

TOWARDS AN ITALIAN STRATEGY FOR THE ARCTIC

NATIONAL GUIDELINES

MINISTRY OF FOREIGN AFFAIRS

AND INTERNATIONAL COOPERATION

2015

1. ITALY IN THE ARCTIC: MORE THAN A CENTURY OF HISTORY

The history of the Italian presence in the Arctic dates back to 1899, when Luigi Amedeo di Savoia, Duke of the Abruzzi, sailed from Archangelsk with his ship (christened *Stella Polare*) to use the Franz Joseph Land as a stepping stone. The plan was to reach the North Pole on sleds pulled by dogs. His expedition missed its target, though it reached previously unattained latitudes. In 1926 Umberto Nobile managed to cross for the first time the Arctic Sea from Europe to Alaska, taking off from Rome together with Roald Amundsen (Norway) and Lincoln Ellsworth (USA) on the *Norge* airship (designed and piloted by Nobile). They were the first to reach the North Pole, where they dropped the three national flags.¹ Two years later Nobile attempted a new feat on a new airship, called *Italia*. Operating from Kings Bay (Ny-Ålesund), *Italia* flew four times over the Pole, surveying unexplored areas for scientific purposes. On its way back, the airship crashed on the ice pack north of the Svalbard Islands and lost nearly half of its crew.² The accident was linked to adverse weather, including a high wind blowing from the northern side of the Svalbard Islands to the Franz Joseph Land: this wind stream, previously unknown, was nicknamed *Italia*, after the expedition that discovered it.⁴

Nobile's expeditions may be considered as the first Italian scientific missions in the Arctic region. His activity laid the foundations for further Italian achievements in Arctic oceanography, meteorology, geography and geophysics: thanks to Nobile, Italy discovered its own "Nordic dimension". Moreover, the efforts by both Arctic and non-Arctic States to rescue the victims of the *Italia* shipwreck represent the first example of international cooperation in extreme weather conditions - so harsh that Amundsen, for instance, lost his life while attempting to come to the castaways' aid. Nobile's Arctic endeavors continued, as he was invited to Russia in order to take part in an exploration of the Franz Joseph Land area conducted by the *Malyghin* icebreaker ship. On his way back, Nobile remained in Moscow for six years. During his stay, he supervised and managed a number of *Aeroflot* airship building activities.⁵

The early Italian presence in the Arctic was extensive and diverse. To take just one example: Silvio Zavatti was an explorer and anthropologist who devoted his life to the study of Nordic populations, especially the Inuit. Between 1961 and 1969 he organized five Arctic expeditions, of which three in Canada, one in Lapland and one in Greenland. His ethnographic research paved the way for the creation of the "Silvio Zavatti Polar Institute" in Fermo.⁶ The Institute hosts the only Italian Museum totally dedicated to Arctic subjects and publishes a specialized journal, aptly called "Il Polo".

The Italian record in the Arctic, therefore, is over one century old and the Italian Arctic footprint has been steadily increasing over time. This was thanks to Nobile's work, and to the later establishment of a Svalbard scientific base ("Dirigibile Italia") by the National Research Council. It was also thanks to the Arctic oceanographic cruises by the OGS *Explora* research ship and to

¹ U. Nobile, *Gli Italiani al Polo Nord*, Arnoldo Mondadori Editore, 1959.

² Six crewmen and the airship superstructure were never recovered. The famous "red tent" was erected by Nobile, Malmgren (who died while looking for rescuers) Cecioni, Mariano, Behounek, Trojani, Viglieri, Zappi and Biagi.

⁴ U. Nobile, *Addio Malyghin !*, Arnoldo Mondadori Editore, 1948.

⁵ U. Nobile, *Storia aggiornata della spedizione polare dell'"Italia" - L'epilogo del dramma*, Roma, 1962.

⁶ www.istitutopolarezavatti.it

the activity of various Italian companies, like Eni and Finmeccanica. Italy may be considered one of the most active non-Arctic States in this area. To the historical reasons for the Italian presence in the Arctic can be added new, urgent challenges largely dependent on global warming, whose repercussions are affecting the Arctic region deeply.

2. ITALY IN THE ARCTIC: THE POLITICAL DIMENSION

Italy was admitted to the Arctic Council as an Observer in May 2013. The Arctic Council ministerial meeting in Kiruna acknowledged the size and the importance of the Italian Arctic record. In science, Italy's contribution includes the creation of important observation platforms in Ny Ålesund like the *Climate Change Tower*⁷ and a number of other research activities, including its oceanographic cruises in the Arctic waters.⁸ In the business sphere, the Italian contribution includes investments by Eni. In addition to its extraction programmes in Norway and Russia, the company is implementing some remarkable projects aimed at improving safety conditions of maritime transport (against oil spill), mitigating its environmental impact and taking into account the role of indigenous. All this is happening against the backdrop of an ecosystem rapidly evolving as a result of global warming.

