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TÍTULO: Plan bajo la Autoridad de Desarrollo de Thal en el desierto en Punjab, Pakistán.

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RESUMEN: El desierto de Thal era conocido por su austero paisaje improductivo, infestado de altas dunas de arena, escasez de vegetación, escasez de agua, clima extremo y pobreza de siglos. En 1949, el gobierno de Pakistán preparó un plan bajo la autoridad de desarrollo de Thal para desarrollar el desierto. La autoridad de desarrollo de Thal transformó la mitad del desierto de Thal en exuberantes campos verdes en solo veinte años. Ahora, los habitantes del desierto están felices y llenos de confianza. El documento proporciona información sobre la ubicación geográfica del desierto de Thal, los antecedentes históricos del canal de Thal, las condiciones socioeconómicas de las personas de la zona antes y después del desarrollo de Thal. Este trabajo de investigación es un intento de resaltar el evento histórico del desarrollo del desierto.

PALABRAS CLAVES: Thal Kalan, Tada, Tadab, Chak, Mandi Town.

TITLE: Plan under Thal Development Authority in the desert in Punjab, Pakistan.

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ABSTRACT: Thal desert was known for its austere unproductive landscape, infested with high sand dunes, scarcity of vegetation, shortage of water, extremes of climate and poverty from centuries. In 1949, Government of Pakistan prepared a plan under Thal Development Authority to develop the desert. Half of Thal desert was changed into lush green fields by Thal Development Authority just in twenty years. Now, the inhabitants of the desert are happy and full of confidence. The paper provides information about the geographical location of the Thal desert, the historical background of the Thal canal, socio-economic conditions of the people of the area before and after Thal development. This research paper is an attempt to highlight the historical event of desert development.

KEY WORDS: Thal Kalan, TDA, TDAB, Chak, Mandi Town.

INTRODUCTION.

If we look into the map of Pakistan, there seems an area of 5 million acres between the 71 to 72 degrees at longitude and 30 to 32.5 degrees at latitude, of which one side Indus River and on the other side Jhelum and joint streams of Jhelum and Chenab Rivers flow is called Thal or Thal Doab or Sindh Sagar Doab.

Thal is derived from a Sanskrit word meaning waste land and other theory is that the word Thal is a distorted form the word 'Tal' which means the bed of a river (Public Relation Division, 1954, p. 7).

The shape of Thal desert is like an inverted irregular triangle with its apex in the south and base to the north along the Salt Range. The length of the base is 65 miles long and the length from base to

apex is approximately 175 miles. Thal desert lies in the districts Mianwali, Khushab, Jhang, Bhakkar, Layyah and Muzaffargarh. At the time of partition of Subcontinent it was the part of districts Shahpur, Mianwali and Muzaffargarh (Thind, 2009, p. 52).

There are various theories about the formation of the Thal desert. The first one is that thousands years ago the Indus Rivers flowed into the center of this region, then it changed its way and deposited the big sand dunes, so in this way the Thal desert was formed. The second theory is that the Thal and the Bikaner desert were the part of the sea and were formed because of geographical changes. The third one is that the sand storms shifted the sand of Rajputana and Thar Desert sand in this area. The last opinion about the formation of the Thal desert is that there was a sea in this area thousands of years ago, then it shifted to south of the region (Public Relation Division, 1954, p. 7).

There are three different and distinct types of soil in Thal area which came into notice after a survey of the area. Firstly, there is a long narrow strip having hard Clay soil from east to west along the Salt Range, this narrow belt is in the north of Thal desert. It contains about 54 per cent Silt, 43 per cent Clay and 3 per cent of coarse and fine sand. Secondly, Thal Kalan captures the whole of the eastern portion of the tract, scanty rainfall shade less sand dunes which keep on moving to and for with the winds mark this out as one of the few desolate tracts which still remain uncultivated in the Punjab.

Thal Kalan lies in both Bhakkar and Layyah areas. Thal Kalan is really a desert, barren and lifeless devoid not only of animal life and birds but also of vegetation. It is about 104 miles long and its width varies from 30 to 50 miles. Thal Kalan area is sand soil having 26 per cent of less Silt and Clay, 22 per cent fine sand, 55 per cent of more coarse sand.

