

Laos PDR: The “Battery for Southeast Asia”, hydropower development plan and progress

Научный руководитель – Светлана Андреевна Аверьянова

Malavanh Onepavina

Student (bachelor)

Санкт-Петербургский политехнический университет Петра Великого, Институт
энергетики и транспортных систем, Saint Petersburg, Russia

E-mail: onepavinamalavanh@gmail.com

Lao PDR is classified as a Least Developed Country. It is a poor, mountainous and highly forested landlocked country with little option to secure a sustainable and environmentally sound economic and social development. By the other way, Laos is a place of remarkable beauty, world-renowned biodiversity and abundant natural resources. A thousand rivers are traversed by the country that teems with life.

Lao PDR's national borders incorporate a significant part of the Mekong River basin. Its main tributaries contribute around 35% of total inflows of the Mekong River. As the country intercepts monsoons from two directions - the Gulf of Thailand and the Gulf of Tonkin - precipitation is considerably high and favourable for hydropower development. Hydropower is seen as a cost-effective energy source in Laos which has a theoretical hydroelectric potential of about 26,500MW excluding the mainstream Mekong. Of this, about 18,000MW is technically exploitable, with 12,500MW found in the major Mekong sub-basins and the remainder in minor Mekong or non-Mekong basins. Around 15% of the country's hydropower potential has been developed over the past 30 years, but under the present government policy the rate of development will accelerate to supply electricity to the rapidly growing economies of the region. In 1996 at its 6th legislature, the Lao Government set a poverty reduction goal which aimed to take the country from the group of Least Developed Countries by 2020. The power sector in Lao PDR serves two vital national priorities: (1) it promotes economic and social advancement by providing a reliable and affordable domestic power supply; (2) it earns foreign exchange from electricity exports. The power sector, and especially hydropower, has already become an important contributor to Laos' economic growth and the national poverty eradication effort. Since 2008 the export of electricity amounted to approximately 30% of all Laos export levels. Agreements for future hydropower exports have already been in place with Thailand, Vietnam and Cambodia.

This presents an opportunity for Laos to develop hydropower plants to meet its domestic electrification needs and to export electricity to neighboring countries where demand for electric power has been steadily increasing [2]. The Lao Government has the ambition to realize the development of electric power facilities as a highly appropriate method of achieving sustainable social and economic development through electrification program as well as source of income. The Lao power sector is under process of development, which aims at realizing the country's electrification program, and at the same time export of electricity to the neighboring countries. The Lao hydropower development plan contains 72 new large dams, 12 of which are under construction and nearly 25 at advanced planning stages. Included in these are a series of nine dams on the lower Mekong Mainstream, of which Xayaburi was the first to begin construction, followed by the Don Sahong Dam. [1]

The Lao government hopes to transform the country into “The battery of Southeast Asia” by exporting the electric power to Thailand and Vietnam. In 2007 the Lao Government said that by

2020 it was committed to supply 7,000MW to Thailand, 5,000MW to Vietnam and 1,500MW to Cambodia. Lao government was launching the first phase of pilot project to sell 100MW of electricity to Malaysia via Thailand's national grid. According to Laos Energy and Mines deputy minister Sinava Souphanouvong, a potential buyer of nuclear power from Laos could be Singapore [3]. The energy purchase and wheeling agreement (EPWA), the first multilateral energy exchange or trade in Asian, was signed during the Asian Ministers on Energy Meeting (AMEM) held in the Philippines. Under the two-year agreement, Laos will export power to Malaysia beginning on January 1, 2018, Deputy Director of Laos' state-owned Electricite du Laos (EDL). Once the agreement ends its term, the involved parties will negotiate again (on future energy trading), who accompanied the Lao delegation to the Philippines. Malaysia's The Star reported that Tenaga Nasional Bhd (TNB), the national utility company of Malaysia which signed the EPWA, will import the electricity from EDL via the existing transmission grid owned by the Electricity Generating Authority of Thailand (EGAT). Without disclosing the price, TNB said it was under no obligation to purchase any minimum amount of energy from EDL, it was revealed. The EPWA governs the obligations of the parties in the selling, wheeling and purchase of energy from EDL via EGAT (the wheeler) to TNB for the two-year period based on the agreed terms and conditions, according to The Star. The EPWA was inked after energy authorities from Laos, Malaysia and Thailand signed a Memorandum of Understanding in September last year in Myanmar during the AMEM, which indicated that Malaysia intended to purchase power from Laos. The 10-member Southeast Asian regional bloc is working towards setting up arrangements for electricity and natural gas within the region via the Asian Power Grid and Trans-Asian Gas Pipeline.

Laos has strongly supported the initiative as it seeks to export more electricity. The country boasts high potential to produce and export more power to its neighbors and other Asian members via the regional power grid. By 2020, there will be more than 90 hydropower plants in Laos with combined installed capacity of almost 14,000MW. Laos expects to export 100MW of power to Singapore via Thailand and Malaysia's network by 2020 as the second phase. The government will use the profits from hydropower sales to fight poverty in the country. In addition to international supply commitments, domestic energy consumption is growing at 8% to 10% annually. The Government of the Lao PDR has to date signed MOUs of is undertaking research studies on more than 70 hydropower projects.

Despite it is abundance of energy source from hydropower in the country, Laos is apparently planning to build nuclear power plant in a cooperation with Russia, as World Nuclear News reported last year.

On April 14, a memorandum of cooperation on nuclear energy "for peaceful purposes" has been signed by Russian state nuclear corporation Rosatom and the Ministry of Energy and Mine of Laos. Laos intends to set up two nuclear power units with a capacity of 1,000 to 1,200 megawatts each. The planned facilities are likely to be built under a Build-Operate-Transfer contract with Rosatom.

The nuclear power plants fit into Laos' strategy to become a major energy exporter in Southeast Asia. The country presently has a rather low power production capacity of 8.2 kWh of electricity, but over 80 new power projects are under construction in the country, mainly hydropower dams built with the assistance of China, as well as coal-fired power plants, which are likely to nearly triple energy production capacity.

References

- 1) EDL- Generation Public Company , Website: www.edlgen.com.la

- 2) Ministry of Energy and Mines in Laos PDR, Website <http://www.poweringprogress.org/new/2-uncategorised/3-hydropower-in-lao-pdr>
- 3) Invest vine Southeast Asia's Business, Website <http://investvine.com/laos-plans-nuclear-power-plants/>