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The EU – A relevant actor in the field of climate change in respect to the Arctic?

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Abstract

The paper explores the role of the EU in the field of climate change as regards the Arctic. Two different types of activities are considered: First, the EU's declared political statements towards the region concerning climate change, and second, its measures in the field of climate change that have an Arctic implication, comprising specific EU programmes and projects. In doing so, individual EU policies – explicit external policies as well as external dimensions of internal policies – are investigated. Due to the specific human implications of climate change in the Arctic, a special focus is made on indigenous peoples, taking into consideration that the Saami people of Finland and Sweden are the only "Arctic" indigenous people within the EU area.
The paper comes to the conclusion that climate change, although still of high relevance within EU's policies generally, is not very prominent in respect to the Arctic. Among the investigated individual EU policies, research has by far the most direct implications for the Arctic, while in most of the others a considerable discrepancy between the EU's declared interest towards the Arctic in the field of climate change and its factual actions relating to this subject can be recognized. The major feature of the EU – its predominant externality as regards to the Arctic in geographical but also in legal terms – is not only one of its major constraints in developing an Arctic strategy, but provides also a significant potential for strengthening the external dimensions of its climate change policy in respect to this region.

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1. Introduction

Global climate change is one of the greatest challenges facing the Arctic. A temperature rise between 4 and 7 degrees Celsius by the end of this century is predicted for the Arctic, and climate models indicate an ice-free Arctic Ocean during the summer months by 2040 – if not earlier. Along with that, indigenous communities of the Arctic are facing major economic and cultural impacts. This makes climate change in the Arctic so much more serious than in Antarctica, for example, where no human beings (as permanent inhabitants) are concerned.
At the same time, the European Union (EU), like many other state and non-state actors, has expressed an increased interest towards the Arctic. This has been demonstrated, among others, by the Commission's Communication on the Arctic region of 2008 and the Council's Conclusions on Arctic issues by the end of 2009. Hereby, the prevention and mitigation of negative impacts of climate change as well as the support of efforts to adapt to inevitable changes is also one of the objectives of an EU Arctic policy. The EU intends to achieve this aim in unison with the Arctic population. Addressing Arctic challenges – thus the declared intention of the EU – shall be conducted in a "*in a systematic and coordinated manner"*.
Against this background, the present paper explores the relevance of the EU as an actor in the field of climate change in respect to the Arctic. In doing so, a critical analysis is conducted on the current stake of the EU's climate change policy and its Arctic implications.
The paper is structured in three main parts: The first part outlines the relevance of climate change in relation to the Arctic and the EU in general. Because of the specific human implications of climate change in the Arctic, the relevance of indigenous peoples in EU policies is also addressed in this part.
The second part, conducted as a kind of inventory, identifies the EU's activities in the field of climate change and their Arctic implications. Here, two different types of activities are considered: First, the EU's declared political statements towards the region concerning climate change, and second, its measures in the field of climate change that have an Arctic implication, comprising specific EU programmes and projects. Before doing so, the legal basis for EU climate change actions towards the Arctic is outlined. The issues of indigenous peoples in the context of Arctic climate change are also taken into consideration when EU's climate change actions are identified.
In the third and concluding part, an analysis of the previously identified EU's climate change actions towards the Arctic is given. On the base of this analysis the main constraints of the EU's climate change policy in respect to the Arctic are summarized, followed by an identification of possible options for the EU to address Arctic climate change in a more coordinated and systematic manner.

For the purpose of this paper, two premises shall be applied to define the Arctic: First, the geographical scope of the area referred to as "the Arctic" in this paper encompasses, following the definition used in the Arctic Human Development Report (AHDR), all of Alaska, Canada North of 60°N, including northern Quebec and Labrador, all of Greenland, the Faroe Islands, and Iceland, the northernmost counties of Norway, Sweden and Finland, and Russia[1]. Second, the Arctic Council is recognized as the main specific governance institution for the region, that is, the

[1] Arctic areas in Russia are the Murmansk Oblast, the Nenets, Yamalo-Nenets, Taimyr, and Chukotka autonomous okrugs, Vorkuta City in the Komi Republic, Norilsk and Igarka in Krasnoyarsky Kray , and „those parts of the Sakha Republic whose boundaries lie closest to the Arctic Circle" (Arctic Human Development Report (ADHR), 2004, available at: <http://hdr.undp.org/en/reports/regionalreports/other/arctic_2004_en.pdf>).

premise that we are talking about the eight circumpolar states as member states of the Arctic Council, and not only about the five coastal states to the Arctic Ocean.[2]

2. The relevance of climate change and indigenous peoples' issues

2.1 Climate change challenges to the Arctic

Despite being a matter of global concern, climate change is of specific relevance for the Arctic due to the particular vulnerability of this region. At its Sixth Ministerial Meeting in April 2009, the Arctic Council recognized climate change as one of the greatest challenges facing the Arctic.[3] This becomes evident at several occasions:

According to the Arctic Climate Impact Assessment of 2004[4] – widely seen as the world's most comprehensive and detailed regional climatic and ultraviolet radiation assessment – climate changes are being experienced particularly intensely in the Arctic where average temperatures have risen almost twice as fast as in the rest of the world during the past decades. Widespread melting of glaciers and sea ice, as well as rising permafrost temperatures provide additional evidence of strong Arctic warming. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)[5], launched in 2007, confirms these consequences by stating that "Average Northern Hemisphere temperatures during the second half of the 20th century were very likely higher than during any other 50-year period in the last 500 years and likely the highest in at least the past 1300 years."[6] An "Update on Selected Climate Issues of Concern" issued by the Arctic Monitoring and Assessment Programme (AMAP) in 2009, a Working Group under the Arctic Council, came to the conclusion that the Arctic continues to warm and that several indicators show further and extensive climate change at rates faster than previously anticipated.[7] The updating report particularly stressed the sharp decrease of sea ice coverage, with a record low in 2007, and ice-free conditions in both the north-eastern and north-western sea passages for the first time in recorded history in 2008. A recent report on "Climate changes in the Norwegian Arctic – consequences for life in the north", published by the Norwegian Polar Institute this May, points out in two of its eleven "key discoveries" that diverse feedback mechanisms enhance global

[2] The Arctic Council states are: Canada, Denmark, Finland, Iceland, Norway, Sweden, Russia and the United States. In this context, the question is debated whether the Arctic Council will be overridden by a new form of intergovernmental cooperation comprising the five Arctic Ocean coastal sates (Canada, Denmark, Norway, Russia and the United States) since they have now met twice, in May 2008 in Ilulissat (Greenland) and in March 2010 in Chelsea (Canada) while excluding the other three Arctic Council states that have no direct coasts to the Arctic Ocean (depending on definition).

[3] *Tromsö Declaration*, Tromsö, 29 April 2009 (Sixth Ministerial Meeting of the Arctic Council), available at: <http://arctic-council.org/filearchive/Tromsoe%20Declaration-1.pdf>.

[4] Arctic Council/IASC, *Arctic Climate Impact Assessment (ACIA) Synthesis Report: Impacts of a Warming Arctic*, Cambridge University Press, 2004, available at: <http://amap.no/acia/>.

[5] IPCC, *Climate Change 2007. Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Geneva 2007, available at: <http://www.ipcc.ch/publications_and_data/ar4/syr/en/contents.html>.

[6] Ibid., p. 30.

[7] Arctic Monitoring and Assessment Programme (AMAP), *Update on Selected Climate Issues of Concern*, Oslo 2009, available at: <http://www.amap.no/assessment/generalpublic.htm>, p. V.

changes in climate and that climate change makes the Arctic more vulnerable, in particular to pollutants and ultraviolet radiation.[8]

Moreover, climate change presents a serious challenge to Arctic inhabitants, in particular to indigenous communities and small island communities since, as highlighted by IPCC Fourth Assessment Report, those are especially vulnerable to Arctic warming.[9] Depending on the definition, the Arctic is home to some 4 million inhabitants, roughly a third of which are indigenous.[10] Many indigenous peoples depend on hunting polar bears, walrus, seals, and caribou, herding reindeer, fishing, and gathering. In addition to the provision of food and the support of the local economy, hunting also serves as the basis for cultural and social identity. Changes in species' ranges and availability, access to these species, a perceived reduction in weather predictability, and travel safety in changing ice and weather conditions present serious challenges to human health and food security[11] and cause thus, as outlined in the Arctic Climate Impact Assessment, major economic and cultural impacts on indigenous communities. Furthermore, an updated AMAP Assessment on Human Health in the Arctic of 2009 states that "all known factors that affect human exposure to contaminants are impacted by climate".[12] This additionally increases the specific vulnerability of indigenous and small island communities living in the Arctic, as pointed out above.

At present, climate governance in the Arctic can be described as a "patchwork of regimes and networks"[13], comprising not only states, but also NGOs, soft law organizations in political fora and economic market actors, as well as legislation and international treaties, all of which influence the region's capacity to mitigate and adapt to climate-related changes. For the immediate future, it has been prognosticated that this patchwork will continue to work and that significant changes, in particular as regards the Arctic Council, seen as a "symbol of emergence of the Arctic as an international region"[14], will probable not occur.[15]

2.2 The relevance of climate change to the EU

Climate change in general is one of the most important issues in EU policies. This is evidenced by the EU's leading role in global climate change policy, at least until the last United Nations

[8] Norwegian Polar Institute, *NorACIA Norwegian Arctic Climate Impact Assessment. Summaries from Five Sub-Reports and the Synthesis Report*, Tromsö, May 2010, pp. 9–10, available at: <http://brage.bibsys.no/npolar/bitstream/URN:NBN:no-bibsys_brage_12124/1/Kortrapport18.pdf>.
[9] Supra note 3, p. 65.
[10] Hugo Ahlenius/Katherine Johnsen/Christian Nellemann (eds.), *Vital Arctic Graphics – People and Global Heritage on our Last Wild Shores*, Norway: United Nations Publications, 2005, p. 14.
[11] Arctic Council/IASC, *ACIA Highlights. Impacts of a Warming Arctic*, Cambridge University Press, 2004, p. 7, available at: <http://www.amap.no/acia/>.
[12] AMAP, *Assessment 2009: Human Health in the Arctic*, Oslo 2009, available at: <http://www.amap.no/>, p. 11.
[13] Timo Koivurova/Carina H. Keskitalo/Nigel Bankes, *Climate Governance in the Arctic*, 1st edition, Springer Netherlands, 24 March 2009, p. 442.
[14] Oran Young, *The Structure of Arctic Cooperation. Solving Problems/Seizing Opportunities*, Rovaniemi, 27–29 August 2000 (Paper for the Fourth Conference of Parliamentarians of the Arctic Region).
[15] Up to now, the Arctic Council has consistently rejected any new governance arrangements and likewise a political will to broaden its mandate, to focus on „high political issues" for instance, is not visible. Another question is that of a replacement of the current arrangement of the Arctic Council consisting of eight states by a new institution comprising only the five Arctic coastal states, see supra note 2.

Climate Change Conference in December 2009 in Copenhagen (COP 15).[16] The EU already played a key role in international negotiations on climate change since the subject appeared on the political agenda, which was in the late 1980s, when the UN Framework Convention on Climate Change (UNFCCC) was negotiated. The UN Framework was then followed by the Kyoto Protocol, which was adopted in 1997.[17]

The commitments of the EU under the Kyoto Protocol (for average emission in the 2008-2012 period) can be summarized as follows:

- a collective 8% CO_2 reduction target (relative to 1990 emissions) for the EU-15 (the EU member states in 1997)
- individual 8 % reduction targets for most of the new member states
- 6% reduction targets for Hungary and Poland
- no targets for Cyprus and Malta.[18]

Due to an ambiguous international climate strategy, the EU committed itself in 2007 to reduce its greenhouse gas emissions unilaterally by 20 percent until 2020 (base year 1990). This goal is going to be raised to a 30% reduction, contingent on similar commitments made by other developed countries, as well as emerging economies according to their responsibilities and capabilities.[19]

Based on these unilateral commitments, the EU for COP 15 primarily aimed to achieve a legally binding post-2012 global climate agreement, in line with keeping global warming below 2 degrees Celsius.[20] However, the Copenhagen Accord[21], being the key outcome of the Copenhagen conference, fell short of many of the EU's objectives. First of all, it does not set global mid-term or long-term reduction targets. Secondly, the offers made by State Parties in Copenhagen did not add up to what was required by science in order to stay within the 2-degree objective. And, thirdly – and most importantly – the Accord is not a legally binding document and, what is more, it does not explicitly aim towards the conclusion of a legally binding agreement in 2010.

