

# **Environmental Governance in Taiwan**

A new generation of activists and  
stakeholders

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 **Routledge**  
Taylor & Francis Group  
LONDON AND NEW YORK

## 2 Contextualizing Taiwan's environmental history

### From "developmentalism" to ecological awareness?

#### Early environmental depletion

Environmental deterioration goes way back in Taiwan's history reaching as far back as Qing times; a period in which the first mass migrations from mainland China brought increasing distress to the island's fragile forest cover and its coveted camphor tree (Williams and Chang, 2008: 14). Later on Japanese rule (1895–1945) also contributed to worsen the ecological situation by initiating the process of dam building (Kerr, 1965), whose serious side effects are still visible today and have, in recent years, come under intense scrutiny and criticism from the environmental community. While the Japanese era was all about maximizing the island's potential for serving as a natural resources base for the benefits of the Japanese Empire, at the same they tried to avoid any reckless exploitation of its forest covers, water and resources, wanting to turn the island into a model colony with long-term benefits for Japan (Williams and Chang, 2008: 16).

From 1947 onward the Chiang Kai-shek era had devastating consequences on the environment (Kerr, 1974; Liu, 1987). Initially, after the Japanese lost the war only a reduced number of administrators and troops were sent to Taiwan; however, after the communists managed to conquer the mainland, the ROC government and the remainder of the nationalists' troops, more or less two million individuals, fled to the island. While many newcomers settled in the north, around the Taipei area and Hualien area, where they took over the structures left behind by the Japanese (Rigger, 2011: 31), earlier Chinese immigrants, who had been brought to Taiwan by the Dutch, had settled primarily in the South and central areas and in the remote wilderness surrounding Ilan (Rigger, 2011: 62). This division, based on ethnicity and political orientations, has continued to divide the political life of the country until today with far-reaching implications and influences on numerous contemporary social issues, none the least the island's fragile environment (Williams and Chang, 2008: 18).

#### Environmental depletion under Chiang Kai-shek

This period marks the beginning of the Republic of China being established in Taiwan, which is divided in two periods, the martial law era (1947–1987) and

the post-martial law era (1987 until today). During the 40 years of martial law, political dissent and public participation in developmental plans were almost non-existent and ecological awareness yet a distant concept.

While the Chiang Kai-shek government was initially preoccupied with reclaiming its rightful position as ruler of both Taiwan and the mainland, its economic and developmental strategy betrayed its position vis-à-vis the island, viewed as a mere temporary retreat. Under this operational framework, natural resources' exploitation had to be maximized and subjected to the primary goal of rescuing China from the communists (Arrigo *et al.*, 1996: 767). Roads, railways and hydroelectric infrastructure initiated during the Japanese era were further expanded through the construction of cross-island highways and smaller roads for facilitating logging and mountain resources' exploitation. All of these projects were carried out without consulting political opponents or listening to people's concerns; the highest precedence was accorded to defense and economic development and environmental distresses faded into the background. At that time Taiwan's authoritarian government created a classical situation of governmental decisions reigning free without a system of effective checks and balances on its pronouncements; all the while the attitude was of total disregard towards both public welfare and the ecological situation. Since the KMT's arrival on the island, the authorities' main concern was a thriving economic development; at first for security reasons (the China threat), and secondarily for internal reasons (need to grow in competitiveness). For both the government and its citizens (mostly preoccupied with their economic well-being) environmental issues remained for a long time mere secondary troubles, buried under the powerful rhetorical imperative of "reclaiming the mainland" (Tang, 1997: 283; Williams and Chang, 2008: 1). As the idea of reclaiming the mainland gradually faded away, due to the changing international recognition of the PRC as the "real China," the KMT finally turned its attention inward, focusing on the development of an export-oriented economy.

In the 1960s, under the protective umbrella of the United States and its consumer market, Taiwan's small and medium-sized export industry grew exponentially (Williams and Chang, 2008: 20). Lack of laws and regulation as well as faulty plans for zoning and control of various industries (Chen and Shih, 2010: 19) led to a dispersion of industrial wastes and pollution problems all over the island's territory. To divert attention from political problems and regain sympathies among the native Taiwanese, the KMT promoted rural industrialization with thousands of small and medium-sized factories, especially on the West coast, subjected to minimal or no environmental controls or requirements (Williams and Chang, 2008: 25; Rigger, 2011: 53). Like its neighbors, Japan and Korea, Taiwan has yet to solve the legacy brought about by the fast-paced development of the steel, paper pulp, cement and chemical industries in the 1970s decade (Tu, 2001: 230). This uncontrolled growth of small industries ended in the 1980s when the government shifted its economic strategies towards the development of industrial parks (Jobin, 2010: 46) or after business conglomerates began shifting their operations offshore (Tu, 2001: 255). Industrial parks had the adverse effect of

intensifying environmental problems by leading to soil and water poisoning; a situation made worse by the fact that such parks were often located on fragile and unspoiled coastal lands, which were easily available, sparking debates in regards to land property issues (Williams and Chang, 2008: 135–165).

Under the political patronage of the United States Taiwan's economy boomed although the political environment remained oppressive and wary of dissent all throughout the 40 years in which martial law was in place (White Terror Era: 1947–1987) giving little space to voice opposition let alone petition on behalf of the environment. As mentioned, the majority of the people were not concerned about the damages and havoc brought upon the island by this sudden economic boom. Petrochemical plants and nuclear energy in particular came to be seen as a solace for Taiwan's thirst for natural resources (Hsueh *et al.*, 2001: 40). Taiwanese were satisfied with their improved living conditions and until the early 1980s the island enjoyed one of the highest per capita income rates among developing nations, accompanied by a vibrant cultural environment in music, arts, literature and film-making (Lupke, 2012: 157).

Alongside the changes at the economical level, a shift in Taiwanese's self-identification was gradually taking place, which had profound repercussions and reverberations on the cultural production sphere.

From the end of the 1960s and later on, in the 1970s, a humanistic trend, which emphasized the beauty of Taiwan's rural life, placing farmers at the heart of agricultural development as the symbol of a newly established Taiwanese Identity, started to appear in certain literary circles (Bain, 1993: 93). It became fashionable for writers and intellectuals to write about village life and "small" men and their plights as a valuable counterpart to city life and the "economic man." Lurking in the background was the implicit critique towards the KMT-led savage industrialization, considered as the culprit for having spoiled the natural environment and as morally "unfair" towards farmers, widely left behind in Taiwan's race towards economic development and modernity.

The Hometown Literature<sup>1</sup> movement fundamentally changed how Taiwanese saw themselves by awakening a strong sense of pride for their origins. As Shelley Rigger writes: "These revolutionary ideas brought a new willingness to practice a specifically Taiwanese way of life, to speak Hokkien without shame, to worship Mazu without apology, to eat the foods that flourished in Taiwan's rich volcanic soil without embarrassment" (Rigger, 2011: 33). These new ideas and strong cultural identification values are the same core components of the contemporary environmental movement. No matter whether a group is directly involved in helping small-town farmers in their struggle against multinationals such as Taiwan Rural Front, or whether it stresses the importance of supporting "natural" methods of cultivation used by Taiwanese farmers such as Homemakers United Foundation, the majority of Taiwanese green groups are deeply imbued by the need to protect the "native" cultural and physical richness of their country and its natural surroundings.

It goes without saying that those 30 years of unrestrained economic growth – without any checks and balances nor concerns for the environment – brought

about disastrous consequences for the ecological well-being of Taiwan. As urban centers such as Taipei and Kaohsiung grew exponentially related problems such as motor vehicle traffic turned these cities into some of Asia's most polluted urban centers. Inadequate infrastructure such as wastewaters and sewage systems led to severe water pollution in rivers and water courses (Williams and Chang, 2008: 25) and the leap in population growth led to huge amounts of untreated solid wastes, which were amassed all over the island and inadequately handled, with catastrophic consequences for both human health and the environment. It was these first-hand and very visible effects that prompted mass action and fostered the birth of an environmental awareness.

### **The birth of an environmental awareness and of the environmental movement**

It was not until the 1980s that a combination of circumstances led to the development of an environmental awareness in Taiwan. First, the visibility and scale of problems had become impossible to ignore; second, this was a decade of extreme mobility for Taiwanese who travelled abroad for leisure and even more importantly for working or studying purposes; overseas they obtained degrees that allowed them, upon their return, to connect the dots between economic development and environmental deterioration (Williams, 1992: 198). The growing environmental awareness among a minority elite of experts and scholars first and among the general population later on in the decade, prompted authorities to recognize the seriousness of environmental problems and the need to properly and urgently address such issues (Ho, 2006: 27). This process was fraught with problems, with several governmental bureaus experiencing conflicting interests that often pitted one faction against the other in fierce and prolonged battles. One such case took place over the Taiwan provincial Highway Bureau's plans to build another cross-island highway from the Western to the Eastern coast, which would have crossed one of last few wild areas left intact in Taiwan (Williams, 1992: 200). The Highway Bureau, in a classical developmental-faction alliance with various business communities and their representatives at the local level, was fiercely opposed by a group of conservationists allied with the Construction and Planning Administration and with the Department of National Parks. The project underwent five years of public debate and review and was finally suspended in 1986 but remains particularly important because it illustrates the growing influence of the environmental movement and the crucial role played by conservationists in those early stages, as the gradual and slow establishment of a process of open review and public discussion was difficult to come by.<sup>2</sup>

The predominant view among scholars of social movements is that the emergence of a plethora of new actors, which the state was reluctant to repress, starting from the 1980s challenged the long-standing authoritarian rule of the government and facilitated the creation of a public sphere, which these activists employed to exert pressure for the reorganization of the country's political structure (Wu, 1990).

All throughout the 1980s numerous social movements, addressing issues that ranged from women's rights, consumers' protection, aboriginal minorities' rights, environmental protection and labor issues, emerged. Beginning in 1988 free press and a variety of civic organizations and political parties blossomed. For environmentalists this meant being able to criticize the state for promoting economic development over ecological protection and demand better living standards (Ho, 2005a: 341). As noted by Hsiao, in comparison to other social movements, the environmental one was universal in nature and had a direct and strong impact on local politics (Hsiao, 1999: 41). Whether or not local residents would turn out to be successful in a confrontation with the local source of pollution depended on several external factors, as well as on their ability at mobilizing, by exploiting socio-cultural ties and networks; in fact the political majority, especially at the localities, was still firmly in the hands of the KMT. Therefore these early protests, rather than being aimed solely at the protection of a certain locality from polluting industries, were first and foremost attempts at gaining in-depth participation in the political life of the country, while trying to fight the KMT's previously undisputed domain over society and politics (Ho, 2006: 58–59). As a consequence, several such actions would quickly turn into anti-KMT movements, deemed culpable of favoring polluting industries over citizens, leading activists and residents to channel their sympathies towards oppositional parties. This gradual erosion of the one-party system slowly established the right conditions for the creation of a multi-party system, where different concerns and voices could be fully heard. As Hsiao puts it: "the environment-related anti-pollution, nature conservation, and anti-nuclear movements have contributed directly or indirectly to Taiwan's democratization, and this in turn has opened new space for these and other movements" (Hsiao, 1999: 43).

The increasing freedom enjoyed by the island after 1987 created a rapidly changing society in which new actors could suddenly voice their concerns. This is in fact the decade in which all of the most important grassroots green groups were born: *Taiwan Environmental Protection Union*, *Wild Bird Federation of the Republic of China*, *New Environment Foundation* and so on. These groups differentiated themselves from previous ones born out of local protests in self-interest because they were/are considered to be the first, advocating on behalf of the public (Tang, 2003: 1036). As stated by McBeath and Leng: "Three new patterns emerged during Taiwan's democratic reforms: legitimization of environmental protests, restructuring of political coalitions and decentralization, and incorporation of NGO participation in decision-making processes" (McBeath and Leng, 2006: 196).

As previously mentioned, this was also the time in which local officials acknowledged for the first time the seriousness of the island's environmental problems, pinpointing its causes in the uncontrolled growth of polluting industries as well as in citizens' lack of environmental education and awareness (Ho, 2006: 27). Governmental willingness to curb Taiwan's ecological distress led to the drafting of the island's first environmental policy plan, *Guidelines for*

*Environmental Policies at the Current Stage*, which was enacted in 1987, around the time when martial law was coming to an end and several struggles on behalf of the environment were becoming more vocal (e.g., the Lukang rebellion against a titanium dioxide plant of DuPont).<sup>3</sup> Struggles on behalf of the environment being less sensitive than direct and outward contention challenging the KMT's political rule, many dissidents chose to cluster under the umbrella-definition of "environmental activists."

Right after the abolition of martial law in 1987 social protests gained in frequency and violence until the early 1990s and then gradually decreased (Ho, 2006: 141; Jobin, 2010: 47). During the following years the KMT sought to regain control of society, and crack-downs towards the newly born opposition party (the DPP) and social movements were frequent (Ho, 2005b: 406; Linda Arrigo, interview, June 30, 2011),<sup>4</sup> increasing confrontations between the police and citizens and sparking several protests (Jacobs, B., 2012: 72). One such incident took place in 1991, as local residents and activists took to the streets in Gongliao to mark their opposition to the construction of controversial NPP-4, known as "*he si* 核四," inside Taiwan.<sup>5</sup> During the conflict one policeman lost his life, resulting in a national manhunt for what were termed "anti-nuclear criminals" (Linda Arrigo, informal communication, July 20, 2011). This radicalization of positions, either in favor or against nuclear energy, pressured numerous KMT members, actually opposed to nuclear energy, into silence for fear of being qualified as "DPP sympathizers." Not surprisingly, given the situation, green activists, and especially anti-nuclear ones, came to gravitate around the pan-green camp, initially perceived as a natural ally against the authoritarian and business-oriented KMT. However, this convergence of ideals between anti-KMT groups, which saw the DPP fully embracing the anti-nuclear cause, also symbolizes the beginning of what Taiwanese scholar Ho Ming-sho (2003) has termed "party dependence"; meaning that nuclear issues came to be seen as politically and ideologically identified with the green camp. While this initially helped activists find new outlets to disseminate their ideas, especially after the DPP won more than one-third of seats in the Legislative Yuan in 1992, in the long run it had the negative side effect of transforming nuclear issues into partisan issues, ascribed almost solely to the DPP (Ho, 2003).

Scholars of Taiwan's green movement generally agree that a true "environmental movement" began in earnest in the 1980s and specifically in the second half of the decade, after the DuPont incident (1986) and the lifting of martial law, when the expression of public dissent suddenly became possible. The victory of the small town of Lukang against a multinational American corporation in 1986 had an invigorating effect on Taiwan's infant environmentalism, which was fully realized after martial law was lifted one year later. As stated by Ho:

Prior to the Lukang movement, Taiwan's environmentalism was mainly restricted to middle-class professionals who focused on educating the public and officials towards nature conservation's issues. Later on journalists and

professors began working with the grassroots. The Taiwan Environmental Protection Union, established at the end of 1987, was the most representative product of this cross-class collaboration.

(Ho, 2013: 701–703)

At any rate, by the end of the 1980s discontent towards governmental and industrial neglect and abuse was rising in numerous localities. This bottom-up civil force pressured the government into compliance, leading to the creation of a national environmental agency, the already-mentioned EPA, which was quickly followed by a complex hierarchy of agencies at all levels that dealt with various environmental issues. This gradually improved the situation, starting from the mid-1990s (Williams and Chang, 2008).

With the lifting of the martial law system and then Lee Teng-Hui's presidency in the 1990s, the democratization process was under way. After Taiwan implemented electoral competition and witnessed its first free and democratic direct presidential election in 1996 (Fell *et al.*, 2006: 15), the KMT was confronted with a double-edged sword; it had to sustain economic growth to win the elections while at the same time it needed to enforce stricter environmental rules in order to clean up the island. Indeed, throughout the whole 1990s environmentalists were empowered by the fact that democratization reduced the control capacity of the state sector.

According to Michael Hsin-Huang Hsiao's categorization of Taiwan's early movement, initially efforts were directed at three, partly overlapping issues of growing concern: nature conservation (since 1982), nuclear energy (since 1988) and environmental pollution (Hsiao, 1999: 32; Ho, 2005c: 238) derived mostly from excessive exploitation of natural resources from big enterprises (Tang and Tang, 1997: 281). In the 1990s collective actions towards local pollution became full-fledged movements in numerous communities, contaminated by various degrees of soil, air or water pollution. These movements started out as a reaction to an already manifested problem, either natural resources' degradation or health effects on people, by victims of this pollution and became later, thanks to media visibility, national grassroots movements. After the primary actors involved in such protests, namely the victims of pollution, a wide array of new participants from college professors and students to sympathetic intellectuals, soon joined the ranks of the nascent anti-industry and pro-environment movement. Opposition parties' members played a critical role in this period of early activism as well (Williams and Chang, 2008: 75).

The main difference between those early environmental protests and the contemporary ones, which will be analyzed in this book, is that the former were – for the overwhelming majority – *reactive*, with victims mobilizing to claim compensation for damages already suffered, rather than *pre-emptive*, as is the case for most protests in present-day Taiwan.<sup>6</sup> A crucial role in the organization of the opposition to polluting facilities, in those early days, was played by local temples; local deities, ghost festivals, folk goddesses and religious parades constituted an integral part of the action repertoire of local environmental mobilization

(Ho, 2005c). One of the notable examples of an anti-pollution protest, which stimulated a community response utilizing ritual and religious practices is the famous Houchin movement.<sup>7</sup> Nowadays the leadership capacity of maximizing its efforts in a concerted action, which transcends ethnic, gender, class and generational divisions has resulted in a more effective force for influencing governmental policies and pressuring authorities.

