行政暨政策學報　第五十六期
民國一〇二年六月　　第 117～146 頁
Public Administration & Policy, No.56
June 2013　　pp.117～146

Policy Change or Policy Intractability in Post-Crisis Landscape? The Fukushima Explosion and Comparative Nuclear Energy Policy

Herlin Chien*

Abstract

Many scholars argue that a crisis can serve as a catalyst to prompt a previously controversial policy change. However, many of the effects of a crisis on policy changes or policy intractability remain uninvestigated. Do policy-makers in different countries react similarly or differently to the same crisis? This paper uses a narrative policy analysis to conduct comparative case studies to examine how the 2011 Fukushima nuclear explosion affected nuclear energy policies in different polities. Six cases are selected: the United States, France, India, Switzerland, Taiwan and Italy. Whereas the first three countries listed do not exhibit nuclear policy changes in the post-crisis landscape, the latter three have experienced a policy reversal.

This research finds that crises do not always serve as a catalyst to induce policy changes as conventional wisdom predicts. Many policies exhibit its intractability even after a major crisis whereas policy learning is not automatic neither.

KeyWords: crisis, policy change, policy learning, nuclear energy policy, narrative policy analysis (NPA)

* Assistant Professor, Department of International Affairs, Wenzao Ursuline College of Languages , E-mail: 98036@mail.wtuc.edu.tw.

I. Introduction

According to conventional wisdom, crises cast shadows on the polities in which they occur (Kingdon, 1984; Sabatier and Jenkins-Smith, 1993; Baumgartner and Jones, 1993; Birkland, 1998; Boin et al., 2009). Historically speaking, however, geographically distant crises can also cast shadows on polities in which they did not occur. For example, the 9/11 terrorist attacks in New York City, the United States, triggered the introduction of "hard" and "soft" security strategies in Europe (Levi and Wall, 2004). In the extant crisis management literature, not only has this observation received little attention, but little comparative effort has been invested in understanding the impacts of a single distant crisis on various polities. As a result of this gap in the literature, this study posits that the current trends in crisis policy-making research might constrain researchers and policy-makers. First, a crisis is believed to have the automatic potential to "punctuate" institutional inertia and cause major policy reversals because most existing studies focused on explaining the link between crisis and reform in a single country. Second, instead of offering a synthesized analysis, public-policy students strive to isolate a single variable in post-crisis governance that most strongly accelerates the pace of policy reform, such as venue shopping, policy entrepreneurship, the type of crisis, the timing of the crisis or information. Third, by over-emphasizing the probability of crisis-induced policy change, policy changes after crises are often misinterpreted as policy learning (Hoberg, 1996; Birkland, 2006).

Having suggested the above points, this paper does not intend to denigrate prior scholarly contributions related to crisis management. Instead, it notes their potential limitations and calls for future studies to further balance our knowledge of, first, the role of crisis in *both* policy reform and the absence

of reform by expanding the single-country policy case-study approach to a *cross-national comparative analysis*, second, how multiple variables in post-crisis governance interact with each other to collectively affect the pace of policy change or the status quo, and lastly, the distinction between crisis-induced policy change and policy learning.

To provide an empirical examination, this study utilizes narrative policy analysis (NPA) to conduct cross-national comparative case studies. In this research, the 2011 Fukushima nuclear crisis is targeted as a focusing event, with its impact on six selected countries' nuclear energy policies dissected—namely, Italy, Taiwan, Switzerland, the United States, India and France. The former three cases display major energy policy changes after the 3/11 Fukushima crisis; the latter three do not exhibit policy changes, only an increase in support for the anti-nuclear movement. Methodologically speaking, this paper's argument builds upon findings from the six comparative case studies on the politics and policy-making surrounding nuclear energy. It takes a grounded theory approach (Glaser, 1978, 1992; Glaser and Strauss, 1965; Strauss, 1987) and applies the method of difference (MoD) (Ragin, 1987, 2000, 2008; Woodward, 2003; Baumgartner, 2009) to examine the three most-similar cases against the other three most-similar contrasting cases to identify the causes of such differences. I seek to open the black box of post-crisis politicking in various polities. By comparing the variations, the findings yield new understandings of the role of crisis in reform and the absence of reform, the "who, what, where, when and how" of the crisis' linkages to policy-making, and the distinction between policy change and policy learning.

II. Limitations in Theoretical and Empirical Studies

Three research tendencies in extant theoretical and empirical crisis

management studies are noted in the following discussion. These tendencies are often taken for granted or over-emphasized by public-policy students, which may constrain the students' research scope and blind them to alternative findings.

1. *Single-Country Analysis of Crisis as a Catalyst in Policy Reform.* As important theoretical explanations for major policy reforms, crises are frequently cited as focusing events and windows of opportunity (Walker, 1977; Light, 1982; Cobb and Elder, 1983; Baumgartner and Jones, 1993; Kingdon, 1984). The majority of empirical case studies are based on single-country analyses of how a crisis causes major policy reversals, such as the 1996 Dutroux crisis in Belgium (Walgrave and Varone, 2008) or the 1989 Exxon Valdez oil spill (Kurtz, 2004). However, parallel to what Nohrstedt (2008) indicates, perhaps more intriguing is the question of why some crises result in major policy changes while others *do not* (Birkland, 2006; Minstrom and Vergari, 1996; 't Hart and Boin, 2001). Although it is difficult to establish causal links between crises and the lack of reform due to non-falsifiability, the research value of this line of inquiry should not be ignored. One way to overcome this challenge is to conduct a comparative study rather than a single-country study. By examining the impact of a crisis on several polities, the variations in empirical findings may yield new insights in further theory building.
2. *Single Variable Causes of Policy Reform*. While many argue that a fully developed theory explaining the crisis-policy change linkage is not available ('t Hart and Boin, 2001: 43), theorists often focus their attention on identifying a single variable that is pivotal in times of crisis and radical policy reversal, including venue shopping (Godwin and Schroedel, 2000; Hansen and Krejei, 2000; Burnett and Davis, 2002; Pralle, 2003), policy entrepreneurship (Mintrom and Vergari, 1996; Corbin, 2010; Kingdon, 1984), the crisis type (Nohrstedt and Weible, 2010; Gundel, 2005), the crisis timing (Wood, 2006; Baumgartner and Jones, 1993: 130; Gladwell,

2000) and information (James and Jorgensen, 2009; Weible, 2008; Staw et al., 1981). By focusing on identifying a single variable in external shocks that affect policy agendas, these scholars not only downplay other variables that cause policy change but also reinforce the seemingly automatic catalyst role of crisis in policy reversal. These assumptions blind scholars from a synthesized understanding of how a crisis can impact policy change and prevent them from appreciating the implications of the absence of reform in times of crisis.