In response to COP 15, the European Council at its meeting on 26 March 2010 in Brussels "called for introducing a new dynamic to the international negotiating process, and proposed following a

[16] After COP XV, the EU's leading role in international climate change policy has come increasingly into question, see among others: Piotr Maciej Kaczynski, *Single Voice, Single Chair? – How to Re-organise the EU in International Negotiations under the Lisbon Rules*, Centre for European Policy Studies (CEPS), No. 207, March 2010; Susanne Dröge/Oliver Geden, *EU-Richtungswechsel in den Klimaverhandlungen?*, Stiftung Wissenschaft und Politik (SWP) , April 2010 (SWP-Aktuell 35).
[17] The EU itself (before the Lisbon Treaty the European Community) as well as all of its Member States are party both to the UNFCCC and to the Kyoto Protocol, see for further information: <http://unfccc.int>.
[18] Some of the New Member States are allowed to choose different base years, see Article 3 para. 5 of the Kyoto Protocol in connection with Annex B.
[19] European Council, *Presidency Conclusions of the Brussels European Council*, 8–9 March 2007, available at: <http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/93135.pdf>.
[20] European Commission, *European Union COP-15 Information Sheet: EU Key Objectives for a Post-2012 Global Climate Agreement*, available at: <http://www.se2009.eu/polopoly_fs/1.26363!menu/standard/file/Info%20sheet%20key%20objectives%20final.pdf>.
[21] Adopted on 18 December 2009, available at: <http://unfccc.int/files/meetings/cop_15/application/pdf/cop15_cph_auv.pdf>.

stepwise approach building on the Copenhagen Accord and its swift implementation"[22]. The stepwise approach should consist of two steps:

"a) As a first step, the next meetings in Bonn [31 May to 11 June] should set the roadmap for taking the negotiations forward. The focus should be on integrating the political guidance of the Copenhagen Accord into the various negotiating texts.
b) The COP-16 in Cancún should at least provide concrete decisions anchoring the Copenhagen Accord to the UN negotiating process and addressing remaining gaps, including as regards adaptation, forestry, technology and monitoring, reporting and verification."[23]

Along with this, the Council concluded, among others, "that a global and comprehensive agreement remains the only effective way to reach the agreed objective of staying below 2°C increase in global temperatures compared to pre-industrial levels"[24]. It furthermore outlined that, according to its commitment to provide 2.4 billion Euro annually over the 2010–2012 period for fast-start financing, it will initiate consultations on practical ways to implement fast start funding in specific areas.[25] A preliminary state of play of commitments will be presented at the May/June 2010 UNFCCC session.[26] As regards third countries, the Council emphasised that it will strengthen its outreach to these countries by addressing climate change at all regional and bilateral meetings, including at summit levels, such as the G20.[27]

Along with this, the Commission published on 26 May 2010 its updated "Analysis of options to move beyond 20% greenhouse gas emission reductions and assessing the risks of carbon leakage"[28]. In this paper, the Commission states that the purpose of this communication "is not to decide now to move to a 30% target: the conditions set are clearly not met." Thus, the paper not only recognizes the realities in international climate change negotiations, as at last shown during the Copenhagen conference, it also reflects to some extent the internal battles that takes place within the Commission at present. These are characterized by a division of member states about the EU's climate strategy: on the one side (UK), holding on a unilateral move to a 30 % reduction target by 2020, on the other side (France, Germany and Poland), insisting on waiting for other rich countries to match their cuts.[29]

In the very next future, it remains thus to be seen whether the EU can maintain its leading role at the international stage. A success in this relation will decisively depend, among others, on its capability to embed its climate diplomacy in strategic foreign relations in order to avoid to be sidelined during the final stage of the negotiations.[30]

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[22] Press Release, 29 March 2010: <http://climate-l.org/2010/03/29/european-council-endorses-post-copenhagen-strategy/>.
[23] European Council, *Conclusions on Europe 2020. Climate Change, and More. II Climate change: Refocusing Our Efforts After Copenhagen*, available at:
<http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/113591.pdf>.
[24] Ibid., *II Climate change: Refocusing our efforts after Copenhagen*, para. 11.
[25] Ibid., *II Climate change: Refocusing our efforts after Copenhagen*, para. 13. a).
[26] Ibid.
[27] Ibid., *II Climate change: Refocusing our efforts after Copenhagen*, paragraph 13. d).
[28] Available at: <http://ec.europa.eu/environment/climat/pdf/2010-05-26communication.pdf>.
[29] Jennifer Rankin, "EU to Maintain Climate Strategy", in *European Voice*, 26 May 2010, available at:
<http://www.europeanvoice.com/article/2010/05/eu-to-maintain-climate-strategy/68046.aspx>.
[30] Oliver Geden/Martin Kremer, "The European Union: A Challenged Leader in Ambiguous International Climate Policy", in Susanne Dröge (ed.), *International Climate Policy*, Berlin, March 2010 (SWP Research Paper).

2.3 The relevance of indigenous peoples to the EU

The development of a European Union policy on indigenous peoples is relatively recent[31] and, compared to other EU policies, not of very high relevance.

Taking the presence of indigenous peoples in the EU area as a point of departure, the concept of "indigenousness"[32] can be applied only to the Saami of Finland and Sweden.[33] Apart from the fact that the definition of Saami is problematic because of the use of different criteria in both countries, it could be, however, roughly estimated that there are between 15,000 and 25,000 Saami in Sweden, and around 7,500 Saami in Finland.[34] Within the EU area, the Saami people of Finland and Sweden are at the same time the only "Arctic" indigenous people.

One of the most apparent controversies in the debate over indigenous peoples is the question whether indigenous peoples are to be regarded as 'peoples' with the right to self-determination. Controversies in this framework mainly result from the "fear among states that recognition of such a right [the political right to self-determination] will result in secession from established states."[35] This fear also characterizes the EU's debate on its policy on indigenous peoples.[36]

At the international level, the EU reflected on the increasing awareness of indigenous peoples' rights internationally, as this has been recently documented by the adoption of the Declaration of the Rights of Indigenous Peoples by the United Nations General Assembly in 2007. The EU co-sponsored the respective resolution and voted in favour of it.[37] Moreover, the EU supported several actions targeting indigenous peoples either directly or as a cross-cutting issue. In 2008, the project "Promotion of Indigenous and Tribal Peoples' Rights through Legal Advice, Capacity-Building and Dialogue" was initiated as a joint management between the European Commission and the International Labour Organization (ILO). The project can be seen as a continuation of the

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[31] Aron Best et al., *Comparative Policy Analyses: U.S., EU and Transatlantic Arctic Policy. Final report of Arctic TRANSFORM*, 30 April 2009, p. 39, available at: <http://arctic-transform.org/download/PolicyBP.pdf>; Adele Airoldi, *The European Union and the Arctic – Policies and Actions*, Copenhagen: Nordic Council of Ministers, June 2008 (ANP 2008:729), p. 81.

[32] There is no international agreed definition on the concept of „indigenous". However, the UN Working Group on Indigenous Populations (UNWGIP) lists the following factors that have been considered relevant to the understanding of the concept of „indigenous": (1)Priority in time, with respect to the occupation and use of a specific territory; (2) The voluntary perpetuation of cultural distinctiveness, which may include the aspects of language, social organization, religion and spiritual values, modes of production, laws and institutions; (2) Self-identification, as well as recognition by other groups, or by State authorities, as a distinct collectivity; and (4) An experience of subjugation, marginalization, dispossession, exclusion or discrimination, whether or not these conditions persist.

[33] The Inuit of Greenland do not count here since Greenland does not belong to the EU. In the case of the Basques of Spain the concept of „indigenousness" does not apply to them since they do not define themselves as indigenous (the criterion of self-identification is missing).

[34] See <http://www.nationalia.info/en/news/365>.

[35] Láilá Susanne Vars, "Political Aspects of the Sami's Right to Self-Determination", in John B. Henriksen (ed.), *Sami Self-Determination – Scope and Implementation*, Galdu Cala 2008 (Journal of Indigenous Peoples Rights No. 2/2008), p. 66.

[36] Reference number 1 of the draft Council Conclusions on Indigenous Peoples of 11 November 2002, for example, noted that „There is no common EU position on the use of term indigenous peoples. Some member states are of the view that indigenous peoples are not to be regarded as having the right of self-determination for the purposes of Article 1 of the ICCPR and the ICESCR, and that use of the term does not imply that indigenous people or peoples are entitled to exercise collective rights."

[37] Council, *EU Annual Report on Human Rights 2008*, Brussels, 27 November 2008, p. 116, available at: <http://www.consilium.europa.eu/showPage.aspx?id=1689&lang=EN>.

implementation of a project by ILO and the work carried out in the regions of Latin America, South Asia and Central Africa. An accomplishment linked to his project was the ratification of ILO Convention No. 169 on Indigenous and Tribal Peoples, by the Government of Nepal, in September 2007.[38]

At the internal level, the issue of indigenous peoples was mentioned for the first time at the Development Cooperation Group of the Council in 1997.[39] In 1998, the Commission produced a working document which provided the basis for its indigenous peoples' policy recognising the value of the indigenous cultures as a potential resource to the entire planet, as well as the importance that indigenous cultures attach to the affirmation of their "self-development", including their own diverse development concepts. Moreover, the importance of encouraging their full and free participation in their countries' development and democratic processes was mentioned. [40] The working document became later endorsed by the European Council.[41]

From this starting point, further important steps in EU policy towards indigenous peoples have been taken as follows:

- In 1999, two Council Regulations have been adopted on the implementation of human rights policy.[42] They became the legal basis for supporting indigenous peoples' rights through the European Initiative for Democracy and Human Rights, renamed in 2006 as the European Instrument for Democracy and Human Rights (EIDHR). The EIDHR aims to provide support for the promotion of democracy and human rights in non-EU countries.[43]
- In 2002, the Council endorsed its conclusions on indigenous peoples[44]. According to them, indigenous peoples' issues should be mainstreamed into the EU's policies, practices and working methods. Furthermore, the principle of full and effective participation of indigenous peoples in all the stages of relevant cooperation projects has been recommended.
- In 2005, the "European consensus on development"[45], a joint statement of the Council, the Parliament and the Commission was adopted. It serves as a basis for the EU development cooperation policy and reaffirms the key positions of the Council Conclusions of 2002. It emphasised that the key principle for safeguarding indigenous peoples' rights in

[38] Ibid. p. 117.
[39] See European Commission Website at: <http://ec.europa.eu/external_relations/human_rights/ip/index_en.htm>.
[40] European Commission, *Working Document of the Commission of May 1998 on Support for Indigenous Peoples in the Development Co-operation of the Community and the Member States*, available at: <http://ec.europa.eu/external_relations/human_rights/ip/docs/working_doc_98_en.pdf>.
[41] Council Resolution of 30 November 1998, available at: <http://ec.europa.eu/external_relations/human_rights/ip/docs/council_resolution1998_en.pdf>.
[42] Council Regulation No 975/1999 of 29 April 1999, available at: <http://ec.europa.eu/europeaid/what/human-rights/documents/975_99_en.pdf>, and Council Regulation No 976/1999 of 29 April 1999, available at: <http://ec.europa.eu/europeaid/what/human-rights/documents/976_99_en.pdf>.
[43] See for further information: <http://ec.europa.eu/europeaid/how/finance/eidhr_en.htm>.
[44] Council, *Council Conclusion on Indigenous Peoples*, 18 November 2002, available at: <http://europa.eu/rapid/pressReleasesAction.do?reference=PRES/02/350&format=HTML&aged=1&language=EN&guiLanguage=fr>.
[45] The Joint Declaration was signed on 20 December 2005, see for further information: <http://europa.eu/legislation_summaries/development/general_development_framework/r12544_en.htm>.

development cooperation is to ensure their full participation and the free, prior and informed consent of the communities concerned.

As regards the Arctic, the status of the Saami has been particularly recognized when Finland and Sweden joined the EU in 1995.[46] The primary objective of respective EU programmes is to strengthen Saami business and thereby to contribute to the development of Saami culture and Saami social life, while in the long-term a differentiated and developed Saami commercial sector that is based on close ties between the natural environment, culture and tradition shall be achieved.[47]

In the recent past, the European Commission hosted an "Arctic Dialogue Workshop"[48] that aimed at enhancing the dialogue between Arctic Indigenous peoples and the European institutions. The workshop took place against the background of the EU ban on seal products that went into force in 2009 and that caused a great deal of resistance (among others, from Canada, Norway and indigenous peoples' organizations) to the EU Commission's application to become a permanent observer to the Arctic Council. Against the backdrop of these tensions, the workshop marked an important step towards a dialogue.

3. The EU's climate change policy and its Arctic implications

The Arctic has at most been of peripheral importance to the EU, which for decades was firmly anchored in central and southern Europe.[49] The EU's interest towards the whole Arctic region is relatively recent and primarily related to the region's emerging geopolitical role.[50] One of the key drivers of this development is climate change and its impacts on the Arctic environment: the EU has increasingly referred to the special vulnerability of the Arctic to climate change and its role as an indicator for the rapid progress of global warming.[51]

In the following, the EU's role in the field of climate change in relation to the Arctic is explored by identifying the EU's activities in the region. Hereby, two different types of EU actions are considered: First, the EU's declared political statements towards the region concerning climate change, and second, its measures in the field of climate change that have an Arctic implication, comprising specific EU programmes and projects. Before doing so, the legal basis for EU climate change actions towards the Arctic is outlined. The issues of indigenous peoples in the context of Arctic climate change are also taken into consideration when EU's climate change actions are identified.

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[46] Protocol 3 to the Act of Accession of Sweden and Finland.
[47] See Website of the Swedish Saami, *The Saami and the EU*, available at: <http://www.eng.samer.se/servlet/GetDoc?meta_id=1110>.
[48] See Website of the Arctic Council Indigenous Peoples Secretariat (IPS): <http://ips.arcticportal.org/news/item/290-arctic-dialogue-workshop>.
[49] Adele Airoldi, *The European Union and the Arctic – Policies and Actions*, Copenhagen: Nordic Council of Ministers, June 2008 (ANP 2008:729), p. 13.
[50] As this has been evidenced, among others, by the assessment of the High Representative and the European Commission in their paper to the European Council on *Climate Change and International Security* of 14 March 2008.
[51] See for instance Memo/07/515 of 27 November 2007, *Climate Change and the EU's Response*, available at: <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/515>; Joe Borg, *Speech at the Arctic Frontiers Annual Conference 2009*, 19 January 2009, available at: <http://www.arctic-frontiers.com>.

3.1 Legal basis

Taking the eight Arctic states as a point of departure, three of them are EU member states – Denmark (Greenland), Finland and Sweden. However, as Greenland and the Faroe Islands do not belong to the EU[52], the EU itself has no coastline to the Arctic marine area. Moreover, Island and Norway, as Arctic states, belong to the European Economic Area (EEA) and are therefore considerably impacted by EU law.[53] [54] In the case of Iceland, which applied for EU membership in July 2009, the Commission in its Opinion of February 2010[55], analyses that "Iceland has already aligned a large part of its legislation and policies with European standards". Furthermore, Russia is the main partner of the EU within the Northern Dimension, while Canada as well as the United States are strategic Partners of the EU interlinked with each other by several bilateral agreements.

Notwithstanding these links between the EU and the eight Arctic states, EU law directly applies only to three of them, and in the case of Denmark this application does not cover Greenland and the Faroe Islands. Thus, in legal terms, the EU acts as an external actor in relation to the majority of Arctic states. This distinguishes its Arctic policy decisively from that to other sea-related regions, like the Mediterranean or Baltic Sea Region, and has consequences for the determination of its policy actions towards the Arctic region.

The legal basis for EU policy actions is provided by the founding treaties of the EU. With the entering into force of the Lisbon Treaty on the 1st of December 2009, two of them – the Treaty on European Union (TEU) and the Treaty Establishing the European Community, the latter renamed Treaty on the Functioning of the European Union' (TFEU) – have been amended to the effect that the European Union and European Community merged into one European Union. Along with that, the Treaty of Lisbon abolished the former "three-legal-pillars" system, and the European Union succeeded the legal personality of the European Communities as a consolidated entity.[56] Being an international legal personality, the EU is now able to conclude an agreement with one or more third countries or international organisations in its own name.[57] In this context, EU negotiation practices have been accordingly changed.[58] For the purpose of this paper, these changes become in particular relevant for the EU in international climate change negotiations, like those within the UNFCCC framework.