Another crucial difference between then and now is the target of protesters. In the early years of Taiwan's environmental activism complaints were mostly directed at big corporations and industrial parks with local residents uniting against the threat coming from the "outside",<sup>8</sup> local governments, deemed unresponsive towards environmental protection, were only secondary targets. Such a strategy changed quite quickly, starting from the early 1990s, as Taiwanese green activists have led projects, protests and watchdog activities playing a major role in shaping pollution control and conservation policies and frequently clashing with governmental authorities and industries. At the same time victims of pollution began asking for financial compensation and gave strength to their demands by employing radical techniques such as sit-ins to block entry to factories and such similar tactics (Ho, 2006: 62; 77). Business sector response was all but united, differing according to the size of the enterprise and the market covered, with the majority of companies aware that, in order to meet new stringent environmental regulations, production costs would have had to rise. Those enterprises which could afford to comply with governmental regulations (mostly big-sized ones) stayed in Taiwan and specialized in high-value items, requiring high levels of technological skills and know-how (Gereffi, 1990: 17) while small and medium-sized ones escaped the new requirements by transferring their production to cheaper countries, mostly in Southeast Asia and, a decade later, Mainland China. With this I am not suggesting that big-sized business conglomerates always comply with environmental regulations; rather, many of them still bet against the sincerity of governmental commitment towards the environment and make use of rising costs, pressure from green organizations and environmental pollution regulations as a blackmail tool towards the government, by threatening to leave Taiwan in search for cheaper countries in which environmental safeguarding regulations are not yet so strict (Hsiao, 1999: 44). The impact of such a bargaining strategy has been very high in Taiwan, a country in which the state was firmly convinced of the need of keeping big industries (e.g., the petrochemical and nuclear ones), as a sign of national sovereignty and strength to counterweight the waning international status of the country and the PRC's rising. Furthermore, the environmental movement also experienced a counter-movement by businesses, attempting to make environmental regulations less rigid (watering down the institute of the Environmental Impact Assessment, for instance) and/or launching large-scale counter campaigns against banning disposable bags and chopsticks, to name but a few of the most significant (Feil, 2012: 188).

The second current of Taiwan's early environmentalism, the "anti-nuclear movement" clustered under its banner countless political activists who sought to erode the KMT's four-decade long undisputed domain (Ho, 2006: 42). Their

*cause célèbre* dealt/deals with opposition to the construction of a fourth nuclear power plant on Taiwanese soil, a project that dates back to the end of the 1980s, when the government first unveiled its intention to build such a facility, a story which is dealt with in Chapter 3.

The third stream in Taiwan's early environmental movement and also the earliest one to emerge, was the Nature Conservation Movement – henceforth NCM – (Hsiao, 1999: 36). Conservationists' main concern was to stop the damage to the island's precious natural resources. Affiliation and membership to the Nature Conservation Movement partly overlaps with that of the already expounded anti-pollution movement, since damage and havoc are brought on natural resources by industrial pollution and other human-induced activities; the difference though, lies in the appeal to higher moral values and the need to nurture nature and protect it from humans, which characterizes this third stream of environmentalism. The contrast with the anti-pollution movement, often considered as utilizing nature as an excuse to protect petty interests and individual properties, is striking. In fact, NCM's campaigns were aimed at saving endangered species and ecosystems such as migratory birds, mangrove forests, coastal wetlands, water and other natural resources from excessive exploitation and pollution. Key players, rather than local communities affected by the negative effects of pollution, were non-governmental organizations such as the *Wild Bird Federation of the Republic of China*, the *Homemakers United Foundation*, the *Green Consumers' Foundation*, the *Nature Conservation Union* and the *Society of Wildlife and Nature*, as well as numerous individual scholars. Women were an essential constituent of the nature conservation movement, keen on highlighting their role in society as educators and mothers, trying to lecture the general public on the need to nurture and respect nature, an important resource to be preserved for the future of our children (Chen Man-li, interview, July 20, 2011; Xu, 2011: 8–9).<sup>9</sup>

Furthermore the Nature Conservation Movement retains strong links with religious movements, in particular with several Buddhist organizations. The above-mentioned *Nature Conservation Union*, for instance, was established by a monk with the intent of saving Taiwan's coastal wetlands from the damages provoked by large-scale industrial pollution. Nowadays, an industrial belt of more than 100 km in length renders most of Taiwan's West coast highly polluted for humans and animals as well as vegetation. A special role in promoting environmental awareness in a less confrontational manner was carried out by another association with a religious background, the *Buddhist Compassion Relief Tzuchi Foundation* (慈濟基金會).

Such organizations, with their efforts to solve environmental problems in non-confrontational ways, coupled with several changes affecting economical processes, such as the aforementioned emigration of polluting industries abroad and the ensuing industrial restructuring that followed, are all aspects that contributed to the slow but gradual establishment of an improved environmental situation. From the study of these early streams of Taiwan's environmentalism, we can observe how the anti-nuclear movement has been political right from the start (Ho, 2003, 2014a; Jobin, 2010) – therefore joining forces with oppositional

parties such as the DPP – while the conservation movement has always striven to be perceived as non-politicized and neutral.

At any rate strict categorizations of the different streams composing the environmental movement have become outdated nowadays due to a partial – sometimes complete – overlapping between both leaders and members of many diverse groups (from anti-globalization forces to anti-nuclear ones), who have combined efforts in fighting for causes such as land evictions, polluting industries or super-imposed, controversial trade agreements. In the case of Taiwan's eighth petrochemical plant for instance, the anti-pollution and the conservation movements joined forces in view of the common goal of avoiding the destruction of a pristine wetland and its ecosystem and of pre-emptively fighting the forecasted negative health-damages for the local residential community.

The growing environmental awareness of the country is also reflected in the political platform of some of the more environmentally oriented parties, under Taiwan's "new," democratic, multi-party system, which has taken root in Taiwan since the watershed year of 1987. Among these, a prominent position is occupied by those parties belonging to the so-called Pan-green (翻錄 *fanlu*) coalition: the Democratic Progressive Party, the Taiwan Solidarity Union and the Green Party. First and foremost it is the DPP, formally established in 1986 by family members and lawyers of former political prisoners, that turned environmental protection into one of the core components of its political credo. However, as the party became more institutionalized, starting from the early to mid 1990s, its alliance with the environmental movement and its commitment vis-à-vis nature conservation gradually faded away, substituted by the need to boost the country's economy. More details in regards to the DPP's role towards the environment will be given in the course of the next section. The Taiwan Solidarity Union, established in 2001, claims to be in favor of a green Taiwan but is, according to several of my sources, putting developmental concerns first, just like the DPP (Lai Rong-xiao, interview, September 1, 2011; Lai Fen-lan, interview, October 30, 2011). Last but not least the Green Party, more on which will also be said in the course of the next section, established in 1996, enumerates among its members a small but fervent number of ideologically motivated adherents, who are active in the organization of protests, campaigns and vigils for several environmental issues.

### **Environmental issues under the DPP (2000–2008)**

As previously stated, the link between politics and environmental issues in Taiwan should not be underestimated. Environmental concerns, among others, were an important driver for people to vote for the Democratic Progressive Party in the year 2000, thus ending 55 years of uninterrupted rule by the Nationalist Party. A mix of fortuitous elements, such as a strong earthquake that hit the country in 1999, revealing the low quality of buildings and cheap constructions all over Taiwan, and daily scandals of small-sized businesses disposing liquid and solid wastes into water bodies and landfills with impunity, ensured that

environmental issues featured more prominently in the presidential elections campaign than in the past.

Even though with every election, pre-electoral canvasses and tactics will focus on warning one's electorate about the risks brought about in case of victory by the opposing party, in reality numerous issues tend to remain exactly the same, regardless of who is ruling the country. A good example is Taiwan's environmental deterioration, to which the DPP vowed to put an end, if ever elected, since at least the 1990s but continued unabated even after the party succeeded in winning its first presidential election in 2000. Before this watershed victory, Taiwan's future president, Chen Shui-bian, had promised to scrap controversial projects such as NPP-4, clean up polluted sites and enforce more stringent environmental regulations (Ho, 2005b: 412; Lai Fen-lan, interview, June 29 and November 24, 2011). Under direct pressure from either the DPP or from activists who had joined the party hoping to bring positive results, numerous provisions for environmental protection were indeed enacted. Until the mid-1990s, household garbage often festered in piles on public streets as trash collection was haphazard and there was no formal recycling policy.

Under the political patronage of the DPP, small cities and towns were cleaned up, a recycling system was established and increased transparency of operations and a more inclusive attitude towards activists became the norm (Arrigo and Puleston, 2006: 170). In fact, the DPP's earliest electoral campaigns were focused on delivering better quality of life at the localities by instituting modern transportation systems, cleaning up air and water courses, setting up parks and other recreational spaces and decluttering streets. The establishment of a capillary system for garbage collection, the setting up of numerous recycling facilities island-wide and the efforts to improve the ecological and residential environments of small towns and cities, drove many Taiwanese to vote for Chen Shui-bian, in the hope of replicating those positive local results at the national level. For environmental activists and eco-conscious individuals, the change in ruling parties represented a chance to redress the various imbalances that had led Taiwanese people and their rulers to favor economic growth over ecological concerns for over four decades.

However, after the DPP began its ascent to "institutionalization," scoring more than one-third of seats in the Legislative Yuan election of 1992, it gradually assumed a more cautious approach towards both social movements, wanting to change its image of an "unrefined" party (Ho, 2005b: 407), and towards environmental issues, considered as an obstacle to economic development. In fact, as a budding democracy with an industrial system in the making, the regime had to sacrifice its goals and compromise with big businesses in order to consolidate the country's economic development (Williams and Chang, 2008: 88; Jobin, 2010: 48, 52). Barely four years into Chen Shui-bian's presidency green activists were greatly disappointed with the ambivalence of many DPP legislators towards scrapping controversial plants or sacrificing economic goals to protect the environment (Lyons, 2009: 69). The rising unemployment rates and the worsening of the economy, coupled with corruption charges towards the administration,

contributed to create a negative reaction towards the DPP presidency. In order to stabilize its precarious situation as “leading party” while the KMT continued to enjoy better local contacts and a capillary distribution of power at the localities, the DPP sought a compromise, which would make it more “acceptable” in the eyes of big business conglomerates, by sacrificing environmental protection (Arrigo and Puleston, 2006: 171). At the same time, mostly preoccupied with the country's economic setback, Taiwanese' support for environmental protection quickly diminished. As told to me by Paul Jobin, former director of the French Centre for Research on Contemporary China, CEFC, Taipei Office (2009–2013):

Some of the most “liberalizing” actions towards industries were in fact met during Chen Shui-bian's Presidency; the legal framework concerning science parks was revised by the Legislative Yuan with the aim of releasing them from the control of local governments. As a consequence, these parks became grey areas, immune from laws such as the Environmental Impact Assessment Act.

(Jobin, interview, October 4, 2011)

The DPP's change of attitude is best exemplified by former president Chen Shui-bian's behavior throughout the years. At his inaugural speech in 2000, his first announcements concerned his grandiose plan to turn Taiwan into a Green Silicon Island<sup>10</sup> (綠色矽島 *lüse xidao*) and the DPP's plan towards environmental protection, embodied in Taiwan's economic plan from 2002 to 2008, “Challenge 2008” (Williams and Chang, 2008);<sup>11</sup> barely one year later, at the Economic Development Advisory Conference held in August 2001, faced with the many financial and industrial difficulties of the country, he went so far as to claim that the EIA was a “roadblock to economic development” and that he “would like to ‘kneel down’ to the EIA reviewers on behalf of business” (as quoted in Ho, 2005a: 350). This Green Silicon Island slogan, chosen by Chen Shui-bian in the late 1990s, was meant to symbolize what the DPP strived to achieve if successful in the electoral competition of the year 2000 (Williams and Chang, 2008: 1). The basic idea behind it was the successful realization of Taiwan's industrial growth in information technology without damaging the surrounding environment. Nevertheless, as amply demonstrated by the objectives listed in the plan, its critics have vehemently argued that the DPP has betrayed its original commitment towards ecological safeguarding by focusing largely on economic goals, job creation and development of new infrastructures (Ho, 2005a: 342; Williams and Chang, 2008: 87; Tsui Shu-hsin, interview, March 24, 2011).

This change of attitude angered environmentalists who, in 1996, established a new political organ, the Green Party of Taiwan (GP), modeled along its German counterpart (Lai Fen-lan, interview, October 30, 2011), with the aim of capturing the sympathies of those who felt betrayed by the DPP's change of heart towards environmental protection. While the DPP was initially worried about this new political adversary, the GP failed to become a full-fledged political party, capable of threatening the DPP's electoral base (Ho, 2003: 703; Jobin,

2010: 48).<sup>12</sup> During the last presidential election held in January 2012, numerous Taiwanese had still never even heard of a “*Lù Dang*” (台灣綠黨 *Taiwan Lùdang*). Even though the Green Party received almost 230,000 votes in January 2012, thus increasing its share nearly threefold – from 0.6 percent in 2008 to 1.74 percent in 2012 – making it the country's fifth political party, it still did not succeed in reaching the 5 percent threshold that is required to win a seat in the legislature (Chiu, 2012). The real “Green Party,” in the minds of many Taiwanese, remains the DPP (Williams and Chang, 2008: 88). As aptly put by Paul Jobin:

Despite its very limited number of members, the Green Party continued to play an active role in environmental issues, but more as a member of the environmental movement at large rather than as a political party *stricto sensu*, or as an alternative to the TEPU, which is too closely associated with the DPP.

(Jobin, 2010: 48)

Even though numerous activists maintain that the DPP betrayed its promises, several positive results for the implementation of a green governance system were nevertheless reached under its aegis. As previously shown, while a first EIA law draft had been proposed already in 1983 it was a mere façade, designed to appease environmentalists' concerns while catering to the interests of businesses (Ho, 2004: 240). In 1994 a series of effective measures such as the acquisition of veto power on projects and increased public participation through public hearings, turned the EIA into an effective tool for individuals trying to access political decisions in regards to developmental projects. This was only made possible thanks to the changing political situation and the increasing number of social movements' leaders recruited by the DPP in the actual writing phase of environmental legislation drafts, thereby reaching a level of efficacy that was unprecedented. Other activists yet were assigned influential positions from which they were able to pass important pieces of legislation on behalf of the environment (Lyons, 2009: 62). But the most visible changes in the environmental realm took place at the local level, in townships and villages, where numerous DPP-dominated counties, more sympathetic and encompassing towards social activists, enacted new pollution-curbing regulations and recruited social activists into their ranks (Ho, 2005b: 407). However, with the increased institutionalization of social activists, formally enlisted in the DPP's ranks, environmental protesters shifted their *modus operandi* from the streets to more formal policy channels (Ho, 2005b: 410). More conventional “contentious politics” forms of protests have only recently been revived, in connection with the campaign on part of activists to stop the construction of NPP-4, which has seen a phase of resurgence since 2011, or against the island's eighth naphtha cracker (2008–2011), expounded in Chapter 3 and 4, respectively. Since the KMT's return to power in 2008, and especially after Ma succeeded in winning his second presidential election in 2012, many social activists and groups have



resorted to more radical forms of protest and mobilization techniques of the past, feeling that their demands and complaints were being, increasingly often, ignored by the government (Cole, 2014).

### Environmental concerns since 2008

In recent years the link between the environmental movement at large and the outcome of political elections and campaigns has become stronger. While both nuclear energy issues and chemical industry pollution had gradually lost importance in the 2000s (Jobin, 2010: 50), in light of the recent Fukushima nuclear catastrophe and planning efforts for the construction of a facility of the caliber of KPT (the already named eighth naphtha cracker), environmental concerns featured prominently during the pre-electoral campaign year in 2011 (Jacobs, A., 2012; Jobin, 2012). In fact, one of Tsai Ying-wen's (蔡英文) – the DPP presidential candidate in 2012 – basic tenets, consistently reiterated throughout her campaign, was the goal of turning Taiwan into a “nuclear free homeland” (非核家園 *feihe jiaoyuan*)<sup>13</sup> by the year 2025 (Tsai Ying-wen, 2011).

As Linda Arrigo and Gaia Puleston noted, one of the reasons why the KMT was unseated from power, after governing for more than 40 years, during the island's second democratic election was the mounting opposition against Taiwan's fourth nuclear power plant project, which the DPP had vowed to fight since the end of the 1990s (Arrigo and Puleston, 2006: 165). Afterwards, at the national level environmental issues were almost ignored both in the 2004 and 2008 campaigns, featuring more prominently in local elections; however, the numerous events of 2011 have brought back environmental concerns to the fore, turning them into crucial elements of political campaigning for politicians to attract votes.

