



Climate Change and Nuclear Power

Ines-Ana Jurković, Danilo Feretić, Nenad Debrecin
University of Zagreb
Faculty of Electrical Engineering and Computing
Unska 3, 10000 Zagreb, Croatia
e-mail: ines-ana.jurkovic@fer.hr

Abstract

The 1992 United Nations Framework Convention on Climate Change is one of a series of recent agreements through which countries around the world are banding together to meet the challenge of altering the global climate. In 1997, in response to the growing public pressure and questions on climate change governments adopted the Kyoto Protocol.

The 5th Conference of the Parties to the UN Framework Convention on Climate Change (COP5 UNFCCC) was a rather technical and complex conference which focused in particular on the development of a detailed framework for the application of „flexible mechanisms“ as laid down in the Kyoto Protocol.

Young Generation Network as a part of the International Nuclear Forum at COP5 took part in the debate saying that nuclear is the part of the solution.

Introduction

Today we are more and more aware of the fact that the relationship between humanity and nature changed forever and climate change became world common concern. After the series of international conferences (beginning in 1980s), United Nations General Assembly addressed the problem and in 1990 formed Intergovernmental Negotiations Committee (INC) for the Framework Convention on Climate Change (UNFCCC).

INC prepared the Convention and adopted it in 1992. In the same year the Convention was opened for signature. As of beginning of 1999 about 175 states have ratified the Convention, thus binding themselves to the Convention's terms and obligations.

The Conference of the Parties (COP) as the supreme body of the Convention held its first session at the beginning of 1995 in Berlin. COP is assisted by two subsidiary bodies (or committees), one for scientific and technological advice and the other for implementation. It can establish other bodies as well, whether temporary or permanent, to help it with its work. At its third session (COP3) in 1997, COP adopted Kyoto Protocol, which obligates developed countries to reduce their collective emissions of greenhouse gasses by at least 5% by the period 2008-2012. COP4 (in 1998) agreed on the Buenos Aires Plan of Action for finalizing the Protocol's details by the end of the year 2000.

Kyoto Protocol

The Kyoto Protocol contains targets for greenhouse gas (GHG) emissions for each so called Annex I country. Annex I countries are all OECD countries (except Mexico), and some transition countries (Croatia is also Annex I country). According to their emissions in 1990, Annex I countries committed themselves to reduce their total GHG emissions by around 5% on average for the period 2008-2012. There is some difference between the target reductions in emissions among Annex I countries. Values range from 6% in Japan, Canada, Hungary and Poland to 8% in European Union member countries and some Eastern European countries. The commitment for the Russian federation, Ukraine and New Zealand is to emissions not higher than their 1990 levels. Some countries are even allowed to increase their emissions relative to 1990 levels.

The Kyoto Protocol is considered to be the most far-reaching agreement on environment and sustainable development ever adopted since it will eventually affect all major sectors of the economy.

This Protocol represents a retreat from one of the UNFCCC key initial aims - for the industrialized countries to limit GHG emissions in the year 2000 to no more than their level of 1990. Comparing the emission objective with this target it can be seen that objective is tightened, but put back by about a decade (quantitative commitments refer to the average for the years 2008-2012). The magnitude of the task appears to be greater for most countries because of the increase in emissions since 1990. Probably only few countries (Germany, Switzerland, UK, Luxembourg, ...) will meet the original target for year 2000, most projections show that reaching the Kyoto targets for individual countries will require further policy action or use of the so called flexibility mechanisms.

Flexibility Mechanisms

Marginal costs of emission reduction may vary across countries as some have to take high cost measures while others do not fully exploit low cost ones, for that reason pursuing quantitative targets by domestic action only can be a relatively costly way to reduce GHG emissions. The flexibility mechanisms provide ways in which emission reductions that take place in one country can be counted against another country's target. There are three mechanisms available: clean development mechanism, emissions trading and joint implementation. The text of the Kyoto protocol is not precise on how the flexibility mechanisms should be implemented. The procedures for these mechanisms should be developed before (COP and "subsidiary bodies" meetings) and finalized at COP6.

Joint Implementation Mechanism (JI): allows one Annex I country to sponsor an emission reduction project in another Annex I country and by that acquire credit for the emission reduction as if it occurred in the sponsoring country, the same amount being deducted from the host country's allowed emission level (Article 6 of the Kyoto Protocol).

