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A critical review on Energy Efficiency and Conservation policies and programs in Vietnam

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ABSTRACT

Due to the rapid population growth and economic development, energy demand is likely to triple over the next decade in Vietnam. Development and implementation of Energy Efficiency and Conservation (EE&C) policies and programs is of great importance for the Government of Vietnam that would help to improve the energy efficiency and contribute in meeting the increasing energy demand of the country in the future.

In the recent years, the Government of Vietnam has made substantial progress in improving EE&C by initiating a number of EE&C policies and programs with the two most important ones are the Law on EE&C and the National Targeted Program on Energy Efficiency and Conservation (Phase I: 2006–2010 and Phase II: 2012–2015). However, implementation of these policies and programs has been challenged in reality. This paper mainly aims to provide an overview on the current and future energy context in Vietnam; review the evolution of the Government's EE&C policies and programs; and identify the challenges and provide the recommendations for implementing EE&C policies and programs more effectively in the future. This paper suggests that much more efforts relating to improvement on collection, analysis, and management of energy data; capacity building; close coordination among the relevant Ministries and the organizations and agencies during the implementation of EE&C policies and programs; etc. should be put forward in the coming years. In addition, a number of recommendations for promoting EE in three largest energy consumers in Vietnam – namely industrial, residential, and transport sectors has been made in this paper.

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1. Introduction

Likes the other developing countries in Southeast Asia, Vietnam is experiencing the high economic growth with the average gross

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domestic product (GDP) annual growth rate of 7.2% during the period of 2001–2010. The rapid economic development together with the urbanization process, industrialization, and population growth has promoted the increasing energy demand for industries, transportation, and domestic activities. It is estimated that the energy use comparative to GDP growth in Vietnam is twice bigger than that of developed countries. Energy demand tripled over the last decade, and it is likely to triple again over the next decade if economic growth remains robust. In consequence, Vietnam will have to rely increasingly on imported energy, including coal and oil. Such situation would raise a number of questions concerning the national energy security [1]. This will also pose a challenge for the Government is to honor international commitments to reduction of greenhouse gas emission.

On the other hand, low energy efficiency, on both the supply and demand sides, is currently also another major energy issue in Vietnam. One of the major causes of low energy efficiency is the current use of old technologies and poor energy management practices. For example, only new, large-scale combined-cycle natural gas-based power plants incorporate world-class technology and provide high fuel efficiency. Most existing coal and oil-fired power plants have low fuel efficiency as their facilities and technologies are relatively old. In 2005, energy loss in power generation was estimated to be 9.5% of total primary energy consumption. The same situation could be seen for the demand side where old and high energy intensive technologies are employed. For example, Blast Oxygen Furnace in the iron industry and low fuel economy cars in road transport are also contributing to the high end-use energy consumption in Vietnam. Indeed, both primary and final energy intensities of Vietnam are conspicuously higher than those of many ASEAN and OECD countries. For example, in 2005, Vietnam's primary energy intensity was 1.2 kg OE/US $ while ASEAN and OECD averages were 0.6 and 0.2 kg OE/US $, respectively [2].

Development and implementation of Energy Efficiency and Conservation (EE&C) policies and programs could not only make the improvement in energy efficiency but also contribute in meeting the increasing energy demand in the future. In the recent years, the Government has strengthened the policy framework on energy efficiency improvement of various end users in the economy. A number of legal documents covering the planning and implementation of EE&C policies and programs has been approved and enforced by the Government. However, implementation of these policies and programs has been challenged in reality. This paper mainly aims to: (1) provide an overview on the current and future energy context in Vietnam; (2) review the evolution of the Government's EE&C policies and programs; and (3) identify the challenges and provide the recommendations for implementing EE&C policies and programs more effectively in the future.

