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The honourable Chairman of Hitachi
Distinguished participants,
Ladies and gentlemen,

I would like to express appreciation and thanks to Hitachi to organize this event. It is an honour for me to present the topic of seeking sustainable renewable energy.

As you know, the consumption of energy in the world is still dominated by fossil energy. However, fossil energy is non-renewable energy that is why we have to look for other energy options.

Indonesia is located along both sides of the equator and between two oceans, the Indian and the Pacific, and two continents, Asia and Australia. This geographical location endows the country with a great variety of potentially huge sources of energy. However, the energy security of Indonesia is catagorized as a weakness.

Energy management in Indonesia is regulated by the Indonesia Constitution. Article 33 of the 1945 Constitution of The Republic of Indonesia relates to the energy management regulations concerning the livelihood of the people and to the control of natural resources for the greatest prosperity for the people. Law No. 30/2007 identifies three principles of energy management: everyone has the right of access to energy; the state controls fossil fuel energy resources, large scale hydropower, geothermal, and nuclear power; and the state regulates new renewable energy resources. In general, energy management covers the universal right of everyone to access energy, the state's right to regulate energy resources, control revenues/rights and maintain security, and protection of energy producers and consumers. Ultimately, the objective of energy management is to achieve sovereignty, independence and energy security.

Indonesia has various potential energy resources, distributed across many islands. Geothermal, hydro power, biomass, solar, wind and even wave current are some of Indonesia's potential energy sources, besides oil and gas.

Utilization of fossil fuels such as oil, gas, and coal still dominate Indonesia's energy consumption. However, with current consumption levels, in a short period of time, those energy resources will run out.

Unfortunately, Indonesia's potential renewable energy is used in only a very limited capacity. For example, Indonesia has 75,670 MW worth of hydro power resources, and yet the installed capacity realizes only around 7.54% of that amount. Geothermal resources have 29 GW worth of energy but only 1,189 MW (< 5%) is used. Therefore, the development of new and renewable energy needs to be increased.

Despite rich energy reserves, Indonesia is facing the limited access to energy. Electrification ratio is still low at 67.15% (2010), which means 32.85% Indonesian has not yet had access to electricity. Development of the infrastructure is also a reason that makes rural area and outer island commonly yet to have access to energy. Energy consumption growth at

7% is unbalancing with the energy supply. While the fossil subsidy is increasing and the dependence to fossil energy is high, the energy reserve and the fund for energy development are still limited. Energy also links with environmental issue, such as the climate change mitigation.
To resolve the energy issues, Indonesia has launched a clean energy initiative which targets to reduce emission by 26% in 2020. Indonesia energy sector is putting efforts in mitigating greenhouse gas (GHG). Indonesia GHG emission is increasing and projected to increase from 2.1 to 3.3 GTon CO_2 between 2005 - 2030. Energy sector is projected to be the main drive of national GHG emission in 2005 - 2030. GHG emission from energy sector comes from each step of energy process (exploration up to utilization). In 2008, Indonesia energy sector emits 351 million tons of CO_2 from supply side and demand side (household, commercial, industry & transportation). However, energy sector is providing cost effective mitigation actions (Energy Efficiency (EE) and small RE projects) as well as relatively high potential emission reduction (geothermal, Carbon capture and storage (CCS). Public and private sectors have yet tapped the potential of clean energy projects in the carbon market, such as Clean Development Mechanism (CDM).

Indonesia is facing multiple energy problems at national and global level. At national level, current national energy supply is still dominated by subsidized fossil fuel. Meanwhile low carbon, renewable energy resources have not been widely utilized. The government should improve the national electrification ratios, especially in the remote areas and isolated islands. In addition, we need to change the paradigm in the energy management to prioritize the development of renewable energy resources, to develop New Relationship Energy (NRE) by using domestic products and to increase national competitiveness. At global level, there is a global issue concerning climate change due to the accumulation of greenhouse gasses in the atmosphere, which is caused by some reasons such as fossil fuel burning that has impacts in the global climate change. The President of Republic of Indonesia, at the G-20 Forum in Pittsburgh, USA in 2009 stated that Indonesia could reduce its emission of 26% and might reach 41% by developed countries' supports by 2020. The President at Retreat in Bali in 2010 gave Policy Directives for applying energy security and implementing Green Economy, hence it is required to arrange economic order with less carbon produced (low carbon economy/green economy) such as implementing low carbon industry.

So what are challenges to develop renewable energy in Indonesia? First, the challenge is the development of new and renewable energy is not optimal. There are considerable energy needs and they keep increasing. While dependency on petroleum is still high and efficiency of energy consumption is still low, Indonesia is facing the increasingly tight competition to access oil supply at global scale.

Beside challenges, there are some opportunities to develop renewable energy: Fossil energy resources are adequate but they need investment; renewable energy potential is quite large and spread out; potential energy savings is still open and the availability of advanced technology.

