

**THE PRIME MINISTER**

**SOCIALIST REPUBLIC OF VIETNAM**

**Independence - Freedom - Happiness**

No.: 2068/QĐ-TTg

*Hà Nội, 25 November 2015*

**DECISION**

**Approving the Viet Nam's Renewable Energy Development Strategy up to 2030 with an outlook to 2050**

**THE PRIME MINISTER**

*Pursuant to the Law on Government Organization dated 25 December 2001;*

*Pursuant to the Law on Electricity dated 14 December 2004; the Law on the Amendment of and Supplement to the Law on Electricity dated 20 November 2012;*

*In response to the request made by the Minister of Industry and Trade,*

**DECIDES:**

**Article 1. To approve the Viet Nam's Renewable Energy Development Strategy up to 2020 with an outlook to 2050 with following main contents:**

**I. VIEWPOINTS ON DEVELOPMENT**

1. Development of renewable energies (RE) shall be in synergy with the realization of economic, social and environment goals: The RE promotion shall not only focus on expanded scale and higher RE share in total primary energy supplies thus contributing to energy security, but also deal with the energy supply for rural areas, giving a reason for better production and establishment of a society that utilizes resources in economical, efficient and environmentally-friendly manners. The RE development shall be built upon resources and socio-economic development needs, and tied in with national and local resources and energy needs.

2. RE development and use shall be concerted with an expansion of RE industry: Priorities shall be given to rapid expansion of such RE areas of enormous resources and good commercial prospects as wind, solar and biomass power. Necessary measures shall be taken to magnify market demands and strengthen international cooperation for the purpose of technology transfer for stronger development of the equipment manufacturing industry. The pick-up and approaching mastery of available technologies as well as better equipment manufacturing capability and stronger competitiveness in the RE market shall be guaranteed in order to meet market demands in sustainable and stable manners, hence creating favorable conditions for the development of a large-scale RE industry.

3. The use of short-term technologies shall go hand in hand with the promotion of long-term technologies: Focus shall be given to proven technologies in the RE field (including hydropower, wind power, solar power, biomass energy and biogas) with a view to generating various RE sources for efficient power supply to the national electricity system and thermal energy for heating needs in production and residential activities. At the same time, emphasis shall also be placed on such new, modern and highly-prospective technologies as the one applied in liquid biofuel production, which is based on the 2<sup>nd</sup> and 3<sup>rd</sup> advanced technology.

4. Incentives/support policies shall be matched with the market mechanism: Various economic and financial incentives/support policies shall be exercised to promote the RE development and use, aiming at addressing primary energy shortages and energy supply to rural areas. Market mechanisms and measures shall be established/taken with a view to bringing together capital sources from all economic sectors into the RE growth, contributing to improved technical level of RE technologies, enhancing the development of RE equipment manufacturing industry, continuously improving the competitiveness and moving towards a RE industry, which is expected, via state support policies, to quickly reach its large-scale position.

5. Restructuring and state management capacity building shall come together in the RE field: State management capacity shall be strengthened at central and local levels in terms of the management of development activities and RE utilization. Barriers shall be gradually removed and mechanisms/incentives shall be promulgated to encourage the appropriate RE development for rapid generation of RE sources.

## **II. DEVELOPMENT STRATEGY AND OBJECTIVES**

### **1. Development strategy:**

Encourage/mobilize all resources from the society and people for RE development and better access to modern, sustainable, reliable and affordable energy sources by all citizens; accelerate the expansion and use of RE sources, increase the domestic energy supply, gradually increase the RE share in the national energy production and consumption in order to ensure less dependence on fossil sources, and contribute to better energy security, mitigating climate change, environmental protection and sustainable socio-economic development.

### **2. Strategic objectives**

- Gradually increase the rate of access to clean energy and electricity sources by local people in rural, mountainous, remote and border areas as well as islands: Most of households shall have electricity in 2020 and access to modern, sustainable and reliable energy services with reasonable electricity selling/energy prices in 2030.