2. Current and future energy context in Vietnam

Vietnam is endowed with a variety of primary energy resources including coal and peat, oil, natural gas, hydro, and renewable energy and it has generally been an energy-self-sufficient economy. The total energy production and consumption in Vietnam during the period of 2001–2011 is shown in Fig. 1. During this period, the average growth rates of total energy production and consumption were 4.3% per year and 5.8% per year, respectively. The energy production by source during the period of 2001–2011 is shown in Fig. 2. Over this period, natural gas production grew at the highest rate (14.8% per year), followed by coal and peat (10.7% per year). The total energy consumption in 2011 was 51313 kt of oil equivalent (kTOE) in which the largest consumer of energy was the industrial sector, contributing 35.4% to the total energy consumption, followed by the residential (31.8%), transport (21.5%), commercial (3.7%), and agriculture/forestry (1.3%) sectors [3]. The energy consumption by sector during the period of 2001–2011 is shown in Fig. 3. Most notable here is the considerable growth in energy consumption in the industrial,

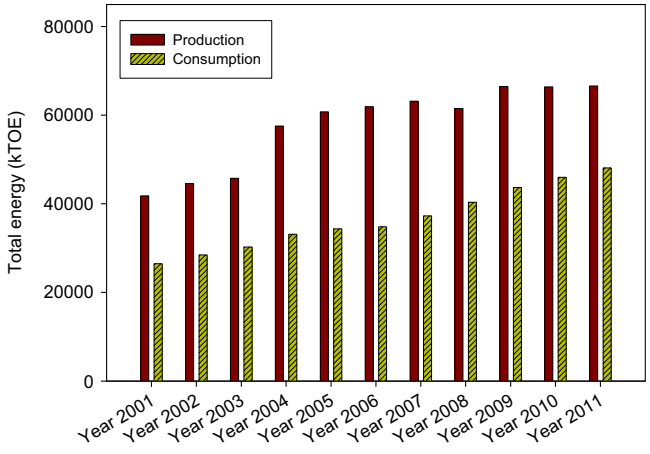

Fig. 1. Total energy production and consumption in Vietnam during the period of 2001–2011.

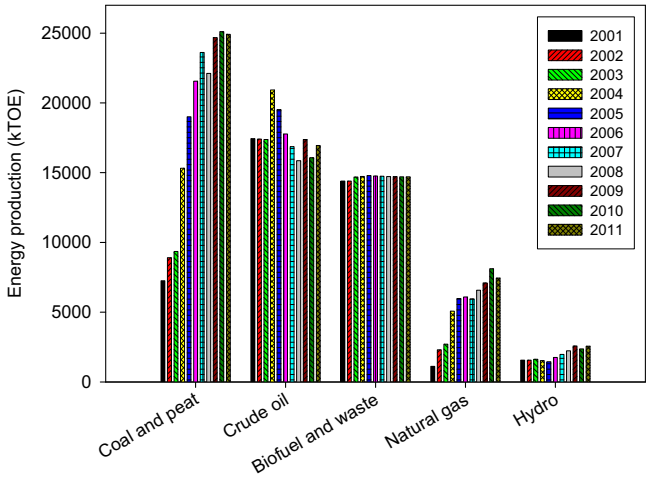

Fig. 2. Energy production by source in Vietnam during the period of 2001–2011.

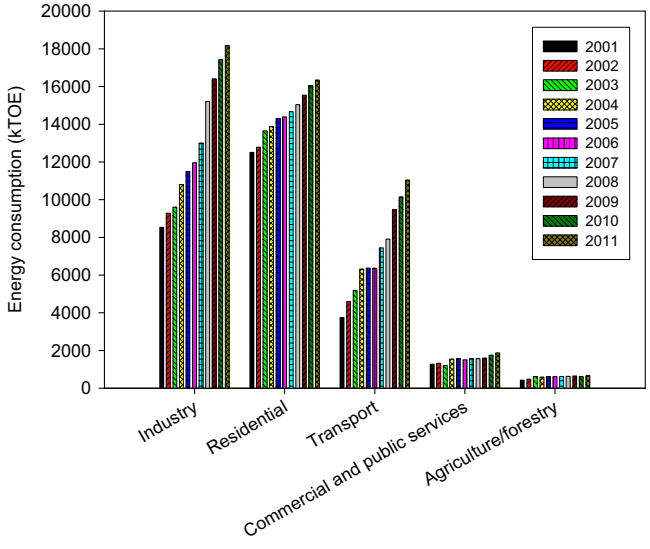

Fig. 3. Energy consumption by sector in Vietnam during the period of 2001–2011.