Article

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The Dilemma of Kabul Electrification in 2020

A. Introduction:

In our world today, people tend to take electricity for granted like air and water and one cannot think of a world without electricity as it has become a part of our daily life.

Reliable access to electricity is crucial as it is an important necessity for our homes as well as for industries. It is not only used to switch on the lights in our houses, but almost all of the devices at our homes and in our businesses require electricity. It also supports a lot of different industries, the largest being the Technology Industry. Other examples are schools, medical facilities, such as, hospitals and telecommunications which all need electricity to run efficiently.

Living in the 21th century, unsecure, unreliable and insufficient supply of electricity is another shortcoming of the Afghan Government towards its people. There is seldom a day when news of blackouts and load shedding's do not reach people. Even Kabul City, one of the nation's most populace city and the most important center of business and industry can be not excluded from that.

In that essay an analysis is made in regards to this failure and solutions are presented which could be employed if a more robust and competent Leadership/Government is in place.

B. Governmental Efforts and Failures:

Since 2001, when the US invaded Afghanistan, billions of dollars have been spent in the reconstruction efforts of Afghanistan by the so-called International Partners and Donors. In addition to over 2 trillion USD spent only on military efforts[1], more than 70 billion USD have been spent for the reconstruction and development of the country since 2001[2] without any significant improvement in Poverty Reduction or of Living Standards. For instance, the US spent nearly 12 billion USD (worth 120 billion USD in today's value) in the Marshal Plan[3] to rebuild whole Europe after the devasting World War 2, which had a much larger and vaster impact as compared to the case of Afghanistan.

Of the funds stated above, over 6 billion USD have been spent for the energy sector by major international funding agencies[4] [5] [6]and employing highly qualified experts, consultants and professionals. The question arises that *How is it that today the Energy Sector is in even worse situation?*

To keep the people calm and provide hope, the government together with its so-called partners have developed and announced several National Strategy documents, such as, Afghanistan National Development Strategy (ANDS 2005[7] and ANDS 2008[8]), National

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[1] Neta C. Crawford, Brown University's Watson Institute for International Affairs, September 2019, U.S. Spending for War in Afghanistan FY2001 – 2019, Rhode Island/United States

[2] OECD - Organization for Economic Co-operation and Development, February 2020, Afghanistan Aid at a Glance Charts, Paris France

[3] United States Department of State, Office of the Historian, Foreign Service Institute, Marshall Plan, 1948

[4] $1.57 billion (with additional $389 million planned for 2019-2024) by Asian Development Bank: Asian Development Bank Member Fact Sheet, September 2019

[5] $3,8 billion US Foreign Aid for Energy Sector of Afghanistan implemented trough different US Institutions (USAID, ARMY, DOD, DOE and TDA), Data from FAE - Foreign Aid Explorer Report Data Query for Energy Sector in Afghanistan, accessed April 2020 and SIGAR Quarterly Reports, July 2014, Section 3 Economic

[6] Nearly $1 billion by World Bank, Germany (GiZ and KfW), Government of India and other Donors directly

[7] Accessible through Website of reliefweb: https://reliefweb.int/sites/reliefweb.int/files/resources/AFA4970B33A0505E49257107000811C6-unama-afg-30jan2.pdf. Retrieved April 19, 2020

Infrastructure Program (NIP 2016) and Afghanistan National Peace and Development Framework (ANPDF 2017)[9], which include goals and objectives for the Energy Sector among other National Development linked sectors.

As an example, in ANDS in the year of 2005, it was envisaged that "By end-2010: electricity will reach at least 65% of the households and 90% of non-residential establishments in major urban areas and at least 25% of households in rural areas", but even after 10 years of the planned delivery the plan is yet to be implemented. The same was again mentioned and endorsed in the succeeding strategy papers; however, the Government is still to deliver on its commitments.

Several other objectives and goals have been set in the energy sector, like increase of domestic power generation by building of major infrastructure projects like dams or utilizing fossil resources for it or setup of a nationwide synchronized electricity grid; however, the Afghan Energy Sector could not achieve the stipulated vision and today after 15 years, the same goal needs to be set out again.