- Develop and utilize RE sources in such a way that contributes to fulfilling the objectives of sustainable environment and development of green economy:

+ Reduce greenhouse gas emissions in various energy activities as compared with BAU scenario: by approx. 5% in 2020; approx. 25% in 2030 and around 45% in 2050.

+ Contribute to reduced fuel imports for energy purposes: Reduce by approx. 40 million tons of coal and 3.7 million tons of oil products in 2030; approx. 150 million tons of coal and 10.5 million tons of oil products in 2050.

- Increase the total production and use of RE sources from approx. 25 million TOE (tons of oil equivalent) in 2015 to 37 million TOE in 2020; approx. 62 million TOE in 2030 and 138 million TOE in 2050; the RE share in total primary energy consumption in 2015 shall be approx. 31.8%; 31% in 2020; 32.3% in 2030 and 44% in 2050.

- Increase the total electricity production from RE sources from approx. 58 billion kWh in 2015 to 101 billion kWh in 2020, approx. 186 billion kWh in 2030 and 452 billion kWh in 2050. The share of RE-based electricity in the total national production shall rise from 35% in 2015 to 38% in 2020; 32% in 2030 and 43% in 2050.

- Increase the absorption area of solar water-heating units from approx. 3 million m<sup>2</sup> in 2015 to about 8 million m<sup>2</sup>, i.e. a supply of 1.1 million TOE in 2020; approx. 22 million m<sup>2</sup>, i.e. 3.1 million TOE in 2030 and approx. 41 million m<sup>2</sup>, i.e. 6 million TOE in 2050. Increase the proportion of households with solar water-heating devices (solar water-heating panels, residential cooking hobs, air heating and cooling units, water distillation, etc.) from approx. 4.3% in 2015 to 12% in 2020, 26% in 2030 and 50% in 2050.

- Scale up the application of biogas technologies with a construction volume of from approx. 4 million m<sup>3</sup> in 2015 to 8 million m<sup>3</sup> in 2020; approx. 60 million m<sup>3</sup> in 2030 and 100 million m<sup>3</sup> in 2050.

- Replace biomass-based conventional stoves and low-performing devices with advanced/high-performing items while utilizing traditional biomass for residential and industrial cooking purposes. Increase the percentage of households using advanced/high-performing stoves from negligible level at present to approx. 30% in 2020; about 60% in 2025; and from 2030, high-performing/sanitary stoves shall be used by most of rural households.

- Increase the production of biofuels from approx. 150 thousand TOE in 2015 to about 800 thousand TOE, i.e. 5% of transport sector's fuel demand in 2020; 3.7 million TOE, i.e. 13% of transport sector's fuel demand in 2030; 10.5 million TOE, i.e. 25% of transport sector's fuel demand in 2050.

- Promote the development of RE technologies and industries, establish RE industrial systems and increase the proportion of domestically-manufactured equipment value in the RE field up to approx. 30% in 2020 and 60% in 2030; and in 2050, domestic needs for these equipment items shall be essentially met, and a portion of domestically-manufactured equipment items shall be exported to other countries in the region and around the world

### **III. DEVELOPMENT ORIENTATIONS BY PERIOD**

#### **1. Present to 2030**

- Development and utilization of independent RE sources for achieving rural electrification goal(s): Establish various development programs for independent RE-based and household-scale power systems, serving for disadvantaged/extremely disadvantaged, remote, isolated and mountainous areas as well as islands for the purpose of poverty reduction and socio-economic development so that most of rural households will be provided with electricity and clean/sanitary energy by 2020 and 2030 respectively.

- Investment in the development of RE-based grid-connected power plants:

+ Encourage the investment in building economically-feasible RE-based grid-connected power plants. Provide support on a competitive basis, ensuring that affordable power sources will be mobilized into the system and RE technologies will be developed for long-term purposes.