As compared to the Daggar area the sand dunes in the Thal Kalan are of much larger and bigger size. Lower portion of the soil of Thal Kalan is stiff and hard but is generally covered with sand. At certain places from where the sand has been drifted away by the winds the hard soil is visible

(Williamson, 1915, p. 47). Thirdly, there is a long strip which lies in between the high bank of the river and Thal Kalan from north to south and it forms the western boundary of Thal desert. This belt is called Thal Daggar in north and Thal Jandi in south, Thal Daggar lies wholly in the Bhakkar and Thal Jandi wholly in Layyah area. It is mainly sandy loam; it contains 61 per cent fine sand, 21 per cent Silt, 15 per cent Clay and 3 per cent coarse sand. The Daggar is such type of land in which high sand dunes are not found and is cultivable although it is hard. The width of Thal Daggar is approximately 17 Kilometers (Abdul Haq, 2003, p. 19).

Before the Thal development, the people of the area were very simple in their dress and food. Men had long Moustaches, wore Pattka whereas men and women wore Chola and Manjhla and these wearing clothes were called Thigras. Bread of wheat or barley was eaten for nearly six months along Lassi if available. In the remaining month, Peehlu and watermelon were eaten in summer and Turnip was eaten in winter.

People were living in three types of houses; the names were Kothas, Jogas and Sahl's. Well, Jhalars and inundation canals were the sources of irrigation. Jhalars and inundation canals were used in Nasheb whereas wells were mostly used in Daggar Thal (Khokhar, 1998, p. 42).

In Thal Kalan, the agriculture was dependent on rain water. The northern Thal Kalan was more Barani than southern part. Wheat was the main crop and Cotton, Gram, Bajra, Jowar, Turnip; Barley vegetables were also cultivated in the area. The northern part of Thal Kalan was totally dependent on Barani cultivation and was more indebted than other parts of Thal.

The main profession of southern parts of Thal Kalan was Maldari, so they grazed animals as they had a variety of bushes in the area. Camels, sheep, goats and cows were grazed by the people. They had their own cattle or they grazed the cattle on agreement which was called Shah Gumashta. The grazers were very happy with their life and were free from debt. Milk was their main food item and sometimes meat.

The Daggar Thal was mostly agricultural, fully depending on well cultivation and Maldari was a helping profession. The people were less indebted than the northern Thal Kalan area because there was surety of well water for farming.

Means of communication were very poor in the area (Bedi, 1934, p. 19). There were some main roads, one of them, was D.I.Khan and Jhang road which passed via Bhakkar, Mankera and Haiderabad whereas the second one was MM road which connected Mianwali with Muzaffargarh via Kalurkot, Darya Khan, Bhakkar, Behal, Karor and Layyah. Besides of these roads, Railway service was also provided since 1886. But the far-flung areas such as Nurpur, Jandanwala, Goharwala, Dullewala and Shergarh had no means of communication, so Camels were used for transportation. There was no light or heavy industry, no garden and other facilities of life such as health and medical were also rare in the area (Tucker, 1879, p. 10).

Question arises in the minds of people that why Government of Punjab decided to irrigate and develop a deserted area? How area was developed and people were settled in Thal? Did Government of The Punjab succeeded to achieve its goals, if yes then how much? The Punjab was annexed with the British in the year of 1849 and there was no perennial canal system but some inundation canals existed to irrigate the fields in the Subcontinent.

The new British Government planned to develop the irrigation system of the Subcontinent for perennial canals, so that the water would be available twelve months of the year and the construction of Upper Bari Doab Canal was started in 1851.

Several new projects were submitted to the Central government i.e. Sutlej Valley Project, Bhakra Dam, Haveli and Thal from Punjab and Sukkar from Sindh province (Fowler, 1950, p. 22). An idea to provide irrigation facility from Indus River on perennial basis was conceived firstly in 1873 during the nineteenth century to vast tracts of land called Sind Sagar Doab or Thal. There was no

water dispute between the provinces of the subcontinent in the early of 1900 but in next some years the situation was totally changed.

