pro-nuclear** storylines promote this energy source as the most favoured option based on the scientific knowledge. Modern nuclear energy is said to be safe the only known way to secure steady and low-cost electricity generation and national scientific and economic development. Equally common arguments are that the world turning to nuclear, that Belarus capable of building its own plant, and that Russia is the only provider of affordable and tested modern nuclear technology. The **anti-nuclear** coalition argues that nuclear fuel prices are rising due to diminishing uranium resources, that partnering with Russia is dangerous and nuclear technology being linked with substantial risks. There are narratives about more countries seeking non-nuclear status, ignored public opinion, and the danger of another Chernobyl-like disaster.

Technocratic nature of the Belarusian discourse can be mainly attributed to the dominance of pro-nuclear scientists and officials who are at the forefront of the decision to build a plant. They are the ones mainly bringing up technical aspects of reactor safety and waste management. On the anti-nuclear side, there are mainly NGOs, sociologists and political analysts and local citizens who are mainly expressing their concerns, doubts and discontent about being ignored. The predominant strategy of pro-nuclear coalition is attack and denouncement of the opposing side as “*radiophobic*”, ill-informed and lacking necessary expertise, while anti-nuclear side is trying to emphasize their education [e.g. NGO members presenting themselves as nuclear physicists] to gain more credibility and trust.

Similarly to the Lithuanian discourse, most pro-nuclear storylines appear in the leading state-run daily, while alternative debate is confined to the private and publicly-funded media.

7.4 Comparative nuclear energy discourse analysis

Comparative analysis reveals disparities between the main global and national discursive drivers for nuclear energy in Lithuania and Belarus. Energy security is a single shared motivating factor on both global and national level, while geopolitics plays a more important role than climate change on the national level.

A closer look at how global and national discourse actors discuss different aspects of nuclear energy shows that **pro-nuclear** storylines contain so-called “*nirvana concepts*” described by Molle (2008). In other words, pro-nuclear politicians, officials, scientists and businessmen in Lithuania and Belarus promote this energy source as the cheapest and the most reliable, claiming that all the risks are controllable. They tend to oversimplify industry’s global future *projections* and turn them into unquestionable *de facto trends*, brush off national constraints and downplay uncertainties to substantiate national pro-nuclear policies. For example, the analysis shows that pro-nuclear actors

in the two countries based their policies on the most optimistic global assumptions and capacity growth projections made mainly for the OECD countries and Asia. Conversely, **anti-nuclear** narratives in both countries mirror those found in similar global discourse coalition that rejects nuclear as too expensive and dangerous. Additionally, national anti-nuclear discourse storylines contain many concerns about the lack of public involvement. The storylines from the **moderate** global discourse are hardly present in national discourses, with an exception of few storylines in Lithuanian discourse.

The analysis also looked at argumentation in Lithuanian and Belarusian discourse and found that although the two national nuclear discourses have many similarities, there are some significant differences among strategies for achieving the pro-nuclear *discourse hegemony* or dominance in the debate in these countries. There are plenty examples from both countries illustrating confrontational style of argumentation characterized by sarcasm, attack and exposure techniques used towards the opponents. Defamatory and derogatory statements are common in editorial columns and opinion pieces, but can be found even in the speeches by the President of Belarus.

In general, **in Belarus** it is more difficult for national anti-nuclear actors to challenge dominant discourse coalitions with equally credible arguments. This situation occurs because of the technocratic nature of the debate dominated by the government scientists and officials who tend to denounce any criticism as ill-informed “*radiophobia*”. Meanwhile **in Lithuania** the debate is dominated by very pronounced geopolitical arguments mainly related to the perceived threat of Russia, but more discourse actors are debating on more equal grounds and thus discourse has democratic characteristics. Pro-nuclear politicians and officials face some more credible opposition as they are confronted by several high profile scientists and economists.

In both countries leading media tends to manipulate the debate by predominantly promoting pro-nuclear storylines and ignoring critics, though smaller alternative outlets contain more diverse views and online media seems to be the most vibrant in terms of competing narratives on nuclear energy. Nonetheless, even in Lithuania, where media has more regulatory freedom, apart from few exceptions, it rarely provides an in-depth, contextualized analysis of nuclear energy and energy security.