Concerning institutional competences, the Treaty of Lisbon introduced a catalogue of those competences that were formerly distributed over the whole treaty arrangement and have now become concentrated in Articles 2–6 TFEU. Accordingly, climate change policy, as a part of

[52] Greenland withdrawal from the EU on 1 February 1985. In the following it was granted the status of an Overseas Countries Territories (OCT) and later on linked to the EU by several partnership agreements.
[53] As for Iceland, through the EEA it has taken on 80% of all EU legislation, and for Norway, it still has to harmonize almost all of its legislation with the EU since 80% of its trade occurs with the enlarged EU. See Diana Wallis et al., *Forgotten Enlargement. Future relations with Iceland, Norway and Switzerland*, 2nd edition, London: Centre for Reform, 2004, pp. 14 and 43.
[54] Svalbard, which is according to the Svalbard Treaty of 1920 under Norway's sovereignty, is excluded from the EEA agreement.
[55] European Commission, *Key findings of the Commission's Opinion on Iceland*, Brussels, 24 February 2010, available at: <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/10/48>.
[56] Article 47 TEU.
[57] Articles 216 and 217 TFEU.
[58] Article 218 TFEU.

environmental policy, falls in the "shared competence" area where both, the Union and the member states may legislate and adopt legally binding acts with the qualification that member states shall exercise their competence [only] to the extent that the Union has not exercised its competence.[59]

However, as EU actions in relation to the majority of Arctic states are determined by its role as an external actor (as described previously), foreign policy plays an important role. The EU's foreign policy is relatively new, and still lacks the supranational structure of other EU policy domains (such as the single market, for instance).[60] Along with this, the constitutional structure of EU international relations law is fragmented.[61] The Lisbon Treaty has not principally changed this, although new external policy institutions have been introduced, such as the High Representative of the Union for Foreign Affairs and Security Policy and a new External Action Service, both aiming at greater coordination and consistency in EU foreign policy. According to the present arrangement, EU external policies appear mainly in the following three types of actions: first, in policies in which the EU has exclusive competence (such as trade for instance); second, through the external dimensions of its internal policies; and third, through its Common Foreign and Security Policy (CFSP). As regards climate change – as a shared competence between the EU and member states – respective actions of the EU towards the Arctic will be mainly identified through the external dimensions of its respective internal policies, although climate change actions could also affect exclusive competences (as far as they are tangent to international trade agreements) and/or the EU's CFSP (as far as they are connected to international climate change negotiations).

3.2 The EU's declared interest towards the Arctic in the field of climate change

While climate change itself has been one of the major topics in EU politics since the late 1980s (see Chapter 2.2), the EU's attention to climate change challenges towards the Arctic is of rather recent date.

In March 2008, the High Representative and the European Commission issued a paper to the European Council on "Climate Change and International Security".[62] In this paper, climate change and its impacts on the Arctic have been particularly addressed in view of their decisive role for "changing the geo-strategic dynamics of the region with potential consequences for international stability and European security interests"[63]. In doing so, the paper stressed the need to address the growing debate over territorial claims and access to new trade routes by different countries and emphasised that these concerns, at the same time, challenge Europe's ability to effectively secure its trade and resource interests in the region and may put pressure on its

[59] See Articles 2 (2) and 4 (2) (e) TFEU. In fact, this situation has not been changed by the Lisbon Treaty; environmental policy was already a shared competence between the EU and its Member States before its entry into force.
[60] Michael E. Smith, "Toward a Theory of EU Foreign Policy-Making. Multi-Level Governance, Domestic Politics, and National Adaptation to Europe's Common Foreign and Security Policy", in *Journal of European Public Policy*, 11 (2004) 4, p. 740.
[61] Paul P. Craig/Crainne DeBurca, *EU Law. Text, Cases and Materials*, 4th edition, Oxford University Press, 2008, p. 169.
[62] High Representative and European Commission, Paper to the European Council on *Climate Change and International Security,* Brussels, 14 March 2008, available at: <http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/reports/99387.pdf>.
[63] Ibid., p. 8.

relations with key partners.[64] This statement clearly indicates that climate change in the Arctic, from a EU perspective, implies not only security but first and foremost also economic challenges.

In October 2008, the European Parliament issued a resolution on "Arctic Governance"[65]. Therein, it expressed firstly its deep concerns "at the effects of climate change on the sustainability of lives of indigenous peoples in the region, in terms of both the general environment (melting icecap and permafrost, rising sea levels and flooding) and the natural habitat (the retreating icecap poses problems for polar bears' feeding habits)"[66]. In consequence of these concerns, the Parliament called on the Commission to add energy and security policy in the Arctic region to its agenda, and to include suitable subjects and joint working procedures for the EU and the Arctic countries primarily (but not exclusively) in the field of climate change.[67]

In November 2008, the Commission issued its communication on "The European Union and the Arctic Region"[68] – up to this date, it is the most far-reaching and comprehensive EU strategic document on Arctic policies. According to this communication, the prevention and mitigation of the negative impact of climate change as well as the support of the adaptation to inevitable changes belong to the first of the three main policy objectives. This objective contains, among others, a proposal for action to "strengthen international efforts to mitigate climate change and identify areas where support for adaptation to the effects of climate change needs to be provided, including the adaptive management of biodiversity" [69] . Importantly, the protection and preservation of the Arctic (objective 1) should be conducted in unison with its population. In this regard, the communication recognises the particular vulnerability of Arctic indigenous peoples to the increasing pressure of climate change and globalisation and declares that EU policies should continue to seek an open dialogue with the communities involved while taking into account the principle of full participation and free, informed consent of indigenous peoples.[70] However, as regards the particular affection of indigenous peoples in the Arctic by climate change, the communication does not contain any concrete proposals for action to support indigenous peoples in the adaptation process.

In its conclusions from December 2008 [71] , the Council welcomed the Commission's communication and considered it as a first layer of a EU Arctic policy. At the same time, the Council agreed that the effects of climate change and of human activities have significant repercussions for the European Union as a whole, and therefore concluded that the European Union should address Arctic challenges – like those of climate change as well as the protection of indigenous peoples – in a ***systematic and coordinated*** manner.

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[64] Ibid.
[65] *EU Parliament Resolution: Arctic Governance*, Brussels, 9 October 2008, available at: <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P6-TA-2008-0474+0+DOC+XML+V0//EN>.
[66] Ibid., para. 1.
[67] Ibid., para. 8.
[68] European Commission, *EC Communication: The European Union and the Arctic Region*, Brussels, 20 November 2008, available at: <http://ec.europa.eu/external_relations/arctic_region/docs/com_08_763_en.pdf>.
[69] Ibid., *2.1 Environment and climate change, Proposal for action 2*.
[70] Ibid., *2.2 Support to indigenous peoples and local population*.
[71] The Council at its 2914th meeting of 8 December 2008 adopted conclusions on *The EU and the Arctic region*, drafted at its meeting on 4 December 2008, available at: <http://register.consilium.europa.eu/pdf/en/08/st16/st16826.en08.pdf>.

Special attention was drawn to Arctic climate change when six groups of Parliamentarians tabled a motion for a resolution on an international treaty for the protection of the Arctic in March 2009[72]. Despite the fact that the necessary majority for such a resolution was beyond reach, the respective Members of the European Parliaments called on the Commission and the Council "to ensure that the Arctic region, by virtue of its impact on the world's climate and its unique natural environment, is given special attention as the EU [during that time] formulates its position for the COP 15 UN Climate Change Conference"[73] later held in Copenhagen in December 2009. However, neither the Parliament's resolution on the EU strategy for the Copenhagen Conference on Climate Change of 25 November 2009[74], nor the Council Conclusions on EU position for the Copenhagen Climate Conference of 21 October 2009[75] contained any specific reference to climate change impacts on the Arctic.

In December 2009, The Council adopted conclusions on Arctic issues[76], while recognising member states' legitimate interests and rights in the Arctic. As regards climate change, the Council again recognised the particular vulnerability of the Arctic region and its crucial importance to the world climate system. Thus, it stressed the need to give increased attention to the impact of climate change in the Arctic within the framework of the United Nations Framework Convention on Climate Change (UNFCCC) negotiations. It also supported action by appropriate international bodies, such as the Arctic Council, World Meteorological Organization (WMO), and the United Nations Environment Programme (UNEP), to enhance observation, monitoring and research, as well as to reduce the effects of emissions of green house gases, black carbon and other short-lived climate forces in the Arctic. In relation to indigenous peoples, the Council underlined the importance of supporting sustainable development for them while paying regard to their traditional means of livelihood. It further welcomed the Commission's proposal to engage in a broad dialogue with Arctic indigenous peoples on the basis of respect for the rights of the indigenous peoples.

On 10th of March this year, a debate on Arctic issues was held at the Parliament[77], involving a statement of the High Representative for Foreign Affairs and Security Policy confirming the EU's political and economic interest in the Arctic region. In relation to climate change, Catherine Ashton stressed the need of assigning high priority to safeguarding environmental conditions in the context of the exploitation of new energy resources. Respective development should be conducted jointly by EU institutions and member states, especially the three Arctic member states, and in closed cooperation with other Arctic stakeholders.

To sum up these political standpoints of different EU institutions, there is definitely an increased attention towards the Arctic, coming from two closely related directions: the specific vulnerability

[72] European Parliament, *Joint Motion for a Resolution on the International Treaty for the Protection of the Arctic*, 30 March 2009, available at: <http://www.europarl.europa.eu/sides/getDoc.do?type=MOTION&reference=P6-RC-2009-0163&language=EN>.
[73] Ibid., para. 8.
[74] See <http://www.europarl.europa.eu/sides/getDoc.do?type=TA&reference=P7-TA-2009-0089&language=EN>.
[75] See <http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/envir/110634.pdf>.
[76] Council, *Council Conclusion on Arctic Issues*, Brussels, 8 December 2009, available at: <http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/EN/foraff/111814.pdf>.
[77] The statements of the High Representative for Foreign Affairs and Security Policy and of other MEPs are available at: <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+CRE+20100310+ITEM-011+DOC+XML+V0//EN>.

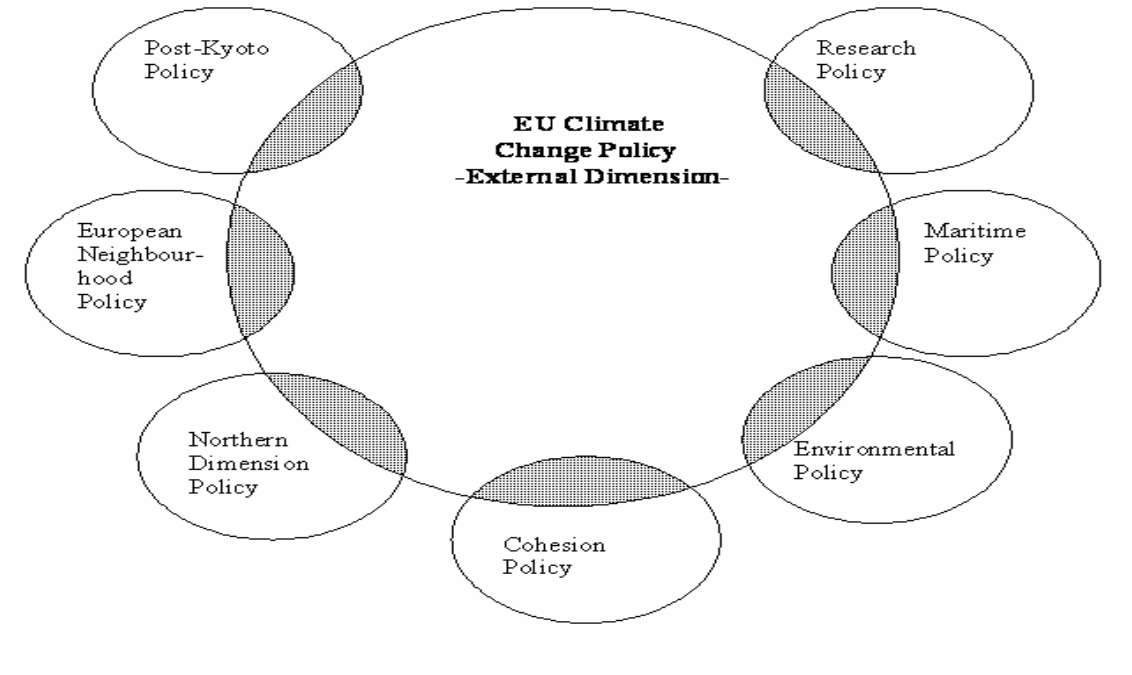
of the region and new prospects arising from climate change. However, this debate is characterized by a great deal of controversy. Often it becomes not very clear by which concepts and positions a future policy on Arctic climate change will be backed up. Against this background, the following chapters of this paper describe measures of EU climate change policy in place that actually and potentially cover Arctic climate change challenges. Hereby the scope is limited to those fields of policy that are either specifically relevant for EU actions towards the Arctic, as a mostly external region, or intrinsically linked to climate change because of their environmental reference.

3.3 Key climate change actions

3.3.1 Climate change policy

The EU's climate change policy is first and foremost very complex. Due to the global relevance of climate change and due to the fact that it is often a subject matter of international agreements, climate change plays an important role in the EU's external policy, in particular in the climate change negotiations within the UN as well as in the framework of bilateral or multilateral agreements with third countries. Apart from the above-mentioned relevance of climate change within the EU external policy, for example in climate change negotiations under the Kyoto Protocol (Chapter 2.2), climate change becomes also relevant within the cross border cooperation with immediate neighbouring countries and within the new Northern Dimension, characterized "as a regional expression of the four common spaces of the Strategic Partnership between the EU and Russia". It is also a subject matter of the EU's cohesion policy, covering not only regions along all internal land borders, but also certain regions along external land and maritime borders.
Moreover, climate change is one of the key drivers of almost all internal sectoral policies within the EU. Climate change in a narrower sense, that is, as an environmental issue, is first and foremost interlinked with the EU's environmental, maritime and research policy. When it comes to the Arctic, the external dimensions of these policies become especially relevant.

In order to illustrate this complexity and to give an overview of the individual policies that are subsequently described, the following figure might be useful. The grey-shaded spaces stand for the subject matters of investigation: external policies or external dimensions of internal polices focussing on climate change that have an actual or hypothetical Arctic implication.