The province Sindh, as a lower riparian, felt that her river rights were threatened. So, the project of 1873 was rejected and was revised many times in 1901, 1917, 1919, 1921 and 1923. The project of 1925 is called Lesser Thal Project and it was designed to irrigate western portion of Thal desert and the Greater Thal was left without irrigation by minimizing its area from 4.60 to 2.19 million acres but was rejected due to the lower provinces and the Sindh province was the main reason of its rejection.

In 1936, the Lesser Thal project was approved by the Government according to which a canal of 6000 Cusecs capacity was provided and eastern portion was left without canal water. The eastern portion of the Thal desert is called Thal Kalan, it means the irrigation facility was provided only to Daggar Thal and Thal Kalan was deprived of the canal water because of the agitation of the lower riparian's (Irrigation Department, 1991, p. 6).

The work on Thal canal project was begun in 1939 but was stopped in the year of 1943 due to 2nd world war, after some delay, the work started again on project. At the time of partition, Jinnah Barrage, Dullewala Branch and Main Line upper were completed and Main Line Lower was under construction. The Thal canal was failed to achieve its objectives because the hot climate of the Thal prevented the colonization process and sand storms choked up the water channels (Irrigation Department, 1993, p. 4).

The arrival of a large number of refugees from India in 1947 considerably increased the pressure on lands. In the Montgomery district, the population was increased by 20 per cent and in Lyallpur district by 32 per cent which was so dangerous for future. There was only one way for the government of Pakistan to shift this agricultural population from the congested districts to the Thal region permanently, because Thal was thinly populated and sparsely cultivated. The central and the

provincial governments decided to extend the irrigation to the Thal area with determination, so that the refugees could be resettled and Thal canal project could be succeeded.

The Thal Canal project consists of one main canal taking off from the Indus River at Kalabagh. This is a lined channel with a capacity of 6,000 cusecs, capable of being increased to 10, 000 cusecs necessary. This canal trifurcates at its tail into three channels with capacity of 4524 cusecs, 1463 cusecs and 613 cusecs respectively. This large used amount of the project which was being met by the provincial resources could only be justified on the basis of increased productivity and increased return by way of land revenue and water rate.

Irrigation facilities for approximately half a million acres were available up to the 1949 but only 88, 000 acres were irrigated and remaining were choked up which presented a worse picture about the failure of the project. The difference in the two figures represented the enormous loss of productive capacity and potential revenues. The Thal Canal Project could therefore, become remunerative only if the entire area, to which irrigation facilities were extended and was developed (Public Relation Department, 1954, p. 23).

Thal Development.

In the year of 1949, Thal Development Act was passed in the assembly. After the formation of Thal development Act, Punjab government formed Thal Development Advisory Board (TDAB) in May 1949, so that the initial steps could be taken and it was considered a government department. The objectives of formation of TDAB were to provide a foundation and to take preliminary steps for the establishment of Thal Development Authority (hereafter TDA).

TDAB set up three specialized departmental committees which were the land utilization committee, the colonization committee and the tractor farming committee for the development of Thal area. TDAB requested the different departments such as Punjab Public Works Department, Resettlement

and Colonies Department, Veterinary Department, Agriculture Department and Forest Department to play their role for the development of the Thal area and prepare schemes for farms, gardens, livestock farms, forests (Public Relation Department, 1954, p. 22).

Under section 2 of the Thal development Act 1949, TDAB was converted to TDA on August 27, 1949 (Information Department, 1949, p. 190). According to the Thal development Act of 1949, The TDA board would be consisted of seven members out of which four members would be official and three would be non-official. One official member would be appointed as the chairman of the authority and other three would be taken from the finance, irrigation and colonization department. The three non-official members would represent the Shahpur, Mianwali and Muzaffargarh districts. TDA was a semi-autonomous body and it worked on secretariat style. All its development projects were planned in headquarter at Joharabad which was later shifted to Bhakkar in 1963.

Mr. Zafar Ul Hassan was the first Chairman of the TDA and he worked hard for the development of the area. TDA was set up firstly for only five years but the Provincial Government extended it twice for second and third five years development plan and it was dissolved in the year of 1969 (Associated Press Pakistan, 1969, p. 9). The dissolution of TDA was carried out twenty years after its formation and decision to dissolve the authority was based on administrative grounds (Information Department, 1969, p. 231).

