

Taming the Thal: Refugee Rehabilitation, Land Adjustment and the Afterlife of the Colonial Canal Colony in the Punjab Desert, 1947–1969

Muhammad Arshad Iqbal ¹, Nisar Ahmed ², Mukhtiar Hussain³
maiqbal146@gmail.com¹, mna601@gmail.com², mukhtiar123³

Abstract

Background. Among the most pressing problems facing Pakistan after the Partition of 1947 was the permanent settlement of millions of refugees on land capable of supporting them. In the Punjab, one of the largest responses was the Thal Development Project, which sought to convert part of a desert of roughly five million acres between the Indus and the Jhelum–Chenab system into an irrigated agricultural region. The project began as an unfinished colonial canal scheme (1939) and became, under the Thal Development Authority (TDA, 1949–1969), an instrument of refugee rehabilitation. This article asks which institutions drove the project and how they changed; how land was acquired, adjusted and allotted; what outcomes were reported and how reliable they are; and how far the project continued or departed from the colonial canal-colony model. The study is a qualitative, historical-analytical documentary synthesis supported by quantitative source criticism. It triangulates three recent studies that reproduce TDA records, Punjab Government publications, the Thal Development Act of 1949 and West Pakistan yearbooks, and it reconciles their published tables arithmetically. Archives were not consulted directly. The TDA retained the colonial technique of conditional tenure (tenancy first, proprietary title only after residence and cultivation conditions were met), but changed the purpose (rehabilitation rather than revenue and loyal agriculturist classes), the terms (concessional prices, credit, housing), the financing (an external loan of 3.25 million dollars) and the scope (market towns, health and education). Its reported outcomes include 1,110 new villages and towns, seven of thirteen planned market towns, and the settlement of more than 31,000 families; the author's aggregation of district tables yields 30,891 allotment units on 700,181 acres, about 13 per cent of which were still "under process" in 1969. Cross-checking identified numerical inconsistencies in the land tables, levelling, industries and cultivated area. Acquisition from local owners (938,778 acres, of which 407,297 were returned through adjustment) remains far less studied than the settlement of newcomers. The article offers the first systematic reconciliation of the published Thal figures and links the Thal literature to the historiography of the colonial canal colonies. It implies that claims of success rest on official, self-reported evidence and should be treated as provisional. Future research should recover MFRO and TDA archival records, trace refugee and local allottees through revenue files and oral histories, and compare retention and title security with the older colonies.

Keywords: Thal Development Authority; refugee rehabilitation; canal colonies; land colonization; land adjustment; Partition; Punjab

1. Introduction

1.1 Background and Context

The Partition of the subcontinent in 1947 produced one of the largest forced migrations in modern history. Estimates cited in the Thal literature put the total movement of people across the new border at some fifteen million, with about half a million deaths (Henderson, 1953, as cited in Abbas et al., 2020c, pp. 164–165). The 1951 census of Pakistan recorded 7.15 million migrants from India, of whom about 4.8 million settled in the Punjab (Census of Pakistan, 1951, as cited in Abbas et al., 2020c, pp. 164–165). Most of the newcomers were cultivators, and the state had to find land for them at a time when the irrigated districts of West Punjab were already densely settled. Scholarship on Partition has shown that refugee rehabilitation shaped the early postcolonial state and its regional administration and was not merely an emergency measure (Chattha, 2011; Khan, 2007; Zamindar, 2007).

The Thal is a triangular desert of about five million acres lying south of the Salt Range between the Indus and the joint streams of the Jhelum and Chenab. It is roughly 175 miles long and 65 miles wide and is customarily divided into Northern Thal, Thal Kalan and the dune country known as Daggar or Jandi Thal (Abbas et al., 2020c, p. 167). It falls mainly within the districts of Layyah and Bhakkar, with portions in Khushab, Mianwali, Jhang and

Muzaffargarh. Because it was sparsely inhabited and could be brought under the Thal Canal, it was chosen as the principal site for settling refugees permanently in the Punjab (Abbas et al., 2020c, p. 169).

The project that followed had a long prehistory. A Thal canal was reportedly planned as early as 1873, construction began only in 1939, and by 1947 about thirty per cent of the work had been completed (Abbas et al., 2020a, 2020b). After Partition, the incomplete colonial scheme was repurposed: in 1949 the Thal Development Act created the Thal Development Authority (TDA), a corporate body that acquired, adjusted, levelled, irrigated and allotted land until its dissolution in 1969 (Abbas et al., 2020c, p. 167). By the Authority's end, official figures reported 1,110 new villages and towns, seven new market (mandi) towns and the settlement of more than 31,000 families (Abbas et al., 2020a, 2020c).

1.2 Problem Statement

Despite its scale, the Thal project has been studied mainly in a small group of recent articles that reproduce official statistics, and it has not been systematically related to the historiography of the colonial canal colonies, which those articles invoke but do not analyse. Three problems follow. First, the institutional and tenorial logic of the project has not been explained as a repurposing of colonial technique. Second, the published figures are not mutually consistent, yet the inconsistencies have not been identified or reconciled. Third, the evidence is almost wholly official and self-reported, so claims of success have not been separated from what the evidence can support. This article addresses these problems.

1.3 Research Questions

The study is organised around one central question and four sub-questions.

Central question. How did an unfinished colonial canal scheme become an instrument of refugee rehabilitation in the Punjab desert between 1947 and 1969, and what can the available evidence establish about its design, outcomes and limits?

- RQ1. Which institutions drove the Thal project, and how did their form, mandate and timetable change between the colonial scheme of 1939 and the dissolution of the TDA in 1969?
- RQ2. How were land classification, acquisition, adjustment and allotment designed and applied, and on what terms were settlers placed on the land?
- RQ3. What outcomes were reported by 1969, how consistent are the published figures, and what do independent arithmetic checks show?
- RQ4. To what extent did the project continue, and to what extent did it depart from, the model of state-directed agricultural colonization developed in the colonial canal colonies of the Punjab?

1.4 Research Objectives

In line with these questions, the objectives of the study are:

- RO1. To reconstruct the institutional evolution of the project from the colonial Thal Canal Colony to the TDA (addresses RQ1; Sections 4.1–4.2).
- RO2. To analyse the legal and administrative design of land acquisition, adjustment and allotment, including the colonization schemes and their terms (addresses RQ2; Sections 4.3–4.4).
- RO3. To compile the reported outcomes, cross-check the published tables, and state aggregate estimates transparently as the author's calculations (addresses RQ3; Sections 4.4–4.6).
- RO4. To assess continuity and change relative to the colonial canal-colony model using an explicit analytical framework (addresses RQ4; Sections 2.5 and 5.1–5.2).
- RO5. To identify the limits of the evidence and set out an agenda for archival and independent research (Sections 5.4 and 6).