It can be argued that although press freedom in democratic system does not in itself guarantee democratic and comprehensive public debate on nuclear energy, it does provide for more opportunities to introduce new arguments and challenge dominant narratives than autocratic system does in a technocratic debate. However, it seems that political and corporate interests coupled with lack of specialized reporting skills can have similarly adverse effect on a quality of the debate both in democratic and in politically constrained public sphere. As a result, significant misinterpretations of global trends and knowledge gaps seem to occur in both national debates on nuclear energy. Therefore, a more inclusive and informed decision-making requires more effort.

7.5 Recommendations

This study shows that the global and national discursive drivers for nuclear energy differ, but national pro-nuclear actors do little justice to the national context. They seem to undermine national economic and technological capacities, and social constraints to implement their own nuclear energy project. Greater attention to these issues could help to avoid ill-informed energy policies with grave economic and social consequences in a long-term. Considering political, economic, technological and social aspects of nuclear deployment, the role of credible, constructive and trustworthy alternative expertise in the debate on nuclear energy should inform decision-making more than it currently does.

According to European surveys, media is the main source of information on nuclear energy issues, but most citizens feel uninformed even in the states with a long history of nuclear power generation. Moreover, the leading print media outlets seem to become primary discourse manipulation tools even in countries ranking high in press freedom lists. Specialized professional training for journalists could improve more critical reporting and eventually a public debate on sustainable energy as well. Moreover, an alternative, particularly internet-based media and specialized social networks have a potentially strong role to play for increased public awareness. Promoting media literacy and ability to independently seek for alternative information is another way to fill knowledge gaps occurring due to lack of quality media coverage and non-democratic decision-making.

It is reasonable to expect improvements to be more viable in countries like Lithuania than in Belarus. Nevertheless, given the nature of the power source such as nuclear, understanding the development of energy policies in these countries is equally important also from the point of view of regional security.

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PERSONAL COMMUNICATION

Donauskaitė, D. Executive editor of the analytical weekly “Atgimimas”, Vilnius. Online correspondence. Budapest, 28 January 2010.

Krylovich, I. Deputy chief editor of the analytical weekly “Belorusy i Rynok”, Minsk. Email correspondence. Vilnius, 17 April 2010.

Sukhy, Irina. Leader of the Belarusian citizen association “Ekodom”, Minsk. One of the authors of the public assessment of the Belarusian NPP project. Informal interview. Minsk, 12 April 2010.

APPENDIX

Table A.1 Texts selected for the analysis of global nuclear energy discourse

No.	SOURCE
1.	Greenpeace. 2009. <i>Nuclear power: a dangerous waste of time</i> . Amsterdam: Greenpeace International URL: http://www.greenpeace.org/raw/content/international/press/reports/nuclear-power-a-dangerous-was.pdf [consulted 9 March 2010]
2.	Intergovernmental Panel on Climate Change (IPCC). 2007. <i>Working group III report "Mitigation of climate change"</i> . Geneva: Intergovernmental Panel on Climate Change. URL: http://www.ipcc.ch/ipccreports/ar4-wg3.htm [consulted 9 March 2010]
3.	International Atomic Energy Agency (IAEA). 2009. <i>Nuclear Technology Review 2009</i> . Vienna: International Atomic Energy Agency. URL: http://www.iaea.org/Publications/Reports/ntr2009.pdf [consulted 9 March]
4.	Nuclear Energy Agency (NEA). 2008. <i>Nuclear energy outlook: Key messages. Executive summary</i> . New Milford: OECD Publications. URL: http://www.nea.fr/neo/summaries/english.pdf [consulted 10 March 2010].
5.	United Nations Development Programme (UNDP). 2004. <i>World energy assessment: 2004 update</i> . New York: United Nations Development Programme, United Nations Department of Economic and Social Affairs, World Energy Council. URL: http://www.undp.org/energy/weaover2004.htm [consulted 10 March 2010]
6.	World Nuclear Association (WNA). 2009. <i>The nuclear renaissance</i> . London: World Nuclear Association. URL: http://www.world-nuclear.org/info/inf104.html [consulted 10 March 2010]
7.	World Energy Council (WEC). 2007. <i>The role of nuclear power in Europe</i> . London: World Energy Council. URL: http://www.worldenergy.org/documents/wec_nuclear_full_report.pdf [consulted 10 March 2010]

