

# A VUONG HYDROPOWER JOINT-STOCK COMPANY: COMMITMENT TO A SUSTAINABLE FUTURE

M.A. NGUYEN VAN LE

Chairman of Board of Management  
A Vuong Hydropower Joint-Stock Company  
Quang Nam Province, Vietnam  
envle20032003@yahoo.com

**Abstract**—Renewable energy is a full of potential field in Vietnam, and also an inevitable trend in energy planning in the future. A Vuong Hydropower Joint-Stock Company (AVJSC) – as an experienced player in construction, development and operation of renewable electricity - would like to share our experience in renewable energy development, and also seek for cooperation opportunities in this field.

**Keywords**—A Vuong; renewable energy; cooperation; investment; equipment manufacturing.

## I. INTRODUCTION

Located in the cascaded hydropower plant system on the Vu Gia-Thu Bon River System in Quang Nam Province, A Vuong hydro plant (210MW) was the first plant chosen to start construction by Vietnam Electricity Corporation (EVN) in 08/2003 due to economic effectiveness and overall social benefits of the project. After more than five years of construction along with fluctuations of the economy as well as change in investment policy, both units of A Vuong hydro power plant were officially commissioned in late 2008, contributing to reduce power shortage in the country.



Figure 1. Panoramic view of A Vuong Hydropower Plant

In the process of building and development, company leaders are committed to ensuring criteria of Green-Clean-

Beautiful and eco-friendly. Campaigns of rubbish collecting, tree planting are launched every year with enthusiastic response and participation of officials and employees of the Company.

Collective efforts of leaders, officers and employees at AVJSC has been recognized and honored by the community. Noble prizes, awards and certificates of the Party and State awarded to individuals and groups of the company are testament to this recognition, and also a source of inspiration, encouragement for the company to continue efforts for the completion of assigned objectives.

## II. CURRENT SITUATION AND TRENDS OF RENEWABLE ENERGY USE IN THE FUTURE IN VIETNAM

### A. Overview Of Renewable Energy Development In Vietnam

Vietnam is endowed with a quite large amount of renewable energy resources. These sources of energy are distributed throughout the country and come from various types of resource. Estimated technical potential of small hydropower (under 30MW) across the country is larger than 4,000MW. Solar energy is abundant with average solar radiation at 5kWh/m<sup>2</sup> per day throughout the country. As a country with approximately 80% population working in agriculture sector, Vietnam also has abundant biomass energy potential. Biomass from agricultural products and residues is available at equivalent to 10 million tons of oil a year. Biogas energy potential is approximately 10 billion m<sup>3</sup> a year, which can be collected from landfills, animal excrements and agricultural residues. Thanks to approximately 3400km coastline, Vietnam also possesses abundant wind energy at an estimated potential of 500-1000 kWh/m<sup>2</sup> per year. These alternative sources of energy can be harnessed to meet Vietnam's rapidly increasing demand for energy. While there has been some early success, deployment of renewable energy has only focused in small hydropower and not reached the country's potentials yet.

### *B. Trends Of Renewable Energy Use In The Future*

Vietnam's renewable energy policies are driven by the needs to ensure energy security in parallel with environmental protection. Forecast figures shows that energy demand will increase four times from 2005-2030 and electricity demand will increase nine times from 2005-2025. So developing renewable capacity is expected to help Vietnam reduce its reliance on foreign sources of energy and ensuring ample energy security in the future.

For a long time, development of renewable energy has been encouraged by the Government of Vietnam through different policies. In Decision No. 1855/QĐ-TTg dated December 27, 2007 approving the National Energy Development Strategy of Vietnam for the period up to 2020 with outlook to 2050 the Government encourages the development and use of new and renewable energy sources; provides financial support for the investigation, research, trial manufacture and establishment of pilot locations; and exempts for the import, production and circulation taxes.

Specifically, the Government set targets to increase the share of renewable energy in total commercial primary energy from 3% in 2010 to 5% in 2020 and 11% in 2050 (Decision No. 1885/2007/QĐ-TTg) and to increase the share of electricity generated from renewable resources such as wind and biomass from 3.5% of total electricity generation in 2010 to 4.5% in 2020 and 6% in 2030 (Decision No. 1208/QĐ-TTg dated July 21, 2011 or Master Plan VII).

For biofuels, the Government has targeted an annual output of 100,000 tons of E5 and 50,000 tons of B5 by 2010 which is equivalent to 0.4% of the country's projected oil and gasoline demand; 1.8 million tons of ethanol and vegetable oil, or 5% of oil and gasoline demand by 2025 (Decision No. 177/ 2007/QĐ-TTg). E5 is gasoline with a 5% volumetric of bio-ethanol content; B5 is diesel with a 5% volumetric of biodiesel content.