3.3.1.1 Mitigation and adaptation

Institutionally, climate change policy within the Commission became most recently, obviously as an expression of the high priority of this topic within EU policies, managed by a specific Directorate for Climate Action, which came into office in February 2010. Before, the main responsibility within the Commission was hold by the Directorate for Environment. Due to the close interlinkage of climate change issues with many environmental issues, it could become, however, difficult to find a clear classification and separation of responsibilities between both Directorates in practice. Along with that, a new Commissioner for Climate Action has been introduced whose mandate is to "have a central role in continuing EU leadership in fighting climate change and leading our [the EU's] international negotiations on climate as well as helping the EU to deal with the consequences of climate change."[78] This mandate clearly indicates the strong focus of this institution on the external representation of EU climate change policies. In practice it remains to be seen, to what extent EU member states are willingly to allow the Commission to play the central role in leading the EU's efforts in climate change negotiations.[79]

EU climate change mitigation policy, overall, aims to reduce greenhouse gas emissions by 20 % of the 1990 level by 2020, and it would commit itself to even 30 %, provided that a similar commitment is undertaken by other industrialized countries and adequate contributions come from economically more successful developing countries.

In 2000, the Commission established a dedicated European Climate Change Programme which aimed to identify the most environmentally effective and most cost-effective policies and measures that can be taken at European level to cut greenhouse gas emissions. Under this programme eleven working groups have been established covering, among others, flexible

[78] Commissioner Connie Hedegaard's mandate provided by President Barroso on 27 November 2009, available at: <http://ec.europa.eu/commission_2010-2014/hedegaard/about/mandate/hedegaard_climate_en.pdf>.
[79] Kaczynski, supra note 16.

mechanisms, such as emissions trading, joint implementation and clean development mechanisms up to energy supply and demand.[80]

Then, following in March 2007, the European Council endorsed an integrated energy and climate package, based on the objective of a maximum increase in global average temperature of 2 degrees Celsius over pre-industrial levels, and containing the following targets to be met by 2020:

- a reduction in EU greenhouse gas emissions of at least 20% of 1990 levels
- 20% of EU final energy consumption to come from renewable resources
- a (legally non-binding) 20% reduction in primary energy use compared with projected levels, to be achieved by improving energy efficiency.[81]

In January 2008, the Commission adopted a package of energy and climate policy proposals.[82] Combined with the previously proposed 2006 Energy Efficiency Action Plan and the 2007 proposal for the reduction of carbon dioxide from passenger cars, the package lays the groundwork for achieving a 20% reduction target by 2020. After a controversial debate, mainly on a potential competitiveness problem for energy intensive industries, the package became finally endorsed by the Council and the Parliament at the end of 2008.[83]

Compared to climate change mitigation policies, the EU's climate change policy on adaptation is relatively new. It considers climate change impacts on a range of sectors, organizations and peoples and involves risk assessment as well as cost-benefit analysis. It also recognizes that the majority of adaptation actions will need to pass parliamentary legislation and be undertaken at the local, regional and national level. Since adaptation policy, in distinction to mitigation policy, focuses predominately on the effects of climate change, it has a much greater external component and is thus, at least theoretically, much more relevant to the Arctic.[84]

Arctic implications

The direct relevance of the EU's climate change mitigation measures to the Arctic relevance is rather limited. Respective measures contained in the European Climate Change Programme and in the subsequent energy and climate change package refer primarily to the EU internal level, since they are specifically addressed to EU member states. Thus, they do not have any specific Arctic implication. However, since decisive reduction of greenhouse gas emissions in Europe would reduce the global impact in itself, the Arctic, like other regions in the world, would certainly benefit from such efforts.[85]

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[80] The palette of these working groups illustrates once more the diversity of policy areas affected.

[81] Collectively, these targets are known as the 20-20-20 targets, for further information see <http://ec.europa.eu/environment/climat/climate_action.htm>.

[82] European Commission, *Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC*, 23 January 2008, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0016:FIN:en:PDF>.

[83] See Press Release of 18 December 2008, <http://www.euractiv.com/en/climate-change/mixed-reactions-parliament-approves-eu-climate-deal/article-178163>.

[84] The Commission outlines at its webpage that „adopting to climate change will […] feature prominently in the Union's external policies to assist those countries most affected". See <http://ec.europa.eu/environment/water/adaptation/index_en.htm>.

[85] Although the global impact would be relatively low since the EU presently produces less than 15% of greenhouse gas emissions while China counts for more than 19% and the U.S. for more than 18%.

As regards climate change adaptation measures, the Arctic relevance is potentially higher. In a "green paper", published by the Commission in 2007, options for EU action for adaptation to climate change have been comprehensively addressed for the first time.[86] The paper generally stressed the need for further research, early integration of adaptation into all present and future EU policies, as well as the funding of programmes and external action, and involving all stakeholders in the development of adaptation strategies. While not focusing on Arctic-specific problems, the paper recognised that the Arctic region is among the most vulnerable areas in Europe, and underlined the importance of involving Russia, Europe's far north, Greenland and the Arctic region in adaptation efforts. Furthermore, the paper stressed the need to improve the basic understanding and prediction of impacts of climate change in the Arctic and raised the general question of whether a re-thinking of EU external policy is needed in light of the need to adapt to climate change.

After public consultation, a "white paper" on "Adapting to climate change: Towards a European framework for action" has been issued in April 2009.[87] In distinction to the precursory "green paper", the "white paper" referred to the Arctic only as one of the most vulnerable regions in Europe. As regards the external dimensions and ongoing work under the UNFCCC, the paper stresses that adaptation should be integrated in trade policy as well as in bilateral and regional financial assistance programmes. Furthermore, it emphasised that external EU policy should also make a substantial contribution to adaptation, via water management, agriculture, biodiversity, forests, desertification, energy, health, social policy, research, coastal erosion, and disaster risk reduction. However, in the latter context the Arctic region has not been referred to specifically.

3.3.2 External policies

3.3.2.1 European Neighbourhood Policy (ENP)

The European Neighbourhood Policy (ENP), a rather recently developed policy, generally aims to avoid the emergence of new dividing lines between the enlarged EU and its neighbours, and instead to strengthen the prosperity, stability and security of all.[88] Since Denmark, Finland and Sweden belong to the EU, and Iceland and Norway are affiliated to the European Economic Area (EEA), only Russia, as an Arctic state and an immediate[89] neighbour to the EU, comes into consideration to be a partner in the ENP. However, Russia, in fact is not a direct partner of the ENP although it is linked to it through the common financing instrument, the European Neighbourhood Partnership Instrument (ENPI)[90]. Through this instrument, Russia is in the position to participate in related programmes: the regional programme in the east and the inter-regional and cross-border programmes. The core objectives of the latter are to support sustainable development along both sides of the EU's external borders, to help decrease differences in living

[86] See <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0354:FIN:EN:PDF>.
[87] See <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0147:FIN:EN:PDF>.
[88] The European Neighbourhood Policy (ENP) was developed in 2004, for further information see <http://ec.europa.eu/world/enp/policy_en.htm>.
[89] The ENP, from a geographical point of view, aims on its „closest" European neighbours only. These are: Algeria, Armenia, Azerbaijan, Belarus, Egypt, Georgia, Israel, Jordan, Lebanon, Libya, Moldova, Morocco, Occupied Palestinian Territory, Syria, Tunisia and Ukraine.
[90] EC Regulation No. 1638/2006 of the European Parliament and of the Council of 24 October 2006 lays down general provisions establishing a European Neighbourhood and Partnership Instrument, available at: <http://ec.europa.eu/world/enp/pdf/oj_l310_en.pdf>.

standards across these borders, and to address the challenges and opportunities following EU enlargement or otherwise arising from the proximity between regions across the EU's land and sea borders.[91] Climate change as a common challenge in the field of environment belongs to these objectives.[92] In 2009, five financing agreements related to Russian cross-border regions were signed[93], but not all of them have yet been ratified by Russia.

Arctic implications

When it comes to the Arctic, two of the above mentioned ENPI financing agreements signed in 2009 have an Arctic implication and could be potentially relevant to climate change[94]:

- *Kolarctic ENPI CBC Programme*[95]: The programme aims to promote cross-border co-operation in a programme area that includes the northern parts of Finland, Sweden and Norway and a large area of north-west Russia. The programme is managed by all the participating countries through the joint management structures. The Joint Managing Authority (JMA) of the Kolarctic programme is hosted by the Regional Council of Lapland (Finland). The first call for proposals has been launched in January 2010 and closed on 9 April 2010. Overall, 34 applications have been submitted, one of which directly includes issues on indigenous peoples and another one includes climate change issues. However, since the ratification of the respective financing agreement, in this case, is still outstanding by the Russian parliament, the signature of contracts with beneficiaries and the allocation of funding have been suspended accordingly.
- *Karelia ENPI CBC Programme*[96]: The key objective of the programme is to strengthen cross-border cooperation in strategically important territories in the programme area and to provide preconditions for pursuing such cooperation in practise. The programme area covers Kainuu, North Karelia, Northern Ostrobothnia, and the Republic of Karelia. The adjacent regions are Lappi and Pohjois-Savo in Finland and the city of St. Petersburg, and the areas of Leningrad, Murmansk and Archangel in Russia. The programme is managed by the Council of Oulu Region (Finland) as the responsible JMA. The first phase of the first call for proposals closed on 17 March. Within the submission period, 56 concept notes were submitted to the JMA. A second call for proposals has been launched in the meantime and decisions on the applications are planned to be made in September 2010.

3.3.2.2 The Northern Dimension

The Northern Dimension, decisively developed on intensified efforts by Finland after its accession to the EU in 1995,[97] has become an important part of the EU external and cross-border

[91] European Commission, *European Neighbourhood & Partnership Instrument, Cross-Border Cooperation, Strategy Paper 2007-2013, Indicative Programme 2007-2010*, available at: <http://ec.europa.eu/world/enp/pdf/country/enpi_cross-border_cooperation_strategy_paper_en.pdf>.
[92] Ibid.
[93] These agreements relate to Kolarctic, Karelia, South East Finland – Russia, Lithuania-Poland-Russia and Estonia-Latvia-Russia).
[94] "Potentially" because of the fact that the regions decide by themselves what focus they will draw on.
[95] For further information see <http://www.kolarcticenpi.info/>.
[96] See <http://www.kareliaenpi.eu/>.
[97] David Arter, "Small State Influence within the EU. The Case of Finland's 'Northern Dimension Initiative'", in *Journal of Common Market Studies*, 38 (2000) 5, pp. 677–697.

policy.[98] It is a permanent framework of the four partners: the EU, Iceland, Norway and Russia.[99] Moreover, regional councils and international financing institutions active in the north are participants of the Northern Dimension. Other actors within the framework include regional and sub-regional organizations, sub-national and local authorities as well as non-governmental organizations. The U.S. and Canada have observer status. The Northern Dimension's main objectives are to provide a common framework for the promotion of dialogue and concrete cooperation, strengthen stability and well-being, intensify economic cooperation, promote economic integration, competitiveness and sustainable development in northern Europe. At present, the Northern Dimension is coordinated by the DG for External Relations, Directorate E/1 Russia/Northern Dimension.[100]

The geographical scope of the Northern Dimension covers the area from the European Arctic and Sub-Arctic areas to the southern shores of the Baltic Sea, including the countries in its vicinity and from north-west Russia in the east to Iceland and Greenland in the west. Beside the Baltic Sea and the Kaliningrad oblast, the Northern Dimension declares the extensive Arctic and Sub-Arctic areas including the Barents Region as a priority area for its policy.[101] Within one of its six priority sectors – the sector "Environment, nuclear safety and natural resources" – cooperation in the field of climate change is identified as its primary field of work.

According to the favoured model of partnerships within the Northern Dimension, three different partnerships – in the field of environment, health and well-being, transport and logistics – have been established to implement projects in the agreed priority sectors. A fourth one – in the field of culture – is close to begin its work. As regards climate change, the Northern Dimension Environmental Partnership (NDEP) should be emphasised. In 2002 an NDEP Support Fund, administrated by the Board of Directors of the European Bank for Reconstruction and Development (EBRD), has been established and became operational. This Fund receives its contributions and donations from the European Union and 12 donor countries[102], from the international financing institutions active within the NDEP, and from other partners and clients[103]. The NDEP has two separate windows: the nuclear and the environmental window. So far, NDEP grants have been allocated to 8 nuclear safety projects in north-west Russia and to 16 environmental investment projects.[104]

[98] The Northern Dimension policy was elaborated in 1999, for further information see <http://ec.europa.eu/external_relations/north_dim/index_en.htm>.
[99] *Northern Dimension Policy Framework Document,* Helsinki, 24 November 2006, available at: <http://ec.europa.eu/external_relations/north_dim/docs/frame_pol_1106_en.pdf>.
[100] Since Russia does not belong explicitly to the ENP, the ND with its strong Russian focus, is not attached to Directorate D/ENP, but to Directorate E/Eastern Europe, Southern Caucasus, Central Asian Republics.
[101] See supra note 99.
[102] Belgium, Canada, Denmark, Finland, France, Germany, the Netherlands, Norway, the Russian Federation, Sweden, United Kingdom and Belarus.
[103] Like the Helsinki Commission, HELCOM, for example, see <http://http//www.helcom.fi/>.
[104] For 2010, pledges and contributions to the NDEP Support Fund amount in total €277.3 million, while €127.6 million are allocated for environmental investment projects, and €149.7 million are allocated for nuclear safety projects.

Arctic implications

Although the Northern Dimension is being declared to provide also a framework of reference for intensified transatlantic cooperation, transatlantic policy does not seem to play a major role.[105] As evidenced by the vast majority of its projects (basis: Northern Dimension Information System: Projects relevant for the Arctic Region)[106], it could be rather characterized as a more or less exclusive aspect of the EU/Russia policy. As regards the NDEP, all of the 24 projects launched so far relate to Russia. Among the 16 environmental investment projects under the environmental window of the NDEP only three have an Arctic implication, and the third one is still on hold due to ongoing loan negotiations between the Nordic Investment Bank (NIB) and the Murmansk authorities.[107]

Moreover, the criticism related to the first and second Northern Dimension's Action Plans, concerning the absence of clear-cut criteria for determining whether an action qualifies as a Northern Dimension project,[108] remains valid. A deeper look into the projects listed in the Northern Dimension Information System (165 projects have been listed as of 15 January 2007) shows that only two of them focus on climate change directly (*presented by the European Commission): DAMOCLES and IPY CARE. Noticeably, both projects are not only listed within the Northern Dimension Information System, but first and foremost in CORDIS, the Community Research and Development Information System, related to the Sixth and Seventh Framework Programmes on Research and Development. Along with the absence of clear criteria, the questions arise on how to identify projects particularly belonging to the Northern Dimension and how to separate them from other projects related to different EU programmes. Clear identification is especially needed in order to avoid a disproportionate impression of EU actionism and to ensure transparency in the EU-cash-flow-system.

