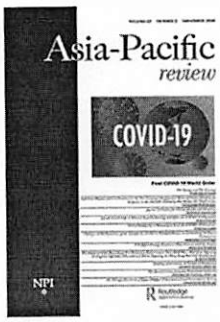

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William Martin

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US-Japan Energy Relations: Past, Present, and the Future

WILLIAM MARTIN

The Oil Embargo of 1973 began a history of close working relations between the United States and Japan in the area of energy security. The need to diversify energy resources to protect the economies of both countries over the last 50 years has taken many forms. Today, new challenges exist to find affordable, safe, secure energy supplies to meet growing concerns over climate, the security challenges posed by China, and the need to find clean energy for a world population approaching ten billion people by the end of the century. A review of past cooperation provides some perspective as to how we might find solutions for the future.

The past

Following the first oil shock, Japan and the United States built successful economies on the basis of inexpensive oil, primarily from the Middle East. The oil shock of 1973 resulted in a tripling of the oil price and put the economics of the US and Japan—indeed the industrialized world—into an economic tailspin. Japan strongly supported Henry Kissinger's initiative to establish the International Energy Agency (IEA), an intergovernmental organization originally created to promote and coordinate the sharing of oil among its members in the event of a severe supply disruption. Japan began a policy of diversification of energy imports, as well as a vision for a strong nuclear program to ensure the three Es: energy security, economic efficiency, and environmental conservation. Energy became an important element between the US and Japanese governments, as well as in private think tank discussions such as MIT's Workshop on Alternative Energy Strategies with the Japanese Institute for Energy Economics, an event that reinforced how international cooperation was essential to buffer against growing dependence on the Persian Gulf.

The IEA trigger for oil sharing was a 7% shortfall, but during the Iranian Revolution the shortfall was only 2%; a scramble for oil resulted and oil prices increased fourfold. The Tokyo G-7 of 1979 focused exclusively on strategies to collectively reduce oil prices as the world economy tumbled again. Japanese companies sought to get oil "at any cost" as Exxon Mobil cut its oil supplies to Japan. Tense relations existed between the United States and Japan as Secretary of State Cyrus Vance told the Japanese Minister of Foreign Affairs Okita Saburo that Japan was "insensitive."[1] IEA and the G-7 failed to contain oil prices and the 1970s ended with negative economic activity. Ulf Lantzke, Executive Director of the IEA, expressed the view that the fault was not with Japan; if the United States wanted Japan to stop Iranian spot market purchases then they should urge Exxon-Mobil to resume oil deliveries to Japan.

At the outset of the Iran–Iraq war in September 1980, oil prices again began to rise. At an extraordinary IEA Governing Board meeting in 1981 led by Japanese Ambassador Miyazaki Hiromichi, member countries agreed to avoid undue purchases on the spot market and to lower oil stocks. This effort to coordinate stock policy had a major impact on the markets and oil prices did not rise; this policy was later confirmed and agreed between Vice Minister Kuroda Makoto of the Ministry of International Trade and Industry (MITI) and the author to build stocks in 1984. Ten years after the oil embargo the United States and Japan had forged an effective emergency response to the global oil crisis—a policy which remains active today in the IEA.

During the 1980s there was also the emergence of two like-minded leaders—Ronald Reagan and Nakasone Yasuhiro. After being in office only six weeks, Prime Minister Nakasone traveled to the United States to meet President Reagan. On the way over, on a stop in Alaska, he gave a press conference and said that he would ask Reagan to free oil exports to Japan. As the energy advisor in the National Security Council (NSC), I noted this remark and prepared a brief for Reagan suggesting that we create an energy working group that would look at not only oil, but other energy sources such as coal and LNG exports from Alaska. I chaired the effort with my Ministry of International Trade and Industry (MITI) counterpart, Mr. Kawasaki Hiroshi, who was Deputy Director General of the Agency for Energy and Natural Resources. Our six months of work resulted in the Reagan-Nakasone agreement of November 1983 during the President's trip to Japan that emphasized the importance of unrestricted trade in oil, gas, and coal. I accompanied Reagan on that trip and was pleased to see that the Ron-Yasu relationship had begun in earnest, a relationship that would later result in the US-Japan Nuclear Cooperation Agreement of 1988 during my tenure as Deputy Secretary of Energy.

