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BARQ II. IN AFGHANISTAN

ii. In Afghanistan

Compared to Iran, Afghanistan is a very modest producer of electricity. Annual production is on the order of a billion kwh (1.039 billion in 1362 Š./1983-84), which represents a theoretical output of about 70 kwh per inhabitant, one of the lowest in the world. This last figure, however, has very little meaning in a country where only 5 percent of the population has access to electricity (about 100,000 households in 1977).

Another difference between the two countries lies in the means by which electricity was introduced and the development of the electrical infrastructure achieved. In Afghanistan, it is the public authorities who played the leading role from the beginning, thus illustrating a type of planned economic development that is quite original.

Except for a handful of small diesel generators installed in several royal palaces beginning in 1894, the true beginnings of electrification in Afghanistan go back to 1918, when the American engineer A. C. Jewett completed the construction of the first electrical plant in the country on behalf of an English firm. Established at Jabal al-Serāj, on the Sālangrūd about 65 km north of Kabul, it consists of a hydro plant with a capacity of 1,500 kw. Begun in 1911, the plant was a risky venture; the three turbines, as well as the rest of the heavy machinery, had to be brought by land from Peshawar on nine wagons drawn by elephants, which took two and a half months to make the journey, and workmen had to be recruited by means of three-month forced-labor

contracts (*hašt-nafarī*, Bell, pp. 194ff.). The plant originally supplied electricity to the royal palace and the main public buildings of Kabul, as well as to the state workshops, which had operated until then on wood fuel. The power station at Jabal al-Serāj later underwent two enlargements but today supplies only the town of Jabal al-Serāj, which owes its industrial character (cement, textiles) to the plant.

During the period 1920-40 only limited progress in electrification of Afghanistan was recorded. Electricity was introduced at Qandahār, then at Herat, thanks to two tiny hydro plants finished in 1314 Š./1935 and in 1315 Š./1936 respectively, one built on an irrigation canal branching off of the Arḡandāb (Bābā Walī, 266 kw), the other on the Harīrūd (Jalwāṛča, 80 kw). The electrification of Kabul was enhanced by a small diesel plant of 1,300 kw for industrial use. Thus by 1940 installed capacity in the entire country hardly surpassed 3 mw, and private consumption was practically nonexistent.

The process of distributing electricity to the households of the capital was actually initiated only in the following year (1941), with the opening of the hydro plant at Čak-e Wardak (capacity: 3.360 kw), constructed on the upper Lōgar, 83 km southwest of Kabul, by the German firm Siemens. At the same time, the textile and food-processing industries that were being established in the Qaṭaḡan constructed their own plants to cover their energy needs: a stream-powered hydro plant at Pol-e Ḵomrī, which also supplies the town (1320 Š./1941, 4,800 kw), a coal-fired plant for the sugar factory of Baḡlān (1322 Š./1943, 1,200 kw), and several diesel plants belonging to the Spīnzar cotton company around Qondūz. In 1335 Š./1956 generating capacity had thus risen to 16 mw, for a production of 36 million kwh.

It was then that the decisive policy of the first two five-year plans (1335-46 Š./1956-67) began; at the end of the period, the country's generating capacity had risen to 226 mw.

Though not all of the projects included in the plans could be realized, because of lack of funds, the electrical production sector did not suffer a lowering of its budgetary priority. It absorbed about 10 percent of aggregate actual investment, a considerable amount, which ensured an average annual increase in production of nearly 60 percent in that period (286 million kwh in 1346 Š./1967). The emphasis was placed on hydroelectricity, the potential of which is very important in Afghanistan, being variously estimated, according to the sources, at between 2,500 and 36,000 mw, with the actual figure

doubtless lying between these two. But the extreme seasonal irregularity of the riverine flow imposes reliance on the expensive technology of reservoir dams. Financial constraints have limited the harnessing process to the Kābolrūd alone, a river that is both more accessible and closest to the demographic center and principal energy market in the country. Thus downstream from the capital, on both sides of the confluence with the Panjšēr, a series of four hydro plants with a total generating capacity of 200 mw has been built: the Darūnta and Naḡlū dams built with Soviet aid, the Sarōbī dam and the Māhīpar stream-powered plant built with West German aid (Figure 28, Table 40). The Darūnta dam, which supplies Jalālābād with electricity, is the only dam connected with an important modern irrigation project. The other dams are devoted exclusively to production of electricity for the Kabul agglomeration and for the important center of textile manufacture at Golbahār, which are linked by a grid of 110-kilovolt lines.

Since 1967 the drive toward construction has slowed noticeably. The only heavy installations completed have been, on the one hand, two 36-mw turbines at the Kaǰakay dam on the Helmand—a project planned since the completion of the dam in 1331 Š./1952 but delayed several times—and, on the other hand, the construction of two large suburban steam plants at Emām Bokrī (Dehādī) southwest of Mazār-e Šarīf (48 mw) and at Pol-e Čarḵī east of Kabul (45 mw), the first running on natural gas extracted from the nearby fields of Jowzjān and the second, planned to stop load shedding due to poor hydraulic conditions in dry years and in summer, running on fuel imported by road from the U.S.S.R. Under these conditions, installed capacity only doubled between 1967 and 1980 and since then has remained at around 420mw.