3. *The Relationship between Policy Change and Policy Learning*. In many crisis-related policy studies, the boundary between policy learning and policy change is blurred, and the causal relation between them is unclear (Bennett and Howlett, 1992; Hall, 1993). Especially when applying Sabatier's "advocacy coalition framework" (ACF) to analyze empirical cases, scholars might place such an emphasis on policy learning that it becomes synonymous with policy change. For instance, in Lertzman, Rayner and Wilson's analysis of learning and change in the British Columbia forest policy sector (1996), the authors conflate policy change with lesson-drawing and paradigm shifts. The effect of this conceptual blurring obscures the fact that learning is an independent variable and that policy change is a dependent variable (Hoberg, 1996). This view ignores ACF's principle of categorizing learning as only one of a number of causes of policy change instead of the primary cause. The synonymous use of the terms policy change and policy learning therefore prevents scholars from noticing a wide range of factors that are external to policy-makers' decision-making and policy-learning processes while disregarding alternative explanations.

III. Narrative Policy Analysis and Cross-National Study

To bridge several limitations in the existing public-policy studies, this paper proposes using narrative policy analysis (Fischer and Forrester, 1993; Roe, 1994; Stone, 2002) as a methodological departure to conduct a cross-national comparative public-policy analysis. By using this approach, this study aims to provide alternative explanations to both policy change and the absence of change in a time of crisis. In doing so, this study will also reveal the deficiency of explanatory power in using a single methodological approach, such as NPA or others. This application of NPA in a comparative study is not designed to be a theory-confirming effort but rather a theory-building and expansion effort.

The integration of NPA into the traditional policy-change theory is a methodological innovation proposed by McBeth, Shanahan, Arnell and Hathaway (2007). They argue that, with some exceptions (Baumgartner, 1989; Hajer, 1993; Radaelli, 1999; Schneider and Ingram, 2005), NPA and the policy-change literature rarely intersect. Yet contrary to Sabatier's conclusions (2000: 138), narratives are the visible outcome of differences in policy beliefs and political strategizing (McBeth et al., 2007). They are not random occurrences. By examining policy narratives, we find that policy beliefs are arguably stable and that policy strategies are predictable. NPA can build upon the ability of more traditional policy-change theories to understand the strategic representation of values in framing a conflict.

Building upon McBeth and advocates of NPA, this paper further attempts to apply NPA to a cross-national crisis policy-making analysis to examine the impact of a single crisis on several polities. With this novel combination, the empirical examinations may reveal how various narratives regarding the same

crisis in different polities play into the role of both policy change or *lack of change*, namely policy intractability. This approach can also help to distinguish policy learning at the technical and managerial level from political strategizing in crisis policy-making. This study seeks to answer questions such as, "Why did this large-scale crisis cause a non-incremental policy change in one polity but not in another?" "Is this policy change an outcome of policy learning or strategic actions for reasons that are oriented more towards political survival at the domestic or international level rather than towards problem-solving?" While the former question comprises the core of traditional public-policy studies, the latter parallels the lost dimensions of crisis management that 't Hart (1993) skillfully advocates as a more power-critical approach to the analysis of crisis management.

This methodological experiment aims to provide an overview of the role of crises in policy-making and to expand the research scope of public-policy students. It seeks to foster a dialogue between traditional public-policy studies and the argumentative turn (Fischer and Forester, 1993). Based on a comparative study, the diverse empirical evidence can challenge a scholar's biased theoretical lens. This study's grounded theory approach demonstrates that some crisis-induced policies can be explained by the interplay of language, action and power advocated by Wittgenstein, Habermas, Foucault and NPA. However, others might find greater resonance in practitioner-oriented handbooks and guidelines on the 'how-tos' of crisis management (Fink, 1986; Raphael, 1986; Nudell and Anthokol, 1988; Pauchant and Mitroff, 1992).

The lesson learned is that it is unrealistic to use a reductionist approach or a single variable to explain crisis policy-making. The causal relation between crisis and policy-making merits a more comprehensive examination and multi-angled approach. The black box of post-crisis politicking comprises the "who, what, where, when, why and how" of the crisis links to policy-making. No single approach is superior to the others in causing either policy change or institutional inertia. Crisis policy-making is contingent upon policy

entrepreneurship, venue shopping, the timing, the type and information regarding the crisis and other factors. This list of variables is not exhaustive, and scholars must unveil the interactions between each variable. One way to surpass the limits of existing studies is to pursue comparative studies. The following empirical cross-national study of the impact of the 3/11 Fukushima crisis on the nuclear energy policy of six polities exemplifies a potential breakthrough in the crisis-management literature.

IV. Case Selection

To explore the black box of policy-making in times of crisis, this study uses a narrative policy analysis to analyze data for six countries: the United States, France, India, Switzerland, Taiwan and Italy. The basic research design is to follow the method of difference (MoD), comparing the three most-similar cases against the other three most-similar contrasting cases to determine the causes of difference. The study intends to choose three cases with major policy change after the event of 311 to contrast against the other three with no major policy change.

However, as to which six cases should be chosen, it is linked to the principles of sampling in qualitative research. To justify the sampling method used in this study, it is essential to reiterate that this research roots in a grounded theory approach which utilizes ‘theoretical’ sampling, designed to generate theory which is “grounded” in the data, rather than established in advance of the fieldwork as in ‘purposive sampling’ (Curtis, Gesler, Smith and Washburn, 2000: 1002). In other words, findings that are to be presented in the last analytical section are not to prove or falsify existing theories but to add on new knowledge, generate new theoretical direction and provide window of opportunities for further researches. The way the six country cases is chosen

nevertheless takes consideration of six criteria as suggested by Miles and Huberman (1994): MH1: relevant to the conceptual framework; MH2 potential to generate rich information; MH3 analytic generalizability; MH4 potential to generate believable explanations; MH5 ethics and MH6 feasibility. For instance, of all the country cases in the world, the researcher has access to archival material in English to the chosen six cases (MH6), they all can generate rich information (MH2) and they are fit to the relevance of conceptual framework (MH1) where all chosen countries' energy policy is one way or the other responded to the distant disaster of 311 in Japan, instead of being indifferent or completely irrelevant due to the lack of nuclear power plants in the country, such as many countries in the developing world.

V. Comparative Case Analysis

1. Case Profile

March 11, 2011, when the nuclear energy plants in Fukushima exploded after an 8.9-magnitude earthquake and a 15-meter tsunami, is a date that the current generation of Japan will likely remember, in the same way that the explosion of the atomic bombs in Hiroshima and Nagasaki on August 6, 1945, left a mark on the collective memory of the last generation. The former crisis was natural, while the latter was man-made. Nevertheless, the unprecedented destruction of public infrastructure, private property, manufacturing establishments and human life is alike in both cases, and both crises were nuclear in nature.

