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Summary

1. Challenges for Japan's Energy Situation in 2013

Japan will have to continue to rely heavily on fossil fuels throughout 2013 even assuming that nine nuclear power stations are operational by the end of the fiscal year. Japan's energy situation remains extremely tough in terms of 3E+S+M (Energy Security, Environment, Economic Efficiency + Safety + Macro economy), and it is important to effectively utilize all options, including restarting the nuclear power stations.

2. Developments in the Discussions on Nuclear Policy

The Nuclear Regulation Authority is conducting various reviews to formulate the new safety standard in July this year, and is scheduled to issue a rough draft in January. The Authority will then start the safety reviews for restarting the nuclear power plants once the new standard is established. However, with no clear prospects on how long the reviews will take, the timing of restarting remains unclear.

3. Nippon Keidanren Declared the Commitment to a Low Carbon Society

"Nippon Keidanren's Commitment to a Low Carbon Society" released on January 17 shows its strategy for curbing global warming by developing and utilizing innovative technologies and expanding the scope of its international contributions. The focus of domestic discussions will now shift to aligning the goal of the whole of industry with that of the entire country, and the actual measures to be taken.

4. New Possibilities Opening Up for EVs

EVs have been developed along the path of gasoline vehicles, their forerunners, but have not spread as widely as anticipated due to bottlenecks such as price and cruising range. However, the use of super mini EVs in limited areas is gathering attention. Breaking away from the path of gasoline engine vehicles could open up new possibilities for EVs.

5. Recent Developments in the LNG Market

Global LNG trades apparently declined year-on-year by a few percentage points in 2012, as Europe saw much smaller imports and the Asia Pacific markets continued steady growth. Japan's imports registered another record high with the bill surpassing JPY 6 trillion. A worrying trend of cost escalation is observed among LNG projects under construction.

6. China Watching: 10 GW Annual Target for New Installations of Photovoltaic Power Capacity

In early January, the National Energy Administration of China set a goal to increase the country's installed capacity of photovoltaic power by 10 GW in 2013. This goal is achievable with appropriate support and a more solid administrative system, and thus China could well become the world's largest photovoltaic power producer in 2015.

7. ME Watching: "Arab Spring" and the Risk of Things Falling Out of Control

The risks of the cycle of violence and terrorism are rising in the Middle East and North Africa. The turmoil in Syria has deepened further, and the hostage incident in Algeria confirmed that Al Qaeda is becoming more active. Despite the unexpected gains of the centrist group in the general election, Israel's hard-line stance against Iran is not likely to change.

8. Russia Watching: Implications of Russia's Arctic Ocean Strategy

There are four factors behind Russia's ongoing efforts to strengthen its Arctic Ocean strategy: opening commercial routes, developing energy resources, military security, and China. Japan must be aware that developments in this strategy could alter the geopolitical balance in the Asia Pacific region.

1. Challenges for Japan's Energy Situation in 2013

Yu Nagatomi, Researcher

Energy Demand, Supply and Forecast Analysis Group, EDMC

At its 411th Regular Research Reporting Session at the end of last year, the Institute of Energy Economics, Japan released its short-term supply and demand outlook for energy up to and including FY 2013. The highlights of the FY 2013 outlook include overseas economic trends, last-minute demand before the consumption tax rise, continuation of electricity saving and energy conservation, restart of nuclear power stations, and the rise in electricity tariffs.

In FY 2012, the Japanese economy gradually recovered from the impact of the Great East Japan Earthquake, and posted 0.9% growth in real GDP from the previous year. Real GDP is expected to grow by 1.4% in FY 2013 due to an economic upturn backed by the recovery of overseas economies and last-minute demand before the consumption tax is raised. In FY 2012, energy demand dropped by 1.0%, falling for the second consecutive year since FY 2011. The drop is expected to shrink and roughly level out in FY 2013. Regarding nuclear power stations, only Ohi Units 3 and 4 are likely to be operational in FY 2012, while the standard scenario for FY 2013 predicts that nine additional power plants, mainly those whose stress test reports are being reviewed ahead of other plants, will be operating by the end of FY 2013. While several nuclear power plants are expected to restart, Japan is likely to post a third straight year of trade deficit since FY 2011 as the country remains dependent on fossil fuel imports which remain expensive.