Clean Development Mechanism (CDM): similar to the Joint Implementation, but with one important difference - host country is non-Annex I country. The purpose of the CDM is to assist countries not included in Annex I in achieving sustainable development and to assist countries included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments (Article 12 of the Kyoto Protocol). Both JI and CDM are project-based mechanisms.

Emissions trading: the intention of this mechanism is to allow Annex I countries, which find it relatively easy to meet their Kyoto targets, to reduce their emissions by more

than is actually required, selling the surplus "permits" to countries whose emission reduction costs are higher (Article 17 of the Kyoto Protocol). The relevant article of the Kyoto Protocol states that emission trading shall be supplemental to domestic action to reduce emissions, reflecting the desire to ensure that all countries took some measures to reduce domestic emissions and did not rely on buying the right to pollute.

COP5 Conference

COP5 - the fifth meeting of the Conference of the Parties (25 October - 5 November 1999, Bonn, Germany) represents continuation of the UNFCCC initiative with the emphasis on the development of the detail guidelines necessary for the implementation of the Kyoto protocol flexibility mechanisms.

The Bonn conference (COP5) was attended by over 4000 participants, with over 60 ministers, and including registrations from 1569 non-governmental organization (NGO) members and 312 media representatives. The nuclear industry NGOs had around 100 registered participants, including 36 from the Young Generation Network (YGN). The International Nuclear Forum (INF) represented the nuclear world at COP5 same way as it did at COP3 (Kyoto) and COP4 (Buenos Aires). INF consisted of 8 nuclear organizations from all over the world: ENS, FORATOM, The Uranium Institute (UI), the Japanese Atomic Industrial Forum (JAIF), the Korea Atomic Industrial Forum (KAIF), the Nuclear Energy Institute (NEI, US), the American Nuclear Society (ANS) and the Canadian Nuclear Association.

The agenda of the COP5 conference was based on the Buenos Aires plan of action, adopted at COP4 in 1998. This plan addresses a number of issues for continuing and advancing the work under the Convention (adopted in 1992) and for finalizing the rulebook of the Kyoto Protocol. The results are to be adopted at COP6.

On the opening day of the COP5 delegates met in Plenary to hear opening addresses and consider organizational, administrative, financial and other matters. During the whole conference the Subsidiary Bodies hold different meetings discussing various issues considering Annex I and non Annex I communications, financial mechanism, compliance, capacity building, activities implemented jointly and Protocol mechanisms.

A number of decisions came out from COP5: some decisions established the process negotiators that will make it possible to finalize regimes for non-compliance, capacity building, emissions trading, joint implementation and clean development mechanism; agreement was reached on how to strengthen the guidelines for measuring GHG emissions from industrialized countries; the way forward for determining how to address adverse affects on developing countries and how to account for net emissions from forests was also pointed out; etc.

In addition to the more than 100 formal statements delivered during the high level segment, ministers and heads of the delegations participated also in informal public discussions. Meanwhile, as a side bar events, governments and non governmental organizations held different seminars and workshops on various aspects of climate change.

And what about nuclear at COP5? Fifth Conference of the Parties was a first COP where nuclear has been mentioned in the formal proceedings. The question of whether nuclear should be excluded from the Clean Development Mechanism (CDM) was a subject of many debates from the first day of COP5, and therefore it was perhaps not surprising that some Ministerial statements included reference to it. Prior to the start of the conference Chairmen of the Subsidiary Bodies published a synthesis of proposals relating to the Kyoto mechanisms. In

this synthesis paper the view of the Association of Small Island States was also included pointing out that project activities under the CDM shall not support the use of nuclear power. Overall it has to be noticed that COP5 did not produce any list of CDM technologies, or any exclusion. The final decisions on mechanisms will depend on consensus amongst all Parties.

YGN and COP

At the COP5 YGN was comprised of two groups: the European Nuclear Society Young Generation Network (ENS YGN) and the North American Young Generation in Nuclear (NA-YGN). Although YGN is a part of the INF it was decided, that at COP5, Young Generation should act independently and be more visible as a separate group.

The YGN members came from 13 countries: Spain, Belgium, Sweden, Germany, Finland, Netherlands, Slovenia, USA, France, Canada, Japan, Croatia and United Kingdom.