Table A.2 Texts selected for the analysis of the Lithuanian nuclear energy discourse

No.	SOURCE
1.	Aleksandravičius, A. 2009. Žemdirbiai – prieš branduolinę energetiką [Farmers against nuclear energy]. <i>Ūkininko patarėjas</i> , July 30. URL: http://www.delfi.lt/archive/article.php?id=23336214 [consulted April 30 2010].
2.	Bartasevičius, V. 2007. Savarankiška energetika – valstybės skydas [Independed energy system serves as a shield for the state]. <i>Lietuvos rytas</i> , October 6.
3.	Bartasevičius. 2008. Ignalina turi suvienyti visą Lietuvą [Lithuania should stand united for the Ignalina NPP]. <i>Lietuvos rytas</i> , September 25.
4.	BNS. 2008a. Amžiaus sandoris – jau užbaigtas [The deal of the century has been completed]. <i>Lietuvos rytas</i> , May 28.
5.	BNS. 2008b. Simboliu pasirinko gervę [A crane for a symbol]. <i>Lietuvos rytas</i> , August 30.
6.	BNS. 2009a. Seimo nariai abejoja AE statybų Kaliningrade realumu [Parliamentarians doubt that te NPP in Kaliningrad is for real]. <i>Delfi.lt</i> , July 24. URL: http://www.delfi.lt/archive/article.php?id=23260929 [consulted April 30 2010].
7.	BNS. 2009b. A.Kubilius: atominę elektrinę Lietuvoje pastatyti realu 2018-2019 m. [Kubilius: a nuclear plant in Lithuania can be completed by 2018-2019]. <i>Delfi.lt</i> , August 22. URL: http://www.delfi.lt/archive/article.php?id=23692306 [consulted 30 April 2010].
8.	BNS. 2009c. D.Grybauskaitė teigia tikinti būsimos atominės elektrinės projektu [Grybauskaitė believes in a NPP project]. <i>Delfi.lt</i> , December 7. URL: http://www.delfi.lt/archive/article.php?id=26582937 [consulted 30 April 2010].
9.	Čaplikas, A. 2007. Ar nauja atominė elektrinė iškilis saugioje vietoje? [Is the location for a new NPP safe?] <i>Valstiečių laikraštis</i> , September 29. URL: http://www.delfi.lt/archive/article.php?id=14551232 [consulted 30 April 2010].
10.	Čekuolis, A. 2008. Radiacija: mitai, siaubai ir tikrovė [Radiation: myths, horrors and reality]. <i>Valstiečių laikraštis</i> , April 9. URL: http://www.delfi.lt/archive/article.php?id=16611840 [consulted 30 April 2010].
11.	Čekutis, R. 2007. Dar viena naujos atominės dilemma [Another dilemma for a new NPP]. <i>Atgimimas</i> , June 22-28.
12.	Čerkauskas, M. 2009. Elektrinės laidotuvėse sklando aferų tvaikas [The funeral of the NPP wit a smell of a fraud]. <i>Lietuvos rytas</i> , December 30.
13.	Damauskas, Ž. 2007a. Kapinynas – Stabatiškės kaime [Repository to be built in Stabatiskes]. <i>Lietuvos rytas</i> , June 12.
14.	Damauskas, Ž. 2007b. Parlamentarai vakar nubraižė energetikos milžino kontūrus [Parliamentarians are sketching up a new energy giant]. <i>Lietuvos rytas</i> , June 29.
15.	Damauskas, Ž. 2007c. Elektrinės projektas kaimynus domina nevienodai [Not all of the neighbours are equally interested in a NPP project]. <i>Lietuvos rytas</i> , July 26
16.	Damauskas, Ž. 2007d. Atominės elektrinės statybą gali finansuoti ir ES [The EU might also finance a NPP construction]. <i>Lietuvos rytas</i> , October 19.
17.	Dambrauskas, A. 2009. Sapnuose – atominis Kaunas [Dreams about nuclear Kaunas]. <i>Lietuvos rytas</i> , June 27.
18.	Damulytė, J. 2008a. Kritikai užpylė „Leo LT“ kritika, V.Navickas vis tiek ragina skubėti [“Leo LT” is criticized, but but Navickas says it is urgent]. <i>Delfi.lt</i> , January 10. URL: http://www.delfi.lt/archive/article.php?id=15569141 [consulted 30 April 2010].
19.	Damulytė, J. 2008b. „Leo LT“ uždegta žalia šviesa – V.Adamkus pasirašė AE įstatymo pataisas [“Leo LT” gets a green light – Adamkus has signed law amendments]. <i>Delfi.lt</i> , February 12. URL: http://www.delfi.lt/archive/article.php?id=15941503 [consulted 30 April 2010].