+ Support the development, on a pilot and selective basis, of several RE technologies that are currently not economically feasible for the purposes of exploitability assessment, technology improvement, market formulation and human resource development.

+ Put resources into R&D and RE-related technology transfer, and investment in the establishment of a RE database for long-term purposes.

- Development and utilization of RE sources for heat supply:

+ Strengthen support to investment, R&D and application of RE sources for heating purposes, thus leading to reduced fossil-fuel use and environmental protection.

+ Provide the Government's partial support at the early stage to put forward the installation and development of RE technologies for efficient and sustainable heat production/use, making sure that quality and standard regulations will be respected in order to meet the set objectives.

- Development and utilization of biofuel sources:

+ Build up resources for R&D; conduct surveys and planning for biofuel development areas and implementation of piloted biofuel projects, aiming at partially using biofuels as a type of substitute gasoline&oil nationwide.

+ Support the investment in piloted generation-2 and -3 biofuel production projects, in which non-food materials will be used.

## 2. Orientations towards 2050

- Bring resources together, and exploit and maximize RE potentials in the country by applying advanced technologies, which are suitable for actual conditions of each region, thus bringing high economic, social and environmental efficiencies.

- Strongly develop RE technology market, machinery/equipment manufacturing industry and supply of domestic RE services.

- Strengthen potentials for research, development, transfer and application of new renewable energies.

## **IV. DEVELOPMENT ORIENTATIONS BY SUB-SECTOR**

### 1. Development orientations towards hydropower:

- The development of conventional hydropower sources shall contribute to local socio-economic development; on-site power supply and improved safety for electricity supply.

- Such development must be consistent with local small and medium hydropower development plans, and built upon comprehensive environmental impact assessments.

- Grid-connected small hydropower projects shall apply the avoided cost tariff.

- The total hydropower production shall be increased from 56 billion kWh in 2015 to nearly 90 billion kWh in 2020; and approx. 96 billion kWh in 2030.

- The pumped storage power plants shall be developed for storage and demand regulation purposes in the power system, thus contributing to improved flexibility and efficiency of power system operations. The capacity of pumped storage power plants shall reach 2,400 MW and 8,000 MW in 2030 and 2050 respectively.

## 2. Development orientations towards biomass energy sources:

- Prioritize the use of biomass energy for the production of power, biogas, pellets/briquettes and liquid biofuels. Increase the utilization rate of wastes generated from industrial/agricultural plants for energy purposes from 45% in 2015 to 50% in 2020, approx. 60% in 2030 and 70% in 2050.

- Increase the disposal rate of animal wastes for energy purpose (biogas) from about 5% in 2015 to 10% in 2020, approx. 50% in 2030, and most of animal wastes shall be disposed in 2050,.

- Increase the disposal rate of municipal wastes for energy purpose from a current negligible level to 30% in 2020, approx. 70% in 2030, and most of municipal wastes shall be used for energy purpose in 2050.

- Total biomass energy volume to be used shall rise from 14.4 million TOE in 2015 to 16.2 million TOE in 2020; approx. 32.2 million TOE in 2030 and 62.5 million TOE in 2050. Of which:

+ Total biomass energy for electricity generation shall go up from 0.3 million TOE in 2015 to 1.8 million TOE in 2020; approx. 9 million TOE in 2030 and 20 million TOE in 2050. Accordingly, the electricity generated shall increase from 0.6 billion kWh in 2015 to 7.8 billion kWh in 2020; approx. 37 billion kWh in 2030 and 85 billion kWh in 2050. The share of biomass power in total electricity production shall increase from 1.0% in 2015 to 3.0% in 2020; approx. 6.3% in 2030 and 8.1% in 2050.

+ Total biomass energy for heat generation shall increase from 13.7 million TOE in 2015, 13.6 million TOE in 2020 to approx. 16.8 million TOE in 2030 and 23 million TOE in 2050. The share of biomass energy in final energy demand shall account for 25% in 2015, 17% in 2020, 14% in 2030 and approx. 12% in 2050.