Following a necessity to restructure in order to keep up with electoral competition, under Taiwan's newly established democratic system, the KMT has gradually transformed itself. Due to the changes in the international situation and the country's undefined status, it has gradually come to accept Taiwan as home, thus coming a long way from viewing the island as a short-term base and unreined-in industrial development as a *must* for its economic take-off. Nonetheless, certain clientele networks and attitudes typical of the authoritarian era, which accord priority to private interests and favoritism, are still a common feature of many “behind the curtain” deals taking place between developers and local governments, as we shall see with the four case studies. Such behaviors however, are no more an exclusive prerogative of the KMT, with the more radical fringe of the environmental movement and Green Party members considering both the DPP as well as the KMT as “part of the problem.”

Starting from 2008 (Ho, 2010a) the environmental movement, as well as civil society in general, has seen a phase of resurgence and activism, especially visible among younger generations. The official incident, which marks the beginning of such a resurgence, is Chen Yun-lin's visit in November 2008 as the first official Chinese envoy to set foot in Taiwan in 60 years. His visit took place in a period

in which numerous Taiwanese were beginning to think that their personal freedoms were slowly being curtailed by the state apparatus.<sup>14</sup> This return to semi-authoritarian and coercive forms of control sparked a wave of protest among students, who organized a big demonstration against police brutality; an event that was later portrayed in Chiang Wei-Hua's film *The Right Thing* and has become the object of study of several civil society scholars, who take it as the beginning of the resurgence of Taiwanese civil activism (Ho, 2010a). In general, as noted by Dafydd Fell, in comparison to the KMT of the 1990s, which chose dialogue over suppression and allowed for the gradual establishment of reforms that met the requests of civil society, such as direct presidential elections (Fell, 2012: 189), the latter administration has, so far, displayed a total disregard for and failure to respond to students' and civil society's requests on several issues, ranging from the abolition of the *Assembly and Parade Act* to demanding a clause-to-clause revision of the service trade agreement, thus creating the conditions for a more radical reaction on the part of the students, who felt that in no other way could their voices be heard.

As far as the environmental movement is concerned, starting from 2008 it has scored some groundbreaking victories. Among these is the success in obtaining – via a public referendum – the abandonment of a plan to have a casino built on the Penghu islands after the liberalization of the casino industry promoted by the KMT.<sup>15</sup> On an even bigger scale, between 2008 and 2011, environmentalists successfully opposed and stopped the construction of Taiwan's controversial eighth naphtha cracker, which was initially moved to Pengerang Malaysia (where China Petroleum Corporation hoped it would encounter less opposition) and finally canceled in 2013 by the developer for financial motivations. All the case studies analyzed in the book are perfect to illustrate this new-found vitality, with social movements frequently resorting to “old-style” methods like street protests, petitions, demonstrations in front of relevant governmental organs and concerts with famous artists as well as more advanced and novel participatory approaches that make use of available legal channels to protest inside the system. Despite the renewed vigor of protesters in fighting polluting complexes and the involvement of several high-profile lawyers who fight alongside with them, the case studies in this volume have brought to light the persistence of old clientele networks, which tend to “lighten” the burden of legal environmental obligations (such as the EIA process that developmental projects over a certain size have to pass) for big businesses, with the aim of providing them with cheap land and water supplies. Previous suppressive actions, employed against those who opposed naphtha crackers, industrial parks and nuclear plants guilty of destroying wetlands and fertile lands around the island, have gradually been substituted by a war of experts with contrasting opinions, on the payroll of each faction.

Finally, one of the biggest changes that has taken place in the past few years in the environmental sphere, is the growing importance accorded to ecological issues as topics of national prominence; a focus that has grown stronger after the watershed year of 2011 with both parties competing to include green issues in their presidential platforms for the 2012 elections.

Before diving into the analysis of the actual case studies it is necessary to get better acquainted with one of the key players in this ongoing environmental struggle with the state: namely green activists, through the information gathered via several in loco interviews and analysis of relevant literary sources.

### **Environmental activists in contemporary Taiwan: achievements and difficulties**

As previously shown, in the early days Taiwan's environmentalism was comprised of different actors: from middle-class intellectuals and scholars educated abroad – aware of the need to protect the environment and in tune with the international environmental community and the dominant environmental discourses – to victims of pollution, whose scope and interests rarely extended beyond that of their immediate surroundings (Ho, 2012: 6). These two groups sometimes collaborated and sometimes came into opposition as they were, to borrow from Ho (2012: 6) “operating in [a] different universe of meanings.” Frictions were particularly severe when monetary compensation for pollution, viewed by middle-class intellectuals as a “selling-out” of the environment, was involved. While such tensions were extremely high in the 1980s and 1990s, with mutual incomprehension fostering suspicion and pitching one group against the other (Ho, 2006: 52), the situation has, since then, gradually improved and there is currently abundant evidence of cooperation among the different groups comprising the environmental movement, facilitating a positive outcome for protesters. Furthermore, a plethora of newer figures, from the lawyer/activist to the members of a more radical anti-globalization fringe have recently joined the ranks of Taiwan's environmentalism.

In the various cases analyzed in the book, especially those that take place in rural areas, where local residents are less informed in comparison to their urban counterparts, middle-class professionals and social activists have cooperated closely with rural villagers, to educate them and provide them with legal aid and assistance. The “elitist” attitude of environmental activists, more preoccupied with providing rich urbanites with an improved urban environment than dealing with the plights of the rural population, has been radically transformed by this new generation of green activists, who target rural villagers as main recipients of their aid efforts; most notably, in this regard, is the already named Taiwan Rural Front.<sup>16</sup> Rural residents, on the other hand, have come to realize that their chances of victory against powerful business lobbies are greatly diminished if they fight alone, thus they eagerly welcome the assistance of better-established urban activists and NGOs. While the environmental movement has come a long way in Taiwan, becoming stronger and unified against powerful industries, vicious factionalism can still be found among green activists, often proving detrimental to the promoted cause; such was the case in the Taipei Dome developmental project, which will be illustrated in Chapter 5, where a fruitful cooperation between different groups was partly hindered by the quarrels of the main protest leader with one Green Party member and with a committed lawyer, who had offered his help pro bono. This capacity of making environmental

concerns “trans-local” by establishing broader coalitions, able to garner nationwide attention, has simultaneously rendered the environmental movement less partisan and more autonomous as well as establishing the conditions for a mounting national support towards their campaigns. Particularly significant is the skilled employment of key experts on the part of activists, such as lawyers fighting through the employment of rules and regulations, and medical experts and epidemiologists, releasing several studies on past and future (forecasted) effects of pollution on human health, which enhance their battles' credibility.

While during the authoritarian era it was the KMT that defined activists as “hooligans,” many of my sources in the environmental movement have used the word *liumang* (流氓) to describe the intimidating and rogue techniques employed by both construction companies and local governments to make them desist in their quest to stop construction projects. Some of my interviewees claimed to be afraid of physical attacks and of threats still being common (Chen Man-li, interview, July 20, 2011). For instance, Chen Chiao-hua (陳椒華), long-time environmental activist, was attacked in 2011 by masked men in Tainan for her participation in a campaign against a local garbage dump in Dongshan (東山) District (Chen Chiao-hua, interview, July 28, 2011). The incident sparked a wave of protests on part of environmentalists all over Taiwan. Another source, who prefers to remain anonymous, related several silent phone calls she received at night, when protesting against a high-profile controversial project involving relevant sums of money, and numerous instances in which her car tires were slit (anonymous informant, interview, March 14, 2011).

According to the *Taipei Times* and to some of my sources, several environmental activists – including *Wild at Heart Legal Defence Foundation* founder Robin Winkler (文魯彬 Wen Lubin), the foundation's secretary-general Lin Tzu-lin (林子凌), Green Party of Taiwan's former spokesman Pan Han-sheng (潘翰聲) and TEPU former president, Wang Chun-shou (王俊秀) – also claimed to have been either physically attacked or verbally threatened on several occasions (Loa, 2011; Pan Han-sheng, interview, September 1, 2011; Robin Winkler, interview, September 5, 2011).

In spring 2013, a couple of incidents where environmentalists trying to protect trees from being transplanted or felled were manhandled and handcuffed (with policemen seemingly misplacing the handcuffs' keys) have sparked concerns in regards to a possible return to semi-authoritarian forms of ruling and police brutality (Shih, Y.H., 2013). One positive note comes from Chen Man-li, the already mentioned chairwoman of the *Homemakers United Foundation* who, during our conversation, remarked how, in comparison to the 1990s when for activists it was quite dangerous to be working in the field of environmental protection, the situation has nowadays greatly improved, even though they still occasionally receive silent phone calls or threats, especially during a sensitive campaign (e.g., nuclear power opposition) (Chen Man-li, interview, July 20, 2011).

Nevertheless certain “performance” problems remain; while it is undeniable that Taiwan has steadily improved its environmental conditions, “green projects” are often showcases for boosting either the state or corporations' images. Miss

Chen shared with me her concerns that to this day, the real figures in regards to the collection of recycled garbage are actually being forged (Chen Man-li, interview, July 20, 2011). Her claim struck a chord when, a few weeks later, I was sitting under a shady tree in the lush green park of National Chengchi University (政治大學 *zhengzhi daxue*) with a friend, trying to find some solace from the scorching heat of a torrid August day. While we were lazily chatting away a garbage truck came by ready to collect recycled goods. In universities, as well as in many other public places in Taiwan's urban centers, citizens are required to recycle items that range from plastic bottles to glass and paper products. Schools enforce strict regulations and the same degree of severity is applied to metro stations and other public areas, with violators being subjected to heavy fines and penalties for infringing the law. Adding insult to injury is the overall lack of trash cans in Taipei, which puts eco-friendly citizens in front of a choice: either renounce buying something to drink – easier said than done given the abundance of 7/11 and convenience stores virtually everywhere – or end up holding their styrofoam cup for as long as 50 minutes without being able to discard it! To return to what I witnessed on that hot summer day, while the initial process is flawless, with students and staff collecting their items and neatly stashing them in differently labeled containers, my friend and I witnessed how the garbage truck, after picking up the trash, regrouped all items in a common pool without any distinction being made. Questions arise as to whether these trash items are later to be divided once again (most probably not) and why then do students and teachers have to go to such great lengths to divide their trash, only to have someone regroup all the items again! A possible explanation I received from Chen Man-li pointed to the government wanting to boost its image of an eco-friendly administration, with a responsible attitude towards basic fundamentals of environmental protection, such as recycling activities, without any real commitment (Chen Man-li, interview, September 21, 2011).

These, as well as other previously mentioned problems, still pose an obstacle to a proper functioning of an environmental protection system worthy of a modern and wealthy country such as Taiwan. While the country has come a long way in solving some of its most abysmal environmental problems, brought about by 30 years of uncontrolled economic development, politics have become so intertwined in environmental processes that it is often unclear which parties are truly committed to the environmental cause and which are exploiting and heralding green issues simply to attract more votes. This aspect will be further expounded through the analysis of four emblematic case studies in the course of the following chapters; suffice to say that while everywhere in the world the political system is closely intertwined with economic transformations (and thus environmental damages) in Taiwan this dimension is even stronger. Paradoxically though, even though environmental issues have been playing a fundamental role in Taiwanese politics for the past 30 years (in the process of institutionalizing democracy, in the DPP's electoral strategy – and lately also in the KMT's), in practice, though often sugarcoated in eco-friendly and green discourses, the dominant imperative still seems to be "business as usual."

A positive turn of events is to be found in the recently occurred emancipation of the environmental movement from the DPP, after several years of close collaboration, which hindered environmental and ecological issues from becoming cross-partisan. Partly because of anti-nuclear concerns and partly owing to activists' disenchantment with the DPP's true stance in regards to NPP-4 and environmental issues, several younger activists have distanced themselves from their forerunners, putting an end to the idea that ecological safeguarding is an exclusive prerogative of the DPP and have grown nearer to the Green Party and other smaller and more independent organizations.

## Conclusions

While the early democratization process of the 1980s legitimized environmental protests for the first time in Taiwan's history, incorporating public participation and requests in the policymaking process, the DPP's first electoral term propelled the country back towards a business-oriented mentality. The party, early on the most natural ally for environmental activists, has meanwhile come to be viewed with suspicion on the part of environmental activists, as guilty of having "betrayed" its original commitment.

Today Taiwan is politically a deeply divided country; the two main parties and their allies all share different views on a variety of issues ranging from economic development and environmental protection to the island's future, which render governmental efficiency volatile and the electorate fragmented; this, in turn, makes it more difficult for environmental agencies to implement regulations that could effectively protect the environment. Nevertheless, Taiwan has come a long way in its economic development and has borne the brunt of its initial unrestrained economic growth. For several decades decisions were taken from the top down without seeking any consultation among citizens thus producing an unprecedented damage to land, soil, air and water resources not to mention human health. However, in parallel with its impressive race towards democratization, increasing ecological and human rights' awareness has gradually but relentlessly driven citizens to expect a higher quality of life and to demand respect for the surrounding ecosystem. Three decades of environmental activism have transformed and rooted Taiwan's environmental consciousness. Cities are less polluted and more livable, a system of public transportation has been established and several polluting facilities have relocated away from Taiwan.

Increased wealth and democratization have brought about environmental improvements, but many aspects that would ensure an effective and efficient system of ecological governance, such as low levels of corruption and a solid regulatory system, are still either missing or hampered by hard-to-die bad habits, "endemic" to Taiwan. The following chapter will focus on one of the most controversial projects inside Taiwan, which has sparked conflict and problems in an endless battle that has been raging for more than a quarter of a century: Taiwan's fourth nuclear power plant.

## Notes

- 1 *Xiangtu Wenxue* (鄉土文學), literally "Literature of the Village Soil," despite the multi-faceted and interconnected meanings it has in Chinese, is used to define the literary genre that focuses on the agricultural, rural and traditional way of life rather than on urban, modern life.
- 2 As shown by Ho in his comprehensive study of the environmental movement in Taiwan "Green Democracy" (綠色民主 *Lüse minzhu*), conservationists were crucial in helping to establish a different cultural mind-set and for changing what he terms as "Chinese bad habits," meaning, for example, the culinary custom of eating wild animals and migratory birds, to this day still considered as "delicacies" in the Chinese cuisine. In 1979, precisely the protection of migratory birds sparked one of the earliest confrontations between conservationists and locals in Kending, Hengchun peninsula. The designation of the Kending area as a "protected national park" in that same year had brought on severe limitations to locals' consumption habits (Ho, 2006: 39).
- 3 This incident refers to a protest against DuPont's plan of building a petrochemical plant in Lukang (鹿港), which ignited opposition by local residents and officials that resulted in DuPont's voluntary withdrawal of the project (Reardon-Anderson, 1997).
- 4 Linda Arrigo is an historical figure in Taiwan's struggle for democracy and human rights with deep ties to the environmental movement. In the past she acted as the international spokesperson for the Green Party of Taiwan. She is currently working at Taipei Medical University as an associate professor.
- 5 In 2004, Tsui Shu-hsin, secretary-general of GCAA, produced a documentary on the lives of Gongliao locals, shattered by the incident that had taken place in 1991. The acclaimed documentary is called "Gongliao, How Are You"? (貢寮你好嗎? *Gongliao ni hao ma?*).
- 6 According to Hsiao (1999: 35) in the 1990s the percentage of pre-emptive protests was at about 16 percent, nevertheless a significant increase in comparison to previous decades in which no protest of the pre-emptive kind took place, indicating a lack of trust towards the government's willingness to solve the island's abysmal environmental situation.
- 7 Houchin (後勁) is a village located in the vicinity of Kaohsiung, where local residents opposed an expansion project by China Petroleum Corporation (CPC) in 1987 and started a protest that lasted three years (Weller, 1999: 115–120; Ho, 2005c: 239); elements of folk religion made up a significant portion in the collective action repertoire employed by protesters.
- 8 This being part of the reason why Taiwan's local anti-pollution movement has been defined as being a "populist" type of movement (Hsiao quoting Szasz, 1999: 35) in which actions are usually started at the local level – with little initial help from outsiders, such as green organizations or concerned intellectuals.
- 9 Chen Man-li, chairwoman of the *Homemakers United Foundation*, told me during our first interview (on July 20, 2011) that the initial spirit of the foundation, as it was established in 1987, was to show that women could be something more than mere housewives, caretakers and cooks; they, too, have an important role to play in society *outside* of the family. Again, as is often the case with pioneering environmental movements, rather than being solely aimed at protecting nature, such ideas and concepts were first and foremost attempts to change the predominant mentality of those times, which considered women's duty and goal in life to be dutiful spouses for their husbands and good mothers for their children. Thus, such associations played a crucial role in trying to raise women's status in society from de facto "second-class citizens" to a position of parity with that of the other sex (Chang, 2009).
- 10 A reference to California's Silicon Valley, based on the fact that Taiwan has built its fortune on the semiconductor and electronic microchip industries.
- 11 For information on the Six-Year National Development Plan see Shapiro (2002).
- 12 Its core membership is varied with a good selection of affiliates representing aborigines, reform activists and environmental activists.
- 13 It is my impression, gathered by talking to several people from all walks of life during the year 2011, that such claims on part of Tsai were perceived by many as naïve, not supported by facts and lacking any basic explanation as to what kind of energetic sources Tsai would use to substitute nuclear energy, which prompted many to think of such declarations as simple electoral campaigning strategies, devoid of any real commitment.
- 14 A notable example is to be found in Professor Ho Ming-sho's discomfort in being contacted by the Environmental Protection Administration, expressing the agency's concerns over an op-ed article he had written (Ho, 2010a: 17; Ho, interview, August 30, 2011).
- 15 In July 2012, a similar referendum was held on Matsu Island with 54 percent of local residents voting in favor of the central and local governments' plan to build a casino in even closer proximity to the mainland, in order to boost Matsu as a gambling and tourist destination (Our Island, 2012a). The casino is scheduled to be open at the earliest by 2019 (Chen, 2013: 89).
- 16 It has to be noted that it is increasingly frequent for young, charismatic protest leaders to travel around Taiwan to explain their group's strategies while trying to garner support for their cause among the rural population. Particularly active in this regard have been the members of the Sunflower Student Movement.

