Yemen electricity generation

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In Yemen, only 41.7% of the population can access the electricity network, and rural electrification is estimated at 22.8%. The sector cannot maintain power production to meet the demands and constrains the socio-economic development of the country. DPPR targeted to expand the coverage of electricity network to 53% of the population, increase generation capacity of public network to 2,114 MW, and reduce transmission loss to 19.5%. To achieve these goals, Yemeni Government is converting diesel generation into gas turbine generation utilizing natural gas produced in Yemen, and introducing renewable energy in remote areas out of electricity grid.

Based on "Cool Earth Partnership" initiative of GoJ, government of Japan has decided to help Republic of Yemen by establish a semi pilot project of power generation by using the solar photovoltaic system to generate power for Al-Wahda Hospital in Aden. The project aims to mitigate affects of global warming by reducing GHGs emission and improve energy efficiency.

This program targets technical staff in Public Electricity Cooperation (PEC) in Yemen and provide them trainings, such as "Tig Welding", "Transmission Network Protection", "Power Cable Jointing", and "Diesel Power Plant Maintenance" by the cooperation of National Electric Power Co. (NEPCO), in order to cope with the lack of qualified technical staff in power sector in Yemen.

This work is a summary of the main of Yemen"s contribution to a regional Middle East and North Africa (MENA) project titled "Energy Efficiency Indicators". The project covered ten countries and started January 2011. The final Report was published on October 2012 [1]. The political unrest which erupted in many of the participating countries had led to delays in finalising the project.

The political unrest and lack of a National Data Bank has made the data collection phase very tedious. Nevertheless the data availability has reached more than 63 % which provides a sufficiently good basis to perform the study. Accordingly the indicators were calculated and the work was performed.

Since human activity is heavily dependent on energy usage and generation, energy indicators have long been used as a measure of a society"s development and sustainability. For example, in 1996 the United Nations Department for Policy Coordination and Sustainable Development complied over 130 indicators [2]. Such a large set can provide an accurate way to assess different aspects of sustainability and development [3-6].

In total 50 indicators were calculated covering a period of 7 years, 2003-2009. The civil unrest which started end of 2010 early 2011 has made it difficult to extend the analysis beyond 2009. The results of the calculations are discussed and analysed. The paper has shown that both energy efficiency and consumption are extremely low in Yemen. Finally, the paper shows also that energy dependency is reaching zero soon and within few

years can be positive which shall make the country in a difficult economic situation due to heavy subsidies on energy sector and expected increase of energy consumption. Here one can see the value of this work as an initial step to help stakeholders of the sector to develop rational energy strategy for Yemen.

Energy demand was in 2009; 7423 thousand ton oil equivalent (ktoe) [7, 8]. This demand is met by local production and imported oil products of 4550 ktoe. However, Yemen exports crude oil and natural gas which reached 12,694 ktoe in 2009. Figure 1 shows the energy profile of the country. The grand total of energy production in 2009 reached 15,567 ktoe. The transport sector was accounted for 34 % of the consumption (most consumption), while minimum consumption was due to the tertiary sector. The profile structure can be explained by the fact that only 70 % of the country is covered by electricity, tourist industry is not strong due to the high security risk and biomass is not included in residential consumption.

Energy consumption of different sectors

The energy resources in Yemen consist of the following:

Oil [2]: It is the main source of energy. Yemen has been exporting oil since the nineteen eighties. The amount of produced crude oil reached 400,000 barrel/day in nineteen nineties but in 2009 it was 284 barrel/day.

Gas [2]: Currently, the certified gas reserved is 18.215 tcf. From this amount 9.5 tcf is allocated for export. The rest can be used for domestic needs or for export.