Statistics show that 441 nuclear power plants are currently operating in 30 countries, including 104 in the United States and more than 50 in France[1]. As a result, the Fukushima nuclear plant crisis has captured the attention of not

[1] See more in International Atomic Energy Agency (IAEA) , 2011.

only the Japanese government and public but also other countries with existing nuclear energy facilities or plans to build new ones. Do countries react similarly or differently to crises such as the Fukushima accident? If they act differently, what causes this difference in response? Does policy learning equate to policy change? Or, while some aspects of natural disasters promote policy learning, do others ontologically cause a paradigm shift in the interpretation of facts? These dilemmas are of interest to crisis-induced policy studies and crisis-management studies in general.

In the event of the 3/11 crisis, the United States, France, India do not exhibit major policy changes but rather a rise in support for the anti-nuclear movement (see Table 1). Switzerland, Taiwan and Italy; however, demonstrate major energy policy changes after the 3/11 event (see Table 2).

As shown in Table 1, the nuclear energy programs of all three polities that did not experience a crisis-induced nuclear policy change did not halt due to the Fukushima nuclear accident. Instead, they have continuously initiated new nuclear programs. On the anniversary of the Fukushima accident, the United States issued new nuclear regulatory orders to expand the safety measures for nuclear power plants—a development that may be viewed as an act of policy learning; however, the government also approved the construction of two new nuclear reactors in March 2012. As for the nuclear giant, French President Sarkozy was the first high-level political leader to visit Japan after the Fukushima incident, on March 31, 2011. France also took advantage of the fact that it held the presidency of the G8 and G20 in 2011 to host various major international nuclear energy meetings or informal European ministerial meetings on nuclear safety, at which the French ecology minister presided. Rather than being discouraged by the nuclear accident, at the domestic level, France has begun to consider extending the operational life of 22 nuclear plants that are due to close in 2022. On the international stage, France has taken a leading role in asserting the safety of nuclear power. Lastly, despite its initial promise to engage non-governmental organizations in establishing and

maintaining its power plants, India is striving to develop indigenous nuclear power capabilities to satisfy the growing energy needs of a rapidly modernizing country. India's recent discovery of local uranium reserves provides further incentive to execute its original plan, developed prior to the 3/11 crisis, to build 40 additional nuclear reactors and to generate 25% of the country's electricity with nuclear power plants by 2050.

Table 1 Three Non-Crisis-Induced Nuclear Policy Changes by Polity

	US	France	India
Policy before 3/11 crisis	*Following a 30-year period after the Three Mile Island crisis, the US expected to build 4-6 new units by 2020. The first of those would result from 16 license applications made since mid-2007 to build 24 new nuclear reactors.	*France is active in developing nuclear technology. *French reactors and fuel products and services are major exports. *France exports nuclear energy to Switzerland, Italy, Germany, Belgium, Spain, and the UK. The 2011 net export was 56 billion kWh.	*India aims to develop an indigenous nuclear power capability. *India expects to build 40 more reactors and to supply 25% of the country's electricity with nuclear power by 2050. *India participates in international cooperation on nuclear energy facilities.
Policy after 3/11 crisis	*Two new reactors were approved in March 2012. *In March 2012, the Nuclear Regulatory Commission issued a new set of orders and recommendations specifically based on the lessons learned from the nuclear crisis in Japan.	*France aims to comply with stricter international safety standards. *The French Court of Audit's report echoes a leaked draft government study stating that extending the life of France's reactors would be a cheaper investment option for 2035-2040 than building any type of new power plant.	*More new plants are being planned, yet the country is concerned about the lack of uranium reserves. *In July 2011, new uranium reserves were discovered at a mine, which could be the answer to India's nuclear fuel supply problems. *India is participating in extensive international cooperation on technology and regulations.

Source: compiled by the author from the Lexis Nexis Academics news databank.

As shown in Table 2, the three polities demonstrating crisis-induced nuclear policy changes—Switzerland, Taiwan and Italy—experienced non-incremental policy changes in the post-Fukushima crisis period. Three months after the March 2011 incident, on June 7, 2011, Switzerland's national council voted 101 to 54 to endorse the phase-out of nuclear energy by 2034. This decision overturned the original plan issued by the Swiss Federal Office of

Energy in 2010 stating that the Niederamt, Beznan and Muheleberg sites are suitable for building new reactors and that new nuclear programs would be authorized by mid-2012. Taiwan's nuclear authority had planned for the addition of 6 new nuclear plants after 2009. The 4th plant, in Lungmen, was near completion and was expected to begin its commercial operation in 2012. However, the Japanese nuclear crisis in March 2011 caused Taiwan to suspend all of its new plans, and the 4th plant is on hold until further safety measures are in place. As for Italy, its 2009 nuclear energy revival plan was put before a referendum held on June 12-13, 2011, in which 94 per cent voted against nuclear power. This sudden nuclear power policy change also marks one of the major political defeats for Italy's longest-serving prime minister, Silvio Berlusconi, who resigned in November 2011.

Table 2 Three Crisis-Induced Nuclear Policy Changes by Polity

	Switzerland	Taiwan	Italy
Policy before 3/11 crisis	In 2007, there was strong local support for the ATEL subsidiary nuclear power plant. The canton parliament called for the rapid construction of a nuclear power plant in Niederamt. In 2010, the Swiss Federal Office of Energy stated that the Niederamt, Beznau and Muheleberg sites are suitable for building new reactors. A federal decision on granting authorization for the plants was expected by mid-2012.	Six additional plants have been in the planning stages since 2009. The fourth new plant was under construction in Lungmen, near Taipei. Its commercial operation was expected to begin in 2012.	*After the 1986 Chernobyl crisis, a referendum rejected the parliament's new nuclear energy plan in 1987 and initiated a five-year nuclear moratorium. *In 1993, the government remained steadfast in excluding nuclear energy. *In 2009, legislation passed to generate 25% of the country's electricity with nuclear power by 2030.
Policy after 3/11 crisis	Following a cabinet decision, the national council on June 7, 2011, voted 101 to 54 to endorse the phase-out of nuclear energy by 2034. The actual legislation is subject to debates and referendums in the future.	All new plans are suspended until safety measures are in place. In Nov. 2011, Taipower said the fourth new plant might be operational in 2014 at the earliest.	In 2009, the revival of a nuclear energy plan was vetoed by a referendum in 2011. The prime minister resigned following the referendum.

Source: compiled by the author from the Lexis Nexis Academics news databank.