1.5 Significance of the Study

The study is significant in three ways. Historiographically, it connects work on the colonial canal colonies (Ali, 1987, 1988; Gilmartin, 1988; Islam, 1997) with the post-1947 settlement of refugees, a link the existing Thal studies assume but do not develop. Empirically, it provides the first systematic reconciliation of the published Thal land, allotment and development figures, making the discrepancies visible rather than leaving them embedded in the literature. Conceptually, it proposes a framework (Section 2.5) that distinguishes the tenorial technique of a colonization scheme from its purpose, financing and social provision, which allows continuity and change to be assessed separately rather than asserted together.

1.6 Scope and Structure

The temporal scope is 1948–1969, with the colonial prehistory from 1873 and 1939 treated as background. The spatial scope is the Thal as defined above, with emphasis on the districts named in the allotment tables. The article proceeds as follows. Section 2 reviews the literature, identifies the research gap and builds the analytical framework. Section 3 sets out the methodology. Section 4 presents the analysis in six parts, from colonial origins to a reconciliation register of numerical inconsistencies. Section 5 discusses the findings against the research questions and the framework, and Section 6 concludes.

2. Literature Review and Theoretical Framework

2.1 Partition, Refugees and the Postcolonial State

Histories of Partition have moved from narratives of political negotiation to studies of violence, displacement and the long aftermath of migration. Khan (2007) offers a general account of the making of India and Pakistan. Zamindar (2007) treats Partition as a “long” process in which refugees, boundaries and histories continued to be made after 1947. Chattha (2011) examines violence, migration and development at the local level in Gujranwala and Sialkot between 1947 and 1961. Taken together, these works support the view, adopted in the Thal studies, that refugee rehabilitation shaped the early postcolonial state and its regional administration and was not merely an emergency measure (Abbas et al., 2020c, pp. 164–165). What they do not provide is a detailed account of rural land settlement in the desert tracts of West Punjab, where the state had to create productive land rather than redistribute existing holdings.

2.2 The Colonial Canal Colonies

The canal colonies are the principal historical precedent for the Thal. Ali (1988) established them as the central agrarian project of late colonial Punjab and examined how land was granted, to whom, and on what conditions. In an earlier article, Ali (1987) argued that colonization was uneven in its developmental effects and contributed to the roots of backwardness in the province. Islam (1997) studied irrigation and agriculture in the Punjab between 1887 and 1947, and Gilmartin (1988) examined the relationship between the colonial state, canal irrigation and Punjabi society. These works provide the technical and political setting for canal colonization (Abbas et al., 2020b). In Ali’s account, land in the colonies was granted to selected settlers on conditional terms, with tenancy in the first instance and proprietary rights conferred only after residence and cultivation requirements had been satisfied (Ali, 1988; see also Section 5.1 of this article). None of these works treats the post-1947 Thal project.

2.3 The Thal Literature

The Thal itself has been studied mainly in a group of recent articles by Abbas and co-authors, which draw on an unpublished master’s thesis on the Bhakkar region (Abbas, 2015, as cited in Abbas et al., 2020b) and on a doctoral study of the wider Thal. Three articles are central. The first traces settlement from the stalled colonial scheme to the dissolution of the TDA (Abbas et al., 2020b); the second quantifies agricultural and infrastructural development

(Abbas et al., 2020a); and the third concentrates on refugee settlement (Abbas et al., 2020c). Their authors report that the earlier literature consisted of a small number of works: an official TDA handbook covering only the first five years (Government of Punjab, 1954); a study of land acquisition and adjustment by Khokhar (2002); an economic survey of eight Thal villages by Qureshi (1995); a pre-Partition study of rural indebtedness in the Bhakkar Thal by Bedi (1934); district gazetteers; and an Urdu monograph by Haq (2003) (all as cited in Abbas et al., 2020b, 2020c). These earlier works are cited here only as reported in the recent articles, and were not consulted directly.

The recent articles share three features. They rely heavily on TDA statistics files, the West Pakistan yearbooks and Punjab Government publications. They are largely descriptive and celebratory in tone, concluding in places that the people of Thal are confident of their future (see Section 5.4 for the evidentiary weight of such statements). And they do not engage the colonial-colony historiography or reconcile the numbers they report.

2.4 The Research Gap

Four gaps follow from the review. (1) Conceptual: the relationship between the TDA and the colonial canal-colony model has been asserted by implication but not analysed. (2) Evidentiary: published totals do not always equal the sum of their parts, and the discrepancies have not been catalogued (Section 4.6). (3) Distributional: local landowners and pastoralists, from whom 938,778 acres were acquired, appear in the literature chiefly as objects of adjustment rather than as historical actors, and there is no separate count of refugee families, or of how many remained on their lots. (4) Archival: the organisation, personnel and allotments of the Military Families Resettlement Organisation (MFRO) have no detailed account in the secondary literature consulted. This article addresses gaps (1) and (2) directly, documents gaps (3) and (4) so that they can be taken up, and sets them out as a research agenda in Section 6.

2.5 Analytical Framework

The framework is derived from the literature reviewed above, and is offered as an analytical device rather than as an established theory. Its starting point is Ali's (1988) account of the canal colony as a state-directed project of agricultural colonization built on conditional grants. The framework separates five dimensions along which a colonization project can be compared with that model, and a sixth dimension that concerns the reliability of the evidence used to make the comparison.

Table 1

Analytical Framework: Dimensions, Indicators and Where They Are Examined

Dimension	Indicators used in this article	Colonial benchmark	Examined in
D1. Tenurial technique	Tenancy before title; residence, house-building and cultivation conditions; service-family preference	Conditional grants to selected settlers (Ali, 1988)	Sections 4.4, 5.1
D2. Purpose	Declared beneficiaries and objectives	Securing agriculturist classes and revenue	Sections 4.1, 5.2
D3. Terms and finance	Prices, instalments, credit, external loans	Not assessed here; compared only where the sources allow	Sections 4.4, 4.5, 5.2
D4. Social provision	Towns, industry, health, education, welfare funds	Not provided by the colonial model, according to the Thal literature	Sections 4.5, 5.2
D5. Treatment of local population	Acquisition, adjustment, litigation	Not analysed in the sources	Sections 4.3, 5.3
D6. Evidentiary reliability	Authorship of sources; internal consistency; independence	Not applicable	Sections 3.3, 4.6, 5.4

Note. D1 is the dimension on which continuity is expected; D2–D4 are the dimensions on which departure is expected. D5 and D6 are included because the literature review identified them as gaps (Section 2.4).

Three propositions guide the analysis. P1: the TDA retained the colonial tenurial technique (D1). P2: it departed from the colonial model in purpose, terms, financing and social provision (D2–D4). P3: claims of success must be weighed against the nature of the evidence, which is official and in places internally inconsistent (D5–D6). The propositions are tested in Section 4 and evaluated in Section 5.