3.3.3 Cohesion policy

The EU´s cohesion policy aims to strengthen economic, social and territorial cohesion among regions and member states. The overall goal is to reduce disparities in the level of development. As regions are driving forces for innovation, cohesion policy in the EU seeks to promote investment in key sectors to improve the competitiveness of regions and countries by an ongoing benchmarking process.[109] For this purpose, cohesion policy receives almost €350 billion, which is over one third of the total EU budget for the period of 2007–2013. The policy is managed by DG REGIO and funded by two structural funds, i.e. the European Fund for Regional Development (EFRD) and the European Social Fund (ESF).[110] Another source is the Cohesion Fund.

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[105] For comparison see European Commission, *Progress Report for the First Ministerial Meeting of the Revised Northern Dimension Policy*, 28 October 2008, available at: <http://www.ndphs.org/internalfiles/File/Progress_report--1st_ND-Ministerial_Meeting_(28-10-2008).pdf>.

[106] Northern Dimension Information System (NDIS), *Projects Relevant for the Arctic Region*, 2006, last updated on 15 January 2007. The NDIS, although updated in 2007, 2008 and 2009 by each priority area and cross-cutting sector as mentioned in the relevant action plan, has not specifically updated as regards the Arctic.

[107] These projects are: the Komi Municipal Services Improvement Project (€6.04 million NDEP grant), the Archangelsk Municipal Water Services Project (€8.2 million NDEP grant) and the Murmansk District Heating Project (€5 million NDEP grant). For further project information see <http://www.ndep.org/projectinfo.asp?ProjectID=127&type=nc&cont=prji&action=projectview>.

[108] Airoldi, supra note 49, p. 19.

[109] See <http://ec.europa.eu/commission_2010-2014/hahn/files/speech_15032010_en.pdf>.

[110] See <http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_210/l_21020060731en00250078.pdf>.

The main objectives deriving from the overall goal of reducing regional disparities are: (1) convergence for regions which are characterized by an inconvenient variation of average GDP per capita; (2) strengthening of regional competitiveness and creation of employment opportunities in all those not covered by the objective 1 regions; and (3) European Territorial Cooperation (INTERREG), now in its fourth series of programmes, furthers cooperation in areas such as training and employment, culture, environment management, and rural and coastal development.

Arctic implications

Cross-border cooperation under the EU's cohesion policy not only covers regions along all internal land borders, but also certain regions along external land borders and maritime borders separated by a maximum distance of 150km. With regard to the Arctic, Article 174 TFEU explicitly mentions the northernmost regions with very low population density as deserving particular attention in order to promote economic, social and territorial cohesion.

Two projects with Arctic relevance that particularly address adaptation to climate change by people living in the Northern periphery (and thus, potentially refer also to indigenous peoples as inhabitants of local communities in these areas) should be emphasised in this context:

- *Clim-ATIC project*[111]: Climt-ATIC is a project in the framework of the Northern Periphery Programme (NPP)[112]. The overall objective of the project is to establish a sustainable advice and training service for community climate change adaptation across the whole of the Northern Periphery. This includes, among others, the development of adaptation strategies by respective communities to avoid or reduce the negative impacts of climate change, while taking advantage of opportunities. Participating regions are Scotland, Sweden, Finland, Norway and Greenland. Clim-ATIC is a three-year project (from March 2008 until February 2011), with a total budget of €2.4 million (whereby 60% are funded by the European Regional Development Fund (ERDF) within the NPP).
- *CoastAdapt project*[113]: CoastAdopt is also a project under the EU's NPP. It particularly aims to safeguard people living in North Atlantic coastal communities and help them adapt to the impacts of climate change. Within the project, five pilot study sites in Iceland, Norway, Ireland and Scotland have been identified to determine the issues experienced by local communities. The specific goals of the project – reducing the risks brought by climate change, the development of adaptation tools and their final implementation – shall be achieved, inter alia, by consultations with local communities, via networking and interaction with related projects, between North Atlantic coastal communities, and with central governments. The project also has a timeframe of three years and is partially funded by ERDF.

[111] See <http://www.clim-atic.org/>.
[112] The Northern Periphery Programme covers a large geographical area and now involves parts of the Member States of Finland, Ireland, Sweden and the United Kingdom (Scotland and Northern Ireland) – in cooperation with the Faeroe Islands, Iceland, Greenland, and Norway. The programme area has been expanded in the 2007–2013 programming period to include western Ireland, Northern Ireland, additional regions in western Norway, and Dumfries and Galloway and North East Moray in Scotland. For further information see <http://www.clim-atic.org/about%20the%20Northern%20Periphery.html>.
[113] See <http://www.coastadapt.org/>.

3.3.4.1 Environmental policy

Climate change, as expressed by the TFEU[114], is an environmental issue with worldwide implications. Thus, climate change policy is first and foremost a part of the EU's environmental policy. Within the EU, action in the field of the environment is managed by the DG Environment. The objective of this Directorate-General is to protect, preserve and improve the environment for present and future generations. General multi-annual Environmental Action Programmes form the framework of the EU's environmental policy. The current framework is provided by the Sixth Community Environment Action Programme (Sixth EAP)[115] for the period 2002–2012. Climate change is one of its four priority areas and emphasised "as an outstanding challenge of the next 10 years and beyond". In accordance with this, the programme aims at "a long term objective of a maximum global temperature increase of 2° Celsius over pre-industrial levels and a CO_2 concentration below 550 ppm".[116]

When it comes to competences, two premises have to be considered:
First, the competence for environmental policy is shared between the EU and its member states.[117] Insofar the EU, due to its new own legal personality, can negotiate in international bodies and conclude international agreements without prejudicing respective member states' competences in the field of environment.[118] However, main environmental policy of the EU is internally related. In this frame, the main legislative instrument used for this purposes is the directive, which is binding as to certain end results that must be achieved in every Member State while national authorities have to adapt their laws to meet these goals, but are free to decide how to do so. Directives, as well as regulations, are generally binding to member states only.
Second, since the main responsibility within the European Commission for European climate change policy has been transferred from the DG Environment (ENV) to the newly established DG Climate Action (CLIM) (see above), a clear delineation between the competences of both DG's has still to be clarified. At the moment, it seems that all policy actions directly related to the energy and climate change package (mentioned above) have been deleted from the DG's agenda as being a subject matter of DG CLIM. Accordingly, the main priorities of DG ENV, as expressed by Janez Potočnik, the new Commissioner for Environment, are focussed on resource efficiency, resilience of ecosystems/halting the loss of biodiversity and environmental legislation implementation.[119] As far as climate change is directly concerned by issues DG ENV deals with, political actions are coordinated by both Commissioners jointly.[120] However, since climate

[114] See Article 191 (1) TFEU, where climate change is emphasised as a particular regional or worldwide environmental problem.
[115] European Parliament and Council of the European Union, *Decision No 1600/2002/EC laying down the Sixth Community Environment Action Programme*, Brussels, 22 July 2002, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:242:0001:0015:EN:PDF>.
[116] Ibid., Article 2, para. 2.
[117] Article 4 (2) (e) TFEU.
[118] Article 191 (4) Sentence 2 TFEU.
[119] Janez Potočnik, *Next Steps in EU Environmental Policy*, 3 March 2010, available at: <http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/10/63&format=HTML&aged=0&language=EN&guiLanguage=en>.
[120] See European Commission, *IP/10/207: European Commission Launches Public Debate on Protecting Europe's Forests Against Climate Change*, Brussels, 1 March 2010; Both Commissioners, European Environment Commissioner Janez Potočnik and Connie Hedegaard, European Commissioner for Climate Action, commented on the adoption of the relevant „green paper", see

change as a major driver is intrinsically linked with environmental policy, in practice it could become problematic to always find a clear assignment of responsibilities.

Arctic implications

Although climate change actions with reference to the Arctic might be exclusively coordinated by DG CLIM in future, the relevance of European environmental policy in the field of climate change towards the Arctic will not be changed essentially by the recent change of internal responsibilities within the Commission: Up to now, the Arctic did not play an essential role in the EU's environmental policy.[121]
The Arctic itself is not mentioned in the Sixth EAP, neither in the context of climate change nor in one of its other three priority areas. The same applies to indigenous peoples. Moreover, also the LIFE programme – the main EU's financing instrument for the environment – which is not covered by LIFE+, running from 2007–2013,[122] has a rather limited relevance to the Arctic because its financing is now limited to the EU, In contrast, previous LIFE programmes, such as the LIFE-Third Countries Programme for instance, also covered neighbouring countries such as Russia. Insofar, the external dimension of environmental actions on climate change towards the Arctic has become rather diminished.
However, one project should be mentioned finally which – although not having an explicit Arctic climate change focus – assesses the EU's current footprint on the Arctic environment and evaluates how it could change over time. This project, entitled "The EU Arctic Footprint and Policy Assessment Project"[123] aims, among others, at analysing and improving the effectiveness of the EU's current environmental (and related) policies. Hereby, future footprint scenarios up to 2030 will be developed. In this context, climate change will probably be identified as one of the key drivers determining the EU's Arctic footprint in future. The project itself is coordinated by the DG ENV and funded under the EU's Thematic Programme for Environment and Sustainable Management of Natural Resources including Energy (ENRTP) which replaces several former programmes in the field of environment, among others that of LIFE_Third Countries (already mentioned above).

3.3.4.2 Maritime policy

The development of an international consensus on integrated ocean governance, promoted by the 1982 UNCLOS, the 1992 United Nations Conference on environment and Development (UNCED) and the 2002 World Summit on sustainable Development, provided the base for the EU's Integrated Maritime Policy (IMP).[124] The IMP, endorsed by the European Council in December 2007, comprises three main pillars: the Integrated Maritime Policy, adopted via a

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<http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/10/53&format=HTML&aged=0&language=EN&guiLanguage=en>.
[121] This applies to climate change in a narrower environmental context. As far as climate change implications on biodiversity and nature protection, marine environment and chemical policies would be concerned, the picture would be differently.
[122] The legal basis for LIFE+ is the Regulation (EC) No 614/2007, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32007R0614:EN:NOT>.
[123] The AFPA project has a time frame from December 2009 to December 2010 and is conducted by the Ecologic Institute, for further information see <http://arctic-footprint.eu/>.
[124] Timo Koivurova, „A Note on the European Union's Integrated Maritime Policy", in *Ocean Development & International Law*, 40 (2009) 2, pp. 171–183.

Communication ("The Blue Book")[125], an accompanying Action Plan[126] and its "environmental dimension" represented by the Maritime Strategic Framework Directive (MSFD) [127].
The IMP aims to change compartmentalised decision-making in the EU into a holistic governance of all European seas while taking into account interrelations and synergies and to develop the different sectoral policies in a coherent framework. In doing so, it aims at exploring the fullpotential of sea-based economic activity in an environmentally sustainable manner. Hereby, the oceans' sustainability is recognized as the main challenge, intimately connected with climate change. The interlink with climate change becomes particularly recognized by the maritime dimension of climate change, reflected, among others, by the EU's "white paper" on adapting to climate change.[128] In December 2009, a seminar on "The maritime dimension of climate change" was organized by the DG MARE along with the UNFCCC COP 15 side-events programme. The seminar provided an overview of different policies currently tackling climate change challenges in the marine environment and in coastal areas.[129]

Although the IMP can be evaluated, if fully implemented, as a clear improvement of ocean management in the European waters and as a step to promote the process of further EU integration,[130] there are several constraints that challenge the achievement of their objectives. First of all, the question of competences: In distinction to its fishery policy, the EU does not have exclusive competence as regards maritime policy, but shares competences with the member states that legislate the extent of their maritime areas, and exercise most powers therein including the enforcement of laws. Insofar, the IMP has to find an appropriate balance between the necessary degree of a common approach as regards "EU Oceans" and the respect for the EU constitutional principles of subsidiarity and proportionality. Secondly, the elements of the IMP (as described above) are led by different EU institutions: While the IMP as an explicit maritime policy is led by the DG MARE, the environmental pillar of the IMP, the MSFD, is led and coordinated by the DG ENV. Although both are linked with each other through the "environmental dimension" of the IMP, implementation in practice demands a high level of coordination.

Arctic implications:

The Commission's Green Paper on Maritime Policy[131], issued in 2006, addressed particularly the Arctic in relation to climate change by stressing that "the Arctic could become a major challenge for EU". It further recognized that safeguarding the Arctic region's climate is a very important part of averting global climate change and thus placed it at the centre of the EU's strategy.

In reference to the Green Paper and a subsequent broad stakeholder participation, demonstrating a broad diversity of issues raised relating to the Arctic Ocean, the Commission in its Blue Paper of 2007 highlighted the requirement for an integrated, cross-sectoral approach which should be reflected in a Commissions report on strategic issues for the EU announced for 2008. The

[125] 10.10.2007, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0575:FIN:EN:PDF>.
[126] 10.10.2007, <http://ec.europa.eu/maritimeaffairs/pdf/ActionPaper/action_plan_en.pdf>.
[127] 17.06.2008, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:164:0019:0040:EN:pdf>.
[128] See supra note 86.
[129] See for further information: <http://ec.europa.eu/maritimeaffairs/climate_change_en.html>.
[130] Koivurova, supra note 123, pp. 178–179.
[131] European Commission, *Green Paper: Towards a Future Maritime Policy for the Union. A European Vision for the Oceans and Seas*, Brussels, 7 June 2006, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2006:0275B:FIN:EN:PDF>.

Commission's Communication on the EU and the Arctic region of November 2008, although proclaiming the mitigation of negative impacts of climate change and the adaptation to inevitable changes as one of its objectives, fell short of addressing the previously expressed needs relating to the Arctic Ocean by merely stressing an ecosystem-based marine management in the Arctic Ocean by sharing experience with the Arctic states.[132] Integration has not been mentioned in this context.

Later on, in October 2009, when the Commission published its Progress Report on the EU's IMP, it also launched an accompanying Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the development of the international dimension of the IMP.[133] This communication, while stressing the "regional approach" (individual approaches tailored to fit each sea basin), explores how the IMP should be extended into the wider international arena by creating a EU framework for a globally integrated approach to maritime affairs. Climate change is particularly referred to in this context, and the paper stresses the need for additional efforts in the field of mitigation in several maritime sectors covered. This is done, among others, by addressing the responsibility of the International Maritime Organization (IMO) (e.g. as far as emissions from ships are concerned), as well as in the field of adaptation, like providing technical and financial assistance for adaptation to climate impacts to developing coastal and island states, through initiatives like the Global Climate Change Alliance, for instance. With a particular relevance for the Arctic – even though potentially – the communication stresses efforts towards an integrated approach to the protection and sustainable use of marine biodiversity in areas beyond national jurisdiction (the proposed Implementation Agreement under UNCLOS for this purpose), an enhanced role in intergovernmental fora, such as Regional Fisheries Management Organisations (RFMOs) specifically relevant for the Arctic[134], as well as enhanced bilateral dialogue on IMP through both the ENP instruments and multilateral dialogue at sea-basin level within existing frameworks, e.g. the Northern Dimension.

