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GHOSTS OF CRISES PAST

COMPARING JAPANESE POLICY EFFECTIVENESS IN THE 1970S OIL CRISES AND CONTEMPORARY CLIMATE CHANGE

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Introduction

Due to the immense strain they put on policymakers, the oil crises of the 1970s and the contemporary challenge of anthropogenic global warming must represent two of the greatest tests of Japanese energy policy of the past 50 years. As such, the policy response to the oil crises had been effective, but the challenges posed by global warming have not been met with equal success – and this situation partly stems from the measures adopted in response to the previous crisis.

While admittedly climate change is a crisis of a somewhat different nature than the oil shocks of the 1970s, both crises compel decision makers to shape the composition of their country's energy mix in response to external imperatives. In the earlier case a host of countries were confronted with the physical scarcity of energy as a result of geopolitical changes stemming from the volatility of the region in which their main energy suppliers were located. Due to the negative externalities associated with the combustion of fossil fuels, solutions typically put forward in response to climate change involve simulating a scarcity of fossil energy in an environment where this scarcity is not immediately apparent. Given

the violent pinch of the 1970s, Japanese policymakers' apprehension against setting up such an *in vivo* experiment in political economy is understandable – though ultimately counterproductive.

This paper will show that Japan, just like the majority of other countries, has no policy on global warming *per se*. Instead, Japan's policies and measures on climate change mitigation are formulated by adjusting the country's energy policy. The oil shocks prove that the Japanese government does have the ability to dramatically alter its energy policy, provided it regards the challenge as legitimate and rises to the responsibility to respond to it, but the institutionalization of some of the solutions to the crises of the 1970s prevent this. Contemporary Japanese energy policy is therefore blinkered to some extent, hobbling the effectiveness of the Japanese response to climate change.

In exploring what factors affect the success of the Japanese government's policies this paper looks at the documents articulating the instruments called upon to respond to these crises. This includes not only laws, but also plans, strategies and outlooks, which may offer details about the general direction of policy, stipulate envisaged targets, or specify concrete measures that, for whatever reason, were not mentioned in legal texts. While all subsequent government activity is theoretically required to be in compliance with the thus formulated documents[1], their specificity is critical, as they may be left purposefully ambiguous if this suits the interests of the government agencies compiling them[2], or if a consensus about how to deploy the policy does not exist among the most important stakeholders.

The experience of the two crises discussed in this paper confirms the need for specificity in the framing of policy. The paper's first two sections discuss the evolution of the response to each of these crises. The third section shows that the failings of the later plan stem at least partially from the successes of the previous one and makes some suggestions about how to overcome the current limitations of the Japanese efforts on climate change mitigation. The final section offers some conjectures as to Japan's future approach to the international climate negotiations are offered.

[1] See 'Environmental Policy Instruments' from Imura (2007), pp. 153-184.
[2] See Van Wolferen (1991), Chapter 5, "The Administrators" and Chapter 8, "Keeping the Law under Control".

Chapter 1
The Oil Crises of the 1970s

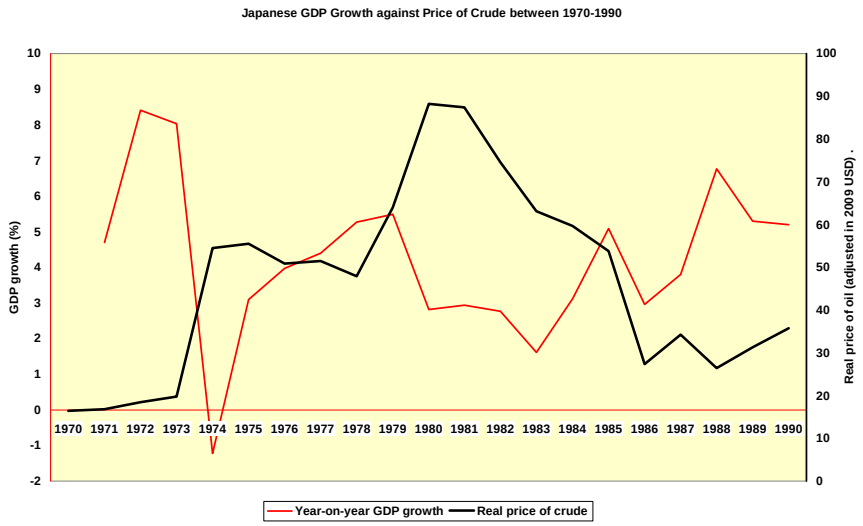

Figure 1: Japanese GDP against price of oil (1970-1990)
Source: UNDATA and US Energy Information Administration.