The duty of carrying out the provision of the Act was vested in a board called "The TDA" which was a body corporate. The creation of TDA marked a departure from the traditional organization and control of the government. For the first time in Pakistan an independent body was given the responsibility of development in a specific area i.e. Thal region. It was a unique experiment as it was combined a wide range of administrative functions under one agency (Information Department, 1963, p. 99).

Total area of Thal desert is approximately 50, 00,000 acres and Thal canal was planned and constructed for the irrigation of 21, 95,733 acres. 3, 71,000 acres was state land and 18, 24,733 acres was occupied by the local land owners within the irrigation area of Thal canal. TDA appointed Land Acquisition officer for the acquisition of land for Thal Project Colonies and private land was acquired in Tehsil Bhakkar, Tehsil Layyah and Tehsil Kot Adu.

According to the TDA Act of 1949, TDA had full powers of acquisition of private owned land without any limitations and conditions. According to the instructions, only the un-cultivated area was to be acquired by the TDA within the irrigation boundry. All Chahi Adna Malkiat and Barani cultivated lands were exempted from acquisition and would remain in-tact with the land owners. Even the acquisition of un-cultivated waste land was not an un-restricted one (Khokhar, 2002, p. 9). So, TDA acquired 9, 38,778 acres land from local land owners under section 36 of TDA Act of 1949. The land within the irrigation boundary of Thal canal became one unit, it was decided that TDA, local land owners and central government were co-owners. The process of partition of land among TDA, local land owners and central government is called adjustment. In spite of all these difficulties, the process of adjustment of land and adjustment of compensatory grants was completed in 1955. TDA paid 8 lac rupees as a compensation grant to the local land owners during the year of 1953-1954.

TDA returned 4, 95,302 acres of land to the local land owners from 9, 38,778 acres of acquired land in the light of Marginal adjustment formula (Ijaz, 2012, p. 543). So, for the Thal development Project, total area was 8,14,478 acres from which state land and acquired land from local land owners was 3,71,000 acres and 4,43,772 acres respectively.

A historical challenge was given to TDA, it not only has to level the deserted land, provide the irrigation facility to the area, colonize the region by different colonization schemes but also have to provide the basic needs of life such as health, education and other services. Besides, the Authority

was also allowed to manage and dispose of under Tube well/ Well schemes state land measuring 0.71 Million acres outside the irrigation limits.

The following table is showing the details about the acquisition, adjustment and land available for development to TDA:

Sr. No.	Detail about acquisition of land	Area in acres
1	Total land of Thal desert	50,00,000 approx.
2	Area under Thal Project Canals	21,95,733
3	State land in the area of Thal Project Canals	3,71,000
4	Land occupied by local land owners	18,24,733
5	Total land acquired by TDA from local land owners	9,38,778
6	Land returned to the local land owners through adjustment	4,95,302
7	Remaining acquired land under TDA control	4,43,772
8	Total Area available to TDA for development within the irrigation boundary	8,14,478
9	Total State land available to TDA for development, outside the irrigation boundary.	7.15000

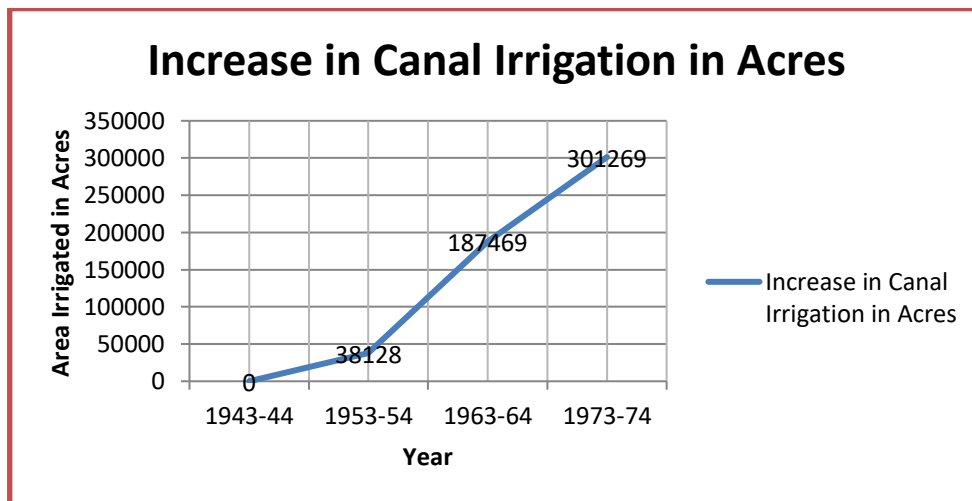
Source: *West Pakistan Year Book*, 1965.

