

ON THE NEED OF A GLOBAL ADMINISTRATION OF NUCLEAR DISASTERS

Armando Barrañón¹

Energy Crisis and Life Extension of Old Nuclear Plants

Given the contemporary conditions of deployment of oil reserves, the increase in oil price that scalated in the last months and the compromises of the industrialized nations to diminish the emission of carbon dioxide into the atmosphere, it is unthinkable that a total supression of the nuclear industry may take effect as a consequence of the nuclear crisis in Fukushima. Only in the caseo of England, a country without important reserves of oil and isolated from the European continent that could provide England with electric energy, the amount of carbon dioxide emissions that no longer are deployed to the environment in the last fifty years due to nuclear energy is more than one and a half billion of tons. Besides this ecological benefit of Brittish nuclear plants, the projection for 2007 was the gradual suspension of Brittish nuclear plants reducing the percentage electric power produced via nuclear plants from 23% down to 3%.^[2] Nuclear energy alternatives are always very much pollutant. Eolic energy uses electricity generators that contain elements whose production harms environment. Therefore energy production poses sustainability challenges that have not been solved and the sustained increase in energy production around the world, will take us to a scenario where every kind of energy production will be employed.

Nuclear plants design has been improved in the last decades and the disaster of Fukushima has signed for the urgent need of replacing nuclear plants installed during the 70s. These old nuclear plants need to be substituted for modern plants that produce less waste radioactive materials and that include passive cooling systems whose operation will not be interrupted in a disaster that switches off electric power. This happened in the case of Germany where due to the intensity of social protest, the date for turning off nuclear centrals has been set to 2022 ^[3].

Nevertheless in 2007 Brittish nuclear plants were expected to receive an extension of life of several decades since they were expected to operate properly during several years. This

could change after Fukushima crisis.

Eight German nuclear plants have been already closed after Fukushima crisis. By May 30th 2011, these German centrals were declared as disconnected forever of the electric network in Germany. This action of the German government cancels the law that approved the extension of life to the German nuclear plants for more than fourteen years and that extended up to 2036 the generation of electricity by means of nuclear plants in Germany.

German decision of anticipating the closure of nuclear plants is contrary to the declarations of the nuclear French authority of supporting the commercialization of its nuclear reactors EPR which are expensive due to the many security elements contained in them, although these modern nuclear reactors are more efficient and have less operation costs. In the case of France, seventy five percent of the electric energy is produced with nuclear plants and France houses 58 of the 143 nuclear reactors existing in the European Union. EPR French reactors incorporate at least two security mechanisms that will be working when there is no electric power and in the case that the core melts, there is a dual container with a pre-stressed concrete wall to resist great fluctuations of pressure and a second concrete wall isolating the core^[4]. These and other elements, enhance security and diminish the amount of radioactive wastes but increase the price of these reactors, therefore these expensive reactors have been sold scarcely. Nevertheless, the fact that the French government investment in nuclear industry is high, makes difficult to believe that the French government will unprejudiced when supervising its nuclear industry, which once again takes us to the need of an international inspection of nuclear industry. Only a worldwide administration of nuclear industry risks will lead us to a more secure world in terms of nuclear risks.

In the case of Japan, the nuclear crisis has decreased nuclear popularity as shown by polls performed by the end of May, 2011. 74% were angry by the worse way in which the Japanese had faced the crisis. And 70% of those interviewed at that time, were asking for the resignation of the Prime Minister Kan. Besides, 84% of the Japanese surveyed did not trust on the information conveyed by the Japanese government about Fukushima accident.

