Report on the hydropower energy sources and security in myanmar

Law, Security

Why Energy is the most important for Myanmar?

In response to climate change, renewable energy was very popular in energy sector of many countries around the world. There have various types under Renewable energy such as hydropower, solar, wind. Human beings usually depend on electricity, mobility, heat as their basic needs in life. People used wood for heat in household work where there had no opportunity to create electricity. This can led negative impacts to forestland. Besides, individual demand for electricity in daily life, electricity requirement increased among economic groups in the process of economic development. Moreover, providing sufficient electricity to citizens in a country directs to the higher living standard of people. Therefore, getting electricity energy was more unforgettable to prioritize in developing countries.

According to European Commission, energy security was defined as " uninterrupted physical availability of energy products on the market at a price which is affordable for all consumers." On the other hand, energy insecurity was defined as " the loss of economic welfare may occur as a result of change in the price and availability of energy". If a country has an energy security, this country will be developed as most commercial products from manufacturing factories require sufficient electricity at an affordable price. A country who offers adequate electricity as an infrastructure could persuade the foreign investors. Through foreign investments in every area, it can not only boost the economic development but also increase the flow of modern technology and human capacity. Moreover, it can create more employment opportunities for youth.

Among various renewable energy types, this paper emphasizes on producing electricity from hydropower plants. The first development was commenced with the construction of Beluchaung hydropower plant since 1954. This was designed to supply Yangon and Mandalay (595 gigawatt) in 1963. The second development was the building of Paunglaung Hydropower plant with installed capacity (280 MW) near Nay Pyi Taw. During the years of 2006-2010, there developed (2) major hydro plants, Shweli (1) of (600Mw) and Yeywa of (790 Mw). Most of hydropower plants in Myanmar were situated on rivers of Salween (Thanlwin) and Irrawaddy.

Water Resources, Hydropower potential in Myanmar

The largest rivers in Myanmar are the Irrawaddy, Salween and Sittaung rivers, all of which has headwater in mountainous area and deltaic area before emptying into Andaman sea. The Irrawaddy River that its length (2200km) flows through the length of Myanmar covering that most important croplands where 37. 2 million people live. The Chindwin River which its length about (800km) in the north-eastern part of the country was a major tributary of Irrawaddy River. To the east from the Irrawaddy, Sittaung River is situated on eastern side of Bago Mountain flows south for 420 km before draining into Andaman Sea. The Salween River shared by China (52. 43%), Myanmar (43. 85%), and Thailand (3. 71%). The total length of the river is 2815 km, of which 1100km within Myanmar’s border, draining about 18. 4% of the territory where mostly covered by forest. According to UNESCAP (1995), the hydropower potential of the river is great.

Hydropower projects on Myanmar side of Salween River and Irrawaddy River

While the hydro potential was guessed to produce around 16000Mw in Salween River, there have been designed six dams over Salween River. Most of the hydro projects on Salween River hold by the Chinese and Thailand private construction companies. Only two dams were intended to be evolved to sell power to Thailand, Tasang of (7110 Mw) and Hutgyi (1360 Mw) with 2007 power development plan. The electricity capacity generated 90% (1190 MW) from the Htutgyi dam were exported to Thailand and Myanmar got the remaining 10%. The Tasang hydropower scheme was signed MOU in 2006 and expected to complete it by 2020.

There have two dams have already finished on Irrawaddy river, which were Shweli (1) hydro project (600 Mw), of which 80% generated revenue for Chinese companies according to 2007 data and Yeywa hydropower project (780Mw) was completed in 2010 on Myitnge River in Mandalay Division in the upper Irrawaddy river basin. Although the Myitsone dam project of (3600Mw) began in 2007 after the China Power Investment Corporation and Myanmar authorities signed agreement, this was suspended in 2011 by the disagreement of public.

