Document 8

Provisional Translation

Review of statements from previous sessions

February 27, 2018

Agency for Natural Resources and Energy
Ministry of Economy, Trade and Industry

Review of statements from previous sessions

2nd Session - Friday, September 29th, 2017

Dr. Paul Stevens (Distinguished Fellow, The Royal Institute for International Affairs, UK)

- The long-term demand for petroleum is overrated. The energy transition from hydrocarbon to electricity will accelerate. The reasons for the transition are climate change and technological innovation (cost reduction of renewable energy, EV).
- There is a high possibility that instability will increase in the Middle East based on the financial instability of the various Middle Eastern countries in the context of a decreasing global dependence on the region, in addition to the uncertainty caused by the Trump regime.

Mr. Adam Siminski (Chair for Energy and Geopolitics, Center for Strategic and International Studies, US)

- Emerging nations drive primary energy consumption worldwide.
- Demand for coal will remain unchanged (possibility of decline), there will be rapid growth in renewable energy and natural gas. Gradual increase in nuclear energy.
- Japan's low energy self-sufficiency and dependence on thermal power are severe issues from a national security viewpoint. Diversifying energy sources to increase diversity is critical.
- The U.S. greatly reduced CO2 emissions without ratifying the Kyoto Protocol. Its withdrawal from the Paris Agreement is not a major problem.

Review of statements from previous sessions

3rd session - Monday, November 13rd, 2017

Mr. Michael Shellenberger (CEO of Environmental Progress, U.S.)

- Increasing density is the megatrend of energy choices (Wood → Coal → Oil → Uranium)
- The social acceptability of nuclear power is critical. Social acceptability will increase through innovative technologies (accident resistant fuel, etc.).
- Unlike nuclear and hydro power, solar and wind power have weak correlation to CO2 emission intensity. (Introduction is not linked to CO2 reduction)
- Germany's dependence on coal continues, and achieving ▲40% by 2020 is likely to be difficult.

Prof. Jim Skea (Professor of Sustainable Energy, Imperial College London, UK)

- The UK realized a substantial reduction by shifting from coal-fired to gas, but achieving the reduction targets of the latter half of the 2020s (▲51% from 2023 - 2027) currently appears difficult. Innovation (hydrogen, CCS, etc.) is critical to achieve the goal.
- Rather than focusing on a single technology, it is important to promote "competition between technologies."
- The UK government is soliciting and supporting research program proposals for next-generation small modular reactors (SMRs) from the private sector as a national project.
- Germany is providing excessive support for renewable energy, and it must be made more effective.

*** Dr. Claudia Kemfert (Head of Energy, Transportation, and Environment, German Institute for Economic Research, Germany)**

(Only materials provided, not attending on the day)

- Investment in low-energy, renewable energy, and EV is necessary for a major reduction in CO2 emissions.
- It is possible to realize a 100% renewable energy system.
- Energy efficiency that crosses sectors is necessary, such as using excess electricity for hydrogen conversion.

Review of statements from previous sessions

4th session – Friday, December 8th, 2017

Mr. Christopher D. Gould (Senior Vice President, Exelon Corporation, U.S.)
Mr. Ralph L. Hunter, Jr. (Managing Director and Chief Operating Officer, Exelon Nuclear Partners, U.S.)

- High capacity factor knowhow for nuclear reactors (at least 90%) drives competitiveness.
- Growth funded by corporate value enhancement from raising capacity factor of nuclear reactors at acquired companies.
- Electricity is no longer a simple commodity as reliability, resilience, environmental capabilities, and other aspects provide value; market design that fairly assesses these values is important.
- Small Modular Reactor (SMR) might offer benefits in cost and safety.

Mr. Matthias Bausenwein (General Manager for Asia Pacific, Ørsted, Denmark)
Ms. Yichun Xu (Head of Market Development Asia Pacific, Ørsted, Denmark)

- Global leader in offshore wind power; integrated handling of development, construction, ownership, and operation.
- Increasing business focus by allocating proceeds from selling non-core businesses (hydropower, gas-fired thermal power, and onshore wind power) to the strategic business (offshore wind power) .
- Cost savings points for offshore wind power are economies of scale from larger wind turbines, equipment and system standardization in multiple projects, and global procurement from multiple companies.
- Requires commitment by the government to market cultivation over the medium term and clear rules for general sea areas; deployment of clusters in suitable areas fosters a supply chain for the area and contributes to further cost savings.

Review of statements from previous sessions

5th session – Wednesday, January 31st, 2018

Mr. Guy Outen (Executive Vice President, Royal Dutch Shell, the Netherlands)

- The future is uncertain. Assuming several scenarios is more appropriate than trying to predict the future. Energy transformation and digitalization are mega trends.
- We will make investments in different fields (such as gas, biofuel, renewable energy, hydrogen, and CCS) to adapt to a wide range of scenarios.
- While continuing the conventional upstream fossil business, we will change our business portfolio (by giving higher priority to shale oil business as a growing business and investing certain amounts in the new energy field as an emerging businesses).
- As a preparation for the worldwide implementation of carbon pricing, we use a shadow carbon price (40 U.S. dollars/t CO2) in internal decision of the investment.

Ms. Marianne Laigneau (Senior Executive Vice President at EDF, France)

- Pursuing both nuclear and renewables is important for a better balance among stable supply, low carbon, and competitiveness.
- As future electric power systems, we are pursuing smart grids and utilization of EVs.
- Germany has increased renewables but continues to rely on coal, with the amount of CO2 emissions remaining unchanged. This situation is against the decarbonization trend.

Mr. Didier Holleaux (Executive Vice-President at ENGIE, France)

- Based on the global trend (decarbonization, dicentralization, and digitization), we are, for example, re-shaping our portfolio and making investments in emerging technologies.
- Natural gas is important as an alternative to coal and oil and as a backup of renewable energies. As a zero-emission gas, we expect the markets for hydrogen and biomass-derived gases will expand.
- Electrification should follow decarbonization in electric power. In Germany, the order is the other way around.

Review of statements from previous sessions

6th session – Monday, February 19th, 2018

Dr. Felix Chr. Matthes (Member of the European Commission Directorate-General for Energy)

- Nuclear phase-out of is clearly on truck, though coal dependency remains.
- 40% GHG reduction target for 2020 is at serious risk.
- An interconnected transmission system is a benefit for installing variable renewable energy, on the other hand, could be a factor of high dependency of coal power.
- Transport sector, in which GHG emission has not been reduced very much, is a key field for action in the next few years. Early decarbonisation of the power sector will be crucial.

Mr. Richard Bolt (Secretary, Department of Economic Development, Jobs, Transport and Resources, State Government of Victoria, Australia)

- Promote policies with the target of realizing GHG net zero emission by 2050 (phase-out of coal thermal power roughly by the middle of the century).
- Victoria's large coal and carbon storage resources combined with Japanese technology could contribute to energy security in both countries.
- Hydrogen may be a key source of industrial heat and transportation fuel in place of fossil fuel.
- A growing renewable surplus could become a large production source of hydrogen.

Mr. Takeshi Uchiyamada (Chairman, Toyota Motor Corporation, Japan)

- There are many world's leading materials and parts manufacturers in Japan. Developing and deploying hydrogen applications in Japan will strongly impact international competitiveness, industrial growth.
- Mobility Electrification is essential to reduce CO2 emissions. EV represents not only "Electric Vehicles" but "Electrified Vehicles" (including HV, PHV and FCV).
- Core electrification technologies can be applied in all electrified vehicles. To meet customer needs, Toyota will pursue all-encompassing approach to products, technologies and social infrastructure.