Before systematically addressing these cases, this study acknowledges two methodological challenges: the data reduction-representation problem and the subjective-objective problem. The first challenge occurs in the methodological process of openly coding the data (such as policy narratives), whereby the data are broken down, closely examined, and compared for similarities and differences, in the same way that a pedologist studies soil samples carried from a forest to the lab[2]. Categories, concepts, and labels are then created. This is the first step toward theory-building, that is, conceptualizing data through classification. However, this act of data reduction encounters the risk of biased representation. A question such as, "Is the selected narrative representative of the policy-makers?" might be asked. The second challenge is similar to the first. It is important to recognize that facts (objective) are constructed in a context of "telling[3]" (subjective). In the narrative policy-analysis approach, the objective-subjective challenge doubles when researchers first subjectively select "narratives" to represent the population. The researchers then endeavor to interpret the speakers' subjective "narrative" to understand the objective facts.

2. Basic Informational Analysis of Six Cases

As shown in Table 3, all of the polities under analysis here are relatively experienced in nuclear energy generation; similarly, Japan's first commercial nuclear power plant was established in 1966. Of the six polities, the United States houses the greatest number of nuclear power plants, followed by France, with 58 plants at present, and India. If one considers only the number of nuclear plants operating in a country, it appears that there is a negative correlation with the likelihood of nuclear crisis-induced policy change—the more nuclear plants a country possesses, the less likely it is that an external

[2] Bruno Latour (1999) uses the analogy of a pedocomparator in explaining methods of social science inquiry.
[3] A related discussion can be found in *Sociological Inquiry* by Dorothy Smith in 1974.

crisis will cause a non-incremental policy change. However, the correlation is unclear between the percentage of energy that is generated by domestic nuclear power plants and the likelihood of a crisis-induced policy change. For example, before the Fukushima crisis, 40 per cent of Switzerland's energy was generated by nuclear plants. Despite such a heavy reliance on nuclear power generation, a non-incremental policy change was nevertheless introduced in the wake of the 3/11 incident. Three months after the Fukushima crisis, the Swiss National Council endorsed the phase-out of nuclear energy by 2034. Nevertheless, India, with only 12-15 per cent of its energy generated by nuclear power plants, is determined to increase its future reliance on domestic nuclear power. Whether the history of nuclear disasters in a territory has an impact on nuclear policy changes in times of crisis is equally unpredictable. Of the six cases, only the United States, Switzerland and Italy had been directly affected by past nuclear disasters, such as the 1979 Three Mile Island plant crisis or the 1986 Chernobyl crisis in Russia (see Table 4). Yet, this direct past experience does not serve as a dependable indicator of whether the countries' nuclear programs will be halted when another crisis occurs, despite the fact that the Fukushima crisis did not damage or directly threaten any of the six cases under examination. For instance, Taiwan has experienced no nuclear disasters in the forty years since its program was initiated in 1972. However, this fact does not prevent Taiwan from experiencing a lack of confidence in its nuclear power plants as of March 2011.

Table 3 Comparison of Basic Nuclear Energy Profiles by Country

	US	**France**	**India**	Switzerland	Taiwan	Italy
Initiation of nuclear energy plan	1960	1974	1969	1969	1972	1963
Number of nuclear plants	**104**	**58**	**20**	5	3	0
% of energy from domestic nuclear generation*	20%	75%	12-15%	40%	17%	0% since 1990. 1970 2.7% 1980 1.2%
Past major nuclear disasters in territory	1979 Three Mile Island plant crisis in Pennsylvania	Sept. 12, 2011: a blast at a nuclear site in southern France killed one person but posed no risk of radiation contamination	No nuclear energy plant crisis, but Indian nuclear military devices exploded in May 1998	Some areas were affected by the 1986 Chernobyl crisis in Russia	No experience of past nuclear disasters	Some areas were affected by the 1986 Chernobyl crisis in Russia

*Source: data collected from http://www.world-nuclear.org/info/inf86.html.

Table 4 Areas in Europe Contaminated by Chernobyl Fallout in 1986*

	Area with Cs deposition density range (km^2)			
	37-185 kBq/m^2	185-555 kBq/m^2	555-1480kBq/m^2	>1480 kBq/m^2
Russia Federation	49800	5700	2100	300
Belarus	29900	10200	4200	2200
Ukraine	37200	3200	900	600
Sweden	12000	---	---	---
Finland	11500	---	---	---
Austria	8600	---	---	---
Norway	5200	---	---	---
Bulgaria	4800	---	---	---
Switzerland	1300	---	---	---
Greece	1200	---	---	---
Slovenia	300	---	---	---
Italy	300	---	---	---
Republic of Moldova	60	---	---	---

* Source: Table 3.2 in Environmental consequences of the Chernobyl accident and their remediation : twenty years of experience / report of the Chernobyl Forum Expert Group 'Environment'. — Vienna : International Atomic Energy Agency, 2006.

3. Narrative Policy Analysis of Six Cases

At the outbreak of the Fukushima crisis, political leaders from the six selected countries employed different narratives to describe the crisis in Japan. This variance in narrative (see Table 5) reflects the differing emphases that the countries placed on the significance of the Fukushima crisis for them. While the United States focused on how it could provide Japan with resources and expertise, France called for international awareness and action in response to the crisis. In contrast, India insisted that the Fukushima disaster was “a crisis but not a deterrent”. Although the Fukushima narratives in these three countries confer different meanings to the crisis, none imply that the country must pursue major policy changes in response to the Fukushima crisis.

Table 5 Fukushima Crisis Narrative I

Country	Fukushima Crisis Narrative (incumbent official’s narrative)
US	Marvin S. Fertel, president and chief executive officer at the Nuclear Energy Institute said, "We appreciate the President's leadership during this difficult time for the people of Japan...**we are providing resources and expertise to the Japanese industry….”** "A review of our nuclear plants is an appropriate step after an event of this scale and we expect that the Nuclear Regulatory Commission will conduct its own assessment” (March 17, 2011).
France	French President Nicolas Sarkozy is the first foreign leader to visit Japan since 3/11. At a news conference following a meeting with Japanese Prime Minister Naoto Kan, Sarkozy warned that what happens at the Fukushima Nuclear Plant could have consequences for what he called the **"global village."** Sarkozy said it is necessary to put international safety standards in place for nuclear power plants. He said that in cooperation with the Japanese prime minister, he plans to organize a meeting of nuclear officials from the G20 countries to prepare for the IAEA nuclear safety summit in June (March 31, 2011).
India	In a newspaper article entitled **“A disaster but not a deterrent,”** "Ours is a very power-hungry country," said Srikumar Banerjee, the chairman of India's Atomic Energy Commission. "It is essential for us to have further electricity generation" (March 16, 2011).

Source: compiled by the author from the Lexis Nexis Academics news databank.