There are strong commitments from Indonesian Government in the ambition of improving the energy development. In the National Energy Management Paradigm, Indonesia is trying to switch the model of "supply side management" to "demand side management". This aims to improve energy efficiency, maximize the provision and utilization of renewable energy and make sure that fossil energy is used as a counterweight and fossil energy sources are not utilized as a legacy for posterity.

Our vision is to increase the total share of renewable energy to 25% by 2025. Meanwhile, our missions are to implement energy conservation for household, commercial, industry, and transportation sector to 15.6% by 2025 and improve energy diversification.

To realize the mission and vision, our policy direction is to reframe the low carbon energy industry along with reducing emission to 26% by 2020 and to achieve energy security and green economy as stated in the President's commitment at G-20 Forum Pittsburgh, USA (2009) and policy directives at Bali Retreat (2010) respectively. Indonesia also set a clear policy and strategy framework for energy development, including energy efficiency improvement (Energy Conservation), renewable energy maximization (Energy Diversification) and low carbon fossil technology. There are multiple policy instruments in Indonesia to support this framework. The country enacted multiple energy laws, which are Law No. 10/1997 on Nuclear Power, Law No. 27/2003 on

Geothermal, Law No. 7/2004 on Water Resources, Law No. 17/2007 on National Long Term Development Plan, Law No. 30/2007 on Energy, Law No. 30/2009 on Electricity. Fiscal Initiatives for energy development are fiscal incentive for NRE development (Article 20, paragraph 5, Law No. 30/2007), pricing for new renewable energy (Feed-in Tariff/FIT) and Renewable Portfolio Standard (RPS). Indonesia has also established the institutes specializing in energy research such as National Energy Council, Ministry of Energy and Mineral Resources (national level), Governor, District Mayors (local level). There are funds created to support the overall energy plan including national budget (APBN, APBD, Private Budget) and international budget from partners, Clean Development Mechanism (CDM). Indonesia has also launched the development strategy for New Renewable Energy and Energy Conservation (NREEC) which aims to improve either the supply side and the demand side. Initiatives for the supply side are applying the mandatory provision of NRE and increasing the use of NRE and cleaner fuels (fuel switching) in providing energy. On the other hand, the strategies in energy utilization (demand side) are applying the commitment in energy utilization efficiency and the principles of energy saving, increasing the use of cleaner fuels (fuel switching) in energy utilization and use of clean and efficient energy technologies along with developing the attitude of life-saving energy.

Indonesian Government has set a clear agenda on new renewable energy and energy conservation. The main agenda includes harmonizing regulations, updating Master Plans on Energy Diversification and Energy Conservation, improving energy utilization efficiency and iconic role model, developing geothermal, bio-energy and other new renewable energies, developing and implementing Clean Energy Initiative (Reducing Emission from Fossil Fuel Burning - REFF-Burn), increasing local content and supporting industries, increasing people's participation on Energy Self-Sufficient Village Program. The supporting agenda includes enhancing research and development as well as training and education.

After forming the detailed agenda, the country also laid down a detailed action plan. In terms of conservation, actions required are increasing the use of efficiency from down to upstream, increasing mandatory energy management for energy user to more than 6,000 tonnes of oil equivalent per year (TOE/year), labelization of energy efficiency products and socialization of energy efficiency. In terms of diversification, actions required are increasing the use of NRE and building geothermal power plants, bio-diessel and municipal solid waste power plants. In terms of transforming energy management, actions required are changing paradigm of energy management with orientation to use more NRE and developing small scale NRE with local resources. Furthermore, in the efforts to improve energy management, Indonesia has invented the Clean Energy Initiative that aims to reduce emissions from fossil fuel burning (REFF-Burn). REFF-burn is divided into three phases. The first phase is Pre-Fossil Combustion to avoid using more fossil energy, the next is During Fossil Combustion to reduce greenhouse gases emitted from fossil fuel burning and the last one is Post Fossil Combustion to capture and store the greenhouse gases from fossil fuel burning.

In conclusion, Indonesia has a significant reserve of energy resources which are distributed in many islands. Fossil fuel consists of oil and gas, coal, coal bed methane, gas shale, hydrate gas. The renewable energy consists of geothermal, hydro, bio-energy, solar, wind and ocean current. Current national energy consumption growth is 7% per year, not balanced with the energy supply that is still dominated by subsidized fossil fuel , meanwhile low carbon, renewable energy resources have not been widely utilized. Therefore, Indonesia needs a transformation paradigm - from "supply side management" to "demand side management" to realize the target of raising the share of renewable energy in the total energy consumption to 25% in 2025.

Besides, Indonesia is actively participating in mitigating GHG emission to combat global warming. The President of the Republic of Indonesia stated that Indonesia could reduce its emission of 26% and might reach 41% with developed countries' supports by 2020. The GHGs mitigation in energy sector poses an opportunity as well as a challenge to implement clean energy that focuses on new renewable energy development, implementing efficiency energy and clean energy technology.

Finally yet importantly, the Clean Energy Initiative is an integrated effort of the energy sector to fulfill the national security energy supply and mitigate the global GHGs emission, that must be equipped with appropriate policy and regulatory framework such as incentives and disincentives to develop EE & RE projects.

Thank you.