The challenge posed to the Arctic environment by global warming needs to be tackled globally by the International Community, in close coordination with the Arctic States. The most important dialogue forum on this issue as far as the Arctic is concerned is represented by the Arctic Council.⁹

Italy views the Arctic Council, with its wide range of members (Member States, Permanent Participants, Observers, Task Forces, Working Groups ...), as the main debating arena for the region. It is a forum for discussion of the different features and issues of this multifaceted area and for the identification of all viable forms of cooperation. Twenty years after its establishment, the Arctic Council has acquired a broader dimension with respect to the initial idea of an inter-Arctic consultation forum. It is, indeed, also a vehicle of regional stability, whose increasing relevance is demonstrated not least by the growing number of its observer countries - including some European Union member States and Asian Countries.¹⁰

Bearing in mind that change in the region depends mainly on phenomena occurring at different latitudes, with tangible repercussions on a global scale, a common approach is needed in order to deal with these new challenges - from global warming to the opening of Polar navigation routes. Given that a global phenomenon calls for a global approach, this entails new responsibilities not only for the Arctic States but also for the International Community as a whole.

⁷ CCT: www.isac.cnr.it/~radiclim/CCTower

⁸ <https://sites.google.com/site/ipynicestreams/home>

⁹ <http://www.arctic-council.org/index.php/en/>

¹⁰ Members are: Canada, Denmark, Russian Federation, Finland, Iceland, Norway, U.S.A. and Sweden. Observers: China, Korea, France, Germany, Japan, India, Italy, Netherlands, Poland, United Kingdom, Singapore, Spain. The EU participates as an observer; its status, anyway, is still to be defined.

National sovereignty of Arctic States is a given, completed and integrated by customary international sea law and by a number of Treaties, the most important being the United Nations Convention on the Law of the Sea (UNCLOS).¹¹ As a State party to UNCLOS, Italy abides by its clauses, including those related to a responsible management of the Arctic Ocean. Italy also abides by the rules of other legal instruments that indirectly concern the Arctic region: the Convention on Biological Diversity,¹² the Convention on Long-range Transboundary Air Pollution,¹³ the International Convention for the Prevention of Pollution from Ships (MARPOL),¹⁴ the International Convention for the Safety of Life at Sea (SOLAS).¹⁵ Italy, moreover, is one of the original signatories to the Svalbard Treaty.¹⁶

The Arctic area includes large portions subject to individual national sovereignties. Italy fully respects those sovereign rights. It stands ready to play its part to confront global challenges through its scientific and technological expertise and through cutting-edge businesses, thus contributing to a sustainable Arctic development while respecting the ecosystem and indigenous peoples. Given the primary relevance of the human dimension, Italy considers that raising awareness of such issues is of capital importance. This should be done through an incremental, internationally coordinated effort, working in concert with the Arctic States.

Against this backdrop the European Union, that in practice participates in Arctic Council activities as an observer,¹⁷ has been playing an increasingly important role as far as policies aimed at combating global warming are concerned. In 2008 the European Commission adopted a document entitled “The EU and the Arctic region”,¹⁸ which highlights the consequences of climate change and new human activities in the Arctic. This was followed in 2012 by a Commission/EEAS Joint Communication,¹⁹ whose content Italy espouses. A new Commission/EEAS Joint Communication will be issued in the first quarter of 2016.

Accordingly, Italy has embarked on a number of initiatives, on a national as well as on an international level, to ensure that its Arctic footprint, be it scientific or business-related, provides added value. A further aim is to demonstrate our country’s commitment to the further, progressive integration of the international presence in the Arctic region. In the multilateral context, Italy takes part in the *Senior Arctic Officials* (SAO) meetings (a specialized diplomatic representative has been appointed to the Arctic Council to this end). We also take part in a number of Working Groups, through the SAO, through our Embassies or by means of experts selected by the National Research Council (CNR) or other Italian scientific agencies such as the National Agency for New Technologies, Energy and Sustainable Development (ENEA), the national Institute for Geophysics and Volcanology (INGV) and the National Institute of Oceanography and

¹¹ http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm

¹² <https://www.cbd.int/>

¹³ http://www.unece.org/env/lrtap/lrtap_h1.html; <http://www.emep.int/>

¹⁴ [http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-\(MARPOL\).aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx)

¹⁵ [http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Safety-of-Life-at-Sea-\(SOLAS\),-1974.aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Safety-of-Life-at-Sea-(SOLAS),-1974.aspx)

¹⁶ <http://www.sysselmannen.no/en/Toppmeny/About-Svalbard/Laws-and-regulations/Svalbard-Treaty/>

¹⁷ <http://www.arctic-council.org/index.php/en/about-us/arctic-council/observers>

¹⁸ COM (2008) 763, final.

¹⁹ *Developing a European Union Policy towards the Arctic Region: progress since 2008 and next steps* http://eeas.europa.eu/arctic_region/docs/join_2012_19.pdf

Experimental Geophysics (OGS).

Italy is engaged in the Arctic Council at all levels, from the *Task Forces* to the *Working Groups*, where it provides an active contribution to different streams of work thanks to the considerable expertise of its scientific community.

In the EU framework, Italy has recently promoted contacts to foster interaction and dialogue between the stakeholders of the Baltic Region Strategy and those of the Adriatic-Ionic Strategy. The aim here is to exchange experiences and best practices which could further develop into a process of increasing integration between the actors of said Strategies.²⁰

Italy considers the waters of Arctic Ocean as being highly relevant to the European Union also. In this respect, Italy took an active part in the drafting of Directive no. 30/2013/EU of June 12, 2013 on safety of offshore oil and gas operations, by providing comments and proposals aimed at consolidating safety standards in the upstream offshore field. The Directive underscores that “*the serious environmental concerns relating to the Arctic waters require special attention to ensure the environmental protection of the Arctic in relation to any offshore oil and gas operation, including exploration, taking into account the risk of major accidents and the need for effective response*”.²¹ To this end, Italian institutions are ready to place their expertise at the disposal of Arctic States, by cooperating in the framework of the Arctic Council to ensure that the research and extraction of oil and gas in the Arctic region is accompanied by the highest standards of safety and environmental protection.