C. Situation in Afghanistan and Kabul City:

Today nearly 60% of Afghans have no access to electricity (access to the national utility grid), and 80% of those live in rural areas. With that being said, 40% of population that have access to electricity have to deal with severe load shedding and blackouts.[10]

81% of Afghanistan's Electricity is imported from neighboring countries[11] on high cost and the cost of imported energy has increased by 14 times from $16 million to nearly $300 million from 2007 to 2018[12].

The other 19% of power is supplied through Domestic Power Generation, half of which is provided through installed Thermal Generators with a high generation cost (diesel generators in provinces cost up to 50 cents/ kWh, compared to the average price of 6 cents/kWh from grid which is almost 10 times higher) and other half is provided from Hydropower, which is seasonal with a capacity factor of less than 40%. Compared to 1978 with 259MW installed Hydropower[13], no new hydropower (except for rehabilitating existing hydropower plants and the 42 MW Salma dam in Herat). Moreover, no gas or coal generation has been added since the 1980s.

Furthermore, the employment of 7 separate grids[14] supplying various regions in the country are not connected in a centralized manner, leading to major difficulties in proper and efficient management of the imported and domestic power production and consumption.

As for Kabul City, housing more than 6 million people (more than 15%of Afghanistan's entire population) the situation is not different.

The Country's Capital and the Economic Center has an assumed peak load of above 800 MW for 2020[15] (although the unsuppressed load is estimated significantly higher);

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[8] Accessible through Website of UNDP https://www.undp.org/content/dam/afghanistan/docs/ANDS_Full_Eng.pdf. Retrieved April 19, 2020

[9] Accessible through Website of Ministry of Finance of Afghanistan: http://policymof.gov.af/home/wp-content/uploads/2019/01/Natioal-Infrastructure-NPP.pdf. Retrieved April 19, 2020

[10] Asia Foundation, A Survey of the Afghan People, 2019, Source of Electricity: 28% in Rural Areas and 91% in Urban Areas for Power from the Grid (considering approximately 38 million Population for Afghanistan with nearly 26% in urban areas)

[11] United States - Central Intelligence Agency, Publications, The World Factbook, Afghanistan Energy 2016. Retrieved April 19, 2020

[12] Website of Da Afghanistan Breshna Sherkat (DABS), Financial/Audit Reports of 2007 and 2018. Retrieved April 19, 2020

[13] Asian Development Bank (ADB), Energy Supply Improvement Investment Program: Report and Recommendation of the President, November 2015, Manila, Philippines. Retrieved April 19, 2020

[14] FICHTNER GmbH & Co. KG, Consultants' Reports for Asian Development Bank (ADB), Power Sector Master Plan, May 2013, Stuttgart, Germany. Retrieved April 19, 2020

however, the available power is only about 300 to 400MW[16] not considering the load which needs to be further transferred through Kabul to the downstream provinces, such as, Logar, Paktiya, Khost, Nangarhar, Kunar, Ghazni, Kandahar etc. (which would decrease the available amount significantly once connected). This leads to major power outages and scheduled load shedding over 15 hours daily, which affects 80% of the households in the city.

Apart from some small rehabilitation works on existing dams near Kabul City, the Government has undertaken two major initiatives which, along with its problems, are explained below:

i. Construction of a 220kV Transmission Line from Uzbekistan to Kabul:

In 2005, the Government and the so-called international development partners decided to go for a fast track solution to immediately bring power from Uzbekistan to the major cities –Kabul, Mazar-e Sharif, Pul-e Khumri and Kunduz – choosing 220 kV over 500 kV Transmission Lines. With a total length of 442 kilometers and costs of nearly $200 million, the construction works were completed in 2009 and the line was finally charged at full capacity in 2011[17].

As the only means to feed Kabul – the largest load center in Afghanistan – from the power exporting countries in the north, it was observed very quickly that the line was technically not efficient for transmitting sufficient power over the 450 km stretch because of the large voltage drop, power losses and other technical difficulties.

Shortage of power or demand exceeding supply by this specific transmission line was not planned to occur for at least 15 to 20 years.

It was clear that there was a mistake either in the power system planning or the decision makers at that time had no choice but to align the design and construction cost with available funding provided by the donors.

ii. Tarakheil Generator Plant and its Huge Costs

Tarakhil 105MW diesel-fueled power plant nicknamed "the White Elephant of Kabul" located near Kabul, was awarded to a US company by USAID in 2007. USAID's goal was to complete the project before the Afghan Elections in 2009. Although the project was plagued by cost overruns, poor contractor performance and delays, the plant was ultimately completed in 2015 (8 years after the planned completion date) with a total construction cost of $335 million, nearly three-and-a-half times that of similar projects which costs normally about $100 million.

