

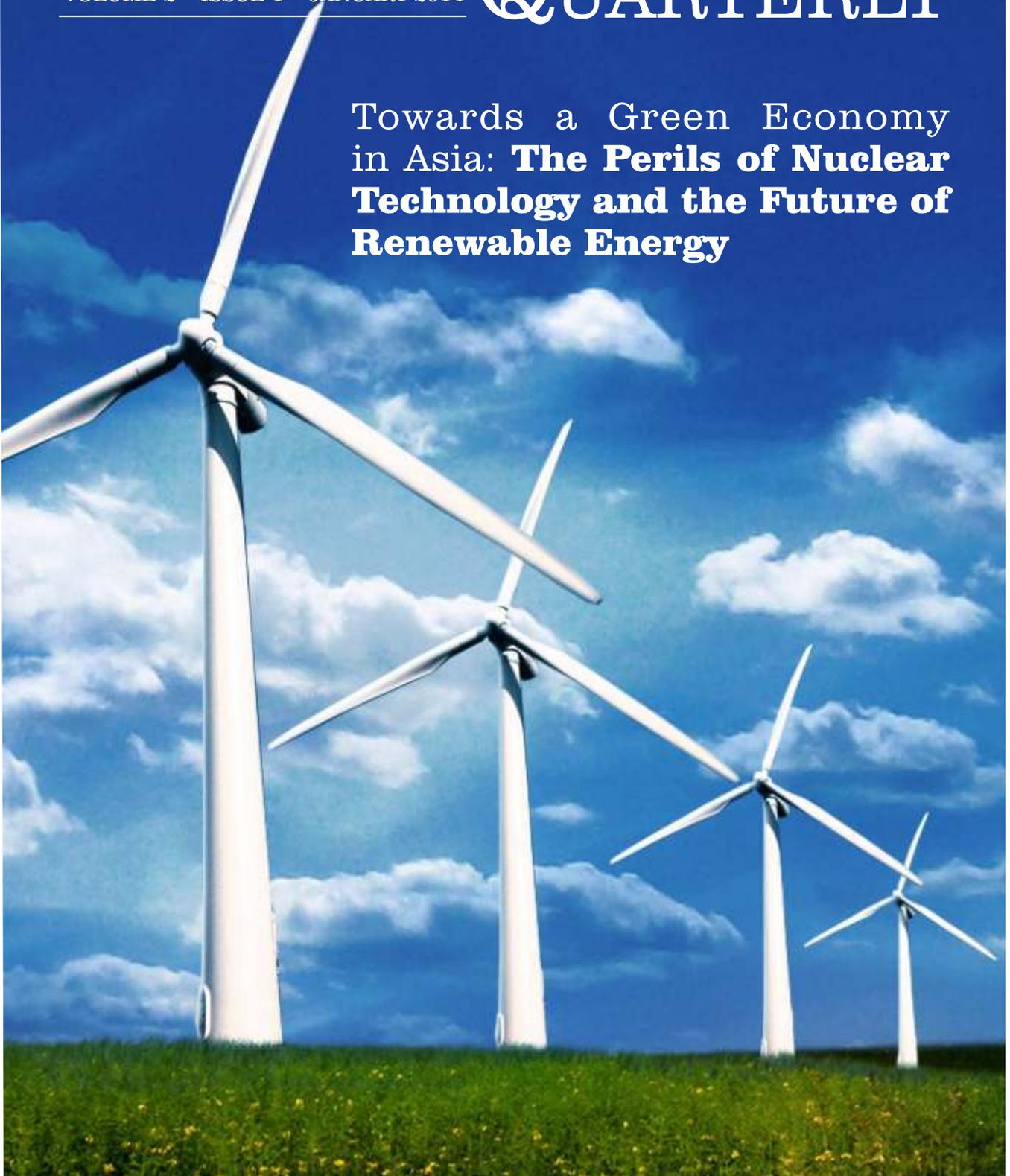
# SOCDEM ASIA

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# QUARTERLY

Towards a Green Economy  
in Asia: **The Perils of Nuclear  
Technology and the Future of  
Renewable Energy**



# Towards a Green Economy in Asia: The Perils of Nuclear Technology and the Future of Renewable Energy

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After two decades of global climate negotiations, beginning with the 1992 Earth Summit and culminating in the fateful Copenhagen negotiations in 2009, the second decade of the 21<sup>st</sup> century saw a series of major (man-made and natural) disasters reaffirming the urgency to pursue a “green economy” paradigm.

The first seismic event was the 2011 Fukushima Daiichi nuclear disaster, which shook Japan to its core, and laid bare the perils of overreliance on nuclear technology as a source of energy. Since then, the world has come to witness how even the most developed countries could fail at ensuring nuclear safety, industrial transparency, and bureaucratic accountability amid an explosive meltdown. The political fallout of the disaster eventually brought down the left-leaning Democratic Party of Japan (DPJ), which came to power on the promise of overhauling the country's creaking state institutions and introducing a new political order.

Meanwhile, the Japanese people have sought to shift the balance of forces between a powerful state bureaucracy that has recklessly downplayed successive reports of impending nuclear disaster, on one hand, and the civil society and reformists that have been pushing for the nuclear phase out of the country's energy landscape, on the other. Among the most prominent advocates of a new energy (and political) order is the former Fukushima Governor Eisaku Satō, who has for years pushed for greater nuclear transparency and the democratization of the energy industry.

“Right after being elected governor of Fukushima Prefecture in 2006, [a number of things] happened that made

me start to question nuclear power.... I drew on the opinions of local representatives and the guidance of Japanese experts to establish an independent research panel to review Fukushima Prefecture's energy policies,” Governor Satō said in an exclusive interview with the *Quarterly*, narrating the dark underbellies of Japan's nuclear industry and the multiple efforts to cover-up alarming leaks concerning nuclear safety. “When whistleblowers emerged and disclosed information [to the Nuclear and Industrial Safety Agency (NISA)], the government astonishingly passed the contents of these revelations back on to TEPCO and let them handle it.”

In response to the Fukushima disaster, many countries began to revisit their nuclear assumption, with nuclear powers such as Germany taking a complete volt-face by opting for nuclear phase-out and a Renewable Energy-based (RE) economy.

“In Germany, just like other parts of the world, there is this ideology, deep-seated conviction, that nuclear technology is cheap, and a symbol of modern technology. And many major party leaders in Germany have come to believe in this. As long as nuclear technology was portrayed as cheap, clean, and modest, it was difficult to argue for a full phase-out,” Member of European Parliament Jo Leinen explained in an exclusive interview with the *Quarterly*, explaining the jolting impact of the Fukushima crisis on the German political psyche. “But after the Fukushima incident, the prevailing philosophical outlook experienced a transformation: not only Soviet-Style technology, ala Chernobyl, could apparently fail, but also Japan's very sophisticated technology -- and by extension those in the Western world. So there was this realization that there was no guarantee of safety with respect to nuclear technology, even the most sophisticated kind, and therefore the

argument that it was morally unacceptable to accept such risk for human beings and the environment.”

But the impact of the Fukushima crisis on many Asian countries was quite muted. From Vietnam to Turkey and China, most developing countries have adamantly downplayed Japan's nuclear disaster by pushing ahead with multi-billion-dollar projects, mostly handled by foreign companies, to build nuclear power plants in order to reduce their dependency on hydrocarbon imports and enhance their energy security. “Even the Fukushima reactor accident had little influence on the continuous growth of powerful pro-nuclear camp. During last five years people in this camp seem to have come to the conclusion that nuclear energy could or should substitute all forms of fossil energies in Korea,” South Korean Academic Lee Pil Ryul argues in the *Quarterly*, emphasizing the stubbornness of the nuclear lobby to push ahead with its monumental projects across Asia, with Korea now also emerging as a nuclear energy exporting country. “[Based on Korea's energy plan], in 2030 the number of nuclear reactors will increase from current 23 to more than 33. In 2050 small flexible reactors, hydrogen reactors and fast breed reactors will possibly be developed and employed for operation in Korea.”

Last August, in an eerie echo of Japan's nuclear conundrum, the *New York Times* reported a series of “bribery and faked safety tests” concerning critical plant equipments installed in a Korean nuclear power plant in Ulsan. Subsequent investigations revealed the potential installment of faulty equipments in 14 out of 23 nuclear power plants in the country, forcing the government to shut down 3 reactors temporarily, and possibly more in the future. This was by all means a wake-up call for many developing countries pursuing the nuclear option.

In the Philippines, where Southeast Asia's first nuclear power plant was built but never operated, the current government continues to waver on its earlier commitments to close the Bataan Nuclear Power Plant (BNPP) for once and for all.

In the 1970s, the administration of President Ferdinand Marcos felt that establishing a nuclear power plant, despite all its financial, technical, regulatory, and safety requirements, would be a rational step towards achieving much-needed energy self-sufficiency. This was in line with the administration's grand plans of making the country a major industrial power in the region. The period witnessed the construction of government-sponsored large-scale production plants in crucial economic sectors such as steel. After all, the Marcos administration increasingly sought to play a 'developmental' role in turning the country's economic fortunes around.

The BNPP was to be built on the Bataan Peninsula, around 100 km west of the capital, with proper construction beginning in 1976. Interestingly, if the oil crisis prompted the construction of the plant, another crisis, namely the 'three mile island' accident in the U.S., placed a temporary break on its completion. Subsequently, a safety inquiry was launched, and the eventual assessment made a set of chilling revelations: around 4,000 technical defects, and stern warnings with regards to the geological vulnerability of the plant.<sup>2</sup>

The end of the Marcos regime saw the demise of its nuclear brainchild, namely the BNPP. The emergence of a more democratic government underscored greater sensitivity to the public pulse. The horrors of the 1986 Chernobyl incident engendered a deep sense of anxiety among Filipino citizens, especially residents of Bataan, who would bear the brunt of a potential nuclear disaster. As a result, the newly-installed government of President Corazon Aquino decided to suspend the operation of the practically complete BNPP. The state woke up to a financial and technical nightmare, when it evaluated the overall costs associated with the plant. The BNPP became the country's biggest single



Photo from Greenpeace.org

debt obligation, with payment arrangements assuming an increasingly complex and dubious character. As a result, the Philippine state filed a legal complaint against the American company Westinghouse for overpricing, bribery, and associated fraudulent activities. It took roughly 3 decades (1976-2007) for the country to complete its payment obligations.<sup>3</sup>

The BNPP is not only proximate to the dormant Mount Pinutubo, but it is also superimposed on a major earthquake fault line – putting the safety and wisdom of the whole project in jeopardy. The plant's proximity to populated areas, and the potential for a large-scale nuclear contagion, also bedeviled the viability of the entire project. Moreover, waste-disposal is also another issue. Up to this date, nuclear waste-management represents a huge political and technical conundrum. This issue is even more dire in the case of a relatively poor and less technically-savvy country like the Philippines, which has been fraught with regulatory lapses and techno-industrial deficiencies. Nonetheless, the construction was pushed forward

well into the twilight years of the Marcos era. Equipped with a Westinghouse light water reactor, designed to produce around 621 MW of electricity, the total cost reached as high as \$2.3 billion.<sup>4</sup>

“But there are hidden, more pernicious costs that must also be unearthed and made transparent. These include [among other things] the damage to the economy wrought by the power crisis that followed in the 1990s when the government did not plan for new generating capacity to replace the mothballed BNPP,” Filipina Economist and energy expert Maitet Diokno writes in the *Quarterly*, fleshing out the long-term damage of the BNPP project to the Philippine economy. “Rather than closing the door firmly on nuclear power, the government of Benigno S. Aquino III appears to be leaving it slightly ajar.”

In India, another Asian democracy where the government has sought to expand its nuclear capacity to meet the demands of its booming economy, there are growing frictions between the state and the civil society.