The Thal desert was hard and more leveled in north whereas there were huge sand dunes in the south. The cultivation, irrigation, roads and other development work could not be done without leveling the land.

To level the whole Thal desert was a difficult task, because in north the land was so hard to break up and in the south high sand dunes which always shifted in thunder storms from one place to other.

It was a new and first experience in Pakistan to level a desert with the help of tractors and machines.

In 1950, tractor division started to level the land in north but it came into notice that big machines were needed for this task. Agricultural Machinery Organization (AMO) was established in 1953 with the financial help of International Bank of Reconstruction and Development, so huge machines were imported. AMO not only broke up and leveled the land but also helped in the construction of water channels and roads. From 1953 to 1969, AMO leveled 631 thousand acres of land, constructed water channels and helped in the construction of MM road and link road connecting new villages (Agricultural Machinery Organization, 1969, p. 34). One of the main objectives of the TDA was the extension of irrigation because sand storms always choked up the water channels and stabilization of water channel was a big challenge.



Source: *Record of Irrigation Department, Bhakkar.*

The authority framed various schemes for colonization of Thal area inside and outside the irrigation boundaries after the approval of the Government. Hundreds of lots were allotted to the different persons (local as well as refugees) through different colonization schemes inside and outside the irrigation boundary of the area. The price of the land was received by the Government in easy

installments and the ownership rights were granted to the relevant person after the fulfillment of the installments. Following are the details of the colonization scheme:

Serial No	Colonization Scheme	Year	Area allotted in Acres
1	Tube well Scheme	1952	150
2	Well Scheme	1952	25
3	Sheep Breeding Scheme	1952	15
4	Sale/Auction Scheme	1954	25 & 50
5	Peasant grant scheme	1955	15
6	Fixed Price Scheme	1957	25
7	Garden-Cum-Nursery Schemes	1958	50
8	Tube well Scheme	1963	100
9	Free Grants of TDA	1952	15

Source: *Record Revenue Department Bhakkar, 2015.*

After the reservation of acquired land for forms, Mandi towns, industries, forests and gardens; TDA divided the remaining land among small portions and shaped them into villages are called Chaks. The land of each Chak was divided into agricultural land, forest, residential sites, pasture and rural compound. Every Chak was planned and constructed for 40 to 50 families. The map of any two Chak is not same. There was a rural compound in the center of each Chak, so that the children could play (Qureshi, 1995, p. 61).

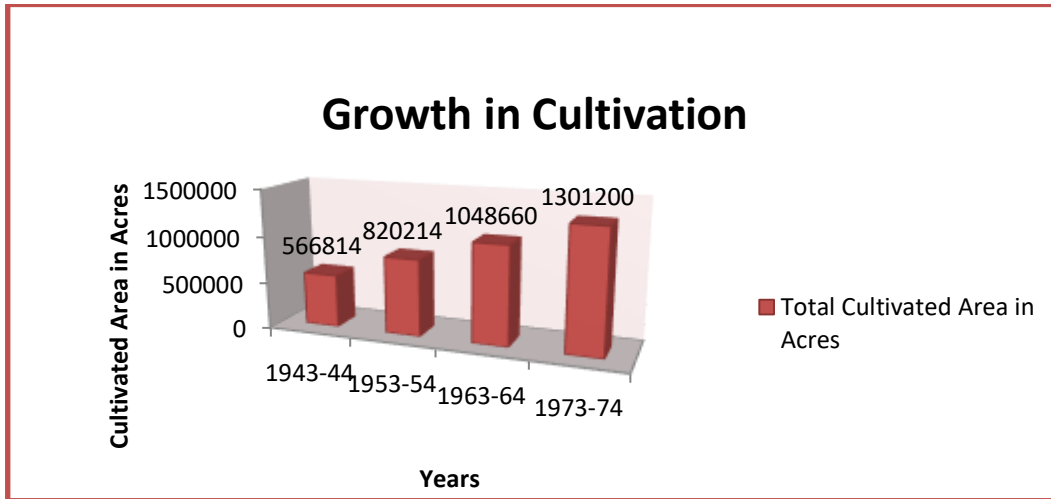
A green belt 100 to 120 feet deep going all around the Chak was made which was used by the villagers as a common pasture. There is 50 acres of forest with every Chak so that the settlers could get fuel wood and a recreational site.