20.	Deksnyš, V. 2008. Lietuviams paęašdinti – ųvalgybinis ųuvis [Reconnaissance shot to scare Lithuanians]. <i>Lietuvos rytas</i> , April 22.
21.	Deksnyš, V. 2009. Atominei elektrinei ieškos investuotojo [In search for an investor]. <i>Lietuvos rytas</i> , October 1.
22.	Delfi.lt I. 2007. SEB: atominė reikalinga, taėiau ne bet kokia kaina [SEB: nuclear plant is necessary, but not at any price]. <i>Delfi.lt</i> , December 11. URL: http://www.delfi.lt/archive/article.php?id=15283312 [consulted 30 April 2010].
23.	Delfi.lt. 2009a. Energetikos ministerija jau kvieėia investuoti į naują AE [The Ministry of Energy invites to invest in a new NPP]. <i>Delfi.lt</i> , December 4. URL: http://www.delfi.lt/archive/article.php?id=26472825 [consulted 30 April 2010].
24.	Delfi.lt. 2009b. Prezidentė prakalbo apie atsakomybę už Ignalinos AE uždarymo vilkinimą [The President speaks up about the responsibility for delays in the Ignalina NPP decommissioning]. <i>Delfi.lt</i> , December 8. URL: http://www.delfi.lt/archive/article.php?id=26621725 [consulted 30 April 2010].
25.	Digrytė, E. 2009. Darbuotojai apie IAE uždarymą: pjaunama auksinius kiaušinius dedanti višta [Ignalina NPP workers: We are culling the golden egg layer]. <i>Delfi.lt</i> , January 5. URL: http://www.delfi.lt/archive/article.php?id=19914231 [consulted 30 April 2010].
26.	Dumalakas, A. 2008. Baltarusių užmaėios sėja nerimą [Fears about Belarusian games]. <i>Lietuvos rytas</i> , December 27.
27.	Eigirdas, E. 2007. Nauja atominė jėgainė – Vyriausybės ramstis [New nuclear plant as a state pillar]. <i>Valstybė</i> , April 18. URL: http://www.delfi.lt/archive/article.php?id=12906290 [consulted 30 April 2010].
28.	Giedra, A. 2008. Atominis kuras: baubas ar Lietuvos ateitis? [Nuclear fuel: a monster or Lithuania's future?] <i>Kelias</i> , June 15. URL: http://www.delfi.lt/archive/article.php?id=17401859 [consulted 30 April 2010].
29.	Gintalaitė, L. 2008. Buldozeriu – per energetikos alternatyvas [Bulldozering over the energy alternatives]. <i>Atgimimas</i> , June 6-12.
30.	Gureviėius, A. 2009. Lietuvoje – dar vienas Rusijos čiuptuvai? [One more Russian tentacle in Lithuania] <i>Delfi.lt</i> , August 28. URL: http://www.delfi.lt/archive/article.php?id=23772458 [consulted 30 April 2010].
31.	Ignataviėius, T. 2008. Panikuotojai – ambicijų nelaisvėje [Picnickers imprisoned by their own ambitions]. <i>Lietuvos rytas</i> , February 6.
32.	Ivašauskas, M. 2008. Į grėsmes – pro didinamąjį stiklą [Looking at risks through the magnifying glass]. <i>Lietuvos rytas</i> , August 27.
33.	Kauzanas, D. 2008. Ignalinos AE: pabaisa gali virsti gražuole [Ignalina NPP: the beast may turn into a beauty]. <i>Lietuvos rytas</i> , February 6.
34.	Kimtyš, L. and Remeikis, V. 2008. Atomo branduolys: žmonijos priešas ir draugas [Atomic nucleus: an enemy and a friend of humanity]. <i>Spectrum</i> , November 2. URL: http://www.delfi.lt/archive/article.php?id=19106123 [consulted 30 April 2010].
35.	Kontrimaviėius, T. 2009. Nelinksmi linkėjimai iš atominės elektrinės: švėskite be mūsų [No happy greetings from the nuclear plant: celebrate without us]. <i>Lietuvos rytas</i> , December 29.
36.	Krasauskas, I. 2009. Branduolinėse varžybose tašų nepelnyta [Nuclear game ends with no score]. <i>Atgimimas</i> , October 9-15.
37.	Lietuvos rytas. 2007. Laiko ženklai [Signs of the time]. <i>Lietuvos rytas</i> , March 29.
38.	Lietuvos rytas. 2008a. Energetikos liūtas bunda [Energy lion waking]. <i>Lietuvos rytas</i> , April 30.
39.	Lietuvos rytas. 2008b. Laiko ženklai [Signs of the time]. <i>Lietuvos rytas</i> , May 28.
40.	Lietuvos rytas. 2009. Savo kiemas – svarbesnis [More concerned about their own backyard]. <i>Lietuvos rytas</i> , August 8.
41.	Lukaitytė, R. 2007. Reikalaujama viešos diskusijos dėl naujos atominės jėgainės statybos [Demanding public debate on a new NPP construction]. <i>Delfi.lt</i> , March 29. URL: http://www.delfi.lt/archive/article.php?id=12680436 [consulted 30 April 2010].