In contrast to the above three countries, officials in Switzerland, Taiwan and Italy used their narratives to link Japan's crisis to domestic nuclear power plant development (see Table 6). Several political leaders in Switzerland insisted that it was "not possible to continue with business as usual". Taiwanese officials made effort to convince the public and their political adversaries that Taiwan is located on a different fault line than Japan, even though both countries are located in earthquake-prone regions. The Italian officials warned that "turning back is unimaginable" and described Fukushima as "a new fear". In shaping their narratives, the leaders from these three countries conveyed their worries, fears and challenges. Their narratives were not as firm as their counterparts in the United States, France and India, countries whose nuclear policies remained intact after the Japan crisis.

Table 6 Fukushima Crisis Narrative II

Country	Fukushima Crisis Narrative (incumbent official's narrative)
Switzerland	Ruedi Lustenberger of the Christian Democratic Party said it **was not possible** to continue with **business as usual**: "We must draw conclusions from this" (March 13, 2011).
Taiwan	Premier Wu questioned the Wall Street Journal report: "100 nuclear reactors operate in **earthquake-prone regions…**most of those plants are in just two countries; Japan and Taiwan." He argued that "Taiwan is located **on a more stable fault line than Japan**'s islands" (March 30, 2011).
Italy	"We cannot allow a new fear, not at this stage. **Turning back is unimaginable**," Economic Development Minister Paolo Romani told reporters (March 16, 2011).

Source: compiled by the author from the Lexis Nexis Academics news databank.

Within one to two months after the Fukushima crisis, only Switzerland and Taiwan responded by initiating parliamentary discussions in an attempt to stop their country's future nuclear power programs (see Table 7). The Fukushima crisis did not ascend to major parliamentary debates in France, India or Italy. Instead, France framed this crisis as an international matter.

India immediately announced its decision to engage non-governmental organizations in its new and existing power plants. While the Italian government wished to execute Prime Minister Berlusconi's plan to re-initiate the country's nuclear program in 2014, it announced a one-year moratorium. Two days after the crisis, the US senate hosted a hearing on the nuclear regulatory commission's report; however, the hearing was conducted to provide an update concerning nuclear safety, not to discuss the future of nuclear energy in that country.

Table 7 Post-3/11 Immediate Policy Response

	US	France	India	Switzerland	Taiwan	Italy
Post-3/11 immediate policy response	*The government will form an NRC task force to respond to 3/11 *The original plan for expansion was delayed *Senate hosted a hearing on the nuclear regulatory commission's nuclear reactor safety report (March 16, 2011)	*The President was the first leader to visit Japan (March 31, 2011) *The President called for raising the international nuclear power plant safety standards	The state-owned Nuclear Power Corporation of India (NPCIL) announced its decision for the first time to engage non-governmental organizations in new and existing power plants (April 2011)	The government initiated parliamentary discussions on the future of nuclear energy in Switzerland	Legislators at the Social Welfare and Environmental Hygiene Committee crossed party lines and approved a non-binding resolution asking the government to stop work on the 4th plant until safety concerns are addressed (March 15, 2011)	The Italian government postponed re-introducing nuclear power by one year (March 23, 2011)

Source: compiled by the author from the Lexis Nexis Academics news databank.

Based on the narratives collected from these six cases, this project finds that each country framed nuclear energy differently, as shown in Table 8. These narratives are the visible outcome of differences in each polity's policy beliefs and political strategies. The three countries that did not experience major policy changes after the Fukushima crisis tended to offer more optimistic narratives concerning their own nuclear energy program: the United States framed nuclear energy as a technological or managerial issue that can be fixed or improved and as a business opportunity. France framed nuclear energy as a point of national pride, as an export industry and as a tool to strengthen

international cooperation. India framed nuclear energy as a tool to strengthen international cooperation, as a link to the military and to terrorists, and as a way to demonstrate independence from global superpowers' interference. The three countries that experienced non-incremental policy changes, however, assigned a more pessimistic narrative to their own nuclear energy programs. For example, Switzerland framed nuclear energy as a technological failure. Taiwan framed nuclear energy as a source of endless political debate and as an unpopular solution to the country's reliance on imported energy and foreign technologies. Italy framed nuclear energy as taboo after the 1986 Chernobyl crisis and as an opportunity to defeat the already unpopular Prime Minister Berlusconi.

Table 8 Comparative Analysis

	US	France	India	Switzerland	Taiwan	Italy
What is nuclear energy for this country? *connotation from denotation	- a technological and managerial issue - a business opportunity	- a source of national pride - an export industry - a tool to strengthen international cooperation	- a tool to strengthen international cooperation - a link to military use and terrorists - a way to show independence from super powers' interference	- a technological failure	- a political debate topic - an unpopular solution to its heavy reliance on imported energy - a reliance on foreign technologies	- a taboo after the 1986 Chernobyl crisis - an opportunity to defeat the unpopular Prime Minister Berlusconi

Source: compiled by the author from the Lexis Nexis Academics news databank.

Moreover, elections appear to be a variable that affects whether a crisis will trigger a major policy change. If the timing of the crisis corresponds to the election timeline, a distant crisis can easily be framed as a domestic political concern. The data show that the three countries that experienced nuclear policy changes during the crisis were either in the midst of electoral campaigns or had political leaders with low political support. In contrast, when the Fukushima explosion occurred, the US, France and India were not under electoral pressure, and their nuclear energy policies remained intact.

In the case of Switzerland (see Table 9), shortly after the Fukushima crisis, the results from four elections in cantonal parliaments show that the Liberal Greens— who oppose nuclear energy—were among the clear winners[4]. In April 2011, the political scientist Georg Lutz from Lausanne University correctly predicted that the nuclear crisis in mid-March would change the campaign ahead of October's federal parliamentary elections. In the October 2011 federal election, the Green Liberal party was again the clear winner, as it gained 12 seats, compared to its 3 seats in the 2007 election.

Table 9 Election, Crisis and Policy Change

	US	France	India	Switzerland	Taiwan	Italy
Electoral Environment/ Timing	No election	No election	No election	Canton election/ parliamentary election	Presidential election	Low support of PM
Venue of Policy Dispute	Nuclear science, technical or regulatory agencies	International meeting, presidential office/government	Government: Prime Minister, External Affairs Minister, United Nations	Local vs. national politics	Presidential election	Constitutional court, referendum, resignation of PM

Source: compiled by the author from the Lexis Nexis Academics news databank.

