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Anti-Nuclear Movement in Taiwan: Fukushima Disaster Prompts the Case for Citizen Participation in Democratization of Energy Policy

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Anti-Nuclear Movement in Taiwan: Fukushima Disaster Prompts the Case for Citizen Participation in Democratization of Energy Policy

ABSTRACT

The anti-nuclear power movement in Taiwan has a history of more than two decade, where the conflict has never been just a question of science, but because of uncertainty and complicated interactions of socio-technical systems, has been about interconnected economic, environmental and social concerns. In the aftermath of the neighboring 2011 Fukushima nuclear disaster, intensive media coverage and synergy among Taiwanese civil society groups and Japanese environmental activists in several national and local rallies resulted in greater public awareness of possible catastrophe from nuclear power disasters among both Taiwanese and Japanese citizens. Despite the strong civic questioning of current energy policy, the Taiwanese government, however, does not only retain its strong support of nuclear energy in guaranteeing the safety of the three current nuclear power plants, but also maintained that diminishing the fourth nuclear power plant would result in costly economic decline for Taiwan. Against that background, this paper aims to investigate how has the anti-nuclear movements in Taiwan been transformed during the past three years and to inquire reasons why it could draw varied constituencies to participate in this collectivism with unprecedented scale. In addition, this paper also analyzes how civil society through varied collective activisms has challenged current energy policy and moved towards democratization of energy policy. Employing a qualitative approach along with discourse analysis and interviewing actors from the various social movement groups, the author attempts to answer questions above in five arguments – a feeling of close cultural and geographical proximity to the Japanese, increasing distrust in safety of the controversial fourth nuclear power plant, cyber communities as mobilization networks, advocacy of elite and celebrity, activism alliances across varied social movement organizations. Finally, deriving from these empirical findings, the author discusses how democratization of energy policy could take place in also recognizing key barriers.

Introduction

After the March 11 earthquake and tsunami in Japan, four reactors of the Fukushima Daiichi nuclear power plant in exploded one after another. It was the most catastrophic nuclear disaster in Japan after World War II and the severity of the accident was much worst than the Three Mile Island disaster of Pennsylvania, USA, in 1979, and has been rated 7 on the International Nuclear Event Scale (INES), the highest level and the same as the 1986 Chernobyl nuclear power plant accident[1]. The world first witnessed the Fukushima Daiichi nuclear disaster through Japan's Nippon Hōsō Kyōkai (NHK[2]) simulcast. It then spread from TV to the Internet, giving the whole world easy access to experience the emotionally charged disaster and catastrophe. Most people in the world usually may not care about nuclear energy much in their daily lives. However, when nuclear accidents, such as the 1979 Three Mile Island incident, the 1986 Chernobyl nuclear accident and/or the 2011 Fukushima Daiichi nuclear disaster, occurred, publics were once again reminded of the potential health risks from nuclear power facilities. People everywhere, especially in so-called 'nuclear states' wondered: could a similar disaster strike closer to home and affect us?

This is a very relevant question for Taiwanese people to ask as a 2011 Natural Resources Defense Council report that evaluated the seismic hazard to reactors worldwide, as determined by the Global Seismic Hazard Assessment Program data, placed all of Taiwan's reactors within the highest risk group of 12 reactors within very high seismic hazard areas, along with some of Japan's reactors (Cochran et al., 2011; Butler, 2011). However, even though a healthy opposition exists to nuclear energy generation in Taiwan, proponents maintain its usefulness for reducing Taiwan's high energy dependency from imported sources.

Against that background, this paper aims to investigate how has the anti-nuclear movements in Taiwan been transformed during the past three years and to inquire reasons why it could draw varied constituencies to participate in this collectivism with unprecedented scale. In addition, this paper also analyses how civil society through varied collective activisms has challenged current energy policy and moved towards democratization of energy policy. It is critical to facilitate wide dialogue about how we understand and respond to this highly topical and important area, for knowledge production, good governance and policy learning, in Japan, the immediate region of the East Asia, and internationally, the thrust of this paper aims to analyze social

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[1] See International Atomic Energy Agency, The International Nuclear Event Scale. See http://www.iaea.org/Publications/Factsheets/English/ines.pdf [accessed June 2, 2012].

[2] 'Nippon Hōsō Kyōkai' (NHK): Its official English name is 'Japan Broadcasting Corporation' which is Japan's national public broadcasting organization.

responses to safety of nuclear energy in Taiwan and demand for democratization of energy policy in the era of post Fukushima.

This analysis is preceded by setting the scene in a section called 'From Japan to Taiwan' (immediately below), which outlines some of the similarities in disaster scenarios between the two nearby countries, and how the Fukushima Daiichi disaster heightened long-held concerns by Taiwan's anti-nuclear power movement about nuclear power and the current nuclear build in Taiwan. This helps contextualize the remainder of the paper by providing a background of the arising anti-nuclear power movements in Taiwan. The author utilizes qualitative approaches through analysis of secondary documents, including news accounts, related reports from governmental agencies, websites of environmental groups and non-governmental organizations …etc., along with field observations of events of varied anti-nuclear power movements during March 2011 and March 2014, as well as interviews with key leaders in environmental groups. With multiple methods for data collections, the author attempts to answer questions above in five arguments – a felling of close cultural and geographical proximity to the Japanese, increasing distrust in safety of the controversial fourth nuclear power plant, cyber communities as mobilization networks, advocacy of elite and celebrity, and activism alliance across varied social movement organizations. Finally, the author discusses how to facilitate democratization of energy policy.