Another 85% asked that the Fukushima nuclear plant should be closed. This was expected to lead to a call for new elections or the resignation of Kan, which finally did not happen. It is not surprising that several countries have rejected the development of new nuclear plants considering the seriousness of the Fukushima crisis^[5]. Tokyo Electric Power Company (TEPCO) had a 7.4 billion dollars quarterly loss, which is almost its market value, due to compensations to the victims of Fukushima nuclear disaster, soaring fuel costs and a dive in sales ^[6]. By July 2011, Japanese Minister Kan acknowledged that cleaning Fukushima plant from radioactive debris and dismantling it could take decades. TEPCO and the Japanese Commission of Atomic Energy signed an agreement to start the removal of the melted nuclear fuel by 2021 and the disaster caused by the tsunami and the earthquake had an estimated cost of 210 billion dollars ^[7]. In the first days of August 2011, Japan had announced the resignation of three top government officials related to nuclear electric power administration due to the Fukushima nuclear crisis, and also only 16 reactors were running of a total of 54 by public safety concerns and other problems ^[8].

Debate about Information Access

Exceptional circumstances of the Fukushima nuclear crisis, namely a 9 degrees in Richter scale earthquake, much more intense than the maximum level of 7.9 Richter expected when this nuclear plant was designed. Besides, a tsunami devastated the Japanese coasts, therefore the Fukushima nuclear accident could be classified as a human error. Energy was interrupted due to these disasters, highways were devastated and the rescue tasks were enormous, which lead to a huge delay in information about the details of the nuclear emergency in Fukushima. Since chemical facilities were set on fire in Japan due to the earthquake and the tsunami, similar fires were expected to occur in Fukushima though a fire in a nuclear plant can be related to serious radioactive hazards. Pictures of Fukushima nuclear plant started to appear in media, with news about the increase in pressure inside of the nuclear reactors. Also, media news reported the design problems of the BWR reactors installed in Fukushima since forty years ago. Antinuclear Non-governmental Organizations (NGOs) sent twitters with links to the official documents of the International Atomic Energy Agency which since 1972 had recommended the suspension of the BWR reactor, since its design is unstable to dynamic load fluctuations. These dynamic load fluctuations

can happen when the cooling system fails. Other twitters commented that by 2002, TEPCO had been fined by falsifying data related to the self inspections performed by TEPCO where fissures were detected not reported in the structure of the reactor [9].

When these facts were broadcasted by media, there was a general reaction of astonishment since Japan refused to gradually replace these BWR reactors, notwithstanding since forty years ago BWR are well known for their tendency to be explosive. Taking on account the weakness of the contemporary Japanese government, it was previsible that the Japanese government was incapable of demanding a full compromise of TEPCO to solve the nuclear crisis in a responsible way. Instead of, precious information related to radioactive levels was hidden to prevent population panic in Tokyo-Yokohama area. More than thirty million people live in Tokyo and radiation could be transported to that urban setting by winds and also there was global concern about the ration that could arrive in the Pacif Coast of USA. Lack of information concerning radioactive levels lead to panic buys of iodine pills in some towns of the USA Pacific Coast. In terms of the radius of the radioactive danger zone around Fukushima, there were important fluctuations for the recommended evacuation zone radius. Japan considered 20 kilometers for the evacuation zone but other countries demanded a larger evacuation radius in the range of 80 to 120 km by March 17th [10]. As a matter of fact, there were analysis performed in May 2011, where high radioactive levels were measured at a distance of 60km away from Fukushima, which were five times larger than those allowed, by the week of May 19th 2011. In the Japanese nuclear central of Hamaoka, at the southwest of Tokyo, there were five tons of sea water entered into the reactor core and 400 tons of sea water invaded the vapor condenser[11]. Airlines arranged a general evacuation of Japan by March 18th considering rumors that nuclear crisis might be worsen[12].

Another information bias came from France that considered the nuclear crisis of level 6 in the scale of 7, where the maximum is Tchernobyl disaster. When interviewed by the French TV the president of the french nuclear industry AREVA, said that Fukushima disaster marks the end of the era of cheap nuclear plants. Also AREVA president said that Japan had asked for USA help ever since the technology of BWR reactors is american as long as these