In the Reagan-Nakasone era, there were bountiful working groups and major progress in pursuing not just energy but a range of scientific endeavors. Japan

became a key partner of Russia and the United States to cooperate in the research and development of fusion, an effort still active today with the ITER project. Japan also took an interest and a share in the funding of the Superconducting Super Collider project, and offered to create the Human Frontiers Science Program, a personal initiative of Nakasone to encourage international scientific collaboration in basic research.

Perhaps the most significant agreement was the agreement on bilateral civilian nuclear cooperation: the Section 123 Agreement. Five years of discussions culminated in a 3-2 vote by the US National Security Council to allow Japan to reprocess spent nuclear fuel. As Deputy Secretary of Energy, I voted for the accord as did my State Department counterpart, Ambassador Richard Kennedy. The Department of Defense and the Nuclear Regulatory Commission (NRC) voted against. The final decision was taken by Deputy National Security Advisor Colin Powell who said at our meeting in the White House Situation Room, "I would normally vote against this given my Defense Department background but today I am going to join Bill Martin and Dick Kennedy and vote for it." He continued, "I know how Ronald Reagan feels about Japan and Prime Minister Nakasone and the President definitely votes for this agreement." In 1988 I was the first person to present this agreement to the US Congress and, fortunately, 30 years ago it was agreed, signed, and sealed.

Following the 1988 agreement, steps had to continue to be taken to negotiate approval for nuclear fuel transport of mixed oxide fuel (MOX) and spent fuel. I started to work with Japanese industry on these plans to ensure safe transport. Also, there was a very important moment in September 1993 when President Bill Clinton—advised by NSC staffer Daniel Poneman—determined in Presidential Decision Directive 13:

> The United States does not encourage the civil use of plutonium and, accordingly, does not itself engage in plutonium reprocessing for either nuclear power or nuclear explosive purposes. The United States, however, will maintain its existing commitments regarding the use of plutonium in civil nuclear programs in Western Europe and Japan.[2]

I had the honor to later interview Prime Minister Nakasone. The then 98-year-old Prime Minister still had strong recollection of the Ron-Yasu relationship and he confirmed that the nuclear agreement was one of his most significant achievements. In return, I recalled that it was Nakasone at the Williamsburg Economic Summit of 1983 who joined UK Prime Minister Margaret Thatcher and Reagan in urging that missiles be deployed in Europe if the Soviets did not come to the arms control table. Nakasone was the swing vote, as French President François Mitterrand and Canadian Prime Minister Pierre Trudeau voted against. I credit Nakasone for being one of the four heroes of ending the Cold War, along with Reagan, Mikhail Gorbachev,

and Thatcher. I told him this personally as I was at Williamsburg as an advisor to Reagan. And it is my theory that it was Japan's strong support as the "unsinkable aircraft carrier" that let Reagan agree to the US-Japan 123 Agreement. I call that agreement not the US-Japan Nuclear Cooperation Agreement, but the US-Japan Trust Agreement—as it was and is trust that underpins the US-Japan alliance.

Environmental and climate concerns also played a significant part in US-Japan relations. Sometimes they also crossed over into the area of trade, specifically autos. After challenging discussions over autos and voluntary restraints in the 1980s, an effort was made by the Japanese Ministry of Foreign Affairs to conceptualize a project to jointly develop alternative fuel autos. A conference was organized between leading experts and politicians in both countries, meeting in Washington and Tokyo. This was at the time of Prime Minister Takeshita Noboru and the organizers were the second North American division of the Ministry of Foreign Affairs, headed by Sasae Kenichiro, later Ambassador Extraordinary and Plenipotentiary of Japan to the United States of America, and the author, as chairman of Washington Policy and Analysis.

This effort, coupled with the 1992 Rio Environmental conference led to increasing awareness on climate, biodiversity, clean water, and environmental pollution. I was impressed by Japan's serious commitment to the environment and its numerical targets. Indeed, Japan had set as a goal doubling GDP in the 1960s to be followed by a commitment to halve environmental pollutants in the 1970s. The balance between environment, energy and economy dominated the conceptual thinking of Japan in the past—and it is a major element of the future with the addition of security and safety. Likewise, the United States instilled greater regulations on electric power generation as well as to set efficiency standards on automobiles, leading to a flattening of energy demand.

