

The Belt and Road Initiative VS Clean Energy & Rural Electrification

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Currently, an estimated 1.1 billion population around the world are still living without access to electricity, half of which are Africans. *The UN Sustainable Development Goals for 2030 (2015-2030)* released in June 2015 included 17 goals to be achieved by 2030, with one of them being that the whole population can access to affordable, reliable modern energy. In November 2016, the UN Security Council unanimously agreed to support the “*Belt and Road Initiative*” and the role it plays in enhancing regional economic cooperation and maintaining regional stability and development. Not only has the “*Belt and Road Initiative*” been written in the UN documents, but it has also become an important platform to realize the *UN Sustainable Development Goals for 2030*.

Poverty and poor economic development is a common problem confronted by the developing countries, and energy shortage has become the main cause. However, poverty and poor economic

development has blocked energy development. Most countries along the Belt and Road abound in clean and renewable energy such as hydro, wind and solar energy, but the production of energy and power supply is still far from sufficient to satisfy the demand for economic and social development.

Currently, clean and renewable energy has surpassed the conventional types in economic benefits in many regions and countries, and the energy structure is undergoing revolutionary changes. In the past 5 years, the cost for wind power development has dropped by 20% on a global basis, while the cost for photovoltaic development has dropped by 60%.

In the long run, the countries using conventional energies are bound to have a transition. The countries along the Belt and Road are important areas for renewable energy development and renewable energy transformation with a big market and plenty of opportunities. The countries along *the Belt and Road* are mostly at a stage of rapid increase in energy demand and confronted with the same question

that what kind of energy system shall be set up. Countries including Oman, Qatar, UAE, Saudi Arabia, etc. all have formulated corresponding planning on new energy development, clearly stating certain amount of power generation from the renewable energy shall be hit.

In the rising photovoltaic market, countries in the Southeast Asia such as Thailand, India, the Philippines etc. are blessed with sufficient sunshine as well as power incentives. In Australia, there is the tradable green certificate system. In America, despite of the high threshold, the dollar assets keep the value well. In the Middle East, and North Africa, there are rich sunshine and new policies on energy. In UAE, there is a record low PV power price of 2.42 cents per kWh in the world, far less than thermal power.

China has been in cooperation with more than 80 countries globally in the field of hydro, photovoltaic, wind, solar water heater etc. On the premise of mutual benefits and double wins, the Chinese government encourages Chinese enterprises with technologic

advantages to keep enhancing the cooperation in technology and industry chain, and jointly promote technological industrialization and demonstration projects construction in solar energy generation, accumulation of energy, smart grid, advanced wind generators etc. to reduce the development cost and promote the application of technologies in large scale in an effort to push the global transformation in energy structure.

China has done a lot in renewable energy development, contributing a lot to the reduction of renewable energy cost globally. There is a solar and hydro complementary project of 1 GW in Qinghai, China. In Africa, the solar and hydro power plants are able to maintain the stable power supply for some regions. China is willing to cooperate with countries and organizations around the globe who have done well in renewable energy development to promote the development of clean and renewable energy in the countries along the Belt and Road. In 2017, China will focus on the cooperation in clean and renewable energy in Morocco, African regions, and South America, etc.

As the most reliable, mature, stable clean energy, hydropower takes up the biggest share in clean energy system, and the global installed capacity of conventional hydropower is about 1 billion kW with annual generation of 4000 billion kWh. The development rate globally reaches 26% (by power generation amount), with Europe, North America, South America, Asia, and Africa respectively being 54%, 39%, 26%, 20% and 9%. The developed countries boast a higher



development rate, with Switzerland, France, Italy, Germany, Japan, and America respectively being 92%, 88%, 86%, 74%, 73 % and 67%, while the developing countries are generally low in hydropower development rate. The development of hydropower in the years to come will mainly happen in those developing countries with low development rate and high power demand, for instance, Asia, Africa, South America, etc. and it is estimated that the global hydro installed capacity will reach 2.05 billion kW (2050GW) by 2050.

China's hydropower development rate has reached 37% (by power generation amount) and the hydro installed capacity has reached 0.32 billion kW, accounting for 27% of the global total, ranking the first in the world. The small hydropower installed capacity in China accounts for half of the global total. In recent years, China has advanced by leaps and bounds in hydropower industry, becoming a "pacemaker" instead of a "follower". As a country of fast hydropower development and high

hydropower technology, China has been strong in its overall capacity in hydropower industry including design, planning, construction, manufacturing, transmission etc. *The 13th Five-Year Plan (2016-2020) for Hydropower Development* clearly states that international cooperation shall be enhanced based on the mode of open development. Guided by the "Belt and Road Initiative", the international cooperation in equipment, technology, standards, project service, etc. shall be further promoted.

As a green, renewable, distributed and clean energy, small hydropower will be an important area of cooperation on energy and infrastructure between China and the countries along *the Belt and Road*. In the developing countries, especially those along *the Belt and Road*, the potential of small hydropower development and cooperation is enormous and small hydropower with its mature and applicable technology holds great attraction to the developing countries. The developing countries



along *the Belt and Road* are rich in hydropower resources, but small hydropower development policies and power market system differ greatly in those countries. Besides, with low rate of hydropower development and utilization, poor management, slow electrification process, those countries especially the African ones are in an urgent need to boost the application of small hydropower in promoting industrialization, infrastructure etc..

To put infrastructure in the first place is China's experience obtained in the 30 years' practice of opening up and reform policy. As important public infrastructure and facilities in the rural areas, small hydropower has mainly served in power supply to promote the rural economy. Confronted by many constraints including technology, capital, talent, equipment, etc., small hydropower has blazed a new trail in those areas with rich hydropower resources. The local people created an innovative and effective mode of development on their own based on

practical experience, contributing a lot to China's electrification process. In addition, small hydropower has also made achievements in rural economy development, targeted poverty alleviation, improvement of livelihood, treatment of small and medium-sized rivers, etc. China's success in rural electrification has set up a good example for the countries around the world especially those developing countries in rural electrification, which has been evaluated highly of by international organizations including the UN and received wide attention from around the world. China's technology and experience in small hydropower is also being popularized in the developing countries. As the biggest developing country in the world, China has been enlightening and demonstrative in technology and experience in small hydropower to those countries in face of shortage of energy and power. The path of opening up and reform and rural

electrification China has taken has served as a good reference to the other developing countries, facilitating them in solving the problems in the course of development.

"China hydro" and *"China's small hydro"* have been a striking signature card of China, which promotes China's technology, standard, manufacture and culture to go global. Small hydro is an important bearer and player in the *"Belt and Road Initiative"*, sharing China's experience in small hydropower with the rest of the world for mutual benefits and double wins.

"The Belt and Road Initiative" originates from China but belongs to the world. The pursuit of clean energy especially small hydropower on a global basis would be a mutual dream, while realizing the Chinese Dream, for which small hydropower is a good media and is a great cause for us to pursue.

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