BWR reactors were installed by General Electric. As it is well known, Japan extended the life of these old BWR nuclear plants notwithstanding there were adverse recommendations by the regulatory organism related to the caducity of the plant since power generators have fissures which make them vulnerable to corrosion in events like the tsunami or an earthquake^[13]. Once again digital media were saturated by requests of an explanation by General Electric, acute analysis by the general public were mocking around the arrangement of the nuclear fuel pools placed just over the nuclear fuel that could melt. Wikileaks conveyed information about the recommendations to the Japanese government made by USA to review this type of nuclear facilities. In the moment of greater intensity of the nuclear crisis, when continuous explosions signed a possible fusion of the reactor core that could cause an explosion that spread the radioactive debris around the world just as happened in Chernobyl. Nevertheless, radioiodine measurements in thyroids of children living in the most contaminated areas nearby Fukushima showed minimal doses thousand times below those considered normal and this relieved those who were in panic about nuclear pollution in Tokyo^[14].

Damage derived from Fukushima nuclear disaster are larger than the 230 billion dollars damage derived from the tsunami and the earthquake. Government and enterprises can be easily corrupted and an international legal framework must be devised that ensures worldwide nuclear security. Other recent worldwide crises, namely mad cow epidemia, have led to the implementation of global norms to move the meat around the world, in such a way that global trade of beef stays alive and global health is secured.

A Democratic Cosmopolitan Administration of Nuclear Crises

In terms of international cooperation, we may say that USA has contributed with military personnel to cool down Fukushima and that the French nuclear authority has sent boric acid that is specially good to cool down reactors because it absorbs neutrons. Nevertheless such a global crisis needed the joint efforts of several countries, with a big team of experts trained to handle a huge nuclear crisis as expected for the old nuclear plants installed in Japan. Such thing did happen for helping survivors of the tsunami and there are such big teams frequently helping in major earthquakes.

Until the last week of March, thermal pictures of the reactors showed a technical view of the nuclear facilities, although these kind of information should have been distributed by media since the beginning of the nuclear crisis, to make public how serious the incident was. Global administration of nuclear risks should take on account these kind of technical data to devise immediate actions to handle a global nuclear crisis. The Academy of Sciences of several countries should be ready to participate in the solution of these global threats, as norms should be worldwide voted to administer such global threats. A global administration of nuclear crisis should be gradually devised this way, and several NGO should participate lobbying for this in distinct countries, at this moment when there is global concern about the impact of Fukushima nuclear crisis. Expert panels integrated by members of the Academy of Sciences of several countries should review the design of these nuclear plants, to ensure their stability with respect to major earthquakes, tsunamis and other kinds of disasters.

The Kantian ideal of a cosmopolitan citizenship and a Nations League is once again in vogue and the humongous levels of corruption between Japanese government and nuclear industry show that national strength is not enough to enforce security nuclear laws^[15]. A worldwide government of nuclear industry needs to be placed in operation as soon as possible and several NGO are working in this direction. Global dimensions of nuclear disaster in Chernobyl and possible regional implications of Fukushima accident, detonated global awareness of the interdependence between distinct zones of the world. Several exercises of international deliberation of problems have been implemented in the past, namely United Nations, International Monetary Fund and G7 summits, where solutions to global problems have been devised.

Kant was concerned about war as the obstacle for reaching such cosmopolitan citizenship and he believed that commercial spirits could provide ties between nations as well as republicanism consensus could be favorable to peace inside of a nation and among countries. While for Kant hospitality was essential for the secure travel of foreigners inside of a country nowadays universal hospitality is not reachable when the well being of a country is harmed in near or far-off lands without any consent of the affected countries.

This is what happened in Fukushima crisis, when regional and global health was harmed by Japanese government and nuclear industry, without the consent of the rest of the world.

A peaceful confederation of nations should create an institution dedicated to administer global nuclear threats, where each country could retain its right to implement national policies while every nation could be able to exit any kind of negotiation while any nation of this confederation should be ready to participate in the common solution of nuclear problems. A cosmopolitan democratic order should be devised in terms of the idea of confederation which was the most convenient way of treating international problems according to Kant. Nevertheless it remains to address the problem of accountability of nations involved in this cosmopolitan democratic confederation of nations for solving global nuclear crises, This last task could be solved creating regional Parliaments, namely the European Parliament, or a Reformed United Nations Organization. Many risks should be handled in international grounds and with full powers in these Parliaments, in peaceful terms whose authority could help to solve global problems as nuclear risks. Globalization has eroded the force of local networks to maintain economic relations and has introduced new players and rules of game that have a regional or transcontinental level. Non-governmental organizations have played a major role to solve local problems with a global scope and an international network is needed to address huge conflicts arising from global nuclear crises.