### 3 Nuclear energy and the fourth nuclear power plant controversy

#### A short story of nuclear energy in Taiwan and the birth of the anti-nuclear power movement

Nuclear power seemed to be a promising form of energy in the aftermath of World War II, because it guaranteed clean and cheap energy supplies, which would not wreak havoc on air and water, while helping power-hungry nations recover from the disasters of the war. In 1955 the Taiwanese government established the Atomic Energy Council – AEC – (原能會 *yuanneng hui*), which would become the leading organ in nuclear-related issues in Taiwan, responsible for radioactive medical wastes, nuclear wastes' safety regulation and radiation protection among other tasks. Back then nuclear energy was seen as a cure-all solution to the growing insecurity surrounding oil and was viewed as a matter of national sovereignty, which had to be included in the so-called “Ten Major Construction Projects,” a state-led program to industrialize the country (Ho, 2014a: 4).<sup>1</sup>

Taiwan entered the nuclear energy business during the KMT era, a period during which decisions considered crucial for the nation's economic well-being were taken by the government without prior discussion, nor any attempt to search for consent among citizens; at that time priority rested with industrialization, which in turn demanded a large amount of cheap energy (Williams and Chang, 2008: 72). On this last point there is speculation among experts and environmentalists that the drive towards nuclear energy was not entirely domestically dictated but at least partly externally driven by countries such as the United States and England, which had a strong interest in finding new markets for the sale of their nuclear reactors; Taiwan was one of these countries (Hoare, 2013: 29).<sup>2</sup>

For all of these reasons, especially in the 1980s, a decade in which the state placed a strong emphasis on economic development, nuclear power generation came to be seen as indispensable to sustain high growth (Hsiao, 1999: 38). By 1985 Taipower had already finished building all three existing nuclear power plants and was planning a total of 20 reactors on the island by the year 2000. The total number of currently functioning reactors in Taiwan has stopped at 6.

Construction of the first plant began in 1971 in Shimen (石門),<sup>3</sup> Taipei County (which changed its name to New Taipei City in 2010), the second plant

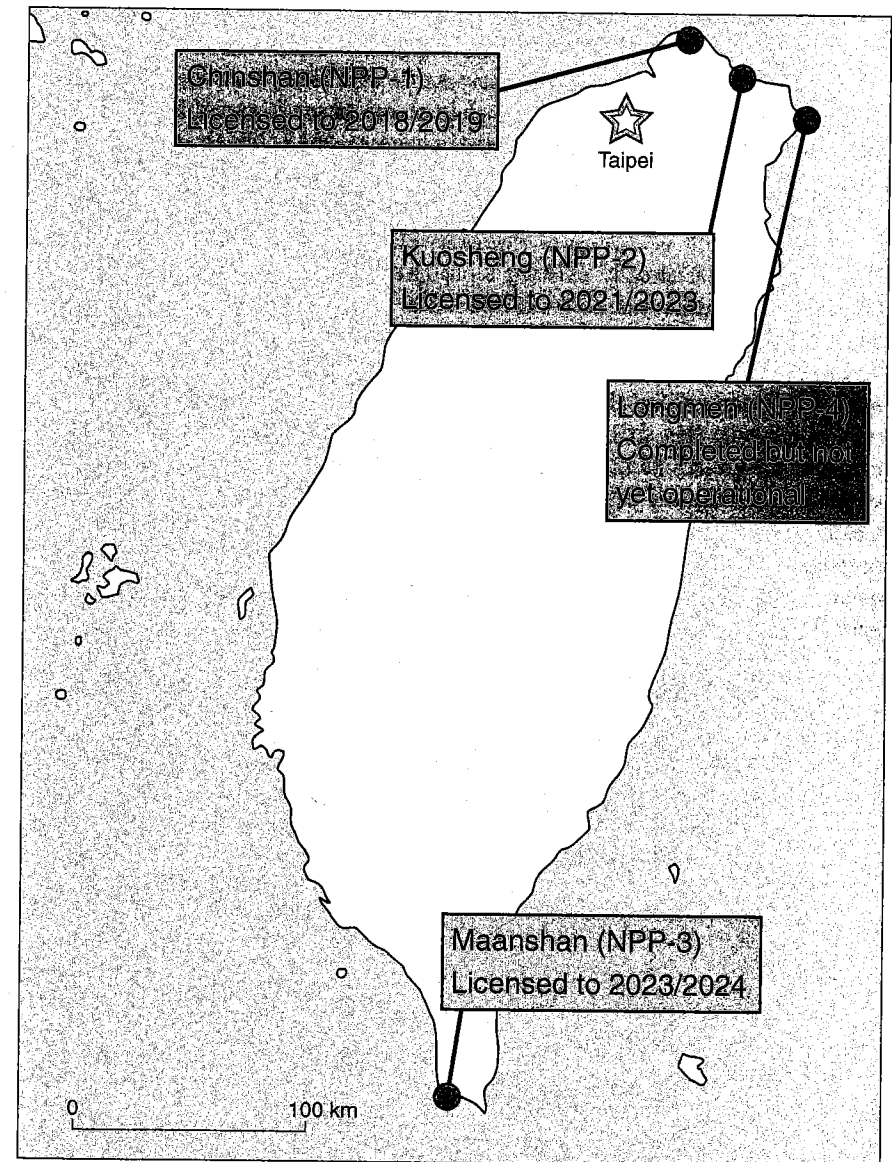


Figure 3.1 Geographical location of Taiwan's power plants (source: Simona Grano).

started in 1974 in Wanli (萬里), also in Taipei County, while construction of NPP-3, set in Hengchun (恆春), Kenting (墾丁), began in 1978. The three plants are all operated by state-owned Taipower – under the Ministry of Economic Affairs – and are expected to have a 40-year lifespan. They have been operational since 1978 (NPP-1), 1981 (NPP-2) and 1984 (NPP-3) (Ho *et al.*, 2013:

775). Geographically, two power plants are located in northern Taiwan, NPP-1 and 2 – and one in southern Taiwan – NPP-3.

Five of the six units underwent minor upgrades at the end of 2008, resulting in net 44 Megawatt electric (MWe) increase (World Nuclear Association, 2014).<sup>4</sup> The oldest reactors, those of the Chinshan plant, meant to expire by 2018 (Shih, 2012: 296), had been granted an extension up to 2037, which was then withdrawn in November 2011; those of NPP-2 and 3 should be operational until 2021–2025 (World Nuclear Association, 2014). The six reactors currently provide 19 percent of Taiwan's electricity (Ho *et al.* 2013: 775; Mathews and Hu, 2013: 2). The already existing three nuclear plants comprise four General Electric boiling-water reactors – BWR – (the same kind as those in Fukushima) and two Westinghouse pressurized water reactors.<sup>5</sup>

Until the 1990s, when independent providers were allowed into the energetic market following political liberalization, generating electricity had been a monopoly of the state (Ho, 2014a: 4). Nuclear energy though, remained tightly in the hands of the government, with Taipower and AEC being among the proponents of the indispensability of nuclear power to ensure the country with a cheap and steady source of electricity. Public opinion was initially greatly influenced by the propaganda campaigns financed by both Taipower and by other governmental agencies such as AEC, which produced books, comics and marketing gadgets to spread the notion that nuclear power stations represented the cleanest and safest

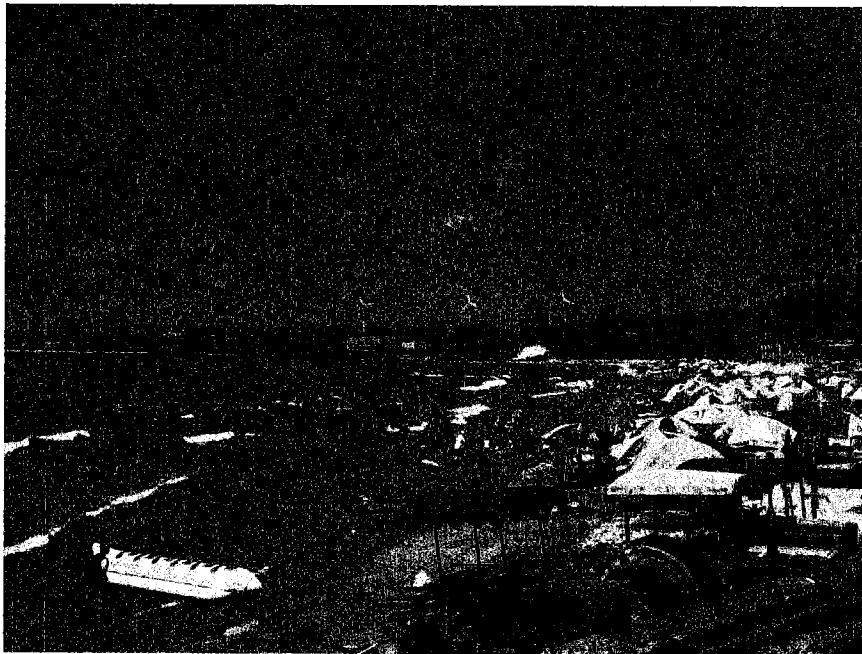


Figure 3.2 NPP-3, located right behind a famous beach in Kenting's national park, August 11, 2011 (source: Simona Grano).

form of energy and that radiations had several useful secondary effects, such as for instance making fruits and vegetables grow bigger (Schafferer, 2001: 103). Even though such propaganda efforts were initially successful, this mind-set changed quite quickly when problems such as how to deal with nuclear wastes and incidents such as Three Mile Island in the United States (1979) and Chernobyl in Ukraine (1986) made nuclear issues (and related fears) known to the general population, stimulating opposition. Furthermore those were the years in which several Taiwanese scholars and students who had left for the United States to pursue their degrees, finally returned home. Some of these American-trained experts and scholars began questioning the KMT-led nuclear expansion plan and started to spread the global anti-nuclear discourse in Taiwan (Weller, 2006). Growing support for the anti-nuclear camp was further helped by a series of incidents and stalls that took place in the early 1980s. In fact it was a fortuitous fire that had taken place at NPP-3 (whose budget ended up costing double the price of the originally approved sum) in 1985, which together with the Chernobyl incident, delivered the first serious blow to the government's nuclear expansion plans (Schafferer, 2001: 99). A few months later, during a debate organized by the *Homemakers United Foundation*, one of the island's earliest organizations, Taipower officials were subjected to extensive quizzing by intellectuals and activists, worried about the feasibility and safety of the newly proposed plant, namely NPP-4.

While at first anti-nuclear voices came almost predominantly from academics and intellectuals after 1988, benefiting from the increase of individual freedoms following the lifting of martial law, local residents of Gongliao joined the protest, de facto symbolizing the birth of the Taiwanese anti-nuclear movement, which came to comprise concerned local residents, intellectuals and civil society organizations (Hsiao, 1999: 38; Ho, 2006: 74). Due to Taiwan's history of democratization, once martial law was abolished, creating numerous outlets to vent discontent (newspapers, television programs, public protests), many of the previously repressed social movements and opponents chose the anti-nuclear cause as their *cause célèbre* to attack the state.

One of the most active players in the early stages of the anti-nuclear movement was the afore-mentioned TEPU, established by a group of university professors and students, mostly congregating around Taiwan National University,<sup>6</sup> in 1987 (Shih, 2012: 301). While TEPU's commitment to the anti-nuclear cause is still strong up until today, in the past decade newer organizations, such as GCAA and *No Nuke Cultural Activism Group* have enjoyed greater visibility and play the leading role in the organization of the several anti-nuclear protests, flash-mobs and online events that took place between 2011 and 2014, as we shall see in the following sections.<sup>7</sup>

## Public awareness of nuclear energy and related risks in Taiwan

The degree of public acceptance of nuclear power differs from country to country and depends on the historical background of each place. Therefore, in some countries citizens are more passive and graciously accept nuclear plants (e.g., in France where the government has successfully spread the idea that it is necessary for the economic well-being of the country, and in Switzerland or Finland, where trust in governmental authorities is high) while in other places (Italy and especially Germany with its long-standing “green” tradition) citizens are active and proactive in battling new or even already existing plants. While the Fukushima Dai-ichi incident in 2011 sparked numerous reactions both in the Western world and in Asia, it is in the latter that several governments (e.g., the PRC) have decided to forge ahead with their nuclear expansion plans. Taiwan, whose geographical position and seismic nature are similar to those of Japan, has witnessed some changes in state-led energetic policies and decisions in the past few years, which are the direct outcome of certain outside events, such as the Fukushima incident, that will be analyzed in depth towards the end of this chapter.

As mentioned, different countries experience different historical evolutions, which have profound reverberations on how its citizens perceive nuclear energy. To fully understand the situation in contemporary Taiwan, a few elements, pertaining to the formation of a nuclear awareness in the ROC, have to be discussed first.

First of all, how did residents of the localities where power plants have been built, react to such “siting” decisions? As explained to me by Ho Ming-sho, when discussing the first nuclear power facility set up in Taiwan, local residents in Shimen initially welcomed NPP-1 and the new opportunities (in terms of job creation) it would bring (Ho, interview, August 30, 2011). However, barely one year after the plant had become operational in 1978, attitudes changed after villagers discovered that the huge heat release from the ocean water cooling system, coupled with the powerful chemical products employed to keep the pipes clean, had significantly diminished their catch of fish. A related issue, which contributed to add insult to injury for local residents, was the imposition of a ban on any new development in the area within five kilometers of the plant, which meant that locals would be excluded from the financial benefits derived from the rising prices of the real estate market, in areas located just outside the capital, such as Shimen, Chinshan and Wanli (Ho, 2006: 74).

A similar situation took place in the late 1980s and 1990s in Gongliao, after this location was selected for NPP-4. Since locals were already aware of the potential damages that such a facility could create, due to the previous experiences of other rural communities, such as Shimen and Wanli, a fierce protest had been mounting since at least 1987 as intellectuals, *Dangwai* (黨外) members and anti-nuclear scholars such as Chang Kuo-lung and Lin Jun-yi started to hold anti-nuclear speeches, informing the local community about the risks that awaited them and providing information of various kinds (Ho, 2003: 694).

In the early 1990s Taiwanese people’s awareness of nuclear risks was further heightened by a long-kept-silent scandal, involving nuclear steel rods. From 1982 to 1984 radioactive scrap metal and steel, scavenged from the nuclear plants, were melted into rebar and used in the construction of apartment buildings and schools in several counties in Taiwan.<sup>8</sup> The contaminated steel was purchased by a company named Shin-long, which smelt it and re-sold it to various steel-processing industries in northern Taiwan. Over 2,000 apartment units and shops are thought to have been built with such contaminated materials and at least 10,000 people are known to have been exposed to long-term low-level irradiation as a result (Chiu, 2001). More precisely, experts estimate that 15,000 citizens and students have received excessive low-dose-rate of gamma irradiation for between two and 15 years (Chang *et al.*, 2001: 655).

This situation was not publicly known until the year 1992. High amounts of radiation had actually been detected as far back as 1985, when a dentist set up an x-ray machine in his apartment in the Minsheng Villas (民生別墅 *minsheng bieshu*) in downtown Taipei. When the AEC went by to conduct a radiation-safety surveillance check, it detected dangerous amounts of radiation even though the x-ray machine was not plugged in (Arrigo and Puleston, 2006: 177).

The two officers dispatched to carry out the safety check on the machine submitted their reports to the AEC on April 1, 1985. AEC then charged two specialists with the task of tracing the source of the construction steel (Schafferer, 2001: 104). All results of the investigation were reported to the then director of the AEC, who decided to take no action. Rather than telling the truth – that the radiation came from the walls – AEC banned the dentist from operating the x-ray machine. The truth came out several years later, in 1992, thanks to a reportage by the *Liberty Times* (自由時報 *ziyou shibao*). Only then did Minsheng villa’s inhabitants first discover that their properties were radioactive. This fame sadly haunts this place today, with the Mingsheng villas having meanwhile been renamed “radioactive houses” (輻射屋 *fushe wu*) (Our Island, 2012b).

In an effort to help the victims seek redress for their grievances, Professor Peter Wushou Chang (張武修) led a research team at National Yang Ming University (陽明大學 *yangming daxue*) for five years (1995–2000), which kept track of more than 4,100 individuals who once lived in buildings that had been constructed in Taipei City between 1982 and 1984, using radioactive steel reinforcing bars (Peter Wushou Chang, informal communication, August 31, 2011). His study, concentrating on the incidence of diseases among residents of radiation-contaminated buildings, showed that the possibility of chromosome aberration (damage to DNA) was proportional to the long-term exposure of the subjects to low-dose radiation. However, even though the team observed a high incidence of cancer, especially cervical cancer, breast cancer, liver cancer, leukemia and thyroid cancer, in the subjects analyzed, due to the length that such studies require to turn out to be correct, it was ultimately impossible to conclude that there was a direct link between the cancer rate and such patients’ exposure to low-dose radiation (Chiu, 2001: 2).