“The opposition to government over the safety of nuclear plants in India was exacerbated by the Fukushima-Daiichi accident; It may be noted that public fear is not limited to installation of nuclear plants...people are also concerned about India’s nuclear mines,” Indian researchers and energy experts Dr. D.K.Giri and Dr. Nivedita Giri write in the *Quarterly*, explaining the contentious nature of India’s nuclear push. “The nuclear sector is exclusively controlled by the central government in India, and the government is bent on pursuing the nuclear route to energy sufficiency despite heavy public protests.”

### Why Go Renewables

Amid an ongoing debate over nuclear phase out in Europe and Japan, the imperative for establishing a “green economy” took another critical turn when developing countries such as the Philippines faced the onslaught of natural calamities and extreme weather events -- believed to be largely caused by climate change.

In early-November, the category 5 -- highest level -- super typhoon Haiyan, known as Yolanda to Filipinos, hit coastal communities in central Philippine islands of Visayas, completely inundating local government units (LGU) in places such as Tacloban City. Haiyan -- one of history’s strongest recorded typhoons -- affected up to 11 million people, claiming the lives of more than 5,000 individuals and leaving 2.5 million people in urgent need of humanitarian relief, with \$14 billion in total economic damages.

Despite the inherent vagaries of climate science, which deals with complex and often unpredictable variables, leading scientists, and IPCC contributors, such as Professor James Hansen of Columbia University and Professor Piers Forster of Leeds University have drawn a convincing connection between climate change and extreme weather events such as Haiyan.

So far, the world’s leading polluters have avoided mandatory measures to mitigate the impact of climate change, and it is far from clear whether there will be any concrete climate deal before 2020. Moreover, the proposed \$100 billion climate fund, which is supposed to help poorer countries to adapt to climate change, is heavily underfunded.

The latest climate negotiations in Warsaw marked a partial victory for developing countries such as the Philippines by (a) pushing for mandatory emission cuts by both industrialized countries as well as major emerging economies that constitute the world’s top-emitters and (b) securing financial commitments for compensating developing countries affected by climate change beyond previous climate fund pledges by the developed world.

Given the perils of nuclear technology and the climate-disruptive nature of fossil fuels, the supply of which has become increasingly precarious due to ongoing geopolitical shocks in the Middle East and booming global demand in coming decades, the development of an RE-based economy is the optimal way ahead, with countries such as Germany, Denmark, and China among the leading producers of green technology. But the rest of Asia is yet to catch up, with industrial powerhouses such as Japan and South Korea -- thanks to their heavy reliance on nuclear technology -- still failing to translate their technological expertise into a “creative destruction” of RE innovations. Asia has no shortage of potentials in this regard.

“Six countries in Asia and the Pacific have over 100 MW of grid-connected photovoltaic solar systems...China is also the world’s leading manufacturer of solar photovoltaic cells with a 30% global market share,” economist and energy expert John West writes in the *Quarterly*, explaining the feasibility and urgency of developing Asia’s RE potentials. “Pushing up renewable usage accelerates the learning process, increases scale and starts to bring down costs. Greater R&D efforts will spur more innovation.”

The Philippines, which enjoys among the world’s most diversified energy mixes, is going through a difficult period of RE struggle, with the current government instead opting for expansion of coal-fired power plants to meet growing demand at home and achieve over-capacity by the 2015-2016 period.

“RE advocates called this move a reckless action that will need serious review especially with the movement that major coal country players are veering away from coal because of

economic and sustainability reasons,” Greenpeace officer and activist Francis Joseph Dela Cruz writes in the *Quarterly*, explaining the negative political and ecological ramifications of the anti-RE policy shift under the current administration. “A country such as the Philippines cannot afford a business as usual stance in the negotiations -- Philippines current miniscule emission numbers allows the climate delegation to leverage and negotiate.”

Overall, the *Quarterly* (3<sup>rd</sup> issue) brings together insights from leading energy experts and activists across Asia, examining the precarious nature of the status quo, the need for a green economy revolution in Asia, and the challenges of making a transition to a more sustainable mode of economic development based on RE.

The essays seek to explore how the strength and resilience of the nuclear lobby, rather than the rationality of the nuclear technology per se, explains the regrettable underinvestment in the RE sector. And why we need to overcome the nuclear lobby -- prospering in the bureaucratic shadows, and constituting large multinational and state-owned companies -- by explaining the rational superiority of alternative energy resources. Democratic accountability and transparency in energy governance will be a crucial step forward.

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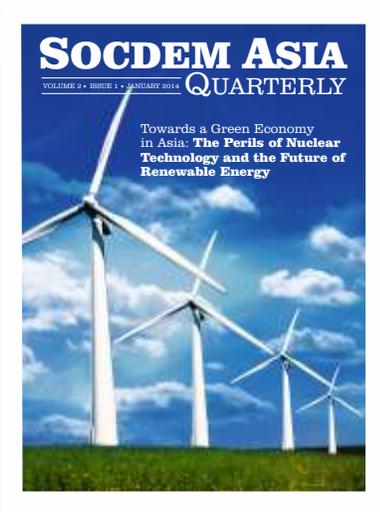
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<sup>1</sup> Ibid.

<sup>2</sup> Valdez-Fabros, Corazon 1998. 'The continuing struggle for a nuclear-free Philippines'. *WISE News Communiqué*. Retrieved January 5, 2011, <http://www10.antenna.nl/wise/index.html> <http://www10.antenna.nl/wise/499-500/4935.html>

<sup>3</sup> Ibid.

<sup>4</sup> Business World (February 2, 2010) 'Cost of Bataan Nuke Plant Rehab Set at \$1' *ABS-CBN News. B.* Retrieved January 5, 2011. <http://www.abs-cbnnews.com/business/02/01/10/cost-bataan-nuke-plant-rehab-set-1-b>



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# Interview with former Fukushima Governor Eisako Satō

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**Heydarian:** As the former governor of the Fukushima Prefecture, you are said to have been originally a nuclear technology advocate and happy about the role of your constituency in contributing to national energy security. Yet, overtime, you became one of the greatest critics of the nuclear program, especially after discovering about cover-ups regarding technical malfunctions in the Fukushima nuclear plant reactor. Could you briefly share with us your experience as the former governor of Fukushima, and how your position on the nuclear plant came to radically change overtime? What were these malfunctions and cracks in the reactor that came to your attention? As a responsible statesman, what was your first reaction and thoughts when you stumbled upon such devastating information? What were the circumstances of whistleblowers coming to you and sharing sensitive information?

**Governor Sato:** Right after being elected governor of Fukushima Prefecture in 2006, three things happened that made me start to question nuclear power. First, just four months after I took my post, the central government responded insufficiently and inadequately to three emergency situations at nuclear power plants in Fukushima prefecture. Secondly, the response to an accident with fatalities in a Kansai Electric Power Co. (KEPCO) nuclear power plant also was irresponsible. Thirdly, a section chief of the Ministry of International Trade and Industry (MITI) (currently the Ministry of Economy, Trade and Industry, METI) made a promise regarding the disposal of spent nuclear fuel rods, but then, before even half a year had passed, he simply scrapped his promise.

Following the above-mentioned developments, the town of Futaba, which is host to two nuclear reactors, began to voice concerns with the Diet's decision to further increase the number of reactors there. Previously, the town had been reassured that with just one reactor they could maintain prosperity for the foreseeable future. Later, Fukushima prefecture's cooperation was again requested, this time for allowing the reprocessing of spent nuclear fuel rods into MOX fuel, or, "pluthermal," at a nuclear reprocessing plant in the village of Tokai-mura. Since the director of the Agency for Natural Resources and Energy had promised to create laws – until that time there had been none – for the disposal and reprocessing of spent fuel, and also had made promises to regulate the process, Fukushima accepted the request. However, shortly thereafter, these promises and conditions were all broken. Rather, as a result of yet another accident in the nuclear reprocessing plant in Tokai-mura (1999), during which two people died, the whole nation started to learn about the dangers of MOX fuel.

**Heydarian:** After expressing your discontent with the nuclear plant, and more broadly with the Nuclear and Industrial Safety Agency's (NISA) handling of the issue, you were eased out of your position, and later even charged with administrative complaints, which, as you have adamantly asserted, are known to be politically motivated. Could you share with us briefly your experience on taking on the powerful regulatory agency? What do you think were and continue to be the major problems in the agency, and why do you think they engaged in cover-ups despite the clear risk to the people? How powerful is the nuclear lobby and TEPCO in determining the country's nuclear and energy policy paradigm?

**Governor Sato:** Although I cannot be entirely sure, I suspect that it was as a result of the central government pulling the strings in the background that the vice president of TEPCO issued threats. At that time, I was on a trip to Korea, but I responded that we should start nuclear power policies over from square one. Then, on the following day, the president of TEPCO held another press conference to revise the vice president's statement. This resulted in an unbelievable stir.

Meanwhile, I drew on the opinions of local representatives and the guidance of Japanese experts to establish an independent research panel to review Fukushima Prefecture's energy policies. What became clear through the results of the investigation were the flaws in Japan's nuclear energy policies and, really, the nuclear fuel cycle itself.

When whistleblowers emerged and disclosed information [to the Nuclear and Industrial Safety Agency (NISA)], the government astonishingly passed the contents of these revelations back on to TEPCO and let them handle it. After that, because there was little Fukushima Prefecture could do in this situation,

After that, 29 more revelations from whistleblowers were leaked. Fukushima's hands were really tied in this situation, and so the prefecture petitioned the central government to act. However, the central government played off this information as if it was an internal TEPCO matter. But because people in



Fukushima were so outraged over the revelations contained in the reports, TEPCO eventually had to shut down all 17 of its reactors in Fukushima.

At that time, all of my policies as governor envisioned a centering of prefectural politics on the people. In other words, I was trying to change the typical top-down approach to politics which positioned the central government at the top, then the prefectures, and finally the cities and villages and their inhabitants at the bottom, to one which started from the people and then moved to cities and villages, prefectures and, lastly, the central government. On the other hand, one of the central tenants of the first Abe administration (2006-07) was a revision of the constitution and introduced a system in which the current 47 prefectures would be reorganized into seven to nine larger regional entities, or, “states” (shū). In this context, I had little other choice than to resign from my post as governor just one day before the Abe cabinet was formed. Also, at a meeting of the National Governors Association just two months earlier, I had rejected a bill which proposed to implement the “state” system of larger regional entities. Therefore, I think this issue was also one of the reasons I lost my position. And there were some other issues, too. For instance, the expansion of large corporations in the prefecture was threatening the local economies. To prevent this from happening, I worked to implement regulations to revitalize and protect our towns and communities.

After the Fukushima nuclear disaster in 2011 and an interview I did with the German magazine, *Der Spiegel*, many things, including my resignation, are becoming clearer. The *Der Spiegel* article, for example, highlighted the antinuclear movement in postwar Germany, and noted Austrian writer Robert Jungk’s book *The Nuclear State*, in which the author paints a bleak picture of nuclear empires eroding democracy [1]. Germany never did become a nuclear empire, but Japan did and, as the article explained, this eventually led to the Fukushima nuclear disaster in 2011.

**Heydarian:** After the Fukushima nuclear disaster, your book *Annihilating a Governor* emerged as a bestseller, vindicating your earlier forebodings about the nuclear plant and the whole “nuclear bureaucratic village” of lobbyists, regulators, and politicians. Do you think that the Japanese public has decisively and wholeheartedly turned against the nuclear program? How much is such public sentiment reflected in actual policy? With the change of leadership from the DPJ (earlier expressing plans to suspending nuclear technology) to the LDP under Prime Minister Shinzo Abe, do you think that there will be a revival in the nuclear technology? Do politicians even have control over the regulatory agency? What are your thoughts on a post-nuclear Japan? Do you think that Japan can attain energy security with a move towards Renewable Energy (RE) and energy efficiency while decoupling from nuclear technology?