A World Parliament could provide a legal basis for the contemporary cosmopolitan citizenship which has become visible nowadays by internet, twitter, Facebook. Individuals broadcast news and information about global crisis, namely Fukushima nuclear crisis without censorship. This way there is no longer an information barrier that controls the information flux hiding the conflicts. Individuals share media news and also become creators of information flux about their personal or local problems. This happened in Fukushima leading to world demonstrations against nuclear risks and will be a major factor leading to global administration of nuclear crises and other global threats.

¹ Depto de Ciencias Básicas, UAM-Azcapotzalco, Cd. de México

email: bca@correo.azc.uam.mx

- 2 Sue Ion, Nuclear Energy: Current Situation and Prospects to 2020 Philosophical Transactions: Mathematical, Physical and Engineering Sciences, Vol. 365, No. 1853, 2007, pp. 935-944.
- 3 "La coalición del gobierno programa el apagón para 2022 El Universal, Lunes 30 de mayo 2011
- 4 "France expands nuclear power despite Fukushima BBC News, 30 de mayo 2011
- 5 "Japoneses a favor de la renuncia de Naoto Kan El Universal, Lunes 30 de mayo 2011
- 6 Taiga Uranaka, "Crisis-hit Tokyo Electric posts \$7.4 billion quarterly loss", Reuters, Tue Aug 9, 2011. Accessed online: <http://www.reuters.com/article/2011/08/09/us-tepco-idUSTRE7780Y420110809>
- 7 "Limpieza de Fukushima tomará décadas": Jap?. El Universal, 9 de julio de 2011. Accessed Online Sept 21st, 2011: <http://www.eluniversal.com.mx/notas/778289.html>
- 8 Yoko Kubota, "Japan to sack top officials over nuclear disaster", Reuters, Thu Aug 4 2011. Accessed Online September 6th 2011: <http://www.reuters.com/article/2011/08/04/us-japan-nuclear-idUSTRE77212020110804>
- 9 "Whistleblowing turns into tornado: TEPCO's falsification of safety records plunges Japanese nuclear industry into deep crisis", Consultado el 11 de abril del 2011 en: http://www.wise-paris.org/index.html?english/ournews/year_2002/ournews020907.html&english/frame/menu.html&english/frame/band.html
- 10 "Les Américains 'inquiètes' et 'frustrés' par le manque d'information Le Monde, 17 de marzo del 2011. Consultado el 18 de marzo del 2011 online.
- 11 "Radioactividad se extiende en Miyagi. Rebasa la zona de exclusiva alrededor de Fukushima El Universal Viernes 20 de mayo del 2011.
- 12 "Las compañías aéreas se preparan para una evacuación masiva", El País, 18 de marzo del 2011. Consultado el 18 de marzo del 2011 online: http://www.elpais.com/articulo/internacional/companias/aereas/preparan/evacuacion/masiva/elpepiint/20110318elpepiint_12/Tes
- 13 "Japan Extended Reactors Life, Despite Warning", HIROKO TABUCHI, NORIMITSU ONISHI and KEN BELSON. The New York Times, Published: March 21, 2011. Consultado en Marzo 22 del 2011. http://www.nytimes.com/2011/03/22/world/asia/22nuclear.html?_r=3&ref=asia
- 14 Declan Butler, "Fukushima health risks scrutinized" Nature 472, 13-14 (2011).
- 15 David Held, "Cosmopolitan Democracy and the Global Order: Reflections on the 200th Anniversary of Kant's 'Perpetual Peace' ", Alternatives: Global, Local, Political, Vol. 20, No. 4 (Oct.-Dec. 1995), pp. 415-429.