At the bilateral level, informal consultations with Arctic Council member States have been taking place in order to define possible fields of cooperation with Italy, both in the scientific and in the economic field. Later on, based on relevant results, “bilateral working tables” composed by representatives of the scientific and business communities of each country, with meetings taking place at regular intervals. Informal contacts with the Saami Council have also been conducted,²² with a view to launching new studies on the culture of Arctic inhabitants, in consultation with Italian academic institutions.

At the national level many initiatives have been initiated to increase awareness of the Italian presence in the Arctic region and reinforce our proactive approach. In addition to our current scientific programmes, other initiatives include the *International Conference on Climate Change in the Arctic* organized by the Ministry of Foreign Affairs and International Cooperation (MFAIC) in December 2014 at *Venice International University*. This was attended by the SAOs of Arctic Council member States and representatives of CNR, Eni and Finmeccanica.²³ The MFAIC also supported two other initiatives in 2014. One was the conference on *Ice and resources: the Arctic as a new geopolitical scenario*,²⁴ organized in the Chamber of Deputies by the Istituto di Alti Studi in Geopolitica e Scienze Ausiliarie with the participation of all the Ambassadors to Italy of Arctic Council States. And the other was a conference on *Environmental Sustainability and Use*

²⁰ Cfr.: <http://www.balticsea-region-strategy.eu/>; <http://www.adriatic-ionic.eu/>.

²¹ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013L0030&rid=1>

²² www.saamicouncil.net

²³ http://www.univiu.org/images/stories/Arctic_Conference_Program.pdf

²⁴ <http://www.geopolitica-rivista.org/cms/wp-content/uploads/locandina190214.pdf>

of Resources in the Arctic Region, hosted by the MFAIC itself and organized by *Diplomacy*, as a part of the 6th *Diplomacy Festival*.

From March 7 to September 30 the *Società Italiana per l'Organizzazione Internazionale* (SIOI), in partnership with the MFAIC and the Ministry of the Environment, will be offering the first Italian Master course dedicated to Arctic issues (Master in Sustainable Development, Resource Geopolitics and Arctic Studies). The course is designed to develop capabilities and competences pertaining to the green economy, energy geopolitics and responsible use of natural resources.²⁵

An informal, open-ended consultation group, called “Tavolo Artico” (Arctic Table) has been recently re-activated. Its mandate concerns the exchange of information and the coordination of activities among the main Italian entities active in the Arctic (more than two dozen), under the aegis of the MFAIC. Outreach and dissemination activities by various actors are also encouraged and supported by the Italian institutions, with the aim of fostering a more widespread interest in Arctic issues on a national scale.

3. ENVIRONMENTAL AND HUMAN DIMENSION

The Italian approach to Arctic issues is based on the selection of actions and key instruments to be developed in the relevant contexts. These include the promotion of “lessons learned” and the exchange and sharing of knowledge on specific aspects of environmental questions. They also encompass a keen awareness of the decisive role played by targeted actions and awareness raising among the main stakeholders in the relevant discussion fora: notably, international negotiations and political processes involving environmental issues. A major role is also played by activities aimed at securing suitable financing flows from EU and international sources. Such activities, if properly managed, will be instrumental in improving and strengthening the bilateral ties already existing with Arctic States and in fostering new collaboration opportunities. They will enable positive returns for the cooperating parties and for the Arctic as a whole, with beneficial repercussions on a global level.

Cooperation and exchange of experiences with Arctic States can (and must) represent also a development opportunity for Italy. Specific subjects of national interest include sustainable urban environment, which is one of the Italian Ministry of Environment’s priorities. To this end, a major role is to be played by scientific and technological research, a sector where Italy can count on various high-level actors, notably in the context of the Arctic Council working groups.

Actions and key instruments will concentrate on environmental issues which appear as crucial in the Arctic environment, such as: biodiversity protection, air pollution prevention, climate change reversal, protection of sea waters and integrated management of coastal zones, including attention to water quality, natural resources management as well as management of environmental risk arising from maritime transport, tourism, mining and port operations.

²⁵ <http://www.sioi.org/pages/it/scuola-di-alta-formazione-internazionale/formazione/master-in-sviluppo-sostenibile-geopolitica-della-risorse-e-studi-artici.php?lang=IT>

3a. ENVIRONMENT

Italy shares a number of similarities with the Arctic region. First of all, the maritime and mountainous features of the Alpine areas, which make them particularly fragile and vulnerable not only to climate change, but also to all factors liable to alter their delicate equilibrium (such as fishing, hunting, pollution and tourism). More specifically, the Baltic and the Adriatic seas share similar features, peculiar to closed seas: for example, scarce water circulation and renewal: The Italian mountain areas and the Arctic region, on the other hand, suffer from similar problems related to geographical, social and technological isolation.

- *Maritime environment*

Parallel challenges affecting the Baltic and the Adriatic seas (and, to a certain extent, the Mediterranean as a whole) are the delicate balance of their ecosystem, their insufficient resilience to continuous or punctual polluting events and the severe consequences of global phenomena (for instance, the rise in the sea level). In addition, the growing density of sea trade in Northern waters counts as a major challenge as it entails a growing risk of accidents and environmental damage connected to possible oil spill. In this respect the MARPOL Convention on the prevention of pollution from ships represents for its parties, including Italy, the key international instrument.