**Governor Sato:** Because of its history with Nazi rule, postwar Germany is cautious about anything that hints of totalitarianism. This is particularly true of the German mass media, which acts as a system to guard against sources of totalitarian ideology. Unfortunately, however, this is not the case in Japan. Even the Japanese mass media lacks an awareness of its cautionary role of keeping extremism in check, and instead is hardly more than another part of the nuclear empire.

Therefore, I think that, just like Germany, Japan needs to weigh things which are scientifically possible against the cultural and philosophical implications of actually putting those things into practice. My comments in the journal of the Atomic Energy Society of Japan speak further to this issue, and I’d like to quote a portion of that here.

“Whether we like it or not, we are living surrounded by the results of scientific advancement and technology. Therefore, it is all the more important that we are able to distinguish between things which are scientifically possible and things that should actually be put into practice. The involvement between scientific advancement and the development of our human society should be dictated by a firm grasp of logic. Also, we should carefully consider our vision for human society and the environment in the twenty-first century, and appropriately evaluate the role of science and technology in this relationship.”

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[1] Translator’s remark: The original German title of Robert Jungk’s book is “Der Atomstaat,” and this is translated into English as “The Nuclear State.” However, in Japanese the title is translated as “Genshiryoku teikoku,” or “The Nuclear Empire.” The difference in the translation of this title, and especially the words “state” and “empire,” is important here because Mr. Sato later likens the nuclear power complex in Japan to an “empire.”

# Interview with Mr. Jo Leinen, Member of European Parliament

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**Heydarian:** What was the German experience with nuclear phase out?

**MEP Leinen:** We have had a long debate on energy policy in Germany, dating as far back as the 1970s; so more or less, for 40 years the German society has been debating the merits and contours of an optimal energy supply regime. And upon decades of careful reflection, technical studies and inter-societal exchanges across the political spectrum, we have arrived at the conviction that we should go for democratization and decentralization of our energy supply -- something that is possible with Renewable Energy (RE), rather than nuclear technology. After the Fukushima disaster in 2011, the German Parliament, across all parties, decided to phase out our nuclear plants by 2020, and, simultaneously, phase in RE in an even more vigorous manner.

**Heydarian:** The ruling party (CDU), or Chancellor Angela Merkel to be more specific, is said to have used a moral argument to justify her volt-face on the nuclear issue, having previously rejected the Green-Red push for nuclear phase out. What is your take on this? What created that cross-party consensus?

**MEP Leinen:** In Germany, just like other parts of the world, there is this ideology, deep-seated conviction, that nuclear technology is cheap, and a symbol of modern technology. And many major party leaders in Germany have come to believe in this. As long as nuclear technology was portrayed as cheap, clean, and modern, it was difficult to argue for a full phase-out. But after the Fukushima incident, the prevailing philosophical outlook experienced a transformation: not only Soviet-Style technology, ala Chernobyl, could apparently fail, but also Japan's very sophisticated technology -- and by extension those in the Western world. So there was this realization that there was no guarantee of safety with respect to nuclear technology, even the most sophisticated kind, and therefore the argument that it was morally unacceptable to accept such risk for human beings and the environment. And this was the argument used by our Chancellor, Angela Merkel, and the German government to sidestep the nuclear lobby within the ruling coalition as well as outside the party, with respect to the nuclear lobby and industry. At this point, the government, led by Merkel, raised a moral argument, saying "look, it is not only politically, but also morally unacceptable [to continue our reliance on nuclear technology]; and since I am on the good moral side, I am advocating RE, which is clean and safe, while phasing out the nuclear technology."

The irony of our nuclear phase out is that we had to do it twice. The first one was in 2002, during the Red-Green coalition government. This was a negotiated agreement between the government and the nuclear industry. But in 2009, there was again a turnabout in the phase out, which gladdened those who were hoping for a nuclear revival. The Fukushima disaster prefaced a second chance at building a political consensus, but more importantly, also a legally binding agreement for a nuclear phase out.

**Heydarian:** What Makes Germany an RE powerhouse?

**MEP Leinen:** We have had a long debate in Germany on energy options, encouraging large parts of the population to gain trust in RE and investments in the RE sector to deal with our energy needs. The turning point was the feed-in-tariff law introduced by the coalition lead by the Social Democratic Party (SPD), whereby the state guaranteed returns for investors (while the industry was still at its infancy). So lot's of people and local communities began investing in RE (e.g., water, solar, and bio-mass), growing from 70 energy producers to 1.2 million over decades, which in the process made citizens both consumers and suppliers of energy at the same time -- thus, building a decisive constituency that has underpinned the success and growth of the RE industry in Germany.

**Heydarian:** Are there lessons for Asia? Is Germany an exception, or does it hold valuable lessons for the rest of the world, as we move towards RE in an attempt to raise energy efficiency, ensure energy security and combat climate change?

**MEP Leinen:** The lesson is that you can be a highly developed country, with high living standards, but without (significantly) relying on nuclear power -- and even reduce dependency on fossil fuels. In the end, our vision in Germany is to have a 100% RE-based energy supply, and we are undertaking a lot of efficiency-boosting and RE-driven measures to build a new concept of economic development, which is ecologically sound, economically sustainable, and socially good, since it also provides a lot of sustainable jobs for a lot of people.

Developing countries look to developed countries, and think that just because they have nuclear technology, therefore it might be good. But this might have been the case or the state of mind 40-50 years ago. Given all the experiences we have had in recent decades with nuclear disasters, and the enormous strides made in the RE industry, the phenomenon of companies in the developed countries selling nuclear technology to the developing world, in my opinion, could be seen as some form of neo-colonialism, since there are obviously better alternatives. And nuclear technology has proven to be dangerous, expensive, and unsustainable -- only benefiting the interests of the nuclear lobby.

# Interview with Mayor **Michael Knape** of Treuenbrietzen/Feldheim, Germany

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**Heydarian:** In what ways do you think that your city, Feldheim/Treuenbrietzen, stands as a success in terms of building a sustainable green community?

**Mayor Knape:** In my opinion, there were three important factors that stand as indicators of success. First is the strong, genuine integration of citizens into building Renewable Energy (RE) projects, and their acceptance of the projects as our primary source of energy supply. Second is our ability to build a clear consensus to assure the supply of energy is pushed to RE-based 100% in the future. Finally, the integration of the local business community, which enabled the creation of a virtuous economic cycle based on RE -- in turn, fostering a local accumulation of natural resources and their optimal utilization. The overarching dimension of our city's success is the reliance on our own human, technological and natural resources, and not those from the outside.

**Heydarian:** What are the critical factors behind Feldheim's success?

**Mayor Knape:** The current structure of German energy supply system. In terms of energy supply, for 50-60 years the whole energy system has been centralized, with four major companies responsible for the bulk of our energy supply. This gave birth to a quasi-monopolistic system, with companies dividing the country into segmented markets and dominating them individually. The old legal framework regarding energy production, transport, and supply was tuned to these companies' interests. But, on the other hand, the German government decided, later on during the early-1990s, to gradually shift away from this centralized system, accelerating during the Red-Green coalition in 1998. The result was a conflictual energy regime, with a lot of regulatory loopholes and legal gray areas, which, fortunately, provided the opportunity for a new RE-based approach. Overall, decentralization was crucial to this transition from a centralized, conventional energy-based regime into an increasingly RE-driven one.

**Heydarian:** What are the challenges in building a green economy, and do you think we can overcome them? What about the financial sector and their role, how crucial are they to the success of building green communities?

**Mayor Knape:** This is a very tough question for a mayor; it is more appropriate to ask the Chancellor or leaders on the national level. But as a mayor of a small town, overseeing this pilot project (of building a sustainable green community in

Feldheim), the major challenge is to shape the legal framework to suit the interest of the RE sector and the establishment of green communities. Also, there is the challenge of proactively integrating the communities into the process, which demands impeccable organization and mobilization.

On the financial sector, they should develop a new type of business model or approach that accepts a margin of uncertainty, which is inherent to REs and any cutting-edge investment for that matter. There could also be a division of labor between larger national and smaller regional banks: big banks investing in the development of the technology, while their smaller counterparts helping in ensuring there is enough capital available for the development of self-sufficient, green communities.

**Heydarian:** How crucial is the Federal/national government to the development of green communities?

**Mayor Knape:** First of all, they should be fully committed to the profound transformation of the national energy system, the so-called *Energiewende*. Secondly, they should support decentralization in this regard, giving local government units enough policy space to make tailor-made decisions. This allows the development of spaces for cost-efficient energy production independent of big companies and major players in the global energy markets. And this implies one should seriously rely on local resources, and invest in new technologies -- or import if necessary -- and assimilate them into individual communities.

**Heydarian:** In your opinion, what is the lesson for us here in Asia? What can we learn from Germany's (and Feldheim's) experience?

**Mayor Knape:** I think the overarching lesson is that there should be a move towards decentralization, especially in archipelagic countries like the Philippines, to enable the development of new structures for energy supply, in accordance to the unique circumstances of the communities.

# Nuclear Phase-Out and Energy Transformation in Korea

LEE PIL RYUL  
KOREA NATIONAL OPEN UNIVERSITY

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**M**y chief interest is how to achieve the energy transformation in Korea: Energy transformation is a rough translation of the German term 'Energiewende', which was taken by the English-speaking media to describe the nuclear phase-out and renewable energy policy in Germany after the Fukushima nuclear accident in March 2011.

Energy transformation, i.e. Energiewende, is the basic prerequisite for establishing a sustainable society. It is hard to imagine a sustainable society without renewable energy sources, and without the basic idea of Energiewende renewable sources could hardly contribute to achieving sustainability.

Energiewende is not a mere replacement of nuclear and fossil energy with renewable sources, but it also includes, on a more fundamental level, the total restructuring of the current society dominated by big business and centralized power in favor of a more decentralized, democratic society. Therefore in thinking and speaking about renewable energy sources the basic idea of the Energiewende should be always present in the background and serve as point of reference.

## The Nuclear Debate

**I**n approaching the energy issues of Korea I always try to consider them from the standpoint of the Energiewende. In Korea there are two camps who are concerned with nuclear power: one is pro-nuclear, the other is anti-nuclear.

People in the pro-nuclear camp firmly believe that the future of energy in Korea lies in nuclear power. In the opposite anti-nuclear camp people strongly assert that nuclear power is too



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**In spite of the continuing anti-nuclear movement, the pro-nuclear camp has been gaining great power and influence during the last five years thanks to the government's strong pro-nuclear energy policy.**

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dangerous for the whole society and future generations to keep as an energy option and therefore it must be phased out rapidly.

In spite of the continuing anti-nuclear movement, the pro-nuclear camp has been gaining great power and influence during the last five years thanks to the government's strong pro-nuclear energy policy. Even the Fukushima reactor accident had little influence on the continuous growth of powerful pro-nuclear camp. During last five years people in this camp seem to have come to the conclusion that nuclear energy could or should substitute all forms of fossil energies in Korea. To meet their future nuclear-dominated energy plan, they have proposed pressurized water reactors, fast breeder reactors, hydrogen producing reactors, small flexible reactors and pyroprocessing - one of the spent fuel reprocessing methods - in their future nuclear program.

According to the energy plan of the Korean government, the share of nuclear electricity must increase up to 59 per cent until 2030. In 2030 the number of nuclear reactors will increase from current 23 to more than 33. In 2050 small flexible reactors, hydrogen reactors and fast breed reactors will possibly be developed and employed for operation in Korea. In 2010 the share of nuclear power in the total electric power production was about 35 per cent. In 2030 it would become about 59 per cent, and if we simply extrapolate this upward trend, we will get 80 per cent share of nuclear power in 2050, which would be produced by not only pressurized water reactors but also fast breeder and other varieties of reactors.