In Taiwan, the Fukushima crisis rendered the 4th nuclear plant controversial: it was the core political dispute in the January 2012 presidential election. The three presidential candidates stated their positions on nuclear energy development in Taiwan. Incumbent President Ma of the KMT party issued a political statement stating that "the new energy policy should be crafted in a proactive, practical and responsible manner in keeping with the principles of no power rationing, maintenance of stable electricity prices and continued reduction of carbon dioxide emissions to meet international goals."[5] The opposition, Democratic Progressive Party Presidential candidate Tsai Ing-wen, declared that

[4] See more news by Geiser, 2011 in Swissinfo.ch "Fukushima Fallout Spreads to Swiss Politics."
[5] See more in news and opinion by Daly, 2012. in "Fukushima 2.0 in the Making?"

if she were to win the election, she would close all three of Taiwan's existing nuclear power plants and end the Longmen NPP project[6], aiming to end Taiwan's nuclear energy program by 2025. Candidate James Soong of the People's First Party proposed not to extend the service life of the three existing NPPs, but he favored a "wait and see" approach on the Longmen NPP.

In Italy, although there was no major election when the Fukushima crisis occurred, the political support for the former Prime Minister Berlusconi was low. Even before the crisis, in the second half of 2010, only 28 per cent of those polled wanted the Berlusconi government to complete its term; 42 per cent wanted a coalition government to assume power, and 30 per cent preferred a snap general election[7]. The June 2011 referendum was another sign of the public's disapproval of the Berlusconi government. However, two weeks before the referendum, Berlusconi's government—which yokes his Freedom People movement to the regionalist and Islamophobic Northern league—first ran into serious trouble on May 30, when his candidate for the mayor of Milan[8] lost in a local election runoff. In November 2011, Berlusconi lost his parliamentary majority and pledged to resign after an austerity package was voted in as the country was buffeted by the Eurozone debt crisis.

If venue shopping is a strategy that policy-makers use to enact policy change, one can determine how each country framed the nature of this policy problem by analyzing "where" the Fukushima crisis and its response were most discussed. For Switzerland, Taiwan and Italy, the nuclear energy policy in the post-3/11 period was primarily discussed in electoral campaigns at the canton, federal or presidential level and in referendums. In the US, France and India, however, the venue for policy debate occurs at the technological or managerial level or at international meetings. As for the United States, its aim

[6] Taiwan currently has three power plants: The Chinshan NPP license expires in 2018-2019, Kuosheng in 2021-2023 and Maanshan in 2024-2025.

[7] Angus Reid Public Opinion, 08/08/10, Few Italians want Berlusconi to finish his term.

[8] Milan is Berlusconi's home city and traditionally a weather-vane accurately pointing to Italy's future political direction. See more in *The Guardian*, June 13, 2011, Berlusconi's nuclear power plants crushed.

is not to push for policy change through legal means but to improve the technology and management of nuclear power generation. As for France and India, nuclear energy is not merely a domestic policy issue but an issue that requires international cooperation and attention.

VI. Theoretical Suggestions and Conclusion

Conventional wisdom suggests that crises such as natural disasters may serve as a catalyst to induce and legitimize previously controversial policy changes (Kingdon, 1984; Sabatier and Jenkins-Smith, 1993; Baumgartner and Jones, 1993; Birkland, 1998; Boin et al., 2009). While many argue that a fully developed theory explaining the crisis-policy change linkage is not available, many aspects of why some crises result in major policy changes while others do not remain hidden in the black box. By conducting a comparative case study, this research serves as a preliminary effort to unravel the post-crisis black box politicking. The findings generated from the grounded theory approach of collecting and analyzing data contribute to the theory of crisis management in the following three areas.

First, the innovative comparative case study approach reveals that crises do not always trigger major “policy changes” as many have claimed. In analyzing the impact of the Fukushima crisis on six countries, this study found that the nuclear energy policies in the US, France and India did not experience non-incremental policy changes in the post-3/11 period, whereas the institutional inertia of Switzerland, Taiwan and Italy was clearly interrupted by the crisis, and major policy reversals ensued.

Second, the data from this comparative study indicate that crises do, as commonly understood, direct increased attention to public problems. These crises are known as focusing events (Birkland, 1998), even in countries that do

not experience major policy changes, such as France. The study implies that the ability of a crisis to interrupt institutional inertia varies and should be categorized according to different levels. Specifically, the impact of the Fukushima crisis on the six countries can be divided into four levels (see Figure 1). After the Fukushima crisis, France demonstrated its policy intractability by successfully framing the nuclear energy crisis and related policies at the international level, away from the level of domestic politics. The US and India responded to the crisis with a problem-solving attitude. While the US has learned from the crisis and demonstrates policy learning by emphasizing technical and managerial improvement, India has responded to the crisis by engaging non-governmental organizations in existing and new nuclear programs. Although Taiwan, Switzerland and Italy reversed the direction of their nuclear programs, Switzerland and Italy experienced a paradigm shift in their belief in developing future nuclear energy programs while Taiwan experienced a partial policy change.

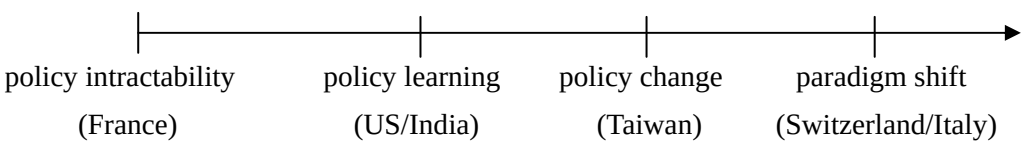

Figure 1 Impact of the 3/11 Crisis on Polities

Source: drawn by author.

Third, the comparative data demonstrate the complexity and vast variation in the correlations between crisis and policy reform/lack of reform. The data show that no single variable can explain the black box of post-crisis politicking. To better explain crisis management, this study proposes a funnel of causality approach (see Figure 2) to unravel the “who, what, where, when and how” of the effects of a crisis on policy-making. This synthesized approach addresses the type of crisis, the timing of the crisis, venue shopping, policy entrepreneurship, political strategy, etc.

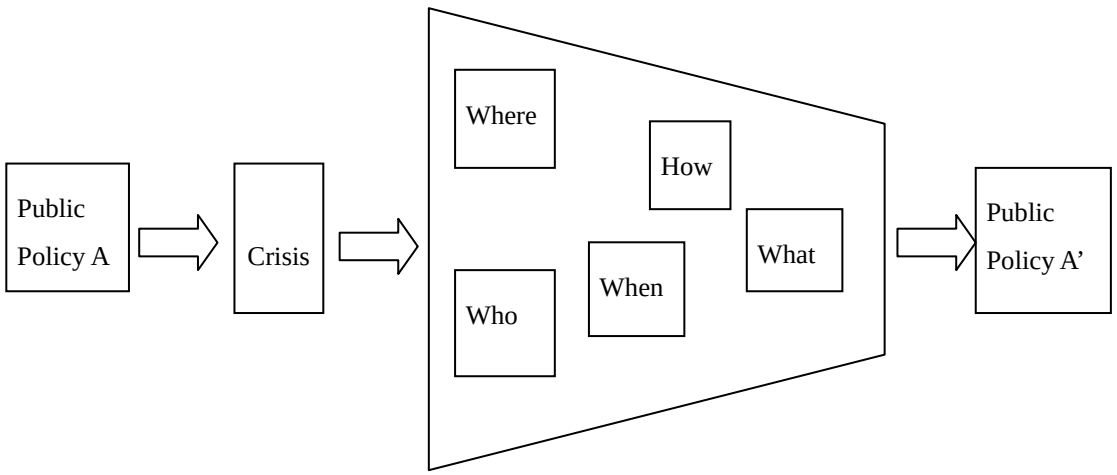

Figure 2 Post-Crisis Funnel of Causality

Source: drawn by author.