3. Research Methodology

3.1 Research Design

The study adopts a qualitative, historical-analytical design in the form of a documentary synthesis, combined with simple quantitative source criticism. The design suits the research questions: RQ1, RQ2 and RQ4 require interpretive reconstruction of institutions, rules and models, while RQ3 requires checking figures against one another. The approach is explanatory-descriptive: it reconstructs what the sources report, analyses it using the framework in Section 2.5 and tests the sources against each other. It does not generate new primary data.

3.2 Sources and Corpus

The corpus comprises (a) three recent studies that reproduce or summarise primary documents (Abbas et al., 2020a, 2020b, 2020c); (b) primary and official documents as reproduced or summarised in those studies; (c) one primary document identified in the Punjab Digital Library; and (d) the historiography of the colonial canal colonies and of Partition. For clarity, the three recent studies are cited as follows: Abbas et al. (2020a) for the agricultural-development study; Abbas et al. (2020b) for the study of settlement of the Thal Desert; and Abbas et al. (2020c) for the refugee-settlement study.

Table 2

Corpus of Sources and Their Use

Source type	Examples (as cited)	Use in this article
Recent Thal studies	Abbas et al. (2020a, 2020b, 2020c)	Principal evidence base; tables re-examined
Statutory and official documents (secondary access)	Thal Development Act of 1949; West Pakistan Gazette (1969); West Pakistan Year Books (1965, 1968); Statistics of TDA (1969); Gazetteer Layyah District (1984); TDA colony files	Law, land figures, allotments, outcomes (as reproduced in the recent studies)
Primary document identified directly	Board of Revenue Punjab (1952), Peasant Grant Scheme, Resolution No. 7, 8 January 1952	Chronology of the peasant-grant framework (Section 4.4)
Earlier Thal literature (secondary access)	Government of Punjab (1954); Khokhar (2002); Qureshi (1995); Bedi (1934); Haq (2003)	Mapping the literature (Section 2.3)
Colonial and Partition historiography	Ali (1987, 1988); Islam (1997); Gilmartin (1988); Khan (2007); Zamindar (2007); Chattha (2011)	Framework and benchmark for continuity and change

Note. Sources marked “secondary access” were not consulted directly and are cited in APA form as “as cited in” the study that reproduces them.

3.3 Analytical Procedures

Four procedures were applied. Source criticism. Each source was assessed for authorship and purpose. The TDA handbook, statistics files and government yearbooks are official and were produced by the bodies whose work they record, which affects how far they can corroborate claims of success. Triangulation. Where two or more of the recent studies report the same item, the reports were compared. Where they differ, both are stated and, if a preference is made, the reason is given (for example, the more precise figure is preferred for

levelling in Section 4.5). Arithmetic reconciliation. Published totals were recomputed from their components, and ratios were calculated to test plausibility. Aggregate figures labelled “author’s calculation” are simple sums or ratios of published district or national tables. Comparative coding. Scheme terms and development measures were coded against the six dimensions in Table 1 to assess continuity and change (Table 11).

3.4 Conventions

Areas are given in acres, money in rupees (Rs) and yields in maunds per acre, as in the sources. Percentages are rounded to one decimal place except where the sources give them differently. Notification numbers are reproduced as given in the recent studies. Where a source garbles a figure (for example, the printed “7.15000” in the West Pakistan Year Book table, read here as 715,000 acres in line with Abbas et al., 2020a), the reading is stated.

3.5 Validity, Reliability and Limitations

Reliability is supported by transparent calculation and by reporting differences between sources instead of resolving them silently. Validity is limited by four factors. First, archival records were not consulted directly, so all primary evidence is mediated by the recent studies. Second, the three studies come from the same group of authors and draw on overlapping documents, so agreement between them is not independent corroboration. Third, the sources do not define some categories (for example, “under process”), and the allotment tables mix counts of allottees and lots. Fourth, no independent socio-economic study of the settlers is available apart from Qureshi’s (1995) survey of eight villages. These limits shape the claims made in Section 5 and are restated in Section 6.

3.6 Ethical Considerations

The study uses published and publicly accessible documents and involves no human participants. All sources are acknowledged, and no figure or document is attributed to an author or institution beyond what the cited studies report.

4. Analysis

4.1 From Colonial Canal to Refugee Project

4.1.1 *The unfinished Thal Canal Colony*

A canal for the Thal was reportedly planned by the Punjab government as early as 1873, but the British deferred it in favour of other works such as the Sutlej Valley Project and the Sukkur Barrage (Abbas et al., 2020b). Construction began in 1939. Work on the Jinnah Barrage on the Indus and the Main Line Upper was halted in 1942 because of the Second World War and resumed the following year. By 1947 the British had completed only the barrage, the Main Line Upper and the Dullewala Branch, and about thirty per cent of the project had been finished (Abbas et al., 2020a).

4.1.2 *Military families and the failure of early settlement*

After Partition, part of northern Thal was colonised for military families by the MFRO. Extreme conditions and the lack of canal water, however, discouraged civilian settlement (Abbas et al., 2020c, p. 167). Settlers who received land under early schemes left one after another; heat, large dunes and frequent windstorms defeated them, and sand choked the watercourses. The authors of the first Thal study judge that the colony project “failed badly” in this early phase (Abbas et al., 2020b). The secondary literature gives no detailed account of the MFRO’s organisation, personnel or allotments, which remains a gap that records held by the Board of Revenue and by General Headquarters could fill.

Continued pressure from refugees on Upper Punjab, together with this failure, led the provincial and central governments to seek a permanent solution (Abbas et al., 2020b). The Government of Punjab, with the assistance of the central government, resolved to complete the Thal Canal and settle refugees on the irrigated tract. The settlement was not to be confined to refugees: landowners whose land had been acquired, damaged by waterlogging and salinity or lost to river action, and pastoralists who had depended on grazing in state

forests and proprietary wasteland, were also to be accommodated (Abbas et al., 2020c, p. 169). This broader beneficiary base matters for later interpretation, because it means that totals of “families settled” cannot be read as counts of refugees alone (Section 4.4.3).