Regarding the situation in FY 2013 based on the foregoing assumptions in terms of 3E+S+M, that is, Energy Security, Environment, Economic Efficiency + Safety + Macro economy, it is clear that Japan will face huge problems in the supply and demand for energy. In terms of energy security, depending on fossil fuels for 93% of its energy in FY 2013, Japan will remain vulnerable to risks in the supply of fossil fuels as oil prices stay high and the situation in the Middle East remains volatile. Further, with no prospects for fully restarting the nuclear power plants, concerns over electricity supply will continue. The electricity supply situation could become dire if the economy recovers sharply. (Note: The current administration forecasts 2.5% growth in real GDP and 2.7% growth in nominal GDP for FY 2013.)

In terms of economic efficiency, there are concerns that the outflow of national wealth and the trade deficit could become the norm as the cost of fossil fuel imports, which, at approximately 23 trillion yen, is already 5.3 trillion yen higher than in FY 2010, remains high. Further, in terms of macro-economic impacts, there are concerns over the impact of the rise in electricity tariffs caused by the increase in fossil fuel imports associated with the shutdown of nuclear power plants. A 15% rise in electricity tariffs will impose an extra cost of about 500 billion yen on the manufacturing industry, possibly accelerating the shift of industry to overseas. Furthermore, regarding the environment, the volume of energy-related CO₂ emissions in FY 2013 is expected to be up 13% from 1990 levels due to the growth in fossil fuel consumption, hindering the discussions on the GHG emissions target for 2020. In FY 2013, Japan will continue to face a multitude of problems in all aspects of the 3E+S+M, and must therefore mobilize all available options, including nuclear power, to ensure a stable supply of energy, reduced energy prices, curb the rise in electricity tariffs and reduce greenhouse gas emissions.

2. Developments in the Discussions on Nuclear Policy

Tomoko Murakami, Group Manager
Nuclear Energy Group, Strategic Research Unit

As of February 14, 2013, there are a total of twelve study teams and expert meetings established within the Nuclear Regulation Authority (NRA), including the study team on the new safety standards for light water reactors for electric power generation, which is tasked with drawing up a new safety standard that reflects the lessons of the Fukushima Daiichi accident, the study team on the new seismic design standards for earthquake and tsunami for light water reactors for electric power generation, which is responsible for developing a new standard against earthquakes and tsunami, and the expert meeting on the investigation of the on-site faults in the Site of Ohi Power Station which is investigating the fracture zones at the Ohi and Higashidori Nuclear Power Stations.

Among these teams, the Study Team for Formulating a New LWR Safety Standard held four meetings in January, including the ninth meeting on January 11 which discussed the requirements for severe accident countermeasures, and the tenth meeting on the 18th which included a hearing of electric utilities' opinions on the draft new safety standard. Based on these discussions, the draft new safety standard, which includes strengthening the facilities to maintain the injection of water into the reactors in the event of a station blackout and installing new facilities to keep integrity of the containment vessel in an accident, has been issued on February 7 without major modifications from the initial proposal. The standard is scheduled to be completed and put into effect in July after fleshing out the details through discussions with third-party experts and electric power companies.

While the NRA is expected to be independent from politics, policy trends, and the wishes of industry, "independence" is clearly not synonymous with being "self-righteous" and "excluding any opinions whatsoever from interested parties". The open hearings with electric power companies were held in the tenth new safety standard meeting and the sixth earthquake and tsunami standard meeting, reflecting the Authority's sincere response to criticisms from some areas of industry about its refusal to listen to the power companies. In the U.S., the NRC commonly uses the knowledge of the industry and its rich experience and data on manufacturing and operating real plants when formulating standards. The NRA's stance must be closely monitored.

Regarding the timing of restarting, which is the key issue affecting Japan's 3E+S+M, it is still extremely difficult to predict in view of the attitude of the NRA. The NRA is cautious about restarting the nuclear power plants, commenting that "the safety reviews (for restart) will start when the new standard becomes effective in July, but the reviews will take time, and a decision will not be made soon". Furthermore, the Authority is planning to ask Kansai Electric to stop Ohi Units 3 and 4, the only units currently in operation, when they reach the end of their operation time limit in August 2013 unless the plants are judged to comply with the new standards. Depending on how the earthquake and tsunami standard turns out, the sites that have so far been considered free of active faults, such as Kashiwazaki-Kariwa, could be declared non-compliant for having an active fault immediately below the reactor building.