A major concern of both the United States and Japan was undue dependence on the Persian Gulf for oil. By the early 1990s, dependence on this volatile region had continued to increase. The Iraqi invasion of Kuwait brought energy security and national security to the forefront. Another growing concern was the rapid industrialization and energy use of China, as well as other developing nations such as India. The weight of the world's economy and energy use was shifting from OECD countries to industrializing nations. As the United States, Japan, and Europe shifted to more service-oriented economies, the less developed nations emerged as important centers of manufacturing and resource extraction. Like earlier industrial periods, this growth was fueled primarily by coal, thus C02 levels increased rapidly with subsequent calls for global restraint being heard, setting the stage for the Kyoto Protocol, as well as subsequent COP discussions.

In the 1990s we saw all of these factors—the rise of China, the instability of the Middle East and the first Gulf War, the threat of terrorism and cyberattacks, rising levels of C02, migration challenges, urban pollution due to rapid urbanization,

especially in developing nations, youth unemployment—rise in prominence in the beginning of the 21st century. Demographic factors also were becoming evident especially the lower birth rates in Europe, Japan, and the United States. On the positive side, the creation of the Internet offered an interconnectedness unknown in the past. All of this impacted quality of life, economic growth, and national security.

Then there was 3/11, the tragedy of the Great East Japan Earthquake. Having been on a visit to Sendai every year between 1988 and today, I was shocked and deeply saddened to see the devastation left by the earthquake and tsunami on the Sendai region and Japan from the relative safety of my living room. I was horrified to see the earthquake and tsunami crush the coastline of Tohoku. My son, Dr. Christopher Martin, was studying at Kyoto University for his doctorate, and like many Japanese parents I was very concerned for my son's safety. He responded by reassuring me, "Don't worry Dad, a group of us of the Primate Research Institute under Professor Matsuzawa Tetsuro are headed to Sendai to help protect animals at the Sendai Zoo." While well intentioned they never left home due to road obstacles.

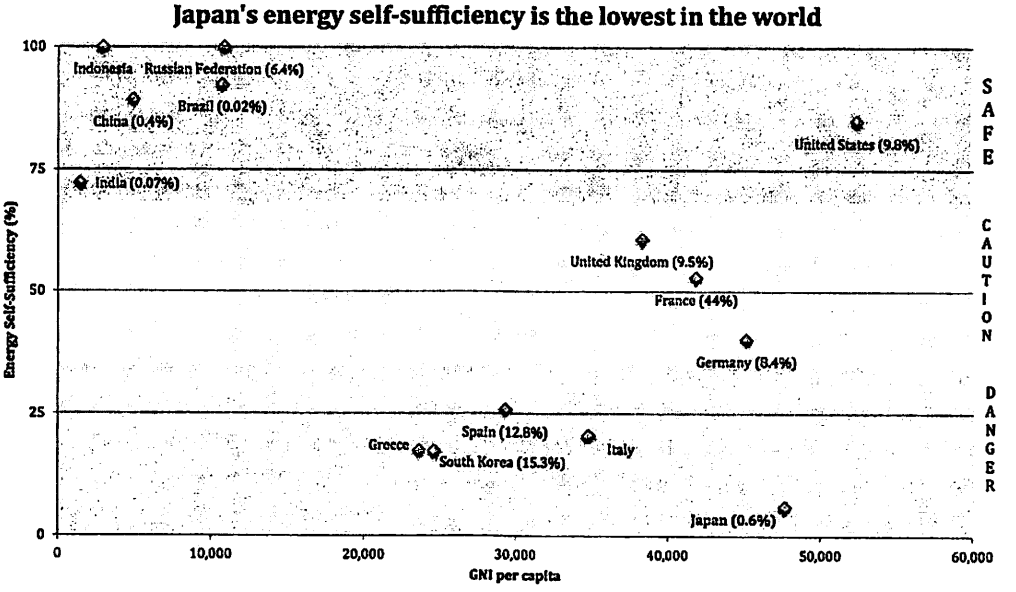
At that time of the accident, we witnessed remarkable cooperation as President Barack Obama offered US soldiers to help the Japanese Self-Defense Forces (SDF). The US government dispatched the USS Ronald Reagan to assist the SDF in distributing emergency relief during Operation Tomodachi. A few days after the accident, I joined Ambassador Fujisaki Ichirō to give remarks at the Council on Foreign Relations. Fujisaki was somber as he discussed the victims of Tohoku and the activities of recovery. I spoke of my respect for the region and the hope that the United States and Japan could work together to rebuild the region.