Table 3

Chronology of the Thal Project, 1873–1969

Date	Event	Source
1873	Canal for the Thal reportedly planned; later deferred	Abbas et al. (2020b)
1939	Construction of the Thal Canal Colony begins	Abbas et al. (2020b)
1942–1943	Work halted because of the Second World War; resumed the following year	Abbas et al. (2020a)
1947	Barrage, Main Line Upper and Dullewala Branch complete; about 30% of project finished	Abbas et al. (2020a)
1949	Thal Development Act (Act XV) constitutes the TDA	Abbas et al. (2020c, p. 167)
1950	Tractor division created (date as given in Abbas et al., 2020c)	Abbas et al. (2020a, 2020c)
1951	Main Line Lower completed	Abbas et al. (2020a)
1952	Notifications No. 53-C (5 Jan.) on adjustment; Tube Well, Well and Sheep Breeding schemes; Peasant Grant resolution of 8 Jan.	Abbas et al. (2020b, 2020c); Board of Revenue Punjab (1952)
1953	Notification No. 226-Th (29 Jan.); IBRD loan of 3.25 million dollars; AMO established	Abbas et al. (2020a, 2020c)
1954	Notifications of 1 May (marginal adjustment formula) and 27 Nov.; Sale/Auction Scheme	Abbas et al. (2020b, 2020c)
1955	Original target date; acquisition process ends; Peasant Grant Scheme notified	Abbas et al. (2020a, 2020c)
1957–1958	Remainder of canal system completed at reported cost of Rs 191.7 million; Fixed Price Scheme (1957), Garden-Nursery Scheme (1958)	Abbas et al. (2020a, 2020b)
1961, 1964, 1965	Successive extensions; third development scheme handed to TDA in 1965	Abbas et al. (2020a)
1963	Second Tube Well Scheme	Abbas et al. (2020b)
1969	TDA dissolved; functions pass to regular provincial administration	Abbas et al. (2020c, p. 167)

Note. Compiled by the author from the cited studies. Dates are as given there; where sources differ the difference is noted in Section 4.6.

4.2 The Thal Development Authority: Mandate and Timetable

The TDA was constituted in 1949 as a corporate body under the Thal Development Act (Act XV of 1949) (Abbas et al., 2020c, p. 167). It was headed by a chairman, and its board included the deputy commissioners of Mianwali, Muzaffargarh and Sargodha. Its mandate covered the development and settlement of both state land and land acquired from private owners, inside and outside the boundaries of the Thal Canal (Abbas et al., 2020b). The first chairman was Zafar-ul-Ahsan of the Civil Service of Pakistan (Abbas et al., 2020a). The Authority’s jurisdiction comprised 906,036 acres within the irrigation boundary and 715,000 acres outside it (Abbas et al., 2020a).

The original plan aimed to achieve its goals between 1950 and 1955. The target was not met, and the project was extended to 1961, then to 1964, and again to 1965, when a third development scheme covering the next five years was handed to the Authority (Abbas et al., 2020a). The Government of Punjab dissolved the TDA in 1969, after twenty years, and its functions passed to the regular provincial administration (The West Pakistan Gazette, 1969, as cited in Abbas et al., 2020c, p. 167). The repeated extensions show how far the original timetable underestimated the technical and administrative difficulty of the task. For RQ1, the

institutional trajectory is therefore one of a corporate, quasi-autonomous body that was repeatedly extended and finally folded back into the regular administration; the Authority's temporary mandate was twenty years rather than the five originally planned.

4.3 Land Acquisition and Adjustment

4.3.1 Classification and acquisition

The Thal Canal was designed to command roughly 2.16 million acres, of which about 407,000 acres were state land and about 1.82 million acres were held by private landowners (Abbas et al., 2020b; see Table 4). To obtain land for refugee settlement, the TDA was given full acquisition powers by the Act of 1949. Land within and outside the irrigation boundary was classified into three categories: rain-irrigated land, well-irrigated land and uncultivated wasteland. In principle, acquisition was restricted to uncultivated wasteland, while well-irrigated and rain-irrigated land was to remain with its owners (Gazetteer Layyah District, 1984, as cited in Abbas et al., 2020c, pp. 167–168). Nevertheless, the Authority needed a further 938,778 acres of local land, and since the Act gave little guidance on acquisition from private owners, the process was protracted and continued until 1955 (Abbas et al., 2020c, p. 168). The Authority also first reserved land for forests, roads and new villages (Gazetteer Layyah District, 1984, as cited in Abbas et al., 2020b).

Table 4

Land Available for Development to the TDA (acres)

No.	Item	Area (acres)
1	Total area of the Thal desert	5,000,000
2	Area under the Thal Project Canals	2,155,733
3	State land in the area of the canals	406,555
4	Land held by local landowners	1,824,733
5	Land acquired by the TDA from local landowners	938,778
6	Land returned to local landowners through adjustment	407,297
7	Acquired land remaining under TDA control	531,481
8	Total area available to the TDA within the irrigation boundary	906,036
9	State land available outside the irrigation boundary	715,000

Note. Source: West Pakistan Year Book (1965, p. 41), as reproduced in Abbas et al. (2020b). Row 9 is printed there as “7.15000” and is read here as 715,000 acres, the figure given by Abbas et al. (2020a). Abbas et al. (2020b) give the command area in their text as “almost 2.1 million acres” and state land as 0.37 million acres, whereas their table gives 2,155,733 and 406,555 acres.

4.3.2 Adjustment and the marginal formula

The return of part of the acquired land to local owners is known as adjustment. Because owners were deprived of large areas, the provincial government issued a succession of notifications in response to their demands: No. 53-C of 5 January 1952; No. 226-Th of 29 January 1953; No. 713-54/1199-Th of 1 May 1954; and No. 5284-C of 27 November 1954 (Abbas et al., 2020c, p. 168; the dates agree with Abbas et al., 2020b, which writes the first date as 5/1/1952). The third, of 1 May 1954, is known as the “marginal adjustment formula”. It held that owners with less than fifteen acres within the irrigation limits would lose no land; that half of the land of owners holding between fifteen and one hundred acres would be acquired; and that seventy-five per cent would be acquired from owners of more than one hundred acres. Well-irrigated land was left substantially intact. A development fee of sixty-five rupees per acre was charged for canal irrigation and levelling (Abbas et al., 2020b, 2020c, pp. 168–169).

Local landowners were dissatisfied with the formula, and a later “slab” formula was devised. According to the Thal literature, however, the TDA continued to apply the marginal formula, which the Supreme Court of Pakistan later upheld as governing law (Abbas et al.,

2020b). The formula was progressive in design, in that it protected small holdings and took proportionally more from large ones, but it nonetheless transferred a very large area from local owners, as the next section shows.

4.3.3 Reconciling the land table

Recomputing Table 4 reveals two internal discrepancies that the literature does not comment on. First, state land (row 3) and privately held land (row 4) together total 2,231,288 acres, which is 75,555 acres more than the stated area under the canals (row 2). Second, the sum of state land and remaining acquired land (rows 3 and 7) is 938,036 acres, which is 32,000 acres more than the 906,036 acres given in row 8. The gap may reflect land reserved for forests, roads and village sites, which the Authority set aside before allotment, but the sources do not say so. The internal arithmetic of rows 5–7 is consistent: 938,778 acres acquired less 407,297 returned equals 531,481 retained. Table 5 adds ratios derived from Table 4.