Resource-poor Japan was able to develop successfully after the Second World War thanks to the availability of cheap fuels sustaining its industries' growing energy demand. However, the 1973 oil embargo imposed by the Organization of Petroleum Exporting Countries (OPEC) brought this to an abrupt end to that. Figure 1 show how, after growing by more than 8% per annum over the previous two years, Japanese GDP contracted by more than 1.2% in 1974. Emergency measures were taken already in December 1973[3], and with the vulnerability of the economy so glaringly exposed the Japanese Cabinet created a Ministerial Council on General Energy Policy in April 1975.[4]

The Council's conclusions articulated the consensus emerging among Japanese politicians, business interests and government bureaucrats on the need to reduce the country's dependence on petrol, to ensure the security of international energy supplies, to promote energy conservation measures, and to develop new energy sources. Reliance on petrol was reduced by developing nuclear power and overseas sources of energy were diversified. Two research initiatives were launched, in 1974 on new and renewable forms of energy and in 1978 on energy

[3] Fukasaku (1973), p. 1066.
[4] Nemetz et al. (1984), p. 559.

conservation[5], and then consolidated in 1982 into the New Energy and Industrial Technology Development Organization (NEDO). These steps were to set the basic direction of Japanese energy policy for the next four decades.

The Japanese government also tackled energy demand through the 1979 the Law on the Rational Use of Energy. This law established tax incentives and subsidies to encourage investment in energy-saving facilities and the development of energy-saving technologies. It further imposed fuel efficiency standards to be fulfilled by 1985. However, most importantly, it granted a number of key ministries the authority to establish standards for the level and structure of energy consumption of actors in a number of economic sectors. In particular factories became subject to energy efficiency requirements. Factories were to hire licensed energy managers to compile and implement yearly reports and plans on energy use, which would be reviewed by separately licensed investigators who would then issue certificates on businesses' compliance with their respective sectoral standards.

The 1979 policy package went beyond the sticks embedded in the letter of the law by including an ample measure of carrots. Significant tax breaks and depreciation schemes were offered immediately in the wake of the second oil shock to companies to improve their energy efficiency. Public loans were made to increase building insulation and the Japan Development Bank offered low interest loans for energy conservation projects in factories. Companies in various industries responded positively to these incentives and energy efficiency increased dramatically. Methods adopted included rationalizing fuel combustion in heat and energy production, adding new hardware to recover waste heat, streamlining production processes with more energy efficient machinery, or introducing radical fuel switching.[6]

[5] Kanekiyo (2006), p. 2.
[6] Fukasaku (1995), p. 1060.

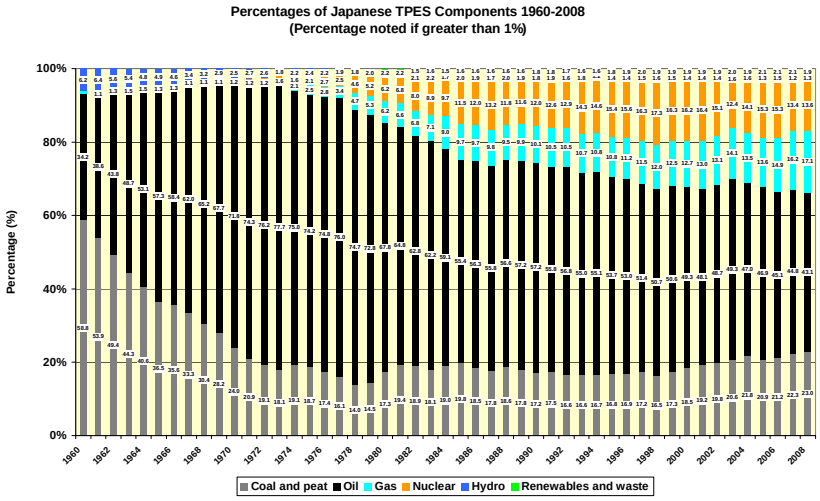

Figure 2: Percentage breakdown of the Japanese total primary energy supply by components over the 1960-2008 period.
Source: IEA Energy Balances (2009).

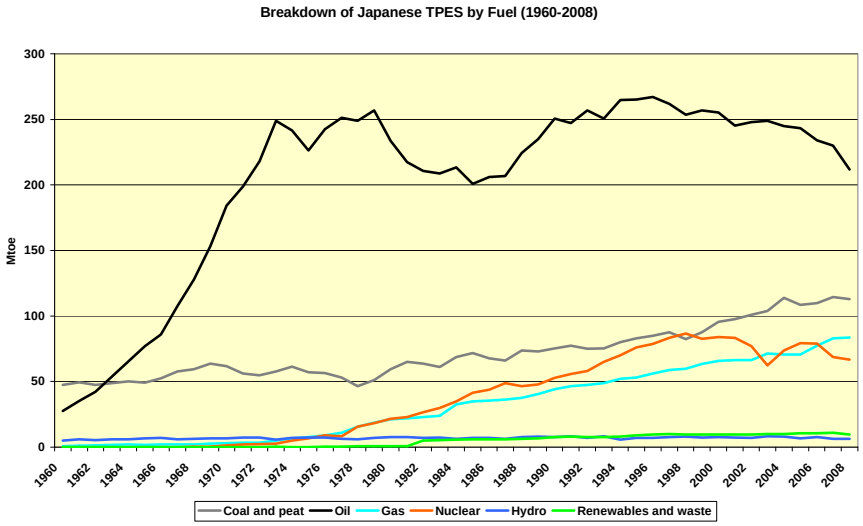

Figure 3: Absolute trends in the Japanese total primary energy supply over the 1960-2008 period.
Source: IEA Energy Balances (2009).