The present

At the time of 3/11, I was working with METI and Japanese industry on US-Japan nuclear cooperation, having hosted several Santa Fe Seminars to bring together Japanese industry and government for talks with high level US government officials on how cooperation in nuclear power could be enhanced. After Fukushima these talks took on more urgency and importance and have resulted in several initiatives to support safe nuclear power in both our countries.

For my part, I had the honor of testifying on nuclear power before a METI subcommittee in 2014. At that time, I described that the key concern of energy policy for Japan is that the degree of self-sufficiency after years of progress had been wiped out and had dropped to a dangerous low of 6% as the following chart illustrated: (see Figure 1)

My bottom line was that Japan needed to find safe ways to restart its nuclear program and other indigenous sources including renewables—while assuring a



[1] The percentage beside each country name is the ratio of nuclear energy in the total primary energy supply, from the 2013 IEA Energy Balances for OECD and non-OECD countries.
[2] Source of energy self-sufficiencies and nuclear share: 2013 IEA Energy Balances for OECD and non-OECD countries.
[3] Source for GNI per capita (Atlas method, current US$): World Bank
[4] The IEA Energy Balance 2013 projections for 2012 were used for OECD countries. The IEA Energy Balance non-OECD 2013 data were plotted for 2011 (no projections exist for 2012). The GNI per capita figures selected for these countries are therefore relative to the 2011 and 2012 self-sufficiencies.
[5] The IEA projected small nuclear share in 2012 is from Ohi's operation from July 2012 through September 2013 (No.3 & 4, 1.18GW respectively).

Figure 1 Japan's energy self-sufficiency is the lowest in the world
Source: IEA Energy Balance 2013 projections and World Bank

skeptical public that nuclear power was safe. At the same time, I recommended that Japan's decade old policy of diversification of energy sources be continued so as not to become unduly dependent on a single source of energy or imports. Diversification of imports—with development of indigenous resources such as renewables and nuclear—coupled with the citizen's determination to save energy (*mottainai* concept of avoiding wastefulness) could be a sensible approach. At the same time, the United States was discovering the potential for shale gas and talk of LNG export, not import, reached the halls of Congress and the Obama Administration. Although not planned or foreseen, US oil and gas independents started a boom that has reshaped today's global energy landscape. Import terminals of LNG have become export terminals. Thanks to the leadership of Secretary of Energy Ernie Moniz, permits were allowed for export and a new era of US-Japan energy cooperation began. This occurred at the same time that Japan was seeking to import more oil, gas, and coal to make up for shortfalls in nuclear energy.

Japanese industry did a commendable job, in my view, to keep the lights on as nuclear plants shut down for regulatory inspections. Since that time Japanese government and industry have painstakingly worked to recover the Fukushima Daiichi site and the Nuclear Regulation Authority (NRA) has pledged efforts to create the safest nuclear power program in the world.

Once again US-Japan cooperation was at the forefront with consultations between NRA and the US NRC to establish safe conditions for restart with redundant systems to avoid future accidents. There have been extensive consultations between US and Japanese utilities coordinated by the Nuclear Energy Institute of the United States and the Atomic Energy Association (ATENA) of Japan. The US and Japanese governments established a high-level bilateral commission to sustain close dialogue on key issues of safety, decommissioning of the Fukushima Daiichi site, and further cooperation in nuclear energy.

At the same time, the boom in US oil and gas meant that the United States had become a net exporter rather than importer of energy. World oil and gas markets have responded to this dynamic and prices for oil and gas have fallen significantly. Thus, Japan and other nations have benefited by importing American LNG and this trend is expected to continue.

On the geopolitical front, in the last four years we have seen evidence of significant cooperation between former Prime Minister Abe Shinzo and President Donald Trump. Abe gained respect as a global champion of multilateralism, seeking to improve relations with first and foremost the United States and also Europe through a comprehensive trade deal. Relations with China fluctuate given frustration over persistent Chinese military expansion. Related to energy is Abe's effort to expand the role of the SDF, stretching further to assist in case of any attacks on US vessels. For his part, Trump has emphasized America's role as an energy superpower and opened up avenues for exports of oil, gas and coal to Japan and the global market.

Collaboration on energy research and development has also increased in areas that enhance energy security, as well as clean energy. On the sensitive issue of non-proliferation and the building of Rokkasho nuclear reprocessing plant, Japan has shown the utmost commitment to transparency and adherence to standards for safety, safeguards, and security set out by the International Atomic Energy Agency. The year 2018 was an important milestone for US-Japan cooperation, marking the extension of the US-Japan Nuclear Cooperation Agreement of 1988. In that regard, we were happy to see the recent continuation of the 123 Agreement between the United States and Japan since it is serves as an important foundation for the peaceful use of nuclear energy. And we are grateful for Japan's transparency and commitment to reduce its plutonium stockpiles.