The radioactive houses' story, sadly famous inside Taiwan, has contributed to spread knowledge and fear of the potential risks of an industry that had been, for a long time, similar to the petrochemical one, considered as "bringing prestige" to the country and as being "closely linked to the issue of sovereignty." Further, this episode serves as a tragic memento of the non-transparent behavior of the nuclear regulatory commission and governmental authorities not too long ago and of how such actions have tragically destroyed the lives of innocent citizens.

### NPP-4: a political controversy

The anti-nuclear debate and the long-standing fourth nuclear power facility project best exemplify the degree of continuity characterizing numerous issues in the environmental sphere, in spite of changes taking place at the political level. This controversial plant, by now built in its entirety, has encountered public opposition and a host of delays since its very first planning phase. In fact, while Taiwan's first three nuclear power plants were all built before the lifting of martial law, and thus with no involvement nor opposition from the public, the KMT government first announced its intention of building a fourth nuclear power plant in the 1980s, as the authoritarian one-party rule was slowly relenting its grip on society (Lupke, 2012: 159–160). Actual construction of the facility started in 1998 but the project has been marred by political controversies and stalling. If it ever becomes operational, NPP-4 will feature two more reactors, bringing Taiwan's total capacity to eight, belonging to the Generation III advanced BWR technology. While the plant was supposed to become operational by 2015 (United Press International, 2013), after the Sunflower Student Movement and the Lin Yi-hsiung strike in the spring of 2014 – two episodes on which more will be said at the end of this chapter – construction of the facility has been put on hold until a popular referendum will most probably settle its fate.

The saga of NPP-4 is a never-ending story of intrigue, political corruption, legal violations and drama that has outlasted two changes of ruling parties and clearly illustrates the strong link between environmental and political issues in Taiwan.

NPP-4 is also the emblem of the anti-nuclear movement's struggle in the country. Since the KMT government first announced its intention of building NPP-4, the project has been nearly canceled twice; people involved in its construction and planning have ended up in jail following corruption accusations and at least two persons have been sentenced to death because of it (Williams and Chang, 2008: 72; Lupke, 2012: 159–160). Its saga is widely known among the general public since its story, depicted in detail by the media, has been dissected virtually from every possible angle, from journalistic reportages on television show *Our Island* (2011c) to protests taking the form of politically dissenting documentaries such as already mentioned "Gongliao, How Are You?" by Tsui Shu-hsin, secretary-general of *Green Citizens Action Alliance*, the previously mentioned advocacy-focused grassroots movement, which deals with anti-nuclear issues, among other things.



Figure 3.3 Tsui Shu-hsin and Wang Chung-ming during a protest for the protection of Tamsui's mangroves, September 18, 2011, Tamsui (source: Simona Grano).

Since its very first planning phase, as political relaxation and democracy were settling in (after 1987) protests clustering around the Gongliao plant came to be characterized by a unique mix of elements from political power, public involvement, local and central government frictions and grassroots activism that would have been repressed in Taiwan only a few decades earlier (Lupke, 2012: 157). According to Michael Hsin-huang Hsiao, to justify the need for a fourth facility, the KMT sought to manipulate public ignorance in regards to nuclear energy by instilling the belief that due to energetic shortages, a fourth nuclear plant was inevitable. Hsiao also claims that Taipower has duly complied with this version of events by rationing energy whenever the anti-nuclear movement appeared most influential among the public (Hsiao, 1999: 49). However, more needs to be said about the historical circumstances surrounding the choice of Gongliao and the early planning phase for this facility.

Taipower had purchased land in Gongliao in 1983. Following the international reverberations of nuclear incidents such as the one in Pennsylvania, a group of activists and intellectuals started to fiercely criticize the government's intention to build a fourth nuclear power plant (Ho, 2006: 43, 74). In 1985, several KMT legislators, themselves opposed to the project, signed a petition demanding that the government suspend its construction. Even though the then premier Yu Kuo-hua (俞國華) set aside the issue temporarily by declaring that



“the fourth nuclear power plant was in no hurry to be built” (Ho, 2003: 692), the project was never truly halted.

In 1990 the construction of NPP-4 was made official and promoted as one of the major upcoming projects in the “Six-Year National Development Plan.” During Hau Pei-tsun’s premiership, in 1992, the budget allocated for NPP-4, which had been suspended since 1985 due to some internal strife inside the KMT government, was re-opened and NPP-4 became the symbol of the attempt to regain firm control over society, after the unruly years the country had experienced since the lifting of martial law; at the same time NPP-4 turned into the emblem of the government’s attention towards economic development. In 1991 the Ministry of Economic Affairs and its executive body, the Executive Yuan, approved the plan and had the Environmental Impact Assessment passed.

Even though, as mentioned in Chapter 1, back then the instrument of the EIA was still in its infancy, constituting a mere black-box process in which no degree of public participation was tolerated, opposition movements nevertheless did make several efforts to take part in the official EIA proceedings regarding the power plant. In fact, the Taipei County government, which was pro-environment, argued with the AEC and obtained five seats on the EIA committee, even though later on the AEC deprived these five anti-nuclear reviewers of the right to participate in the final decision (Ho, 2004: 244). In 1991, after the government announced that an EIA on the plant had in fact been approved, the Yenliao Anti-Nuclear Self-Defense Association (鹽寮反核自救會 *Yenliao fanhe zijiuhui*),<sup>9</sup> formed in 1988, launched a protracted protest and set up a barricade around the construction site. At the height of Hau’s premiership with its radical attitude towards social movements, the fierce battle between protesters and Gongliao locals on one side and governmental and police forces on the other had begun. The previously mentioned (in)famous incident portrayed in Tsui’s documentary took place in 1991 as a young military reserve on the side of protesters, Lin Shun-yuan (林順源), accidentally drove over a policeman when backing up with his truck. He was sentenced to life imprisonment, as if the killing were intentional (Tsui, 2004; Arrigo and Puleston, 2006: 177). The CEO of the Yenliao Association, Gao Ching-nan (高清南) was sentenced to ten years in prison. Seventeen others were indicted and found guilty (Ho, 2003: 697).

After the incident, further problems arose concerning the allocation of the budget, which was quickly rising due to the continuous delays in the plant’s protracted construction. The KMT, still in control of more than half of the seats in the Legislative Yuan, succeeded without problem in securing approval for the yearly budgets for the construction of NPP-4 from 1995 to 1997. The opposition declared that it would continue fighting against the allocated yearly sums in the following years. In 1999, after the Atomic Energy Council approved the license for the construction of the plant, the government revoked the fishery rights of Gongliao locals without any previous notice. At that point residents went to the Executive Yuan to protest against this decision (Tsui, 2004).

Ten days before the presidential elections of 2000, future President Chen Shui-bian (陳水扁) appeared in Gongliao and promised local residents that, if

elected, he was going to stop NPP-4. After he took office however, he did not proceed to immediately halt construction even though it could have been easier to do so back then, as the project was still at an early stage of its construction, at the foundation of the first reactor (Ho, 2003: 684). Due to mounting protests on part of anti-nuclear activists, he appointed a commission of 18 experts and industry representatives charged with the task of making some recommendations on how to proceed (Arrigo and Puleston, 2006: 178). Anti-nuclear activists were granted seven seats but no financial allowance for research, nor any authority to pressure Taipower into sharing relevant documents. Afterwards, barely five months after winning the presidency, the DPP made a reckless move to terminate NPP-4, without prior consultation or approval from the Legislative Yuan (Ho, 2005b: 412). The scrapping of the power plant was bitterly attacked in corporate circles and by sections of the KMT, in large part due to Taiwan’s mounting economic troubles; being nearly 30 per cent completed, NT\$40 million had already been spent on the project (Jacobs, B., 2012: 176).

Trying to “mend fences” with the KMT, Chen Shui-bian met with Lien Chan (連戰) on October 27 of that same year, to discuss the fate of NPP-4. Lien Chan proposed to continue with the construction while at the same time drafting a plan for a quick termination of the operational activities of the first three nuclear power plants (Jacobs, B., 2012: 177). Two hours after the meeting, the DPP Premier Chang Chun-hsiung (張俊雄) announced that the construction of NPP-4 would be halted, due to the difficulty in solving several thorny issues such as the nuclear waste problem and also stated that Taiwan enjoyed a surplus of electricity and was in no immediate need of another plant. The KMT then brought impeachment charges towards Chen by claiming that, by overturning the previously passed legislation without the permission of the parliament, the president had exceeded presidential authority and violated the constitution. However, this motion was never lodged and on November 25, 2000 the KMT publicly announced that its plans to have Chen Shui-bian impeached had been shelved. This course of action seems to be the result of popular surveys, indicating a slump in support towards Chen but not supporting his impeachment. Chen himself, after apologizing to the KMT, tried to avoid any further escalation of tensions, and appealed to the Council of Grand Justices, Taiwan’s highest court, to rule on the constitutionality of the decision to cancel the power plant. The latter released its constitutional interpretation, arguing that the order to halt the construction had not been issued properly, on January 15, 2001 (Ho, 2005b: 412; Lyons, 2009: 65); one month later, construction of NPP-4 resumed (Ho, 2014a: 8).

Rumor has it that DPP lawyers were prepared to battle the verdict of the highest court but that Chen Shui-bian took the decision to continue with the project, right after a meeting with Lee Teng-hui (李登輝), in which Lee’s political support for the DPP was exchanged for a continuation of the project (Linda Arrigo, interview, November 3, 2011). On January 31, 2001 the project was finally put up for vote in the Legislative assembly. The motion to continue with the construction was passed with 134 members in favor and 70 members

opposed. As noted by Shih Fan-long, “To complicate the matter further, the issue of nuclear power goes beyond domestic politics: considerable economic and political interests of superpowers and multinational companies were involved, affecting the delicate balance of international relations” (Shih, 2012: 303).

The ruling party’s change of attitude on nuclear energy was a bitter blow for environmentalists as they could see how the majority of DPP legislators fell silent on the issue of NPP-4 and Taiwan’s energetic future almost overnight, despite the “nuclear-free country” slogan being enshrined in their party charter since the year 1986 (Ho, 2003: 694). After more than a decade of sustained struggle, locals were extremely disappointed by the DPP’s turnaround on the construction of NPP-4: several community members became demoralized and the whole movement lost stamina (Shih, 2012: 304). Retracing a general pattern of social movements in Taiwan (Ho, 2010a) the local anti-nuclear platform and the Yenliao Association in Gongliao have both enjoyed a new phase of activism since the year 2010. Right after the Fukushima incident, as anti-nuclear activists organized a first protest parade on March 20, 2011, the DPP tried to re-launch its visibility by organizing banners and supporters for the protest. Activists were so angry at what they perceived to be a clear attempt at gaining votes that they coined the slogan “NPP-4 is a joint venture of both the green and blue camp” (核四是藍綠共業 *hesi shi lan lü gongye*) (Tsui Shu-hsin, personal email communication, July 6, 2012) to signal their distance towards both parties, deemed equally guilty for the protraction of this controversial project.

Even though NPP-4’s construction is de facto almost completed, anti-nuclear activists’ battle throughout the years has nonetheless produced numerous positive results. First of all it has forced the state to rescale its initial nuclear-expansion agenda, even though indignation and anger remain, for what concerns the amount of money spent on the facility. The cost of the project, the biggest of its own in Taiwan, was initially estimated to be around US\$6.5 billion (Power Technology, 2012) but it has now grown to US\$10 billion. In fact, according to opposition Legislator Tien Chiu-chin, Taipower calculated in 2000 that it would cost NT\$80 billion (US\$2.6 billion). The estimated cost nowadays is at least four times higher (de Changy, 2012).

### ***A long list of structural and operational problems***

Throughout the years a long list of scandals and incidents have marred NPP-4’s construction and delayed its operations.

First and foremost anti-nuclear activists worry about the elevated risks associated with an earthquake in a highly seismic country such as Taiwan; in fact, NPP-4 is located in the immediate vicinity of over 50 schools, at a distance of 40km from the capital, Taipei and within a radius of circa 100 underwater volcanoes, a few still active (Chao, 2012).

Another major problem pertains to the management and operational activities of the plant (Tsai, J., 2011). In fact, while the managing contractor is General Electric (GE), the turbines in the reactors have been contracted to Mitsubishi and

other parts of the reactors yet have been subcontracted to Hitachi and Toshiba, which are GE’s Japanese partners (Power Technology, 2012). A common fear among anti-nuclear activists is that, given the numerous companies having a stake in the project, should something happen, no one would take responsibility (Hsü Kuang-jung, interview, September 15, 2011; Lai Fen-lan, interview, November 24, 2011).

Furthermore, while the plant was, in its initial planning phase 25 years ago, supposed to be completely computerized, the project has taken so long to build that the sophisticated technology it was based on is by now obsolete; Taipower’s changing of the original design has also raised concerns among AEC’s experts, with a few officials resigning in sign of protest after Fukushima and the heightened attention towards nuclear safety (Ho, 2014a: 6). Due to the numerous developers involved in the project and the advancements of technology in the past 20 years, several components of the reactors have become difficult to find or simply do not fit with newer parts anymore, causing concern among the public and green activists (Pan Han-sheng, interview, September 1, 2011). Moreover, this is the first plant that Taipower has had to build in its entirety; the company previously restricted its role to the actual management of nuclear facilities after other companies (e.g., General Electric or Japanese companies) carried out the actual construction. Numerous media reports have exposed scandals such as electric cables chewed by rats (Tsai, J., 2011) and my sources have spoken of substitution of critical components of reactors with plastic parts unable to endure exposure to high temperatures (Hsü Kuang-jung, interview, September 15, 2011).

Due to the numerous design and engineering flaws of the fourth nuclear power plant, revealed over the years, representatives from environmental NGOs, local communities and engineering experts established an official commission, named the “Oversight Commission on the Safety of the Fourth Nuclear Power Plant,” that passed a resolution in August 2011, which stated that the construction process should be stopped, unless Taipower reforms its engineering procedure before the end of the year 2011. The government ignored this resolution but promised that the safety of the fourth nuclear power plant would be ensured through a peer-review process carried out by international experts. According to two of my interviewees, one a member of the GP and the other of the GCAA, this amounts to a mere façade display on the part of the government (Wang Chung-ming, interview, September 17, 2011; Chao Chia-Wei, interview, October 24, 2011); in fact, by “international experts” the government refers to those from the World Association of Nuclear Operators (WANO) and Nuclear Regulatory Commission (NRC) from the United States, whose credibility should be put in question, they maintain, considering that the Fukushima Dai-ichi Plant had passed its WANO examination with full-fledged colors in 2009, barely two years before the disaster.

Another controversial issue for those who oppose the project is the emergency plan that the government has set up, should a nuclear accident really take place on Taiwanese soil (Liu, 2011: 141–143). First, the evacuation zone has

been set at 20–30 km, instead of the 80 km radius evacuation zone recommended by the United States. Even with such a limited evacuation perimeter, a minimum of five million people would have to be relocated in case of an accident (Lee, 2014b: 3). Paul Jobin, himself a scholar of environmental pollution and related health damages, believes that this might indicate a somewhat naïve attitude on part of the authorities, who refuse to face the eventuality of having to resettle more than six million people, in case a nuclear disaster really were to take place at one of the three nuclear facilities located in northern Taiwan (Jobin, 2012: 25).<sup>10</sup>

Taiwanese erotic novelist, turned anti-nuclear activist, Liu Li-er (劉黎兒), writes in her book that no additional safety measure, such as providing local authorities with iodine tablets, equipping them with enough buses for evacuation and being capable of formulating accurate forecasts on wind direction, have been fulfilled under what the government calls its *District Plan for Emergency Management* (緊急應變計畫區 *jinji yingbian jihuaqu*) (Liu, 2011: 142).

A long-time connoisseur of Japan, where she lived for many years until the Fukushima disaster, Liu thinks that just like in the Japanese case, where governmental response and management of the post-disaster situation was characterized by a high degree of inadequacy, Taiwan too is in urgent need of strengthening the country's emergency responses and has to lay priority on fostering a transparent and effective communication with the population. Effective communication and openness can help in shaping the public's perception of a disaster as well as avoid misinformation and distrust; without these elements, any remedy policy would be ineffective (Liu, 2011: 142, 150).

Last but not least trust in Taipower's (namely in the government) capacity of handling a nuclear facility is at an all-time low. A survey carried out by the Atomic Energy Council discovered that more than half of the people residing in the vicinity of NPP-1/2/3 displayed similar levels of trust towards nuclear plants' safety (between 58 percent and 66 percent) with a much lower percentage if the question shifted on the level of trust in the capability of the government to effectively handle a nuclear emergency (between 37 percent and 46 percent) (Atomic Energy Council, 2010). A survey by Ho Jung-chun *et al.* (2013) discovered that 94 percent of Gongliao residents are opposed to NPP-4 and displayed a high level of distrust (also 94 percent) towards the safety management capability of Taipower and the government (Ho *et al.*, 2013: 786). Three different opinion polls conducted in 2013 by both the DPP as well as by pro-KMT polling agencies showed that between 58 percent and 69 percent of the citizens are opposed to NPP-4. The share of those who support the project is between 18 percent and 25 percent (*Liberty Times*, 2013 as quoted in Ho, 2014a: 2).