Figures 2 and 3 show the development of Japanese energy policy from the 1960s until today. In the 1960s, leading up to the 1973 OPEC embargo, price differentials favoring oil replaced a significant share of domestic coal with imported oil, overwhelmingly of Middle Eastern origin. The crisis had a

simultaneous tempering effect on both the Japanese domestic energy demand and GDP, reflecting industries' diminished access to their fuel of choice. However, despite some initial government efforts, the relatively swift resolution of the first oil crisis allowed demand for oil to return to 1972 levels. Only after the second oil crisis, triggered by the Iranian Revolution in 1979, did the government intervention succeeded in reinforcing fuel substitution in the private sector in order to reduce reliance on oil in both relative (figure 2) and absolute (figure 3) terms.

The Japanese government's measures tell a tremendous success story. Between 1977 and 1987 GDP increased by 42%, while the country's total energy demand rose merely by a mere 14%. The result was a decrease in the energy intensity of Japan's GDP by as much as 21% over the same period.[7] While sustaining economic growth, Japan also managed to reduce the amount of oil it consumed from 256.8 million tons in 1979 (i.e. 72% of the contemporary total primary energy supply (TPES)) to 200.7 million tons by 1985 (55% of TPES). Within a decade of 1978 the amount of energy produced from coal, natural gas and nuclear power grew by 32%, 102% and an astonishing 156%, respectively. At the beginning of the 1990s the Japanese energy mix was unrecognizable from what it had been two decades before, and a large part of this success can be attributed to the responsiveness of policymakers to the challenges of the day.

Chapter 2
Global Warming

During the negotiations on the Kyoto Protocol at the 1997 third Conference of the Parties (COP-3) of the United Nations Framework Convention on Climate Change, in response to pressures from the EU and the US and rising to their responsibilities as the hosts, Japan was constrained to agree to reduce its emissions by 6% from their 1990 levels over each of the five years of the Protocol's first commitment period (2008-2012). Currently, in the middle of the commitment period, Japan does not seem to be able to meet its target through purely domestic means.

[7] Author's own calculations based on information IEA (total primary energy supply) and UNDATA (gross domestic product).

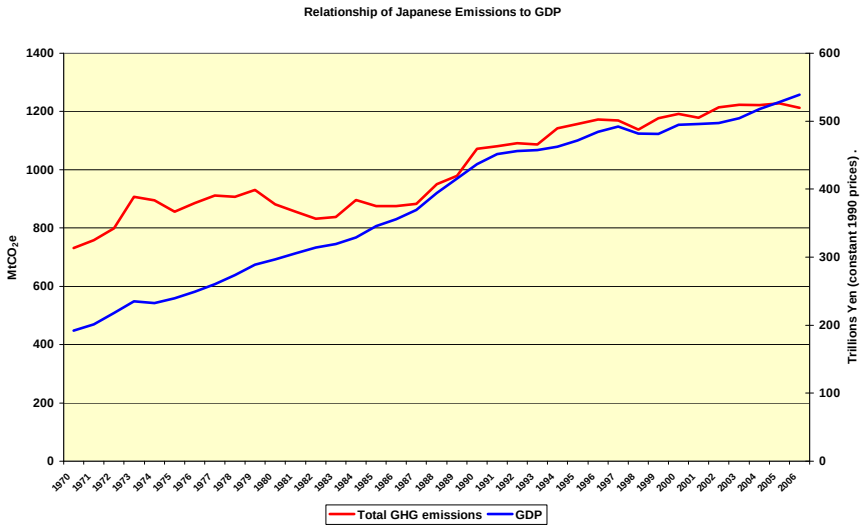

Figure 4: The correlation of CO_2 emissions (measured by the IEA sectoral method) to gross domestic product in Japan over the 1970-2007 period.
Source: UNDATA and IEA Energy Balances (2009).

Already in 1997, Japanese decision-makers believed this target to be beyond the country's abilities to achieve[8]. The 1983 'Japan's Long-Term Energy Supply and Demand Outlook and Future Energy Policy' declared that "much of the conservation potential in using remedial measures and auxiliary energy saving technology has already been realized" two decades earlier in response to the oil crises. Indeed, as can be seen from figure 4, there had been a significant dip in yearly Japanese GHG emissions between 1979 and 1989, but there has been an the inexorable upward trend in Japanese emissions starting around 1990, showing no sign of abating prior to the financial crisis that started in 2008.

