



Pakistan – a caged tiger hunting for energy



Karachi, widely unrecognized in the west, is estimated near to 20 million inhabitants. With more than twice the population of my home country Austria, this city is an example par excellence that Pakistan is brimming with life.



The population's average age is as low as 20 years - typical for a threshold country – and you can feel this fact in the country's potential and in the urge for action that can be sensed in every corner of the country.

Pakistan's economy is not in perfect shape, but it's rapidly growing and securing the country a place in the so called 'next eleven' club, which marks the nations with high chances of becoming the big players of the 21 century.

Never the less, the playground for economy in Pakistan can by no means be called risk free. Aside from corruption, political instability and terrorism, in particular, industry faces one major bottle neck: energy! After separation from India, Pakistan managed to raise a notable industry sector which specifically suffers from a severe energy shortage. The discrepancy between demand and supply is steadily increasing while the government performs a desperate race against many odds to fill this gap, which results in daily black outs for many hours throughout the country.

This is devastating for every serious industry and puts the country's economy in chains. The political elite in Pakistan is fiercely determined to address this problem.

Pakistan looks in all directions and literally grabs everything within its reach to boost its power production capabilities. When it comes to energy it seems money is lying on the streets - practically every western person I found in the capital Islamabad is involved in energy projects and hunting for a piece of the cake.



The country has been looking seriously towards nuclear energy since the early 1970 but faces many political challenges in this sector.

This started with trade embargos following India's unexpected introduction of "Operation Smiling Buddha", fruit of the Indian nuclear weapons program which consequently led to the local pendant under Abdul Qadeer Kahn's famous clandestine network.

As of today Pakistan supplies 2% of its energy production by nuclear - but has plans to dramatically increase this figure with the concrete aim to install nearly 10 GWe until 2030.

So far China is the most important partner for Pakistan in the nuclear sector. This cooperation already led to the construction of several units and more projects are in the planning phase or under construction as per today.

However, as the United States strongly intervened and prevented knowledge transfer and cooperation with third countries in this sector Pakistan faces a dilemma.

While mastering the technology to a level of building and operating commercial reactors, these kind of undirected general embargos prevent the industry from receiving up to date safety technology, a serious concern that was raised and intensively discussed by member states during the IAEA general conference 2012.

Until now, China was the only partner touching the nuclear sector in Pakistan, and even this came with many restrictions - the visit of Vladimir Putin to Pakistan in 2012, as the first Russian president ever, marked a turning point and promises further movement.



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Aside from agreements on strategic partnership and joint efforts to fight terrorism Russia has shown special interest in energy projects, including the nuclear sector.



This is one more sign, also directed towards the United States of America, marking Pakistan's independence as global player. Russia as well has agreed to invest in CASA-1000 (Central Asia-South Asia) electricity transmission project and funding and construction of Iran-Pakistan gas pipeline project.

That leads us to the next problem: Pakistan needs energy right now, better yesterday than tomorrow, and this is something which obviously cannot be achieved by the nuclear sector.

An urgent demand is traditionally satisfied by building caloric plants - which of course is a path that Pakistan follows - but bears the drawback of vulnerability to rising commodity prices and security of supply. The masterminds behind the plans to solve the energy crisis are seriously worried on relying too much on oil, gas and coal sitting in the middle between emerging markets all hungry for energy and not famous for their stable and unselfish relations with Pakistan.

While it may not be the first thing that springs to mind, Pakistan's water in fact plays a crucial role for the country. This becomes much clearer when we consider that 30% of the country's energy production is covered by hydro. The huge potential is also mirrored in the name of the energy ministry: Ministry for energy and water. Unlike in Western Europe, there is great potential in upgrading the already decent hydro share in Pakistan to a vast extent but, as with many things in this country relating to this topic, to do so would mean walking on thin ice. There are serious political obstacles towards fulfilling the potential of hydro. Manipulating the water supply in a country with a climate such as Pakistan's, would create an enormous echo - far over the country's borders.

Renewable energies and efficiency enhancement also enjoys great attention which is remarkable for a threshold country, but reinforces the impression that Pakistan catches literally everything in its reach. The government formed an institution called Alternative Energy Development Board, with the aim of reaching 10% share of production, excluding hydro.

To a certain extent, Pakistan reminds me of the German situation except that they can't afford the romantic ignorance towards the reality demonstrated by Germany, which relies on good infrastructure and back-up from its neighbors while satisfying voters until the next election.

They consider everything from solar and wind to novel technologies. By chance I was lucky enough to talk to the president of Isotherm, Inc. in Islamabad, an impressive American company contracted for energy production utilizing process heat in Pakistan. Where this makes perfect sense but does not sound all too unusual, the same company also has its hands on an Ocean Thermal Energy Conversion (OTEC) plant prototype in Hawaii with a surprising 100MWe output. These plants utilize the vertical temperature gradient of sea water, not physically overly challenging but the devil lies in the detail! This green technology demands unique experience in this field, exceptional engineering skills and expensive high tech material to withstand corrosion. It is no big surprise that they were already hunting for suitable locations for such plants on Pakistan's shores.

The bottom line is Pakistan is emerging and wants to break the chains that slow down this process. Though as mentioned earlier on, energy is not the only challenge. The very pragmatic and clever moderate forces which try to lead the country to a prosperous future need to overcome pressure and instabilities from outside as well as from inside.



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Pakistan has a growing highly educated upper class which needs to keep up the difficult job of utilizing the huge potential of the country.

I felt and saw for myself during my last trip that the mood can turn quite quickly where poverty creates an environment in which left alone, unsatisfied and easily manipulated, masses open the door for fundamentalism. It does not take much to turn the country to chaos with burning streets, casualties and the military struggling to maintain control and order- Pakistan's face can change dramatically just within a few days.

It is vital to utilize the potential of this young, poor and eager population and not let it be misused by corrupting forces. The leaders of the country must succeed in keeping up with the speed of Pakistan, and be sure not to leave behind the people who urgently need perspective to head in the right direction. For sure Pakistan sees interesting times and the pace at which this fascinating country is moving is a magnet for all gold diggers who dare to touch this rough environment.

Michael Gerstmayr

eafes Board Member and
blogspot contributor

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