Hydropower ambitions of Myanmar

In Myanmar, the first two five-year development plans (2001-2005 and 2006-2010) focus on hydropower growth to feed the domestic market, the third five year plan (2010-2015) onwards the strategy is to increase the regional power trade with the Greater Mekong Region (GMS) and Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)

countries to include the exports to the long-term strategic plan. In BIMSTEC energy minister's conference in 2005, member countries agree BIMSTEC vision of Trans-border power exchange and grid interconnections to meet rising energy needs through the flow of electricity across member countries.

What is the government policy and strategy over hydropower project to sustain energy security in Myanmar?

The National Energy Management Commission (NEMC) was established in 2013 to address energy demand and supply related issues. The major legislation dealing with hydropower development include the following acts, Conservation of Water Resources and Rivers Law(2006), Environmental Law(2012), Land Acquisition Act(1894), Vacant, Fallow, Virgin Lands Management Law (2012), Farmland Law (2012), Foreign Investment Law (2012), Environmental Conservation Rules (2014). NEMC set up National Energy Policy paper in 2014 that was approved from President. Under this paper, national energy sector policies were to implement short term, long term of energy development considering impact of natural and social environment, to institute laws and rules and regulations to promote private sector participation and privatize state energy organizations, to advance international cooperation in energy matters, to raise energy efficiency and energy conservation, to develop policy in respect with energy product pricing encountering economic security of energy producers and energy consumers.

To achieve 100% national electrification in 2030, Myanmar energy sector gained capacity development and policy and advisory TA (technical assistance) projects from ADB (Asian Development Bank). In 2013, ADB

provided $60 million loan to restructure the distribution network in Yangon, Mandalay, Sagaing, Magway and also approved $80 million loan to strengthen the transition lines and substations. World Bank Group and JICA (Japan International Cooperation Agency) has been assisting the MOEE (Ministry of Electricity and Energy) stressing upon power sector generation and transmission sector planning. ADB serve as a major partner for development of Myanmar energy security through research statistical development, public-private partnership management and advancement, formulation of environmental impact assessment and socioeconomic impact assessment to acquire sustainable and inclusive development of energy resources.

Suggestion

Although private sector participation was encouraged by the government energy plan, electricity sector continues predominately state-owned. Rules related with electricity law (2014) may frustrate private sector investment. The retail tariff which set at MK 35- MK50/kWh for household was the lowest tariffs in Southeast Asia. Consequently, it caused losses to the government. Government may detain introduction of cost- reflective tariffs due to population resistance.

Moreover, to meet the rural electrification program, $6 billion required for connecting 7 million households by 2030. Donor funding of $0. 4 billion per year will be a challenge as a funding gap. The recommendations for Myanmar energy security were that seeking donor assistance for financial needs and furnishing capacity development in planning project,

management, environment safeguard. Besides, ongoing and advanced investment from donors and private sector will be needed to fulfill the funding gap.

Under Mindanao Modular Generator Set Program in Philippine, loan facility is extended to participating electric cooperatives in Mindanao for the acquisition of modular gensets as an immediate relief to supply needed power in the franchise area of electronic cooperatives. ECs need to retain the generator sets and return to the government when power supply in Mindanao has already stabilized after entry of new power generation projects. Interim Mindanao Electricity Market was intended to supply serving as a venue for transparent and efficient utilization of all available capacities in Mindanao Grid. To institutionalize the transparent system of power supply of electricity, Department of Energy of Philippine and Energy Regulatory Commission jointly issued resolution No 1 " A resolution enjoying all distribution utilities to conduct (CSP) Competitive Selection Process in procurement of supply for their captive market." Moreover, they have planned open market for electricity energy through wholesale electricity spot market (WESM) retail cooperation and open access (ROCA).

In comparing with Philippine, Myanmar electricity law still weak in detail about privatization and open market assessment. Myanmar should need to emphasize clear and accurate rules and regulations dealing with open market and privatization. To achieve energy security with uninterrupted physical availability at an affordable price, rules that boost private sector investment should be implemented.