The anti-nuclear camp totally rejects the program of pro-nuclear camp, and is demanding the nuclear phase-out and the expansion of renewable sources. However, their main interest does not seem to be in the Energiewende in Korea but rather in their emphasis of the dangers of nuclear power. Energiewende requires longterm and complex thinking and furthermore actions towards 'concrete utopia'. Nevertheless, people in the anti-nuclear camp like to make suggestions for expanding renewable sources. For instance they demand the government to reintroduce the feed-in-

tariff system (FIT), discarding the current 'renewables quota system'. They argue that the feed-in-tariff system is a better instrument than the quota system to enhance the share of the renewable electricity and that it could facilitate the normal people to install PV power plants.

The FIT was introduced in Korea in 2002 but substituted by the quota system from 2012. In 2002, when the FIT was introduced, the government submitted the "new and renewables roadmap", where a 7% target share for renewable electricity was set for 2011, even though it seemed totally impossible to achieve this. However, the "new and renewables roadmap" and the FIT was announced with little preparation. My personal experience has in fact confirmed this: After the introduction of the FIT, I immediately installed 3kWp PV power plant, but I had to fight and argue with the responsible ministry for four years

until successfully selling the electricity from 2006 onwards.

After my success, the number and capacity of PV plants increased rapidly. In 2008, for instance, installed capacity of PV power plants was about ten times higher than that of 2006. However, the Korean government was not satisfied with this situation, because on the one hand they could not control the increasing rate of renewables and on the other hand they thought the the FIT was not market conformist. Therefore, the government decided to abolish the FIT and to introduce the renewable energy quota system (RPS) from the year 2012 onwards. The Korean government considered the quota system a better instrument than the FIT, because with the quota system the government could dictate the power companies how much they should produce the renewable electricity among their total electricity production.

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Photo from <http://phys.org>

## An Untenable Status Quo

In contrast to the pro-nuclear as well as the government's argument, the anti-nuclear camp argues that the quota system could hardly enhance the electricity production from renewables. They argue that it does not allow normal people to participate in the renewable electricity market. However, under the FIT the participation of the normal people was not unlimited. Some people including myself installed small PV power plants, but nobody could take part in the construction of wind farms and large scale PV power plants. Main beneficiaries of the FIT were big capital owners, who had no other interest than to make profit from their solar power plants. To achieve this goal they destroyed the mountains, forests and farmlands to construct their power plants.

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## Main beneficiaries of the FIT were big capital owners, who had no other interest than to make profit from their solar power plants.

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If we evaluate the effectiveness of two instruments with their potential of increasing renewable electricity, the RPS is better than the FIT. The electricity market in Korea is almost totally monopolized by the state owned Korea Electric Power Corporation (KEPCO). Most of electricity consumed in Korea is sold by the KEPCO. The situation of the electricity production is almost the same. Only 12 per cent of electricity production is taken by big private companies.

The Korean government has the exclusive control over the electricity market. Under such situation, the quota system could work more effectively for enhancing the electricity production from renewables. It is too early to evaluate the effect of quota system, but the high increase of installed PV capacity of 2012 shows the effectiveness of quota system. If the obligatory share of renewable electricity would be fulfilled by the power production companies, the renewable electricity production would increase rapidly.

Whether with the RPS or the FIT, the difference between electricity productions from conventional, on one

hand, and renewable sources, on the other, will be continuously growing in Korea. In 2010, the gap was around 490 TWh, but, according to the government's basic electricity supply plan, this is set to increase to 681 TWh in 2027. Faced with this ever enlarging gap the government and pro-nuclear camp believe that there is no other choice than nuclear power.

Confronted with this projection, we can surmise that the Energiewende in Korea can not be achieved without reducing the electricity and energy consumption. If the energy consumption in Germany is increasing, Energiewende will encounter enormous resistance from all sides of society. Therefore, under current circumstance in Korea, the most important task for Energiewende is to solve the problem of ever increasing electricity and energy

consumption. But how can we fight with this seemingly unbeatable gigantic enemy? You can be easily caught by frustration in a society like Korea where most people wants ever increasing economic growth.

### Lessons from Germany

Although the circumstances in Korea seem to be hopeless, the German history of Energiewende gives us some cause for optimism. In Germany, people can enjoy fundamental civil and political rights essential for transforming the society. Without these democratic rights, the introduction of FIT in many communities, before it's nationwide introduction and the establishment of citizen electricity company in Schönau would have been impossible. The participation of a wide range of social groups in anti-nuclear and Energiewende movement was also essential to the nuclear phase-out and Energiewende.

Impressive success stories like the suspension of the construction work in Wyhl and the Citizen Power Company in Schönau helped the movement flourish all over the country.

During the long-continued German anti-nuclear movement, enormous number of progressive initiatives by civil society groups emerged and successfully survived in the struggle against nuclear and fossil energy lobby. A large number of young people from anti-nuclear movement founded renewable energy corporations and developed them into leading companies in their fields. Ordinary citizens also built numerous wind- and solarpower cooperatives. Through those activities, the idea of Energiewende could be disseminated and inherited from generation to generation.

Because the nuclear phase-out and the Energiewende is a long-lasting process, people who are involved in them could live on and with them for their whole life. Founding Energiewende corporates is the best way for that purpose. You have to be able to earn money with anti-nuclear and Energiewende movement.

German history of nuclear phase-out and Energiewende implies: first democracy is the fundamental prerequisite for energy transformation; and second, wide ranging support from various kinds of social groups is indispensable.

Protest and resistance groups are necessary but not enough. Long lasting success stories must support the anti-nuclear and Energiewende movement. Progressive endeavors like the founding of renewable energy companies, citizen cooperatives and introduction of good energy policies should arise in the whole society.

### Korea's Path Forward

What can be done in Korea with these German lessons? Korea is in a totally different situation. The electricity market is almost totally monopolized by the state owned utility company. Democracy in a deep sense is still very weak. Blind belief in technology and economic growth is firmly anchored among the people. Young people do not have great interests in alternatives and 'concrete utopia'. Politicians have little interest in energy issues.

Nevertheless I would like to make some suggestions for achieving nuclear

phase-out and Energiewende in Korea. To weaken the power of the state owned electricity company KEPCO, we must, for instance, divide it into small regional and local utility companies controlled by communal governments. In short, the total monopoly of the KEPCO should be broken, and/or the electricity market must be liberalized according to alternative arrangements. The electricity grid must be opened, at least to the renewable electricity companies. Last but not least, consumer-oriented mental infrastructure which is strengthened through neoliberal capitalism should be overcome or tempered. Otherwise the enlarging gap between electricity productions from conventional and renewable sources can't be reduced.

It may seem almost impossible to achieve all these suggestions. But in the seemingly hopeless situation it is important to have an optimistic position and to begin with small steps. We can start with electricity independence within our own homes. If we can produce electricity from solar power plants on the rooftop of our houses and store it, then we become able to cut off the electricity supply cable from the KEPCO and free ourselves from nuclear and fossil-fuel-based electricity.

Unlike the anti-nuclear campaign, these could provide long-lasting success stories, even if in the beginning they seem almost invisible. It allows the inhabitants to be independent from nuclear power and monopolistic KEPCO and the state. It allows the inhabitants to become independent from fossil-fuel-based energy. It forces the inhabitants to live in accordance with the nature and triggers them to rethink about the consumerism. This step has a potential to become a citizen's movement and if many people participate in this movement and become independent from nuclear energy, nuclear phase-out in Korea could become a reality.

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*Lee Pil Ryul*

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# From Insanity to Sensibility: Off with Nukes, On with RE

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MAITET I. DIOKNO

Among the things for which the Marcos Government and its energy czars will forever be remembered is the monumental folly in Morong, Bataan, Central Luzon: the Bataan Nuclear Power Plant (BNPP). Built between 1976 and 1984,<sup>1</sup> on top of one volcano—Mt. Natib—and near two others (Mt. Mariveles and Mt. Pinatubo);<sup>2</sup> it cost double the going price of nuclear plants at the time.<sup>3</sup> Known to have been completed without all the required clearances,<sup>4</sup> the BNPP was found to have over 4,000 construction defects that would render it unsafe to operate the plant, or very costly—running to the hundreds of millions of dollars—to correct.<sup>5</sup> Thankfully, it has never been operated and has not generated a single watt of electricity. This means the Philippines has not had to face any risk of a meltdown or nuclear hazard in the event of an earthquake or man-made error in operation. Nor has the Philippines had to deal with the problem of storing spent fuel, and its attendant risks—made all too real by the unending danger in Fukushima, Japan, since the strong earthquake and tsunami of March 2011.

Despite the decision of then President Corazon C. Aquino to mothball the BNPP, following the April 1986 Chernobyl nuclear disaster,<sup>6</sup> her government pledged to honor the onerous \$2.3-billion BNPP loan extended by the US Export Import Bank for the Westinghouse plant. To this day the Philippine government is still attempting to pursue the Marcos cronies, Herminio Disini,<sup>7</sup> who reportedly brokered the BNPP deal for a “commission” allegedly worth US\$18 million.<sup>8</sup> While justice for this onerous transaction has yet to be obtained, the

Philippine government continued servicing the debt until it was fully paid in 2007.<sup>9</sup>

Some Filipino engineers and politicians still cling to the idea of reviving and rehabilitating the plant. Mauro Marcelo, a nuclear engineer of the National Power Corporation, told the *New York Times* that the Philippines would have been “the first nuclear country in Southeast Asia” if not for “bad luck.”<sup>10</sup> The effort to revive the BNPP was given a push by the state-owned Korea Electric Power Company (KEPCO), which submitted a proposal to the Arroyo administration in early 2010.<sup>11</sup>

## Step No, Step Yes

President Benigno S. Aquino III had publicly stated that he had no plans to revive the BNPP, despite earlier calls of his cousin, former Representative Mark Cojuangco, to do so.<sup>12</sup> Until this year, the government was spending PhP40 million a year to maintain the BNPP.<sup>13</sup> In August 2012 it was reported that the Aquino administration refused to retain this amount in its 2013 budget.<sup>14</sup> But just before President Aquino left for a state visit to Korea in mid-October 2013—during which visit he was to meet with Korean investors—he ordered the Budget Department to reinstate the allocation for BNPP's maintenance in the 2014 budget.<sup>15</sup> Rather than closing the door firmly on nuclear power, the government of Benigno S. Aquino III appears to be leaving it slightly ajar.

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**While justice for this onerous transaction has yet to be obtained, the Philippine government continued servicing the debt until it was fully paid in 2007.**

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## ..let us turn the BNPP into an exercise in closing the door on nuclear power once and for all

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Before any talk of reviving the monster of Morong is allowed to resurface, the Aquino administration must undertake a thorough and comprehensive accounting of all the costs involved thus far in contracting, building, and mothballing this fiasco. The doubling of the plant's cost and the embedded "commissions" of Marcos and his crony, the servicing of the debt, the litigation cost in the failed attempts to pursue Westinghouse and Disini in Philippine and foreign courts, the cost of maintaining a non-generating plant—these are the obvious costs that must be laid bare to the public and future generations of Filipinos.

### Hidden Costs must be Disclosed

But there are hidden, more pernicious costs that must also be unearthed and made transparent. These include the damage to the economy wrought by the power crisis that followed in the 1990s when the government did not plan for new generating capacity to replace the mothballed BNPP,<sup>16</sup> and the failure of the State to provide the needed social services and physical infrastructure in order to protect its people, especially the poor, and sustain the country's ability to develop, when it chose to prioritize the servicing of the onerous BNPP debt.<sup>17</sup> To this day we continue to feel the effects of the BNPP aftermath.