From Japan to Taiwan

On 11 March 2011, a magnitude 9.0 earthquake and subsequent tsunami hit the northeastern coast of Japan, which resulted in a severe nuclear disaster occurred at the Fukushima Daiichi nuclear power plant. More than fourteen thousand people reportedly died, and thirteen thousand people remain missing as of 24 April 2011. Almost a half million people became homeless due to the earthquake and tsunami and the proximity of homes to nuclear power plants (Fujigaki and Tsukahara, 2011). The triple catastrophe not only strikes Japanese in terms of the number of people suffering and geographical extension of the area destroyed, but also the chronological impacts of the disasters. The structure of this disaster is too complicated to single out the precise individual causalities. Nevertheless, it was shown that Japanese scientists and authorities over looked evidence that the Tohoku coastline was prone to much larger earthquakes and tsunamis than history predicated (Lay, 2012). Another instance revealed that before the earthquake Japanese government already had results from an existing simulation of a 'loss of electric power supply to the cooling system' at a

nuclear reactor; the simulation results are available in a government report.[3] But the professionals running nuclear power plants did not assume that loss of electric power would really occur (Geller, 2011).

The preliminary summary of the International Atomic Energy Agency (IAEA) fact-finding expert mission to Japan concludes that the accident was a failure of regulation, not of operation. The IAEA mission was also informed that there were problems in the interaction between Tokyo Electric Power Company (TEPCO) and the central government and that these appeared to inhibit swift and effective emergency response during the critical initial stage of the accident (IAEA, 2011). Moreover, for those who survived a severe quake and/or tsunami, where do they go? In the midst of reactors exploded one after the other, and the water level in the reservoir of spent fuel lowered and became heated, should people in the neighboring area stay or escape? Evacuation from the vicinity of the nuclear power plants was one of the critical emergency issues following the triple calamity. Should the evacuation area be a 30 km radius from the reactors, as the Japanese government announced, or 80 km, as the United States advised?[4] Fujigaki and Tsukahara (2011) observed in the time of emergency, there were gaps between official statements and non-official comments. A significant divide in opinions existed between the authorized statements of official professionals, made through spokespersons and announced via television and other public media, and other professional and expert comment expressed on the Internet and through more private media. Such differences in opinion and diversity of evidence eventually evoked questions about issuing of official statements and may lead to citizen's mistrust toward government. Fujigaki and Tsukahara (2011: 390) concluded 'from a STS perspective, we should define a number of questions concerning information and public management. For example, official statements should present the public with both worse-case and best-case scenarios. In addition, they should be more precisely estimate citizen's literacy about nuclear power plants and radiation.'

The sequential enduring development of the ecological, social, economic, cultural, health and political impacts of Fukushima Daiichi disaster have in-depth implications for all the members around the world, particularly on Taiwan, due to several similarities between Taiwan and Japan. Nuclear power plants in Taiwan, like Japan, are built along coastlines and cooled by seawater. The Wall Street Journal[5] cited findings from World Nuclear Association (WNA) that of more than four

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[3] See Japan Nuclear Energy Safety Organization, http://www.jnes.go.jp/gijyutsu/seika/2009_genshi.html (accessed on June10 2012)

[4] Japan nuclear crisis: Pressure to widen evacuation zone, BBC News (31 March 2011). See: http://www.bbc.co.uk/news/world-asia-pacific-12916688 [accessed June 5, 2012].

[5] See: http://online.wsj.com/article/SB10001424052748703512404576208872161503008.html

hundred currently operating nuclear power plants across the world, thirty-four are the most potentially dangerous due to their proximity to geological faults and seas. Japan and Taiwan together account for thirty of the thirty-four high-hazard earthquakes areas. Of these, twenty-four are in Japan and six are in Taiwan (Tamman at al., 2011). Regarding population density, as a factor of risk from nuclear power plants, an analysis by *Nature* and Columbia University in New York[6] (Butler, 2011) shows that two-thirds of the world's nuclear power plants have more people living within a 30-kilometer radius of the power plants than the 172,000 people living within 30-kilometer radius of the Fukushima Daiichi plant, who were forced or advised to leave. Twenty-one of these nuclear power plants have populations larger than 1 million within that radius, and six have populations larger than three million. Among these six, Taiwan has two, Kuosheng plant with 5.5 million people and Jinshan plant with 4.7 million.

The Japanese government declared a 20 km evacuation zone around Fukushima Daiichi nuclear power plant on 12 March 2011 and evacuated about 77,000 people living in the tent towns and villages within the evacuation zone (Chan and Chen, 2011) On 25 March another 62,000 people living between 20 and 30 km from the plant were told to stay inside their homes initially, but later they were evacuated as well (Chan and Chen, 2011). During nuclear disaster, the US embassy advised American citizens living within 80 km of the facility to evacuate (American Nuclear Society, 2012: 31). Comparing potential challenges in such an emergency between Taiwan and Fukushima Daiichi case, Chan and Chen (2011) indicated that if a 20 km evacuation zone was applied to the vicinity of Taiwan's nuclear power plants, about 2 million people would have to be evacuated; if the evacuation zone was extended to 30 km, 6.5 million people in Taipei would have to be evacuated. If employing the 80 km evacuation zone as the US embassy suggested, there are forty-two percent of Taiwan's total population (or 9.7 million people) within that area. The traumatic evaluation and radiation risks for such population densities, located so close to these power plants has been well shown in the Fukushima Daiichi disaster. In the case of the Kuosheng plant with 5.5 million people within a 30-kilometer radius, for example, there is a 32% increase in population density risk over Fukushima Daiichi. In addition, compounding this risk is where, controversially, all six of Taiwan's existing reactors are built near major fault lines, whereas the Fukushima Daiichi plant was not on a fault line but in an earthquake zone. In 2009 Central Geological Survey of Ministry of

[6] The finding revealed that the KANUPP plant in Karachi, Pakistan, has the most people – 8.2 million – living within 30 kilometers, although it has just one relatively small reactor with an output of 125 megawatts. Next in the league, however, are much larger plants – Taiwan's 1,933-megawatt Kuosheng plant with 5.5 million people within a 30-kilometer radius and the 1,208-megawatt Jinshan plant with 4.7 million; both zones include the capital city of Taipei.