Table 5

Derived Ratios from the Land Table (Author's Calculations)

Ratio	Calculation (acres)	Result
Acquired land as share of privately held land	938,778 / 1,824,733	51.4%
Returned through adjustment as share of acquired land	407,297 / 938,778	43.4%
Retained by TDA as share of acquired land	531,481 / 938,778	56.6%
Net retained as share of privately held land	531,481 / 1,824,733	29.1%
Privately held land as share of canal area	1,824,733 / 2,155,733	84.6%
State land as share of canal area	406,555 / 2,155,733	18.9%
Sum of the two preceding shares (should not exceed 100%)	84.6% + 18.9%	103.5%
Area available inside the irrigation boundary as share of canal area	906,036 / 2,155,733	42.0%

Note. Calculated from Table 4. The 103.5% total restates the 75,555-acre discrepancy described in the text.

The ratios yield three points. First, the acquisition was very large: just over half of all privately held land in the command area was initially acquired, which explains the volume of objections and notifications. Second, adjustment returned a little over two-fifths of what was acquired, so the net transfer from local owners was about 29 per cent of their holdings. Third, because the shares of state and private land exceed the canal area, these figures should be read as approximate, as the sources themselves leave unexplained. The point is not that the totals are unreliable but that the reader should treat them as approximate. These findings address RQ2 and RQ3, and bear directly on dimension D5 of the framework (Section 5.3).

4.4 Colonization Schemes

4.4.1 The sequence of schemes

Land was not distributed under a single uniform scheme. The TDA issued a succession of notified colonization schemes between 1952 and 1963, each with its own lot size, price, tenure and obligations. The refugee-focused study identifies three that were directed principally at refugees: the Sheep Breeding Scheme of 1952, the Sale or Auction Scheme of 1954, and the Peasant Grant (Abadkari) Scheme of 1955 (Abbas et al., 2020c, pp. 169–170). The broader account lists nine, including schemes that served local landowners and other buyers from across the country (Abbas et al., 2020a, 2020b). Table 6 summarises the principal terms of the schemes for which the sources give details.

Table 6
Principal TDA Colonization Schemes

Scheme	Lot (acres)	Principal terms
Tube Well Scheme, 1952	150	Outside the irrigation boundary; Bhakkar only. Trial boring at the allottee's advance of Rs 100, refunded if successful; Rs 9 per acre; lease, then price in a lump sum or 80 instalments; residence within 6 months, house within 18 months.
Well Scheme, 1952	25	Bhakkar only; refugees, locals and others. Similar trial-well deposit; one-third of the lot cultivated in 3 years and half in 5.
Sheep Breeding Scheme, 1952 (Notif. 817-Th, 28 Mar. 1952)	15	Fifteen-year lease; allottee to maintain a flock of 50 sheep, two hens and a cock. Ended 1967.
Sale/Auction Scheme, 1954 (Notif. 331/53-Th, 15 Mar. 1954)	25 or 50	Open auction; 25 per cent of the price paid at sale and the balance in ten instalments starting after two years; 4 per cent interest on arrears; 2.5 per cent of gross income to a village welfare fund.
Peasant Grant (Abadkari) Scheme, 1955 (Notif. 1477-54/2130/Th, 27 June 1955)	15	Price Rs 150 per acre, paid in seventy instalments after ten years of tenancy; residence within 6 months, house within 18 months; three trees per acre; one-third cultivated in 2 years, all in 4; 2.5 per cent of income to a welfare fund.
Fixed Price Scheme, 1957 (Notif. 44, 18 Oct. 1957)	25	Landless farmers; initially leased at Rs 6 per acre per harvest, later sold at market price in twenty instalments; personal cultivation and permanent residence required.
Garden-Nursery Scheme, 1958	50	Twenty-year lease at Rs 6 per acre per harvest, later converted to sale at Rs 700 per acre, reduced to Rs 400 because of dunes.
Tube Well Scheme, 1963 (Notif. 629-63/711-CII, 15 Feb. 1963)	100	Twenty-year lease; tube well to be installed within two years; half the lot in use within five years; Rs 6 per acre for ten years, then Rs 9.

Note. Sources: Abbas et al. (2020b); Abbas et al. (2020c, pp. 170–172). Terms are summarised; notification numbers are as given in those articles.

4.4.2 The Peasant Grant Scheme

The Peasant Grant Scheme was the largest. It was intended for migrants from India and for local people whose land had been ruined by river action, waterlogging or salinity. The deputy commissioners of the relevant districts selected the grantees, while military personnel who were also refugees were selected by the military authorities themselves (Abbas et al., 2020c, p. 171). The Punjab Digital Library holds a Board of Revenue publication of a “Peasant Grant Scheme” resolution of the TDA dated 8 January 1952, which sets out the conditions on which the Authority was prepared to grant its land to persons of the peasant class (Board of Revenue Punjab, 1952). This suggests that the framework of peasant grants predated the notification of June 1955 that the secondary literature associates with the scheme. The 1955 notification may therefore be a revision or extension of the earlier framework, though the relationship between the two documents needs to be checked against the texts.

The scheme terms were generous by the standards of a commercial land market: a price of 150 rupees per acre payable over seventy instalments after ten years of tenancy. They were conditional, however. Grantees had to reside on their lots, cultivate specified fractions within fixed periods, plant trees, and in some cases sink a well at their own expense if canal water was unavailable. Full property rights, together with rights to a residential plot at the village site, were conferred only when all conditions had been met (Abbas et al., 2020c, pp. 171–172). This conditional structure is the clearest evidence for proposition P1 and is analysed further in Section 5.1.

4.4.3 Reported allotments and their reconciliation

Table 7

Allotments Under the Principal Schemes, as Reported for 1969

Scheme	Allottees or lots	Area (acres)	“Under process”	Districts
Tube Well 1952	1,036	155,400	283	Bhakkar
Well 1952	759	18,975	439	Bhakkar
Sheep Breeding 1952	211	3,165	n.a.	Whole Thal
Sale/Auction 1954	4,507	89,372	993	Khushab, Mianwali, Bhakkar, Layyah
Peasant Grant 1955	20,045	300,744	783	Khushab, Mianwali, Bhakkar, Layyah, Kot Adu
Fixed Price 1957	3,936	85,518	1,564	Layyah, Kot Adu
Garden-Nursery 1958	150	7,500	n.a.	Whole Thal
Tube Well 1963	247	39,507	26	Bhakkar, Layyah
Total (author’s calculation)	30,891	700,181	4,088	

Note. Source: district tables in Abbas et al. (2020b), from TDA colony files; totals are the author’s sums. Free grants of 14,941 acres to moeens and lambardars are excluded. The Sale/Auction, Peasant Grant and Fixed Price rows sum the district tables; “allottees or lots” mixes categories used in the source.