As most of Japanese direct greenhouse gas emissions stem from the conversion of fuels into energy, the Ministry of International Trade and Industry (MITI) was already in the late 1980s successful in portraying climate change as an energy issue, which thereby fell under the responsibility of its own Agency for Natural Resources and Energy[9]. Holding the ability to meet a growing energy demand and the improved quality of living as unquestionable positives, the perception developed among Japanese policymakers that very little could be done domestically to diminish emissions levels without negatively affecting the country's economy. Therefore, for more than two decades, MITI and its successor, METI, were able to prevent efforts by the Japan Environment Agency

[8] See Matsumura (2001).
[9] IEA (2007), p. 60.

and its successor, the Ministry of Environment (MOE), to impose a policy direction that questioned the normative primacy of economic development over climate concerns.[10]

Consequently, a strong, independent framework on global warming never truly developed in Japan. While there had been an Action Program to Arrest Global Warming already in 1990, it held no legally binding power. In the wake of COP-3, a Law Concerning the Promotion of the Measures to Cope with Global Warming was enacted in 1998, formally inviting the central government, local governments, businesses and citizens to "strive" to limit their emissions without specifying a schedule, targets, or legal responsibilities. A 2002 amendment invited stakeholders to make voluntary efforts to mitigate climate change through the formulation and publication of plans and published numerical, though non-binding, targets for various groups. The industrial sector is likely to meet this target through the Voluntary Action Plan on Global Warming of the Japan Business Federation (Nippon Keidanren) that had been established in a pre-emptive move already prior to the signing of the Kyoto Protocol five years earlier. It took the momentous electoral victory of the Democratic Party of Japan (DPJ) in the August 2009 elections to even bring a serious proposal for a Basic Law on Global Warming to the floor of the Japanese Diet in 2010.

Climate policy was therefore formulated by default by energy policy. Two particular legal instruments stand out in relevance in this respect: the previously mentioned 1979 Law on the Rational Use of Energy and the 2002 Basic Act on Energy Policy.

1998: Vehicle fuel efficiency to improve by 22.8%, Top Runner program (energy efficiency improvements in the field of household appliances) established, central government gained right to impose energy efficiency improvements upon companies.
2002: Coverage extended to newly built office buildings and those undergoing major renovation work.
2005: Regulations in the freight sector and residential buildings.

Box 1: Important expansions of the Law on the Rational Use of Energy

The Law on the Rational Use of Energy underwent a significant number of amendments in the wake of 1997 signing of the Kyoto Protocol, significantly expanding its scope and spreading legally binding duties to an ever increasing number of sectors. Due to its progressively increasing scope, the requirements imposed upon some of the country's most relevant energy-consuming sectors and the powers bestowed upon government authorities to force non-compliant bodies, this law is arguably to be one of the

[10] Campbell (1989), p. 17, and Wong (2005), p. 55.

most powerful legal instruments worldwide in the field of energy efficiency promotion.

The Basic Act on Energy Policy was intended to promote long-term measures on energy supply and demand. The law and the three Basic Energy Plans it mandates[11] are seen by actors in the energy field in Japan as providing a large, overarching framework spelling out the direction the Japanese government wishes to pursue in managing the nation's energy markets.[12] It establishes three principles – "stability of energy supply", "compatibility with the environment" and "application of market principles" [13] – as standards for assessing the direction of the country's energy policy. While the climate-related impacts of the various fuels discussed feature prominently in the analysis of their respective role in the country's energy supply, more than twenty years after the oil crises compatibility with the environment and the application of market principles are noticeably of secondary and tertiary importance next to the overwhelming importance placed on the stability of the energy supply.

On the supply-side, all three Basic Energy Plans speak of nuclear power as the mainstay of the nation's power generation, supplemented mainly by oil and coal, albeit with clear intentions of increasing the share of gas fuels in the nation's energy mix. The need to diversify the energy supply is discussed mostly in terms of energy security, i.e. of decreasing dependency on Middle Eastern oil, increasing stockpiles of various kinds of fossil fuels, and praising the stability of supply stemming from the dispersed nature of global coal markets. Renewable forms of energy, while holding "great potential", are believed to hold high implementation costs and to have a negative impact on large-scale grids due to their unreliable power generation potential.

Conversely, demand-side energy policies, even in the basic draft of the 2010 document, which shows a much greater willingness than its predecessors to take a progressive stance on energy matters (e.g. targets for zero-emission office buildings and households, vehicle fuel economies, etc.), consistently take a technology-centric approach, aiming at reducing energy consumption through increased energy efficiency measures. The industrial sector received universal praise in both the 2003 and 2007 documents for its contribution to making Japan the world's most energy efficient nation, while the power generation sector escapes direct mention in spite of its tremendous contribution to the Japanese

[11] 2003, revised in 2007, and currently undergoing a second revision (a draft available online was used for the purposes of this paper).
[12] Interview with energy company executives.
[13] Author's own translations.

emissions. Instead, emphasis is shifted to the demand-driving sectors, such as the commercial, household and transportation sectors.

A similar approach can be gleaned from a 2006 METI document entitled the 'New National Energy Strategy'. While the Basic Energy Plans mostly shy away from specifying numerical targets and schedules, this document holds five key numerical targets to be achieved by 2030 (see box 2). Thus, even though the document ventures to specify aspirational targets, the thinking behind this future vision is the same as in the three Plans: tackling the demand side through energy efficiency measures, while vigorously pursuing nuclear power and maintaining a stable supply of traditional fossil fuels on the supply side.