Further doubts in regards to the need for a fourth power plant in the country arise out of the consistent discrepancies between, on the one hand, energetic shortages emphasized by the government and the pro-development faction (Taipower's White Paper, 2013 as quoted in Wang and Lee, 2013a: 3) and what, according to environmental activists, is in fact a surplus of energy reserves, which Taiwan has accumulated in the past two decades, without the contribution

of a fourth nuclear plant (Tsui Shu-hsin, interview, March 24, 2011; Hsü Kuang-jung, interview, September 15, 2011 among others), an issue that will be dealt with later on in the course of this chapter.

At any rate the numerous structural problems of this facility contribute to heighten nuclear safety awareness among the general population, in the aftermath of the Fukushima disaster. The next section will focus on the political fall-outs of the Fukushima incident on Taiwan's domestic situation, trying to assess how different stakeholders, from anti-nuclear activists to political parties, have sought to transform their strategies to utilize the nuclear meltdown to their own advantage.

### The Fukushima effect and its reverberations

As mentioned above, in the 1990s, due to several factors such as an increase in the maneuver space for activists after the lifting of martial law (1987); the concomitant mass scale reverberations of the Chernobyl incident (1986); and the creation of a green party inside Taiwan (1996), public opinion was quite informed about nuclear issues (Jobin, 2012: 2). In comparison, the following decade (2000–2008) was one of cooptation for green movements, which became "institutionalized" following the Democratic Progressive Party's (DPP) electoral success (Ho, 2005b: 405; Jobin, 2010: 49). With green movements becoming quieter on nuclear energy, citizens were also less informed and thus their perception of risk, considering the lack of serious nuclear accidents at that time, decreased. The Fukushima Dai-ichi event, in all of its drama, has had the effect of giving new stamina to the anti-nuclear power movement globally, while bringing nuclear energy concerns to the fore of all of Taiwan's major parties' political agendas and platforms. In fact, the nuclear meltdown and Japanese people's losses and suffering after the massive earthquake and tsunami that wreaked havoc on the country, have reinvigorated activists' fight against NPP-4. In light of Taiwan's own situation: a seismic, overly populated country with nuclear power plants located side by side with densely inhabited centers and in close proximity to numerous underwater volcanoes (Chao, 2012), it is easy to understand why fear of a nuclear disaster inside the country has been growing. While in the aftermath of Fukushima some people had high hopes for a future nuclear-free Taiwan, after the 2012 presidential elections held in January, newly re-elected President Ma Ying-jeou initially stated that the construction of controversial NPP-4 would go on as planned (Tsai, 2012); at the same time he declared that the shelf-life of the three already existing facilities would not be prolonged. As we shall see towards the end of this chapter this scenario has, meanwhile, radically changed, in the aftermath of another unexpected event and its reverberations for the anti-nuclear cause, the Sunflower Movement.

Having failed to stop its construction, Taiwanese anti-nuclear activists' main goal has shifted to preventing NPP-4 from ever becoming operational. To reach their purpose they employ the powerful imagery of death evoked by the incident in Fukushima with its unforeseeable and long-standing health consequences,

spearheaded as an example of what could take place on Taiwanese soil if the plant is ever to become operational (Hsü Kuang-jung, interview, September 15, 2011; Tsui Shu-hsin, interview, September 20, 2011; Lai Fen-lan, interview, October 30, 2011). This strategy is extremely effective; in fact, it has been proved that environmental claims are more successful if protesters “piggyback on dramatic real-world events,” by bringing attention to issues that would otherwise be neglected (Ungar, 1992). In the aftermath of a news-magnet event such as the Fukushima meltdown and the increased media attention towards this topic (*Apple Daily*, 2011; *Our Island*, 2011a, 2011c, 2012c; Tsai J., 2011; Chang, P.W., 2012; Fang, 2012: 8; Lee, 2012a, 2012b, 2012c), nuclear awareness in Taiwan has been growing steadily. Right after the Japanese disaster the leading scientific journal *Nature* rated two of Taiwan’s nuclear plants among the world’s most dangerous (Butler, 2011: 400).

Given the significance of the nuclear incident and the crucial political moment when it took place – barely ten months before Taiwan’s presidential election of 2012 – several concerned stakeholders, from political parties to social activists, sought various methods to exploit it to their own advantage.

As far as Taiwanese activists are concerned, the anti-nuclear movement has experienced a phase of intense activity with countless protests tallying on the fears created by Fukushima. Right after the nuclear disaster, nuclear-related issues got so much attention that they planned a host of different activities to fully exploit the momentum. In March 2011, around 2,000 anti-nuclear protesters demonstrated all over Taiwan for an immediate end to the construction of the island’s fourth nuclear power plant. Protesters were also opposed to any lifespan extension for the three other already functioning nuclear plants (*Asia One News*, 2011). Massive protest parades were organized on April 30, 2011 with 5,000 people joining an anti-nuclear protest in Taipei City, holding yellow banners and waving sunflowers as part of a nationwide “No Nuke Action” campaign against the construction of NPP-4 and in favor of more renewable-energy-oriented policies (Lee, 2011a); the turnout was so high that a new phrase was coined to describe these parades: “the 430 movement” (430 行動, 430 *xindong*).

In 2012, rather than declining, the number of protests increased; in March, about 2,000 people staged an anti-nuclear rally in Taipei to commemorate the one-year anniversary of the massive earthquake and tsunami that hit Japan the previous year, while renewing their hopes for a nuclear-free island.

One year later, on March 9, 2013 200,000 people took to the streets in Taipei and three other major cities, again requesting that the construction on the fourth nuclear power plant be halted. The protest in Taipei was the largest ever anti-nuclear demonstration held in Taiwan to this day (Taiwan Insights, 2013).

Afterwards the cultural community organized a series of anti-nuclear events in Taipei, under the name “Movement to say no to nuclear plants number four, five and six” (不要核四、五六運動). This anti-nuclear campaign, which began on March 15, 2013, included in its ranks several cultural heavyweights, including film director Ko I-chen (柯一正) and writer Hsiao Yeh (小野) (Tseng *et al.*, 2013) and was aimed at bringing individuals opposed to nuclear energy every



Figure 3.4 Sunflowers as a symbol of clean energy were already being used at an anti-nuclear rock concert, November 5, 2011, Taipei (source: Simona Grano).

Friday to Liberty Square, where activists and intellectuals held anti-nuclear speeches and sought to raise awareness of the underlying risks connected to nuclear power plants and more specifically to the faults and dangers of NPP-4.<sup>11</sup> Three years after the Fukushima incident protesters are still active and make use of every auspicious event, trying to spin it in their favor. A strong earthquake

that hit northern Taiwan on February 12, 2014 has renewed concerns about the possibility of one of the nation's plants being damaged by a quake. This earthquake was particularly worrisome due to its magnitude (4 on Yangmingshan) and the fact that the epicenter was in Taipei's Shilin District (士林區) (Lee, 2014a: 1). On February 16, 2014 protesters took to the streets in what was termed "an anti-nuclear run"; this event was meant to symbolically portray the run Taiwanese would have to make if something real were to happen to one of its plants (Lee, 2014b: 3). Barely six days later, an eight-hour long concert, supporting the abolition of nuclear power, was held in Taipei (Lee, 2014c: 3). Such events are principally meant to encourage young people to join anti-nuclear campaigns and become more involved in social movements' activities.<sup>12</sup>

If activists have sought to employ the Fukushima disaster to their own avail, using protests and parades as their main tools, major political parties have done the same, by incorporating nuclear energy issues and concerns into their electoral platforms, to avoid losing out to the competition.

While several international governments, from Germany declaring that the country would end its reliance on nuclear energy by 2022, to Switzerland and Italy, have shelved their plans for nuclear expansion (or initiation in the Italian case) shortly after the Fukushima disaster, pre-electoral campaigning in Taiwan all throughout 2011 reflected a division according to political orientations and so did a few opinion polls carried out after Fukushima among the general population;<sup>13</sup> the *Liberty Times* (自由時報 *ziyou shibao*) suggested predominantly anti-nuclear feelings among its readership, with more than 87 percent asking for a re-examination of NPP-4, as requested by the DPP;<sup>14</sup> the *China Times*, sympathetic to the KMT, reflected opinions on the other side of the political spectrum with a total of 57 percent of the people agreeing with President Ma's stance on nuclear energy (as quoted in Jobin, 2012: 12). A more neutral position is attributed to the *Apple Daily* with 56 percent of its respondents wishing to stop NPP-4's construction, 32 percent wishing to continue with the project and 12 percent with no opinion (*Apple Daily*, 2011).<sup>15</sup>

As noted by Paul Jobin, while this figure is not an absolute majority it does nevertheless show that more people have become anxious in regards to nuclear power generation after Fukushima.

As for politicians, the KMT's official stance towards nuclear energy since 2011 has been evolving according to the changes that have taken place in public opinion. Initially, right after Fukushima and during the electoral campaign for the elections of 2012, Ma Ying-jeou spoke about de-commissioning the first three nuclear power plants by 2025, while continuing with the construction of controversial NPP-4; this meant that Taiwan was going to become nuclear-free at the earliest in 2055; a position that is reminiscent of the previously mentioned proposal by Lien Chan in 2000 (Jacobs, B., 2012: 177). President Ma was keen to reassure Taiwanese that: the new plant would begin commercial operation only under secure conditions; that NPP-1 would soon be decommissioned; and that the lifespan of NPP-2/3 would not be prolonged.<sup>16</sup> He insisted that Taiwan can only take a gradual approach towards the achievement of a nuclear-free

homeland because of energy security concerns, the need to keep electricity prices reasonable and the goal to reduce – or keep in check – greenhouse gas emissions. On this point, Stephen Shu-hung Shen, previous minister of the Environmental Protection Administration (2008–2014), is famous for his opinion that the immediate abolition of nuclear energy is a "romantic idea" but highly impractical as well as in conflict with Taipei's goal of meeting its carbon reduction targets and reducing air pollution (Chu Yu-chi, Director General at EPA, interview, November 2, 2011). In fact, Minister Shen estimates that if plant n. 4 were to be canceled and replaced by coal-fired plants, Taiwan's carbon emissions would soar. At any rate, considering that in 1985 power generation derived from nuclear accounted for 52.4 percent (Taiwan Statistical Data Book, 1996: 94), in 1990 Taiwan nuclear energy accounted for 36 percent of its installed capacity of electricity output (Ho, 2014a: 4) and the share dropped to 19 percent 20 years later, one can observe how the country has moved along the trajectory of trying to diminish its dependence on nuclear energy.<sup>17</sup>

A few months after winning the presidential race in 2012, Ma declared that nobody inside Taiwan is opposed to the government's policies towards nuclear energy (沒有人反對台灣政府的核能政策 *mei you ren fandui Taiwan zhengfu de heneng zhengce*) (PNN, 2012). In response, anti-nuclear groups collected 15,000 signatures, composed a huge banner with the names of the signatories and brought it to the Presidential Palace to confront Ma Ying-jeou, chanting the slogan: "I am someone, I oppose nuclear energy" (我是人, 我反核 *wo shi ren, wo fan he*)<sup>18</sup> (Ma, 2012).

Concerning the DPP's position towards nuclear energy and its electoral platform, after the Fukushima disaster the party reverted to its early anti-nuclear stance with several politicians competing to emphasize their opposition to nuclear power and NPP-4, in order to gain visibility in the year preceding the upcoming presidential elections of 2012.

As mentioned above, Dr. Tsai Ying-wen, the then presidential candidate for the DPP, had tried to turn the issue of ending Taiwan's reliance on nuclear energy into the *pièce de résistance* of her campaign, with the much-heralded slogan of achieving a "nuclear-free homeland" (非核家園) by the year 2025. Ironically, her candidacy was announced exactly on March 11, the very day of the earthquake that hit Japan. After the nuclear meltdown she made several important and audacious statements on the nuclear issue.

However, while she officially supported several protest rallies held against nuclear energy, such as the already named "430 movement" held in Taipei on April 30, 2011, she preferred not to join these parades. Such decisions, coupled with her somewhat ambiguous attitude towards NPP-4, supporting its construction but not its operation (Shih, 2012: 297; Ho, 2014a: 14), confused and angered the most radical wing of her electorate as well as those hard-core, no-compromise green activists, staunchly opposed to the plant, who dubbed her behavior as "opportunistic" and "equivocal" (Tsui Shu-hsin, interview, March 24, 2011; Linda Arrigo, informal communication, November 3, 2011). Many environmental activists perceived her position as a calculated move to take

advantage of the high tide of opposition towards nuclear energy, generated by the nuclear disaster in Japan. The DPP's prior betrayal of its pro-environmental commitments was still fresh in the minds of anti-nuclear activists. At any rate, the schism between the "older" and the "newer" generation of anti-nuclear activists has become even more deep-seated after 2011, with TEPU and other old-guard groups still leaning towards a cooperation with DPP and newer groups, such as GCAA, taking a clear stand in favor of more independence and distance from both political parties, equally guilty of having betrayed environmental protection. Therefore, many green activists chose to cast their vote, whenever possible, with the Green Party, which ultimately did not manage to exceed the 5 percent threshold required to get a seat in the Legislative Yuan for any of its ten candidates.<sup>19</sup>

In her defense, Tsai maintained that she did not agree to press for an immediate halting of the construction mainly in consideration of the legal conflict that would have arisen with the developers (Jobin, 2012: 9). Tsai's explanation was that the costs of compensation for a breach of the construction would have turned out to be higher than finishing the project and maybe coming up with an alternative solution for its use.<sup>20</sup>

As stated by Paul Jobin, "Once again, Taiwanese nuclear politics were back to the situation of the 2000s, presenting a strong antagonism between blue and green camps, with NPP-4 as a cornerstone" (Jobin, 2012).

In fact, the nuclear energy controversy proves once more the depth to which environmental issues become politicized in Taiwan, with citizens dividing along the pan-green or pan-blue positions.

On this point it is important to note that while most of Taiwan's citizens are more aware and concerned about a potential nuclear accident hitting the country after Fukushima, when asked to pay higher prices for energy, in favor of a "nuclear free home," few declare themselves willing to forsake nuclear. In the pre-Fukushima era, an island-wide survey carried out by Taiwan Environmental Protection Union (TEPU) in 2000 discovered that 42 percent of the people thought nuclear should be gradually phased out; 32 percent thought of it as "safe and necessary" for the country's energetic survival while 21 percent considered it "unsafe but necessary" (as quoted in Williams and Chang, 2008: 82-83), thus clearly illustrating the ambivalent feelings displayed by many Taiwanese in regards to nuclear energy, even more so in the pre-Fukushima period. In fact, we have to keep in mind that the debate on nuclear energy touches upon practical concerns, such as the costs to be sustained if the country really were to move away from its nuclear trajectory and the ensuing problems that would arise, to ensure a steady supply of resources, lest risking a rise in electricity prices, which might create resentment in the population. For activists this attitude is a clear sign that Taiwanese citizens are quite receptive to the much-propagandized problem of the island's scarcity of resources. In fact, the notion that the country's energetic output is not adequate for current needs is an issue that concerns many. In Pan Han-sheng's words: "Under the state pro-growth ideology, the campaign to promote nuclear energy as a leading state sector has been successful

in marginalizing opposite view, as emotional and lacking any scientific evidence" (Pan Han-sheng, interview, July 1, 2011). To those who emphasize the country's need for energy, green activists respond that Taipower spreads misleading information by highlighting Taiwan's lack of sufficient energy resources when the country's energetic supplies are actually in excess (Tsui Shu-hsin, interview, September 8, 2011; Lai Fen-lan, interview, November 24, 2011). They emphasize that their proposals are viable without any radical action, such as forsaking air-conditioners and electric illumination.

In Tsui Shu-hsin's words:

We only call for reasonable use. We need smarter policies, such as raising electricity costs and energy taxes. These measures would be directed at the industrial sector and not at private households. Even if all three operational nuclear power plants were to cease operation, our back-up capacity would still remain at about 20.9 percent. It is a myth that nuclear power is indispensable. Taiwan's electricity resources are sufficient without nuclear power; the so-called supply crisis is premised on huge economic growths in future decades which will not lead to insufficient supplies but to a reduced back-up capacity, at perhaps above 10 percent. We need to look past these threats.

(Secretary-General of the Green Citizens' Action Alliance and member of the NNP4 Safety Committee, GCAA's headquarters, September 8, 2011)

Green Citizens Action Alliance has come up with a three-pronged alternative plan to cut energy consumption: (1) reducing the ratio of electricity-thirsty industries; (2) increasing the generation of renewable energies; and (3) increasing energetic efficiency. GCAA's members believe that if all of these three provisions were to be implemented, the energy saved would be equal to the production capability the country could derive in the future from NPP-4 (Tsui Shu-hsin, interview, September 20, 2011).

Environmentalists believe that a partial solution could be found in the increase of energy costs, which are currently too low; a rise would encourage people not to waste energy and be more conscious about its use (Pan Han-sheng, interview, September 1, 2011; Tsui Shu-hsin, interview, September 8, 2011; Hsü Kuang-jung, interview, September 15, 2011; Lai Fen-lan, interview, November 24, 2011). In Hsü Kuang-jung's words:

Taiwan is not short of power, because the amount of electricity generated by nuclear power accounts for only 19 percent of the total power supply, and can be replaced by improving electrical transmission efficiency or energy-conservation measures.