Economic Affairs it was discovered that 'Shan-Jiao faults', one of the active faults, passing Jinshan coast, with distance of 7 kilometers away from Jinshan nuclear facility and 5 kilometers away from Kuosheng plant.[7] Moreover, two more reactors under construction at Longmen plant are also located near the densely populated cities of Taipei and New Taipei and in the same survey as referred to above, six non-active faults were found within 5 kilometers of this plant.[8] Map of four nuclear power plants in Taiwan is presented in Figure 1.

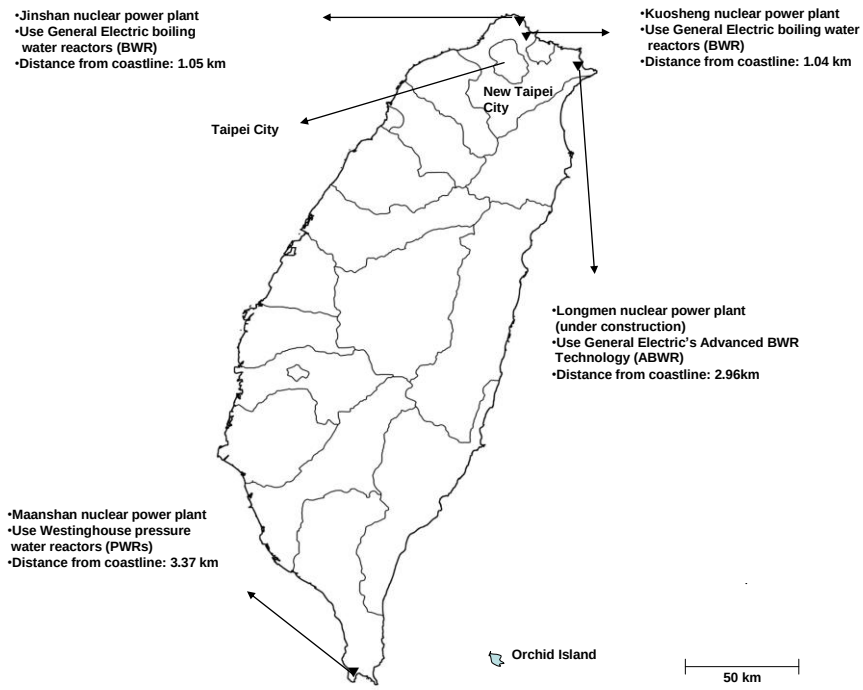

Figure 1: Map of Taiwan's Nuclear Power Plants

Though the nuclear industry says nuclear reactors world-wide are built to withstand the most powerful quakes thought possible at each location, and usually added safety factor in case of those projections are wrong, in other words, scientists sometimes have underestimated how powerful earthquakes can be (Lay, 2012). The 9 magnitude earthquake (also known as a temblor), set off by subterranean stresses,[9]

[7] See: http://www.gcaa.org.tw/modules/tadnews/index.php?nsn=196 (in Chinese)
[8] See: http://www.gcaa.org.tw/modules/tadnews/index.php?nsn=196 (in Chinese)
[9] See: http://www.thedailybeast.com/articles/2012/02/15/new-earthquake-could-hit-japan-s-fukushima-nuclear-plant-study.html

that hit Japan was more than 10 times bigger than the Daiichi plant had been tested to withstand (Tamman et al., 2011). Anti-nuclear activists in Japan have long warned that the country's reactors were more vulnerable to earthquakes than operators and government regulators acknowledged, unfortunately, their perspectives were not taken seriously.[10] In the aftermath of Fukushima disaster, anti-nuclear power movements have risen intensively in Japan[11] and in many countries.[12] They advocate a complete shutdown of nuclear power plants and demand a shift in government policy toward alternative, typically renewable, sources of energy. For example, Angela Merkel promised to close all seventeen Germany's nuclear power facilities by 2022, and the Swiss government plans to decommission all of its nuclear power plants by 2034 (Lou, 2011). Taiwan's anti-nuclear activism is well paced in this global alliance, and is more so because it is so close to Japan and as discussed above has similar if not worse disaster scenarios. Before we describe how anti-nuclear power movement in Taiwan has been heightened by Fukushima Daiichi disaster, brief profile information about nuclear power in Taiwan is provided.

Brief Profile Information about Nuclear Power in Taiwan

Taiwan lacks domestic energy resources and highly depends on import (about more than 98% of its energy), so it is a top priority of the government to develop clean, sustainable, and independent energy and achieve the balance among energy security, environmental protection, and industrial competitiveness, and reduce CO_2 emissions through various strategies, such as promoting energy research at several universities since the 1990s[13] and developing nuclear energy.