1. Improving energy efficiency by 30%;
2. Reducing reliance on oil from contemporary approximately 50% to only 40% of the TPES;
3. Reducing reliance on oil in the transportation sector from contemporary 100% to only 80%;
4. Increasing the percentage of power generated in nuclear power plants from approximately one third contemporary values to at least 30-40% [*sic!*];
5. Raising the percentage of oil imported into Japan by Japanese companies from 15% to contemporary 40%.

Box 2: Targets Specified in the 'New National Energy Strategy'.

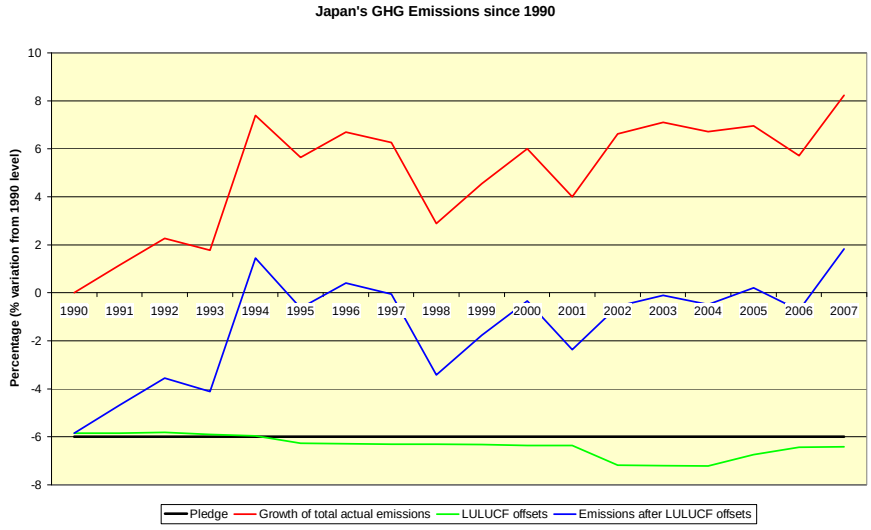

Figure 5: Japanese emissions with and without land-use, land-use change and forestry offsets over the 1990-2007 period.
Source: UNFCCC.

Given this overwhelming focus on the stability of energy supply to the detriment of other policy priorities, achieving its target for the Kyoto Protocol's first

commitment period was always going to be very difficult. Figure 5 shows clearly how, even when taking into account Japan's generous Land-Use, Land-Use Change and Forestry (LULUCF) offsets, the country was nowhere close to the compliance level up to 2007. With the most recent corrected data available estimating Japanese emissions for 2008 at 1.282 $GtCO_2e$[14], i.e. roughly 1% over 1990 emissions, Japan will need to make extensive use of flexibility mechanisms in order to be in compliance with its first commitment period target.

It should be born in mind that 2008 was also the first year of the most recent global financial crisis and that year-on-year GDP growth from 2007 had been only +0.44%, as opposed to the roughly 2-3% recorded during 2004-2007. Should economic activity reach pre-crisis levels again, emissions can safely be expected to shoot up again. Thus, Japan's tremendous collapse in emissions at the beginning of the first commitment period can hardly be attributed to the policy framework currently put in place to address the problem of global warming. Therefore, to the extent that it exists, Japanese policy on climate change can be said to have so far failed.

Chapter 3
The Legacy of the Oil Crises

The crises of the 1970s have had a very deep impact on the shape of Japanese energy policy. In response to them Japan diversified away from its reliance on crude oil imports mainly by increasing the share of coal, gas and nuclear power in its energy supply, and by increasing the energy efficiency of its most energy-intensive industries. Some of those solutions are now proving counterproductive in the light of the new crisis.

3.1 Supply-side shortcomings

Although figure 2 shows a successful diversification away from crude oil in the Japan's TPES from 1979 onward, figure 3 clearly demonstrates that today absolute reliance on oil as is almost at pre-crisis levels. In fact, given the frequent troubles of the Japanese nuclear power sector, most of the slack in the decreased consumption of oil is being picked up by coal and natural gas. Especially coal became an exceedingly important fuel in the 1990s, when new coal-fired capacity came online in the power generation and industrial sectors (see figures 6 and 7), turning these sectors into Japan's largest drivers of direct emissions. The lowest value for the combined percentage for oil, gas and coal in the country's

[14] 47news.com, April 15, 2010.

TPES since 1979 has been 79.2% in 1998, when nuclear power generation in Japan was at a historical peak. Japan remains thus intensely reliant on fossil fuels to meet its energy needs.