Present electrification efforts are directed toward renovation of existing plants to improve productivity and toward modernization of the transmission and distribution networks. The latter have remained entirely in embryonic form (aggregate length of lines: ca. 5,000 km), as there is no interconnection among the different regional production centers (Figure 28). They are mostly overhead and antiquated, leading to heavy line losses from clandestine tapping, as well as from the poor condition of the meters and of the lines themselves, which have been estimated at up to 53 percent of production in 1971 and up to 41 percent as late as 1983. The indispensable program of rehabilitation is being accomplished in the Kabul region with the aid of the German Democratic Republic, while in the north of the country, the establishment of a first grid of high-tension lines (220 kilovolts) interconnected

with the Soviet network has been under way since 1981; completion is scheduled for 1991, and there is a possibility of subsequent extension to Kabul.

The organization of the Afghan electricity sector has been subject to many revisions during the twentieth century. Production and distribution had originally been entrusted to the Ministry of Commerce. In about 1933-34 these functions were assumed by the newly established Ministry of Public Works. A turning point came in 1319 Š./1940, when the private firm Tanwīrāt, soon pashtunized as Də Brēšnā Lōy Šerkat, was created. This firm obtained the concession for construction of several public plants, but the discovery of financial irregularities in 1955 forced the state to take control. Finally, a reorganization of several public agencies in the production-and-distribution sector took place in 1345 Š./1966. From it emerged the Də Afḡānestān Brēšnā Moʾassesa, a state enterprise, at first attached to the Ministry of Mines and Industry, then in 1356 Š./1977 to the Ministry of Water and Energy, and, finally, since 1361 Š./1982 to the new Ministry of Electrical Energy (Wezārat-e Anaržī-e Barq). This agency does not have a monopoly on either production or distribution of electricity in the country; it operates only 87 percent of the country's generating capacity, and its share of actual production is still smaller, having shrunk continuously since 1978 (80 percent in 1978, 75 percent in 1981, and 72 percent in 1983). The remainder is divided between two types of independent producer: on the one hand, private producers geared toward industrial use but also supplying 2,500 households, with a capacity of 14 mw (3 percent of national capacity), and, on the other, public producers directed by various other ministries, with a maximum capacity of 43 mw of generating capacity (10 percent of national capacity). The entire electrical sector (production, distribution, and consumption) employed only 3,507 people in 1362 Š./1983, of whom 1,983 were in Kabul.

Of a total generating capacity of 419 mw divided among 40 plants, hydroelectricity accounts for 70 percent (294 mw), steam power for 23 percent (97 mw), and diesel power for 7 percent (28 mw). The development of this distribution ratio over the last fifteen years has been marked by a diminution in the relative importance of hydroelectricity, which reached an effective maximum of 95 percent of generating capacity around 1970. During the same period, steam-powered electricity experienced the most spectacular growth.

Electricity is far from being available everywhere in Afghanistan; certain provinces such as Orozgān and Paktīkā are totally without it, while in the other provinces only the urban centers, about thirty in all, are electrified. It

should be noted that only the largest among them (Kabul, Qandahār, Mazār-e Šarīf) have a permanent supply of electricity, at least in certain quarters, which explains their attraction as locations for new industries. In all other towns electric service is limited to two or three hours a day, from nightfall to about 10:00 p.m., and the number of customers within a particular locality is extremely small (public buildings like cinemas, hospitals, police stations, hotels, restaurants; private homes of high civilian and military officials, as well as of local notables); industries established in such centers continue to depend on their own electrical production. Rural electrification does not exist apart from a few electrified villages in the immediate vicinity of Kabul and Laškargāh.

The electrification of the entire country, which has been a declared goal of every Afghan government since 1955, is thus almost as far from becoming a reality as ever. Present plans are for harnessing new streams (the Harīrūd at Salma, the Balḵāb at Čašma-ye Šafā, the Kokča) and for multiplying small local plants, especially in the gas-producing region of the north; however, in the prevailing political context, most of these plans are not feasible. Since 1980, only two new plants have been opened: one at Fayżābād, the other at Asadābād, both quite modest in size. In fact, electricity is at stake in the present political struggle. The antigovernment guerrillas regularly blow up the pylons of the transmission lines and sometimes damage the plants themselves. The distribution of electricity has thus become very erratic. At Kabul cuts in current have been chronic since 1982 and were particularly frequent and long-lasting in 1983. In the face of such disorganization, individuals adapt according to their means; the great majority of the population has recourse to paraffin lamps, which had fallen into disuse in Kabul but the sale of which has experienced a spectacular boom in recent years. The more privileged equip themselves with small domestic gasoline generators, which have become a typical feature of the urban landscape, while many manufacturers and merchants have furnished their factories and shops with emergency generators themselves.

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