+ Total biomass energy for biofuel production shall increase from 0.2 million TOE in 2015 to 0.8 million TOE in 2020; approx. 6.4 million TOE in 2030 and 19.5 million TOE in 2050.

## 3. Development orientations towards wind power:

- Onshore wind power shall be prioritized for the period up to 2030; the R&D activities shall be conducted for offshore wind power from 2030 onwards;

- Total electricity generated from wind sources shall increase from approx. 180 million kWh in 2015 to 2.5 billion kWh in 2020; approx. 16 billion kWh in 2030 and 53 billion kWh in 2050. The share of wind power in total electricity production shall increase from a negligible level at present to about 1% in 2020, 2.7% in 2030 and around 5% in 2050.

## 4. Development orientations towards solar energy:

- Develop solar power for supply to the national electricity system and border areas, islands and remote/isolated communities, which are not accessible to the national power grid.

The total solar power production shall increase from about 10 million kWh in 2015 to 1.4 billion kWh in 2020; approx. 35.4 billion kWh in 2030 and 210 billion kWh in 2050. The share of solar power in total electricity production shall increase from a negligible level at present to around 0.5% in 2020, about 6% in 2030 and 20% in 2050.

- Develop solar energy devices that can provide heat for households, industrial production, agriculture and services. The total solar energy for heating purposes shall increase from 1.1 million TOE in 2020 to about 3.1 million TOE in 2030 and 6 million TOE in 2050.

## **V. MECHANISMS/POLICIES**

### **1. Formulation of a RE market:**

- Priorities shall be given to the RE investment and utilization during the expansion of energy sector, forming the basis for the formulation and enhanced growth of a RE market.

- Organizations/individuals of various ownership forms shall be encouraged to play their parts in RE development and utilization. The State shall protect the legitimate rights and interests of those organizations/individuals that develop and utilize RE sources.

### **2. Policies for electricity tariff and guaranteed investment**

- The Ministry of Industry and Trade (MoIT) shall prepare and submit for the Prime Minister's approval of the electricity price applicable to grid-connected power generation projects using renewable energies. The electricity tariff shall be consistent with conditions of different regions and characteristics of various RE-based power generation technologies, and follow the principle that helps promote the RE development and utilization as well as guarantees investors' cost recovery and reasonable profits; the electricity tariff shall be promptly adjusted according to the new development of RE-based technologies.

- Power entities shall be responsible for purchasing all electricity produced from grid-connected RE-based power projects within their jurisdiction. The power purchase shall be performed on the basis of the MoIT-regulated standard power purchase agreement.

- The electricity purchase cost for power generation projects using RE sources shall be accounted into the power entity's electricity tariff, calculated and fully incorporated into electricity retail tariff structure, and recovered from electricity sale revenues.

- The power generation projects using RE sources shall be given with prioritized connection to the national power system. The connection cost and other associated costs as reasonably incurred in the RE-based electricity purchase by a power grid entity (i.e. a transmission/distribution unit) shall be incorporated in such power grid entity's transmission/distribution cost.

- For an independent power system using an independent RE-based power source, the project investor shall prepare the electricity price proposal, determine the total state budget-supported amount and submit for the MOIT's appraisal and report for the Prime Minister's approval. The total state budget-supported amount shall be covered by the Sustainable Energy Promotion Fund.

3. Organizations/individuals operating in the electricity sector shall be responsible for making their contributions to the country's RE development. Power generation/distribution entities shall be required to meet Renewable Portfolio Standard (RPS).

- For power generation entities that have their installed capacity of larger than 1,000 MW (excluding BOT-invested sources), the proportion of electricity generated from RE sources (excluding hydropower sources of greater-than-30 MW capacity) shall not be less than 3%, 10% and 20% in 2020, 2030 and 2050 respectively.

