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Mr. Qudratullah Delawari
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cc: Dr. Qayoumi, Chief Advisor of President on Infrastructure

Your reference:
Your letter dated:
Our reference: 3890A01-000/MYL/ZHE
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Date: 1 February 2016

G 0134 AFG - Energy Master Plan Development - Preparation Phase 1 - (EMD-PP1)
Fichtner Letter No. 110
Route Options for 500 kV Transmission Line between Dasht-e-Alwan and Kabul

Dear Sir,

As requested by DABS, we briefly summarize herewith the reasons for the DABS / ADB decision to select the Salang Pass route for the north-south connection in Afghanistan.

In the 2012 Afghanistan Power Sector Masterplan (ASMP) desk study conducted by Fichtner for the Asian Development Bank, from its home office in Stuttgart, the optimum solution for the afore-mentioned north-south connection was investigated and two transmission line corridors for the subject routing were considered, namely

a) Dasht-e-Alwan (Pul-e-Khumri) to Kabul (Arghande) using Salang corridor, or
b) Dasht-e-Alwan (Pul-e-Khumri) to Kabul (Arghande) using Bamyan link.

The advantages (+) and disadvantages (-) of the Salang Pass route are the following:

(+) The costs to build and operate the Salang Pass route are lower as the line is shorter;
(-) Adding in the future a third line to Salang Pass may not be feasible;
(-) Access in winter to some areas along the route, up to 4,500 m height is limited;
(-) The area is exposed to avalanches and other natural hazards;
(-) Routing all lines to Kabul on one corridor increases the risk of total supply loss.

The advantages (+) and disadvantages (-) of the Bamyan Pass route are the following:

(+) Highest point of the line is 3,500 m which is lower than in the Salang Pass;
(+) Adding in the future a second line to Salang Pass remains possible;
(+) Kabul power supply depends on separate line routes which reduces total supply loss risk;
(+) Future thermal and hydroelectric power generation near route can be easily evacuated;
(+) Possible connection of the Bamyan area to the national grid of Afghanistan;
(-) The costs to build and operate the Bamyan Pass route are higher as the line is longer;
(-) The area around Bamyan is considered currently unsafe compared to the Salang Pass area.

Further than the arguments for or against each route listed above by Fichtner and considered in the studies, Fichtner understands from ADB and Afghanistan Government side, that the Bamyan corridor was specially favored in case the following assumptions materialize:

(i.) By 2018, 800 MW coal to power generation plants will be built by Hajighak iron mine investors (Canadian-Indian Consortium) plus a 400 MW coal to power generation will be built by Aynak copper mine investors (MCC China);
(ii.) CASA-1000 project would use the Salang corridor in 2014 leaving no space for the subject line to utilize Salang corridor.

In 2013, Fichtner carried out an on-field survey to ascertain the subject line routing through the Salang Pass, supplemented by high resolution satellite imagery to verify if this route could be used. The results of the survey showed that the route was possible.

The funds available from ADB were sufficient to finance an overhead transmission line through the Salang Pass route but were insufficient for the Bamyan route which was approximately 35 million USD more expensive (due mainly to the longer route). At the time the decision for the Salang Pass was made, MEW also had concerns on the security situation between Doshi and Bamyan which would have posed significant construction challenges.

By mid 2013, when such walk through survey was completed by Fichtner team, power generation with coal [refer to (i.)] was seen as postponed to some distant future date. In the meantime, the CASA project [refer to (ii.)] has found an alternative route through Panjsher.

In view of the above facts and developments, it was decided in 2013 by the different parties involved (DABS, ADB, MEW and MOF) that the Salang Pass corridor would be used to construct the 500 kV line between Dasht-e-Alwan (Pul-e-Khumri) to Kabul (Arghande).

In the meantime the 500 kV overhead transmission line across the Salang Pass route has been tendered and negotiations were carried out with the successful bidder. Changing corridors from the Salang Pass to Bamyan could have the consequences listed below. These possible consequences require careful analysis to verify if they will actually happen and in to which extent and if mitigation measures are possible:

a) The additional costs for the overhead line would be approximately 35 million USD.
b) To provide power to Bamyan, a 500/220/20 kV substation at Bamyan is required.
c) There might also be additional costs for security and demining during the construction period.
d) The project will be delayed by approximately two years which is the time required for the design and tendering of the new route.
e) Other indirect consequences could be the delay in the implementation of the power purchase and sales agreement with Turkmenistan (signed in Nov. 2015) cannot be implemented in time by 2018.
f) Power to the provinces in the south and Kabul might have to be deferred by two to three years.
g) The completed downstream power infrastructure cannot be energized and cannot be protection against theft.
h) Project financing may be in jeopardy from US and Japan (90% for this line) if the project is delayed.

In case the final decision is to keep the Salang Pass route, an alternative to provide the Bamyan regions with energy can be investigated. These could be a photovoltaic generation or a 220 kV transmission link from Charikar which will have more supply options (from TAJ, UZB, TKM and local generation).

Due to the advanced stage of the project, Fichtner considers that keeping the Salang Pass route will be the most appropriate solution. If the contract with the winning bidder is signed shortly, works could start within the next weeks.

Yours sincerely,

Fichtner

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Projects Director

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Project Manager