Add to this the cost of rehabilitating the BNPP should the government succumb to pressure to revive the monstrosity. KEPCO estimates this to amount to one billion US dollars, or \$1.6 million per megawatt:<sup>18</sup> There will no doubt be cost overruns, as is the trend throughout the world—300 percent overrun is a commonly cited global number.<sup>19</sup> To this day, no private bank will fund nuclear power, and no private company will insure it.<sup>20</sup> This is also why those who would like the BNPP revived and rehabilitated insist



that government foot the bill<sup>21</sup>—ironic in an era where privatization is the main buzzword of policy makers.

### Conversion Options

Several options have been considered with regard to converting the never operated BNPP into some other thermal plant. Turning it into a coal fired plant was rejected because of the problem of transporting and stockpiling coal in the site.<sup>22</sup> Another option was to turn it into a natural gas fired plant but it seems this would be costly and the private sector proponent withdrew its proposal.<sup>23</sup> Perhaps the least costly and the most relevant option for our country would be to close the door on nuclear power altogether, and at best, maintain BNPP as a monument to folly.

At present the National Power Corporation, which is responsible for maintaining the plant, opens the BNPP to visitors. Ironically calling the visits "eco-tourism," the NPC engineers who guide the curious public wax lyrical about the wonders of nuclear energy and how much safer the BNPP is to the Fukushima Daichi nuclear plant in Japan.<sup>24</sup> It is clear that their hopes persist of turning the country into a plutonium import-dependent nation and giving it a new problem of where and how to store nuclear waste. Nevertheless they reluctantly admit to flaws pointed out by some of their more observant visitors.<sup>25</sup>

### Never again; Onward with RE!

Turning the BNPP into a lesson in history and science would be relevant if the entire story of the BNPP in particular, and of nuclear power in general, were told to all visitors, especially the youth. Filtering of information is the current norm during visits to BNPP, with the engineer-guides selecting only what would favor a pro-nuclear stance. In the interest of history and justice, the whole truth must be disclosed. The corruption involving the BNPP, the geological hazards surrounding the location of the BNPP, the resultant debt-power crises—these are but some of the more important aspects of the BNPP that the public must know, no matter how ugly and unbearable. A global history of nuclear disasters, from Three Mile Island to Chernobyl to Fukushima, would also be a crucial lesson for all to learn and where better to do so than in a plant that thankfully never had to bear the risks of such disasters. The true costs of operating nuclear plants worldwide, the failure of TEPCO—the owner of the Fukushima-Daichi plant—to effectively handle the ticking time bomb,<sup>26</sup> and the recent scandals about KEPCO—the state-owned Korean power company—deliberately hiding the accidents at its nuclear plants,<sup>27</sup> are tales that must be shared and discussed among all visitors. In short, let us turn the BNPP into an exercise in closing the door on nuclear power once and for all.

Having done so, we must then set ambitious targets—a minimum of 50% of generated power by 2020—for renewable energy. The Philippines is rich in renewable energy resources and the development of these resources<sup>28</sup>—not fossil fuels, not nuclear power—must be actively pursued.

The switch to renewable energy, in order to succeed, must be accompanied by what the global unions call “energy democracy.” By this is meant a change in the relations and structures of power that dominate the power sector today. The switch to renewable energy will make possible decentralized systems of generation, empowering local systems that can live alongside—if not entirely independent of—the national grid. Energy democracy means that community residents are innovators, planners, and decision-makers on how to use and create energy that is local and renewable. By making our energy solutions more democratic, we can make places environmentally healthier, reduce mounting energy costs so that families can take better care of their needs, and help stem the tide of climate change.<sup>29</sup>

In the Philippines energy democracy also means providing the poor with access to electricity. In 2008, two-thirds of the 2.9 million Filipino families who did not have electricity at home, came from the poorest 30 percent.<sup>30</sup> In this sense the technological possibilities opened up by renewable energy should also make possible the provision of electricity to impoverished communities that are not necessarily poor with regard to renewable energy resources.

Contrapose this with the emerging picture—after the passage in 2001 of a law embodying electricity reforms such as privatization and liberalization of the power sector—of growing concentration in ownership of generation, distribution and transmission. Elite control of the power sector has been consolidated rather than weakened after the electricity reform law of 2001, reinforcing the weave of power in all its dimensions in the hands of a few.<sup>31</sup> The development of renewable energy makes small possible. Perhaps it is through the addition of small communities in the power scene that the concentration of political and economic power in the hands of the elite could be shaken.

It is truly a blessing in disguise that the Philippines is not rich in oil, coal and plutonium. The shift towards renewable energy is necessary if we are to protect and nurture our environment, and make electricity accessible and affordable to all, especially the poor. The shift towards renewable energy can challenge the deeply rooted linkages between political and economic power in Philippine society. And Filipinos can hold their heads up high for being the first in Asia to go renewable rather than nuclear.

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<sup>1</sup> ABS-CBN News Research, “Timeline: Nuclear Power in the Philippines,” <http://www.abs-cbnnews.com/research/12/21/09/timeline-nuclear-power-philippines>

<sup>2</sup> Kelvin S. Rodolfo, “Geological Hazards of the Bataan Nuclear Plant: Propaganda and Scientific Fact,” University of Illinois at Chicago, 20 July 2010.

<sup>3</sup> Brian Dumaine, “The \$2.2 Billion Fiasco,” in *Fortune*, 1 September 1986, [http://money.cnn.com/magazines/fortune/fortune\\_archive/1986/09/01/67989/index.htm](http://money.cnn.com/magazines/fortune/fortune_archive/1986/09/01/67989/index.htm)

<sup>4</sup> Ibid.

<sup>5</sup> Rodolfo, loc cit. See also ABS-CBN Timeline. See also *Business World*, 2 February 2010.

<sup>6</sup> ABS-CBN Timeline.

<sup>7</sup> Christine O. Avendano, “High court affirms cases vs Marcos cronies,” in *Philippine Daily Inquirer*, 1 October 2013. <http://newsinfo.inquirer.net/498295/high-court-affirms-cases-vs-marcos-crony-disini>

<sup>8</sup> Ibid.

<sup>9</sup> ABS-CBN Timeline.

<sup>10</sup> Jes Aznar, “A Nuclear Plant, and a Dream, Fizzles,” in *New York Times*, 14 February 2012. <http://www.nytimes.com/2012/02/14/world/asia/bataan-nuclear-plant-never-opened-now-a-tourism-site.html?pagewanted=all&r=0>

<sup>11</sup> “Cost of Nuke Plant Rehab Set at \$1-B,” in *Business World*, 2 February 2010. [www.abs-cbnnews.com/print/87329](http://www.abs-cbnnews.com/print/87329)

<sup>12</sup> “Palace won’t support Bataan Nuclear Power Plant opening,” <http://west.mabuhaynews.net/V19N12/fr05.html>

<sup>13</sup> Leilani Chavez, “Push to revive Bataan nuclear plant timely?” ABS-CBN news, 23 December 2009. <http://www.abs-cbnnews.com/special-report/12/21/09/push-revive-bataan-nuclear-plant-timely>

<sup>14</sup> “Bataan Nuclear Power Plant gets no funds in 2013,” *Philippine Daily Inquirer*, 20 August 2012. <http://newsinfo.inquirer.net/253426/bataan-nuclear-power-plant-gets-no-funds-in-2013>

<sup>15</sup> Christine F. Herrera, “Aquino makes U-turn on nuke plant budget,” in *Manila Standard Today*, 19 October 2013. <http://manilastandardtoday.com/2013/10/19/aquino-makes-u-turn-on-nuke-plant-budget/>

<sup>16</sup> The loss of productivity and competitiveness as a result of the lengthy outages of the 1990s; the high cost of electricity that resulted from hastily built independent power plants with overpriced contracts; the further ballooning of the debt of the National Power Corporation as a result of its obligations under these onerous contracts are direct consequences of the decision and action of the government of Corazon Aquino to mothball the BNPP without planning for additional capacity to replace the mothballed plant.

<sup>17</sup> See this author’s discussion on social debt, “The Debt to the People,” a power point presentation made at the Congress of the Freedom from Debt Coalition, Quezon City, 17 August 2010.

<sup>18</sup> “Cost of Nuke Plant Rehab Set at \$1-B,” in *Business World*, 2 February 2010. [www.abs-cbnnews.com/print/87329](http://www.abs-cbnnews.com/print/87329)

<sup>19</sup> Jerry Taylor and Peter van Doren, “Nuclear Power in the Dock,” in *Forbes*, 4 May 2011. [http://www.forbes.com/2011/04/04/nuclear-energy-economy-opinions-jerry-taylor-peter-van-doren.html?feed=rss\\_home](http://www.forbes.com/2011/04/04/nuclear-energy-economy-opinions-jerry-taylor-peter-van-doren.html?feed=rss_home)

<sup>20</sup> Juergen Baetz, The Associated Press, 21 April 2011. <http://www.globalnews.ca/Nuclear+plants+viable+only+when+uninsured/4653983/story.html>

<sup>21</sup> Alvin Elchico, “RP must consider nuclear power: expert,” ABS-CBN news, 6 July 2009. <http://www.abs-cbnnews.com/business/07/06/09/rp-must-consider-nuclear-power-expert>

<sup>22</sup> “Bataan Nuclear Power Plant gets no funds in 2013,” *Philippine Daily Inquirer*, 20 August 2012. <http://newsinfo.inquirer.net/253426/bataan-nuclear-power-plant-gets-no-funds-in-2013>. See also <http://www.rappler.com/business/industries/173-power-and-energy/30166-napcor-govt-bnpp-rehab-plan>

<sup>23</sup> Dr. Michael C. Clarke et al., “Options for the Conversion of the Bataan Nuclear Power Plant to Fossil Fuel Firing,” METTS Consulting Engineers. <http://www.metts.com.au/bataannucdoc.html>

<sup>24</sup> This author was with a delegation organized by the Active Citizenship Foundation that visited the BNPP on 31 January 2012, and heard the NPC engineer make such a claim to the delegation. See also [http://www.asienhaus.de/public/archiv/Nuclear\\_Tourism\\_May31-longer.pdf](http://www.asienhaus.de/public/archiv/Nuclear_Tourism_May31-longer.pdf) and <http://www.nytimes.com/2012/02/14/world/asia/bataan-nuclear-plant-never-opened-now-a-tourism-site.html?pagewanted=all&r=0>

<sup>25</sup> Jes Aznar, “A Nuclear Plant, and a Dream, Fizzles,” in *New York Times*, 14 February 2012. <http://www.nytimes.com/2012/02/14/world/asia/bataan-nuclear-plant-never-opened-now-a-tourism-site.html?pagewanted=all&r=0>

<sup>26</sup> See Brad Jacobson, “The Worst Yet to Come? Why Nuclear Experts Are Calling Fukushima a Ticking Time-Bomb,” 4 May 2012. [http://www.alternet.org/story/155283/the\\_worst\\_yet\\_to\\_come\\_why\\_nuclear\\_experts\\_are\\_calling\\_fukushima\\_a\\_ticking\\_time-bomb?page=entire](http://www.alternet.org/story/155283/the_worst_yet_to_come_why_nuclear_experts_are_calling_fukushima_a_ticking_time-bomb?page=entire)

<sup>27</sup> “South Korea: Forgery Scandal Affects Reactors,” in *New York Times*, 6 November 2012. [www.nytimes.com/2012/11/07/world/asia/south-korea-scandal-affects-reactors.html?pagewanted=print](http://www.nytimes.com/2012/11/07/world/asia/south-korea-scandal-affects-reactors.html?pagewanted=print)

<sup>28</sup> The estimate of the Department of Energy is 250,000 MW of renewable energy resources, broken down as follows: geothermal, 1,200 MW; hydropower, 10,500 MW; wind, 76,000 MW; biomass, 235.7 MW; ocean current, 170,000 MW. This estimate does NOT include solar power potential. See also Rowaldo del Mundo, “Renewable Energy for Energy Security,” Quezon City, 16 February 2010. Prof. del Mundo’s estimate of the country’s solar power resources is 5.2 kWh/m<sup>2</sup>/day (5 sunshine-hours).