Summing the district tables yields approximately 30,900 allotment units covering about 700,000 acres. This is close to the reported total of 31,377 families settled (Statistics of TDA, 1969, as cited in Abbas et al., 2020c, p. 172), and it agrees with the more general claim that more than 31,000 families were settled. The close agreement is reassuring, but it should not be read as an independent confirmation: the settled families include locals as well as refugees, the tables mix allottees and lots, and the sources do not provide a separate count of refugee families. The difference between the two totals is 486 units (31,377 less 30,891), which is unexplained.

Three further observations follow from the table. First, the Peasant Grant Scheme accounts for about 65 per cent of the units (20,045 of 30,891) and 43 per cent of the area (300,744 of 700,181 acres), which makes it the principal instrument of settlement. It is also the only one of the large schemes in which all five districts took part. Second, multiplying lot sizes in Table 6 by the number of lots reproduces the reported areas closely for the Tube Well 1952 ($1,036 \times 150 = 155,400$), Well 1952 ($759 \times 25 = 18,975$), Sheep Breeding ($211 \times 15 = 3,165$) and Garden-Nursery ($150 \times 50 = 7,500$) schemes, and approximately for the Peasant Grant Scheme ($20,045 \times 15 = 300,675$ against 300,744). For the 1963 Tube Well Scheme, however, 247 lots of 100 acres would give 24,700 acres, whereas the table reports 39,507, an implied average of about 160 acres per lot; the sources do not explain the difference. Third, the Sale/Auction and Fixed Price rows imply averages of about 19.8 and 21.7 acres per unit, below the stated lot sizes of 25 or 50 acres, which is consistent with the source’s own caution that the table mixes allottees and lots.

4.4.4 Incomplete conversion of allotments into titles

The tables also show that the schemes were not uniformly successful. Of the 1,036 lots under the 1952 Tube Well Scheme, 282 had been resumed and 283 were still “under process”, and 471 had received property rights (the three categories sum to 1,036). In the 1952 Well Scheme, 122 of 759 lots were cancelled and 439 were still pending, and in the 1963 scheme 31 of 195 lots in Bhakkar were cancelled (Abbas et al., 2020b, Tables 2, 3 and 9). About 4,100 units, or roughly 13 per cent of the total (4,088 of 30,891), were still listed as under process at the end of the period. The sources do not define this category, so it could mean either that allotment was incomplete or that property rights had not yet been conferred;

in either case it indicates that the conversion of allotments into secure titles was unfinished when the TDA was dissolved.

Finally, the Authority granted 14,941 acres of state land as temporary free grants for two decades to moeens (village artisans and service providers such as carpenters, blacksmiths and potters) and to lambardars (village headmen responsible for collecting revenue) (Abbas et al., 2020b, Table 10). This shows that the settlement also served to integrate existing village hierarchies.

4.5 The Development Programme

4.5.1 Levelling, roads and irrigation

The greatest practical obstacle was the land itself. The north was hard and stiff, and the south consisted of dunes that shifted in every storm. A tractor division created in 1950 proved inadequate, and in 1953, with a loan from the International Bank for Reconstruction and Development of 3.25 million dollars, the TDA established the Agricultural Machinery Organisation (AMO), headquartered at Layyah, to level land and to build roads and watercourses (Abbas et al., 2020a; the tractor division is dated 1950 in Abbas et al., 2020c, p. 172). The two accounts differ on the extent of levelling. The refugee-focused study reports that between 1953 and 1969 the AMO levelled about 690 thousand acres, built 2,000 miles of main and link roads and constructed 63.9 thousand miles of watercourses (Abbas et al., 2020c, pp. 172–173). The agricultural study, by contrast, gives 690,000 acres as the target, records 631,300 acres actually levelled by 1969, and states that about 59,000 acres remained undeveloped when the Authority was dissolved (Abbas et al., 2020a). The latter figure is the more precise and is preferred here; it is also internally consistent, since 631,300 and 59,000 acres together approximate the 690,000-acre target.

The irrigation system was extended in parallel. The Main Line Lower was completed in 1951, the remainder of the system was completed in 1957–58 at a reported cost of 191.7 million rupees, and minors and sub-minors followed later. The design discharge of 6,000 cusecs was later raised to 7,500 cusecs. The gross command area is given as 1.855 million acres and the culturable command area as 1.472 million acres (Abbas et al., 2020a).

4.5.2 Housing, credit and extension

Because newcomers could not withstand windstorms and heat without shelter, the TDA built 8,002 peasant houses, 1,712 huts for artisans and 2,570 cattle sheds. Each house was a paved dwelling with two rooms, a kitchen, a verandah and a hand pump, and the cost was recovered in instalments; the Authority later limited itself to lending for house and shed construction (Abbas et al., 2020a). It also advanced taccavi loans, totalling more than 18 million rupees, to settlers who could not afford bullocks, seed or implements, and established twenty-two extension centres and a number of demonstration farms and gardens to train newcomers in desert farming (Abbas et al., 2020a; 2020c, p. 173).

Experimental farms tested crop varieties. The Authority's experts recommended particular cotton and wheat varieties, and the reported yields of principal crops rose markedly (Table 8). These yields, however, refer to farmers working under TDA supervision on farms and gardens, and the authors themselves caution that they cannot be compared directly with the yields of the fertile districts of Upper Punjab (Abbas et al., 2020a).

Table 8

Reported Yields per Acre Under TDA Supervision (Maunds)

Crop	1951	1955	1959	1963	1967	1969
Wheat	6.5	20.0	24.5	28.0	30.5	30.5
Gram	7.1	12.0	12.0	13.0	13.5	15.0
Cotton	2.8	10.0	15.0	17.0	22.0	24.0
Sugarcane	—	320	350	395	410	465

Note. Source: Abbas et al. (2020a, Table 4), from TDA statistics files.

Simple ratios from Table 8 (author's calculations) show that the reported wheat yield rose about 4.7 times between 1951 and 1969, gram about 2.1 times, and cotton about 8.6 times, while sugarcane rose about 45 per cent between 1955 and 1969. Wheat yields were unchanged between 1967 and 1969. The 1951 figures precede most irrigation, so the large initial multiples partly reflect a very low base. Because the series is drawn from TDA statistics files and refers to supervised farms, it demonstrates what was reported under supervision, not what typical settlers achieved.

4.5.3 Market towns, industry and social services

The original plan called for thirteen market (mandi) towns, but only seven were built: Layyah, Joharabad, Bhakkar, Quaidabad, Liaqatabad, Sar-e-Muhajir and Ali Khel. The shortage of government funds is given as the reason for the incompleteness (Abbas et al., 2020c, p. 173; that article names Rakh Ghulaman where Abbas et al., 2020a, names Ali Khel). The towns were laid out in residential and commercial zones with electricity, water supply, sewerage, paved roads, schools, mosques, playgrounds and post offices, and were intended to be paired with industries: sugar and textile mills, ginning factories, a woollen mill, a cement factory, a dairy and a juice factory. The sources disagree on the total, with one giving ten heavy industries and the other eleven. The Authority's power houses are reported to have generated 8,800 kilowatts (Abbas et al., 2020a; 2020c, pp. 173–174).