Needless to say, the NRA is expected to make decisions independently based solely on scientific reasoning. The energy industry may be forced to recognize that curbing the electricity shortfall during peak demand alone is no longer sufficient reason for accelerating the decision to restart the nuclear power plants, and should take measures to prevent further worsening of their finances in view of the possibility of a third summer and winter without nuclear power.

3. Nippon Keidanren Declared the Commitment to a Low Carbon Society

Hiroki Kudo, Assistant to Managing Director
Global Environment and Sustainable Development Unit

On January 17, the Keidanren, or the Japan Federation of Economic Organizations, released the “Nippon Keidanren’s Commitment to a Low Carbon Society”, which is a voluntary action plan for global warming countermeasures from 2013. The action plan includes a review of the voluntary environmental action plan which has been implemented since June 1997, and presents the industry’s overall stance towards global warming for 2013 onwards and the specific action plan of each participating industry.

In the review, the Keidanren highly evaluates the achievements of the voluntary environment action plan (covering 44% of all CO₂ emissions of Japan), citing (1) a 10.1% reduction in CO₂ emissions from 2011 levels by the 34 participating industries (industrial and energy conversion sectors), (2) promotion of changes in the way of thinking and technological development in industry achieved by the action plan as a co-benefit, (3) through a continuous review process, devising ways of raising the probability of attaining a higher goal, such as expanding the participating industrial sectors, raising the target levels, and using a credit system.

The Nippon Keidanren’s “Commitment” also presents its basic stance that breakthroughs and technological innovations are crucial for achieving the international target of halving global GHG emissions from current levels, and that they will engage in long-term efforts based not only on maximum domestic efforts but also international contributions. Based on this policy, each industry has set its own action plan based on four pillars: (1) setting a reduction target for 2020 for domestic business activities, (2) strengthening joint efforts among companies, consumers and customers, (3) promoting international contributions, and (4) developing innovative technologies.

The highlight of the new action plan is a greater range of corporate efforts for reduction. The plan focuses on making GHG reduction efforts not only in Japan but also abroad by developing high-efficiency technologies and innovations and deploying them in other countries. The challenge is to determine the framework under which each company and industry should engage in these activities, and how to quantify their actual contributions. It is important for the public and private sectors to work together in building this framework. Meanwhile, the range of reduction efforts could also be expanded to include the supply chain. The purpose is to encourage new reduction efforts by reassessing the scope of reduction based on the Life Cycle Assessment (LCA) concept. Here again, the method for quantifying the actual reductions is the challenge.

The “Commitment” does not yet set a specific target for the whole of industry; this task is left for the near future. Neither has a specific target been set for the power sector, as the post-March 11 energy policy is still being considered. As the new administration has announced that it will revise the 2020 GHG emissions target, it is important to identify a target that can be achieved with direct fiscal spending. In the process, domestic discussions will focus on the national target and the role of the Nippon Keidanren’s Commitment to a Low Carbon Society, and how to ensure transparency of the action plan and improve its effectiveness.

4. New Possibilities Opening Up for EVs

Hisashi Hoshi, Board Member, Director

New and Renewable Energy & International Cooperation Unit

Sales of EVs are disappointing. Sales of the global leader, Nissan's "Leaf", have reached only about 40,000, far below the company's global target of 1.5 million by 2016. Besides the relatively expensive price, its short cruising range makes consumers reluctant to purchase the vehicle. A cruising range of only 200 km per full charge looks rather risky to drivers who are used to gasoline vehicles.

While the sales of EVs struggle, the development of super mini EVs is picking up. Aside from the Leaf, Nissan has developed a two-seat super mini EV "New Mobility Concept" and has launched demonstration tests. And despite distancing itself from full-scale EVs, Toyota also has its one-seat EV "COMS". All major automakers except Mitsubishi Motors have entered this market. The market also has the support of the Ministry of Land, Infrastructure, Transportation and Tourism, which is considering establishing a new auto category for super mini EVs between the existing "Kei" light cars and mopeds, and allowing them on public roads except highways.