In conclusion, by conducting empirical examinations of six cases following the 3/11 crisis, this study demonstrates the utility of comparative studies in discovering novel correlations between crises and policy-making. Comparative studies can also broaden the scope of research to explore why some crises result in major policy changes while others do not, thus contributing to further theory-building in crisis management. The findings from the comparative case studies cast doubt on the presumed role of crises as catalysts to induce policy change, demonstrate the need to categorize the political effects of a crisis, and propose a preliminary funnel of the causality approach to determine the "who, what, where, when and how" of the effects of a crisis on policy-making. Lastly, the complexity of this comparative crisis-induced policy analysis reveals that crises do not occur in a political-administrative vacuum. Instead, they interfere with ongoing political and bureaucratic processes and debates in any policy area (Nohrstedt and Weible, 2010: 26). Especially in the era of globalization, rapid information flows and regional cooperation, a crisis' effects are no longer confined to the polity in which it occurs. A crisis has the potential to influence global policy, either intentionally (as in France's case), unintentionally or inevitably.

References

Baumgartner, F. 1989. “Independent and Politicized Policy Communities: Education and Nuclear Energy in France and in the United States.” *Governance*, 2 (1): 42-66.

Baumgartner, F. 2009. “Uncovering Deterministic Causal Structures: A Boolean Approach.” *Syntheses*, 170: 71-96.

Baumgartner, Frank and Bryan D. Jones. 1993. *Agenda and Instability in American Politics*. Chicago: University of Chicago Press.

Bennett, Colin and Michael Howlett. 1992. “The Lessons of Learning: Reconciling Theories of Policy Learning and Policy Change.” *Policy Sciences*, 25: 275-94.

Boin, Arjen, Paul 'tHart and Allan McConnell. 2009. “Crisis Exploitation: Political and Policy Impacts of Framing Contests.” *Journal of European Public Policy*, 16: 81-106.

Burnett, M. and C. Davis. 2002. “Getting Out the Cut: Politics and National Forest Timber Harvests, 1960-1995.” *Administration and Society*, 34(2): 202-228.

Birkland, T. A. 1998. “Focusing Events, Mobilization, and Agenda Setting.” *Journal of Public Policy*, 18(1): 53-74.

Birkland, T. A. 2006. *Lessons of Disaster: Policy After Catastrophic Events.* Washington, D.C: Georgetown University Press.

Cobb, Roger and Charles D. Elder. 1983. *Participation in American Politics: The Dynamics of Agenda-Building.* (2nd ed.) Baltimore: John Hopkins University Press.

Corbin, T. B. 2010. *Policy Entrepreneurs and Focusing Events: Congressional Agenda Setting after Hurricane Katrina*. Claremont: The Claremont Graduate University.

Curtis, S., W. Gesler, G. Smith and S. Washburn. 2000. “Approaches to Sampling and Case Selection in Qualitative Research: Examples in the Geography of Health.” *Social Science & Medicine*, 50(7-8):1001-1014.

Daly, John. 2012. Fukushima 2.0 in the Making? January 1st. from http://www.econmatters.com/2011/01/fukushima-20-in-making.html. Retrieved April 22, 2013.

Fink, S. 1986. *Crisis Management: Planning for the Inevitable*. New York: American Mangement Association.

Fischer, Frank and John Forrester. 1993. *The Argumentative Turn in Policy Analysis and Planning*. Durham, NC: Duke University Press.

Geiser, Urs. 2011. "Fukushima Fallout Spreads to Swiss Politics." *Swissinfo.ch*. April 11. from http://www.swissinfo.ch/eng/Specials/Elections_2011/Opinion_and_Background/Fukushima_fallout_spreads_to_Swiss_politics.html?cid=29973340. Retrieved April 22, 2013.

Gladwell, Malcolm. 2000. *The Tipping Point.* New York: Little, Brown and Company.

Glaser, B. 1978. *Theoretical Sensitivity*. Mill Valley, CA: Sociology Press.

Glaser, B. 1992. *Basics of Grounded Theory Analysis: Emergence versus Forcing.* Chicago: Aldine.

Glaser, B. and Anselm L. Strauss. 1965."Discovery of Substantive Theory: A Basic Strategy Underlying Qualitative Research." *American Behavioral Scientist*, 8: 5-12.

Godwin M. and J. Schroedel. 2000. "Policy Diffusion and Strategies for Promoting Policy Change: Evidence from California Local Gun Control Ordinances." *Policy Studies Journal*, 28(4): 760-776.

Gundel, Stephan. 2005. "Towards a New Typology of Crisis."*Journal of Contingencies and Crisis Management*, 13(3): 106-115.

Hajer, M. 1993. "Discourse Coalitions and the Institutionalization of Practice: The Case of Acid Rain in Great Britain." In Frank Fischer and John Forester eds., *The Argumentative Turn in Policy Analysis and Planning*. Durham, NC: Duke University Press, 43-76.

Hall, P. 1993. "Policy Paradigms, Social learning, and the State: The Case of Economic Policymaking in Britain." *Comparative Politics*, 25: 275-96.

Hansen, K and D. Krejci. 2000. "Rethinking Neoinstitutional Interaction :Municipal Arena-Specific Strategies and the Base Closure Process." *Administration and Society*, 32(2): 166-182.

Hoberg, G. 1996. "Putting Ideas in Their Place: A response to Learning and Change in the British Columbia Forest Policy Sector." *Canadian Journal of Political Science*, 29: 135-144.

International Atomic Energy Agency. 2011. "Energy, Electricity and Nuclear Power Estimates for the Period up to 2050." IAEA-RDS-1/31, IAEA, Vienna, Austria. from http://www-pub.iaea.org/MTCD/publications/PDF/RDS1_31.pdf. Retrieved April 22, 2013.

James, Thomas E. and Paul D. Jorgensen. 2009. "Policy Knowledge, Policy Formulation, and Change: Revisiting a Foundational Question." *The Policy Studies*, 37(1): 141-162.