(Hsü Kuang-jung, Professor of Atmospheric Sciences, NTU, September 15, 2011)

In this regard it is has to be mentioned that energy prices in Taiwan have remained steady for more than 20 years, from 1983 to 2006 (Shih, 2012: 310),

a fact that has been heralded by pro-nuclear bureaucrats as possible thanks to the country's domestic generation of nuclear power. A recent increase of electricity rates, unilaterally announced by Taipower, provoked fierce reaction among opposition forces. DPP legislators claim that before resorting to such a raise – the third in less than a year and a half – the company should address those issues that have increased the company's expenditures in the past few years, such as prices of favor accorded to commercial clients and the high extra costs sustained for the prolonged construction of NPP-4 (Wang, 2013b).

Anti-nuclear activists maintain that the government's plan, targeted at changing people's habits, is fundamentally flawed and that what really needs to be done is to reform the pricing mechanism so that those who consume vast amounts of electricity (namely factories) will pay more per unit than those who consume small amounts (households).

At present, the pricing system favours consumers with big volumes. In reality the public de facto subsidizes the industrial sector's power usage at the cost of NT 2,000 per household. Not only is this policy unjust, it also leads to oversupply and wastefulness.

(Tsui Shu-hsin, September 20, 2011)

Critics of nuclear energy also question the need for a fourth nuclear power plant, considering the small percentage of electricity supply derived from nuclear, which accounts for a mere 18–19 percent (Mathews and Hu, 2013). Taiwan has long been toying with the idea of increasing its share of renewable energies such as solar photovoltaic (PV) and wind turbines.<sup>21</sup>

### The storing of radioactive wastes

No matter what the future holds in store for Taiwan's nuclear energy policy, a big headache for governments dealing with nuclear production is what to do with its unwanted by-products, namely nuclear wastes. This issue takes on a whole new dimension in Taiwan where, throughout the past two decades, it has become intermingled with international, racial and environmental-justice concerns. In fact, following Taiwan's complex political situation, as a sovereign state with no international status, deprived of a seat in the United Nations, the Republic of China cannot use the option of reprocessing its spent fuel abroad (Liu, 2011: 145). Therefore, since its first nuclear reactor started being operational in 1971, wastes have been stored either inside its nuclear facilities or, after 1982, on the already mentioned Orchid Island (蘭嶼 *Lanyu*), inhabited by the aboriginal Yami (or Tau in their own language) Tribe.<sup>22</sup>

In the 1970s, when the KMT regime decided to locate a nuclear waste facility on this offshore island it deliberately omitted to provide locals with the truth, leading residents to believe that a fish-canning factory was going to be built on their island (Huang *et al.*, 2013: 1559). The factory was propagandized as an invaluable source of new job opportunities for a low-income community such as

Lanyu. Shipping of the wastes began in 1982; from 1982 to 1996, 100,000 barrels of nuclear wastes were brought to the island (Enn, 2012: 152). While the Yami originally ignored what the government had built (Huang *et al.*, 2013: 1561), after an environmental NGO found out the truth, they began refusing further shipments of wastes and have consistently negotiated for the removal of the storage which, according to the government, was supposed to be a temporary deposit in the first place. Unverified rumors of stillborn infants and birth defects on Orchid Island have increased exponentially although very few medical studies support these statements in a consistent manner until today (Arrigo *et al.*, 2000; Peter Wushou Chang, informal communication, August 21, 2011; Boris Voyer, telephone interview, November 16, 2011; Loa, 2012c). Poor management on the part of governmental bureaus and Taipower in regards to the nuclear-wastes facility on Orchid Island, where numerous leaks have caused radioactive material to seep into nearby sea and land, increases public mistrust towards authorities regarding nuclear technology-related issues (Chung, 2005; Loa, 2012b, 2012c, 2012d; Grano, 2014a).<sup>23</sup>

Even though opinions among residents of Lanyu are not uniform, with some valuing the improved infrastructure and lifestyle opportunities that the new facility has created and some utterly opposed to it, in the past few years and especially since 2011, locals have upped their requests to have the repository moved elsewhere (Loa, 2012d). The Fukushima Dai-ichi incident has given them new strength to renew their protest to have the storage site moved in February 2012; these rallies have been given a high degree of visibility by the local media, especially by those newspapers that are not aligned with the KMT, such as the *Taipei Times* or the *Liberty Times* (e.g., Loa, 2012a, 2012c, 2012d).

In order to avoid the process of “wastes dumping” being associated with “environmental racism” (due to the fact that Orchid Island is predominantly inhabited by the already mentioned Yami tribe of Austronesian descent), Taiwan has been toying (albeit with no success) with the option of “exporting” its wastes abroad. A number of options, all with severe repercussions on Taiwan's international status, have been under consideration. Negotiations went on for a while with China, North Korea and Russia. In 1997 and 1998 Taiwan actually signed agreements with North Korea (Schafferer, 2001: 109); however, after South Korea voiced concerns in regards to North Korea's potential handling of uranium-enriched material, Taiwan's international reputation suffered a great blow and accusation of “environmental classism” (a rich country which exploits a poorer one for its own sake) were repeatedly raised so that Taiwan was forced to abandon the North Korean option (Hsiao, 1999: 51).

Such issues highlight once more the international dimension of the nuclear controversy; in fact, all of Taiwan's six reactors are imported from US vendors – one of the speculations behind the prolonged continuation of NPP-4 being US pressure – and, as shown, Taiwan itself has consistently tried to find a suitable *escamotage* that would allow it to export its undesirable products, “dumping” them onto less developed countries.

Confronted with the Yami's refusal to accept any more barrels and with the nuclear issue having gained visibility among the general population, the

government was forced to find alternative storing sites. Finding a suitable repository has been a consistent headache for the Taiwanese government since at least 1999, when it promised to remove all wastes from Orchid Island by the year 2002 and store them in a purpose-built storage facility on the mainland, to be located either in Pingtung (屏東) or Penghu County (澎湖縣). In fact, in 1999 the Ministry of Economic Affairs (MOEA) announced that two sites for storage had been found, one being Da-Ren Town (達仁鄉) in Taitung County (台東縣) and one being Wang-An Town (望安鄉) in Penghu County (Huang *et al.*, 2013: 1562). However, since the AEC drafted the “Act on Sites for Establishment of Low Level Radioactive Waste Final Disposal Facility” in 2006 (AEC, 2006), which sketches the basic framework both for what concerns the criteria to site such facilities but also for incorporating public participation in the decision-making process, the whole procedure has become more complicated, subject to the several interests of the many concerned stakeholders. The act lists a number of conditions that have to be fulfilled for such a facility to obtain a green light (e.g., avoidance of areas where there are active geological faults) and furthermore establishes that an ad hoc committee should be charged with the responsibility of acting as a “watch-dog” over Taipower’s siting decisions (Huang *et al.*, 2013: 1562). This committee shall be composed by 17–21 representatives of relevant governmental agencies, experts and scholars (experts having to be at least three-fifths of the total members). Furthermore, the act states that after a suitable site is found, a referendum must be carried out and only in case it successfully passes, can the site be listed as a candidate for hosting the storage complex. Financial compensation matters are also regulated in detail in the act.

Due to the increased knowledge on the part of protesters in regards to nuclear energy and its by-products, locals in Taitung and Penghu have vehemently protested the government’s proposal and have set up barricades and raised compensation issues, which had to be dealt with before any decision could be made. Therefore the initial plan, which was to complete the facility by 2013 (Williams and Chang, 2008: 2013), as of 2014 has yet to be defined in both its location and scope and even though the government maintains that it has identified a suitable parcel of land to accommodate the surplus of nuclear wastes, the truth is that, up until now, not a single municipality has agreed to accept such a facility.

Finally, an important but often forgotten dimension of the nuclear energy controversy is related to secondary issues, such as radiation contamination of food products, which takes on a whole new dimension in Taiwan, a country where food safety issues have consistently been on the front page of media reports for the past couple of years, and especially since the 2011 plastifiers scandal. While in no immediate danger of being exposed to radiation plume, Taiwan deals with the fear of contaminated food and radioactive products that may be imported from Japan, the products of which had always been considered as “up-scale” delicacies, devoid of the numerous scandals that so often marr Chinese and Taiwanese domestic goods, and thus a synonym for “safety” and “quality.”

Strong reactions among the population and concerned activists were ignited after the announcement of the Ministry of Health in July 2012, which called for

a lowering of the safety standards for the contamination of radioactive elements (Our Island, 2012d). The proposal called for increasing the tolerance level for food products, extending it to 300 or even 370 Bq/kg<sup>24</sup> when the international standard states that anything over 100 Bq/kg is considered as “nuclear waste” (Paul Jobin, email communication, October 24, 2012). As of November 2014, only vegetable, fruit, aquatic products, baby formula, dairy products and water imported from Japan require a radiation detection report, with the exception of all food products from Fukushima, Ibaraki, Tochigi, Gunma and Chiba prefectures, which have been banned since the Fukushima Dai-ichi nuclear disaster in March 2011. However, following the latest food-safety scandal of September 2014 the government has been compelled to enforce stricter regulations to avoid any more problems in the future. Thus, the Food and Drug Administration, starting from 2015, will require Japanese companies intending to import teas, candies or cookies to submit a radiation detection report issued by a local authority (Hsu, S., 2014).

### The nuclear referendum issue

The first two referenda on the island’s fourth nuclear power facility were held in 1994 by the Taipei County government, at the time controlled by a DPP incumbent; they were declared invalid for lack of sufficient turnout. Soon after the Taipei City Government, at that time also under DPP’s rule, held its own referendum on the nuclear issue, jointly with the March 1996 Presidential Elections (Hsiao, 1999: 39). The turnout indicated that 52 percent of voters opposed the construction of NPP-4. A fourth referendum was held in 1998 in Ilan County also under a DPP leadership (Ho, 2014a: 7).<sup>25</sup> Finally, in 2001, after the unsuccessful and clumsy attempts to scrap NPP-4 from the country’s political future, the DPP government promised the electorate that a national referendum on the issue would soon be held. After the referendum did obtain a legal status in 2003 the DPP proposed that one be held in conjunction with the 2004 presidential election (Ho, 2005b: 413), the focus of which was going to be on China’s missile threats. While the DPP has to be credited with giving the instrument of the referendum a legal status, its promise of holding an anti-nuclear plebiscite was never honored (Ho, 2014a: 9). In fact, when Taiwan’s first legal referendum was finally held, on the same day of the 2004 presidential election, the issue of nuclear energy was not included among the various issues on which citizens were called to give their opinion.

For almost a decade the nuclear referendum issue lay forgotten until early 2013, when common citizens, Taiwan observers and scholars alike were confronted by the insistent news, circulating on several media outlets, of an imminent government-backed referendum on NPP-4. In reality it was actually the idea of the DPP, which in January 2013 had launched a signature campaign to hold a referendum on NPP-4 that should have taken place in conjunction with the municipal elections of November 2014. The choice of holding the referendum concurrently with a national election was made out of consideration for the



high threshold set by the *Referendum Act* (公民投票法 *gongmin toupiaofa*),<sup>26</sup> so as to take advantage of popular mobilization for other political issues (the national election). Since the DPP announced its decision without previously seeking consent from anti-nuclear activists, rumors began circulating that the party was merely trying to increase its electoral success by exploiting the nuclear issue. Therefore the DPP abandoned the referendum plan, which was revived one month later by the KMT. On February 25, 2013 Premier Jiang Yi-huah (江宜樺) suggested using a popular plebiscite to decide on the fourth nuclear plant. The KMT was facing an internal strife in regards to nuclear energy, with several political figures openly expressing their disapproval of NPP-4; among these former Taipei Mayor Hau Lung-bin (郝龍斌) (Ku *et al.*, 2013; Mo, 2013) – by no means a friend of environmental activists – and New Taipei City Mayor Eric Chu (朱立倫), both openly concerned about NPP-4.<sup>27</sup> The government's hope in proposing the referendum was that it could, once and for all, settle the plant's fate (Fell, 2013) thus signaling a departure from the party's traditional, pro-nuclear orientation. The reasoning behind the government-backed referendum is that the public should be called in to settle a thorny issue that politicians haven't been able to solve in more than two decades (with numerous repercussions dealing with safety) and give their opinion on the feasibility of completely forsaking nuclear in the future, while at the same time maintaining enough energy reserves and reasonable costs (Mathews and Hu, 2013).

To Taiwan watchers and scholars, both parties' behaviors appeared as somewhat "out of character." After having advocated for a referendum on the nuclear issue for more than ten years, activists and DPP members, rather than being pleased, disagreed with the way the question about the fate of NPP-4 had been phrased by the government. In their opinion, the question was in favor of the proponent (KMT), being phrased as such: "Do you agree that the construction of the fourth nuclear power plant should be halted and that it not become operational (你是否同意核四廠停止興建不得運轉?)." DPP members openly accused the government of deliberately phrasing the question in a negative way, in order to win the referendum, taking advantage of the structural flaws of the referendum law; this way, citizens who chose not to participate in the referendum would be considered as supporting the construction of the plant. Instead, the DPP advocated for an immediate halting of the plant's project; knowing full well that the KMT would never agree to do so, the party argued that the government should at least provide a report on the quality of the construction to prove that the plant was worth the investment needed to complete it. The truth is that, after having advocated for a referendum the DPP abandoned the idea only to walk into a trap set up by the KMT with its own referendum proposal. In fact, if the DPP refused to be engaged it was going to risk political credibility having previously advocated for a referendum itself. Therefore the party opted for a two-pronged strategy: mobilizing its supporters' base while at the same time attempting to pressure the KMT into revising the *Referendum Act*, by lowering the threshold for referenda to be declared valid (Shih, H.C., 2013). After the KMT's proposal to settle this two-decade-long controversy via a popular

plebiscite, those few KMT members who had openly expressed their opposition to the construction of NPP-4, sided with the official party line, claiming that it represented a chance to let popular will decide. Nevertheless, a few discordant opinions remained. According to the *Taipei Times*:

Lin Tsung-yao (林宗堯), a former member of the Atomic Energy Council's Fourth Nuclear Power Plant Safety Monitoring Committee and a former General Electric engineer, who the KMT had been expecting to come to the rescue of the plant project, said that the plant is a hopeless case as far as safety is concerned.

(Fang, 2013: 8)

This would indicate a certain uneasiness in KMT circles, in regards to NPP-4 becoming operational.

Whether the KMT's proposal stands to indicate that the party is becoming increasingly attentive to people's wishes or whether the Nationalists have simply realized that the alienation of an increasing number of individuals who oppose nuclear energy could backfire and threaten its position as leading party, remains to be seen. A good old fist fight, reminiscent of the early days of Taiwanese democracy, broke out in the parliament on August 2, 2013, pitching anti-nuclear as well as DPP supporters against KMT legislators (Tomlinson, 2013), with requests (or rather yells and screams) for the government to *first* amend the *Referendum Act* and *then* talk about NPP-4 (先修公投, 再談貢寮 *xian xiu gongtou, zai tan gongliao*).

However, the referendum plan was postponed indefinitely in September 2013 by the very same KMT legislator, Lee Ching-hua (李慶華), who had first launched the idea. Afterwards, the nuclear referendum issue lay forgotten, in the midst of more pressing concerns and protests, such as those towards the Free Trade and Service Agreements, until April 2014.

Tallying on the high degree of popular support towards the Sunflower Movement (Wang, 2014), anti-nuclear activists resumed their battle to lower the referendum threshold, criticizing the government for what they considered to be a hypocritical stance in regards to the quorum for a referendum to have legal validity. In fact, while the KMT continues to uphold the 50 percent threshold in regards to NPP-4, it has allowed a casino referendum, held on Mazu in 2012, to be declared valid with a 40 percent turnout of voters, thus with a simple majority of votes rather than being based on shares (Shih H.C., 2013).<sup>28</sup>

As mentioned above, the Sunflower Student Movement took place between March and April 2014 in Taiwan and was mainly focused on requesting a clause-to-clause review of the controversial CSSTA. However, given the fact that several of the students making up the core component of the Sunflower Movement are also anti-nuclear activists, as shown in several anti-nuclear leaflets distributed during the three-week-long protest, it is correct to say that social activists in contemporary Taiwan aspire to a common goal, which transcends old categorizations and divisions and is firmly rooted in the upholding of Taiwan's



Figure 3.5 Anti-nuclear activists at the Sunflower Student Movement protest, April 17, 2014, Taipei (source: Rosa Enn).

democratic principles and the protection of its citizens' independence and right to self-determination, from both the government as well as from Mainland China, no matter the formal cause they stand for. In fact, other than just advocating for an oversight mechanism, which could monitor future cross-strait negotiations, the student leaders of the Sunflower Movement established a new organization, *Taiwan March* on May 18, 2014, which aims to reform Taiwan's referendum law and push for a legislative review of the CSSTA, along with other cross-strait pacts and economic bills. The direct link between the Sunflower Movement and the anti-nuclear power movement is also visible in the public declaration of one of the students' leaders, Chen Wei-ting (陳為廷), who was very active on social media in defending an anti-nuclear rally where activists (including himself) occupied Zhongxiao West Road, blocking the traffic for hours, and were criticized by many annoyed citizens who had to be re-routed due to the parade (Tsai and Chung, 2014: 3).<sup>29</sup>

However, even more important for NPP-4 and the anti-nuclear cause was Lin Yi-hsiung's<sup>30</sup> hunger strike to protest against the construction of NPP-4, which started on April 22, 2014. His actions, which seemed even more dramatic given his failing health, are credited with launching a series of anti-nuclear rallies all over Taiwan (Lee, 2014d), which pressured the government, weakened by the two-week-long Legislative Yuan occupation and by the increasing number of

protests of the past few years, into releasing a statement on April 27, 2014; in it the Ma administration announced that it was halting work on the Lungmen nuclear power plant (the already mentioned NPP-4), pending a referendum on its future and that fuel rods would not be inserted before the referendum. Specifically, the KMT agreed to seal off NPP-4's n. 1 reactor after a series of safety tests are completed and halt all work on reactor n. 2 (Hsu, J., 2014). So far, the plant has cost more than US\$9.9 billion – NT\$274 billion (World Nuclear Association, 2012; Ho, 2014a: 5).