- For power distribution entities that generate/purchase electricity from RE sources and end-use customers who self-generate electricity from RE sources (excluding hydropower sources of greater-than-30 MW capacity), the proportion shall not be less than 5%, 10% and 20% in 2020, 2030 and 2050 respectively.

- The MoIT shall determine, on annual basis, the minimum proportion of electricity generated from RE sources by power generation/distribution entities.

#### 4. Net-metering mechanism:

- End-use customers who are purchasing electricity from the national power system and at the same time able to generate electricity from RE sources for self-assumption purpose shall be entitled to net-metering mechanism.

- Power distribution entities shall be responsible for entering into, on the basis of net-metering principle, power purchase agreements with end-use customers who have power installations using RE sources.

- The MoIT shall introduce simplified connection processes/procedures in order to encourage the investment by end-use customers; and prescribe valuation method(s) and other necessary commercial agreements to guarantee the balanced benefits for both end-use customers and power distribution/trading entities.

- The total production of electricity generated from RE sources by end-use customers shall be incorporated into the power distribution/trading entity's RPS.

#### 5. Preferential and support policies for the RE development and utilization

- RE development and utilization projects shall be entitled to incentives on investment credits as prescribed in current legal regulations on State investment and export credits.

- Tax incentives:

+ Import duties: RE development and utilization projects shall be exempt from import duties for goods imported to establish project fixed assets; goods imported as raw materials, materials and semi-finished products that are not domestically produced and imported for project's production purposes under the provisions of the existing laws on export and import taxes.

+ Corporate income tax (CIT): the CIT exemption and reduction applicable to RE development and utilization projects shall be the same as to projects in the fields of investment priorities as stipulated in the existing laws on taxes.

- Preferential treatment for land: RE development and utilization projects shall be entitled to the exemption/reduction of land use/rental costs as prescribed in the existing laws applicable to projects in the fields of investment priorities

- Priorities shall be given to research studies on RE development and utilization in the field of science & technology and hi-tech industry development; and fund allocation for scientific and technological research studies within pilot and industrialization projects for the purposes of RE development and utilization, promotion of technological improvements related to RE development and utilization, reduced production costs of RE products and higher product quality.

6. Policies for environment protection: Organizations/individuals that use fossil fuels for energy purposes shall be required to pay environmental fees for the fuel volume used. A portion of environmental fees collected shall be used for the promotion of RE development and utilization via Sustainable Energy Promotion Fund.

## **VI. SOLUTIONS TO STRATEGY IMPLEMENTATION**

### **1. Strengthened state management in RE development and utilization**

- The MoIT shall exercise its unified management function of the RE development and utilization across the country. Relevant ministries shall, according to their functions and duties, perform the management of RE development and utilization in relevant field(s).

- Agencies that perform the State management of energy in provinces and centrally-run cities (collectively referred to as provinces) shall be responsible for the management of RE development and utilization within their jurisdiction.

### **2. Inventory of RE sources**

- The MoIT shall take lead and collaborate with relevant ministries and agencies in organizing the surveys/assessments of RE potentials across the country; and provide guidelines/instructions on the contents of surveys/assessments.

- The relevant ministries shall, according to their functions and duties and under the MoIT's guidelines/instructions, be responsible for the assessments of RE potentials within their jurisdiction, and send assessment findings to the MoIT for consolidation purpose.

### **3. Preparation of RE development plan(s)**

- The MoIT shall:

+ On the basis of projected energy demands and RE availability across the country, prepare the national RE development plan, submit for the Prime Minister's approval, and promulgate and work on implementation arrangements after the plan is approved by the Prime Minister.

+ On the basis of national RE development and utilization plan, develop and promulgate the RE industry development plan and list of key projects that should be prioritized.

- The PPC of a province where there is a potential for RE development shall organize the preparation of provincial RE development plan and submit to the Minister of Industry and Trade for approval.



- Relevant ministries shall be responsible for preparing related plans facilitating the implementation of the Prime Minister-approved national objectives for RE development and utilization.