To generate the nuclear energy, and as referred to above, Taiwan currently has six nuclear reactors,[14] which are located in three power plants, two in northern Taiwan and one in southern Taiwan. Two more reactors are under construction in the north.[15] Current installed capacity of nuclear power is 4,884 megawatts (MW).[16] The first nuclear power plant, Jinshan Nuclear Power Plant, is located in Shihmen District, New Taipei City. The second, Kuosheng Nuclear Power Plant, is located in Wanli

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[10] See: http://openchannel.msnbc.msn.com/_news/2011/03/12/6254004-anti-nuclear-group-in-japan-says-emergency-was-predicted?lite

[11] See: http://www.reuters.com/article/2011/04/08/us-japan-nuclear-debate-idUSTRE73719020110408

[12] Anti-nuclear movements in Hong Kong, European countries, and South Korea …etc. See: http://world.pressenza.org/npermalink/anti-nuclear-demonstrations-in-hong-kong-june-11-2011 (in Chinese); http://futurechallenges.org/local/europe%E2%80%99s-atomic-dilemma-will-the-anti-nuclear-wave-increase-carbon-emissions/ ; http://en.wikipedia.org/wiki/Anti-nuclear_movement_in_South_Korea

[13] See: http://en.wikipedia.org/wiki/Energy_in_Taiwan

[14] See: http://en.wikipedia.org/wiki/List_of_nuclear_reactors#Taiwan

[15] See: http://en.wikipedia.org/wiki/Template:Taiwan_nuke_plant_map

[16] See: http://en.wikipedia.org/wiki/Nuclear_power_in_Taiwan

District, New Taipei City. The straight-line distance between this nuclear power plant and Taipei City is only 22 Km. Both of these use General Electric's boiling water reactors (BWR), a light water[17] nuclear reactor[18] where the core heats water, which turns to steam and then drives a steam turbine to generate electricity. It is the second most common type of electricity-generating nuclear reactor. The BWR was developed by the Idaho National Laboratory[19] and General Electric[20] in the mid-1950s.[21] These types of reactors were also used at Fukushima Daiichi.[22] The third nuclear power plant, Maanshan Nuclear Power Plant, is located in Hengchun Township, Pingtung County. It instead uses pressurized water reactors (PWRs) made by Westinghouse, which constitute the large majority of all western (second-generation) nuclear power plants: a different system prevents the water from boiling in the PWR unlike the BWR,[23] which is considered safer. Under construction is the Longmen power plant (also known as the Fourth Nuclear Power Plant) in New Taipei City's Gongliao District, which uses two advanced (third-generation) boiling water reactors. The three nuclear power plants are run by Taiwan Power Company (also known as Taipower), which is a state-owned electric utility power company.[24] Regulating them is the Atomic Energy Council (AEC) of Taiwan, the Republic of China but these plants are also subject to International Atomic Energy Agency safeguards.

History of Anti-Nuclear Power Movements in Taiwan

Prior to 2011 Fukushima nuclear disaster

Anti-nuclear movement in Taiwan has lasted for three decades. It has a long history as a forerunner among other environmental movements in Taiwan – Not only it leads the emergence and growth of environmental movement organizations, but also is implicated in the course of democratization in Taiwan. The history of the anti-nuclear movement also offers us an opportunity to observe the change of the political and social movements in the past few decades after the martial law in Taiwan lifted.

The voice of anti-nuclear power facility from the civil society began in the opposition to the third nuclear power plant, but the focal point of anti-nuclear power movements is on the construction of the fourth nuclear power plant in northeastern Taiwan. In 1980 the Government proposed to have the fourth nuclear power plant project and Gongliao was selected as a construction site. In 1982, the project was postponed by the minister of the Ministry of Economic Affairs (MOEA) due to a

[17] See: http://en.wikipedia.org/wiki/Light_water_reactor
[18] See: http://en.wikipedia.org/wiki/Nuclear_reactor
[19] See: http://en.wikipedia.org/wiki/Idaho_National_Laboratory
[20] See: http://en.wikipedia.org/wiki/General_Electric
[21] See: http://en.wikipedia.org/wiki/Boiling_water_reactor
[22] See: http://en.wikipedia.org/wiki/Fukushima_Daiichi_Nuclear_Power_Plant
[23] See: http://en.wikipedia.org/wiki/Pressurized_water_reactor
[24] See: http://en.wikipedia.org/wiki/Taipower

downturn in economic growth and power demand. In 1983, the Premier of the Executive Yuan redirected Taipower to restart the project in response to economic recovery. In 1985, the Economic Planning and Development Commission (EPDC) conditionally agreed to invest US$5.6 billion on the condition of conducting an environmental impact assessment (EIA) for the project. The EPDC also forbade the project from initiating construction without submitting an EIA report for Atomic Energy Council (AEC) approval. Despite the KMT government's new concern for the project's environmental effects, the project's feasibility was critically questioned by concerned public, politicians, scholars and environmentalists in terms of nuclear safety and economic costs. As a result, the Executive Yuan's Premier announced that the project would not proceed without responding to the public concerns and gaining public confidence (Hsu, 2001; Hsu, 2005).

After Chernobyl nuclear power plant accident in the Soviet Union took place in 1986, the public in Taiwan again questions nuclear energy. In 1988, Taiwan Environmental Protection Union, the first environmental protection organization, facilitated networking and grass-roots organizations of many local anti-nuclear power plants activism. In the same year, "Yenliao Anti-Nuclear Self-Help Organization" was set up and began anti-nuclear strategy of street protests. This period of anti-nuclear movement established the foundation of the mass street protests. Through thousands of people marched on the street many times, the movement aimed to highlight the issues of nuclear power in Taiwan society. The anti-nuclear power movements in Taiwan not only challenged the U.S. force of oppression behind the fourth nuclear power plant procurement, but also questioned the national nuclear policy and criticized various environmental impact assessments under a black-box mechanism. The civil society criticized that the fourth nuclear power plant project signifying the political authoritarian dictatorship and technological dictatorship. Therefore, anti-nuclear movement became an important local battle over the sovereignty of Taiwanese people and environmental protection.