The future

Working for 50 years on US-Japan energy issues has reinforced my belief of the wisdom of Ambassador Mike Mansfield, who declared, "The US-Japan relationship is the most important bilateral relationship in the world, bar none." That comment has more relevance today than when the Ambassador spoke the words

in the 1980s. In the future energy can serve as the bedrock of the relationship, along with our security agreements. However, even security arrangements will be impacted by how well we develop strategies for clean, safe, secure, and innovative energy systems that leverage the US-Japan relationship as a "HUB" for greater energy security and environmental quality around the Pacific Rim, through Asia, India, Africa, the Middle East up to and including the UK and Europe. We are in direct competition with China and while we do not wish for confrontation, we do urge that China not seek global hegemony at the expense of Japan and the United States. As the world's first and third economic powers, we have the economic strength, management know-how, political-military assets, technology, and natural resources to fuel a prosperous world in the future.

As we look ahead to 2040, 2050 and beyond, an examination of US-Japan cooperation needs to consider three main factors in evaluating energy cooperation: geopolitics and national security; economics and trade; and the global, national and regional environment, consisting of evaluation of the physical and interactive systems of atmosphere, oceans, and land.

Starting with the geopolitical element, the world situation is shaped by two recent developments that will set the tone over the coming decades. First, the ambitions of China continue—militarily, politically, globally threatening freedom

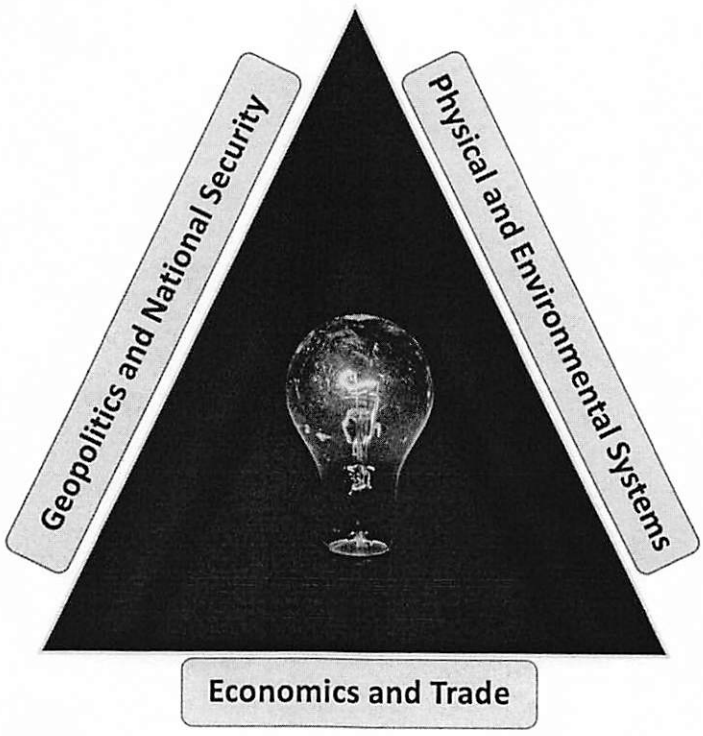


Figure 2 Three main factors in evaluating energy cooperation
Source: Image developed by the author