<sup>29</sup> <http://www.centerforsocialinclusion.org/ideas/energy-democracy/>

<sup>30</sup> National Statistics Office.

<sup>31</sup> Jerbert Briola, “From state monopoly to de facto Electricity Oligarchy,” in PAID, Vol 13. No. 1, Nov 2009.

# India's Integrated Energy Policy: Challenges and Opportunities for A Sustainable Energy Paradigm

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India aspires to achieve 2-digit economic growth despite the temporary slowdown. But, a high economic growth would require a much larger demand as well as enhanced supply of energy. Here lies a formidable challenge for India in securing a variety of choices in terms of supply possibilities of energy.

India's per capita energy consumption is one of the lowest in the world. Moreover, India's energy sector is unable to deliver a secure supply of energy, and demand for fuel imports is growing. Imports also become uncertain as India is largely oil - dependent on the volatile regions in the Middle East. The alternative is to augment the indigenous sources of energy. But, lack of sufficient capacity to make timely and adequate investment, limited technology choice, lack of a strong political will etc. give rise to the fear that India may be heading towards a energy crisis.

Therefore, in view of the growing need of secure supply of energy for growth as well as meeting the life-line requirements of a vast number of Indians, the central Indian Planning Commission has come up with an integrated energy policy for the country. This paper discusses and critiques the policy in terms of various trajectories for energy supply, possible fuel mix, technological constraints, political and policy scenario, mainly the renewable energy sources, nuclear energy, investment possibilities and so on.

The vision behind the integrated energy policy is to meet the energy needs of the entire sectors- commercial, industrial and the life-line use by the vulnerable households in the country. India's energy consumption consists of

60% imports of oil. The electricity sources consist of 56.85% of coal, 9.2% gas, 0.58% oil, 19.14% hydro, 2.32% nuclear, and 12.09% renewable energy. And those sources are handled by five ministries in Government of India. Ministry of Coal, Ministry of Petroleum and Natural Gas, Ministry of Atomic Energy, and Ministry of New and Renewable Energy, Ministry of Power. Each ministry is busy in protecting its own trust resulting in mix-up priorities, lack of co-ordination and synergy. Hence, there is the need for an integrated energy policy to optimize the energy generation.

Let us look at the two sources that are gripping the concerns as well as challenging the wisdom of policy makers across the world. These sources are nuclear energy, and renewables. The nuclear technology expert of India, who went to become the President of Republic of India, between 2002 to 2007, A.P.J. Abdul Kalam had said "in

order to make India fossil fuel free, energy independent, and self-sufficient, we ought to engage in generation of nuclear energy.' Furthermore, a statement from Indian Prime Minister's office issued in 2012, in the face of growing protest against nuclear plants said, "Nuclear energy could address India's energy challenges, meet massive energy demands, mitigate carbon emissions, and enhance energy security." That is why perhaps India remains committed to nuclear energy production even after Fukushima-Daiichi accident in 2011. The technical defense of Government of India is that it is developing the potential of thorium fuel cycles, which is better than Uranium, as it is less hazardous, although not easy to weaponise. India has highest thorium resources in the world. According to IEA Report 2010, currently, India is the only country that is developing the potential of Thorium fuel cycles.

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**...there is the need for an integrated energy policy to optimize the energy generation.**

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Photo by Sam Panthaky

Government of India is moving ahead with nuclear technology. It has, of late, got access to global nuclear industry and technology, mainly in United States, France and Japan. But it faces growing public opposition and protest over the safety and environmental impacts. The opposition to government over the safety of nuclear plants in India was exacerbated by the Fukushima-Daiichi accident (BBC-2011). It may be noted that public fear is not limited to installation of nuclear plants, as it was seen in the fierce opposition to Kundankulam nuclear power plant, in a small town in Southern India, people are also concerned about India's nuclear mines. In 2011, uranium was discovered in the northeastern Indian state of Meghalaya. People are heavily opposed to mining of uranium there as it would "degrade the environment and cause health hazards. It would also open up the state for heavy influx of outsiders to the predominantly tribal state". (Times of India, New Delhi, 2011). The nuclear sector is exclusively controlled by the central government in India, and the government is bent on pursuing the nuclear route to energy sufficiency despite heavy public protests.

The Renewable Energy sector in India has potential, but is underused. The conventional wisdom holds that it is expensive to produce energy from renewables, hence the use of coal etc. should be continued. There has been some shift in thinking in response to climate change challenges. However, despite growth of small hydro and wind power, the contribution of renewable energy to the total energy consumption has remained below mere one percent.

Given the inherent energy deficit in India, and the potential of renewable sector, Government of India is gearing up to the need of boosting this sector. A government publication said, "Renewable energy is expected to supplement the power generation and meet basic energy needs especially in rural and remote areas." As a matter of fact, India has the fifth largest capacity for wind energy. It has 300 days of solar radiation in the country and the bio-mass is abundantly available. Government of India has taken some steps to harness its renewable energy potential. It has set up an ambitious



Image from flickr / 350.org

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**Green-growth has to be a preferred strategy for which people's support is essential. It will not only help solve India's persistent energy problems, but improve people's lives.**

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Solar Mission in 2010 to augment its solar power capacity. The 12<sup>th</sup> Five Year Plan running from 2012 to 2017 envisages capacity expansion of renewable energy up to 30 GW: wind 15 GW, solar 10 GW, small hydro 2.1 GW, and bio-power 2.9 GW. India's Integrated Energy Policy 2008, focusing on a low carbon, green-growth economy aims at shifting the energy strategy in favour of renewable. But, the actualization of this objective encounters challenges and implementation bottlenecks. Mainly three issues need to be addressed. One, the transmission infrastructure should be expanded. Energy is lost in faulty and cumbersome transmission routes. Second is the issue of land acquisition. The lead time for acquiring land is 6 to 12 months as the process is beset with procedural wrangles. Third issue is the government policy of imposing the mandatory domestic content requirement, particularly in the solar

industry. This slows down the process of expansion of the sector as India still does not have the capacity. Fourth, in an irrational procurement policy the government puts emphasis on lower tariffs, instead of asking for more technical experience and financial capacity.

There are traditional oil import lobbies against promotion of renewable. Hence, there has to be a sustained national dialogue involving the state, businesses and the civil society on the energy mix for India. Evidently, renewable sector cannot thrive without strong policy support from the government, business sector participation, and civil society consciousness. Green-growth has to be a preferred strategy for which people's support is essential. It will not only help solve India's persistent energy problems, but improve people's lives.

To conclude, India needs to transform its energy sector, make it an open and functioning market, and align its policies and institutions with global practices. In particular, it should improve the capacity of players of energy sector, mainly the energy companies, allowing them to compete on a level playing field. Second, it should set pricing that is commensurate with commercial viability, although in terms of its national priorities relating to distributive justice; it can have relative pricing and a consistent tax structure. Thirdly, India has to attract significant investment to meet its growing energy demands and provide access to all citizens. Here, a rational and judicious energy mix is critical to investment policy. Fourth, India should have a truly integrated and consistent energy policy, and effectively implement it. The gap between policy and practice has to be narrowed. Finally, a strong political will of the leadership as well as of citizens is the key to transforming the energy sector. There is a quite a bit of misinformation and manipulation of facts on the energy issue, mainly in regard to nuclear energy, its costs - financial, human and environmental etc, and benefits. Nuclear countries like Germany are going for a nuclear-free-energy policy, whereas others continue to rely on nuclear power. Fukushima-Daiichi has given as a wake-up call and revived the nuclear debate. So, more research, authentic information, and consistent and clear message are necessary to conduct the energy policy in India which is witnessing sporadic conflicts between the governments and the civil society. The debate needs to be actively conducted within and between countries across the world. This is a call all progressive leaders, thinkers, activists, and observers ought to respond to. Will they?

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# Penang's Green Economy Vision: Recent Endeavors, Key Challenges, and Emerging Opportunities

JESSICA CHOONG

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UNEP defines a green economy as one that results in "improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities" (UNEP, 2010). A green economy is low-carbon, resource efficient, and socially inclusive. (UNEP, 2013)

The concept of sustainable development has been gaining ground in Malaysia. The idea of steering Malaysia into a green economy has received much applause as Malaysia possesses a wealth of biodiversity. Sustainable development helps to preserve the environment and ensure a healthy economic growth. Penang is an active player when it comes to green economy and has been formulating green policy initiatives, embracing green economy at the forefront since 2008. In 2009, the Department of Energy, Green Technology and Water (KeTTHA) was formed under the Najib administration.

## Initiatives

A series of initiatives are in practice since 2008 under the "Cleaner, Greener Penang" motto. The Penang Green Office Project is one of the recent green initiatives development. Organized by Penang Green Council, the Penang Green Office Project is "an assessment tool to help offices to adopt sustainability principles."

Penang is the first Malaysian state to adopt Green Building Index (GBI). GBI rates commercial, industrial and institutional buildings based on its energy efficiency, indoor environmental quality, sustainable site planning and management, material and resources, water efficiency and last but not least,

innovation. GBI assesses and awards building either Platinum, Gold, Silver or Certified based on its points. The state government awards incentives to developers of certified buildings.

Being a water scarce state, the Penang Water Authority commenced the Aqua Save program in 2010 to encourage organizations to conserve water usage in their daily operations for the long term goal of water sustainability by issuing Aqua Save Certification. Majlis Perbandaran Seberang Prai has announced plan to make Batu Kawan into an Eco-Town, in collaboration with Kawasaki Eco-Town in Japan. Industries located in the designated area of eco-town adopt best practices in closed resource cycle. Green Schools in Penang adopt green approach in managing waste, usage of water and usage of energy. For example, almost all school participating in Green Schools have rainwater-harvesting system. Green Schools keep close tabs on their monthly water and electricity usage to prevent unnecessary wastage.

Under waste-separation-at-source, waste will be categorized according to groups such as organic waste, glass, plastics and paper. Practicing waste-separation-at-source facilitates the collection and accumulation of categorized waste. The massive amount of each group of waste will be put into good use as inputs for businesses instead of going to the landfill. Waste-

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**Green Schools keep close tabs on their monthly water and electricity usage to prevent unnecessary wastage.**

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Photo by LOW LAY PHON

**Penang is the first state in Malaysia to launch a state-wide campaign to reduce plastic bag consumption.**

separation-at-source pilot program was carried out in Green Schools to make students and their family members understand recycling and its value. Through this pilot program, students are educated on what to recycle and how to manage organic waste.

Penang state government has started the initial stage to extract biogas from sanitary landfill. Methane makes up around 50% of landfill gas and is used as fuel. Methane gas is around 30 times more harmful than carbon dioxide due to its mass as a green house gas, which contributes greatly to global warming." The edit is the "around 30 times", since the original version mistakenly puts more than 100 times.

The "White Coffin," a grassroots movement initiated in 2007 by Universiti Sains Malaysia Penang students, started with the intention of getting rid of polystyrene containers on USM campus. It started on a campus, and is now widely adopted in Penang as Penang state government has banned polystyrene material in food containers and packaging.

Penang is the first state in Malaysia to launch a state-wide campaign to reduce plastic bag consumption. On 1 January 2011, Penang implemented "Everyday is No Free Plastic Bags Days." The Federal Government adopted a similar initiative, making every Saturday "No Free Plastic Bags" days.