In 1992, the Legislative Yuan resumed the implementation of the budget of the fourth nuclear power plant, which triggered the war of the next wave of anti-nuclear movement. Under pressure from the civil society, a comprehensive re-election of Congress body, which had not been re-elected for a long term, was conducted in the Congress. The Democratic Progress Party (DPP) won one third of the seats in the Congress, making it possible to stop building the fourth nuclear power plant through the budget cut of this project in the Legislative Yuan. Anti-nuclear organizations began the strategy to put pressure on the Parliament. At the same time, local grassroots organization "Yenliao Anti-Nuclear Self-Help Organization" continually led the people of Gongliao to protest and have petition to the Legislative Yuan.

Unfortunately, the Kuo-Ming-Tang (KMT) government refused to compromise and through majority vote in the Congress, the budget of the fourth nuclear power plant was thawed. Up to this point, after strategies focusing on central administration and legislative process, the anti-fourth nuclear power plant had taken more access to the masses of political strategies – mobilized people to petition to dismiss those pro-nuclear legislators and Gongliao Township local referendum …etc.

In 1994, in order to avoid anti-nuclear activists protesting outside Legislative Yuan from time to time, the KMT passed the one-time budget of the fourth nuclear power plant in full for the next eight years, which made the people extremely disappointed to the KMT regime. Lin, Yi-Hsiung, then DPP member, initiated strategies of anti-fourth nuclear referendum movements – demanding a national referendum in order to abolish the fourth nuclear power plant. Strategies, such as sit-in hunger strike and ascetic as social advocacy, anti-nuclear voices raged. Referendum law was not legalized then, but the petition was up to more than 100,000 people and the number of the street demonstrations of the anti-nuclear movement was up to 30,000 in 1995.

In 1996, DPP proposed to stop building the fourth nuclear power plant in the Legislative Yuan, the KMT had the reconsideration vote to overturn the case. After all this, the DPP announced that it would abandon the strategy of protest on the street and concentrate on the parliamentary route to fight for the middle-class support. This result was a big blow in anti-nuclear movement. At this point the movement implicit contingency was divided into two directions: first, parliamentary lobbying and promoting the strategy of referendum, and continually support the DPP in the election to overthrow KMT in order to obtain political power and access to the ultimate success of the anti-nuclear; second, to employ strategies of local grass-roots protests and monitoring the plant's construction in Gongliao. In addition, in 1997, administrative procedures of the fourth nuclear power plant had not been completed, including the collection of local fishing rights, part of the project land use changes, the survey of cultural sites and issuance of construction permits. Activists in local and national levels hindered the construction plans by delaying all procedures mentioned above. More legitimacy of opposition was obtained in term of the rights of local residents and protection of the environment.

In 2000, the DPP ruled for the very first time and it announced that the construction of the fourth nuclear power plant was suspended. However, the strategy to stop building the fourth nuclear power plant was too rough, unfortunately causing fierce confrontation between the ruling and opposition parties and social restlessness. Even though the anti-nuclear movement united to launch a large procession to support the cessation of the decision, the DPP finally failed to withstand the political pressure

in the downtime of less than four months after and once again announced that the construction of the fourth nuclear power plant was resumed. In 2002, the DPP government had the agenda "nuclear-free homeland" set into the Basic Environmental Act and set up nuclear-free homeland promotion committee. It attempted to implement social advocacy within the political system, but it was not effective. In 2004, the Executive Yuan finally ordered to assess whether the removal of the coastal engineering project should be done. But due fear of the political backlash, a decision has not yet been made, unfortunately. In the same year, nuclear reactor parts were delivered to Taiwan from Japan.

The grass-roots strategy suffered a serious setback, and even once was halted for a while. In order to re-establish a mass base of the anti-nuclear movement, the activists had anti-nuclear documentary and tours in 2005 to raise young generation's awareness and understanding of the anti-nuclear movement. In addition, an international coalition has emerged between the Gongliao community and international anti-nuclear organizations. The representatives of the affected population in Tokai-mura, Ibaraki Prefecture, Japan, where had nuclear accident, and nuclear engineering experts Kikuchi Yoichi were invited to come to Taiwan to share their experiences. In addition, issues of beach loss and coastal ecological system damages have become the new focus of the movement and also begun to respond to the global nuclear renaissance under the context of global warming crisis, and proposed ultimate solutions for the energy problems in Taiwan. During 2009 and 2010, activists organized cultural activities like concerts and local farmer's markets to attract young people's attentions and participations in the anti-nuclear movement. In 2010 the Green Citizen Action Alliance invited two Japanese geological experts to Taiwan to investigate the fault near the proposed site of the fourth nuclear power plant, trying to make Taiwanese society to pay more attention to the impact of earthquake on nuclear power safety. Up to this point, major actors of anti-nuclear power movements in Taiwan had been environmentalists and residents from neighborhood of the proposed fourth nuclear power plant, current power plants and Lanyu where restores nuclear wastes. The mass public in Taiwan were not involved in anti-nuclear activism in a great scale.

After Fukushima disaster

In the aftermath of the Fukushima nuclear disaster in March 2011, the inherent risks of nuclear energy, for the first time, has struck a chord with the Taiwanese people. At the same time, however, such a profound feeling is also mixed with ambivalence, and even skepticism. Many worry that Taiwan may experience power shortages without nuclear energy, while others are distressed about the lack of viable alternative sources

of energy. In addition, there are also those who are concerned about economic development, and the sustainability of the standard of living in Taiwan.