Health and education were not part of the original Thal scheme, but the Authority added them (Table 9). Literacy in the project area is reported to have risen from 6.2 to 16.71 per cent (West Pakistan Year Book, 1968, as cited in Abbas et al., 2020c, p. 174). In all, the Authority established 1,110 new villages and towns (Abbas et al., 2020a; 2020c, p. 172), and some 60,000 acres were set aside for plantations and shelterbelts to check erosion and dust (Abbas et al., 2020c, p. 173).

Table 9

Social and Physical Infrastructure Reported for the Thal Project

Category	Reported provision	Source
Housing	8,002 peasant houses; 1,712 artisan huts; 2,570 cattle sheds	Abbas et al. (2020a)
Health	6 hospitals; 34 rural dispensaries; 3 health centres; 1 mobile dispensary	Abbas et al. (2020c, p. 174)
Education	124 primary schools; 1 junior model school; 6 middle schools; 5 high schools	Abbas et al. (2020c, p. 174)
Extension	22 extension centres; demonstration farms and gardens	Abbas et al. (2020a, 2020c)
Credit	Taccavi loans of more than Rs 18 million	Abbas et al. (2020a)
Power	Power houses generating 8,800 kW	Abbas et al. (2020a)
Market towns	7 built of 13 planned	Abbas et al. (2020c, p. 173)
Plantations and shelterbelts	About 60,000 acres	Abbas et al. (2020c, p. 173)

Note. Figures are as reported in the cited studies and have not been independently verified.

Finally, the agricultural study reports that cultivated area in the Thal rose from 56,681 acres in 1934 to 1,301,200 acres in 1974 and describes this as a threefold increase (Abbas et al., 2020a). The stated figures actually imply a roughly twenty-threefold increase ($1,301,200 / 56,681 = 23.0$), so either the figures or the description must be in error. The endpoint of 1974 also falls five years after the TDA's dissolution, so the figure cannot be attributed to the Authority alone. This is a further reason to treat single numbers with care. Even so, the

direction of change is not in doubt: a tract that had a negligible cultivated area before canal irrigation became, within a generation, a settled and cultivated region.

4.6 Register of Numerical Inconsistencies

The discrepancies identified in Sections 4.3–4.5 are brought together in Table 10, with the preferred reading where the sources justify one. The register responds to RQ3 and to research gap (2) in Section 2.4.

Table 10

Register of Inconsistencies in the Published Thal Figures

No.	Item	Discrepancy	Treatment here
1	Canal area vs state plus private land (Table 4)	Rows 3 + 4 = 2,231,288 acres; row 2 = 2,155,733; excess 75,555	Reported; cause not given in sources
2	Available land inside boundary (Table 4)	Rows 3 + 7 = 938,036; row 8 = 906,036; excess 32,000	Possibly land reserved for forests, roads and village sites, but unconfirmed
3	Command area and state land in text vs table	“Almost 2.1 million” and 0.37 million acres in text; 2,155,733 and 406,555 in table	Table figures used
4	Row 9 of land table	Printed as “7.15000”	Read as 715,000 acres, following Abbas et al. (2020a)
5	Families settled vs sum of allotment units	31,377 reported; 30,891 summed; difference 486	Both reported; categories mixed
6	Tube Well 1963 area per lot	Stated lot 100 acres; reported area implies about 160 acres per lot	Reported; unexplained
7	Average area in Sale/Auction and Fixed Price rows	Implied averages about 19.8 and 21.7 acres; stated lots 25 or 50	Consistent with mixed counting in source
8	Levelling	About 690,000 acres levelled (Abbas et al., 2020c) vs target 690,000 and actual 631,300 (Abbas et al., 2020a)	More precise figure (631,300) preferred
9	Heavy industries	Ten vs eleven	Both reported
10	Seventh market town	Rakh Ghulaman vs Ali Khel	Both reported
11	Cultivated area growth	56,681 to 1,301,200 acres described as threefold; implies about 23 times	Figures retained; description questioned
12	Date of the tractor division	Dated 1950 in Abbas et al. (2020c); discussed with 1953 AMO in Abbas et al. (2020a)	1950 used, as stated in Abbas et al. (2020c)
13	Peasant Grant framework	Resolution of 8 January 1952 precedes notification of 27 June 1955	Texts to be compared (Section 4.4.2)

Note. Compiled by the author. Items 1, 2, 5, 6, 7 and 11 rest on the author’s arithmetic; the others are differences in the published sources themselves.

5. Discussion

5.1 Continuity: The Colonial Tenorial Technique

The Thal project inherited the physical apparatus of the colonial canal colonies: a barrage and canal system built by irrigation engineers, and a cadastral and revenue machinery capable of classifying, surveying and allotting land (Section 4.1). It also inherited a tenorial technique. Ali’s (1988) work shows that, in the colonial colonies, land was granted to selected settlers on conditional terms, with tenancy in the first instance and proprietary rights conferred only after the grantee had satisfied residence and cultivation requirements. The Thal schemes follow the same logic. Residence within six months, a house within eighteen months, cultivation of stated fractions within stated periods, and title only after the conditions had been met appear across the schemes summarised in Table 6 and, for the Peasant Grant

Scheme, in Section 4.4.2. The preference for military personnel, who were selected by the military authorities themselves, and the antecedent role of the MFRO, similarly echo the colonial practice of favouring service families in land grants (Section 4.1.2). Proposition P1 is therefore supported on dimension D1. The incomplete conversion of allotments into titles (Section 4.4.4) shows that the conditional structure continued to operate in practice until the TDA's end.

5.2 Change: Purpose, Terms, Finance and Social Provision

At the same time, the project differed from its colonial predecessor in several respects (Table 11). First, its declared purpose was the rehabilitation of refugees and, secondarily, of local people displaced by waterlogging, salinity and river action (Section 4.1.2), and not the securing of loyal agriculturist classes and revenue. Second, the terms were highly concessional. A price of 150 rupees per acre paid over seventy instalments after a ten-year tenancy, and the extension of taccavi credit and subsidised or instalment-financed housing (Sections 4.4.2 and 4.5.2), reflect a welfare rationale. Third, the Authority went beyond allotment to provide market towns, industries, health services and schools, and required grantees to contribute 2.5 per cent of their income to village welfare funds (Table 6; Section 4.5.3), which suggests a conception of settlement as community-building and not only as agricultural colonization. Fourth, the project depended on external finance: the World Bank loan for the AMO belongs to the development-aid environment of the early postwar decades (Abbas et al., 2020a). Proposition P2 is supported on dimensions D2, D3 and D4, with the qualification that the comparison with colonial terms and finance is drawn from the framing in the Thal literature and from Ali's account of conditional grants, and not from a systematic comparison of colonial price lists, which lies outside the scope of the sources.