3.3.4.3 Research policy

Research and development play a crucial role for addressing climate change. The EU has financed research into climate change and technological development since the 1980s, facilitating the formulation of realistic policy objectives.[135] The objective of Community actions in this field is to help structure the European Research Area.

Within the European Commission the DG for Research, Innovation and Science, led by Director General, José Manuel Silva Rodríguez (Spain), together with the DG's dealing with Information Society, Industry and Entrepreneurship, Maritime Affairs and Fisheries, Energy, Transport as well as with the Joint Research Centre (JRC), is responsible for coordinating EU research policy.

The EU's main instrument for research and development funding in Europe is the multi-annual Framework Programme. It brings together scientists from all 27 member states and is open to

[132] European Commission, *Communication of 20 November 2008*, supra note 67.
[133] European Commission, *Communication: Developing the International Dimension of the Integrated Maritime Policy of the European Union*, Brussels, 15 October 2009, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0536:FIN:EN:PDF>.
[134] The two regionally RFMOs specifically relevant to the Arctic are the Northwest Atlantic Fisheries Organization (NAFO) and the Northeast Atlantic Fisheries Commission (NEAFC).
[135] European Commission, *Action Against Climate Change. Research and Development to Fight Climate Change*, November 2007, available at: <http://ec.europa.eu/environment/climat/pdf/brochures/research_en.pdf>.

those from third countries. The Framework Programme and its budget are adopted by co-decision of the Council and the Parliament. The present framework Programme, running from 2007 to 2013, is the Seventh Framework Programme for Research and Technology Development (FP7)[136].

FP7 has a total budget of 50.521 million Euro allocated for the period 2007–2013.[137] Its four major themes are cooperation, ideas, peoples and capacities. It is characterized by a strong commitment to developing multilateral initiatives for addressing global challenges, first and foremost climate change, and a new approach to promote international cooperation.

Arctic implications

Research, as one of the policy sectors most important to the EU's climate change policy, has the most direct implications to the Arctic. Due to the main objectives of the EU's Arctic policy, climate change ranks highest in EU-Arctic related research. This becomes evident by a survey of EU research projects related to climate change, primarily based on the time frame of FP7 (2007–2013)[138]. In this time frame, the EU is essentially engaged in 38 research projects on climate change, which are directly relevant to the Arctic (see Annex 1). The total amount of EU funding for these projects is 118 million Euro.

Because of its circumpolar relevance, the following five projects should be highlighted:

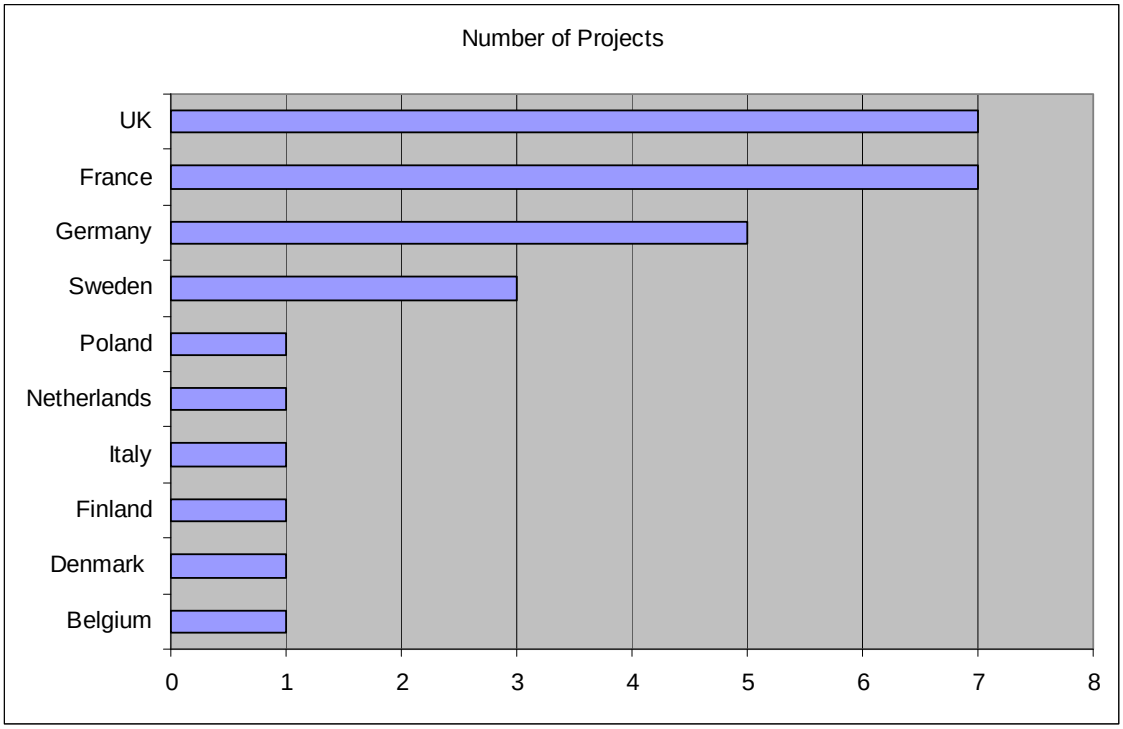
- *"Developing Arctic modelling and observing capabilities for long-term environmental studies"* (DAMOCLES): The project aims to identify and understand the changes occurring in the Sea-Ice, Atmosphere and Ocean of the Arctic and Sub-Arctic domain. Furthermore it wants to improve the realism by which these changes are simulated in models, thus extending the lead-time prior to the onset of extreme climate events and seeks to determine appropriate adaptation strategies for a range of anticipated socio-economic impacts following the disappearance of the perennial Sea-Ice. (time frame: 12/2005–05/2010, EU-Contribution: 16 million Euro)
- *"Ice2sea-estimating the future contribution of continental ice to sea-level rise"* (ICE2SEA): The ice2sea programme will draw together European and international partners to undertake targeted studies of key processes in mountain glacier systems and ice caps (e.g. Svalbard), and in ice sheets in both polar regions (Greenland and Antarctica) to improve the understanding of how these systems will respond to future climate change. (time frame: 03/2009–05/2013, EU-Contribution: 10 million Euro)
- *„Thermohaline Overturning - at Risk"* (THOR): The project aims at improving the quantification of the risk, time horizon and possible scenarios for a thermohaline circulation breakdown. (time frame: 12/2008–11/2012, EU-Contribution: 9.2 million Euro)
- *"Arctic Tipping Points"* (ATP): The project aims at identifying the elements of the Arctic marine ecosystem likely to show abrupt changes in response to climate change, and

[136] See <http://ec.europa.eu/research/fp7/>.
[137] See budget breakdown of the Seventh Framework Programme, available at: <http://cordis.europa.eu/fp7/budget_en.html>.
[138] Database provided by the Community Research and Development Information System (CORDIS), available at: <http://cordis.europa.eu/fp7/projects_en.html>.

establish the levels of the corresponding climate drivers inducing the regime shift for these tipping element. (time frame: 02/2009–01/2012, EU-Contribution: 4.998.098 €)

- *"Acoustic technology for observing the interior of the Arctic Ocean"* (ACOBAR): The project will develop an observation system for the interior of the Arctic Ocean based on underwater acoustic methods including tomography, data transmission and communication to/from underwater platforms, and navigation of gliders. ACOBAR will contribute to filling gaps in the global ocean observation system and thereby support the development of GEOSS. (time frame: 10/2008–09/2012, EU-Contribution: 3 million Euro).

Within the EU, the engagement of EU member states in Arctic-related research on climate change differs widely: While 10 of 27 EU member states are involved in climate change projects related to the Arctic, France and United Kingdom (both of them with permanent observer status to the Arctic Council) are in the lead among these 10, followed by Germany and Sweden (an overview of EU member states' engagement is provided in Annex 2). The following figure may illustrate the different engagement related to relevant research projects on climate change :



* The figure is based on projects listed in CORDIS, the Community Research and Development Information System

Concerning Germany, 5 research projects on climate change related to the Arctic are coordinated by German research institutions, like the Max Planck Society for the Advancement of Science, the Max Planck Institute for Meteorology, the Leibniz Institute of Marine Sciences at the Christian-Albrechts Universität zu Kiel (IFM-GEOMAR), the Forschungszentrum Jülich and the University of Hamburg (see Annex 3). Apart from this leading coordination work, German research institutions participate in further 17 climate change research projects related to the Arctic (out of 38), first and foremost the Alfred Wegener Institute for Polar and Marine Research (AWI) which gains ca. 6.8 million Euro from the EU in supporting its Arctic related research (see Annex 3).

In relation to indigenous peoples living in the Arctic, two of the above identified 38 projects – ARCRISK and CLEAR – deal with the consequences of climate change on indigenous peoples in particular, primarily on their health (see Annex 4).

4. Conclusion

4.1 Analysis of EU policies in the field of climate change in respect to the Arctic

Although climate change, in general, is still of high relevance within EU's policies, this does not apply necessarily in respect to the Arctic.

First of all, there is a considerable discrepancy between the EU's declared interest towards the Arctic in the field of climate change and its factual actions relating to this subject. This applies both, to its external policies explicitly dedicated to the Arctic, like the Northern Dimension with the European Arctic and Sub-Arctic areas as declared priority areas of its policy, and to its internal policies that have a potential Arctic relevance through their specific external dimensions. In detail, the Arctic, although recognized in many EU policy documents as an area specifically vulnerable to climate change consequences, has been neither particularly emphasised nor specifically addressed within the relevant EU positions during international climate change negotiations, like those at COP 15 in Copenhagen 2009. Moreover, the topic of climate change, although declared as a primary field of work within the Northern Dimension, is scarcely visible when it comes to factual actions, so for instance within the Northern Dimension Environmental Partnership (NDEP) which has been specifically developed to address serious environmental problems in north-west Russia. Only a very few projects indicate climate change considerations, and the problem of clear qualification of respective projects under this instrument, in distinction to projects of other EU policy instruments, seems to remain valid. When it comes to the external dimensions of EU internal policies, here in particular the EU's climate change adaptation, environment and maritime policies, the Arctic, although particularly addressed in some of the respective strategic documents, remains peripheral as regards concrete actions. One exception has to be made in relation to research. Research policy, as one of the most important policy sectors within the EU's climate change policy, has by far the most direct implications for the Arctic. Within a survey conducted in the framework of this paper, 38 research projects in the field of climate change could be identified as having Arctic implications. The EU contributes almost 120 million Euro to these projects.

Secondly, there is very little interlinkage between climate change and indigenous peoples' issues. Although the protection and preservation of the Arctic, including the mitigation of negative impacts of climate change and the adaptation to inevitable changes, shall be conducted – according to the EU's strategy on Arctic policies[139] - in unison with its population, little attention is paid in practice to the concerns of Arctic indigenous peoples in relation to climate change. Apart from a few specific projects dealing with indigenous peoples issues in the frameworks of the Northern Periphery Programme (NPP) and the Seventh Framework Programme for Research and Technology Development (FP7) (see chapters 3.3.3 and 3.3.4.3), indigenous peoples'

[139] European Commission Communication of November 2008 and Council Conclusions of December 2009, see supra notes 68 and 76.

concerns specifically in respect to climate change impacts in the Arctic seem not to be linked conceptually to the EU's indigenous peoples' policy. This applies, on the one hand, in particular to the EU's Saami policy, where no specific relevance to climate change has been made, for instance in respect to Saami reindeer herding and its dependency on different climate patterns. On the other hand, it also applies to other EU policy instruments specifically developed to mainstream indigenous peoples issues into EU's policies, like the Council's conclusions on indigenous peoples' issues of 2002[140] or the "European consensus on development". These latter instruments, although recognizing the relationship between indigenous peoples and climate change at a very general level, primarily focus on so-called "less-developed countries" (LDCs) and on small island development states when it comes to climate change[141], while the Arctic remains out of the focus.

To sum up, the Arctic remains de facto quite peripheral in the EU's climate change policy, and a specific interrelation between the impacts of climate change on indigenous peoples living in the Arctic is, despite a few projects, still lacking. Insofar, current EU actions to address Arctic climate change are far from being appropriately characterized as being conducted in a "systematic and coordinated" manner.

4.2 Constraints and options

Although three of the Arctic States are EU member states (in the case of Denmark with the exception of Greenland and the Faroe Islands), and the other five are interlinked with the EU by different types and degrees of partnership agreements, the EU – at least in legal terms – acts as an external actor towards the majority of Arctic states. This externality relates additionally to the fact that none of the current EU member states is a coastal state with regard to the Arctic Ocean. Moreover, the EU's involvement in Arctic climate governance, described above as a "patchwork of regimes and networks", is not very clearly defined and varies considerably. These features together certainly restrain the EU's role in the field of climate change towards the Arctic.

At the same time, however, they provide – once being appropriately recognized – a significant potential for strengthening the external dimension of the EU's climate change policy in respect to the Arctic. This applies, in particular, to the external dimensions of the EU's climate change adaptation policy and its maritime policy. Although the special situation of the Arctic with respect to climate change is somehow reflected in both contexts, an explicit recognition of the specific problems faced by the region as regards climate change consequences would be needed, in particular the recognition of climate change induced problems of indigenous and coastal communities. Apart from this, specific actions addressing the particular problems of climate change in the Arctic should be initiated, both within relevant programmes and initiatives. Due to the high complexity of climate change policies, these actions need in any case a better and systematic coordination.

As regards the Northern Dimension, the EU should take additional efforts in the field of climate change policy to make the Arctic window of this instrument more visible. This especially applies to the Northern Dimension Environmental Partnership which bears a constitutional potential to

[140] Council Conclusion, supra note 44.

[141] See para. 76 of the Joint Statement by the Council and the representatives of the governments of the Member States meeting within the Council, the European Parliament and the Commission on European Union Development Policy, *The European Consensus*, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2006:046:0001:0019:EN:PDF>.

address climate change consequences in Arctic and Sub-Arctic areas of north-west Russia. If this work is intensified, the success story of the Northern Dimension in the field of "low politics"[142] could be significantly extended to the issue of climate change. Particular attention should be paid to indigenous peoples' issues as expressed in relevant policy framework documents. Hereby, the coordination with other climate change actions relevant to the Arctic within EU policies should be improved to enhance effectiveness, and also to avoid misleading duplication.