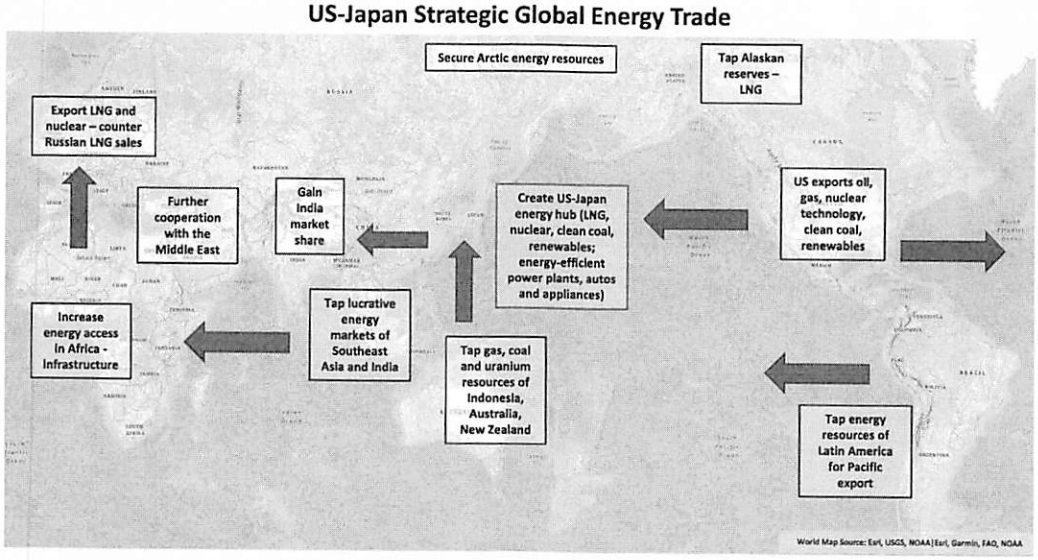


Figure 3 Japan strategic global energy trade
Source: Esri, USGS, NOAA|Esri, Garmin, FAO, NOAA

of navigation, global health, and environmental quality. Finding avenues of cooperation with China is important, but aggressive behavior at the expense of the United States and Japan must be halted. It is clear that an Anglo-Japan coalition needs to be considered to challenge China and contain its ambitions so that it does not impact negatively the rest of the world. This amounts to a Pacific Rim plus India coalition.(Figure 3)

The coalition starts in the Americas (North and South), extends to Asia—including Australia and New Zealand—with the hub being Japan. Continuing to move westward, the coalition seeks to include India, parts of Africa, reaching up through the Middle East and eventually concluding in the United Kingdom and Europe. This strategy is in contrast to the post-World War II effort where America looked eastward toward Europe, the North Atlantic Treaty Organization, and Russia. At that time, the United States and the United Kingdom were key partners; this strategy would put US-Japan at the center, mimicking the US-UK special relationship. The American view would circle the globe in a westward and southern manner. Such cooperation would: improve military preparedness; stabilize supply chains; bring prosperity and infrastructure to the broad coalition, competing head-on with China's ambitious Belt and Road initiative; and provide a backdrop for extensive trade in energy.

Greater cooperation in energy can enhance the relationship. US, Canadian, and Australian fossil fuels can supply growing quantities of energy to the regions. Japanese and American clean coal technology and Japan's ability to burn fossil fuels efficiently in power plants can offer cleaner energy throughout

the region. Finally, as developing nations industrialize, the United States and Japan can supply energy efficient appliances, automobiles, and efficient electrical infrastructure—competing head on with China's ambitions to wage a soft war of infrastructure development. It is noteworthy that a similar plan was announced by the State Department called Asia EDGE. This program should be further pursued to create a Pacific Rim/Asia corridor of influence that could also help restrain China's ambitions in the South China Sea and compete with the Belt and Road Initiative.

The United States is withdrawing troops from the Middle East, and both Republicans and Democrats share this goal. This should not necessarily be viewed as a negative event by Japan and others that depend on the free flow of oil and gas and protection of the energy infrastructure in the region. A militarily oriented strategy must be replaced with an economic security and prosperity package that brings the nations of the Middle East together. The recent Trump success in getting UAE and Israel to sign a peace accord should be expanded to include Saudi Arabia and Qatar. This would provide more stability for the resource rich, yet historically unstable, Middle East. Such an enlarging coalition can be effective in containing the ambitions of Iran. The United States and Japan can help put together this coalition reaching global status.

Environmentally, the United States and Japan should individually and collectively pursue global environmental issues such as healthy atmosphere, clean air, clean water, food security, and clean energy. Climate grabs the headlines but action on climate must be within a framework that includes all physical dynamics of the Earth's biosphere. Other critical issues include reducing urban pollution, providing clean water, and to wisely cultivate soil practices to ensure food for a planet of 10 billion people by 2100.

As widely noted, energy production and use will have a major impact on the Earth's biosphere, and, therefore, clean energy strategies will be necessary, recognizing that such energy needs to be affordable and practical as the greatest expansion of energy will not be in the OECD but in the developing world where jobs and economic growth will be essential to stability and prosperity. As a practical matter, developing nations will need fossil fuels for economic development. Reducing emissions in Europe, North America, and Japan will not guarantee a healthy global environment. Likewise, the most important challenge confronting the world is the successful development of the economies of currently industrializing nations which can create sufficient jobs for a tremendous surge in youth employment. If the world cannot provide a healthy environment and job creation in the developing world then we could see greater migration and immigration challenges coupled, as well as more extremist activities globally which could exacerbate radicalization.