Directive 2013/30/EU on offshore safety constitutes another relevant operative tool in this field, by virtue of its strict regulations on the construction and management of extraction facilities and the guarantees to be provided by oil & gas operators (insurance, bond bails).

- *Air pollution and climate change*

Taking action to fight climate change in the Arctic is clearly a priority for regional actors; its universal recognition as a global priority is equally essential. Actions to raise awareness, by public opinion and all relevant stakeholders, are just as important.

In recent years, most Arctic countries have increasingly been promoting policies aimed at curbing levels of *Short Lived Climate Forcers* (SLCFs). SCLFs are methane, tropospheric ozone, hydrofluorocarbons (HFC) and *black carbon*. Locally, most black carbon emissions come from wood burning and diesel engines. At the international level, current actions are mainly geared at reducing emissions from ships. Given the increasing development of Arctic sea routes, vessels are likely to bring this kind of pollutants ever-closer to the especially vulnerable Arctic areas. In fact, SCLFs are trans-border by nature. Once they are circulating in the atmosphere, they tend to accumulate in the Arctic region though they are produced at lower latitudes (most black carbon found in the Arctic comes from middle latitudes). According to the Intergovernmental Panel on Climate Change (IPCC),²⁶ SCLFs reduction would significantly improve the ice and snow cover situation in the Arctic region.

²⁶ The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change. It was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO): <http://www.ipcc.ch/>

Italy plays an active role in applying the main international instruments dealing directly or indirectly with atmospheric pollution and climate change, namely:

- UN Framework Convention on Climate Change (UNFCCC); ²⁷
- Vienna Convention for the Protection of the Ozone Layer ²⁸ and Montreal Protocol on Substances that Deplete the Ozone Layer; ²⁹
- UNECE Convention on Long-range Transboundary Air Pollution (CLTRAP). ³⁰
 - *Biodiversity*

Biodiversity in the Arctic appears among the most vulnerable on our planet. A number of international instruments to safeguard biodiversity are available, the effectiveness of which has been demonstrated over the years. Italy considers that each of them should be employed in the Arctic area through tailored actions and measures, to be implemented by international cooperation and partnerships. Italy takes an active part in the main vehicles available to this end, such as:

- the already cited UN Convention on Biological Diversity, aimed at the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources, also through international cooperation;
- the Bern Convention on the Conservation of European Wildlife and Natural Habitats, covering the conservation of plant and animal life with their habitats, the promotion of cooperation among States and the endangered/vulnerable species monitoring; ³¹
- the Paris International Convention for the Protection of Birds in the wild state; ³²
- the Bonn Convention on the Conservation of Migratory Species of Wild Animals, aimed at protecting and effectively managing migratory animal species throughout their range. ³³ In the framework of this Convention, the *African-Eurasian Migratory Waterbird Agreement* (AEWA) ³⁴ is particularly relevant;
- the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), regulating the international trade of plant and animal species verging on extinction. ³⁵

²⁷ <http://newsroom.unfccc.int/>

²⁸ <http://ozone.unep.org/en/treaties-and-decisions/vienna-convention-protection-ozone-layer>

²⁹ <http://ozone.unep.org/en/treaties-and-decisions/montreal-protocol-substances-deplete-ozone-layer>

³⁰ <http://www.unece.org/env/lrtap/30anniversary.htmlv>

³¹ <http://www.coe.int/it/web/bern-convention>

³² <http://sedac.ciesin.org/entri/texts/protection.of.birds.1950.html>

³³ <http://www.cms.int/>

³⁴ <http://www.cms.int/en/legalinstrument/aewa>

³⁵ <https://www.cites.org/>

3b. HUMAN DIMENSION

- *Urban Areas*

In view of the distinctive features of Arctic areas, including their vulnerability, the role of urban development is of remarkable importance. Some Arctic States are pioneering in this field: for instance, Sweden, with its holistic approach to sustainable urban development. In other words, urban sustainable design should not be understood only as architectural and urban design, but also as a careful planning of interactions among all relevant subsystems (waste cycle management, energy, heating etc.) that allow a city to be environmentally effective and sustainable, thus improving the quality of life. This holistic approach to sustainability in urban areas has become an integral part of the “*smart city*” concept.

Urban sustainable development is an Italian national priority. It will be pursued in the framework of the relevant international instruments, notably the Transport, Health and Environment Pan-European Programme³⁶ and the HABITAT III negotiations.³⁷

- *Indigenous peoples*

Being both vulnerable and marginal, many areas in the Arctic constitute highly fragile realities. Indigenous peoples are confronted with ecosystem alteration, loss of biodiversity and the side effects of unregulated hunting and fishing. Anyway, social issues linked to connectivity (or the lack of) should not be under-estimated, as they jeopardize socialization, career development and business opportunities - similarly to what happens in some Alpine areas. In this respect, work conducted under the Alpine Convention³⁸ is worthy of note. It is intended to improve access to general services for Alpine settlements affected by a significant degree of isolation, by fostering organizational innovation and underscoring the need for general services accessible to the population as a whole.