Taiwan's government, civil society, and various scholars have proposed many solutions to address these concerns. Yet, in general, these ideas are largely still stuck in the stage of talking past each other. In 2008, Taiwan's Ministry of Economic Affairs proposed a Sustainable Energy Policy Program to delineate the national energy policy for the next 10 years. The plan aims to produce a win-win result among economic development, energy security and environmental protection, with a particular focus on improving the efficiency of energy use and production, increasing the added value of energy utilization, pursuing a low carbon and low pollution energy supply and reducing dependency on fossil fuels and imported energy. Still, in spite of this policy declaration, the government has insisted upon completing and using the fourth nuclear power plant in the near future. Taiwan's civil society continues to challenge the legitimacy of this policy, especially in the aftermath of the Fukushima disaster, and considers it to be a disguise for the real intention for nuclear power usage. Contested discourses regarding energy policy, economic stability and environmental protection have emerged between the government, which is pro-nuclear power, and the civil society, which demands the elimination of the fourth nuclear power plant. These discourses surround issues such as sustainable economic growth as well as the feasibility of a stable, continuous power supply that is not only efficient, but also affordable and environmentally-friendly. However, the ongoing question regarding Taiwan and nuclear energy cannot be quantified by a reduction in the level of carbon emissions or the cost of power generation. It is a value choice. More and more Taiwanese are willing to pay a little more for electricity in exchange for green power generation. Thus, environmental groups stress the argument that the government should seriously expand renewable energy development strategies.

After the 2011 Fukushima disaster in Japan, the anti-nuclear movement in Taiwan has reached its climax. Taiwanese people have mobilized each year since 2011 to express their opposition to nuclear power and demand a nuke-free Taiwan. The civil society initiated two national-wide parades on March 20th and April 30th in 2011. More than 15,000 citizens participated in the parade on April 30th, which include more than fifty NGOs across from diverse groups, such as students, homemakers, community organizations, religious believers, artists and environmental groups.

Photo 1: March 20, 2011 Anti-nuclear movement in Taiwan. Kids hold slogan 'I love Taiwan, don't want nuclear disaster.
Photo taken by Sung, Bi-Lung, Epoch Times.

Photo 2: Anti-nuclear parade in Taiwan, 30 April, 2011. Artists painted anti-nuclear symbols on umbrellas.
Photo taken by Sung, Bi-Lung, Epoch Times

Photo 3: 11 March, 2012 anti-nuclear movement in front of Taipei Train Station. Participants simulated nuclear disaster.
Photo source: Central News Agency.

In February 2013, the government announced to solve the fourth nuclear power plant controversy through referendum. Since the current threshold of referendum in Taiwan is too high, this announcement drew critiques and the scale of anti-nuclear movement rally grew. Approximately 220,000 people participated in an anti-nuke rally in March 2013, while about 120,000 people came out in Taipei City on a rainy day on March 9, 2014 to oppose nuclear power. In addition, not only have different NGOs, which existed prior to 2011, collaborated together to protest nuclear power, but also several new anti-nuclear organizations have been established since the 2011 Fukushima disaster. These new anti-nuclear movement organizations include "Mom Loves Taiwan," "Say No to the Fourth Nuclear Power Plant, Friday at Six Movement," "Anti-Nuke Army," and "Father Loves Taiwan." These NGOs have generated several discourses in regard to the issue of nuclear power in Taiwan, and at the same time, these groups offers unique perspectives that aim to balance environmental protection, energy security and economic stability. Still, while Taiwan's NGOs propose the zero growth of electricity needs, the government insists that without operation of the fourth nuclear power plant in the near future, Taiwan will not have enough electricity supply, and thus, the price of electricity will increase. Contested discourses of pro and con nuclear energy have arisen.

In April 2014, former DPP chairman Lin, Yi-Hsiung announced that he would launched an indefinite hunger strike, starting from April 22nd in order to stop the fourth nuclear power plant. He posted a document on his face book to express his determination of seeking righteousness to protect beautiful Taiwan. The civil society responded with another wave of activism to push the government to give up the fourth nuclear power plant. Supporting Lin, Yi-Hsiung's hunger strike, National Anti-Nuclear Action Alliance launched a campaign "End the fourth nuclear power, return right to the people" campaign on April 26th and many civil groups began gathering on Ketagalan Boulevard to show their determination to stop the nuclear power in Taiwan. On the 27th, a group of university professors and researchers launched the activity "Citizen Audit the Fourth Nuclear Power Plant" discussion, a total of nearly 700 citizens to participate in small group discussion relating to the future of the fourth nuclear power plant and issue of referendum for nearly three hours. "To modify an existing referendum law, to deliver a referendum on nuclear power plant bill" stood up as the number one option after the discussion and many creative ideas emerged during Dstreet discussion on April 27th. In the afternoon of April 27th, National Anti-Nuclear Action Alliance once again called on people to join the anti-nuclear march, starting from Ketagalan Boulevard with short talks, and then started marching to Jhong-Xiao West Road where they had a nuclear disaster simulation with "No nuke" signs and then began occupation of that road with sit-in

actions. Demands were clearly stated: abolishing the fourth nuclear power plant, decommissioning the first and the second nuclear power plants. The same day's evening, President Ma made an announcement: after security check, the No. 1 nuclear reactor of the fourth nuclear power plant will have sequestration, and its unit 2 will be shutdown. In addition, the Executive Yuan will convene a national energy conference, to ensure the future supply has no problem. President Ma also expressed that this decision is to retain the option for the next generation in the future if necessary. Lin, Yi-Hsiung stopped his hunger strike after President Ma's announcement.