One of the greatest potentials to strengthen the EU's position in the field of climate change with respect to the Arctic lies in its role in international climate change negotiations. Many questions currently facing the EU in this context also affect its potential role as an Arctic actor in the field of climate change. Internally, the EU will have to conciliate diverging opinions of EU member states as regards concrete green house gas emission reduction targets – going to move unilaterally to a 30% reduction target (as suggested by the UK) or to stay, for the time being, with a 20% reduction target while waiting for other developed countries to match their respective reduction targets (as suggested by France, Germany and Poland)[143]. Finding a consensus will certainly be a challenge, also due to the fact that Central and Eastern European member states tend increasingly to represent a more moderate position in EU climate politics.[144] At the international forum, the EU will have to lobby for its climate strategy and to strengthen its climate diplomacy in strategic foreign relations in order to avoid to be sidelined during the final stage of negotiations, as happened during the Copenhagen climate summit last year.[145] This again requires an unified or at least a consistent position among its member states in order to enable the EU to speak with "a single voice" during climate change negotiations. The Lisbon Treaty, supposed to provide for more clarity on how the EU can manage the negotiation of international treaties, states that the Commission "…shall ensure the Union's external representation [with the exception of the common foreign and security policy, and other cases provided for in the Treaties]"[146]. In this, the Commission sees a clear mandate for its central role in leading climate change negotiations which leaves no room for expressing diverging member states' interests.[147] In contrast, the Council is of the opinion that the Lisbon Treaty does not change the distribution of competences between the Commission and the member states in areas where national governments and the EU both have competences in international negotiations (like in the case of climate change), and that, thus, diverging member states' interests can be expressed through the joint system of presentation within the Troika.[148] These differing positions have led to a complex legal battle on the interpretation of the Lisbon Treaty. Upcoming international negotiations, like that on an international mercury treaty in June, will become a test case for the capability of the EU to take use of advanced opportunities provided by the Lisbon Treaty.[149]

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[142] Irina Busygina/Mikhail Filippov, "End Comment: EU-Russian Relations and the Limits of the Northern Dimension", in Pami Aalto et al., *The Northern Dimension of the European Neighbourhood*, Brussels: Centre for European Policy Studies, 2008.
[143] Rankin, supra note 29.
[144] Thomas Spencer/Anna Korppoo, *Tools for Building EU Climate Consensus*, Finnish Institute of International Affairs, 26 May 2010 (Briefing Paper 61).
[145] Geden/Kremer, supra note 30.
[146] Article 17 paragraph 1 TEU.
[147] Jennifer Rankin, "A Union with One Voice?", in *European Voice*, 6 June 2010, available at: <http://www.europeanvoice.com/article/imported/a-union-with-one-voice-/67886.aspx>.
[148] Ibid.
[149] Jennifer Rankin, "Row Over Who Provides the EU's 'one voice'", in *European Voice*, 20 May 2010, available at: <http://www.europeanvoice.com/article/imported/row-over-who-provides-the-eu%E2%80%99s-%E2%80%98one-voice%E2%80%99/67997.aspx>.

In conclusion, the EU, despite or precisely because of its external role in relation to the Arctic, has a considerable potential to develop and enhance its role in the field of climate change towards this region through its external policies. For this purpose, it should use first and foremost its existing external policy instruments like the Northern Dimension or Cross Border Cooperation within the framework of the European Neighbourhood Policy Instrument as well as instruments of the external dimensions of related internal policies, such as those of its climate change adaptation and maritime policies. In doing so, the EU should also take additional efforts to overcome internal and external constraints to address Arctic climate change in a more systematic and coordinated manner. The recognition of indigenous peoples' issues in relation to Arctic climate change should be an imperative in this context.

Annexes

Annex 1

EU Research Projects on Climate Change with Arctic implications 2007-2013

(ordered by size of EU-contribution)

Project	Acronym	Short Description	Start/ End	EU-Contribution (in €)
Developing Arctic modelling and observing capabilities for long-term environmental studies	DAMOCLES	DAMOCLES aims to identify and understand the changes occurring in the Sea-Ice, Atmosphere and Ocean of the Arctic and Sub-Arctic domain. Furthermore, it wants to improve the realism by which these changes are simulated in models, thus extending the lead-time prior to the onset of extreme climate events and seeks to determine appropriate adaptation strategies for a range of anticipated socio-economic impacts following the disappearance of the perennial sea ice.	12/2005-05/2010	16,522,614
Ice2sea-estimating the future contribution of continental ice to sea-level rise	ICE2SEA	The ice2sea programme will draw together European and international partners to undertake targeted studies of key processes in mountain glacier systems and ice caps (e.g. Svalbard), and in ice sheets in both polar regions (Greenland and Antarctica) to improve understanding of how these systems will respond to future climate change.	03/2009-05/2013	9,994,842
Thermohaline Overturning - at Risk	THOR	Stability of the Thermohaline circulation; collaborative project involving 20 higher educational and research institutions of 9 European countries, that aims at improving the quantification of the risk, time horizon and possible scenarios for a thermohaline circulation breakdown.	12/2008-11/2012	9,200,000
Hotspot ecosystem research and man's impact on European seas	HERMIONE	The study sites include the Arctic, North Atlantic and Mediterranean and cover a range of ecosystems including cold-water corals, canyons, cold and hot seeps, seamounts and open slopes and deep-basins. The project will make strong connections between deep-sea science and user needs. HERMIONE will enhance the education and public perception of the deep-ocean issues also through some of the major EU aquaria.	04/2009-03/2012	7,998,955

Comprehensive modelling of the Earth system for better climate prediction and projection	COMBINE	The response of permafrost to Arctic warming is a key concern, with the potential for strong feedbacks through accelerated emissions of CH4 and CO2. Likewise, large feedbacks involving snow/sea-ice may impact strongly on the Arctic climate. The European integrating project COMBINE brings together research groups to advance Earth System Models (ESMs) for more accurate climate projections and for reduced uncertainty in the prediction of climate and climate change in the next decades.	05/2009-04/2013	7,922,679
European Seas Observatory Network	ESONET	The aim of ESONET is to create an organisation capable of implementing, operating and maintaining a network of ocean observatories in deep waters around Europe from the Arctic Ocean to the Black Sea connected to shore with data and power links via fibre optic cables.	03/2007-02/2011	7,000,000
Climate Change: Learning from the past climate	PAST4FUTURE	Past4Future will combine multidisciplinary paleoclimatic records from ice cores, marine cores, speleothems, pollen and other records, concentrating on a global distribution of the records, to reconstruct climate change and variability during the present interglacial (the Holocene) and the last interglacial.	01/2010-12/2014	6,647,909
European Project on Ocean Acidification	EPOCA	The overall goal of the European Project on Ocean Acidification (EPOCA) is to fill the numerous gaps in our understanding of the effects and implications of ocean acidification. EPOCA aims to document the changes in ocean chemistry and biogeography across space and time. An integral part of the project involves a team of scientists from around Europe travelling to the Arctic to advance our understanding of the biological, ecological, biogeochemical, and societal implications of ocean acidification.	05/2008-04/2012	6,548,995
Arctic Tipping Points	ATP	Collaborative large-scale project that aims at identifying the elements of the Arctic marine ecosystem likely to show abrupt changes in response to climate change, and establish the levels of the corresponding climate drivers inducing the regime shift for these tipping element.	02/2009-01/2012	4,998,098
The European polar research icebreaker	ERICON-AB	Generation of strategic, legal, financial and organisational frameworks required from National Governments and the European Commission to commit financial resources to the construction and running of the European Polar Research Icebreaker AURORA BOREALIS.	03/2008-02/2012	4,498,243

European Multidisciplinary Seafloor Observation	EMSO	Project with the main objective of establishing the legal and governance framework for EMSO, an infrastructure servicing scientists and other stakeholders in Europe and outside Europe for long-term deep water observation and investigation. It is geographically distributed around European waters from the Arctic to the Mediterranean Sea. EMSO will provide real-time long-term monitoring of environmental processes in the geosphere, biosphere and hydrosphere of European seas.	04/2008-03/2012	3,900,000
Network of leading mesocosm facilities to advance the studies of future aquatic ecosystems from the Arctic to the Mediterranean	MESOAQUA	In marine ecology there is an urgent need to understand the functioning of the lower part of the pelagic food web, its response to and effect on climate change, its response to pollution and environmental toxins, and its role in producing food for commercially important species at higher trophic level.	01/2009-12/2012	3.500.000
Reconciliation of essential process parameters for an enhanced predictability of stratospheric ozone loss and its climate interactions	RECONCILE	RECONCILE will produce and test reliable parameterisations of the key processes in Arctic stratospheric ozone depletion and bridge these to large-scale chemistry climate models (CCMs), thereby greatly enhancing their ability to realistically predict the future evolution of Arctic stratospheric ozone loss and the interaction with climate change.	03/2009-02/2013	3,499,782
Arctic health risks: Impacts on health in the Arctic and Europe owing to climate-induced changes in contaminant cycling	ARCRISK	Comparison of health risk in populations in the Arctic and selected areas due to the spreading of contaminants resulting from climate change	06/2009-11/2013	3,499,052
Quantifying the carbon budget in Northern Russia: past, present and future	CARBO-NORTH	CARBO-North aims at quantifying the carbon budget in Northern Russia across temporal and spatial scales. Activities address rates of ecosystem change, effects on the carbon budget (radiative forcing), and global climate and policy implications (Kyoto). Results are used for integrated ecosystem modelling, calculation of net radiative effects and assessment of the sensitivity of climate model predictions to transient environmental changes.	11/2006-04/2010	3,099,822

Acoustic technology for observing the interior of the Arctic Ocean	ACOBAR	ACOBAR will develop an observing system for the interior of the Arctic Ocean based on underwater acoustic methods including tomography, data transmission and communication to/from underwater platforms, and navigation of gliders. ACOBAR will contribute to filling gaps in the global ocean observing system and thereby support the development of GEOSS. ACOBAR will extend and improve methods for underwater data collection that are presently tested in DAMOCLES IP.	10/2008-09/2012	3,000,000
Training in sources, sinks and impacts of nitrogen deposition in the Arctic	NSINK	The NSINK Initial Stage Network training network targets one of the most vital, interdisciplinary problems facing future Arctic environmental management: namely the enrichment of Arctic terrestrial and aquatic ecosystems by reactive atmospheric nitrogen from low latitude emission centres. This problem will greatly exacerbate ecosystem response to *climate change,* and urgently requires holistic sources to sinks type studies of nitrogen dynamics.	11/2008-102012	2,656,767
Climate change, environmental contaminants and reproductive health	CLEAR	The research project investigates the possible impact of global climate change on reproductive health in one Arctic and two European populations. The key questions to be addressed are, firstly, how may climate change influence human exposure to widespread environmental contaminants and, secondly, how may contaminants impact occurrence of reproductive disorders as sensitive indicators of health?	05/2009-04/2013	2,377,603
Modern approaches to temperature reconstructions in polar ice cores	MATRICS	The project aims to reconstruct global climate changes in the past in order to understand current climatic evolutions. Polar ice cores are crucial for investigating about past climate changes.	01/2009-12/2013	2,100,000
Novel lipid biomarkers from polar ice: climatic and ecological applications	ICEPROXY	Sea ice reconstructions are of paramount importance in establishing climatic evolution of the geological past. In the current project, some well characterised organic chemicals (biomarkers) from microalgae will be used as proxy indicators of current and past sea ice in the Arctic and Antarctic regions. Sediment cores will be obtained from key locations across both of the Arctic and Antarctic regions and the data derived from these studies will be used for climate modelling studies. New tools for determining the consequences of future climate change on polar ecosystems will be established.	10/2008-9/2013	1,888,593

The European centre for Arctic environmental research	ARCFAC V	The European Centre for Arctic Environmental Research form the northernmost (Arctic) baseline node within several climate research programmes and international networks. The high latitude location and multidisciplinary research environment are ideal for research and monitoring of contemporary environmental change.	05/2006-04/2010	1,833,600
Lapland atmosphere-biosphere facility	LAPBIAT	The main objective of the facility is to enhance the international scientific co-operation at the seven Finnish research stations and to offer a very attractive and unique place for multidisciplinary environmental and atmospheric research in the most Arctic region of the European Union. The facility produces valuable knowledge of global change from the thermosphere to biosphere and ecosystems.	11/2006-10/2010	1,490,534
Training in multi-scale approaches to understand carbon dynamics in Arctic and upland systems	MULTI-ARC	MULTIARC will provide high quality research training to a team of six postgraduate researchers. Training will be provided within the theme of carbon dynamics in Arctic and upland systems with the overall aims being to understand the plant and soil driven processes that define carbon dynamics at the plot and ecosystem scale and to understand how these processes scale up and drive catchment-scale carbon dynamics.	06/2006-05/2010	1,099,351
Study of environmental Arctic change-developing Arctic modelling and observing capabilities for long-term environment studies	SEARCH FOR DAMOCLES	"SEARCH for DAMOCLES" is based on recent initiatives started in Europe and the USA in the field of Arctic marine ecosystems and Global change, with specific emphasis on Arctic Ocean long-term observatories. "SEARCH for DAMOCLES", positioned in the domain of Arctic Science, will be particularly timely in the context of the International Polar Year and will significantly contribute to the coordinated implementation of the DAMOCLES and SEARCH work programmes in the field of Global Change and Ecosystems. The coordination and synchronization of Arctic programmes such as DAMOCLES and SEARCH is a unique opportunity to ensure the necessary pan-arctic coverage of observations and data evaluation for understanding Arctic system variability.	10/2006-05/2010	605,000
Climate of the Arctic and its role for Europe (CARE)	IPY-CARE	Creation, co-ordination and preparation of a Pan-European science and implementation plan for Arctic climate change and ecosystems research programme as contribution to the International Polar Year.	07/2005-03/2007	395,000