4. THE SCIENTIFIC DIMENSION

4a. CONTEXT AND CHALLENGES

Against the backdrop of growing concern about the threats posed by climate change, the scientific community is attempting to keep pace with the complexity of the processes, interactions and feedbacks that underlie such phenomena. A need arises to deepen the knowledge of the Earth system, so that reliable and sustainable solutions can be identified. In particular, more Arctic observation is urgently needed, whether through coordinated monitoring to improve the forecasting quality of the meteorological and climatic model and our understanding of the Arctic system and its role in the Earth system, or through experimental tests and oceanographic expeditions.

³⁶ <http://www.thepep.org/en/welcome.htm>

³⁷ Habitat III is the United Nations Conference on Housing and Sustainable Urban Development, to take place in Quito, Ecuador, from 17 - 20 October, 2016: <http://unhabitat.org/habitat-iii-conference/>

³⁸ <http://www.alpconv.org/it/convention/default.html>

The permanent presence of sea ice, large ice sheets and permafrost on the ground are unique features of the polar regions that amplify, at a regional level, the impact of global climate change. The distinctive features of high latitude radiation further increase the system's sensitivity to changes and are a factor in amplifying such change. The features peculiar to the Arctic system produce strong and complex interconnections among physical, chemical, geological and biological components of the system itself, which are amplified by feedback processes and by the system's overall complexity. Such an intricate problem requires a broad and intense collaborative effort on an international scale, so that the different observation capabilities, databases and analytical methods could be harmonized, resulting in higher levels of understanding. This, in turn, will allow for a realistic decision making process on choices concerning the business potential/the use of resources, on the one hand, and the mitigation of climate change effects, on the other. International collaboration in this field represents the main avenue to foster opportunities to promote the national interest, be it political or economic.

Italian Base *Dirigibile Italia* - Ny-Ålesund

Since the 1960s, the former mining village of Ny-Ålesund, on the Svalbard Islands, has been transformed into an important research center dedicated to the Arctic environment and its components (atmosphere, hydrosphere, cryosphere, biosphere). In Ny-Ålesund, international cooperation allows for and enhances the study of the complex interconnections between biological phenomena and physical, chemical, dynamical and radiation processes. Eleven countries, including Italy, currently maintain research stations in Ny-Ålesund, where research projects and continuous monitoring activities take place all year round. Science-related action in Ny-Ålesund is coordinated by NySMAC (*Ny-Ålesund Science Manager Committee*), a scientific and technical committee bringing together the eleven stations managers. Italy has been chairing the committee for to mandates, from 2001 to 2005.

"Dirigibile Italia", whose name recalls the 1928 expedition by Umberto Nobile, was opened in 1997 as a multidisciplinary research station. It is managed by the Italian National Research Council; its research activities are coordinated by the CNR Department for Earth-system Sciences and Environmental Technologies.

Of a surface of 330 square meters, 170 are office and labs space. The base is open all the year round, though it manned only while research activities are taking place. It can host up to seven researchers, working on: Atmospheric Chemistry & Physics; Marine Biology; Physics of the High Atmosphere; technological research, Geology and Geophysics; Glaciology, Nivology and *permafrost*; Paleoclimate; Oceanography/limnology; terrestrial Ecosystems; Environmental studies; Humane Biology and Medicine. Starting in 2009, three important multidisciplinary observation platforms have been added to the station: the Amundsen-Nobile Climate Change Tower (CCT), the aerosol and Gruvebadet interface processes lab (GVB) and a mooring (MD1) on the inside of the Kongsfjorden.

Italian Polar Research ship OGS *Explora*

The OGS *Explora*, owned since 1989 by the National Institute for Oceanography and Experimental Geophysics (OGS), is an ocean-going multipurpose research vessel certified as capable of navigating and collecting data also in a polar environment.

As a multidisciplinary ship, it is equipped both with oceanography and biology laboratories and geophysical data acquisition systems. OGS *Explora* has conducted ten research cruises in Antarctica and four around the Svalbard Island; it has also been employed in providing support activities to companies with offshore activities in the Arctic area (Canada, Greenland, Iceland, Norway, Fær Øer Islands).

The OGS *Explora* is 73 meters long with a gross tonnage of over 1400 tons, and can reach a cruising speed of 11 knots. The ship is integrated into the EUROFLEETS³⁹ research infrastructure (the European research vessels fleet, currently about to become an EFSRI⁴⁰ infrastructure), where it is made available to the scientific community for Polar areas. In addition, the ship is listed in MERIL⁴¹ (European map of research Infrastructures). The vessel's global oceanic vocation, coupled with its polar research specialization, are instrumental to international collaborative scientific initiatives.

In early 2016 the OGS *Explora* will begin an intensive refitting process. By renewing some structural elements, laboratories and the accommodation space, her operational lifespan will be extended by 12 years. The refit will also make possible to increase the number of on-board scientists up to 24 and widen the vessel's operational scope in the fields of geophysics, physical oceanography and biological oceanography.

4b. STRATEGIC GUIDELINES

The priorities and actions set out by the science community and by international coordinating bodies, scientific (ICSU, IASC, EPB) as well as political (Arctic Council, European Commission) to understand climate change are aimed at:

- 1 - Increasing the spatial and temporal resolution of the Arctic observation system and strengthening the level of coordination among different national initiatives.
- 2 - Promoting the study and knowledge of a further "dimension" of the Arctic system, namely

³⁹ <http://www.eurofleets.eu/np4/home.html>

⁴⁰ http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=esfri

⁴¹ <http://portal.meril.eu/converis-esf/publicweb/startpage?lang=1>

its complexity, as an integral component of the Earth system that plays a key role in causing the *Arctic amplification* phenomenon as well as the nature and entity of ongoing transformations. In this context, the sites (also known as SuperSites) where large quantities of relevant physical, chemical and biological parameters can be simultaneously obtained all over the year are of the highest importance.