- The national and provincial RE development and utilization plans should indicate development goals, major tasks, key project locations, implementation progress, related electricity network construction, service system, safety measures, etc.

#### 4. Development of national standards and norms

- The MoIT shall develop or promulgate national technical standards applicable to grid synchronization with RE-based power sources and construction of RE-related works and equipment items that require national technical standards for consistent application nationwide.

- For any elements that are not guaranteed by national standards, relevant ministries/agencies shall develop or promulgate for the application of basic related standards.

#### 5. Solutions to improved rate of RE development and utilization:

- Solutions to solar energy development and utilization:

+ Encourage organizations/individuals to develop and utilize solar energy systems for water heating, heating/cooling and power generation systems.

+ Real estate development enterprises shall be responsible for fulfilling all requirements for solar energy use in the design and construction of their building structures in accordance with technical standards as prescribed by competent State management agencies.

+ For a building structure that has been completed, the user(s) may choose to install the solar energy system which satisfies relevant technical standards and product standards, provided that such installation shall not affect the structure quality and safety.

- Solutions to strengthened development and utilization of biomass energy:

+ Coal-fired power plants shall be required to combine coal and biomass energy during their production process. The MOIT shall prescribe specific minimum proportion of biomass energy applicable to each power plant within each geographical location and period.

+ Old and low-performing coal-fired power plant owners should consider and convert into biomass fuel use.

- Incentives for clean/hi-efficient biofuel development and utilization, and growth of energy crops: The State shall encourage the production and use of liquid biofuels. Within their local trading system, gasoline/oil enterprises must also sell liquid biofuels which satisfy national standards; on annual basis, the MoIT shall prescribe specific minimum proportion of liquid biofuels that gasoline/oil enterprises must sell in localities.

- Promotion of RE development and utilization in rural areas: On the basis of the rationale for local socio-economic development, environment protection and comprehensive control of sanitation conditions, the Provincial People's Committee (PPC) shall take lead and coordinate with other relevant authorities in preparing the RE development plan in rural areas

in accordance with local conditions and advocating the use of biogas and other conversion forms of biomass, solar, wind and small-scale hydropower energy.

#### 6. Financial support for the RE development and utilization

- The Sustainable Energy Promotion Fund shall be established and financed by the state budget, revenue from environmental fee levied on fossil fuels, various sources of funds and contributions from domestic and foreign organizations/individuals as well as other legitimate funding sources for the purpose of financial support to the promotion of RE development on the national scale. The Sustainable Energy Promotion Fund shall be used to:

+ Compensate the costs incurred by power entities on the:

. Investment in independent power systems using independent RE-based power sources.

. Construction of a power grid to be connected to RE-based power source(s) while the cost recovery is not possible from the electricity transmission price.

+ Provide support to:

. Scientific and technological research studies on the formulation of standards and demonstration projects for the RE development and utilization;

. Projects using renewable energies in rural areas;

. Construction of independent RE-based power generation systems in remote/isolated areas and islands;

. Surveys and assessments of RE sources, and development of relevant information systems;

. Promotion of local contents during the equipment production for the RE development and utilization.

- Priorities shall be given to research studies on RE development and utilization in the field of science & technology and hi-tech industry development; and fund allocation for scientific and technological research studies within pilot and industrialization projects for the purposes of RE development and utilization, promotion of technological improvements related to RE development and utilization, reduced production costs of RE products and higher product quality.

#### 7. Solutions to human resource development:

- Enhance the management capacity for RE development at all levels;

- Encourage and support universities/vocational training institutions to develop their training curricula and deliver new RE-related courses.

- Promote and support RE-related R&D activities among scientific and technical research organizations, especially the in-depth research on those RE technologies which are suitable for Viet Nam's typical conditions.

- Develop short- and long-term cooperation plans with international organizations in terms of RE-related human resource development, education and training.

- Encourage and support the expansion of services and consulting entities in RE field.