Why Thrust of Anti-Nuclear Power Movement in Taiwan Grows in Recent Years?

A feeling of close cultural and geographical proximity to the Japanese

In the aftermath of the Fukushima nuclear disaster, from our observation and media coverage in Taiwan as well as national poll (Yang, 2011), it seems that Taiwanese society for the very first time have a deep feeling about nuclear safety issues. Through NHK simulcast, then spread from TV to the Internet, giving Taiwanese easy access to experience the emotionally charged disaster and catastrophe. Due to geographical and cultural proximity to the Japanese, when the 2011 Fukushima Daiichi nuclear disaster, occurred, Taiwanese publics were once again reminded of the potential health risks from nuclear power facilities. People wonder could a similar disaster strike closer to home and affect us? This is a very relevant question for Taiwanese people to ask as a 2011 Natural Resources Defense Council report that evaluated the seismic hazard to reactors worldwide, as determined by the Global Seismic Hazard Assessment Program data, placed all of Taiwan's reactors within the highest risk group of 12 reactors within very high seismic hazard areas, along with some of Japan's reactors (Cochran et al., 2011; Butler, 2011).

Increasing distrust in safety of the fourth nuclear power plant

The Atomic Energy Council, Taiwan's nuclear regulator, said all its nuclear power plants are built to withstand earthquakes of magnitude 7 or above and tsunamis of 12 to 15 meters. It even used the metaphors that the fourth nuclear power plant was 'built on a rock', which has been 'as solid as the Buddha sitting on the lotus throne' in order to persuade the public to believe the fourth nuclear power plant is definitely safe.[25] But experts involved in the relief work of the September 21 2009 earthquake in Taiwan (also known as the 921 or Jiji earthquake where 2415 people died) doubt the nuclear safety claimed by the government. They argue that when seismic plants move, the plate will be squeezed, which leads to the fragmentation or shattering of the rock,

[25] See: http://www.libertytimes.com.tw/2011/new/mar/16/today-o3.htm (in Chinese)

releasing much energy. Therefore, governmental officials should be reserved about nuclear safety, instead of boasting about it.[26] An interview with one of the environmental group leader also emphasized: 'the seismic design of the first nuclear plant is 0.3g,[27] and the second, the third and the fourth nuclear power plants are 0.4g, which are far worst than 0.6g, the original Japanese nuclear power plant seismic design. Responding to the earthquakes, the Japanese nuclear power plants have begun seismic intensity upgraded to 1.0g. But Taiwan is still ignoring the threat of earthquakes.' (Interview with environmentalist #1).

There are also questions about safety procedures and government's capacity to respond to nuclear accident in Taiwan.[28] For example, environmental groups and others question the government's capacity to evacuate so many people effectively and concerned about its nuclear disaster management. This question, stimulated by the Fukushima Daichii disaster is all the more pertinent when the 2011 Natural Resources Defense Council[29] report placed Taiwan's reactors within the highest risk group of 12 reactors within very high seismic hazard areas, along with some of Japan's reactors (Cochran et al., 2011). Environmental groups and some citizens highly concern about the feasibility to evacuate residents near nuclear power plants in northern Taiwan and they point out that government's confidence in its emergency management is blind.[30]

Another environmentalist considered nuclear safety drills in Taiwan were not realistic but perfunctory. He indicated that:'The Government have conducted more than 40 million nuclear safety drills over the past 16 years, but these drills did not realistically match what was needed to react to a "nuclear accident". This was because the government has been reluctant to publicly recognize the risks and possible hazards of nuclear power plants. For example, when nuclear disaster occurs, the correct preventative action for citizens, who reside in affected vicinity, is to take iodine within one hour after the accident in order to have the thyroid filled with normal iodine. This helps to block the absorption of radioactive iodine. But, in fact the government has never informed residents in the vicinity of power plants the correct timing to take iodine tablets in order to prevent thyroid cancer. Meanwhile, the current emergency evacuation area for Taiwan nuclear power plants is a radius of 5 km. We know the Fukushima Daiichi accident has evacuated thousands of residents within a radius of 20-30 km. If similar hazards occur in the first and the second nuclear power plants in Taiwan, just say within 20 km, the evacuation population

[26] See: http://shuchuan7.blogspot.tw/2011/03/blog-post_13.html (in Chinese)
[27] See: http://en.wikipedia.org/wiki/Gal_(acceleration); http://en.wikipedia.org/wiki/Gravitational_constant
[28] See: http://www.watchinese.com/article/2011/3074?page=show (in Chinese)
[29] See: http://en.wikipedia.org/wiki/Natural_Resources_Defense_Council
[30] See: http://www.watchinese.com/article/2011/3074?page=show (in Chinese)

would reach up to 1.6 million people. Does the government have capacity to evacuate so many people effectively? I doubt it!' (Interview with environmentalist #2).

According to Ho (et al., 2013), a sample of 2819 individuals in Taiwan responded to the survey in the aftermath of 2011 Fukushima disaster, with 66% perceiving that Taiwan's safety management of nuclear power plants was inferior to Japan's, while 40% perceived a higher possibility of nuclear accidents like that in Japan. In this study, respondents also strongly distrusted the government's ability to manage nuclear emergencies, regarding Taiwan's risk management as inferior to that of Japan. More than half of these respondents opposed the planned fourth NPP, but even those who approved of this project voiced concerns about the safety risks from the fourth plant. A nearby major nuclear event like the Fukushima incident was likely to have shown significant impacts and further augmented public risk perceptions, ultimately shifting general attitudes away from nuclear power. In addition, a greater public awareness of possible future catastrophe from nuclear power disasters for both Taiwanese and Japanese citizens. Such awareness is revealed in the result of island-wide survey (valid sample number: 2000) concerning related questions about nuclear power issues done by the Institute of Sociology, Academia Sinica in June 2011. The result of the national poll showed Taiwanese citizens worry about nuclear disaster (62.32%), they distrust the current nuclear policy (60.45%) and consider it's important 'to continually develop renewable energy and at the same time decreasing nuclear energy in order to meet the goal of nuke-free in the long term (85%) (Yang, 2011).