3 - Defining, at various levels (European or international), the scientific research agenda and priorities in the medium and long term, through projects such as the *Coordination Support Action EU-PolarNet*⁴² and initiatives like ICARP.⁴³ At the European Union level, the Arctic is listed as priority in the “Scoping Paper for Horizon 2020 Societal Challenge Climate Action, Environment, Resource Efficiency and Raw Materials”.⁴⁴

The overall objective is, therefore, the consolidation of the Italian presence in the Arctic, as also envisaged by past operational guidelines. Over the next few years, the Italian scientific community, supported by the national research agencies (CNR, ENEA, INGV, OGS) and in line with the above-mentioned international efforts, has set itself the following goals.

A - Promoting Italian participation in Arctic research as an example of national scientific and technological excellence, optimizing the use of its resources and expertise. Priority will be given, on one hand, to medium-long term continuous monitoring activities and, on the other, to experimental activities on terrestrial and oceanic ecosystems. This objective will be pursued first of all through solid, continuing experimental activity in Ny-Ålesund, to be coordinated with the other Countries operating there and coupled with oceanographic activities. The aim there is to make a significant contribution to the integrated study of the Ocean-Earth-atmosphere system. An active participation in the *Svalbard Integrated Earth Observation System (SIOS)*⁴⁵ initiative will make it possible to extend scientific interests and activities to the entire archipelago. The participation of the OGS *Explora* oceanographic ship in the EUROFLEETS research infrastructure will contribute to expanding the geographical horizon of research activities and promoting the Italian research systems in Europe.

B - Expanding the Italian presence in the pan-Arctic observation system, mainly on the basis of bilateral arrangements. On-going contacts are meant to allow, over the next two-three years, for the launch of collaborations in Greenland and in Canada. To the east, Italy, initiatives will concentrate on Russia, Korea, China and Japan. A few specific arrangements are already in place; more may be activated via instruments such as the scientific and technological cooperation agreements promoted by the Ministry of Foreign Affairs, the agreement between the CNR and the *Russian Foundation for Basic Research (RFBR)* and the agreement between the OGS and China's *First Institute of Oceanography (FIO)*.

C - Reinforcing internationalization. Italian research agencies (CNR, ENEA, INGV, OGS) already

⁴² http://www.eu-polarnet.eu/fileadmin/user_upload/redakteur/Members_documents/Tool-Kit/EU-PolarNet_FactSheet_2015.pdf

⁴³ <http://icarp.iasc.info/>

⁴⁴ https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/12.%20SC5_2016-2017_pre-publication.pdf

⁴⁵ <http://www.sios->

[svalbard.org/servlet/Satellite?c=Page&pagename=sios/Hovedsidemal&cid=1234130481072](http://www.sios-svalbard.org/servlet/Satellite?c=Page&pagename=sios/Hovedsidemal&cid=1234130481072)

take an active part in international Arctic initiatives. The CNR is a member of IASC and EPB; it also participates in ECRA initiatives, in particular in the *Arctic Climate Stability and Change Collaborative Programme* promoted by AWI (Germany) and *Bjerknes Centre* (Norway). The sharing of major oceanographic infrastructures (such as research vessels, perforation systems, ROVs) will contribute to the further internationalization of the Italian oceanographic research in the Arctic. Under the IASC's aegis, CNR and OGS will continue to make an active contribution to two of the Arctic Council *Working Groups* on sea and atmosphere-related matters (in particular, to AMAP). OGS was part of the Italian delegation to the *Arctic Circle 2014* event in Reykjavik. CNR is a contributor to the *International Polar Initiative* (IPI)⁴⁶ and has represented the Italian research community in SAON since day one⁴⁷. As far as major infrastructural initiatives are concerned, moreover, Italy has played an active part in the *preparatory phase* of the SIOS and is planning to participate via CNR in its *interim phase* and to promote it on a national scale.

D - *Participating in the European Arctic infrastructural strengthening action* promoted by the European Commission, by Arctic Countries and also by Mediterranean Countries like France (*iA00S France - inner Arctic Ocean-Observing System* project). This objective will be pursued by further developing the *Dirigibile Italia* base as well as its observation platforms, through:

- taking part in the new research infrastructures promoted by the EC and by the *European Strategy Forum on Research Infrastructures* (ESFRI)⁴⁸ for the Arctic areas (e.g., SIOS);
- supporting the ESFRI infrastructures coordinated by Italy that are consolidating their presence in the Arctic and sub-Arctic regions, namely EMSO - *European Multidisciplinary Seafloor and Water Column Observatory* (Europe-wide multidisciplinary network of marine observatories),⁴⁹ and EPOS-*European Plate Observing System*,⁵⁰ the infrastructure integrating the observation systems dedicated to terrestrial dynamics and tectonics;
- supporting the possible Arctic extension of the ESFRI ICOS - *Integrated Carbon Observation System*⁵¹ infrastructure;
- conducting further oceanographic expeditions;
- participating in European *calls* in partnership with BAS, NPI, AWI and non-Italian Universities.