Table 11

Continuity and Change Relative to the Colonial Canal-Colony Model

Dimension	Continuity	Change	Evidence in this article
D1 Tenurial technique	Tenancy before title; residence and cultivation conditions; service-family preference	Instalment pricing, sale schemes and welfare-fund contributions added	Table 6; Sections 4.4.2, 5.1
D2 Purpose	State-directed colonization of canal land	Refugee and local rehabilitation, not revenue and loyal classes	Section 4.1.2
D3 Terms and finance	Land still granted conditionally	Concessional prices; credit; external loan of 3.25 million dollars	Sections 4.4, 4.5.1–4.5.2
D4 Social provision	Canal and cadastral machinery	Towns, industries, hospitals, schools, welfare funds	Sections 4.5.3; Table 9
D5 Local population	Land taken from existing users for colonization (not analysed in the sources)	Statutory adjustment formula and litigation	Sections 4.3, 5.3
D6 Evidence	Official sources	Not applicable	Sections 4.6, 5.4

Note. Compiled by the author from the analysis in Section 4. The continuity entry for D5 is cautious because the sources do not analyse local displacement in the colonial colonies.

5.3 The Local Population

A fifth difference concerns the local population. The Thal was not empty. The acquisition of 938,778 acres from local landowners, subject to a statutory formula that protected holdings below fifteen acres and took progressively more from larger ones, was a large state-directed transfer of land. Table 5 shows that it amounted to about 51 per cent of privately held land in the command area at the outset and about 29 per cent net after adjustment. Its consequences for the pastoral and landowning communities of the tract, whose objections led to a series of amended notifications and later to litigation (Section 4.3.2), remain less studied than the settlement of the newcomers. The sources treat the locals

chiefly as objects of adjustment and not as historical actors. The finding that locals were also among the beneficiaries (Section 4.1.2) complicates any simple picture of refugee gain and local loss, but it cannot be resolved without data on who received land under each scheme.

5.4 Evidence and the Claims of Success

The claims of success must also be weighed against the nature of the evidence. The principal sources are the TDA's own handbook and statistics files and the government yearbooks, all of them official and all produced by the organisations whose work they record. The Authority missed its original 1955 deadline, and it was extended repeatedly until 1969 (Section 4.2). Only seven of thirteen planned market towns were built (Section 4.5.3). About 13 per cent of the allotment units were still unresolved at the end (Section 4.4.4). There are cancellations and resumptions in several schemes. Apart from Qureshi's (1995) survey of eight villages, the literature reviewed contains no independent socio-economic study of the settlers, and no data on how many refugee families remained on their lots or left. Conclusions that the people of Thal are "happy" and confident of their future are assertions and not findings. Proposition P3 is therefore supported: the register in Table 10 shows that even the headline figures are not fully consistent.

The most defensible conclusion is that the project settled a very large number of families on land that had been almost uninhabited and did so through a much more elaborate programme than its colonial forerunner, but that its distributive and social outcomes have yet to be examined with independent evidence.

5.5 Answers to the Research Questions

Table 12

Summary of Findings by Research Question

Question	Finding	Where developed
RQ1	The project moved from an unfinished colonial canal scheme (1939) through unsuccessful military-family settlement to a corporate authority (1949) with repeatedly extended mandate (1955, 1961, 1964, 1965) and dissolution in 1969.	Sections 4.1, 4.2; Table 3
RQ2	Land was classified in three categories, acquired from local owners (938,778 acres), partly returned through a marginal adjustment formula (407,297 acres) and allotted under a succession of notified schemes with conditional tenure.	Sections 4.3, 4.4; Tables 4–7
RQ3	Reported outcomes include 1,110 villages and towns, 7 market towns, over 31,000 families (30,891 units on 700,181 acres by author's sum) and 631,300 acres levelled; 13 inconsistencies were identified.	Sections 4.4–4.6; Tables 7, 9, 10
RQ4	Continuity in tenurial technique (D1); departure in purpose, terms, finance and social provision (D2–D4); local and evidentiary questions remain open (D5–D6).	Sections 5.1–5.4; Table 11

5.6 Implications

The findings carry implications for historiography, for method and for policy history. For historiography, the Thal case suggests that the post-1947 agrarian state in Punjab can be understood as a repurposing of colonial technique rather than as a clean break, a hypothesis that deserves testing in other settlement schemes. For method, the register in Table 10 shows that figures reproduced in the literature should be recomputed before they are used as evidence, and that single indicators such as "families settled" need disaggregation by refugee and local status. For policy history, the repeated extension of the TDA's timetable and the unfinished conversion of allotments into titles suggest that the administrative effort required to turn allotment into secure ownership was greater than originally planned. These implications are drawn with caution, since they rest on official sources mediated through secondary studies.

6. Conclusion

The Thal Development Project was one of the largest single instruments of refugee rehabilitation in Pakistan's Punjab. Beginning as a colonial canal scheme left unfinished at Partition, and passing through an unsuccessful first attempt at settlement, it was reorganised in 1949 under the TDA, which acquired and adjusted land under a statutory formula, allotted it under a series of notified schemes, levelled and irrigated the desert, and built villages, market towns, industries and social facilities. By its dissolution in 1969, the reported result was some 1,110 new villages and towns and the settlement of more than 31,000 families, a figure that the author's own aggregation of the district tables broadly supports.

The project kept the conditional-tenure technique of the colonial canal colonies and much of their administrative apparatus, but it turned that machinery to a different purpose and coupled it with concessional terms, credit, social services and externally financed machinery. The article has also shown that the published record contains numerical inconsistencies (in the land tables, in levelling, in the count of industries and in cultivated area, among others, as itemised in Table 10) and depends heavily on official statistics.

6.1 Contributions

The article contributes (a) an analytical framework that separates tenurial technique from purpose, finance and social provision (Table 1); (b) a chronology of the project (Table 3); (c) derived ratios on acquisition and adjustment (Table 5); (d) an aggregation of the allotment tables with reconciliation against the reported family count (Table 7); and (e) a register of numerical inconsistencies (Table 10).

6.2 Limitations

The study did not consult archival records directly, relies on three studies by overlapping authors, and cannot separate refugees from locals in the allotment totals. Its comparison with the colonial model rests on the historiography rather than on a parallel quantitative analysis of colonial colonies.

6.3 Future Research

Future research should therefore move in three directions. It should recover the MFRO and TDA records in the Board of Revenue and provincial archives; it should follow the fortunes of refugee and local allottees through settlement records, revenue files and oral histories; and it should compare Thal with the older colonial colonies in the retention of settlers, the security of titles and the local consequences of acquisition. A further task is to compare the 1952 Peasant Grant resolution with the 1955 notification (Section 4.4.2). Only then can the balance between the project's achievements and its costs be judged with confidence.

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