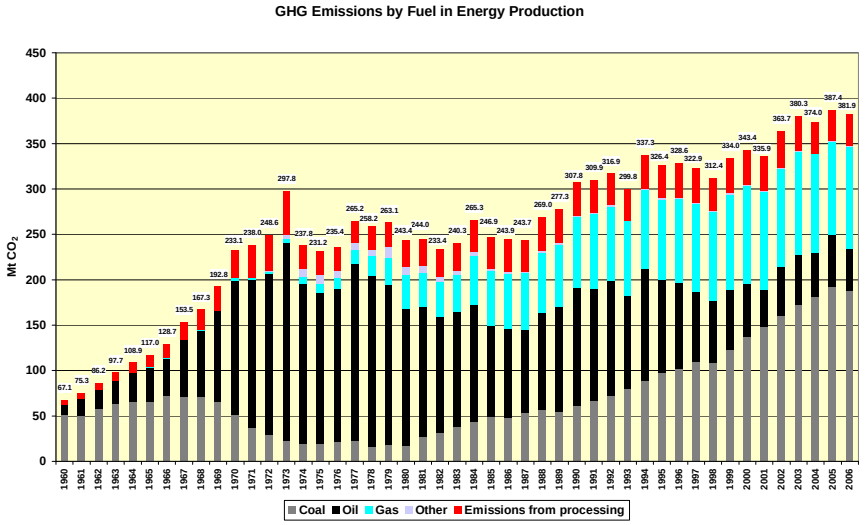

Figure 6: Japanese CO2 emissions from fuel combustion in energy production over the 1960-2006 period.
Source: IEA Energy Balances (2008).

Despite the bad reputation of nuclear power Japan, METI keenly seeks to increase the role of nuclear power in the country's TPES and to establish a reliable nuclear fuel cycle. While such developments would go a long way towards increasing Japan's energy security, they are unlikely to contribute in even the smallest way to Japan's climate change mitigation efforts even in the medium term, as the abovementioned technologies currently seem to be more than two decades away from commercial deployment.

The question of increasing the role of alternative forms of energy in Japan's energy supply is a hotly contested topic in Japan – so much that even the country's physical potential for renewable forms of energy is intensely debated.[15] Nevertheless, side-stepping that discussion, a couple of pertinent observations can still be made. For instance, very little seems to have changed over the course of the past three decades in the relative emphasis placed between the different forms of alternative energy. Thus, the 1983 'Japan's Long Term Energy Supply and Demand Outlook and Future Energy Policy' discusses under its section on alternative sources of energy only one form of renewable energy (photovoltaics),

[15] Personal interviews with industry executives.

as opposed to three non-renewable ones (fuel cells, coal liquefaction and gasification, and oil shales). As late as 2007, alternative forms of energy were seen as having still only a complementary role, with the text focusing on hydrogen, fuel cells, fuel generation from biomass, and the negative influence on power grids stemming from the fluctuation of renewable power generation. Renewable forms of energy such as wind, solar, geothermal, tidal, etc. receive relatively little attention in METI's Energy Plans and 'New National Energy Strategy', while technological fixes for improving the energy efficiency of fossil fuels still feature highly on the agenda.

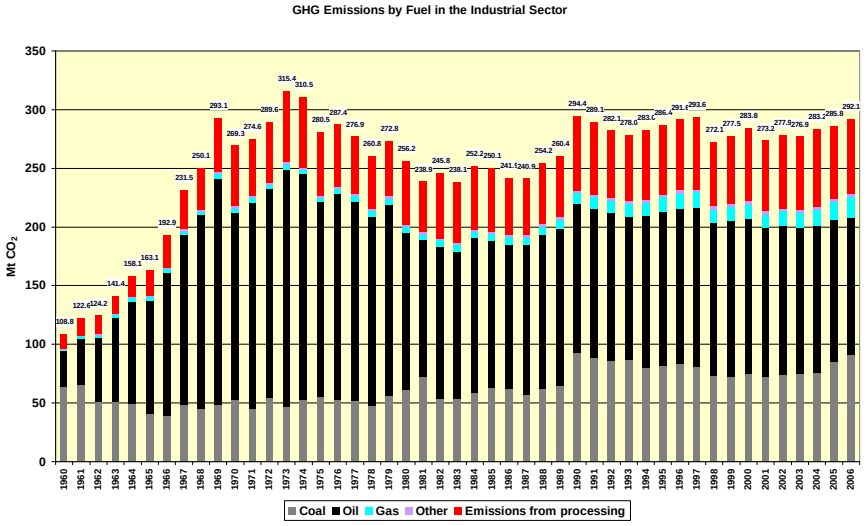

Figure 6: Japanese CO2 emissions from fuel combustion in the industrial sector over the 1960-2006 period.
Source: IEA Energy Balances (2008).

The result of this attitude can be observed in figure 2, where it is shown that renewables never exceeded 2.1% of Japan's TPES. This is because the current renewable portfolio standards and feed-in tariff systems, whose design was entrusted to METI, have not yet led to increased deployment of renewable forms of energy.[16] It is also worth noting at this point that the battle lines in this debate are drawn between predictable interest groups – with traditional energy companies closely aligned with METI, pointing to the strong limitations of Japan's physical and economic potential for renewable forms of energy, being opposed by green NGOs and academics aligned with the renewables industry, claiming that as much as 70% of the country's energy demand could be satisfied

[16] Iida, June 1, 2009.

by wind, solar, geothermal, etc. power.[17] This begs the question whether or not Japan is not currently experiencing a re-run of the attempts from elsewhere to maintain the supremacy of fossil fuels and halt the spread of renewable forms of energy.