All the Chaks were connected to the main towns and cities with main highways. The settlers had not to pay even a single rupee to the TDA at once for agricultural land, residential plot, constructed two roomed house etc. and all above facilities were provided to the settlers in easy installments. First of all the settlers had to pay the price of seed, secondly the price of fertilizers, thirdly the price of Oxen, fourthly the price of constructed house and lastly the price of agricultural land in easy installments (Abbas, 2015, p. 93).

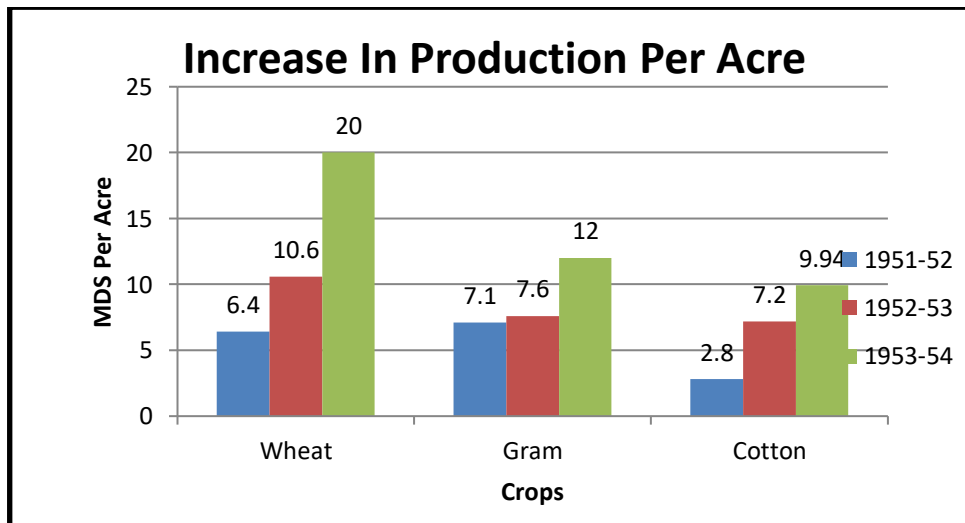
During the 20 years, TDA established 1110 Chaks in the whole Thal area and allotted land in these Chaks to the refugees migrated from India having no peace of land, migrated military families and to those cultivators whose land was unfertilized by *Sem* and *Thur*. Residential plots were also granted in the same Chaks to the settlers where the agricultural land was allotted. Basic facilities of life were provided at one place to several Chaks such as school, dispensary, post office, Mosque, Bank, Patwar khana, Bus stand, Panchayat Ghar, Veterinary hospital, Light and heavy industry, Green Belt, Police station, Shops, Rural compounds. TDA constructed 7803 peasant houses at the cost of Rs. 30 Million and 1712 Artisan huts with Rs. 79, 23, 600, 00 have been constructed so far. About 31,000 families have been settled in Thal on a permanent basis, thus reducing pressure over land in other congested districts (Information Department, 1965, p. 108).

Authority also established 10 farms, gardens and 22 extension centers in the whole Thal. These farms, gardens and extension centers were worked as demonstration centers. These institutes worked for the stability of water courses, supplied quality fruit plants and seed, introduced the sowing time for crops and modern methods of cultivation. TDA provided guidance to the new settlers for farming. The experts not only recommended varieties of fruits and crops but also introduced best cropping pattern for Thal. TDA provided Taccavi loans to the new comers so that they could pay for bullocks, agricultural implements and seeds and loan was returned in easy

installments. The development of the region has increased the intensity of crops cultivation and even the yield per acre has increased substantially (Information Department, 1963, p. 20).