Super mini EVs are intended for shorter distances than regular cars. The short cruising range of EVs would not be such a disadvantage if their usage is limited to local shopping, home delivery of smaller parcels, and a means for older people to get around. The car could also be made much smaller as short-distance driving usually involves only one or two passengers. A lighter body weight would also mean a smaller battery and hence lower cost.

So far, the target of EV development has been to catch up with gasoline vehicles. EVs have been aiming to rival the performance of the gasoline engine, which has been refined for over 130 years, and to adapt itself to a transportation infrastructure that is designed for the gasoline engine. The new super mini EV option, however, indicates the possibility of other paths. Private cars are used by far the most for local town driving, with the occasional long trip. EVs can definitely handle town driving even with a short cruising range of 40 to 50 km. Though there are still real issues such as lowering costs and redefining the safety standard, EVs could carve out their own large market by not competing on the same turf as gasoline vehicles.

In China, small EVs are becoming popular under a different context. The small EVs that have sold as many as 100,000 units, mainly in Shandong Province, are cheap models selling for less than 200,000 yen thanks to the use of off-the-shelf motors and cheaper lead-acid batteries. They can still travel at 50 km per hour with a range of 100 km. They have preempted the buying motive of the lower income bracket amid the wave of motorization. This new demand segment arose thanks to the characteristics of the EV.

Currently, there are various ongoing demonstrations on transportation infrastructure for EVs, such as pick-up and drop-off car sharing, both in Japan and elsewhere. Like mobile phones which spread dramatically by creating new demand areas different from those of land lines, EVs and their unique transportation systems (electromobility), as well as their market, could have huge possibilities.

5. Recent Developments in the LNG Market

Hiroshi Hashimoto, Senior Researcher, Oil and Gas Unit

Global LNG trades in 2012 presented a striking contrast to those in the previous two years, as traded volume apparently declined year-on-year by a few percentage points in 2012, compared to the spectacular growth of 25% in 2010 and 8% in 2011. The year 2012 saw only one additional large-scale LNG production train at the Pluto project in Australia. Several LNG producing countries decreased outputs due to glitches and smaller availability of feedgas. The European LNG market, as a whole, reduced imports by nearly 30%, redirecting and re-exporting most of the reduction to the Asia Pacific region. On the other hand the Asia Pacific region is estimated to have increased its LNG imports by around 10%. As a result, the ratio between the Asia Pacific and Atlantic markets stood 7:3 in 2012, compared to 6:4 in 2010.

Japan's LNG imports registered another record high of 87 million tonnes for the calendar year 2012, surpassing the previous high of 83 million tonnes for the April 2011 - March 2012 period. The average unit price also went up to USD 17.28 per million Btu for the period between April and September 2012 from USD 11.28 and USD 15.91 in the fiscal years 2010 and 2011, respectively. As the yearly average unit price for the current fiscal year is expected to be higher than the previous ones, the total amount paid in the fiscal year is expected to surpass JPY 6 trillion, partly due to recent depreciation of the Japanese currency.

Turning eyes on to the emerging LNG importing markets around the world, India's third import terminal at Dabhol in Maharashtra finally received its commissioning cargo at the end of December. Although teething glitches have caused delays of commissioning new receiving terminals in Malaysia and Israel, further expansions of LNG markets are expected to continue in different countries in 2013. Flows of diverted LNG cargoes into South America, rather than the unilateral rush into the Asia Pacific region that was previously observed, have increased in recent months ignited by sudden surges of spot cargo purchasing activities by Brazilian and Argentine buyers.

Japanese players have continued accelerating medium- and long-term procurement activities lately. Kansai Electric Power announced in November 2012 that the company had agreed with BP to purchase 500,000 tonnes per year of LNG from BP's global portfolio beginning in 2017, with pricing linked with liquid gas market indices rather than the traditional JCC oil index. Chubu Electric Power announced in January 2013 that the company had agreed with Korea Gas (Kogas) to jointly purchase 1.70 million tonnes of LNG over five years to 2017 from Eni as the first international joint procurement initiative. Tokyo Electric Power in February 2013 revealed a deal to purchase 800,000 tonnes per year beginning in 2017 from the Cameron project in the United States.