3.2 Demand-side shortcomings

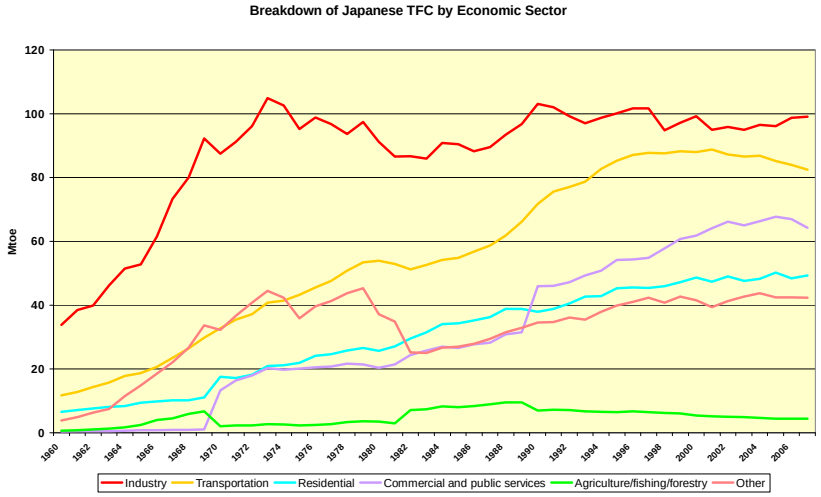

Figure 8: Absolute trends in the Japanese total final energy consumption over the 1960-2008 period.
Source: IEA Energy Balances (2009).

Even though, as figure 8 shows, the industrial sector is the largest single sector in Japan's total final consumption, 2003 and 2007 energy plans have been very lenient on the industrial sector, with wording being largely identical in both of them. The Keidanren's Voluntary Action Plan invariably receives praise for successfully pursuing energy efficiency. Indeed, as can be observed from figure 8 the industrial sector as a whole consumed almost 4% less power in 2007 than in 1990 – as part of a reliable trend. However, the category "industrial" in figure 8 does not include energy conversion industries (i.e. power and heat generation, etc.), although the Keidanren Voluntary Action Plan does include intensity-based commitments for them. While overall the Keidanren's plan is on track[18], this masks the fact that emissions from the extremely highly emitting power sector (37.7%-41.4% of total national emissions between 1960 and 2006) have risen by over 24% in the 1990-2006 interval, as can be seen from figure 6, making power companies voracious consumers of international carbon offsets. Second, the lack

[17] Personal interview, Chatham House rules.
[18] Point Carbon News, November 17, 2009. Also: Interview with industry executives.

of transparency surrounding the process through which the targets in the Voluntary Action Plan are set makes it very difficult to evaluate whether they are truly ambitious or do not in fact challenge industries to change their practices at all.[19]

Japan's policy success in the transport sector has been unequivocal. As can be seen from figure 8, energy consumption here had decreased by 2007 by over 7% from a peak in 2001. Japan's public transportation network is truly enviable and Japan remains to this day the only country in the world to hold fuel economy standards for heavy-duty vehicles.[20] The pursuit of a "modal shift" in transportation, i.e. a shift in freight shipping from trucks to e.g. boats, could hold additional potential for improvement in this sector.

In contrast to the successes in the transport and industry sectors, the household and commercial sectors are very powerful examples for Japan's failure to address the contemporary challenge of climate change effectively. Figure 8 demonstrates the continuous growth in energy consumption in these two sectors over the past two decades. Despite the 1979 Law on the Rational Use of Energy successfully promoting the energy efficiency of individual appliances in more and more sectors, the increased ownership of energy-consuming appliances has more than offset the positive gains generated by energy savings. Furthermore, given the high level of fossil fuels in the Japanese energy supply, this heightened energy consumption can only translate into a progressively increasing burden on the atmosphere. In response, METI's energy plans suggest deploying technology allowing the visualization of the total amount of energy consumed by household appliances, but at no point is it made clear why this would result in a change in consumer behavior. Indeed, there seems to be little faith in conveying energy awareness to consumers through price signals and it has been pointed out elsewhere[21] that Japanese tax rates on energy products, including transport fuels, are among the lowest in the OECD. Strong price signals are channeled to consumers primarily because energy market reform takes a definite third place after the stability of supply and compatibility with the environment in METI's plans.

3.3 An end to institutionalized limitations?

Japanese energy policy remains first and foremost concerned with the stability of the energy supply. In fact, METI's entire conceptualization of demand-side policies is limited to energy efficiency improvements, while economic measures

[19] OECD (2010). IEA (2007).
[20] IEA (2007), p. 72.
[21] Point Carbon News, May 6, 2010.

such as feed-in tariffs or carbon taxes are dismissed because of insufficient understanding of their effects on the economy, with the consequences for the stability of power supply being of greatest concern. A perception exists that the only reliable means of achieving meaningful cuts in emissions is through technological progress in the field of nuclear power or the efficient usage of fossil fuels.