Source: Record Revenue Department, Bhakkar.



Source: A Handbook of Thal Development Authority, P. 107.

Mandi Towns at Joharabad, Quaidabad, Liaqatabad, Rakh Ghulaman, Bhakkar, Sarai Muhajir and Layyah were constructed which were not only plan to work for business centers of agricultural production but also provide labor for the established industries of the adjacent areas.

All the modern facilities such as electricity, underground sewerage, drinking water through pipe lines, wide and straight roads, schools and play grounds for children, medical facility, telephone, mosque, cinema, post offices and banks were provided for the settlers.

A heavy industry was established near every Mandi Town, so that the employment could be provided to the residents of the Mandi Towns (Housing Department, 1969, p. 42). The electricity is an indispensable part of industries and also very essential for city housing towns and its significance cannot be denied. Mandi Towns and industries created real demand for electricity. It was planned and hoped that the Provincial Government would provide electricity from Jinnah Barrage through installing hydro power station but was not fulfilled. So TDA had to make its own arrangements to provide electricity for Mandi Towns and industries. Electricity division of TDA was established in the year of 1951. TDA erected power houses at Joharabad, Quaidabad, Liaqatabad, Rakh Ghulaman, Layyah, Dhighana, Haiderabad and Bhakkar. In the year of 1958, TDA was providing 8800 KWs electricity to private and industrial consumers. Later on, when WAPDA proposed up, all the power houses were sold and transferred to WAPDA (17, p76).

TDA established 4 forest divisions in Thal for forestation, the names are Joharabad, Bhakkar, Layyah East and West forest divisions. In the start of the development, TDA reserved 1.5 lac acres of land for forests but due to shortage of water, the area was reduced to 60, 000 acres. TDA planted five national parks in the area, the names are Kundian National Park, Bhakkar National Park, Fateh Major National Park in Bhakkar, Bhagal National Park in Layyah and Rajan Shah National Park. In addition, Chak plantation, Compact plantation and road side plantation were also raised (Public Relation Division, 1954, p. 54).

Means of communication always played an important role in the advance of a region because the transportation of goods and material depends upon the roads and railway. In any area, if the development work is going on, roads and railway have its importance and cannot be neglected.

TDA planned and constructed Muzaffargarh-Mianwali road (MM Road) because with the advent of colonization a marvelous change has taken place. MM Road was connected from Mianwali to Muzaffargarh via Harnoli Mor, Chandni Chowk, Dullewala, Khansar, Sarai Muhajir, Fateh Pur, Chowk Azam and Chowk Sarwar Shaheed. It passes through the heart of the Thal and with a distance of 20 to 25 Kilometers away from major cities of the Thal like Piplan, Kalurkot, Darya Khan, Bhakkar, Karor, and Layyah. TDA constructed 2000 miles link metaled roads connecting Chaks of the Thal.

All the important markets were connected with metaled roads. It provided a great relief to the agriculture society in bringing their produce to the major markets of the district. In addition to the metaled roads the Kacha roads along with different canal distributaries also became available to the farmers for shifting their agriculture produce to the various markets (Information Department, 1965, p. 109).

The setup of industries was not included in the actual plan of Thal development, whereas, for the equal and collective progress of any area, it is necessary to develop industry and agriculture side by side. Therefore, TDA decided to establish industries in Thal area for providing bread and butter to the settlers of the Thal and utilizing cash crop of related areas on local levels.

For the establishment of industries, TDA got the guidance from the experts of agricultural forms established within the Thal area for selecting suitable places and knowing which area would be suitable for sugar industry and textile industry so that the raw material of high quality could be available on local level.

Keeping in view the opinion of agricultural experts, TDA established four ginning factories, two textile mills, two sugar mills, one cement factory, one woolen mill, one dairy factory and one juice factory in the area. The TDA was running 5 cottage industries training-cum-production centers at Joharabad, Quaidabad, Kalurkot, Sarai Muhajir and Chak No 50/MB. The goods produced in these

centers were in great demand in the market of the whole country and particularly the Thal carpet was very well-liked in the Europe and was exported to United Kingdom and other countries (Information Department, 1965, p. 10).