E - *Developing synergies between Arctic activities by Italian research agencies and PNRA activities*. Such synergies will be fostered, first, by standardizing the management of data coming from both the Arctic and Antarctica, by means of an information system gathering all generated metadata and, as to the Arctic, acquired data also. A second, highly important step will consist of the divulgation and dissemination of results. Finally, the third step will concern the enlargement of the Italian polar science community, to be achieved through specific training for young researchers.

F - *promoting and strengthening the collaboration among national actors (Agencies,*

⁴⁶ <http://internationalpolarinitiative.org/IPIhomepage.html>

⁴⁷ <http://www.arcticobserving.org/>

⁴⁸ http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=esfri

⁴⁹ www.emso-eu.org

⁵⁰ www.epos-eu.org

⁵¹ www.icos-ri.org

Universities). CNR, OGS and INGV are engaged in a 2012 project called ARCA - *ARctic: present Climate change and pAst extreme events*, involving nine Italian Universities. The wide synergies emerging in the ESFRI framework between SIOS, with CNR participation, and EMSO and EPOS, both coordinated by INGV, will be further enhanced. Similarly, the Italian Space Agency (ASI) will be involved in order to identify ways and means for feeding the *Cosmo-SkyMed* unique products into the pan-Arctic observation system.

G - *Promoting technological innovation and experimenting actions*, mainly in the field of atmosphere observation (UAVs, extreme environments monitoring systems, air-sea-ice interface monitoring systems), marine observation (USVs, ROVs) and satellite observation (product development, cal/val), also by harmonizing and exploiting the ample experience gained by the Italian science community in the PNRA framework.

5. ECONOMIC DIMENSION

A number of studies⁵² support the notion that the Arctic hosts significant, unexplored amounts of mineral and energy resources (e.g., hydrocarbons and rare earth elements). Their possible exploitation is a complex endeavor and, in many areas, still an impossible one, due to technological, infrastructural and financial constraints. The on-going thinning of ice sheet could make access to such resources easier than it is at the moment. In view of the delicate environmental conditions in the Arctic, however, ensuring the highest operation safety and ecosystem protection standards remains a necessary condition that implies sizable investments and a wide use of cutting-edge technology.

Italy has a significant track record in offshore oil & gas research and exploitation. At the same time, one of its distinctive features is the value of its cultural and environmental heritage, considered at the global level to be truly unique. Therefore, Italian institutions have a keen awareness of the importance of the environmental compatibility of extraction activities. They have developed notable expertise that ensures safety performance levels that are among the highest worldwide.⁵³ The Italian extraction industry, in turn, has been demonstrating its technical quality since 1959, when the first offshore oil platform in European waters was installed in Italy. Italian institutions can also make their competences available to the Arctic States, by cooperating at the level of Arctic Council working groups, with a view to tackling the problems arising from the increase of industrial and anthropic activities in the Arctic.

In the Arctic, Italy is deeply committed to the investigation of climate change through the work of its research agencies activities. Italy is also in a position to respond to the need for infrastructures and services tailored to Arctic requirements, thanks to the cutting-edge technological expertise of its businesses. This applies in particular to companies providing specialist services such as satellite-based control and offshore engineering, not to mention capabilities related to energy, navigation and building.

⁵² See, for instance, <http://energy.usgs.gov/RegionalStudies/Arctic.aspx>

⁵³ Ministero Sviluppo Economico - Direzione Generale Risorse Minerarie ed Energetiche - *Rapporti Annuali*.

Italy's considerable experience in the field of renewable energies is also noteworthy. The first geothermal power plant was built in Italy at the beginning of the 20th century. Today, Italy remains one of the European leaders in geothermics and is willing to develop possible synergies with the Arctic countries, some of which have a comparably strong tradition in this field.

Italy's ability to embark on pioneering endeavors and to combine advanced technology with the preservation of the environmental and cultural heritage provides the added value that it can bring to the of the economic growth and sustainable development of the Arctic region.

According to central scenario drawn up by the International Energy Agency (IEA) *World Energy Outlook 2014*, global energy demand is set to grow by 37% by 2040.⁵⁴ Along with renewable sources, Arctic resources could play a significant role in satisfying this thirst for energy, an issue that does not concern a single State but all global actors. Related investments, anyway, will have to comply with a wide range of criteria: the need for sustainable development, taking into account the fragility of the Arctic ecosystem; the human dimension; financial constraints; compliance with relevant regulations; peculiar, hostile weather. Environmentally sensitive and remote areas such as these call for a heightened commitment to safety as well as for careful risk analysis, the use of advanced technology use and the selection of highly skilled personnel, coupled with constant cooperation with indigenous peoples. The last-named are the real experts on the Arctic environment, as they safeguard a unique heritage of traditions and culture that date back millennia and which should be protected and enhanced by any business operating in the region.

Every Arctic stakeholder has an interest in respecting such a peculiar and sensitive ecosystem. Italy supports an eco-sustainable management of Arctic fisheries stocks. Commercial fishing should take into account its impact on the ecosystem as a whole and on the subsistence of Arctic inhabitants, and prevent damage to non-commercial species and to marine biodiversity.

5a. ENI AND THE ARCTIC

Eni acknowledges the scientific evidence on climate change as listed in the IPCC *5th Assessment Report* IPCC (AR5), which ascertained the extreme probability of a meaningful connection between climate change and anthropic activities. Faced with such evidence, Eni is convinced that all public and private actors should actively contribute to the mitigation of risks connected to climate change. As an energy global leading company, Eni has for years been committed to satisfying its customers' energy demand while at the same time striving to mitigate the climate impact of its own production process and products. To this end, in the past ten years Eni has been implementing a three-pronged *Climate Strategy*:

- continuous improvements in its own energy efficiency and progressive reduction of emissions arising from its production activities;
- promotion of natural gas as a fuel for the transition towards a *low carbon* economy;
- investments in renewable energy and development of "green" products.