Cyber communities as mobilization networks

Internets and cyber communities, such as face book, have been utilized as mobilization networks to facilitate spreading of information relating to nuclear power and varied collective activisms. During March 2011 to April 2014, various collective actions of anti-nuclear movement drew participants from face book of different NGOs. There have been cross-posting of information of activisms. For examples, information of anti-nuclear movement rally during recent years were posted on face book a certain time prior to the rally activities and clearly stated what will take place during the activism. Internets and cyber communities have been also used to call for activism volunteers to maintain orders during large scale anti-nuclear power movements.

One of the example is one cyber group called "Anti-Nuke Army." This group has compiled varied YouTube clips and films related to nuclear power from varied sources. The information from this group has been spreading over the cyber communities, like face book, to grow the public's knowledge concerning the fourth nuclear power plants and related information, such as updates about Fukushima disaster and following

development in the aftermath. Another example is the mobilization of the Dstreet of "Citizen Audit the Fourth Nuclear Power Plant" on April 27th 2014. It only took three days prior to the event, the Dstreet team drew about 30 volunteers to facilitate deliberative discussion among nearly 700 citizens and generated a report concerning the future of the fourth nuclear power plant. The results of such a large scale of citizen discussion about nuclear energy received the major media's coverage.

Advocacy of elites and celebrity

After Fukushima nuclear disaster, many celebrity, including singers, movie stars, artists, writers, poets, directors, have joined the anti-nuclear activism. Some of them have committed each Friday night since 2013 anti-nuclear rally to an activity called "Say No to the Fourth Nuclear Power Plant, Friday at Six Movement," in order to strengthen the momentum of the activism and spread the value of nuke-free homeland and take back the power of the citizens. Some celebrity or social elites have joined annual anti-nuclear power rally since 2011 and openly have their opinion stated in the media to against the nuclear power for protection of Taiwan environment. Environmental groups successfully gain supports from these celebrity and have their video clip of anti-nuke campaign circulated over internets. These campaign also receives some mainstream media's coverage in each year's anti-nuclear rally.

Activism alliance across varied social movement organizations

Different NGOs, which existed prior to 2011, collaborated together to protest nuclear power since Fukushima disaster. Several new anti-nuclear organizations have been established since the 2011 Fukushima disaster. These new anti-nuclear movement organizations include "Mom Loves Taiwan," "Say No to the Fourth Nuclear Power Plant, Friday at Six Movement," "Anti-Nuke Army," and "Father Loves Taiwan." These NGOs have together generated several discourses in regard to the issue of nuclear power in Taiwan, and at the same time, these groups offers unique perspectives that aim to balance environmental protection, energy security and economic stability. Activism alliance across these varied old and new social movement organizations especially during 2013 and 2014. They have had brain-storming for strategies of activisms and exchanged resources. For example, "Mom Loves Taiwan" has better economic resources so it is responsible for projects that demands monetary resources input. Several creative and heart-warming anti-nuclear campaign videos were produced through resources offered by "Mom Loves Taiwan" and then circulated by other NGOs over internet and cyber communities. According to an interview, these social movement organizations meet regularly to discuss movement strategies and the next

step after the government announced to stop the fourth nuclear power plant in the end of April of 2014.

Moving towards Democratization of Energy Policy

In addition to civilian masses parades, a group of homemakers, writers, citizens and scholars initiated a civil organization "Crazy for Green Electricity Action Alliance" and proposed to Taipower the option of using green electricity and reject the nuclear power. Stickers with words "I want renewable energy. I have the right to have green electricity …" have been spread through internets and have obtained support from many people to put stickers on their electricity meters. Representative from this organization met with President Ma to express their concerns for nuclear safety and appeals for nuclear-free homeland. This movement has demonstrated to the government that citizens are willing to pay more for clean and safe power, as well as to urge Taipower to get rid of threat from nuclear energy.

As "anti-nuclear" should not only be a slogan, NGOs has taken another step to propose specific action of democratization of energy policy. In a symposium of March 2014, NGOs come together to declare the strategy "Green power surrounded nuclear power." This strategy aims to utilize the election to demand the candidates to reveal their attitudes towards energy policy. NGOs wishes to appeal to candidates to modify the "Electric Act" so that electricity and telecommunications integration, the establishment of the power industry standards, promote community and civic co-generation, distribution and sale of liberalization; and also to modify "Renewable Development Act" to provide the public and civil society green electricity power plant options.

One of such strategy is proposed by HAND, The new civic movement "One Person, One Kilowatt" a description of NGO social enterprise will --- to practice civic power plant energy independence. It is emphasize that people do not want to wait for the Government to implement energy justice, and they hope to raise co-production of green energy. Only the initial small rooftop solar installations, hope for the future towards biomass (biomass) power generation joint venture. The vision is that everyone has the opportunity to participate in the production of electricity. This is a new citizens' movement through investments, finding the right roof system for one's own household consumption of electricity produce and via citizens' participation in the creation of green energy production as long-term investment.[31]

[31] See: http://www.hand.org.tw/home

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