As energy is at center of the geopolitical, economic and environmental pyramid, it is a vital starting point for taking action. In this regard, The Prime

Minister and President should establish a US-Japan Energy Working Group that combines the elements of the Reagan-Nakasone energy agreement of 1983, the US-Japan Nuclear Cooperation Agreement of 1988 (extended in 2018), and the US-Japan Bilateral Commission, started in the wake of the Fukushima nuclear accident. We applaud the efforts of both the Obama and Trump administrations and the Department of Energy for offering invaluable assistance. This bipartisan effort will continue across the range of energy resources and their geopolitical, environmental and economic impact on public health and safety. Some thoughts for the future collaboration are:

- The United States should continue efforts to expand trade in LNG with Japan as the hub for Pacific Rim and Asia deliveries. LNG, while a fossil fuel, releases far less CO2 per unit of energy than coal. As approximately 40% of the world's electricity production is currently coal powered, LNG can be a viable, environmentally friendly substitute. US exports to Japan can not only be destined for Japanese use but as a starting point or hub for expansion of US LNG into the Asia-Pacific region.
- Clean coal technology is essential because over one-third of electricity generated around the world is produced from coal-fired power plants. It is not wise to eliminate coal use in both the United States and Japan; it is more important to improve the capacity to have clean coal technologies, including high combustion efficiencies, improved scrubbers and an all-out effort to sequester CO2. Our nations' technological advancements are necessary to lead efforts to burn coal more cleanly in developing nations. To not compete would be to cede the playing field to China and to fuel a "dirty coal" world.
- Maintain and expand the nuclear energy option in each country, including safe maintenance of existing reactors and a commitment to build new advanced reactors. Japan should continue efforts to finish the Rokkasho nuclear power plant and ensure safe recycling technology consistent with global nonproliferation agreements and the US-Japan Nuclear Cooperation Agreement. Japan should allow utilities to operate nuclear power plants that the NRA deems meets all regulatory requirements for additional years beyond their original operating licenses, for the time the reactors remained in cold standby and nonoperational between 3/11 and the resumption of operations.
- Maintain leadership roles in the completion of the ITER fusion project. It has been 35 years since the author and Evgeny Velikhov agreed to cooperate in magnetic fusion at the time of the Reagan-Gorbachev summit. All of the parts are now ready for final assembly with initial tests anticipated in five years.
- Evaluate more fully the interrelationships of digitization and energy from cybersecurity to enhancing energy and electrical systems.
- Fuel innovation and the concept of *mottainai*. The nations should further pursue new and renewable sources of energy, the hydrogen economy, and greater energy conservation.

- Finally, the leaders can agree to "electricity for humanity"—deploying the clean energy initiatives to developing countries to meet the needs of a planet which will grow from 7 to 10 billion people by 2100. Many of our global challenges can be resolved with a promise of a fully electric world: more livable conditions will make migration less necessary; reducing C02 through clean energy in developing nations will reduce climate dangers and make urban centers more inhabitable; greater electrification will help with clean water strategies; greater industrialization through electrification will help with youth education; electrification is the key to the digital/computer world helping with health centers, schools, quality of life. Imagine living through COVID-19 without electricity and one can imagine the challenges facing countries with exponential rates of growth in population.

Both the United States and Japan also face political and economic challenges for domestic audiences. Debates in each country are widespread, spanning the Green New Deal to "energy dominance." As we look to the longer term, from the period 2030 to 2050, we can see that elements of both strategies will be needed. It is not one or the other. Japan, for example, should make efforts to increase its energy self-sufficiency from under 10% today to at least the percentage of self-sufficiency which has been achieved with food production: 38%. With self-sufficiency at that level, a plan of diversification of imports can be achieved drawing upon the Middle East, the United States, Australia, Russia, and other suppliers.

At the same time, the United States should continue to make effort to develop plentiful US resources in an environmentally sensitive manner and export these resources to Japan. Japan, for its part, should consider being a hub for energy trade as energy demands expand in the Pacific, Asia, South Asia, and Africa. Both the United States and Japan should combine efforts to deploy innovative, safe, proliferation-resistant nuclear reactors to use domestically and internationally in direct competition with Russia and China. Recent action by the US International Development Finance Corporation to allow financing of nuclear reactors is an important step in this direction. Finally, the United States and Japan should share clean coal technology with the developing world as environmental problems cannot be solved with just more stringent emissions requirements.