8. Solutions to market formulation and RE technologies:

- Develop a national RE program which aims at promoting RE utilization in power generation and application of solar energy and bio-gas for households; carry out R&D programs for RE technologies; and disseminate information and involve community advocacy in the field of RE development.

- Establish and develop RE industry, and encourage the research, transfer, reception and effective application of technical advances as well as new technologies in RE production and utilization.

- Formulate and expand RE technology market, create equality on the basis of fair competition among enterprises of all economic sectors, and support the promotion of RE production, trading and service projects.

9. Strengthened communication/information activities and better public awareness on RE development and utilization:

- Enhance the communication and knowledge dissemination on the important roles and enormous socio-economic and environmental protection benefits to be brought by RE production and utilization in the process of sustainable development, thus leading to practical actions that contribute to the RE development and utilization.

- Encourage and provide local people/communities with technical support to the implementation and scale expansion of RE development and utilization models among households/enterprises.

- Encourage and provide communities with support to develop RE development and utilization models; pilot and move towards replicating various models of green houses, buildings, urban areas and rural areas (i.e. villages/communes) where the majority of energy needs shall be met by RE sources, and wastes from industrial/agricultural production, forestry and husband shall be adequately disposed and utilized for energy purposes.

10. Stronger international cooperation in RE field:

- Strengthen international cooperation so as to attract more capital sources and promote technology transfer in RE field.

- Effectively receive, accept and transfer the world's technical advances, technologies and new scientific achievements in RE development and utilization for stronger, rapid and sustainable growth of RE sector in Vietnam;

- As an experience-gaining exercise in RE development, enhance bilateral and multilateral cooperation with countries that have well-established RE industry and with foreign organizations/individuals that have strong potentials to learn experience;

- Develop and implement international cooperation programs/projects so as to take full advantage of all assistance available in forms of experience, intelligence, capital and equipment, and to attract investments for RE production and utilization.

## **VII. IMPLEMENTATION ARRANGEMENTS**

### **1. MoIT:**

The MoIT shall be the lead agency, which is responsible for RE development and utilization with the following main tasks:

- Perform the assigned tasks as stipulated in this Decision;
- Develop a roadmap for the implementation of this Decision and submit for the Prime Minister's consideration and approval;
- Conduct studies and pilot projects on RE technologies;
- Determine urban towns/communes of typical conditions in various ecological areas in order to develop pilot projects on green urban/rural zones; on that basis, propose solutions to nationwide replication.
- Establish transparent market mechanisms so as to promote investments in RE development and utilization;
- Enhance the human resource development for the expansion of RE sources;
- Coordinate with concerned Ministries/agencies in the inclusion of RE projects into Rural Electricity Supply Program, National Target Program for establishment of new rural areas and other related programs in rural/mountainous areas and islands.
- Strengthen advocacy activities to raise public awareness on the benefits of RE development and utilization;
- Enhance international cooperation, in RE field, with countries in the region and in the world;
- Promulgate regulations and guidelines for related entities to ensure the fair access to power grid by RE-based power generation projects;
- Propose new mechanisms/policies/regulations, which encourage investments in RE development and utilization and are suitable for each period, and submit for the Prime Minister's approval.

2. The Ministry of Construction: shall collaborate with the MoIT and related Ministries in the development of technical standards for solar energy integration into energy systems in condominiums and high-rise buildings.

### **3. Ministry of Science and Technology (MoST):**

- At the request of concerned ministries/agencies, appraise and promulgate national regulations and standards related to RE production and utilization;
- Given priority to research studies on RE development and utilization in the process of scientific/technological and hi-tech industry development.
- Coordinate with the MoIT in carrying out research programs and promoting RE-related scientific/technological activities in such a way that encourages the absorption and application of the world's advanced technologies.