Late Holocene climate sea ice variability in the south-western Labrador sea	CLIMICE	CLIMICE aims to reconstruct late Holocene changes in sea ice variability and regional sea surface temperatures (SST) in the Labrador Sea area using high-resolution sediment records. Information of past natural variability in climate is essential for refining and validating future climate change models and improving predictions.	08/2009-07/2011	284,055
The Nordic Seas in the global climate system		Cooperation between three INTAS members from Norway, Germany and United Kingdom, and five NIS members from Russia and Ukraine. The overall scientific objective of the research is to develop, validate and implement state-of-art key ocean-atmosphere and ice datasets and models to study the past, present and future climate changes in the Nordic Seas with focus on understanding the nature of exchanges with North Atlantic and Arctic Ocean.	04/2004-03/2007	264,000
Radiolarian artificial neural networks based estimation of the paleo sea surface temperatures and salinities in the Arctic and Antarctic Ocean and their response to isolation forcing	RADANN	We expect that thermal changes in the world ocean at 18K BP reported by CLIMAP would be quite different, which would have a wider implications on boundary conditions used in general circulation models currently used. Radiolarian ANN-based paleo-SSTs and salinities are envisaged to reveal more realistic thermohaline changes in the subtropical and sub-polar regions in both hemispheres, at the strategically located gateway of the thermohaline conveyor belt, which transports tropical heat to the North Atlantic resulting in warmer winters in the northern Europe than the scenario projected by shutting down of the conveyor belt due abrupt climatic changes.	10/2005-09/2007	227,191
The effect of climate change on the pristine peatland ecosystems and (sub) actual carbon balance of the permafrost boundary zone in Sub-Arctic Western Siberia	INTAS 2003-51-6294	The annual carbon balance of sub-arctic peatlands of Western Siberia will be estimated in key areas by ground flux measurements at the main mire types (wet peatland ecosystem types) and at lakes and rivulets of peatlands.	03/2004-02/2007	219,996
DAMOCLES over Europe	DOE	The "DAMOCLES Over Europe" project aims to enhance the existing DAMOCLES Exhibition being developed in the context of the DAMOCLES IP project, and to provide the logistical, language and technical support to allow the finalised scientific exhibition on research on sea-ice conditions in the Arctic, and their relationship with the ocean and the atmosphere, to tour around Europe.	11/2006-10/2008	190,000

Impact of Climate Change on light-related carbon fluxes in the Arctic Ocean	MALINA	The general objective is to determine the absolute significance of organic matter photo-oxidation and of primary production, and their relative balance in the Arctic Ocean.	08/2008-08/2011	183,234
Quantifying the effects of vegetation change on surface temperature change	TSURF	Vegetation change feeds back to climate change by altering the surface albedo, soil heat flux, and sensible and latent heat flux, and thereby the surface energy balance and surface temperature (Ts). The project aims to quantify the role of land cover change on Ts change in global ecosystems using the FLUXNET database with a focus on the European sub-arctic. The purpose is to explore the mechanisms that result in Ts change to build mechanistic understanding of these processes using global examples.	03/2009-02/2011	172,434
Large scale carbon export to the Eurasian Arctic shelf elucidated with molecular characterization and compound specific radiocarbon assessment of black carbon	CARBON14 ARCTIC	Since climate models forecast the largest warming trends on Earth occurring in the Eurasian Arctic, there is urgent need to increase the understanding of its terrestrial carbon release and potential for large-scale climate effects thereon. By a comprehensive analytical program, including molecular characterization of recalcitrant forms organic matter and compound-specific radiocarbon analysis (CSRA) of terrestrial lipid biomarkers, the project would reveal effects of recent climate change on the large-scale C cycle.	10/2008-09/2010	170,697
European high Arctic wetland change	EHAWC	High Arctic wetland sites on the Svalbard Archipelago, Norway, will be studied with a cross-disciplinary approach that utilizes geological, biological, and biogeochemical methods. Greater understanding of relationships between environment and ecosystem dynamics over recent-past and millennial-scale time scales in the High Arctic is timely owing to existing knowledge gaps regarding Arctic wetlands as well as present rapid Arctic change.	05/2007-04/2009	160,180
Diffuse trace metals in Arctic Ocean surface waters	DIFMET	This interdisciplinary project will contribute to our understanding of how inorganic marine components are linked to biochemical processes. Such information may be invaluable for future studies in a key region for global climate regulation, where a rapid and pronounced climatic warming has been predicted within the next 100 years.	01/2006-12/2007	159,314
Arctic environments; the protected areas of Lena Delta and new Siberian islands	INTAS 2003-51-6682	The project studies the environments of the Lena River Delta, New Siberian Islands as well as the adjacent south-eastern Laptev Sea shelf in time and space in order to better understand the Arctic's response to global change.	06/2004-05/2007	144,000

MERIS-based assessment of carbon supply into the Arctic by river run off (MACRO)	INTAS 2006-100025-9142	The project is intended to provide, within the problem of accurate assessment of global carbon cycling, a methodology and its application to produce time series of quantitatively assessed DOC fluxes brought into and spread over the Kara Sea during the time period of significant climate shifts in the northern high latitudes.	02/2007-01/2009	120,000
Coastal colonization in a rapidly changing Arctic environment	DYNARC	DYNARC aims to redress the paucity of knowledge of colonization processes and interactions between benthic macro-organisms in the Arctic coastal zone. The project focus on marine resources, and will provide new and important knowledge that will be of paramount importance for the local management of standing stock of various marine species.	04/2007-03/2008	40,000

Annex 2

EU Projects on Climate Change with Arctic implications 2007–2013
EU Member States engagement

Project	Acronym	Land	Coordinator/ Institution
DAMOCLES over Europe	DOE	Belgium	International Polar Foundation
Climate Change: Learning from the past climate	PAST4FUTURE	Denmark	University Kopenhagen
Climate change, environmental contaminants and reproductive health	CLEAR	Denmark	Aarhus University Hospital
Late Holocene climate sea ice variability in the south-western Labrador sea	CLIMICE	Denmark	The geological Survey of Denmark and Greenland
Lapland atmosphere-biosphere facility	LAPBIAT	Finland	University Oulu
Developing Arctic modelling and observing capabilities for long-term environmental studies	DAMOCLES	France	Université Pierre et Marie Curie
European Seas Observatory Network	ESONET	France	Institut Francais de Recherche pour l´exploitation de la mer
European Project on Ocean Acidification	EPOCA	France	Centre National de la Recherche Scientifique
The European polar research icebreaker	ERICON-AB	France	Fondation Européenne de la Science
Novel lipid biomarkers from polar ice: climatic and ecological applications	ICEPROXY	France	Centre National de la Recherche Scientifique
Study of environmental Arctic change-developing Arctic modelling and observing capabilities for long-term environment studies	SEARCH FOR DAMOCLES	France	Université Pierre et Marie Curie
Impact of Climate Change on light-related carbon fluxes in the Arctic Ocean	MALINA	France	Centre National de la Recherche Scientifique
Thermohaline Overturning - at Risk	THOR	Germany	University Hamburg

Comprehensive modelling of the Earth system for better climate prediction and projection	COMBINE	Germany	Max Planck Gesellschaft zur Förderung der Wissenschaften
Reconciliation of essential process parameters for an enhanced predictability of stratospheric ozone loss and its climate interactions	RECONCILE	Germany	Forschungszentrum Jülich
Arctic environments; the protected areas of Lena Delta and new Siberian islands	INTAS 2003-51-6682	Germany	IFM-Geomar
MERIS-based assessment of carbon supply into the Arctic by river run off (MACRO)	INTAS 2006-100025-9142	Germany	Max-Planck Institut für Meteorologie
European Multidisciplinary Seafloor Observation	EMSO	Italy	Istituto Nazionale di Geofisica e Vulcanologia
The effect of climate change on the pristine peatland ecosystems and (sub) actual carbon balance of the permafrost boundary zone in Sub-arctic Western Siberia	INTAS 2003-51-6294	Netherlands	University Utrecht
Coastal colonization in a rapidly changing Arctic environment	DYNARC	Poland	Institute of Oceanology, Polish Academy of Sciences
Quantifying the carbon budget in Northern Russia: past, present and future	CARBO-NORTH	Sweden	University Stockholm
Radiolarian artificial neural networks based estimation of the paleo sea surface temperatures and salinities in the Arctic and Antarctic Ocean and their response to isolation forcing	RADANN	Sweden	University Göteborg
Large scale carbon export to the Eurasian Arctic shelf elucidated with molecular characterization and compound specific radiocarbon assessment of black carbon	CARBON14ARCTIC	Sweden	University Stockholm

Ice2sea-estimating the future contribution of continental ice to sea-level rise	ICE2SEA	UK	Natural Environment Research Council
Hotspot ecosystem research and man's impact on European seas	HERMIONE	UK	Natural Environment Research Council
Training in sources, sinks and impacts of nitrogen deposition in the Arctic	NSINK	UK	University of Sheffield
Training in multi-scale approaches to understand carbon dynamics in Arctic and upland systems	MULTI-ARC	UK	University of Sheffield
Quantifying the effects of vegetation change on surface temperature change	TSURF	UK	University Edinburgh
European high Arctic wetland change	EHAWC	UK	Queens University Belfast
Diffuse trace metals in Arctic Ocean surface waters	DIFMET	UK	University of Oxford

Annex 3

EU Research Projects on Climate Change with Arctic implications 2007–2013
German institutional engagement
EU Contribution to AWI

Project	Acronym	Coordinator/ Institution	German Institutes	EU-Contribution to AWI (in €)
Developing Arctic modelling and observing capabilities for long-term environmental studies	DAMOCLES	Université Pierre et Marie Curie (France)	University Hamburg, AWI, University Bremen	1,124,806
Ice2sea-estimating the future contribution of continental ice to sea-level rise	ICE2SEA	Natural Environment Research Council (UK)	AWI	1,111,083
Thermohaline Overturning - at Risk	THOR	University Hamburg	Leibniz-Institut für Meereswissenschaften an der Universität Kiel, Max-Planck Gesellschaft zur Förderung der Wissenschaften	
Hotspot ecosystem research and man's impact on European seas	HERMIONE	Natural Environment Research Council (UK)	University Erlangen-Nürnberg, AWI, Archimedix, Möckl & Munzel, Max-Planck Gesellschaft zur Förderung der Wissenschaften, Jacobs University Bremen University Bremen	184,204
Comprehensive modelling of the Earth system for better climate prediction and projection	COMBINE	Max-Planck Gesellschaft zur Förderung der Wissenschaften	University Kassel	
European Seas Observatory Network	ESONET	Institut Francais de Recherche pour l´exploitation de la mer (France)	SIS Sensoren Instrumente Systeme, SEND Signal Elektronik, Norddeutsche Seekabelwerke, Technische FH Berlin, Konsortium Deutsche Meeresforschung	220,200

Climate Change: Learning from the past climate	PAST4-FUTURE	University Kopenhagen (Denmark)	AWI, Max-Planck Gesellschaft zur Förderung der Wissenschaften	319,862
European Project on Ocean Acidification	EPOCA	Centre National de la Recherche Scientifique (France)	GKSS Forschungszentrum Geesthacht, AWI, Leibniz-Institut für Meereswissenschaften an der Universität Kiel, Max Planck Gesellschaft zur Förderung der Wissenschaften	
Arctic Tipping Points	ATP	Tromsoe University (Norway)	Max Planck Gesellschaft zur Förderung der Wissenschaften	
The European Polar Research Icebreaker	ERICON-AB	Fondation Européenne de la Science (France)	Bundesministerium für Bildung und Forschung, AWI	900,887
European Multidisciplinary Seafloor Observation	EMSO	Istituto Nazionale di Geofisica e Vulcanologia (Italy)	Konsortium deutsche Meeresforschung	70,000
Network of leading mesocosm facilities to advance the studies of future aquatic ecosystems from the Arctic to the Mediterranean	MESOAQUA	University Bergen (Norway)	Leibniz-Institut für Meereswissenschaften an der Universität Kiel	
Reconciliation of essential process parameters for an enhanced predictability of stratospheric ozone loss and its climate interactions	RECONCILE	Forschungszentrum Jülich	Max Planck Gesellschaft zur Förderung der Wissenschaften, University Heidelberg, Forschungszentrum Karlsruhe, Deutsches Zentrum für Luft- und Raumfahrt, AWI, University Wuppertal	386,667

Arctic health risks: Impacts on health in the Arctic and Europe owing to climate-induced changes in contaminant cycling	ARCRISK	Arctic Monitoring and Assessment Programme (Norway)	Max Planck Gesellschaft zur Förderung der Wissenschaften, AWI	157,427
Quantifying the carbon budget in Northern Russia: past, present and future	CARBO-NORTH	Stockholm University (Sweden)	AWI, University Greifswald	142,880
Acoustic technology for observing the interior of the Arctic Ocean	ACOBAR	Stiftelsen Nansen Senter (Norway)	AWI, Optimare Sensorsysteme	1,032,761
The European centre for Arctic environmental research	ARCFAC V	NORSK Polarinstitute (Norway)	AWI	999,960
Study of environmental Arctic change-developing Arctic modelling and observing capabilities for long-term environment studies	SEARCH FOR DAMOCLES	Université Pierre et Marie Curie (France)	AWI	104,000
Climate of the Arctic and its role for Europe (CARE)	IPY-CARE	Stiftelsen Nansen Senter (Norway)	Max Planck Gesellschaft zur Förderung der Wissenschaften, AWI, Akademie der Wissenschaften und der Literatur	70,000
The Nordic Seas in the global climate system		Nansen Environmental and Remote Sensing Centre (NERSC) (Norway)	AWI	17,000
MERIS-based assessment of carbon supply into the Arctic by river run off (MACRO)	INTAS 2006-100025-9142	Max-Planck- Institut für Meteorologie	GKSS Forschungszentrum Geesthacht	

The effect of climate change on the pristine peatland ecosystems and (sub) actual carbon balance of the permafrost boundary zone in Sub-arctic Western Siberia	INTAS 2003-51-6294	Utrecht University	?	?

Annex 4

EU Projects on Climate Change related to indigenous peoples in the Arctic 2007–2013

Project	Acronym	Short Description	Start/ End	Lead Country/ Institution	EU-Contribution (in €)
Arctic health risks: Impacts on health in the Arctic and Europe owing to climate-induced changes in contaminant cycling	ARCRISK	Comparison of health risk in populations in the Arctic and selected areas due to the spreading of contaminants resulting from climate change	06/2009-11/2013	Arctic Monitoring and Assessment Programme (AMAP) (Norway)	3,499,052
Climate change, environmental contaminants and reproductive health	CLEAR	The research project investigates the possible impact of global climate change on reproductive health in one Arctic and two European populations. The key questions to be addressed are, firstly, how may climate change influence human exposure to widespread environmental contaminants and, secondly, how may contaminants impact occurrence of reproductive disorders as sensitive indicators of health?	05/2009-04/2013	Aarhus University (Denmark)	2,377,603