At COP5, just as at COP4, three "Young Nuclear Climate Teams" were formed. The three groups were named Blue, Green, and Red. They had different obligations and jobs throughout the conference:

Blue: followed the UN meetings and briefed to the INF

Green: monitored NGO side bar activities and briefed to the INF and organized the YGN events

Red: responsible for communication activities together with the INF, prepared summaries about news to send back to the companies, and prepared publications & statements

The Blue group was responsible for attending the official sessions of the COP, and they tried to be in touch with their government delegations and the EU delegations to provide information to the INF on the current status of the negotiations. The Green group attended side bar events organized by the environmental and other NGOs and IGOs and tried to be a part of the relevant discussions, asking questions and sharing remarks. The Green group was also responsible for the on-the-spot organization of YG activities. The Red group was responsible for communication activities. They were taking care of the INF exhibit stand, making sure that there was always someone at the stand who can respond to the requests for information or interviews from the delegates, NGOs and the media. The Red group members were also responsible for the collection of the relevant press clippings about COP5 on a daily basis and for the preparation of the summaries on the COP5 events that were then sent to different relevant companies and organizations. One or two YGN press spokespersons were nominated for the conference press events. Besides that someone from each of three groups was responsible for reporting to the INF each day of the conference.

Climate change is certainly to be a worse problem for future generations than for our own, but the decisions taken now on energy use and long term energy strategies will have an important impact. Electricity production is one of the major CO₂ sources (fossil fuels are the dominant source of energy in most countries). Nuclear can play an important role when it comes to the development and implementation of policies and measures to cut global warming. On the occasion of the COP5, and taking into account lessons learned in past, Young Generation took part in the debate saying that nuclear is a part of the solution.

In order to be able to fulfill the given goal for COP5 YGN prepared, adopted and implemented detailed work program: saying that nuclear is a part of the solution and that it can fit into the flexibility mechanisms, saying that nuclear technology meets the necessary criteria for sustainability, saying that nuclear can play a role when it comes to agree on

policies and measures to cut global warming, developing a new kind of communication towards the public, politicians and the press, taking the part in national debates, etc.

As said before YGN members were also taking care of the INF stand that was situated in the main corridor close to plenary meeting rooms and coffee bar, which meant that it was noticed and visited by many delegates and NGO members passing by. In the first week of COP5 the Young Generation held a side bar event, which was well attended. Guests enjoyed in the informal discussions during the event and liked the YGN open approach. In the same week YGN organized a field trip to the Mülheim Kärlich Nuclear Power Plant. About 20 delegates and journalists from various countries visited the plant. This YGN initiative was well received by all the guests encouraging YGN to carry on with the approach. After the trip CBC Radio Canada broadcast a report that presented nuclear in an objective way and showed its presence at COP5.

During the second week YGN organized a spectacular event outside the Conference venue, the Maritim Hotel. 800 helium filled blue balloons were raised into a high arch, representing 1 million tones of CO₂ emissions that were avoided every year as a result of nuclear power generation in the European Union. The Young Generation emphasized that nuclear energy was already avoiding global carbon emissions and the facts could not be ignored.

In the second week, during the time allocated to the NGOs, the INF was given the opportunity to address the plenary session. The speech was prepared by the INF (including the YGN group) and delivered by YGN representative Dr. Astrid Gisbertz. This was a great achievement as it was the first time that nuclear industry had a chance to make a public statement in front of the delegates in the climate change negotiations. And finally, as a COP tradition, the Young Generation prepared a statement with a special focus on why nuclear should be included in flexible mechanisms:

"As young people in nuclear, we want to draw your attention to an issue that has just started to be discussed in the FCCC negotiations. At COP5, nuclear was mentioned in several plenaries and side bars as a 'non-option' technology as far as CDM is concerned. It is disappointing to see how sound economic and ecological arguments sometimes have to make way for ideologies originating from a lack of willingness to have open discussions on the real facts and figures. As electricity production is one of the major CO₂ sources, nuclear can play a role when it comes to creating policies and measures to cut global warming. This message invites discussion. So, let us raise some hot issues and our view on how to handle them...