42.	Lukaitytė, R. 2009. A.Brazauskas: po IAE uždarymo rimtas ir ilgalaikis partneris lieka Rusija [Brazauskas: after the Ignalina NPP shut down the only long-term partner remains Russia]. <i>Delfi.lt</i> , December 31. URL: http://www.delfi.lt/archive/article.php?id=27330677 [consulted 30 April 2010].
43.	Makaraitytė, I. 2007a. Trigalvis slibinas ryja ir savo vaikus [Three-headed dragon eating up its own children]. <i>Atgimimas</i> , March 30 – April 6.
44.	Makaraitytė, I. 2007b. Trigalvio apatiniai [Underwear of the three-headed dragon]. <i>Atgimimas</i> , October 5-11.
45.	Makaraitytė, I. 2007c. Nauja AE: „prišša“ prie Rusijos ar garantuoja nepriklausomybę? [The new NPP: ties-up to Russia or liberates?] <i>Atgimimas</i> , December 7-13.
46.	Makaraitytė, I. 2008a. Referendumas akims mulinti [A cover-up referendum]. <i>Atgimimas</i> , July 18-24.
47.	Makaraitytė, I. 2008b. Beviltiško Seimo simbolis [A hopeless parliament symbol]. <i>Atgimimas</i> , October 3-9.
48.	Makaraitytė, I. 2008c. Reikia bijoti ne Rusijos, o savų oligarchų [We should be weary not about Russian, but our own oligarchs]. <i>Atgimimas</i> , October 24-30.
49.	Makaraitytė, I. 2009a. Arklys, kuris nejuda nei į priekį, nei atgal [A horse that is moving nowhere]. <i>Atgimimas</i> , February 27 – March 6.
50.	Makaraitytė, I. 2009b. Ar greitai atsiras žodis „atominė“? [How soon we will hear about nuclear?] <i>Atgimimas</i> , March 6-12.
51.	Makaraitytė, I. 2009c. Afera, kuri kainuos dar vieną milijardą? [A fraud that will cost another billion?] <i>Atgimimas</i> , March 27 – April 3.
52.	Makaraitytė, I. 2009d. Energetika kaip ežiukas rūke [Energy system like hedgehog in the fog]. <i>Atgimimas</i> , March 27 – April 3.
53.	Makaraitytė, I. 2009e. Rusai kiša kiaulę, o mes – džiūgaujame [Happy about Russians fooling us]. <i>Atgimimas</i> , October 9-15.
54.	Makaraitytė, I. 2009f. Atominei – maišas pinigų be dugno [A bottomless money bag for a NPP]. <i>Atgimimas</i> , November 27 – December 4.
55.	Nastaravičius, M. 2008. „Liūtą“ pasiryžę stabdyti [Determined to stop the “lion”]. <i>Atgimimas</i> , April 25 – May 2.
56.	Paulauskas, S. 2008. Reikalingos ne pragaro energetikų „oro pilys“, o struktūrinė reforma [We need no hellish “castles in the air”, but a structural reform]. <i>Delfi.lt</i> , August 25. URL: http://www.delfi.lt/archive/article.php?id=18297601 [consulted 30 April 2010].
57.	Pilibaitytė, V. 2009. Atominė: nei švari, nei saugi [Nuclear: not clean or safe]. <i>Atgimimas</i> , September 4-10.
58.	Plunksnis, V. 2008. Atominės statytojų apetitas – be ribų [An unlimited appetite of the nuclear plant builders]. <i>Atgimimas</i> , September 19-25.
59.	Plunksnis, V. 2009. „Leo LT“ nieko nenuveikė. Ar tikrai? [“Leo LT” achieved nothing, but is that so?] <i>Atgimimas</i> , May 21-28.
60.	Pocienė, A. 2009. Ekologiški projektai miršta dar negimę [Environmental projects are dead in water]. <i>Lietuvos rytas</i> , September 1.
61.	Prunskienė, K. 2009. Sveiką protą nuolat užgožia politinė erzelynė [The political fuss messing with our sanity]. <i>Lietuvos rytas</i> , August 27.
62.	Rainytė-Bodard, O. 2009. Būti ar nebūti atominei elektrinei [To be or not to be for a nuclear power plant]. <i>Lietuvos žinios</i> , October, 6. URL: http://www.delfi.lt/archive/article.php?id=24397065 [consulted 30 April 2010].
63.	Saladžius, E. 2009. Švari energija dar stringa [Still no breakthrough for the clean energy]. <i>Lietuvos rytas</i> , October 1.
64.	Samoškaitė, E. 2009a. A.Sekmoka abejoja, ar bus pastatyta nauja elektrinė [Sekmoka has doubts about new nuclear power plant]. <i>Delfi.lt</i> , January 27. URL: http://www.delfi.lt/archive/article.php?id=20298429 [consulted 30 April 2010].
65.	Samoškaitė, E. 2009b. Hamletiška Lietuvos abejonė: statyti atominę elektrinę ar nestatyti [Hamlet’s dilemma:

	To build or not to build a new nuclear plant]. <i>Delfi.lt</i> , August 3. URL: http://www.delfi.lt/archive/article.php?id=23399597 [consulted 30 April 2010].
66.	Siurbis, V. 2009. Pajudėti iš mirties taško nėra sudėtinga [It's not hard to come out of standstill]. <i>Atgimimas</i> , May 15-21.
67.	Skinulytė, J. 2007. Pigijs elektros dienos suskaičiuotos [Counting the last days of the cheap electricity]. <i>Kauno diena</i> , July 19. URL: http://www.delfi.lt/archive/article.php?id=13825570 [consulted 30 April 2010].
68.	Skinulytė, J. and Navickaitė, L. 2007. Nuomonės: pažadų, chaoso ir kylančių kainų metas [Opinions: in the times of promises, chaos and rising prices]. <i>Kauno diena</i> , December 27. URL: http://www.delfi.lt/archive/article.php?id=15428850 [consulted 30 April 2010].
69.	Sotvarienė, R. 2007a. Trigalvis slibinas – prieš Rusijos galybę [Three-headed dragon against the mighty Russia]. <i>Lietuvos rytas</i> , March 23.
70.	Sotvarienė, R. 2007b. Iš pasakų atskridęs trigalvis slibinas virsta realiu liūtu [Three-headed dragon turning into a lion]. <i>Lietuvos rytas</i> , December 20.
71.	Sotvarienė, R. 2008a. Amžiaus projektą plakė pavydas ir įtarimai [The project of the century faced envy and suspicion]. <i>Lietuvos rytas</i> , February 2.
72.	Tilindis, A. 2009. Geležinė magnolija – turtingų draugų glėbyje [The iron magnolia among her wealthy friends]. <i>Lietuvos rytas</i> . May 26.
73.	Tracevičiūtė, R. 2007. Atominei elektrinei gresia specialistų stygius [The nuclear plant is facing a shortage of workforce]. <i>Lietuvos žinios</i> , July 12. URL: http://www.delfi.lt/archive/article.php?id=13764710 [consulted 30 April 2010].
74.	Tvirbutas, S. and Paukštytė, K. 2008. Atominis iššūkis verslui [A nuclear challenge for the business]. <i>Klaipėda</i> , March 6. URL: http://www.delfi.lt/archive/article.php?id=16218460 [consulted 30 April 2010].
75.	Vagnorius, G. 2009. Lietuva vėl energingai stumiama į Rusijos glėbį [Lithuania is systematically being pushed into Russia's hands]. <i>Lietuvos rytas</i> , August 27.
76.	Varanavičius, D. 2009. Atominiai spąstai Lietuvai [A nuclear trap for Lithuania]. <i>Valstybė</i> , February 14. URL: http://www.delfi.lt/archive/article.php?id=20573391 [consulted 30 April 2010].
77.	Vilemas, J. 2008. Lietuvos energetika po 2009 metų [Lithuanian energy system after 2009]. <i>Valstybė</i> , November 16. URL: http://www.delfi.lt/archive/article.php?id=19289174 [consulted 30 April 2010].
78.	Žvirblytė, J. 2009 Energetikos iššūkiai virsta galimybėmis [Energy challenges are turning into opportunities]. <i>Lietuvos žinios</i> , February 12. URL: http://www.delfi.lt/archive/article.php?id=20532513 [consulted 30 April 2010].