The installed capacity of thermal generation increased in Kabul City, but its production cost ($0.25–$0.35) per kilowatt hour (KWh) and which is mainly diesel (Diesel is both expensive and dangerous to transport in Afghanistan), is 4 to 5 times higher than imported energy as well as hydro power, and because of this high cost the Afghan national power utility could not afford to operate the power plant. The plant requires an estimated $245m per year for only the fuel. The power plant is operated partially only for emergency with nearly 1% of its total capacity and contributes nearly 0% to the electrification of Kabul City. Furthermore, this underutilization has apparently resulted in the premature failure of

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[15] FICHTNER GmbH & Co. KG, Consultants' Reports for Asian Development Bank (ADB), Power Sector Master Plan, May 2013, Stuttgart, Germany. Retrieved April 19, 2020 ANNEX 3.4-9, Development of Peak Load (in MW), HIGH SCENARIO for Kabul in Year 2020

[16] 300 MW is supplied by the 220 Transmission Line from Pule-Khumrie to Kabul and remaining by surrounding hydro power plants (Naghlu, Sorubi and Mahipar HEPP with capacity of 188 MW and 40% annual average utilization of it)

[17] Asian Development Bank (ADB), Emergency Infrastructure Rehabilitation and Reconstruction Project, Compeletion Report, October 2009, Manila, Philippines. Retrieved April 19, 2020

equipment, which has already raised high operation and maintenance costs, and can result in catastrophic failure[18].

Overall, we can summarize that for Kabul City spending of nearly $550 million in the recent 20 years has led only to the increase of imported electricity with high tariffs, even not addressing half of the required electricity.

D. Reasons for Failing:

i. Reliance on Foreign Institutions and Funding Agencies

Besides the fact that the reliance on Foreign Aid is always accompanied with following their agenda and being restricted or even unable to have a right to decide where and how to spend the available funds, the real intention of so-called International Partners is not to Develop but to keep the country dependent and not self-reliant.

Funding Agencies are providing financial assistance in two ways: Off-Budget and On-Budget. The government of Afghanistan has minimal or almost zero influence and role in Off-Budget projects' planning, design and implementation. The on-budget package is also divided into two sections: discretionary and non-discretionary. The discretionary portion is the smallest in the budget and it is the only part where Afghan Ministries (or Entities) can propose a long list of projects and the Ministry of Finance chooses a set of projects to be included in the budget, based on ambiguous criteria. On the other hand, in the non-discretionary budget, the Afghan Government is obliged to follow the international development partners' agenda. The only difference with off-budget model is that non-discretionary on-budget is channeled through MoF's Public Financial System.

Throughout, the Afghan Government has mostly been involved only when projects were completed or issues such as land acquisition and resettlement, or coordination among different government entities needed to be maintained.

For instance, the regional transmission interconnection projects with the neighboring countries, i.e. Tajikistan and Uzbekistan, are given priority over investment in generation in Afghanistan. Even projects proposed in the ANDS, especially on the generation side, were not considered by development partners, who cited various reasons such as transboundary water sharing treaties with neighbors[19], security concerns, high upfront costs etc.

Additionally, complex conditions and covenants are set by the donors in order to avail the available funds. For example, use of Eco-Friendly options or non-required and time-consuming procurement models which often culminate in high and illogical contract values. These burdens are mostly not followed by their origin countries itself, but hindering the fund receiver countries to solve their problems on fast track.

Furthermore, existing of more than 25 different so-called international development partners in the power sector have led to inadequate and inaccurate prioritization of investments due to lack of a unified, harmonized and coordinated joint agenda. For example, different development partners picked different locations of Afghanistan and built transmission lines and substations without cross-checking and cross-referencing the design and criteria has led to 7 islanded systems, thus, creating a challenge for the government to interconnect them.