The Municipal Council of Penang Island hosted the launching ceremony for "EM Mud Ball - One Million Apologies to Mother Earth" in 2009. EM mud balls are made up of a combination of earth, EM (effective microorganism)-treated rice-rinsed water and Bokashi, a fermented organic matter made using sawdust and bran, according to

Penang Government Initiatives for Environment Management (PGI-EM) committee member Soo Lee Choo. EM mud balls are highly effective in breaking down harmful bacteria and had been used in cleaning up around 150 rivers in Japan. (Filmer, 2009)

### Opportunities

**T**he creation of green economy brings business, leadership and technological advancement opportunities to Penang.

Manufacturing accounts for around 35% of global electricity use, over 20% of carbon dioxide emissions and over a quarter of primary resource extraction. It also accounts for up to 17% of air pollution-related health damage. Estimates of gross air pollution damage range from 1% to 5% of global Gross Domestic Product (UNEP, 2011).

There is some evidence to suggest how fiscal policy is being employed by regional states to address externalities resulting from manufacturing. For instance, in November 2010, Vietnam passed its first law on environmental taxation, which is expected to generate tax revenue between US\$ 757 million and US\$ 3 billion. (UNEP, 2013) In Australia, between 2010 and 2011, environmental taxes amounted to AU\$ 26 billion and accounted for 2% of its GDP and 7% of total tax revenues. (Australian Bureau of Statistics, 2012)

Penang could make use of subsidies, carbon taxes and pollution taxes as a carrot and stick approach to promote green tech shift among businesses. Nevertheless to really execute this, the Federal Government in Malaysia needs to decentralize, such that Penang state will have the power to levy environmental taxes. Green tech has better energy efficiency, thereby reducing or even eliminating wastage. It lowers carbon emission, thereby minimizes pollution. Green tech is environmentally-friendly, thereby engaging businesses, community and environment in a sustainable manner. To further develop Penang's green economy, the carbon and pollution tax revenue could be channeled to fund green tech projects and investments.

The hospitality and service industry in Penang generates lots of food waste. This creates great opportunity for businesses and households to gather their food waste for generation of bio-fertilizer and bio-fuel. This is possible by having an effective food waste converter, which receives food waste in a neighborhood and mixes it with other ingredients for fermentation. By-products of this process are bio-fertilizer and bio-fuel, which can be used to fulfill the communities' needs. In addition to food waste conversion into useful inputs, used cooking oil



Photo by ANDRE OLIVEIRO

## Green economy policy is difficult to be implemented currently because of the high cost in building the infrastructure needed to maximize the conversion of waste to resources.

could be collected and made into bio-diesel to power public buses.

### Challenges

The pathway to green economy is no doubt challenging. Green economy policy is difficult to be implemented currently because of the high cost in building the infrastructure needed to maximize the conversion of waste to resources. Without such infrastructure, the waste conversion costs will be higher. For example, livestock farms in Penang are scattered over a wide area and farming livestock is on small scale. Hence, investors in green livestock farms will have to bear additional costs in transporting the livestock waste as inputs to nurture crops in farms further away.

The materialization and success or failure of green initiatives also require strong political will. Since 2008, Penang has demonstrated strong leadership in green matters. Nevertheless, with

continuous and stronger political will, highly targeted green economy policies can be put into action and would transform Penang into the region's leading green economy.

To reduce and limit pollution, one way is to set a price for pollutants. However the current governance structure in Malaysia does not allow Penang state government to easily put a price on pollutants. This is because Penang state government has limited powers in levying taxes. Hence it is not easy to impose a tax on pollutants to incentivize users to switch to greener ways of doing things. The solution to this problem would be to decentralize the structure of governance so that local electorates will hold the local government, who has tax levying powers, accountable for the local green issues.

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# Why Asia should give Renewable Energy a Chance: A case for a Green Economy Revolution

JOHN WEST

As we look ahead further into this Asian Century, perhaps the greatest challenge facing Asia is accessing clean, safe, affordable and secure sources of energy. But Asia's very rich renewable energy resources like solar, wind and geothermal have the potential to help the region meet this challenge.

In the coming decades, Asia has the potential to continue its spectacular development by continuing on its catch-up path to the West. For example, the Asian Development Bank (ADB) estimates that Asia's share of global GDP could rise from 28% in 2010 to some 44% in 2035. And since Asia has around 60% of the world's population, the region's catch-up process is set to continue beyond this date.

But lots of energy will be necessary to fuel this "Asian Century", as energy demand tends to grow in tandem with the economy, even if improvements in energy efficiency can moderate that linkage. In this regard, some 700 million people in Asia still have no access to modern electricity, and will need to be serviced as their incomes grow and they are lifted out of poverty.

Already in 2010, Asia accounted for 34% of world energy consumption. But renewable energy accounted for less than one-sixth of this, almost half its share in 1990. Over this twenty year period, we saw large increases in the use of all other energy sources, namely hydroelectricity, nuclear, natural gas, oil and coal. By 2010, coal accounted for one-half of Asia's energy use, and oil for one-quarter. (While hydroelectricity is often considered a renewable energy, all too often it is an unsatisfactory form of energy, as it can destroy the natural environment, displaces local communities, and have adverse effects on downstream water users, including in neighboring countries.)

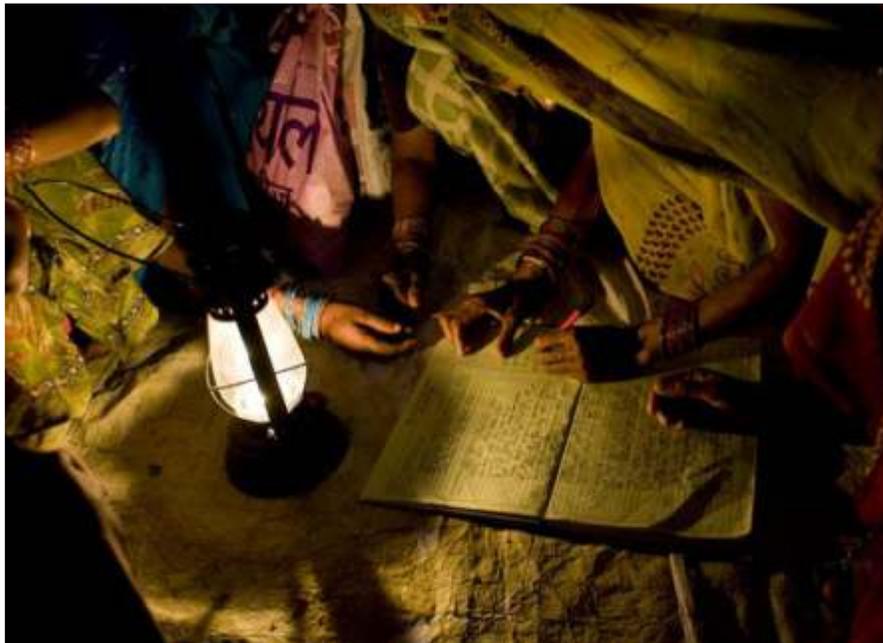


Image by Amit Verma

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**...some 700 million people in Asia still have no access to modern electricity, and will need to be serviced as their incomes grow and they are lifted out of poverty.**

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The ADB estimates that continued economic growth could lift Asia's share of energy consumption to around 50% of global consumption by 2035. But the ADB projects a further decline in the relative contribution of renewable energy, whose share could drop to one-tenth by 2035. Coal, oil, and natural gas would remain more important energy sources than renewables. And while nuclear would remain less important than renewables, it is set to grow much more quickly.

Let's examine in more detail Asia's renewable energy situation, in order to understand this pessimistic scenario for renewable energy. While renewable energy may account for about one-sixth of Asia's current sources of energy, almost all of this is in the form of

biofuels, namely, wood, charcoal and agro-residues, which are used by poor people in rural areas.

A few country examples serve to highlight the point. In 2009, 12% of China's total energy supply came from renewables, 27% for India, 35% for Indonesia, 6% for Malaysia, 44% for the Philippines, less than 1% for Korea, and 3% for Japan. In none of these cases is the combined share of solar and wind above 1%. For most countries, biofuels dominate.

Geothermal energy is a particularly interesting case. In Indonesia and the Philippines, the shares of geothermal are 8% and 23%. But in Japan, the land of the famous "onsen", geothermal only accounts for 1% in Japan.

Overall, the share of Asian energy coming from solar, wind and geothermal is miniscule. And as urbanization proceeds and incomes grow, the use of traditional biofuels will decline.

However, the main reason that the ADB and many other analysts do not see a major role for renewable energy in the coming decades in Asia is its "uncompetitive costs". But this view is based on a narrow and incomplete assessment of the costs of fossil fuels and nuclear energy.

Fossil fuels, especially coal, have disastrous effects on the environment and human health. For example, the air in many Asian cities is severely polluted, with terrible consequences on the health of their citizens. Recent studies suggest that Beijing residents are losing 5 years of their life due to air pollution.

Global warming is another consequence of fossil fuels. And while this is a global problem, whose origin lies in two centuries of Western industrialization, Asian countries will suffer the adverse consequences of climate change more than other regions of the world. The vast majority of the world's cities exposed to rising sea levels are in Asia. Thus, Asian countries have a keen interest in reducing carbon emissions, especially China which is now the world's largest carbon emitter.

Another challenge for Asia's energy future is that of energy security. The only energy source that Asia has in abundant supply is coal. And its dependence on importing oil and gas from the politically unpredictable Middle East and Russia will only grow with time. And even if imported energy supplies were secure, they are costly, and will likely become even more costly over time.

Lastly, there are the manifold risks and costs of nuclear energy, like waste management, proliferation and, as highlighted by the case of Fukushima, safety. This has provoked great public opposition to nuclear by the Japanese public.

Most importantly, there are many emerging examples in Asia which demonstrate the immense potential of renewable energies.

China has made massive efforts in developing renewable energy, and now leads the world in installed capacity and is increasing its overseas investments in renewable energy. China now ranks first in the world in terms of installed wind power, and as of 2010, China has become the world's largest maker of wind turbines, surpassing Denmark, Germany, Spain, and the United States. Wind power has been rapidly expanding in India and Mongolia.

Six countries in Asia and the Pacific have over 100 MW of grid-connected photovoltaic solar systems: China with 7,000 MW, Japan 6,914 MW, Australia 2,200 MW, India 1,461 MW, Korea 963 MW, and Thailand 360 MW. China is also the world's leading manufacturer of solar photovoltaic cells with a 30% global market share.

China's development of renewable energy has been strongly supported by the government, demonstrating the importance of public leadership. And while the industry has been predictably experiencing growing pains, governmental support must increase as it tries to tackle the adverse environmental consequences of its dramatic growth path.

Following the Fukushima nuclear disaster, Japan has the opportunity to chart a new future, one based on

renewable energy, and shift away from fossil fuels and nuclear energy which have been the country's principal energy sources. As an island country, Japan has numerous coastal regions where off-shore wind engines could be installed and supply factories as well as whole towns with energy. With its important solar radiation and large surface of (until now) uncovered rooftops, photovoltaic's (PV) could easily be installed and produce an important amount of energy for individual households. As Japan is very densely populated, its waste could be converted into biofuel/agrofuel and used to produce electricity.

Most importantly, Japan has immense geothermal potential which could be easily exploited and converted into electricity, once infrastructure is installed. Geothermal energy currently accounts for only 1% of total energy production, but has the capacity to meet 10% of Japan's electricity needs. The Philippines is another country with great geothermal potential. Its installed capacity is second only to the US, and plans to expand geothermal capacity by 75% by 2027.

With much of Japanese public opinion now firmly against nuclear energy, the Japanese government should make more decisive steps to develop renewable energy. Unfortunately, the new Abe government seems to be more

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## ...vast majority of the world's cities exposed to rising sea levels are in Asia

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*Photo/Conor Ashleigh*





Photo by fliclr / Matthias Lambrecht

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## ...nuclear companies from Japan, Korea, Russia, and the US are pushing developing countries in Asia to develop nuclear energy, with financing from their foreign aid and/export credit agencies

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responsive to lobbying from Japan's nuclear industry. One reason is that industry fears that if Japan abandons nuclear energy, it will be difficult to export nuclear energy to Asia's emerging economies. Indeed, nuclear companies from Japan, Korea, Russia, and the US are pushing developing countries in Asia to develop nuclear energy, with financing from their foreign aid and/export credit agencies.