Among those projects that are under construction and are supposed to supply the Japanese market, the Gorgon project in Western Australia revised its development cost estimate upward to USD 52 billion in early December 2012 from USD 37 billion at the time of its final investment decision in 2009. In 2012 several other projects in Australia and Papua New Guinea also increased their development cost estimates in the midst of construction, pointing to higher labor costs and logistical issues. Issues relating to project costs and timely implementation are expected to continue attract attention, as consuming markets want more competitive LNG supply in a timely manner.

6. China Watching: 10 GW Annual Target for New Installations of Photovoltaic Power Capacity

Li Zhidong, Visiting Researcher
Professor at Nagaoka University of Technology

At the national energy work meeting held on January 7 and 8, the National Energy Administration indicated eight focus areas for the year's activities, including strengthening the development of unconventional fossil fuels and renewable energies, accelerating the upgrading of the wide-area transmission grid, controlling total energy consumption, liberalizing prices and promoting fair competition. The key point is that the annual target for new installations of photovoltaic (PV) power capacity was set to 10 GW. This is 2.5 times the capacity installed last year, and is already half the target of 20 GW by 2015 set by the twelfth 5-year plan.

Behind this ambitious target is the government's firm determination to develop PV power as a new strategic industry. In its standing committee meeting on December 19 last year, the State Council presented an analysis that China's PV power industry, while facing problems such as excessive facilities, overdependence on overseas markets and financial woes, is very important for the country's migration to a low carbon energy structure and innovation in the supply and demand system of energy. Based on this analysis, the committee decided to encourage the removal of obsolete facilities, reorganization of the industry and development of technology, as well as expansion of the domestic PV power market with emphasis on the dispersed system, and healthy development of the industry.

The expansion of PV power development is also backed by the sharp drop in the price of solar panels to 5,300 yuan (approx. 7.4 yen)/kW which caused the cost of dispersed PV power generation to fall to 1.2–1.4 yuan (approx. 16.8–19.6 yen) in the eastern demand areas of the country, approaching typical electricity tariffs, and the shrinking of new nuclear plant constructions to 16 GW from the initial plan of 40 GW by 2015 following the ban on construction of new nuclear plants in inland areas and to the strengthened nuclear safety standard.

Various efforts have already begun. The government is supporting large-scale PV power generation through a FIT system. The purchase price is currently 1 yuan/kWh. The "Golden Sun Model Project", which promotes dispersed PV power generation, subsidizes 50% of the installation cost in return for selling excess electricity at the price of coal-fired thermal electricity, which is much lower than the typical purchase price of PV electricity. In 2012, two demonstration projects with a total output of 4.54 GW were licensed in April and December. Furthermore, the National Energy Administration will launch a large-scale dispersed PV power model project in which electricity producers will be subsidized based on their electricity output, supporting up to 500 MW of electricity business per region in 31 regions, or 15 GW in total nationwide. In addition, grid operators, who have been reluctant to purchase PV power, took the decision at the end of last October to provide grid connection free of charge for dispersed PV power and to simplify and accelerate the procedure, enabling connection to the grid within 45 business days from application.

While measures for promoting PV are being strengthened, there are still challenges, including integrating the diversely-implemented support measures into a single FIT system, setting the purchase price based on the hours of sunlight, and centralizing the PV power administration which is now scattered across various ministries. If the problems in the current support measures and the administrative system can be straightened out, China's annual increase in installed capacity could exceed 10 GW, and could make the country the world's largest PV power producer in 2015.

7. ME Watching: “Arab Spring” and the Risk of Things Falling Out of Control

Koichiro Tanaka, Managing Director &
Head of JIME Center

Two years since the “Arab Spring”, the Middle East and North Africa are now threatened by cycle of violence caused by the turmoil following political changes, and countries both inside and outside the region are struggling to deal with the situation. Examples of such struggles include the civil war in Syria which has spiraled into armed conflict, as well as the hostage ordeal in Algeria.

The multinational hostage incident on January 16 in Algeria, which was reportedly associated with the turmoil in neighboring Libya and Mali, was a tragic reminder for the international community of the need to be alert to the activities of long-known terrorist organizations. It also raised questions about the crisis management system of the government and companies of Japan. However, the information released so far has been fragmented, inconsistent and at times contradictory, and the details remain to be confirmed. Hence, further international inquiries are required to ascertain the motives and background of the terrorist group which allegedly has strong ties with Al-Qaeda.