Table A.3 Texts selected for the analysis of the Belarusian nuclear energy discourse

No.	SOURCE
1.	Avimova, K. 2006. Samolet upadet – i nichego ne sluchitsia s sovremennoi atomnoi stantsiei [The plain can hit and nothing will happen]. <i>Belorusy i Rynok</i> , December 11-18.
2.	Avimova, K. 2008. Deneg dolzhno khvatit [Money should suffice]. <i>Belorusy i Rynok</i> , January 8-15.
3.	BelaPAN. 2006. Rossiiskii "Grinpis" okazhet podderzhku protivnikam stroitelstva AES v Belarusi [Russian Greenpeace will support anti-nuclear protesters in Belarus]. <i>Naviny.by</i> , December 4. URL: http://naviny.by/rubrics/society/2006/12/04/ic_news_116_263246/ [consulted 9 March 2010]
4.	BelaPAN. 2007. Belarus ne v silakh samostoiatelno razvivat atomnuiu energetiku, zaiavliaet glava NANB [Belarus does not have a capacity to develop nuclear energy independently]. <i>Naviny.by</i> , June 25. URL: http://naviny.by/rubrics/society/2007/06/25/ic_news_116_272837/ [consulted 9 March 2010]
5.	BelaPAN. 2008a. Predstavitel partii BNF: reshenie o stroitelstve AES bylo priniato bez rassmontrenia alternativy [Representative of BNF: decision regarding a NPP has been made without considering alternatives]. <i>Naviny.by</i> , January 17. URL: http://naviny.by/rubrics/economic/2008/01/17/ic_news_113_284037/ [consulted 11 April 2010]
6.	BelaPAN. 2008b. V Belarusi net spetsialistov dlia stroitelstva AES, schitaet uchenii [Scientists say Belarus has no specialists to construct its own NPP]. <i>Naviny.by</i> , February 8. URL: http://naviny.by/rubrics/economic/2008/02/08/ic_news_113_285321/ [consulted 11 April 2010]
7.	BelaPAN. 2008c. "Za svobodu" nachinaet sbor podpisei protiv stroitelstva AES ["For the freedom" are starting collecting signatures against a NPP construction]. <i>Naviny.by</i> , April 26. URL: http://naviny.by/rubrics/politic/2008/04/26/ic_news_112_289829/ [consulted 11 April 2010]
8.	BelaPAN. 2008d. Professor Georgii Lepin: storitelstvo AES v Belarusi chrevato mnozhestvom bed [Professor Georgii Lepin: a NPP project in Belarus is going to cause many troubles]. <i>Naviny.by</i> , October 10. URL: http://naviny.by/rubrics/society/2008/10/10/ic_news_116_299647/ [consulted 11 April 2010]
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