For its part, Korea has been pathbreaking in adopting a "Green Growth Strategy" in 2009. But most regrettably, this Strategy is placing more emphasis on nuclear than renewable energy. Nuclear power plants produce one-third of Korea's electricity through 23 facilities, and there are plans to build nine more over the next decade, seemingly undeterred by Japan's Fukushima problems. Efforts to expand renewable energy, like the solar panels on the rooftop of Seoul's City Hall, seem like symbolic drops in the ocean.

The case of Korea, like Japan, highlights the governance challenges of nuclear energy. Over the past year, three reactors were reportedly taken off line

after faked safety certificates were discovered. Some government officials were fired or jailed for accepting bribes from parts suppliers. Corruption, cover-ups and incompetence in the nuclear industry, especially in Japan, are the heart of citizen mistrust of this technology.

Overall, renewable energy is still very much on a learning curve. But the manifest problems of fossil fuels and nuclear energy mean that Asian countries and their governments must drive that learning curve as hard and fast as possible -- because over time, the potential of renewables will only grow.

Pushing up renewable usage accelerates the learning process, increases scale and starts to bring down costs. Greater R&D efforts will spur more innovation. Asia also has much to learn from countries like Germany and Denmark, which have been successfully exploiting renewable energy, as well as the accumulated expertise of the United Nations, World Bank and Asian Development Bank. And as fossil fuel prices will rise in the future, the relative attractiveness of renewables will only improve.

Successfully navigating and managing Asia's energy future is critical for Asia's future, and especially critical to the future of the planet. And there is no doubt that renewable energy must play a leading role in providing Asia with clean, safe, affordable and secure sources of energy. Governments from developing Asia must resist the "easy option" of buying nuclear with soft financing Japanese, Korea and other governments.

"Give renewable energy a chance" must become the new mantra of the Asian Century!

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# Hot and Cold: The Current State of Renewables in the Philippines

FRANCIS JOSEPH DELA CRUZ

Economic development's direct proportionality with energy consumption has been established through scientific data collection and history. As discussed in the Intergovernmental Panel on Climate Change (IPCC) special report on renewable energy (RE), studies on the plausibility of using RE in country specific context is highly beneficial (IPCC, 2012). According to the special report (IPCC, 2012), "RE offers the opportunity to contribute to social and economic development, energy access, secure energy supply, climate change mitigation, and the reduction of negative environmental and health impacts."

Philippines is regarded to be at the forefront of renewable energy or "renewables" development in Asia. Civil society organizations such as Greenpeace led some of the biggest campaigns for RE by campaigning against the high carbon emitting coal fired power plants and unstable nuclear power plant. The campaign's success resulted to an increase of the RE profile in energy discussions.

Renewable energy in the Philippines was institutionalized by the Renewable Energy Act of 2008. The law mandates the government to:

- a. Expedite the exploration and development of renewable energy sources in the archipelago;
- b. Increase the utilization of RE by institutionalizing local and national capabilities in the use of RE systems;
- c. Encourage the utilization and development of RE in reducing harmful emissions thereby creating a balance between

economic development and protection of health and environment;

- d. Establish necessary infrastructures to implement the RE Act to its full extent.

The RE Act obliged the government to create a plan in achieving renewable energy targets in accordance with the development goals of the country. The law should have opened an opportunity for changing the current energy industry in the Philippines. Five years later after the RE Act was passed, the 28-page piece of document remains more of a symbol of RE development in the Philippines rather than the game changing legislation it was expected to be.

A piece of legislation this comprehensive and this strong begs the question, where is the Philippines now vis-à-vis its renewable energy pathway?

## A peek inside DOE

One of the most usual conclusions of a day's worth of discussion between RE advocates and Department of Energy (DOE) is: A DOE officer saying that the interest of the department cuts across all energy sectors, and not just the RE. When the government leadership changed after the 2010 elections, an energy reform agenda was immediately crafted. The Energy Reform Agenda sought to consolidate the government's efforts in improving energy services in the country under the mantra "Energy Access for More" (Department of Energy, 2013). The new plan emphasizes the mainstreaming access of the greater majority to reliable energy services and fuel. According to the overarching mantra of the new plan, the national government should include an energy agenda as one of its key priorities by including it in high-level political and developmental discussions.

**Civil society organizations such as Greenpeace led some of the biggest campaigns for RE by campaigning against the high carbon emitting coal fired power plants and unstable nuclear power plant.**



Photo by Greenpeace.org

A review of the 2009- 2030 Philippine Power Development Plan (PDP) of the Department of Energy (DOE) suggests that coal-fired power plants are driving the overall energy plan of the Philippines. When the plan was drawn up in 2009, the commitment that the government got from the private sector alone for building coal fired power plants is ten times bigger in terms of capacity than renewable energy power plants (Department of Energy, 2009).

The PDP singled out the island group of Mindanao because of the dominance of renewable energy sources, particularly hydro power plants. According to the PDP, the dependence of Mindanao on its hydroelectric energy supply has made it vulnerable to climate-related events such as drought, running the risk of having an inefficient power supply.

### The Mindanao power crisis

Three years after the release of the DOE-PDP, Mindanao was declared under a power crisis, with rotating brownouts reaching up to eight hours and erratic supply of electricity becoming the “new normal”. The power crisis disrupted the lives of the people living in the affected areas (Añonuevo, 2013). The crisis is attributed to the under-supply of electricity in Mindanao because of the rapidly decreasing water levels in locations where the hydropower plants are located. In an interview with DOE Sec. Jericho Petilla, he suggested that the immediate action necessary to address the crisis is to build more energy sources in the area. Discussions of improving and diversifying RE sources in Mindanao were started to cover other options in exploring RE sources in Mindanao, which happens to be not only limited to hydro power, to improve the situation.

RE advocates were surprised when the DOE leadership announced that the government will be building coal-fired power plants in Mindanao to increase the base load provided to consumers. DOE is eyeing the creation of surplus-capacity through these plants in Mindanao by 2015 or 2016 (Añonuevo, 2013). RE advocates called this move a reckless action that will need serious review especially with

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**RE advocates were surprised when the DOE leadership announced that the government will be building coal-fired power plants in Mindanao to increase the base load provided to consumers.**

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*Photo by Greenpeace.org*



the movement that major coal country players are veering away from coal because of economic and sustainability reasons (Constantino, 2013).

If such a movement is present, then why is the Philippines rushing into the dirty world of coal?

### The President who mocked RE

The current president of the Philippines, Benigno S. Aquino III, pledged drastic changes in the government. A long and sustained campaign against corruption was set in motion, and perhaps changes are really happening. Unfortunately for RE, the president who promised change fell into the cracks of unstudied assertions towards RE in his latest State of the Nation Address (Mindanews, 2013). In his speech Pres. Aquino said, “If you put up a wind-powered plant, what do you do when there is no wind? If you put up a solar plant, what do you when the sky is cloudy? Let me be clear: I believe in renewable energy and we support its use, but there should also be baseload plants that can ensure a steady supply of electricity for our homes and industries.”

RE advocates immediately slammed the statements made by Pres. Aquino contesting that RE sources such as wind and solar do not work that way. The mocking remarks by the president in the annual national situationer sent a clear signal that RE is not a priority development area of the current government. It also provided tangible proof of how RE projects are being implemented as “tokens” in accordance to the RE Act of 2008, not as a long-term solution for the country's energy problems.

### The coal take-over

As of this moment, 17 coal-fired power plants are in the DOE project pipelines for 2014. According to DOE, these projects seek to stabilize the power crisis in Mindanao as well as to create an electricity surplus in the country. The World Bank commissioned Climate Expenditure and Institutional Review report stated that an increase in the promotion of coal-fired power plants can be expected if DOE will continue treading in its current development trajectory. The demand for coal based on 2010 numbers is seen to quadruple by

2030 (The World Bank, 2013). With the fast increasing cost of coal in the international markets, the Philippine energy agenda should be democratized from what appears to be a monopoly of big coal players. Data suggest that this situation has been going on for a while now. In 2010, DOE recorded that coal shared 34%, the biggest chunk, of the Philippines' gross energy generation. Geothermal and hydro powered power plants share are only 15% and 12%, respectively. Unfortunately, the share of other RE sources such as solar, biomass, and wind was too small to even be reflected in the data representation (Department of Energy, 2010).

### The revolution

Despite the bleak future of RE under the current government leadership, Philippines in 2012 still committed to increase the share of RE in the total energy supply to 40% by 2020 (WWF- WRI, 2013).

Greenpeace campaign called Energy [R]evolution seeks to address the issues revolving around the debates why the Philippines will benefit from RE. In accordance with the RE Act of 2008, this campaign has key principles in framing its discussions in RE advocacy:

- a. Implement renewable solutions, especially through decentralized energy systems;
- b. Respect the natural limits of the environment;
- c. Phase out dirty, unsustainable energy sources;
- d. Create greater equity in the use of resources;
- e. Decouple economic growth from the consumption of fossil fuel.

The Energy [R]evolution also calls for the promotion of energy efficiency and policy flexibility. Energy efficiency through the proper transfer of energy saving technologies and a change in the consumer behavior are expected to have a multiplier effect on RE sources.

Science, data, and advocates have proof that RE will work well in the Philippines, so where does DOE's apprehension towards RE come from?

With the current pace of DOE it can be assumed that the commitment made by

the Philippines to shift to RE is null and impossible to achieve as of this moment. The apparent priority of the government is to fund and explore funding for coal fired power plants shelves RE indefinitely.

### Battling where it counts

Just like any other campaign, pushing for RE requires a balance between the ideologies of clean, healthy, and sustainable living and actual politicized recommendations that would allow the government to practice wisdom and provide an elbow room to make existing energy policies more flexible and accommodating. Economics, policy, and advocacy are three focal points that RE advocates should be focusing on in the Philippines, despite the current bias of the government towards coal and oil.

The economics of the energy sector goes beyond the primary supply and demand relationship. Over supplying electricity to the grid does not automatically translate a price cut. Existing government subsidies to specific energy sectors should be lifted or at least adjusted to market- friendly levels. Socializing the Feed-in Tariff of RE suppliers can empower even small producers to become more competitive. Economic studies on the sources of energy should be framed through a long-term perspective to consider potential future trends such as the shutdown of coal markets in other countries.

Policy recommendations in aid of the oversight functions of the Philippines Congress on the energy policy should be crafted to support the shift expected from a compelling long-term energy plan. Legally- binding targets should be set within the Philippine bureaucracy to ensure that RE will be explored as a solution not just as a token to an existing law.

The stakes of RE advocates in the Philippines is taking an exciting and equally critical turn, especially with climate-related disasters gaining the spotlight. If the government will pursue its coal intensive energy program the Philippines will lose the opportunity to be build a sustainable energy sector and the moral ascendancy in the bigger international climate negotiations.

Locally, building RE systems can never come at a better time; the Philippines can still avert the future coal crisis that is currently brewing. Internationally, the Philippine delegation will lose the authority to demand for reparations on loss and damage, long-term finance, and emergency disaster pathway if the energy sector will start increasing its carbon emissions and abandon the country's RE targets. A country such as the Philippines cannot afford a business as usual stance in the negotiations -- Philippines current miniscule emission numbers allows the climate delegation to leverage and negotiate.

There is nothing new with these recommendations, since these have been echoed in several materials submitted to DOE. How can this make a difference? We'll we will never know until we rekindle the [R]evolution.

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