Whether such a popular plebiscite will ever be held is difficult to say. At any rate, in July 2014 TEPU members began collecting signatures for initiating one and have managed to surpass the threshold (in terms of signatories) needed (Lai, 2014b). The fact that the decision was taken only a few months prior to the November 29, 2014 municipal elections, considered as a prelude of the 2016 presidential elections, and thus of extreme importance for all parties, cannot be underestimated.

## Conclusions

Taiwan, with its fast-paced race from a pre-industrial society to a post-industrial one, provides interesting examples of how novel kinds of risks, brought about by modernization, become part of everyday life. As shown by relevant data collected through interviews and written sources, the response to the Fukushima disaster took different forms in Taiwan with no homogenous attitude and a division that often traces political orientations.

The numerous scandals and “incidents” surrounding NPP-4's lengthy construction and the several already mentioned rumors pertaining to the nuclear-wastes' facility on Orchid Island contribute to lower local residents' trust towards the capability of Taipower of managing the plant effectively and transparently. Such scandals, to which media outlets politically close to oppositional parties have given high visibility, have contributed to a rapid decline of social trust, with far-reaching social and political ramifications. Nevertheless, the fact that despite all this, the decision to freeze NPP-4 was taken due to pre-electoral concerns (the municipal elections of November 2014), clearly illustrates that “political” interests are the main drivers behind strategic decisions, which deal with energy concerns and a powerful national industry, whose monopoly resides with the state and is linked to the issue of national sovereignty. To once more underline the importance of the year 2011 as a watershed year, we have witnessed how, from an unfavorable situation of “party dependence,” in which anti-nuclear activists had no choice but to rely on the DPP's political strength, after the nation-wide impact generated by the Fukushima disaster, they have gradually become “independent” and have freed themselves from party constraints; something made possible only due to the renewed interest of the media and the public towards nuclear issues worldwide. While political parties initially found themselves in a position of “superiority,” it is now they, as witnessed for example with the KMT's attempt to exploit the referendum issue to its own

advantage, which have to try to incorporate environmental concerns in their electoral platforms so as to gain visibility, meet popular demands and attract voters. Prior to the Fukushima incident, except for a minority of anti-nuclear activists, neither the government nor society at large gave much thought to the issue of nuclear energy.

Therefore, the biggest change brought about by the Fukushima disaster in 2011 and by the re-awakening of anti-nuclear sentiments triggered by the Sun-flower Movement protest in 2014, is the crossing of the partisan divide; a change that has rendered the anti-nuclear movement more mainstream, globalized and rejuvenated, leading it to break its ties with the traditional party orientations that had characterized Taiwanese political life (from environmental to other issues) for more than two decades. Although it is quite safe to assume that Taiwan will not radically depart from its nuclear trajectory in the near future,<sup>31</sup> the Fukushima incident first and the most recent protests and dissatisfactions towards the government have had two effects: they have forced many previously indifferent citizens to be confronted with the risks the country would face, in the case of a nuclear catastrophe; and second they ignited strong social protests and concerns, which the KMT government could no longer ignore. Furthermore, after the prolonged and fierce debate surrounding the issue of the fourth nuclear power facility, it is unconceivable that any government, blue or green, will ever dare to propose a fifth facility, de facto putting an end to the KMT's initial nuclear expansion plans, symbolizing the anti-nuclear movement's greatest victory.

Even better suited to understand the contours of environmental politics in Taiwan than the nuclear energy controversy is the story of the petrochemical industry, the damages of which in terms of air, water and soil pollution are geographically spanned out across different regions of the country, as we shall see in the next chapter.

## Notes

- 1 When Chiang Ching-kuo, son of Chiang Kai-shek, served as the premier of Taiwan in the early 1970s, he announced that the government would start a series of infrastructure projects. They are known as the "Ten Major Construction Projects" (十大建設 *shi da jianshe*), which laid the groundwork for Taiwan's economic miracle in the 1980s. The development of the nuclear energy and petrochemical sectors were among them.
- 2 A first pact between the United States and Taiwan to ensure supplies of nuclear fuels for Taiwan's power plants was signed between the Taipei Economic and Cultural Representative Office in the US and the American Institute in Taiwan in 1972 and amended in 1974. The pact expired on June 22, 2014 but a new agreement to ensure the continuation of such services had already been finalized in December 2013 (*Taipei Times*, 2013c).
- 3 NPP-1, which carries the name of Chinshan plant, is actually located in the town of Shimen, right at the border with the town of Chinshan (金山); thus some scholars talk about Shimen while others about Chinshan when referring to the NPP-1's location.
- 4 Taiwan currently has 4,927MWe of nuclear power capacity by means of three active plants and six reactors (data retrieved from the World Nuclear Association on September 5, 2014).

- 5 The boiling water reactor (BWR) is a type of light water nuclear reactor used for the generation of electrical power. It is the second most common type of electricity-generating nuclear reactor after the pressurized water reactor (PWR), also a type of light water nuclear reactor. The main difference between a BWR and PWR is that in a BWR, the reactor core heats water, which turns to steam and then drives a steam turbine. In a PWR, the reactor core heats water, which does not boil. This hot water then exchanges heat with a lower pressure water system, which turns to steam and drives the turbine. The two reactors in NPP-4 belong to the third generation of advanced boiling water reactors; the first of their kind in Taiwan (Power Technology, 2012).
- 6 National Taiwan University (國立臺灣大學 *guoli Taiwan daxue*) is considered as the "liberal" university, *alma mater* of numerous social activists and concerned environmentalists, as opposed to National Chengchi University (國立政治大學 *guoli zhengzhi daxue*), whose reputation as a more "conservative" nationalists' cadres school is well known. Shelley Rigger in *Why Taiwan Matters: Small Island, Global Powerhouse* calls Chengchi University "a training ground for future KMT leaders" (Rigger, 2011: 63).
- 7 GCAA was initially, back in 1992, the Taipei Branch of TEPU (Ho, 2014a: 10; Tsui, Shu-hsin, interview, September 8, 2011). The increasingly fierce antagonism with the national federation led to a secession in the year 2000 and GCAA was finally established. The two organizations are different in their composition; while TEPU's core is still made up of scholars, intellectuals and university professors, GCAA's members are younger, more radical and with a background of student civic activism, as best exemplified in the figure of Tsui Shu-hsin, secretary-general of the association as well as a Taiwan National University graduate and documentary director.
- 8 During one interview, Linda Arrigo shared with me the following information, which she has in turn obtained through an interview with a former AEC official: allegedly, all throughout the 1980s, government workers received contributions to their welfare funds from scrap sales (Linda Arrigo, June 30, 2011).
- 9 Yenliao is the old name for the Gongliao area (Shih, 2012: 297); it is home to prehistoric relics from an aboriginal tribe, the Ketagalan Culture, as well as to a long-standing fishing community and several beautiful beaches such as Fulong, which hosts a variety of rock concerts and recreational activities all year long. The Yenliao Association is the most notable locally based anti-nuclear organization.
- 10 The operational nuclear facilities in the vicinity of the Taipei downtown area are respectively located at a distance of 28 kilometres (NPP-1); 22 kilometres (NPP-2) and 40 kilometres (the not yet operational NPP-4).
- 11 These anti-nuclear speeches and parades by intellectuals and cultural heavyweights are somewhat reminiscent of the early stages of the anti-nuclear movement in Taiwan, when scholars and intellectuals would travel to rural areas (下鄉) and impart their knowledge to villagers via speeches or articles (Ho, 2006: 43).
- 12 Green Citizen Action Alliance published its first anti-nuclear music album in 2013, which included 34 songs by local independent artists and bands, who play their music to promote anti-nuclear ideals among younger generations (Lee, 2014c: 3; Tsui, email communication, March 22, 2014).
- 13 During our interview, Professor Lin Tze-luen shared with me his views on how nuclear energy, always a political topic, has become even more politicized since the year 2000:

If you are pro-nuclear energy, people think you certainly have to be a KMT supporter and if, on the other hand, you are opposed to it, you have to be pro-DPP. This of course is a biased and too simplistic view of the issue, as in Taiwan there are several individuals who do not vote for the KMT and nevertheless still think that Taiwan needs nuclear energy, in order to satisfy its energetic needs.

(Lin Tze-luen, interview, July 15, 2011)

- 14 The *Liberty Times* survey question was phrased: DPP Legislators in the Legislative Yuan request a temporary halt of NPP-4 facility until a total check-up can be conducted, what is your opinion, in favour or against? [民進黨立委在立法院委員會以臨時提案要求核四停工進行總體檢，請問您是否贊成? ]。In favor: 1180 (87.93%) [贊成: 1180 (87.93%)]；Not in favour: 160 (11.92%) [不贊成: 160 (11.92%)]；do not have an opinion: 2 (0.15%) [沒意見: 2 (0.15%)]。March 15.
- 15 The *Apple Daily* survey was phrased: Yesterday anti-nuclear groups established a meeting to organize an anti-nuclear parade, requesting for NPP-4's halting, what is your opinion? [昨反核團體串聯舉行反核遊行，訴求停建核四，請問你的看法? ]。In favor of stopping NPP-4: 55.89% [應停建核四 55.89%]；not in favor of stopping construction: 31.54% [不應停建 31.54%]；do not have an opinion [12.57% 沒意見 12.57%] May 1, 2011.
- 16 Recently the KMT's stance seems to have changed once more and the Ministry of Economic Affairs has announced several times since 2013 that, in case controversial NPP-4 does not go into operation, then the life of all the other plants will have to be extended indefinitely. Considering that the normal retirement age for nuclear plants around the world is 28 years and that the Chinshan plant (NPP-1) already has 36 years of life, concerns about safety are increasing (Lee, 2014a: 1).
- 17 In 2013 the electricity generated by Taipower's 27 coal-fired power plants accounted for 69.4 percent of the country's total electricity production, while 11 hydroelectric plants generated 13.8 percent and three nuclear power plants generated 15.7 percent. As for the production of renewable energy, Taipower's 15 wind farms and three photovoltaic power plants accounted for less than 1 percent (Taiwan Insights, 2013). A report released by the government's organ Commission for Economic Planning and Development on August 12, 2013 listed the economic repercussions of stopping all nuclear operations. The report claimed that stopping the construction of NPP-4, while following the plan for the decommissioning of the three other plants, would cause the Gross Domestic Product to contract by NT\$94 billion (US\$3.1 billion) while 19,464 jobs would disappear thus leading to an increase in electricity prices, among other problems (*Taipei Times*, 2013a).
- 18 As of January 2013 this has become a Facebook page with 28,000 fans: [www.facebook.com/pages/%E6%88%91%E6%98%AF%E4%BA%BA%E6%88%91%E5%8F%8D%E6%A0%B8/307969115955037?fref=ts](http://www.facebook.com/pages/%E6%88%91%E6%98%AF%E4%BA%BA%E6%88%91%E5%8F%8D%E6%A0%B8/307969115955037?fref=ts).
- 19 Source: Jobin (2012): National percentage of votes for Green Party's electoral candidates in the 2012 elections, undivided per electoral districts: 1.7441%. Share of votes per candidate, divided per each electoral district: Taipei first electoral district (Zhang Yu-jing 張育憬) 2.34%; Taipei's seventh electoral district (Pan Han-sheng 潘翰聲) 24.00%; Taipei's eighth electoral district (Yu Wan-ru 余宛如) 2.00%; New Taipei City first electoral district (Wang Chung-ming 王鐘銘) 2.37%; New Taipei City tenth electoral district (Yang Mu-wan 楊木萬) 4.58%; Taichung fourth electoral district (Cai Zhi-hao 蔡智豪) 2.00%; Changhua first electoral district (Shi Yue-ying 施月英) 1.52%; Tainan fifth electoral district (Lin Min-chang 林民昌) 1.52%; Kaohsiung third electoral district (Lin Zhen-Yang 林震洋) 1.66%; Taitung city (Xie Wen-Han 謝文漢) 0.72%.
- 20 A talked-about alternative solution could be to turn the plant into a natural gas-fired power plant, more environmentally friendly than coal-fired plants. Tsai Ying-wen's reasoning, which echoes the concern of many people inside Taiwan, starts from the assumption that the plant has already taken more than 14 years for its actual construction and has so far cost taxpayers about NT\$300 billion (US\$10 billion) (*Taipei Times*, 2013b).
- 21 In this regards, a German wind power company, InfraVest GmbH, has questioned the government's commitment towards increasing its quota of wind power and has accused the KMT of not being serious in its intention. In fact, after InfraVest announced that it was going to build 14 wind turbines on the pristine coastline of Yuanli Township and some local residents, worried about the near distance between their homes and the turbines, launched several protests and hunger strikes, the government did nothing (Chen and Cole, 2013).
- 22 To be precise, only low-level wastes are stored in the deposit on Orchid Island; high-level radioactive wastes, requiring more than 10,000 years to decay, are stored in the cooling pools of the reactors, in the actual power plants. Should something happen to one of these plants, the radiation contamination could be made even worse due to the high amount of high-level radioactive wastes stored inside the plants, which could pose a serious hazard to the surrounding environment (Liu, 2011: 144-145; Huang *et al.* 2013: 1556). Furthermore, the six reactors' cooling ponds currently contain almost four times the amount originally planned, making Taiwan's power plants among the most dangerous in the world. According to Chiu Syh-tsong, head of AEC's fuel cycle department, the first fuel ponds will reach maximum capacity in 2014 (as quoted in de Changy, 2012). Concerning low-level radioactive waste, the repository on Orchid Island, which was supposed to be only a temporary home for such storage, has been full for the past five years, according to Professor Peter Wushou Chang, head of the Radiation Protection Association. His organization has detected that presence of caesium-137 in neighboring sweet potato fields and taro paddy fields, suggesting leakage (Peter Wushou Chang, informal communication, August 21, 2011).
- 23 In a survey of public perceptions of technological risks conducted by Chen Dung-sheng in 2009, 74.5 percent of respondents thought that nuclear wastes affected the health of humans, and 71 percent agreed that nuclear technologies pose unknown risks to both the environment and mankind (Chen, D., 2011: 570).
- 24 The becquerel (symbol Bq), named after Henri Bequerel who, together with Pierre and Marie Curie shared a Nobel prize for their work in discovering radioactivity, is the unit of radioactivity derived from the International System of Units (SI).
- 25 Considering that that instrument of the referendum had not yet obtained a legal status at the time, such ballots had no legal value; nevertheless anti-nuclear activists often quote those ballots, as the proof of popular opposition towards nuclear energy, in light of the fact that all of them generated an anti-nuclear majority (Ho, 2003: 699).
- 26 According to Taiwanese law, for a referendum to be declared "valid" the turnout of voters needs to be higher than 50 percent; furthermore, at least 50 percent of those who vote must say "yes" to the question, for the referendum to have legal validity.
- 27 Chu and Hau are among the most probable candidates to succeed Ma in the next presidential elections in 2016, thus indicating that their anti-nuclear stances were most probably calculated moves rather than bona fide anti-nuclear commitments.
- 28 Since none of the six earlier referendums held in Taiwan have managed to reach the threshold, protesters argue that the requirement for more than 50 percent of eligible voters to cast a ballot, for a referendum to be declared valid, is too high.
- 29 In regards to the occupation of Zhongxiao West Road, the Anti Nuclear Abolition Platform, which includes several anti-nuclear groups, announced on June 9, 2014, that many of its members have been requested to report to the nearest police station, for questioning in regards to their actions on April 27. Among them, Green Citizens' Action Alliance secretary-general Tsui Shu-hsin (崔懷欣) and Citizen of the Earth Taiwan's Taipei Office director Tsai Chung-yueh (蔡中岳) have both been told that they risk being charged with violating the *Assembly and Parade Act* (集會遊行法) and endangering public safety.
- 30 Lin Yi-hsiung, a former head of the DPP, is sadly famous inside Taiwan for the brutal murder of his mother and twin daughters in 1980.
- 31 While during the electoral campaigning for the presidential election in 2011 President Ma announced several times that the duration of the island's already functioning three nuclear facilities would not be prolonged, provided that NPP-4 be completed, the recent changes most probably signify that the other three plants will serve longer times.