Kingdon, J. W. 1984. *Agendas, Alternatives and Public Policy*. Boston, MA: Little Brown.

Kurtz, R. S. 2004. “Coastal Oil Pollution: Spills, Crisis, and Policy Change.” *Review of Policy Research*, 21(2): 201-219.

Latour, Bruno. 1999. *Pandora's Hope: Essays on the Reality of Science Studies*. Cambridge: Harvard University Press.

Lertzman, Ken, Jeremy Rayner and Jeremy Wilson. 1996. “Learning and Change in the British Columbia Forest Policy Sector: A Consideration of Sabatier's Advocacy Coalition Framework.” *Canadian Journal of Political Science*, 22: 111-133.

Levi, Michael and David S. Wall. 2004. “Technologies, Security, and Privacy in the Post-9/11 European Information Society.” *Journal of Law and Society*, 31(2): 197-220.

Light, P. 1982. *The President's Agenda: Domestic Policy Choice from Kennedy to Carter* (with Notes on Ronald Reagan). Baltimore: Johns Hopkins University.

McBeth, Mark K., Elizabeth A. Shanahan, Ruth J. Arnell and Paul L. Hathaway. 2007. “The Intersection of Narrative Policy Analysis and Policy Change Theory.” *The Policy Studies Journal*, 35(1): 87-108.

Miles, M. and A. Huberman. 1994. *Qualitative Dada Analysis*. London: Sage.

Mintrom, Michael and Sandra Vergari. 1996. “Advocacy Coalitions, Policy Entrepreneurs, and Policy Change.” *Policy Studies Journal*, 24(3): 420-34.

Nohrstedt, D. 2008. “The Politics of Crisis Policymaking: Chernobyl and Swedish Nuclear Energy Policy.” *Policy Studies Journal*, 36(2): 257-278.

Nohrstedt, Daniel and Christopher M. Weible. 2010. “The Logic of Policy Change after Crisis: Proximity and Subsystem Interaction.” *Risk, Hazards and Crisis in Public Policy*, 1(2): 1-32.

Nudell, M. and N. Anthokol. 1988. *The Handbook for Effective Emergency and Crisis Management*. Toronto: Lexington.

Pauchant, T. C. and I. I. Mitroff. 1992. *The Crisis-Prone Organization: Diagnostic and Intervention*. San Francisco: Jossey-Bass.

Pralle, S. B. 2003. “Venue Shopping, Political Strategy, and Policy Change: The Internationalization of Canadian Forest Advocacy.” *Journal of Public Policy*, 23(3): 233-260.

Radaelli, C. 1999. “Harmful Tax Competition in the EU: Policy Narratives and Advocacy Coalitions.” *Journal of Market Studies*, 37: 661-682.

Ragin, C.C. 1987. *The Comparative Method*. Berkeley: University of California Press.

Ragin, C.C. 2000. *Fuzzy-Set Social Science*. Chicago: University of Chicago Press.

Ragin, C.C. 2008. *Redesigning Social Inquiry: Fuzzy Sets and Beyond*. Chicago: University of Chicago Press.

Raphael, B. 1986. *When Disaster Strikes: A Handbook for the Helping Professions.* London: Hutchinson.

Roe, E. 1994. *Narrative Policy Analysis*. Durham, NC: Duke University Press.

Sabatier, P. 2000. "Clear Enough to Be Wrong." *Journal of European Public Policy*, 7: 134-40.

Sabatier, P. and H. Jenkins-Smith. 1993. *Policy Change and Learning: An Advocacy Coalition Approach*. Boulder, CO: Westview Press.

Schneider, Anne and Helen M. Ingram. 2005. *Deserving and Entitled: Social Constructions and Public Policy*. Albany: State University of New York Press.

Smith, D., 1974. "The Social Construction of Documentary Reality." *Sociological Inquiry*, 44(4): 257-268.

Stone, D. 2002. *Policy Paradox: The Art of Political Decision Making* (revised ed.). New York: W.W. Norton.

Strauss, A. 1987. *Qualitative Analysis for Social Scientists*. Cambridge, UK: University of Cambridge Press.

Staw, Barry M., Lance E. Sandelands and Jane E. Dutton. 1981. "Threat Rigidity Effects in Organizational Behavior: A Multilevel Analysis." *Administrative Science Quarterly*, 26(4): 501-524.

't Hart, P. 1993. "Symbols, Rituals and Power: The Lost Dimensions of Crisis Management." *Journal of Contingencies and Crisis Management*, 1(1): 36-50.

't Hart, Paul and Arjen Boin. 2001. "Between Crisis and Nornalcy: The Long Shadow of Post-Crisis Politics." In A. B. Uriel Rosenthal eds., *Managing Crises: Threats, Dilemmas, Opportunities*. Springfield, IL: Charles C. Thomas, 28-46.

Walgrave, Stefaan and Frederic Varone. 2008. "Punctuated Equilibrium and Agenda-Setting: Bringing Parties Back in: Policy Change after the Dutroux Crisis in Belgium." *Governance*, 21(3): 365-395.

Walker, J. L. 1977. "Setting the Agenda in the U.S. Senate: A Theory of Problem Selection." *British Journal of Political Science*, 7: 423-445.

Weible, C. M. 2008. "Expert-Based Information and Policy Subsystems: A Review and Synthesis." *The Policy Studies Journal*, 36(4): 615-635.

Wood, Robert S. 2006. "Tobacco's Tipping Point: The Master Settlement Agreement as a Focusing Event." *The Policy Studies Journal*, 34(3): 419-436.

Woodward, J. 2003. *Making Things Happen*. Oxford: Oxford University Press.

災變事件後政策的變遷或停滯？福島核災與比較核能政策

簡赫琳*

摘 要

許多學者研究發現，災變是許多爭議性高之政策變遷的催化劑，但除此之外，災變究竟如何影響政策制訂方向還未被仔細檢驗，例如：不同國家之政策制定者面對相同的災變，其政策回應到底是相同還是不同？本研究使用敘事政策分析法 （NPA）來比較多國在 2011 年福島核災後核能政策走向的相異，共有六國在本研究中被分析：美國、法國、印度、瑞士、台灣與義大利，前三國在災後並沒有顯著核能政策變遷，後三國則在災後經歷核能政策改變。

此研究發現，災變並不總像過去研究發現的必為政策帶來變遷，許多政策縱使在經過災變後仍是停滯，政策學習也不一定是必然。

關鍵詞：災變、政策變遷、政策學習、核能政策、敘事政策分析法（NPA）

* 文藻外語學院國際事務系助理教授，電子郵件：98036@mail.wtuc.edu.tw。

收稿日期：101 年 11 月 13 日。接受刊登日期：102 年 4 月 15 日。