The death toll of the civil war in Syria has soared in recent months, with substantially more deaths per day than a year ago. This is caused by intensifying battles in various parts of the country despite the stalemate in the frontline, as the government becomes growingly dependent on air attacks while the rebel forces are fighting to expand their ground with weapons supplied by third countries. Further, while the neighboring countries are paying keen attention to the moves of the Kurdish minorities, three female members of an anti-Turkish Kurdish group PKK were assassinated in Paris, showing that the Kurdish issue is starting to spread beyond the region.

In the Israeli general election, the ruling Likud Party remained in power, although it won fewer seats than expected, while the far-right party and the new centrist party emerged. The rather unexpected outcome reveals that the people care more about the domestic economy than security issues such as the controversy over the recent settlement policy or the country’s belligerent rhetoric to Iran’s nuclear program. However, under the third Netanyahu administration which is appealing to Europe and the U.S. for the need for military action against Iran, Israel’s hard-line stance against Iran is unlikely to change.

In Iran, the rivalry between the various political groups is becoming more apparent as they head toward the presidential election this summer. The recent controversial and verbal confrontation between President Ahmadinejad and Speaker of Majles Larijani is one example of such. Amongst the reformists, moves are afoot to endorse a powerful candidate and prevent the fundamentalist forces, which already dominate the parliament and the judicial branch, from dominating all three branches of government. The road to candidacy, however, has become narrower following the revision of the presidential election law, which virtually closes the door to pro-reform groups. On the other side of the Persian Gulf, Bahrain is on high alert as the second anniversary of the crackdown on the people approaches. Although calls for national dialogue continue, the prospects remain uncertain.

8. Russia Watching: Implications of Russia's Arctic Ocean Strategy

Shoichi Itoh, Manager, Senior Analyst
Global Energy Group 2, Strategy Research Unit

In the Arctic Ocean where the area of sea ice is shrinking due to global warming, Russia is accelerating efforts to develop resources and open routes leading to the Pacific Ocean. It is not so long ago that a Gazprom-chartered tanker loaded with Norwegian LNG arrived at the LNG port of Kyushu Electric on December 5, 2012, becoming the first to successfully deliver LNG via the Arctic sea route. In a press conference held on the 20th of that month, President Putin reemphasized the importance of the Arctic sea route for Russia and the need to develop means of transportation including nuclear icebreakers.

There are four motives behind Russia's accelerated efforts to strengthen its presence in the Arctic Ocean. First, it intends to develop a commercial route extending from Europe all the way to the Asia Pacific. The trip from Rotterdam, one of the major ports of the European Continent, to the Sea of Japan would be about 10 days shorter by the Arctic sea route (3,500 nautical miles) than via the Suez Canal (12,500 nautical miles, approximately 30 days). Russia aspires to take the initiative in the new and attractive marine transportation business.

The second purpose is to develop energy resources. U.S. Geological Survey (USGS) estimates that the Arctic Ocean holds 30% of unexplored natural gas and 10% of oil resources, most of them in Russian territory. Nevertheless, these rich resources have remained almost untouched until today. Various related laws are now being revised to encourage investment in their exploration and development, including tax incentives. Meanwhile, coordination between stakeholders is facing difficulty regarding how far domestic private companies and foreign funds should be allowed to enter the market.

Third is military security, including demarcation of national boundaries. Russia is in a border dispute on the Arctic continental shelf with the U.S., Canada and Denmark, and the outcome of the dispute is extremely important for Russia as it would impact, in the event of an emergency, the military operation of its Northern Fleet headquartered in the non-freezing port of Murmansk in the Arctic Ocean.

Fourth is China, which Russia considers as its most serious geopolitical rival. In August 2012, when the ice of the Arctic Ocean receded to its smallest in recorded history, news of China's successful voyage across the Arctic Ocean using its own icebreaker shocked the Russian military. Russia is extremely concerned about China's strengthening naval strategies in the East and South China Sea, and that it might eventually make similar moves in the Arctic Ocean.

The impact of Russia's strengthened Arctic strategy will not be limited to the new marine transportation business or potential new oil and gas field development. Japan should note that the geopolitical balance in the Asia-Pacific region could also shift, depending on the strategies of the U.S. and China. This is a key factor that Japan should not overlook in building its strategy towards Russia.

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