4. Ministry of Agriculture and Rural Development (MARD):

- Take lead and coordinate with the Ministry of Natural Resources and Environment (MoNRE) and PPCs in determining and developing policies related to the most efficient use of land areas for growing energy crops;

- Coordinate with the MoIT in applying the improved stove model for better efficiency of biomass-based stoves and development of advanced biogas systems in rural areas, thus moving towards universal use of clean energy in rural areas;

- Promulgate sustainability criteria and assessment methods for the development of sustainable biomass energy in the forestry sector, which are drawn upon the combined program for both forestry development and biomass fuels;

- Take lead and coordinate with the MoIT in developing raw material-growing scheme for biofuel production.

- Take lead and coordinate with the Ministry of Planning and Investment (MPI) and Ministry of Finance (MoF) in developing and carrying out preferential/support policies for biomass material growing for biofuel production.

5. Ministry of Transport (MoT): shall coordinate with the MoIT in implementing scientific and technological research studies and policies in order to promote biofuel use by personal vehicles, and public, goods and air transportation systems.

6. Ministry of Finance (MoF): shall coordinate with the MoIT and other related ministries/agencies in working out tax policies and reasonable tax levels applicable to RE projects.

7. Ministry of Planning and Investment (MPI): shall formulate policies and incentives to attract investments and facilitate domestic and foreign investors in the field of RE production.

8. Ministry of Education and Training (MoET) shall integrate RE-related knowledge and technology into courses of both general education and vocational training sub-sectors.

9. Power entities:

- The power grid management entities shall sign grid connection agreement(s) with RE-based power generation projects that have been licensed or incorporated in the RE-based power generation project portfolio as approved by competent authorities, and purchase all electricity produced from RE-based power projects that satisfy technical standards for grid connection within the jurisdiction of power entities.

- The expansion of transmission/distribution grids shall be performed in accordance with the national and local power development plans as approved by competent authorities, taking into account the foreseen elaboration of RE sources and linkages among different areas as well as electricity supply security.

- Power entities shall develop and apply smart grid technologies and energy-storage techniques, enhance grid operation and management, increase the reception of RE-based power sources.

- Power entities shall consider and make preparation for a market design and electricity system operations model, which allows integrating a larger proportion of power sources using variable REs (wind and solar).

- Research shall be conducted on improving the projection of hydro, wind and solar power potentials; and on integrating online projection data with control systems of different load dispatch centers.

- Consideration shall be made on different methods of determining the needs for additional measures to enhance the flexibility of the power system; research shall be carried out to explore and assess the costs and benefits of the electricity system if there is a high proportion of RE-based power sources.

10. Relevant Ministries, sectors, localities, enterprises, organizations and individuals shall, according to their functions and tasks, organize and well implement the provisions of this Decision.

## **Article 2. Enforcement**

1. This Decision shall take effect from the signing date;

2. Ministers, Heads of Ministerial-level agencies, Heads of Government-dependent agencies, Chairpersons of the People's Committees of provinces and centrally-run cities and relevant entities/individuals shall be responsible for executing this Decision./.

**PRIME MINISTER**

**(Signed)**

### ***Recipients:***

- Central Communist Party Secretariat
- Prime Minister, Deputy Prime Ministers;
- Ministries, Ministerial-level agencies, Government-dependent agencies;
- People's Councils and Committees of provinces and centrally-run cities;
- Central Office and Committees of the Communist Party;
- Party General Secretary Office
- State President Office;
- Ethnic Minority Council and National Assembly Committees;
- National Assembly Office;
- People's Supreme Court;
- People's Supreme Procuracy;
- State Audit;
- National Financial Monitoring Committee;
- Social Policy Bank;
- Vietnam Development Bank;
- Central Committee of Vietnam Fatherland Front;
- Central Agencies of Mass Organizations;
- Government Office: Minister-Chairperson, Vice Chairpersons, Prime Minister Assistant, E-Portal Manager, Departments of KTTH, KGVX and V.III;
- For filing: Clerical section, KTN (3 copies).

**Nguyễn Tấn Dũng**

*GIZ translation - for reference only*