In order to achieve those targets, investors are supported with various incentives by the Government. Renewable energy power plants will receive incentives for investment, electricity tariffs and taxes. Investors can enjoy advantages such as import tax exemption and land fee exemption over a certain period of time. In the Joint Circular 58/2008/TTLT-BTC-BTN&MT dated 4 July 2008 the Ministry of Finance (MoF) and the Ministry of Natural Resource and Environment (MONRE) prescribed the object of subsidy, the conditions of subsidy, and the method of calculating the subsidy rate for one unit of production, the annual subsidy amount, the term of subsidy, and the application process to request the subsidy for CDM projects in Vietnam to which renewable energy is eligible.

The existing incentives however are not sufficient yet to create the appropriate conditions for planning and implementing numerous renewable projects as well as the sale of renewable energy products in Vietnam. These incentives are beneficial to small hydropower projects only and not to other forms of renewable energy.

### **III. CONTRIBUTION TO THE COMMON CAUSE**

In addition to ensuring the reliable and effective operation of A Vuong HP Plant, AVJSC also makes incessant efforts to

find out new headings aiming at contributing to the national development.

With its leadership's strategic vision and the efforts made by the whole staff, AVJSC has been step by step forming and developing relevant services as well as studying and manufacturing of equipment to be used in renewable energy field, from which early success has been achieved.

#### *A. Power Plants and Industrial Utilities Maintenance Services*

Although the brand name of AVSC (A Vuong Center of Hydropower Maintenance and Technical Service) has come into being for just 3 years, yet it has been met with Consumer confidence. A series of maintenance and testing contracts have been awarded to AVSC, among them are those for hydropower plants of Serepok 4, Song Ông , Kon Dao, Song Bung 4A, Song Bung 5, Song Bung 6,...

#### *B. Project Management Consulting Service*

Thanks to the experience accumulated from previous projects and its expert staff, AVJSC has performed project management consulting Service for a number of hydropower projects in Central region.

Survey and investigation are now in progress in respect of finding out the prospective hydropower projects (each of approx. 100MW capacity) which can be build with AVJSC's investment.

#### *C. Research And Manufacture Of Small Hydropower Plants*

At present, the source for hydropower equipment mainly comes from abroad, which requires much effort in following up the supplying process and increases the cost for maintenance and repair. To improve such condition, AVJSC's leaders have contacted with world leading manufacturers such as Power Machines (Russia), BFL (India)...for cooperation in manufacturing of equipment for medium and small plants aiming at the target of having these "made in Vietnam" equipment of good quality coming from the production line in 2 years.

In parallel with technical cooperation and technology transfer, AVJSC engineers, with creativeness and enterprise were successful in designing and manufacturing of small hydro-turbines, governing and excitation systems for generating units... These products were initially accepted by the market and were put into operation in practice at such plants as Kon Dao, Dai Dong ...

#### *D. Research And Manufacture Of Equipment For Solar Energy And Wind Energy Systems*

For effective exploitation of renewable sources such as solar energy, wind energy, biomass energy..., the Company formed a team that undertook relevant researches for manufacture of equipment to be used in scattered power generation systems. As an initial step, single phase inverter of up to 5kW was manufactured and expected to be commercialized in 2013.

Other products for scattered power sources, such as three phase inverter, wind turbine are also under research for manufacture and introduction to market at the earliest possible.

#### IV. OPPORTUNITIES AND CHALLENGES

Those pride-worthy achievements have been obtained thanks to the Company knowing how to bring into play its strengths in management and operation. Each employee understands thoroughly the motto: "*Think a lot to make a complicated big works become simple and small ones, so everybody can do. Small works lead to big results*".

AVJCS's advantages can be listed as follows:

- Strategic vision, practical and drastic way of management and operation applied by the Company's leadership;
- Support from relevant ministries, agencies, local authorities and EVN;
- Sense of solidarity, disciplinary awareness and aspiration for knowledge of the whole staff.
- Profound experienced management and technical staff with thorough knowledge of practical conditions of Vietnam power sector legal environment.

Beside the above mentioned advantages, the Company has to deal with following difficulties:

- Source of finance: Calculations indicate that the total investment required for power sector (as per Master plan VII) till 2020 is about 929.7 thousand billion

dongs (~48.8 billion USD), of which 66.6% (~32.5 billion USD) is allocated for generation projects; In the period of 2012-2030, it is estimated that about 1,429.3 thousand billion dongs (~75 billion USD) will be required, of which 65.5% (~49 billion USD) will be invested in power generation. The required investment is enormous, so the finance source must be stabilized, requiring the involvement from various organizations and individuals, domestic and abroad.

- Legal procedures: Vietnam's power sector is in the process of re-structuring aiming at a fairly competitive market with state regulation. The involving parties must therefore confront with risks arisen from the changes of legal procedures.

With the above mentioned situation, AVJSC invites cooperation and investment from organizations and individuals from within Vietnam and abroad for the development of renewable energy in Vietnam, a policy which is pursuing by AVJSC. AVJSC commits to be a reliable partner, sharing together opportunities come from this highly potential field.

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