⁵⁴ https://www.iea.org/publications/freepublications/publication/WEO2014_ES_Italian.pdf

The climate change challenge is a global one that requires shared solutions. Italy therefore believes that GHG reduction programs encompassing the products and production process of a company should be integrated with a strong commitment to initiatives aimed at fostering synergies with public and private actors, with a view to combating climate change.

For its part, Eni joined two public-private initiatives to curb methane emissions and flaring:

- *Climate and Clean Air Coalition*, coordinated by UNEP and aimed at reducing methane emissions in many fields, including Oil&Gas; in this framework, Eni has undertaken to report on its activities to improve the monitoring of, and to reduce, methane emissions connected to natural gas production.
- *Global Gas Flaring Reduction*, coordinated by the World Bank, is aimed at progressively zeroing flare gas emissions. In 2014 Eni subscribed to the “zero routine flaring in 2030” goal, which they deem to be able to attain in advance of that deadline.

Again in 2014 Eni, together with other O&G major companies, embarked on a voluntary program called the *Oil&Gas Climate Initiative*. This is an ambitious action plan, meant to take part in the fight against climate change: it aims to strengthen proactive collaboration, information sharing and communication aspects in order to optimize GHG emission management by the oil & gas sector, thus contributing to the transition towards a low-carbon energy.

Carbon pricing is one of the instruments leading to the goal of a de-carbonized economy. In this regard Eni published a public appeal to all Governments and UNFCCC, ⁵⁵ calling for the introduction of carbon dioxide emissions pricing systems. The aim here is to create a clear, stable and more ambitious regulatory framework, also by harmonizing the existing national rules, the differences in which currently lead to distortions in competition (*carbon leakage*). ⁵⁷ A development of this nature could reduce uncertainty in *low carbon* technology investments, while encouraging the identification of more advantageous ways and means to significantly curb carbon dioxide emissions on a global scale.

The Arctic constitutes a huge challenge for all companies, both in technology and management terms. While it provides opportunities to explore new mineral resources, it has also sensitive and remote areas that oblige to increase safety measures and conduct a thorough risk analysis by deploying cutting-edge technology and highly skilled personnel.

Eni’s approach to Arctic activities, therefore, is based on the following principles:

- activities are to be performed in *ice free* offshore areas only, assisted by satellite iceberg control and remote monitoring of all drilling activity;

⁵⁵ http://www.eni.com/it_IT/media/comunicati-stampa/2015/06/Major_europee_oil_gas_lanciano_appello_tariffazione_emissioni_anidride_carbonica.shtml

⁵⁷ Delocalization of production facilities linked to higher environmental costs (e.g, compliance to the *EU Emission Trading Scheme*).

- operations are to be conducted only during periods of the year when repercussions on the marine environment (in particular, on mammals) are minimal, while guaranteeing site-specific biodiversity conservation techniques;
- the best drilling technologies to be employed; well diameter to be kept at minimum; pressure management; use of *blow out preventers* and robotic oil spill prevention/containment systems;
- local inhabitants have to be involved and informed; their activities have to be protected; their know-how is to be employed, especially in the area of emergency management is concerned (fishing vessels, for instance, may help in detecting/containing oil spills);
- technologies to be used and criteria to be adopted for the evaluation and management of the environmental and social impact, based on lessons learned through the current joint venture operations in the region.

To understand the Arctic environment and adjust to its sensitivity, Eni has also engaged in discussions with a number of NGOs. As a result, new engineering solutions have been identified for the cultivation of the *Goliat* field (located in the Norwegian Barents Sea).⁵⁸ In this way, operations can be adapted to the area's extreme conditions (a particularly cold climate, long periods of darkness, communications difficulties), to its fragile ecosystem and to the specific needs of the indigenous peoples. The floating production, storage and offloading unit (FPSO), which can store up to one million barrels of oil, will receive half of its power supply from the mainland, through the longest submarine cable of this type in the world. This will enable a 50% reduction in carbon dioxide emissions. Associated gas and production waters will be re-injected into the oilfield, thus minimizing emissions to the atmosphere and the marine environment.

6. CONCLUSION

Italy is about to reach the milestone of a century of scientific presence in the Arctic. Our footprint has been consolidating over time, thanks to the size and quality of the activities conducted by scientific institutions like CNR, ENEA, INGV and OGS, together with many Universities and other research centers.

Accordingly, Italy is set to get increasingly involved in all avenues of Arctic cooperation, be it on a multilateral level (in the Arctic Council and in other relevant fora) or bilaterally, with each of the Arctic States.

At home, the Government will keep on supporting the national research centers currently engaged in the Arctic; moreover, it will continue to promote a growing awareness of Arctic-related themes by the civil society, remaining fully available to collaborate with citizens and other actors who may be interested to know about the Arctic.

Actions by the Government will of course be fully in line with the principles and goals of the European Union environmental policy, as well as with all relevant international obligations. In particular, to those pertaining to sustainable development - that is, the compatibility and the

⁵⁸ <http://www.eninorge.com/en/field-development/goliat/>

synergetic relationship between economic growth, the protection of the environment and the specific needs of the indigenous peoples.