- mix is the way

Population growth, together with economic development, leads to a growing need for energy. We know that this cannot go on forever, but in order to guarantee that our children will be able to enjoy a good quality of life in times to come, every possible opportunity should be taken to ensure that they will be free to choose what is right and reasonable. Over the past 200 years, we have burned the large part of the fossil energy capital that nature took billions of years to accumulate. Today, we are still relying on fossil fuels for more than 80% of our primary energy needs. It is clear that we have to go for a balanced energy mix of all the existing sources (gas, coal, oil, nuclear and renewables), together with an overall optimization of energy production & consumption and a continuous search for new clean and safe energy sources. The new challenge for everybody is to define the importance of each of the energy contributions in the mix, at local and at international level.

- nuclear is part of the solution ...

It would not be very 'clean' to sell the developing countries a nuclear power plant, take the money and run... This is not our style. We believe nuclear can fit into the flexibility mechanisms. The technology meets the necessary criteria for sustainability: - Nuclear is a carbon-free, advanced and innovative environmentally sound technology - just what the Protocol asks for. When, under the

framework of the Protocol, the 'climate' is ready to build nuclear under a JI or a CDM project, it is clear that the environmental additionally would be maximum. With regard to the CDM, we understand that there is a big difference between installing solar panels and building nuclear in a developing country. Introducing nuclear should be appropriate for that country in the first place, and the decision to do so should be taken only by that country itself. However, it is clear that building nuclear under a CDM can only be possible in a culture of peace and safety consciousness. - Nuclear has exceedingly high safety standards. Nuclear power plants are subject to rigorous controls and their operators undergo extensive and ongoing internal training on safety procedures. Regrettably, even with all these measures in place, people are human and everyone learns from their mistakes. As young workers in nuclear facilities around the world, we can attest to the safety of nuclear power through our personal experiences. Safety of people and the environment is of utmost importance to the nuclear energy community. - There are reasonable technical solutions for treatment, transport and disposal of nuclear waste. Human beings are starting to have that kind of impact on the eco-system that is resulting in the need for a transfer of responsibilities to future generations, not only with regard to radioactive waste, but also with regard to GHG emissions and global warming, loss of biodiversity, genetic manipulation, ... While CO₂, as fossil waste, is diluted and dispersed in the environment, radioactive waste is compacted, well-sealed, decaying naturally and thus its radioactivity is disappearing slowly. It is also controllable and retrievable at any time."

Conclusion

Climate change would have lasting consequences. Many effects of the climate change will not be seen now or even for two or three generations, but in the future everyone may be living with it. The Convention takes this into account by establishing institutions to support efforts to carry out and to monitor long-term commitments and work on minimizing and adjusting to climate change.

The Conference of the Parties as the Convention's supreme body met for the first time in 1995 and continues to meet on a regular basis to promote and review the implementation of the Convention. COP can also strengthen the Convention as it did with the Kyoto Protocol in 1997. Five per cent cut, as defined in the Protocol, may seem as a small reduction in GHG emissions, but comparing it with the rise in emissions that would otherwise be expected it can be clearly seen that many countries are going to have to make a significant effort to meet their commitment.

YGN work started in Kyoto and was continued during COP4 in Buenos Aires and COP5 in Bonn. With the experience that it already has, Young Generation is trying to give nuclear a position of equality with other energy sources - position that it should get and have especially in the view of the on going debates on protecting our climate and conserving natural resources.

References

- [1] UNFCCC, "The Kyoto Protocol to the Convention on Climate Change", October 1999, UNEP/IUC/99/10
- [2] Organization for Economic Co-Operation and Development, "Action Against Climate Change- The Kyoto Protocol and Beyond", 1999
- [3] UNFCCC, "Convention on Climate Change", May 1999, UNEP/IUC/99/2
- [4] UNFCCC Secretariat Press Release, "Ministers Pledge to Finalize Climate Agreement by November 2000", November 1999
- [5] Earth Negotiations Bulletins - issued during COP5, 1999

- [6] International Energy Agency, "The IEA Energy Indicators Effort: Extension to Carbon Emissions as a Tool of the Conference of Parties", 1999
- [7] ENS YGN and NA-YGN, "Report on the YG activities at the Fifth Conference of the Parties (COP5) to the United Nations Framework Convention on Climate Change (UNFCCC)", March 2000
- [8] Non-Governmental Environmental Groups, "ECO" - NGO Newsletter, October 1999
- [9] Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, "On track towards climate protection", 1999
- [10] Official UNFCCC site, "COP5 Report", 1999, www.unfccc.de