It is undeniable that Japan faces certain restrictions that other countries do not, such as the high marginal cost of further reducing emissions, or the arguably restricted potential of renewable forms of energy. This is all the more reason why Japanese policy makers should at the very least creatively explore novel directions in energy policy, if not design outright an actual climate policy from scratch – featuring clearly spelt out targets, responsibilities, and oversight and enforcement mechanisms, robust economic policies and enthusiastic support of energy alternatives.

Unfortunately, until the August 2009 elections, Japan seemed to willingly blind itself to the possibility of addressing climate change. The unimpressive results on climate are easily understood once one realizes that the Energy Plans' ambitions lie elsewhere and that Japanese energy stakeholders, while controlling the climate agenda, are not willing to forcefully engage with it. It remains to be seen whether the fall of the 1955 system will usher in an era where Japanese climate policy will be able to break free from the restrictions imposed upon it by traditional energy policy and enable Japan to meaningfully contribute to climate change mitigation.

Chapter 4
Implications for the Future

Given the very deep time-horizon associated with the construction of a new energy infrastructure, Japan will not to be able to engage in climate change mitigation during the Kyoto Protocol's first commitment period to a significant extent through domestic action alone. Despite factor analyses pointing out that policy has started having an impact on Japan's emissions pathways[22], the fact remains that the tremendous recent collapse in Japanese emissions is overwhelmingly tied to the effects of the ongoing financial crisis. The phantom cuts that have emerged as a result can hardly be called permanent and, assuming a recovery from the crisis, they are going to prove fleeting.

[22] See JRI (2010).

No credible scenarios exist for Japan fulfilling its ambitious 2020 pledge without making extensive use of the current flexibility mechanisms. In the future Japan will continue to rely strongly on its generous allowance for domestic forestry credits and will continue to offset its domestic emissions by extensively drawing on international carbon credits. However, even the abovementioned evaluations praising contemporary Japanese climate policy make it clear that, even featuring modest economic growth up to 2020 and assuming that as much as 40% of the required emissions would be achieved through carbon offsets, the current policies will not be enough to help Japan achieve by 2020 its -25% pledge relative to 1990. Indeed, Japan has been very keenly seeking the expansion of the flexibility mechanisms to new sectoral or technological mechanisms, which would allow it to export its considerable technological capacity to less advanced countries in exchange for carbon credits.

It has been pointed out before that the change in the structure of Japanese industries had a non-negligible impact on Japan's energy consumption in the wake of the 1970s oil crises.[23] However, Japanese economic analysts point out that the Japanese economy is unlikely to undergo significant changes before 2020 – neither structurally nor quantitatively[24]. Therefore the lesson to be derived from the crises of the 1970s is that effective policy packages need to engage economic actors in a comprehensive, clear and positive manner. Thus, while punishing profligate energy consumers and progressively increasing their legal responsibilities, the Japanese state also allowed businesses to continue to grow through the generous provision of subsidies and loans. Such a policy approach, which would be both forceful and balanced, has not been formulated yet in the case of climate change.

Large energy-consuming companies correctly perceive the Basic Law on Global Warming pushed by the DPJ as a poorly tuned all-stick-no-carrot legal package. Leadership showing strong determination to support future industries over carbon-polluting ones and diminishing the opposition of established industries against vigorous mitigation policies would be a welcome development. Furthermore, clear policy areas remain underexploited by decision-makers due to the limitations of its old-fashioned energy policy. Japan needs to realize that "green" technology extends beyond energy efficiency improvements. Beyond the controversial renewables question, developing the power-and-heat cogeneration sector, formulating a carbon tax with redistributive features, or increasing the operation rate of nuclear power generation by legislating a new inspection

[23] Fukasaku (1995), p. 1075.
[24] Interview with researcher at the Japan Center for Economic Research, Chatham House rules

regime for power plants are only a couple of areas where room for improvement remains.

Neither of the above is sufficiently fleshed out at the current stage of the debate on climate change policy, with Japan treading water in an unhelpful status quo. Given Japan's political system, this status quo is likely to continue for as long as a forceful position does not coalesce around concrete policy proposals put further by visionary politicians in order to cut the Gordian knot in the tug of war between Japan's different ministries. While the grand policy goal of the DPJ's heavyweights has been to diminish the influence of public servants in policy making, they are unlikely to achieve this goal if they spend their time on byzantine infighting instead of independent policy articulation. It is unfortunate that while having been elected with such overwhelming support on an agenda of change, they have so far been unable to take advantage of policy options that had been left unexploited by previous administrations. One can only hope that the DPJ could perhaps, having exorcised some of the demons haunting it in the wake of Prime Minister Hatoyama's resignation on June 2, produce a vision-driven policy-package with a strong and clear sense of direction after this summer's House of Councilors elections.

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