Concerns over Aid Effectiveness in least developed countries are a global phenomenon, including Afghanistan. Various literature explains that provision of aid in the development sector did not achieve the expected outcomes, rather it exacerbated and complicated the problems. For example, $1 trillion in development assistance to Africa for the past several

[18] Special Inspector General for Afghanistan Reconstruction (SIGAR), Inquiry Letter to the U.S. Agency for International Development regarding Tarakhil Power Plant, June 19, 2015, Virginia, United States

[19] Afghanistan Research and Evaluation Unit, Case Study: Developing transboundary water resources: What perspectives for cooperation between Afghanistan, Iran and Pakistan?, May 16, 2016, Kabul, Afghanistan

decades could not overcome the chronic challenges and did not make the African people better off[20]. Furthermore, when governments receive aid, they sense less accountability to building up own capabilities as dependence on internal resources diminish.

ii. Role of Foreign Advisers and Consultants:

Another major problem connected with the donors is their linking of funds with hiring consultants mostly from their own countries with high salaries without any enrichment to the projects. Mostly they are taking the leading role and the governmental employees sitting simply in the back seat and just signing off on their overpriced timesheets. Payments for such consultants are often 100 times higher than the normal skilled governmental employees leading to major discouragement among the local staff. Additionally, the consultants working often also from abroad due to security issues and are very weak in picture about the ground reality leading to time consuming and long-lasting communications and disputes which affect project time and quality.

The justification for hiring such consultants is to bring expertise, transparency and knowledge sharing with capacity building. But in reality, it is mostly due to these consultants that projects are setup on high contract value and delivered with less quality. Furthermore, delaying projects is mostly in advantages of these consultants as their engagement is increased. Side Agreements, off the record, with the contractors are also not rare.

In respect to knowledge sharing and capacity building, consultants working for the international development partners often provide their deliverables (i.e. reports and assessments) in terms of paperwork and leave Afghanistan without building the institutions. Today, government employees in the energy sector line-ministries and DABS are incapable of carrying out their tasks without the assistance of international advisors and consultants, including policy analysis, sector planning, project preparation, bidding processes, project implementation, monitoring and evaluation, etc. despite fifteen years of consistent spending on capacity building. SIGAR, RAGA, ADB and World Bank assessments and evaluation reports assert that the institutional and personnel capacity of the Afghan Energy Sector is still weak and incapable of carrying out all the sector tasks e.g. policy, regulation, planning, project implementation, and operating an electrical utility among others by Afghans alone. The sector is not only predominantly reliant on foreign aid, but it requires technical assistance in all facets of the sector. Another example is that the regulatory framework is not in place until today. Consequently, it delayed the private investment in the power sector for a decade.

iii. Government Internal Mismanagement and Political Disinterest:

In addition to the negative role and impact of funding agencies and their linked consultants, the government itself lacks proper and efficient management. Several and parallel existing government bodies[21] bring ambiguity, overlap, confusion and contradiction in the scope of work and mandates. What happens in practice is that political offices such as ministerial and deputy ministerial level positions have different levels of influence and authority, depending on their political affiliation or political personality and career. Disputes and negative competitions among these ministries and governmental institutions often end up in disadvantaging the Afghan people.

The most important issue, which is the real basis leading to the above-mentioned obstacles and problems, is the non-presence of political will. The situation that most political figures are busy with is their own personal agendas that has led to most decisions being taken in favor of hidden interest paving way for external actors to enter the field and influence the overall sector in a negative way.

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[20] Dead Aid: Why Aid Is Not Working and How There Is a Better Way for Africa by Dambisa Moyo, 2009

[21] For instance: Ministry of Energy and Water, Ministry of Mines and Petroleum, National Utility Company - DA Afghanistan Breshna Sherkat (DABS), Ministry of Rural Rehabilitation and Development, Ministry of Finance and Ministry of Economy.

E. Impact of Failure to Supply Energy:

Failure of the Government to improve the electricity access after nearly 20 years with support of its so-called international partners has had major impact on the people of Afghanistan.

Per capita consumption of electricity in Afghanistan is among the lowest, at about 141 kilowatt-hours (kWh) a year whereas the global average energy consumption is about 3,100 kWh, with top values of 50,000 kwh in Iceland, 24,000 in Norway or 12,000 in the United States. Even Neighboring countries like Tajikistan, Turkmenistan, Iran, Pakistan, China etc. provide 4 to 30 times more electricity to their people than in Afghanistan.[22]

This puts Afghanistan in an extreme energy poverty position. Considering the fact that main source of power is imported electricity from other countries, the high costs are not affordable for normal people which has led to major areas, especially the capital, relying on only one Transmission Line which is the reason for no energy security and has resulted in sometime near to one month electricity black outs if the line is damaged by incidents.