To fully evaluate energy options greater work needs to be done on the economics of externalities: what is the "real" price of energy when one considers the combination of economics, environmental impact, health and safety, and national security. The United States experienced low energy prices for the last three decades, made possible by maintaining a large military presence the Middle East. A classified Defense Department study revealed that the "real price" Americans paid may be five times the amount at the gas pump because of military expenditures to protect oil supplies and transportation routes. Sadly, externalities also

include the number of deaths and injured of American soldiers since the Gulf War —which today is close to 70,000 if one considers the Middle East conflicts since 1991 up to and including conflict in Afghanistan and Iraq. It is no wonder that both Trump and Obama wanted to return American troops home and this trend is likely to continue. Therefore, Prime Minister Abe's pledge to increase the role of SDF could put more Japanese soldiers in harm's way. What does this suggest? It underscores that domestic energy resources such as nuclear power, wind, solar and energy conservation can save lives—not only from environmental/climate harm, but militarily if and when a conflict might arise in the Middle East or in direct confrontation with China in the South China Sea.

An analytical private think tank group should support the official government program and include distinguished members from academia and think tanks. Integrating the issues of geopolitics, energy, environment and economic development will require broadening our set of analytical tools to determine the systemic nature of interactions. This will require a better understanding of the economics of externalities and a sectoral approach to energy economies. It is proposed that a working group should be organized by the Santa Fe Leadership Program and include MIT and the Institute of Energy Economics, Japan to build and evaluate global political, economic, environmental and energy options, highlighting the role of US-Japan cooperation.

Such an effort would be to modernize the 1975 Shimoda meeting of the Workshop on Alternative Energy Strategies (MIT) which was headed by MIT Professor Carroll Wilson, Okita Saburo, and Sakisaka Masao.[3] It is worth noting that the Japanese government supported a very important, but relatively unknown program in the OECD in the late 1970s—the Interfutures Project that looked at integrated global futures.[4] A similar project needs to be started today. Excellent modelling capabilities at MIT, the Institute of Energy Economics—as well as the giant computer simulations of the US national laboratories and Japanese government researchers can be brought together to look at this issue of global futures and the role that might be played by the United States, Japan, and other OECD partners.

Finally, my almost 50 years of working on energy issues with key Japanese government, industries, and think tanks has taught me that human relations are the most valuable commodity we have. The US-Japan relationship is unique and it needs to be maintained as it matures in the coming years. It is quality, not quantity, that matters. The US-Japan relationship should continue to seek depth in personal relations. The challenges of the world are serious and plentiful. A strong US-Japan bilateral relationship can make for a much better cleaner and safer world through the activities of energy cooperation. Let's keep going and innovating with our sights high and our spirits in harmony.

Notes

1 The *Asahi Shimbun* reported Vance's comment on December 13, 1979.

2 Fact Sheet — Nonproliferation And Export Control Policy, The White House, Office of the Press Secretary, September 27, 1993.

3 See Carhart, S C. Energy demand analysis in the workshop on alternative energy strategies. United States: N. p., 1978. Web. doi:10.2172/6539263.

4 Interfutures: Facing the Future. Organization for Economic Co-operation and Development. https://www.oecd.org/futures/35393713.pdf Director of Information, OECD. 1979.

About the author

William F. Martin is an American energy economist, educator, and international diplomat who is currently Chairman of Washington Policy and Analysis. Martin served as Special Assistant to Ronald Reagan and was responsible for coordinating the President's international travel and oval office visits from 1983-1985 including meetings between Prime Minister Nakasone and President Reagan. He also served as Executive Secretary of the National Security Council and Deputy Secretary of Energy during the Reagan Administration. He was President of the Council of the University for Peace, appointed to the Council by Secretary General of the UN Kofi Annan. Martin served as Chairman of the Department of Energy Nuclear Advisory Committee under both Presidents George W. Bush and Barack Obama. Emperor Akihito of Japan presented William Martin with the Order of the Rising Sun, Gold and Silver Star at the Imperial Palace on Wednesday, May 8, 2018, in recognition of his "contributions towards strengthening nuclear cooperation between Japan and the United States."