Two livestock farms, one at Rakh Ghulaman and second at 205 TDA were set up. These farms increased the cattle breed, provided labor for agriculture and increased the production of milk, meat, butter and wool. 205 TDA farm is maintaining sheep flocks for wool and meat. The Rakh Ghulaman farm was maintaining sheep, goats, buffalo and cows. There are many sections of the farm such as agricultural, dairy, sheep, goat and poultry. It considerably increased the quality livestock and preserved the breed of cattle (Livestock Department, 2015, p. 46).

The government health and education department did not normally provide medical and educational facilities to the settlers in the newly colonized area of Thal. Without these services it was very difficult, rather impossible, to attract good colonists to come and live under hard conditions of Thal desert. These two services are the most essential and basic requirements for the success of a colonization scheme. The provisions of these facilities were actually the responsibility of respective government departments. The settlers were paying all taxes to the government and thought themselves entitled to such a benefit as were being extended in the other parts of the province.

TDA opened 124 primary schools, five middle schools for boys, one middle school for girls, four high schools for boys and one high school for girls in the Thal area. All above school were opened by own expenses of TDA but in the year of 1964, 122 primary schools out of 124 primary schools were transferred to the provincial government (Education Department, 1969, p. 88). The authority kept in view the recommendations of Bhore committee and the experience of old colonies of Faisalabad (Lyallpur) for providing the health services in the region of Thal. There has been reserved 20 to 30 acres of land by TDA for hospitals in Mandi Towns and they also planned if

population would increase, the hospitals could be able to meet the future demands and they could be expended.

Primary buildings and auxiliary wings were two distinct parts of hospitals structure. Primary building consisted of modern radio therapy, operation theaters, dressing rooms, examination cubical and was capable of localized expansion. On the other hand, auxiliary wings specialized departments and wards could be added in primary building when they considered necessary. In hospitals the training was given to social personnel's, LHVs, Dais and nurses to raise the social and health standard of the settlers (Public Relation Division, 1954, p. 177).

TDA had set up five hospitals in Mandi Towns, 32 rural dispensaries, 3 health centers, 3 sub-centers and 3 mobile dispensaries in the Thal region up to 1969. Each of the hospital was to be 125 beds expandable to 250. Surgical, medical and gynecological specialists were to be provided beside general duty medical officers, woman medical officers and lady health visitor's etc. the Tehsil hospital was to be provided 50 beds to begin with and could be raised to 100 beds. Whereas, the rural dispensaries were to be provided with 4 beds, doctor, lady doctor and ancillary staff. More than 50,000 people were receiving health services from all health centers of the region. The medical division of Thal was divided into sub-divisions and MO was considered head of each sub-division who worked in hospital and also looked after 2 to 3 nearly in rural dispensaries due to lack of qualified staff. These institutions provided health facility to 50, 000 people annually (Health Department, 1969, p. 23).

CONCLUSIONS.

In 1949, nobody could imagine and believe that the vast desert Thal area could be converted into greenery. Before TDA, the people of the area were illiterate, ill fed and very poor but after TDA;

they have a happy and confident look with optimistic view of future. It has achieved almost all of its objectives which were set in the start of the project.

TDA, within its jurisdiction, extended the irrigation system up to maximum, increased the sub-soil water level, colonized the area through different schemes, leveled the desert, established Chaks and Mandi Towns, resettled the 31, 000 families of the refugees from the congested areas of the country and decreased the pressure on land, provided Taccavi loans, seeds and training to the new farmers, secured the basic facilities of life such as electricity, education, health in Chaks and Mandi Towns. It also ensured employment in Mandi Towns and constructed roads.

The development of the region has affected favorably the climate conditions of the province as a whole, not only the number of sand storms decreased but it also decreased their speed. TDA enhanced the socio-economic conditions of the people of the area and transformed the dumped desert into green fields. On the other hand, more than half of the Thal desert was deprived of the irrigation facility and development, because without irrigation, development could not have been done. So, the remaining undeveloped portion of Thal desert is still waiting for irrigation and development. It needs the attention of the Government, if it wants to see the Thal Desert more prosperous and well progressed. In this context, Greater Thal Canal should be completed on priority basis and TDA should be re-established for the development of this more than half part of Thal Desert.

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