Above impacts have major influence in different areas affecting further impacting the life of Afghan people in a negative manner beside the burdens of the ongoing war.

i. Health and Environment

Over 97% of the rural population is estimated to use solid fuels for cooking, with the result that Afghanistan is among the top 10 countries most affected by indoor (household) air pollution and Particulate Matter (PM) Pollution.[23]

Furthermore, crippling winter electricity outage and peak demand in the Afghan capital has led to smoke from coal and wood-fired heaters making breathing nearly impossible resulting in thousand direct illnesses and dead, especially the weak and elderly.[24]

ii. Economical / Public Service / Living Standard

Despite the availability of abundant highly skilled young population and educated workforce, business and industry can't be established and succeed due to none availability of required electricity most technology rely on. Despite that, non-availability of energy during cold season which could be addressed with electricity culminates into impacting basic services. Most notable is the education sector which suffers for nearly 3-5 months a year.

F. Alternatives not Used or Exhausted:

Comparing the required nearly 2,000 MW countries electricity demand[25] to the available potential electricity generation capacity of nearly 312,000 MW from renewable energy sources only[26], it is quite clear that the government has failed to utilize at least 1% of the overall available potential despite more than $4 billion investments in the past 20 years.

As for Kabul City only, two major dam projects, Baghdara and Sorobi 2, near Kabul could provide 390 MW[27] clean/renewable hydroelectricity free of charge on an initial investment

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[22] From Wikipedia, the free encyclopedia, List of countries by electricity consumption. Retrieved April 19, 2020

[23] World Health Organization (WHO), Programme Areas, Environmental Health. Retrieved April 19, 2020

[24] aljazeera.com, Kabul: 17 killed due to hazardous levels of air pollution, December 31, 2019. Retrieved April 19, 2020

[25] FICHTNER GmbH & Co. KG, Consultants' Reports for Asian Development Bank (ADB), Power Sector Master Plan, May 2013, Stuttgart, Germany. Retrieved April 19, 2020 ANNEX 3.4-9, Development of Peak Load (in MW), HIGH SCENARIO for Country Total in Year 2020

[26] Asian Development Bank (ADB), Energy Supply Improvement Investment Program (RRPAFG 47282-001): Sector Assessment (Summary): Energy, 2015, Manila, Philippines. Retrieved April 19, 2020

[27] Afghanistan Investment Opportunities in Energy Sector prepared for India-Afghanistan Trade and Investment Show in Delhi, accessible through DABS official Webpage - Investment Opportunities. Retrieved April 19, 2020

cost of about $516 million[28] and construction period of about 3-4 years. With annual generation capacity of 1,857GWh, both would address more than 80% of actual power supply[29] saving nearly $110 million annually and repay their initial investment within 4-5 years. Besides that, it would have increased irrigation coverage and contributed to the overall economy of the country especially created thousands of working positions.

Despite the fact that both projects were prioritized and listed in the ANDS among other similar strategic and economically lucrative projects and endorsed by the donors, both and also other same projects (for example: Gulbahar, Shatoot and Darunta HEPP) have been ignored until today. Despite these, less efficient and less strategically important projects with higher costs have been selected with longer construction periods of 8-12 years leading to this drastic situation.

G. Solutions:

As it is clear in the sector, Afghanistan electricity crisis can be effectively and efficiently addressed if the country's huge resources and potential, especially in the generation, are utilized. In actual status, such approach needs to be in a special and unrestrained way in order to implement on fast track.

However, most importantly, which is also applicable for other sectors that are in a similar condition is that the country needs a government which is really interested to address the peoples' needs and problems and is willing to change it by all means. A government which relieves itself from external interference, burdens and conditions and exploits its own capabilities.

Written for the Central Media Office of Hizb ut Tahrir by

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[28] Baghdara with $336 million and Sorobi 2 $180 million costs. Stated costs has been deducted by 40% as it is usual that international consulting firms estimates costs 40-50% higher due to security and unforeseen risks.

[29] Baghdara 967GWh + Sorobi2: 890GWh compared to actual Kabul electricity consumption of nearly 2,200GWh